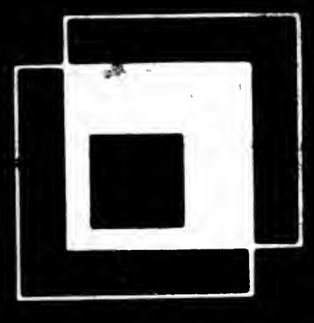
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Robert Gottschalk Appointed Commissioner of Patents

The Office of the White House Press Secretary released the following on January 4, 1972:

THE WHITE HOUSE

The President today announced the recess appointment of Robert Gottschalk as Commissioner of Patents. He will succeed William E. Schuyler, Jr., whose resignation was accepted effective August 25, 1971. On November 12, 1971, the President nominated Donald W. Banner of Chicago, Illinois for this position. The nomination was not confirmed prior to Senate adjournment, and Banner has asked that for personal reasons his name not be resubmitted to the next session.

Gottschalk is presently the First Assistant Commissioner of Patents, a position to which he was appointed by the President on May 20, 1970. From 1965 to February 1970, Gottschalk served as Director of Patents for GAF Corporation in New York City. He was graduated from McGill University in 1931 and received his law degree from St. Lawrence University in 1934.

Following graduation he entered into the private practice of patent and trademark law. In 1941, he became the patent and trademark counsel for the Corn Products Company. From 1946 to 1961 he was employed by Standard Oil of Indiana—first as assistant manager of the patent department, and finally as director of contract and legal matters. In 1961 he became the general patent counsel for the Canteen Corporation. From 1964 to 1965, Gottschalk was the managing director of his own firm, Robert Gottschalk Associates.

He is married to the former Elizabeth Papenhausen. They have one son and reside in McLean, Virginia.

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Oath of Office administered Friday, January 7, 1972.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Access to Pending Applications

A proposal was published at 36 F.R. 16194 to amend § 2.27 by deleting the requirement to show good cause in order to obtain access to a pending application file.

After consideration of all comments and suggestions submitted by interested persons, the amendment as proposed is hereby adopted, subject to the following changes:

1. The title of § 2.27 is changed by inserting the word "trademark" after the word "pending."

2. In paragraph (b) of § 2.27 the word "trademark" after the word "pending" is deleted.

Access to a pending application will be granted upon oral request at the office of the Director of the Trademark Examining Operation. The files will be ordered at 2 p.m. each day and will usually be available for inspection by 3 p.m. the same day. Files must be inspected in the presence of office personnel and papers may not be removed without authorization. Copies of the contents of files may be made only in the Trademark Search Room or by the Document Service Branch. Written requests for copies of the contents of application files may be addressed to the Document Service Branch; the cost is 30 cents per page.

The procedure for access to published and registered files and terminated inter partes proceedings will remain unchanged. Access to a published application is granted by request in the Trademark Docket Section. In order to obtain access to a registered file or terminated inter partes proceeding, an order must be placed in the Trademark Docket Section. These files are available either the same day or the morning of the following day.

Effective date. This amendment is effective on the date of its publication in the Federal Register (12-31-71).

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

December 21, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

December 22, 1971.

The text of the revised section is as follows:

§ 2.27 *Pending trademark application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

[F.R. Doc. 71-19081; Filed 12-30-71; 8:45 a.m.]

Published in F.R. 24506, Dec. 31, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,611,813, Sharpless and Eichert, Jr., MAGNETIC DATA STORAGE SYSTEM, **filed** May 22, 1968, D.C. Md. (Baltimore), Doc. 19515, *Technitrol, Inc.* v. *Scientific Data Systems, Inc.* (*Xerox Corporation substituted for Scientific Data Systems, Inc.*). Agreed, settled, satisfied and dismissed with prejudice as to Xerox Corporation, Sept. 2, 1971.

2,690,518, Fyler and Rowe, COLOR PICTURE TUBE; **3,179,836**, J. Giuffrida, COMPENSATION FOR EARTH'S MAGNETIC FIELD BY COLOR DOT DISPLACEMENT; **3,222,172**, same, METHOD FOR MAKING COLOR TELEVISION PICTURE TUBES, **filed** Mar. 15, 1971, D.C., N.D.N.Y. (Utica), Doc. 71-CV-118 and 119, *General Electric Company* v. *Columbia Broadcasting System, Inc.*

2,750,055, J. D. Huffines, REFUSE COMPRESSOR MECHANISM FOR VEHICLES, **filed** Aug. 24, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. CA71-789, *James Donle Huffines* v. *Thiele, Inc. et al.*

2,771,759, Leath and Bobo, Jr., TEXTILE PRODUCT AND METHOD, **filed** Jan. 5, 1971, D.C. Puerto Rico (San Juan), Doc. C-3-71, *Patentex, Inc.* v. *Manhattan Hosiery Corp. and United Hosiery Mills, Ltd.*

2,779,399, Zink and Reed, FLARE STACK GAS BURNER; **3,134,424**, same, FLARE STACK GAS BURNER ASSEMBLY, **filed** Aug. 2, 1971, D.C., S.D. Tex. (Houston), Doc. CA71-H-844, *John Zink Company* v. *National Airoil Burner Co., Inc.*

2,798,621, L. W. Tracy, SELF-LOADING VEHICLE, **filed** June 25, 1971, D.C. Oreg. (Portland), Doc. 71-454, *Ray Reese, doing business as Advance Axle & Trailer Co., and E. Dale Frodsham* v. *Commercial Bodybuilders, Inc. et al.*

2,948,928, Ebneth and Falk, PROCESS FOR MANUFACTURING FOAMED POLYURETHANE ARTICLES, **filed** Mar. 11, 1971, D.C.N.J. (Newark), Doc. 363-71, *Mobay Chemical Company and Farbenfabriken Bayer Aktiengesellschaft* v. *Hudson Foam Plastics Corporation et al.* Consent order of dismissal, June 23, 1971.

2,950,318, S. H. Shapiro, PROCESS FOR THE PRODUCTION OF QUATERNARY AMMONIUM COMPOUNDS; **3,222,402**, M. C. Cooperman, PREPARATION OF N-ALIPHATIC TRIMETHYLENE DIAMINES, **filed** Feb. 26, 1968, D.C., W.D. Tenn. (Memphis), Doc. C-68-40, *Armour & Company and Armour Industrial Chemical Co.* v. *Enenco Inc.* Plaintiffs' motion to dismiss the counterclaim on 3,222,402 be denied, July 15, 1971.

2,981,689, E. Albers-Schoenberg, SQUARE LOOP FERRITES, **filed** Feb. 22, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c478, *Electronic Memories & Magnetics Corp.* v. *Control Data Corp.* On motion of the plaintiff, cause is dismissed, June 23, 1971.

3,011,057, H. O. Anger, RADIATION IMAGE DEVICE, **filed** June 21, 1968, D.C. Conn. (New Haven), Doc. 12618, *Hal O. Anger, Nuclear Chicago Corporation* v. *Intertech, Inc. and Picker Corporation.* Consent judgment, defendant has infringed each of claims 1 and 3 through 18. Injunction entered, July 1, 1971.

3,037,659, W. H. Frederick, NESTING AND STACKING BASKET, **filed** Sept. 2, 1971, D.C., E.D. Tex. (Tyler), Doc. 5352, *William H. Frederick; Nathan Gilbert and Banner Metals, Inc.* v. *AAA Wire Products, Inc.*

3,050,087, D. M. Caplan, FLEXIBLE HOSE; **3,194,705**, same, METHOD AND APPARATUS FOR MAKING REINFORCED CORRUGATED HOSE, **filed** June 23, 1971, D.C., W.D. Pa. (Pitsburgh), Doc. 71-587, *Carlisle Corporation* v. *H. K. Porter Company, Inc.*

3,090,300, L. G. Dubuit, SILK SCREEN PRINTING MACHINE, **filed** Aug. 18, 1969, D.C., W.D.N.C. (Charlotte), Doc. 2525, *Louis Gilbert Dubuit, Machines Dubuit and American Screen Process Equipment Company* v. *Harwell Enterprises, Inc., and Roy M. Harwell, Jr.* Motion for summary judgment granted to defendant, Aug. 30, 1971.

3,095,777, R. L. Hallock, DRIVEN FASTENER HAVING PENETRATING POINT FOR ATTACHING OBJECTS TO METAL, **filed** Dec. 11, 1970, D.C., S.D. Ohio (Dayton), Doc. 3981, *Gripnail Corp. and Robert L. Hallock* v. *H. A. Jones Co., Inc.*

3,098,748, Noznick and Tatter, WHIPPING AND POWDERED SHORTENING COMPOSITIONS, **filed** May 17, 1968, D.C.N.J. (Trenton), Doc. No. 485-68, *National Dairy Products Corporation* v. *Beatrice Foods Co.* Judgment declaring patent invalid and dismissed counterclaim, Sept. 16, 1971.

3,134,424. (See 2,779,399.)

3,153,254, Lenz and Scinta, WINDSHIELD WIPER, **filed** July 12, 1971, D.C. Conn. (Bridgeport), Doc. B-323, *Trico Products Corporation* v. *Roberk Company.*

3,179,836. (See 2,690,518.)

3,194,705. (See 3,050,087.)

3,222,402. (See 2,950,318.)

3,249,384, R. M. Timms, SPRING SUPPORTED SADDLE, **filed** July 28, 1971, D.C. Conn. (Bridgeport), Doc. B-331, *The Troxel Manufacturing Company* v. *Mesinger Manufacturing Company, Inc.*

3,261,330, P. Arant, INTERLOCKED WATER AND FUEL SYSTEM FOR STEAM CLEANERS AND THE LIKE, **filed** June 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1527-R, *Clayton Manufacturing Co.* v. *Manufacturers Motor Products Co. and Homestead Industries, Inc.*

3,326,692, Lombard and Blaese, METHOD OF AND APPARATUS FOR COOKING, **filed** May 17, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c24, *Restaurant Technology, Inc.* v. *Geropco Inc.*

3,329,852, Saussele and Menzel, DIRECT-CURRENT MOTOR WITH PERMANENT-MAGNET ROTOR AND SEQUENTIALLY ENERGIZED STATOR WINDINGS, **filed** Aug. 18, 1971, D.C.N.J. (Newark), Doc. 1241-71, *Gebr. Beuhler Nachfolger GmbH, etc.* v. *Siemens-Schuckertwerke Aktiengesellschaft, etc.*

3,332,544, A. H. Willinger, PACKAGING ARRANGEMENT FOR AN AQUARIUM, **filed** Mar. 19, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69-C-294, *Metaframe Corp.* v. *Miracle Pet Products, Inc. et al.* Consent judgment for injunction, Aug. 4, 1971.

3,379,228, Carlberg and Siegal, PORTABLE SAW TABLE; **3,379,229**, B. L. Siegal, same, **filed** July 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1875, *Porta-Table Corporation* v. *Kaiser Aluminum and Chemical Sales, Inc.*

3,379,229. (See 3,379,228.)

3,402,657. (See Re. 26,240.)

3,448,178, T. P. Flanagan, HOT MELT ADHESIVES COMPRISING ETHYLENE/VINYL ACETATE COPOLYMERS AND ALPHA-PINENE/PHENOL CONDENSATION PRODUCTS, **filed** Sept. 21, 1971, *National Stareh and Chemical Corporation* v. *Findley Adhesives, Inc.*

3,527,018, D. E. Jahnke, VACUUM PACKAGING OF POULTRY, **filed** Sept. 24, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-525, *Vac-Air, Inc.* v. *John Mohr & Sons, Inc.* Judgment, defendant permanently enjoined, July 6, 1971.

Re. 26,240, C. I. Wasserman, HIGH SPEED PRINTERS WITH COLUMN SPANNING HAMMERS; **3,402,657**, Potter, Foley and Antonucci, HIGH SPEED BELT PRINTER WITH PRINTING SLUG SUPPORTING MEANS, **filed** Sept. 9, 1971, D.C.R.I. (Providence), Doc. CA4711, *Potter Instrument Company, Inc.* v. *ODEC Computer Systems, Inc.*

D. 171,968, L. Blum, RAIL, **filed** June 25, 1969, D.C., S.D. Fla. (Miami), Doc. 69-797-JK, *Blumcraft of Pittsburgh* v. *Metallic Engineering Co., Inc.* Judgment with consent, entered in favor of plaintiff, July 29, 1971.

Certificates of Correction for the Week of Feb. 1, 1972

3,438,335	3,575,127	3,588,723	3,596,087
3,475,239	3,575,587	3,589,355	3,596,362
3,484,228	3,577,473	3,589,640	3,596,471
3,491,864	3,578,778	3,589,734	3,596,537
3,516,991	3,579,373	3,590,358	3,596,709
3,529,408	3,580,308	3,591,165	3,596,755
3,535,403	3,580,854	3,591,301	3,596,799
3,538,101	3,580,869	3,591,312	3,596,940
3,538,227	3,581,993	3,591,578	3,597,073
3,541,086	3,582,561	3,591,731	3,597,203
3,547,670	3,582,786	3,592,788	3,597,225
3,549,010	3,583,339	3,593,018	3,597,301
3,551,660	3,583,463	3,593,910	3,598,108
3,554,336	3,583,544	3,594,111	3,598,386
3,554,563	3,584,641	3,594,192	3,598,719
3,555,035	3,585,395	3,594,411	3,598,738
3,555,055	3,585,516	3,594,510	3,598,903
3,555,734	3,586,753	3,594,533	3,599,959
3,559,199	3,586,930	3,594,559	3,600,090
3,560,167	3,587,052	3,594,608	3,600,212
3,564,290	3,587,317	3,594,847	3,600,215
3,565,686	3,587,640	3,594,991	3,600,278
3,567,627	3,587,646	3,595,390	3,601,194
3,572,751	3,587,691	3,595,771	3,602,847
3,572,969	3,587,818	3,595,861	3,602,895
3,573,072	3,587,969	3,595,903	3,602,929
3,574,604	3,588,070	3,595,950	3,603,218
3,574,751			

Patents Available for Licensing or Sale

2,925,617. WINDSHIELD WIPER. Zelmer L. Williams, Rte. 2, Box 382, Olympia, Wash., 98501.

3,102,721. PANTAGRAPH EQUILIBRIUM SPRING MECHANISM. Paul D. Levle, 2333 N. Central Ave., Phoenix, Ariz., 85004.

3,455,301. MALE GENITAL APPLIANCE. Bruce P. CLARK, 133 17th St., Oakland, Calif., 94612.

3,458,893. ARTIFICIAL TREE LIMB TAPERING METHOD. Correspondence to: Seymour H. Miller, executive vice president, Masterpiece, Inc., 29 Elm Ave., Mount Vernon, N.Y., 10550.

3,563,237. DISTAL PHALANX BANDAGE. Edwin L. Maxwell, Washington, D.C. Correspondence to: Millen, Raptes & White, 503 Crystal Mall, Bldg. 1, 1911 Jefferson Davis Highway, Arlington, Va., 22202.

3,572,418. METHOD FOR ASSEMBLING MOLDING FLASKS WITH SAND CORES. Fritz Winter Eisengiesserei, Allendorf, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,584,506. FLOW METER. Kamekichi Shiba, Tokyo, Japan. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,589,562. PRESSURE POWERED AEROSOL TIMER. Willard E. Buck, Lake Havasu City, Ariz. Correspondence to: Fred Briggs, Jr., P.O. Box 1437, Lake Havasu City, Ariz., 86403.

3,596,307. ADJUSTABLE MOUNTING FOR DOORS. Samuel Kolmetsky, 17 Marion Ave., Westville, N.J., 08093.

3,606,856. CICLO AMPHIBIOUS. Ernesto O. Moraga. Correspondence to: Sherman Levy, Suite 635 Washington Bldg., 15th and New York Ave. NW., Washington, D.C., 20005.

3,611,633. METHOD AND APPARATUS FOR OUTDOOR FLOWER ARRANGEMENTS. Clarice W. Shackelford, 3628 13th St. NW., Washington, D.C., 20010.

3,612,070. POWER DRIVEN, HAND HELD HAIR CURLER. Robert M. Reyes, 614 Forest Ave., Los Angeles, Calif., 90033.

3,627,119. JACKETED BUNDLES OF RIGID BEVELED STRIP MATERIAL. William T. Pearce, 7994 E. Evans Creek Road, Rogue River, Oreg., 97537.

The following 3 patents are offered by: Phillip M. Wilson, 133 Whitelaw Ave., Wood River, Ill., 62095.

3,590,950. MECHANICS PORTABLE STEP FOR VEHICLE MAINTENANCE AND REPAIR.

3,518,024. ONE-HAND BOAT/CANOE SCULLING PADDLE.

3,618,230. RETREADERS TIRE DRYER AND CONDITIONING MACHINE.

General Electric Company is prepared to grant non-exclusive licenses under the following 50 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,594,524. VACUUM-TYPE ELECTRIC CIRCUIT BREAKER.

Applications for license under the following 3 patents may be addressed to: Department Patent Counsel, Apollo and Ground Systems, General Electric Co., P.O. Box 2500, Daytona Beach, Fla., 32015.

3,575,616. SIGNAL CONDITIONER.

3,591,854. SIGNAL PHASE AND MAGNITUDE MEASUREMENT CIRCUIT.

3,593,156. FREQUENCY DOUBLER.

Applications for license under the following 46 patents may be addressed to: Patent Counsel Contractor Equipment Business Division, General Electric Co., 1285 Boston Ave., Bldg. 21ES, Bridgeport, Conn., 06602.

2,828,250. METHOD AND APPARATUS FOR THE ELECTROLYTIC OXIDATION OF COPPER WIRE.

2,831,050. CREPE PAPER INSULATION.

2,841,633. ELECTRICAL CABLE-STRUCTURE.

2,922,804. BASIC LEAD p-NITROSOPHENOLATE.

2,930,083. EXTRUSION OF CROSS-LINKED POLYETHYLENE AND PROCESS OF COATING WIRE THEREBY.

2,991,268. CURABLE COMPOSITION OF POLYETHYLENE, DI-α-CUMYL PERONIDE, CARBON BLACK, COAL DUST AND CURED PRODUCT THEREOF.

3,008,201. APPARATUS FOR THE CONTINUOUS FORMATION OF INTERMEDIATES.

3,060,053. METHOD AND APPARATUS FOR ACCRETING MOLTEN COPPER ON A MOVING MEMBER.

3,060,054. METHOD AND APPARATUS FOR ACCRETING MOLTEN MATERIAL ON A MOVING MEMBER.

3,060,055. METHOD AND APPARATUS FOR ACCRETING MOLTEN MATERIAL.

3,060,056. METHOD AND APPARATUS FOR CONTINUOUSLY ACCRETING MOLTEN MATERIAL.

3,094,752. DIP FORMING TUBING.

3,134,150. SUSPENSION SYSTEM.

3,145,119. FLOAT CASTING.

3,148,169. CURABLE POLYETHYLENE COMPOSITION COMPRISING PEROXIDE CONTAINING TERTIARY CARBON ATOMS, CLAY FILLER, AND AN ELECTRICAL CONDUCTOR INSULATED WITH THE COMPOSITION.

3,153,954. WIRE ROLLING SYSTEM AND METHOD.

3,161,541. SYNTHETIC RESIN AND CONDUCTORS INSULATED THEREWITH.

3,164,896. PROCESS FOR CONTINUOUS MANUFACTURE OF TUBING.

3,171,866. PEROXIDE CURED POLYETHYLENE WITH POLYVINYL CHLORIDE FILLER AND WIRE COATED WITH THE SAME.

3,188,305. CROSSLINKING OF VINYL HALIDE RESINS.

3,207,719. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH TIN HALIDES.

3,207,720. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH A METAL HALIDE.

3,207,721. POLYVINYL CHLORIDE COMPOSITIONS CURED WITH A COBALT HALIDE.

3,207,825. PROCESS FOR EXTRUDING POLYTETRAFLUOROETHYLENE-SILICONE RUBBER COMPOSITION.

3,235,960. PROCESS FOR THE CONTINUOUS FORMATION OF INTERMEDIATES.

3,264,692. INLET ORIFICE FOR CONTINUOUS CASTING APPARATUS.

3,286,018. POWER CABLE CONDUCTOR FOR REDUCING WINDAGE.

3,286,019. POROUS CONDUCTOR JACKET.

3,286,020. COVERING FOR POWER LINE CONDUCTORS TO REDUCE WINDAGE, CORONA LOSS AND RADIO FREQUENCY INTERFERENCE.

3,288,744. VINYL HALIDE RESINS STABILIZED WITH TRIS (HYDROXYMETHYL) AMINOMETHANE.

3,288,764. CURING OF CHLOROSULFONATED POLYETHYLENE.

3,288,879. VULCANIZATION OF RUBBER WITH AN ORGANO-HYDROGEN POLYSILOXANE AND A CHLORO-PLATININ ACID COMPOUND.

3,296,189. CHEMICALLY CROSS-LINKED POLYETHYLENE STABILIZED WITH POLYMERIZED TRIMETHYL QUINOLINE.

3,334,080. CURABLE COMPOSITION COMPRISING POLYETHYLENE AND 2,5-BIS(t-BUTYLPEROXY)-2,5-DIPHENYLHEXYNE-3.

3,346,444. ELECTRICALLY CONDUCTIVE POLYMERS AND PROCESS OF PRODUCING THE SAME.

3,396,231. STRESS GRADED CABLE TERMINATION.

3,424,130. ENTRY PORT MEMBER FOR DIP CRUCIBLE APPARATUS.

3,461,218. CRYOGENIC A.C. CABLE.

3,466,186. DIP FORMING METHOD.

3,484,280. ATMOSPHERE CONTROL IN DIP-FORMING PROCESS.

3,494,883. POLYOXYMETHYLENE POLYMERS CROSS-LINKED WITH TRIALLYCANURATE AND A PEROXIDE.

3,510,345. APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING THE MOLTEN METAL BATH LEVEL IN A METALLURGICAL PROCESS.

3,538,884. CONTINUOUS FORMATION OF INTERMEDIATES.

3,546,014. METHOD FOR MAKING THIN WALL INSULATED WIRE.

3,553,348. POLYMERIC BLENDS FOR INSULATION COMPOSITION.

3,582,534. STRESS CASCADE-GRADED CABLE TERMINATION.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 76 patents.

Inquiries respecting these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,617,326. METHOD OF BRANDING SILICON PLASTIC SURFACE.

3,617,381. METHOD OF EPITAXIALLY GROWING SINGLE CRYSTAL FILMS OF METAL OXIDES.

3,617,621. COLOR COMPENSATING CIRCUITS.

3,617,622. OSCILLATOR CIRCUITS FOR PROVIDING A VARIABLE AMPLITUDE OUTPUT SIGNAL UNDER CONTROL OF AN INJECTED INPUT SIGNAL.

3,617,821. HIGH-VOLTAGE TRANSISTOR STRUCTURE HAVING UNIFORM THERMAL CHARACTERISTICS.

3,617,823. SELF-SCANNED PHOTOTRANSISTOR ARRAY EMPLOYING COMMON SUBSTRATE.

3,617,889. TIME-FREQUENCY-PHASE IN-BAND CODED COMMUNICATIONS SYSTEM.

3,617,892. FREQUENCY MODULATION SYSTEM FOR SPREADING RADIATED POWER.

3,617,919. CANONICAL ORTHOGONAL FILTER.

3,618,049. HOLOGRAM MEMORY.

3,618,132. FREQUENCY SHIFT OSCILLATOR WHICH AVOIDS THE GENERATION OF TRANSIENTS.

3,618,185. OVAL LOUDSPEAKER BASKET AND METHOD OF MANUFACTURING SAME.

3,618,841. ENDLESS LOOP TAPE CARTRIDGE.

3,619,024. PACKING OF HOLOTAPE.

3,619,025. ELIMINATION OF THE EFFECTS OF SCRATCHES AND TWISTING IN A HOLOGRAPHIC MOTION PICTURE TAPE.

3,619,031. ELECTRO-OPTIC PARITY CHECKER.

3,619,285. METHOD OF MAKING A PATTERNED METAL FILM ARTICLE.

3,619,487. SELECTIVELY OPERATED TINT CORRECTION CIRCUITS.

3,619,488. VIDEO AMPLIFIERS.

3,619,489. SHADOWING SYSTEM FOR COLOR ENCODING CAMERA.

3,619,492. AUTOMATIC FINE TUNING CIRCUITRY.

3,619,509. BROAD SLOPE DETERMINING NETWORK.

3,619,517. LABYRINTH FOR UNIDIRECTIONAL MICROPHONE.

3,619,569. OPTICAL CARD READING APPARATUS.

3,619,585. ERROR CONTROLLED AUTOMATIC RE-INTERROGATION OF MEMORY.

3,619,647. STAIRCASE VOLTAGE GENERATORS.

3,619,665. OPTICALLY SETTABLE FLIP-FLOP.

3,619,666. TRIGGER CIRCUITS HAVING UNIFORM TRIGGERING VOLTAGES.

3,619,689. CATHODE-RAY TUBE WITH ELECTRODE SUPPORTED BY STRAPLIKE SPRINGS.

3,619,707. ASTIGMATISM CORRECTION FOR ELECTRON-BEAM DEVICES.

3,619,725. ELECTRICAL FUSE LINK.

3,619,731. MULTIPLE PELLET SEMICONDUCTOR DEVICE.

3,619,733. SEMICONDUCTOR DEVICE WITH MULTI-LEVEL METALIZATION AND METHOD OF MAKING THE SAME.

3,619,734. ASSEMBLY OF SERIES CONNECTED SEMICONDUCTOR ELEMENTS HAVING GOOD HEAT DISSIPATION.

3,619,811. GAS LASER TUBE MOUNT.

3,620,467. ENDLESS LOOP TAPE CARTRIDGE.

3,620,692. MOUNTING STRUCTURE FOR HIGH-POWER SEMICONDUCTOR DEVICES.

3,620,799. METHOD FOR METALLIZING A CERAMIC BODY.

3,621,226. ANALOG MULTIPLIER IN WHICH ONE INPUT SIGNAL ADJUSTS THE TRANSCONDUCTANCE OF A DIFFERENTIAL AMPLIFIER.

3,621,297. MONOSTABLE MULTIVIBRATOR.

3,621,367. FREQUENCY MULTIPLIER EMPLOYING INPUT AND OUTPUT STRIP TRANSMISSION LINES WITHOUT SPATIALLY COUPLING THEREBETWEEN.

3,621,462. AMPLIFIERS AND OSCILLATORS COMPRISED OF BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE STRUCTURE.

3,621,487. SEQUENCER.

3,622,226. LIQUID CRYSTAL CELLS IN A LINEAR ARRAY.

3,622,322. PHOTOGRAPHIC METHOD FOR PRODUCING A METALLIC PATTERN WITH A METAL RESINATE.

3,622,341. ZINC OXIDE AND TITANIUM OXIDE SENSITIZED BY AZO DYES.

3,622,690. ELECTRONIC SCANNER UTILIZING A LASER FOR THE SIMULTANEOUS SCANNING AND REPRODUCING OF IMAGES.

3,622,712. DEVICE EMPLOYING SELENIUM-SEMICONDUCTOR HETEROJUNCTION.

3,622,758. ARTICLE LABELING AND IDENTIFICATION SYSTEM.

3,622,826. PHOSPHOR SCREEN COMPRISING TWO KINDS OF PARTICLES, EACH HAVING PHOSPHOR CORE AND PHOSPHOR COATING.

3,622,903. HIGH-GAIN DIFFERENTIAL AMPLIFIER.

3,622,906. LIGHT-EMITTING DIODE ARRAY.

3,622,913. FREQUENCY MODULATED PHASE-LOCKED OSCILLATOR HAVING LOW- AND HIGH-FREQUENCY RESPONSE.

3,623,020. FIRST-IN FIRST-OUT BUFFER REGISTER.

3,623,117. COLLAPSIBLE STRUCTURE TO SUPPORT ANTENNA ELEMENTS.

3,623,120. MAGNETIC DRUM SYSTEM.

3,623,219. METHOD FOR ISOLATING SEMICONDUCTOR DEVICES FROM A WAFER OF SEMICONDUCTING MATERIAL.

3,623,392. VISUAL DISPLAYS UTILIZING LIQUID CRYSTALS.

3,623,795. ELECTRO-OPTICAL SYSTEM.

3,623,867. PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE RAY TUBE SCREEN STRUCTURE.

3,623,994. VERY SHORT LUMINESCENT DECAY-TIME PHOSPHOR.

3,624,279. COLOR TELEVISION RECEIVER HUE CONTROL.

3,624,280. TELEVISION AMPLIFIER CIRCUITS.

3,624,286. NOISE CANCELLATION IN VIDEO SIGNAL GENERATING SYSTEMS.

3,624,419. BALANCED OPTICALLY-SETTABLE MEMORY CELL.

3,624,423. CLOCKED SET-RESET FLIP-FLOP.

3,624,425. CAPACITANCE MULTIPLICATION NETWORK.

3,624,428. ELECTRIC SIGNAL PROCESSING CIRCUIT EMPLOYING CAPACITIVELY-SCANNED PHOTOTRANSISTOR ARRAY.

3,624,465. HETEROJUNTION SEMICONDUCTOR TRANSDUCER HAVING A REGION WHICH IS PIEZOELECTRIC.

3,624,490. TWO TERMINAL CURRENT REGULATOR.

3,624,510. THRESHOLD DIGITAL SWITCH CIRCUIT FOR REMOTE CONTROL SYSTEM.

3,624,512. AUTOMATIC FREQUENCY CONTROL SYSTEM.

3,624,554. ULTRA HIGH FREQUENCY OSCILLATOR UTILIZING TRANSMISSION LINE TUNABLE RESONANT CIRCUITS.

3,624,559. PHASE OR FREQUENCY MODULATOR USING PIN DIODES.

3,624,573. BLUE LATERAL MAGNET STRUCTURE.

3,624,634. COLOR DISPLAY.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 11, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-04-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-21-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-18-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods. Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-30-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-10-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-27-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-01-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	11-03-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	12-03-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-04-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-01-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-01-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during January 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

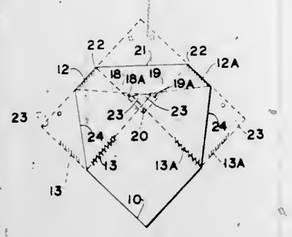
Patents..... Numbers 2,698,434 to 2,700,763, inclusive
Plant Patents..... Numbers 1,339 to 1,344, inclusive

PATENTS

GRANTED FEBRUARY 1, 1972

GENERAL AND MECHANICAL

3,638,239
BLOUSE CONSTRUCTION
Katherine L. Wilcox, Box 834, Lacombe, Alberta, Canada
Filed Apr. 30, 1970, Ser. No. 33,495
Claims priority, application Great Britain, May 6, 1969, 22,969/69
Int. Cl. A41d *1/22*
U.S. Cl. 2—105 6 Claims



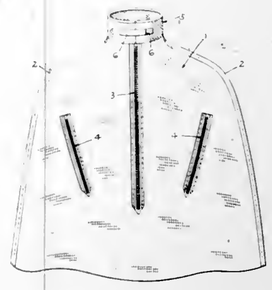
Two squares of material are sewn together along a pair of shoulder seam lines and a pair of side seam lines intermediate the ends of the edges of the material. Pairs of dome fasteners or the like may then be engaged inwardly to form a draped sleeveless blouse.

3,638,240
VENTED GOGGLES
James V. Militello, Buffalo, N.Y., assignor to American Allsafe Company, Inc., Buffalo, N.Y.
Filed Feb. 7, 1968, Ser. No. 703,617
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 N 2 Claims



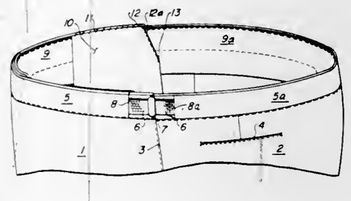
Vented goggles of the type having a frontal lens portion and a molded plastic frame extending about the lens portion and rearwardly to the face of the wearer. The vent structure is entirely of molded plastic comprising an oblong opening in the plastic frame having a surrounding wall extending outwardly from the frame, together with an oblong plastic cap which secures over the wall in sealing engagement with the front portion thereof. The cap has an opening along the lower part of its rear wall whereby venting air may pass through such opening and upwardly over the outwardly extending wall of the frame.

3,638,241
FOUL WEATHER OUTER GARMENT
Kenneth E. Holmes, Holmes Road, Andover, Mass.
Filed May 25, 1970, Ser. No. 40,121
Int. Cl. A41d *3/08*
U.S. Cl. 2—88 2 Claims



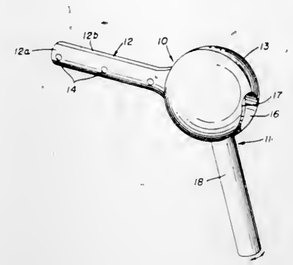
A foul weather outer garment is provided to be worn over conventional outer garments. It comprises a sacklike body portion without arms, having a split turtle neck pervious to air and moisture, adjustable as desired, the body portion being substantially impervious to air and moisture and open at the bottom to permit the circulation of air through the garment and about the neck portion from which the air and moisture are exhausted to the atmosphere.

3,638,242
BELT-TYPE SIDE POCKET WAIST ADJUSTMENT FOR GARMENTS
Frank Herter, 2817 Cypress Ave., Cleveland, Ohio
Filed Mar. 23, 1970, Ser. No. 21,787
Int. Cl. A41d *1/06*
U.S. Cl. 2—237 4 Claims



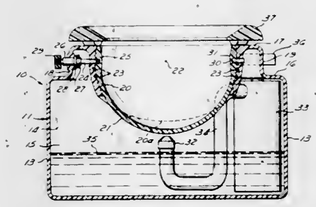
A garment is disclosed which includes a front section having a front waistband and a rear section having a rear waistband. A pocket pouch extends downwardly from a seam at the top of the front waistband. The rear waistband is received in the pocket pouch for sliding movement in the pocket pouch. The seam at the top of the front waistband guides the rear waistband in the pocket pouch to maintain the rear waistband in aligned overlapping relation to the front waistband. Elastic means retains the rear waistband in the pocket pouch and urges the rear waistband against the seam to maintain alignment.

3,638,243
SURGICALLY IMPLANTABLE PROSTHETIC JOINT
William B. Campbell, Jr., Columbus, Ohio; Jack E. Burroughs, Fort Worth, Tex., and Joe K. Cochran, Jr., Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio
Filed May 4, 1970, Ser. No. 34,173
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 2 Claims



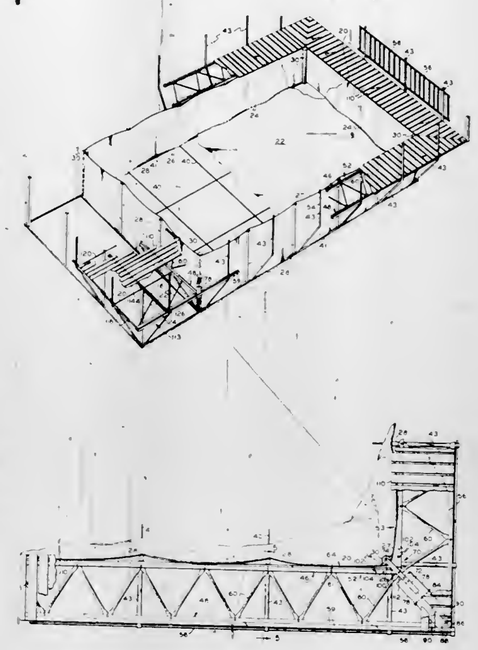
A surgically implantable hinge joint for replacing a damaged or diseased natural hinge joint in the skeletal structure of humans and other animals and composed of relatively rotatable ball- and socket-members each having elongate shank portions for implantation in the proximal end portions of the bones which are severed from the removed natural joint, and which provides for at least limited axial rotation of one of the joint members relative to the other together with relative hinging or pivotal swinging movement of such members in a given plane.

3,638,244
WATER CLOSET
John H. Schmid, and Arthur E. Thomas, both of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.
Filed Apr. 6, 1970, Ser. No. 25,896
Int. Cl. E03d *5/01, 5/016*
U.S. Cl. 4—17 22 Claims



A water closet for collecting and disposing of waste materials is disclosed. The water closet includes a receptacle having a top opening therein. A bowl is mounted within the top opening and the bowl is adapted to be pivoted from a position wherein the interior of the bowl faces upwardly to collect waste to a position wherein the bowl faces downwardly to empty the contents of the bowl into the receptacle. A spray head is located beneath the bowl to direct a flushing solution against the interior of the blow when the bowl is in its inverted position.

3,638,245
TRUSS BEAM SWIMMING POOL
George R. Birkemeier, Portland, Oreg., assignor to Timber Structures, Inc., Portland, Oreg.
Filed Aug. 28, 1969, Ser. No. 853,685
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 12 Claims

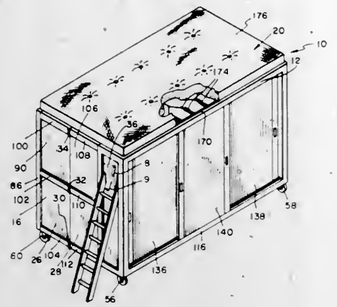


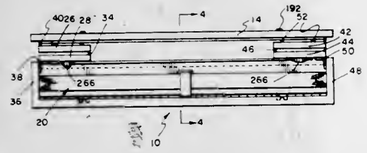
A truss-beam swimming pool includes slightly bowed truss beams 52 and 53 secured together at their ends by joints 70 and forming a self-restraining rectangle. The beams take lateral thrust from tops of posts 28, which support continuous sidewalls 26 which support sidewalls 24 of a plastic pool member 20. The joints 70 rest on corner posts 30 and tie together inner chords 46 and end webs 60 of the beam. The joints also support the inner ends of corner beam members 78. The beams are supported by posts 28, 30 and 43 and have duckboards nailed to the chords thereof to form a deck. The lower ends of the posts are secured together by tierods and by bottom frame members 41.

3,638,246
COLLAPSIBLE COMBINATION BED AND CLOSET
William A. Jewell, 3747 Cambridge, Kansas City, Kans.
Filed Mar. 4, 1970, Ser. No. 16,392
Int. Cl. A47c *13/38, 17/40*
U.S. Cl. 5—2 R 6 Claims

A collapsible combination bed and closet comprising upstanding sidewalls connected by inwardly foldable end walls. A sleeping platform in the nature of a padded spring support is pivoted to the top of one of the sidewalls so as to be swung to a storage condition between the sidewalls that does not interfere with inward folding of the end walls. Shelves and clothes rod are detachably mounted to extend between the end walls, and a closable opening is provided in one of the sidewalls for access to the shelves and rod. A collapsible bot-

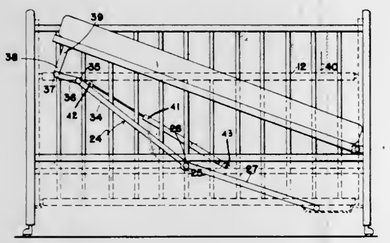
tom wall including a fixed section is provided and there is sufficient space above and on the fixed bottom wall section





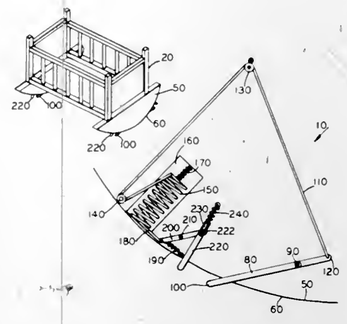
(when the end walls are folded) to accommodate storage of the shelves, rod and a ladder.

3,638,247
BABY'S CRIB
Francis Alan Kennedy, Miami, Manitoba, Canada
Filed Apr. 29, 1970, Ser. No. 32,856
Int. Cl. A61g *7/10*; **A47d** *7/03, 9/00*
U.S. Cl. 5—11 **3 Claims**



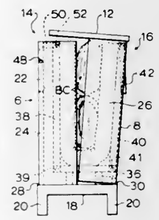
When one side of the crib is pushed down, linkage raises one end of the base frame and the mattress so that the mattress is inclined with the head of the baby raised almost level with the top of the dropped side. As the side is moved up to the normal closed position, the mattress lowers to the original horizontal position.

3,638,248
APPARATUS FOR PRODUCING A ROCKING MOTION
Jack Silverglate, 6 Roanoke St., Woodbridge, N.J.
Filed Jan. 14, 1971, Ser. No. 106,418
Int. Cl. A47d *9/02, 13/10*; **A47c** *3/02*
U.S. Cl. 5—105 **5 Claims**



The apparatus comprises a plurality of rods and levers and springs interconnected by a cable so that a crib or the like, moved by hand initially, causes the apparatus to apply a force to the surface on which the apparatus is mounted to cause the rocking motion to continue.

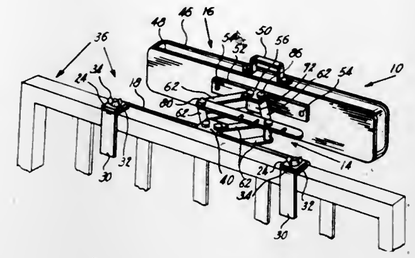
3,638,249
CABINET BED
Stylianos G. Katsigarakis, 214 Vaughan Road Apt. 0101, Toronto 347, Ontario, Canada
Filed Jan. 7, 1970, Ser. No. 1,138
Int. Cl. A47c *17/60*
U.S. Cl. 5—159 **11 Claims**



A cabinet bed comprising a cabinet having a box mounted on a base; said box being formed of two halves which are respectively hinged to the base for opening and closing. When closed, the box contains a folding bed which is comovably coupled to both box halves for unfolding and folding coincidentally with the opening and closing of the box halves; the bed in its unfolded state being supported at an optimal level.

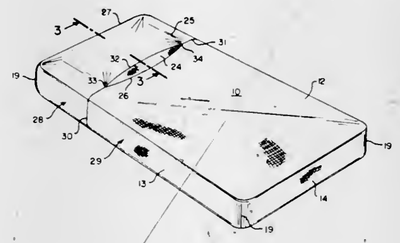
3,638,250
FOOTREST STRUCTURE FOR BEDS
Charles B. Johnson, 1600 E. University, Des Moines, Iowa
Filed Apr. 3, 1970, Ser. No. 25,326
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 **7 Claims**

A footrest structure for beds of ordinary construction to be provided as a brace or support for the feet of the bed occupant, particularly when he is in a sitting or partially sitting position. This footrest includes an adjustable mounting bracket which is attachable to footboards of varying thicknesses. A footrest cushion is attached to the mounting



bracket by a scissor-type jack mechanism so that the cushion can be moved longitudinally of the bed to accommodate persons of different heights. The adjustment mechanism is provided with a suitable locking device to hold it immovable in any adjusted position.

3,638,251
COMBINATION BEDSHEET AND PILLOWCASE
Sidney Matthew Weiss, c/o The Griswold-Eshleman Co. 625 Madison Ave., New York, N.Y.
Filed Jan. 2, 1970, Ser. No. 190
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C **4 Claims**



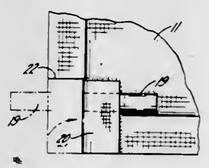
The disclosure relates to a combination bedsheet and pillowcase. A fitted-contour bedsheet is provided adjacent its head end with a transverse gore, either integral or as a separate panel, providing a pocket bulge at the head portion of the sheet. One or more pillows, depending on the configuration of the sheet, may be received between the mattress and the bedsheet within this pocket bulge, and, in one advantageous form of the invention, the front of the pocket tucks under the front edge of the pillow, providing the appearance of a conventional separate sheet and pillow arrangement. The fitted-contour sheet is self-holding on the mattress, so that the pillow or pillows are totally enclosed and secured in place. To particular advantage, the new combination bedsheet is constructed of knitted fabric, mechanically preshrunk in the length direction; in this way, a "no iron" sheet may be constructed using ordinary knitted cotton fabrics, which are to be preferred over synthetic or resin-fixed fabrics for the same purposes.

3,638,252
FITTED BEDSHEET
Carlton L. Palenske, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 22, 1969, Ser. No. 886,830
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 **4 Claims**



A contoured bedsheet readily adaptable to folding and compact packaging which can be directly applied to a mattress without turning it inside-out prior to application. The bedsheet comprising a central rectangular portion, two side panels each of which has a common edge with the central portion, at least one end panel having a common edge with the central portion, and at least two corner sections each of which has a common edge with both a side panel and an end panel. In forming the sheet, the corner sections are inwardly folded and, for each section, the common edge between the section and the end panel is secured to the side panel along a line which extends from the intersection of the common edges of the corner section toward the edge of the side panel at an angle which is greater than 90° and less than 120° from the common edge between the corner section and the end panel.

3,638,253
DEVICE FOR FILLING AND SEALING FLEXIBLE CONTAINERS
Paul R. Stumpf, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 11, 1969, Ser. No. 857,041
Int. Cl. A47c *27/08*
U.S. Cl. 5—337 **9 Claims**

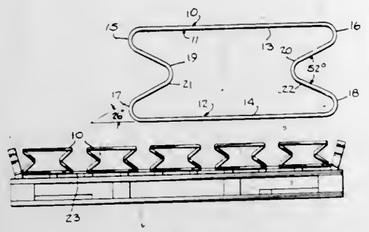


There is disclosed a tubular valve used to fill and seal inexpensive, disposable, inflatable containers such as pillows and the like. Sealing of this valve is accomplished by folding it to collapse its walls.

3,638,254
SPRING
Vernon A. Falkenau, Mishawaka, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 15, 1970, Ser. No. 37,755
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—351 **6 Claims**

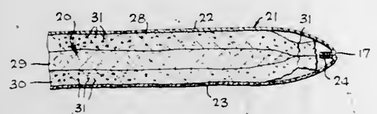
A plastic spring having two longitudinal sides joined by transverse sides having curved portions. The upper and lower

halves of the spring are symmetrical. Upper curved portions are disposed directly over lower curved portions to cause vertical deflection of the spring without horizontal roll in



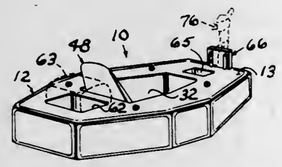
response to load. A mattress foundation utilizing such springs has border springs so mounted as to tend to slant outwardly but held in a vertical position by the foundation cover, thereby keeping the cover taut.

3,638,255
SEAT CUSHION OR PILLOW
Eugene L. Sterrett, 2835 Letricia Drive, Hacienda Heights, Calif.
Filed Oct. 2, 1969, Ser. No. 863,245
Int. Cl. A47g *9/00*; **A47c** *7/74*
U.S. Cl. 5—337 **10 Claims**



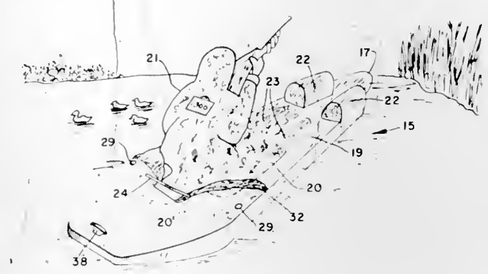
A seat cushion or pillow including an outer porous covering containing a mass of cushioning material, and with the pillow or cushion being formed at least partially of, or carrying, an odor adsorbent substance, preferably activated charcoal.

3,638,256
MOTOR-PROPELLED FISHING FLOAT
Hubert L. McIntyre, 1406 E. Tonkawa, Tonkawa, Okla.
Filed Feb. 24, 1970, Ser. No. 13,399
Int. Cl. B63b *35/00*
U.S. Cl. 9—1 R **5 Claims**



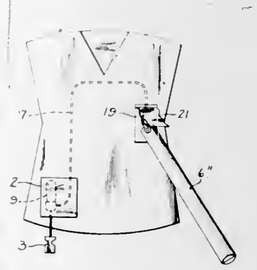
In a fishing float a horizontally disposed open framework reinforced polygonal-shaped buoyant body is provided with a seat-equipped central opening. An upstanding transom, at one end of the body, supports an outboard motor. An upwardly open recess, in the other end portion of the body, receives a battery for providing electrical energy to the motor.

3,638,257
HUNTING BOAT
Carl J. Ernst, P.O. Box 221, Webb, Miss.
Filed July 16, 1970, Ser. No. 55,315
Int. Cl. B63b *35/00*
U.S. Cl. 9—5 **10 Claims**



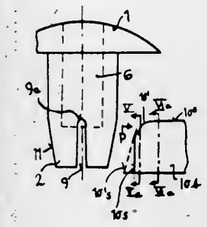
A low-profile hull without substantial vertical surfaces conforms substantially to the body of an occupant in a reclining position and can also accommodate the occupant in a sitting position. The hull has a convexo-concave bottom which slopes upwardly at the stern and a convexo-concave deck which is coextensive with the bottom and is provided amidships with an opening for the occupant. The deck also has blisters for the occupant's feet, and grooves serving as gun rests. Fillers of buoyant material are provided in the bow, stern and amidships, and the stern filler is recessed to form storage compartments. The hull is covered with camouflage material permanently attached as by gluing to all above water surfaces of the hull.

3,638,258
RESCUE LIGHT FOR A LIFE SUPPORT SYSTEM
Richard I. Black, Closter, N.J., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Jan. 12, 1970, Ser. No. 2,201
Int. Cl. B63c *9/18*
U.S. Cl. 9—321 **1 Claim**



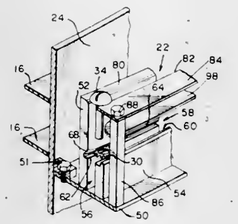
The combination of a rescue light attached to a life support system, such as a life vest, life raft, or life preserver. The lighting device consists of a transparent envelope containing a chemiluminescent element which is activated by the admission of a gas. The gas serves the additional purpose of inflating said envelope to form a substantially rigid wand of light. Means may be provided to quickly detach the wand from the support system.

3,638,259
METHOD FOR MAKING BLIND RIVETS
Carl B. H. Eibes, deceased, late of Schaittenbach, Germany; Ursula Eibes geb. Waschau; Christian Eibes, both of Schnaittenbach; Carl-Herwig Eibes, Berlin-Schoneberg, and Maria-Theresia Wagner geb. Eibes, all heirs, Amberg, all of Germany, assignors to Kerb-Konus-Gesellschaft Dr. Carl Eibes & Co., Schnaittenbach am opf., Germany
Filed Jan. 29, 1968, Ser. No. 701,490
Claims priority, application Germany, Feb. 1, 1967, E 33312
Int. Cl. B21k *1/58*; **B23g** *9/00*
U.S. Cl. 10—27 **4 Claims**



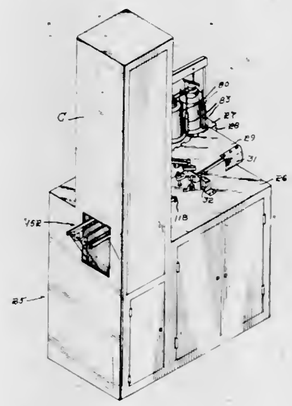
The disclosure relates to blind rivets and to an improved method of making such rivets. Symmetrically disposed slots are formed in the plain end of the rivet by means of chisel-type or edge-cutting tools so as to form several segments or lugs which, in use, may be spread apart by a spreading pin or the like to secure two or more members together.

3,638,260
FEEDER FOR SCREW BLANKS AND SERRATED WASHERS
John B. Brown, and Raymond L. Alexander, both of Indianapolis, Ind., assignors to Moorfeed Corporation, Indianapolis, Ind.
Filed Mar. 25, 1970, Ser. No. 22,635
Int. Cl. B21k *27/00*; **B23p** *19/08*
U.S. Cl. 10—162 **11 Claims**



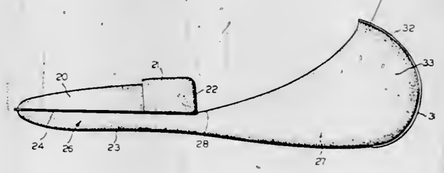
Vibratory track means for serially feeding washers, the track means including means providing an upwardly facing first ledge portion for supporting peripheral edge portions of the washers, an upwardly extending first wall portion extending along and bounding the first ledge portion, and an overhanging, downwardly facing portion extending outwardly from the first wall portion by an amount preferably not substantially greater than the cross-sectional width of the first ledge portion. The track means also includes means providing a second upwardly facing ledge portion for supporting the diametrically opposite peripheral edge portions of the washers and an upwardly extending second wall portion extending along and bounding the second ledge portion and facing the said first wall portion, the track means being devoid of any surface overhanging this second ledge portion.

3,638,261
APPARATUS FOR APPLYING INK OR OTHER LIQUIDS TO SOLES OR OTHER FREE FOAM ARTICLES
James Johnson, Plaistow, N.H., and Richard S. Ordway, Haverhill, Mass., assignors to Circle Machine Co., Inc., Haverhill, Mass.
Filed June 1, 1970, Ser. No. 42,270
Int. Cl. A43d
U.S. Cl. 12—1 A **30 Claims**



Apparatus is disclosed for applying liquids, inks and adhesives, for examples, to or otherwise treating the margins of shoe soles or other free form articles. The apparatus has first means to support an article in an elevated position and adapted to be opened to enable an article to be introduced or removed and, when closed, operable to turn the article to a desired extent and to apply a liquid to or otherwise treat its margins. Conveyor means, desirably including a dryer when the treatment is with a liquid, includes a transfer device at its infeed end operable to remove a treated article from the first means. Control means actuated when an article is introduced into the supporting means first closes the supporting means and then opens it when an article has been turned to the desired extent and operates the conveyor means.

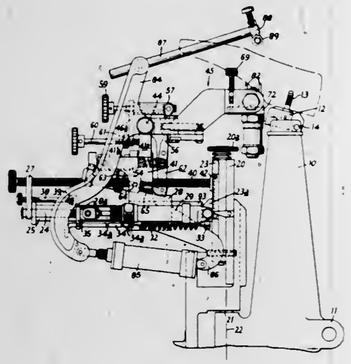
3,638,262
METHOD OF MAKING SLIPPERS
Winalee G. Mitchell, and James G. Mitchell, both of 205 Farnsworth Road, Waterville, Ohio
Original application Apr. 10, 1968, Ser. No. 720,016, now Patent No. 3,523,378. Divided and this application May 1, 1970, Ser. No. 43,660
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 MC **5 Claims**



Slippers having an upper joined to a lower blank of elastomeric sheeting material which increases in width but

the marginal edges thereof taper inwardly and upwardly toward the heel where the left and right sides are joined in a heel seam which is at least partly forwardly inclined. Also, a method of making such slippers including the steps of simultaneously cutting and bonding an upper with a lower blank having lateral edges which, in the rearward direction are from about parallel to divergent, folding the lower blank on about its longitudinal axis and bonding the folded left and right sides together along a heel seam which is at least partly forwardly inclined.

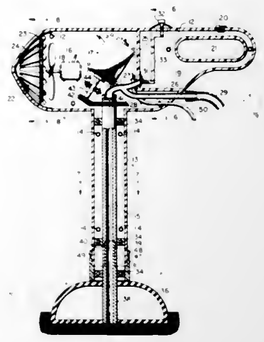
3,638,263
SHOE UPPER DRAFTING APPARATUS
Harold Albert Boddy, Leicester, England, assignor to Ralphs Unified Limited, Leicester, England
Filed June 2, 1969, Ser. No. 829,214
Claims priority, application Great Britain, June 4, 1968, 26,540
Int. Cl. A43d *21/00, 3/00*
U.S. Cl. 12—8.8 **12 Claims**



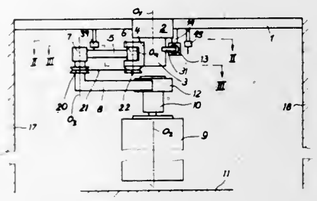
Apparatus for applying a drafting pull to a shoe upper on a last-carried bottom uppermost on a support which enables the last to pivot heightwise of the last about its heel end portion comprises a pair of pincers for gripping opposite sides of the forepart of the upper. The pincers can be swung towards and away from each other. The pincers are mounted on a carriage for movement lengthwise of the last, relative to the last and a member is provided for pressing on the bottom of the last to cause the last to pivot about the support, so that the upper can be drafted lengthwise of the last and across the last.

3,638,264
COMBINATION ROTARY BRUSH, DETERGENT DISPENSER AND DRIER
Frank Roosevelt Walton, 7939 Dellwood Ave., Lanham, Md.
Filed Mar. 20, 1970, Ser. No. 21,389
Int. Cl. A46b *13/04;* **F26b** *19/00*
U.S. Cl. 15—4 **4 Claims**

A portable implement combining therein a powered brush element, a detergent chamber capable of releasing a brushing agent and directing the same to a point of discharge adjacent the brush element together with a drying means, all operative parts for the aforesaid assembly being wholly contained within a single casing, thus enabling the implement to be efficiently employed in the washing and drying of objects to be cleaned and subsequently dried.



3,638,265
VEHICLE-SCRUBBING DEVICE
Heinrich Fuhring, Augsburg; Richard Fleschhut, Goggingen, and Hans Wolter, Augsburg, all of Germany, assignors to Bowe, Bohler & Weber, Augsburg, Germany
Filed Dec. 1, 1969, Ser. No. 881,155
Claims priority, application Germany, Dec. 3, 1968, P 18 12 324.5
U.S. Cl. 15—21 D **10 Claims**

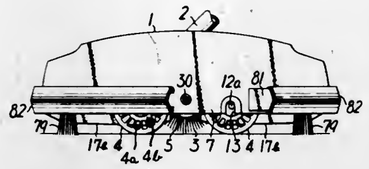


A rotary scrubbing brush for cleaning the surface of an automotive vehicle moving relatively to a supporting structure is mounted on that structure through a guidance system, such as an articulated linkage or a guide track, enabling a generally diagonal displacement of the brush from a starting position outwardly or upwardly under the pressure of an oncoming vehicle to sweep and eventually clear the front surface of that vehicle; the guidance system is then swung, through an angle of about 90° or less, into a substantially symmetrical angular position in which a restoring force acting upon the brush holder causes a return sweep along the rear surface of the vehicle.

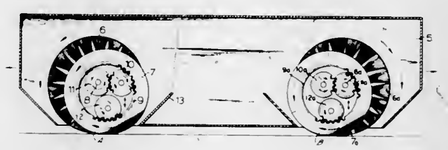
3,638,266
ELASTIC WHEEL CONSTRUCTION FOR CARPET SWEEPER
Hiroshi Fukuba, 2-320-82 Matsugaaka, Nagareyama City, Japan
Original application May 12, 1969, Ser. No. 823,570. Divided and this application Mar. 4, 1971, Ser. No. 121,012
Int. Cl. A47l *11/32*
U.S. Cl. 15—41 R **1 Claim**

A carpet sweeper to be moved back and forth by operating a handle is provided with a rotary cleaning brush adapted to

be moved in contact with the floor by means of four supporting spoked drive wheels each integrally formed of flexible rubber and mounted on a sweeper body. The frame cover of the sweeper body is of a double-wall structure made of a thin, lightweight synthetic resin plate. The sweeper body further comprises dust receptacles covering the under portion and positioned to the front and rear of the rotary brush, means for elevating the drive wheels and comb members to clean the rotary brush. The operating members for opening or closing the dust receptacles and for elevating means are disposed on the upper surface of the frame cover.



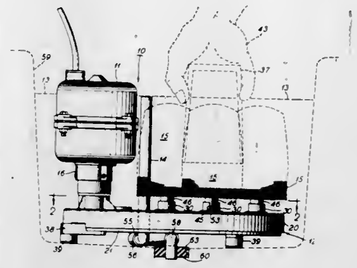
3,638,267
FLOOR TREATING APPARATUS
Johannes Liebscher, Nassau/Lahn, Germany, assignor to Gunter Leifheit K.G., Nassau/Lahn, Germany
Filed June 13, 1969, Ser. No. 832,950
Int. Cl. A47l *11/33*
U.S. Cl. 15—41 R **11 Claims**



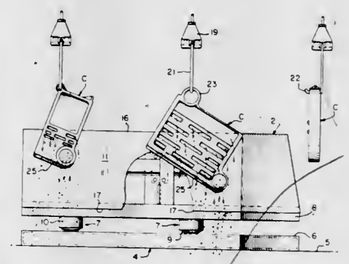
A carpet sweeper having a support which mounts several ground-engaging wheels rotatable in clockwise and counterclockwise directions in response to movement of the support in opposite directions. Each wheel drives a rotary brush by way of one or two spur gears in such a way that the brush rotates in a single direction irrespective of the direction of rotation of the respective wheel.

3,638,268
GLASS WASHER AND POLISHER
Gilbert N. Van Horn, Pompano Beach, Fla., assignor to Bar Maid Corporation, Pompano Beach, Fla.
Filed Jan. 26, 1970, Ser. No. 5,764
Int. Cl. A47l *15/38;* **B67c** *1/08*
U.S. Cl. 15—76 **7 Claims**

A glass washer and polisher is shown having a base comprising a top plate and a bottom plate with premolded bearing sections therein. A plurality of gear and brush holders which are also molded are mounted within the bearing portions of the top plate and bottom plate of the base. A submersible drive motor is oriented with its axis perpendicular to that of the base and through its drive gear and an idler drives the gear and brush holders. An overflow drain is provided through the base to accommodate the smaller sink sizes customarily found in bars, kitchens, and chemical research facilities which may be quite small. The motor is provided on a short shaft which renders the unit considerably more stable in operation, and offers the twofold advantage of cooling the motor to increase its life expectancy and at the same time warming the water to improve the efficiency of washing and polishing glass elements.



3,638,269
VERTICAL SHAKEOUT FOR SUSPENDED CASTINGS
W. Wayne Campbell, Columbia, Pa., assignor to Peerless Industries, Inc., Boyertown, Pa.
Filed Nov. 17, 1969, Ser. No. 877,392
Int. Cl. B22d *43/00*
U.S. Cl. 15—94 **10 Claims**

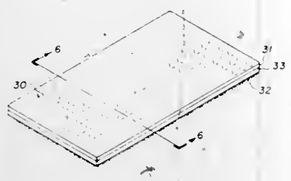


An article shaking apparatus includes a plate across the face of which castings are moved longitudinally in a suspended manner. The plate is inclined from the vertical in a direction transverse to the casting travel and includes means imparting vibration thereto.

3,638,270
MONOFILAMENT PILE CLEANING TOOL
Norman C. Schlegel, Jr., and Edward F. Engel, both of Rochester, N.Y.
Original application Sept. 25, 1967, Ser. No. 674,078, now abandoned. Divided and this application Oct. 22, 1969, Ser. No. 871,445
Int. Cl. A46b *3/00;* **A47l** *13/12;* **D03d** *27/00*
U.S. Cl. 15—114 **12 Claims**

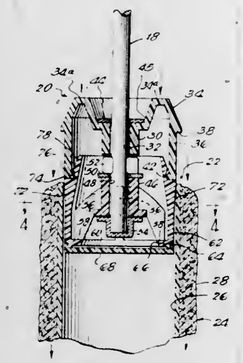
A cleaning tool is formed with a base, a woven backing fabric secured to the base, and a monofilament of resilient resin woven into the backing fabric so that lengths of the monofilament turn away from the plane of the backing fabric

and extend outward from the backing fabric at a predetermined uniform angles to form a sparse pile of bristles stiff



enough to stand free and resiliently self-supporting in a regular array for cleaning.

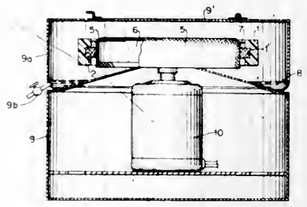
3,638,271
MANDREL CONSTRUCTION FOR PAINT ROLLER
John A. Pharris, Milwaukee, Wis., and Giacinto C. D'Ercoli, Park Forest, Ill., assignors to EZ Paintr Corporation
Filed Jan. 29, 1970, Ser. No. 6,671
Int. Cl. B05c *1/08*; **B44d** *3/28*
U.S. Cl. 15—230.11 **7 Claims**



An improved mandrel construction for paint rollers characterized by the provision of a laterally movable inboard mandrel and a fixed outboard mandrel with the outboard mandrel having generally yieldable fingers normally engaging the interior of a replacement roller cover telescoped thereover. Mating locking surfaces are provided on the inboard and outboard mandrels so that when the two are brought together by relative axial movement and the locking surfaces thereof interengage, the fingers on the outboard mandrel are contracted to permit the roller cover to relatively freely fall therefrom.

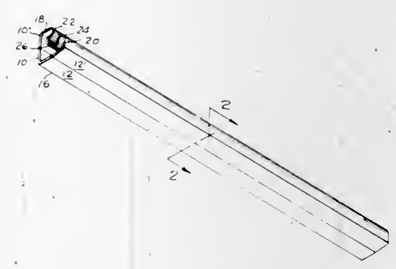
3,638,272
DEVICE FOR CLAMPING OF BUFFING AND POLISHING CLOTHS
Horst Poleska, and Horst Fleischhauer, both of Rathenow, Germany, assignors to VEB Rathenower Optische Werke, Rathenow, Germany
Filed July 8, 1969, Ser. No. 839,862
Int. Cl. B05c *1/00*
U.S. Cl. 15—230.19 **11 Claims**

A device for clamping or securing buffing and polishing cloths, such as used on the disks of rotary and vibratory buffing and polishing machines, comprising an outer accommodating member and at least one inner clamping member, the former being made of a material which is stable in shape, such as plastics, while the latter is preferably made of wood which is adapted to swell on effect of a polishing or abrading



suspension used in the machine. The outer member has a groove for receiving part of the inner member or members. The members of the clamping device may be circular or rectangular; up to four inner member parts are suggested, particularly in the rectangular embodiment.

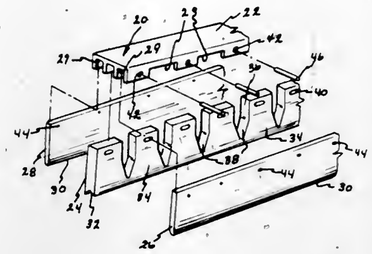
3,638,273
STRIKEOFF ROD
William S. Haivala, 1716 N. Gabin, Wichita, Kans.
Filed May 8, 1970, Ser. No. 35,631
Int. Cl. E01c *10/12*
U.S. Cl. 15—235.4 **2 Claims**



A strikeoff rod comprising an elongated hollow member having two walls intersecting generally at right angles to each other. Each of said walls has a beveled portion sloping inwardly starting on a line parallel to but spaced from the intersection of said walls. The extremities of said walls are remote from said intersection, and are connected by an undulant wall.

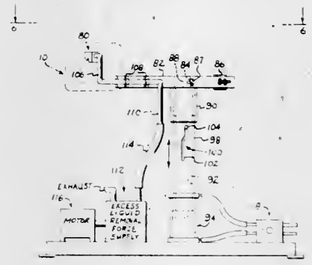
3,638,274
WINDOW WIPER AND SCRAPER BLADE
Alfred Farver, 1106 Haven St., Mount Morris, Mich.
Filed June 12, 1970, Ser. No. 45,802
Int. Cl. B60s *1/02*; **A47l** *1/00*
U.S. Cl. 15—250.41 **17 Claims**

A combination wiper and scraper blade for cleaning curved and/or straight window surfaces comprising a pair of elongated resilient members, such as rubber blades, having parallel wiping edges extending lengthwise thereof with a plastic member disposed therebetween and having a wiping edge parallel to the wiping edges of the resilient members. The plastic member is so constructed that it is uniformly reversibly flexible throughout its lengthwise wiping edge in a plane generally perpendicular to the window surface to be wiped such that the wiping edge will conform to the contour of the window surface while being relatively inflexible in a plane which is generally at right angles thereto. In a second



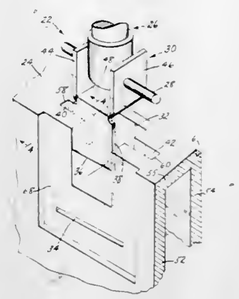
embodiment, means are provided for retracting and extending the plastic member to selectively engage and disengage the window surface.

3,638,275
METHODS AND APPARATUS FOR THE MANUFACTURE OF COLOR CATHODE-RAY TUBE SCREENS
John F. Larson, Seneca Falls, N.Y., and Walter A. Polashenski, Roanoke, Va., assignors to Sylvania Electric Products Inc.
Original application Apr. 22, 1968, Ser. No. 723,098. Divided and this application Sept. 24, 1970, Ser. No. 75,170
Int. Cl. A47l *7/00*
U.S. Cl. 15—304 **5 Claims**



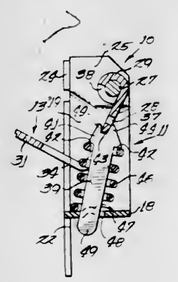
Methods for drying the upstanding walls of a cathode-ray tube faceplate, particularly around the area of the mask supporting studs are disclosed. The methods utilize an accurately controlled and automatically positionable head for removing excess liquid from the walls and stud area after a processing step. The liquid may be that remaining from either a prerinse in which case either forced air or a vacuum system may be utilized for the liquid removal; or after a developing step in the actual screen formation when a vacuum principle along is utilized for drying the wall area. The described apparatus for carrying out the method comprises a free-floating, self-orienting head which is pivoted to provide arcuate movement in a given substantially vertical plane, and reciprocatable shaft means connected to the free-floating head for indexing the head in a substantially perpendicular direction. Cam means associated with the reciprocatable movement causes engagement and disengagement of the head with the faceplate in accordance with the direction of movement thereof. The cam means causes the head to pivot in a substantially horizontal plane to bring the head into engagement with the faceplate wall.

3,638,276
HINGE ASSEMBLY
Woodson H. Vance, Hartsville, Tenn., assignor to U.S. Industries, Inc., New York, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,625
Int. Cl. E05d *7/12*
U.S. Cl. 16—149 **8 Claims**



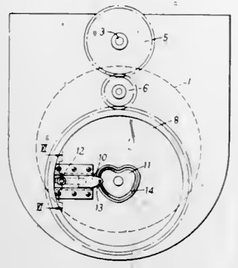
A metal hinge is mounted on a plastic base of a carrying case or the like for supporting an instrument or machine (e.g. a sewing machine) for pivotal movement relative to the base. The hinge comprises a pivot support member carrying a pivot pin on which the instrument or machine is pivotally mounted. The pivot support member is received and secured in place in a suitable channel in the base member and the pivot pin is secured in suitable slots in the base member disposed adjacent to the aforementioned channel.

3,638,277
SPRING HINGE CONSTRUCTION
William H. Coe, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed May 7, 1970, Ser. No. 35,460
Int. Cl. E05f *1/12*
U.S. Cl. 16—190 **3 Claims**



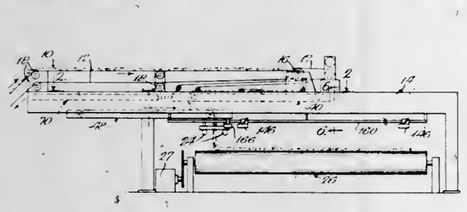
A spring hinge construction for an overlay door for a metal cabinet or other enclosure where the hinge provides the door with a positive closed position and a positive holding 90° open position, with the hinge having a toggle with an overcenter position for both the 90° open and the closed positions. The hinge includes an L-shaped cabinet wing and a channel-shaped door wing joined at a pivotal axis, an elongated toggle having one end adapted to project through a wall of the door wing during opening or closing movement and an enlarged opposite end engaging the cabinet wing adjacent the pivot axis. A compression spring encompasses the toggle with one end engaging the enlarged end of the toggle and the opposite end abutting the above-mentioned wall of the door wing.

3,638,278
COILING TEXTILE STRANDS
Arne Johnels, Boras, Sweden, assignor to I.W.S. Nominee Company Limited, London, England
Filed June 5, 1969, Ser. No. 830,608
Claims priority, application Great Britain, June 7, 1968, 27,199/68
Int. Cl. B65h *54/80*
U.S. Cl. 19—159 4 Claims



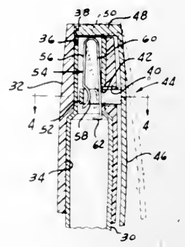
Strands of textile fibers, such as slivers, are coiled in cans at controlled density and more especially at even density throughout, by employing a guide eye which does not merely rotate above the can mouth but has in addition a radially reciprocating component of motion. The coiling device achieves this motion by means of a radially movable slide on a rotary guide member, the slide carrying the guide eye and being actuated by a cam and follower mechanism. The shape of the cam determines the packing density in different portions of the can.

3,638,279
CROSS LAPPER
Harrison G. Swados, Snyder, N.Y., assignor to MSL Industries, Inc.
Filed Oct. 20, 1970, Ser. No. 82,438
Int. Cl. D04h *11/00*
U.S. Cl. 19—163 10 Claims



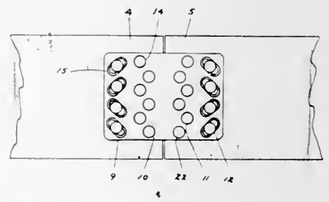
A cross lapper for making a multilayer fibrous mat and including a frame, first and second endless driven conveyors respectively carried by reciprocating supports which are moved between extreme positions on the frame by a fluid ram having its cylinder connected to the frame and its piston rod connected to one of the supports. A fixed rack is carried by the frame and a second rack is carried by one of the supports with a pinion engaging the respective racks and has its axis aligned with the axis of a fluid ram. The means for supplying pressure fluid to opposite ends of the cylinder is in the form of a fluid circuit having a fluid-actuated control device interposed between a pressure fluid source and the cylinder with first and second flow paths between the source and opposite ends of the control device, each of the flow paths having a control valve therein. The control valves are positioned to define extreme positions for the supports and are actuated when the supports reach the extreme positions to reverse the position of the control device.

3,638,280
POCKET CLIP FOR WRITING INSTRUMENT
Gino C. Di Spirito, Hasbrouck Heights, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed June 25, 1970, Ser. No. 49,590
Int. Cl. B43k *25/00*
U.S. Cl. 24—11 S 1 Claim



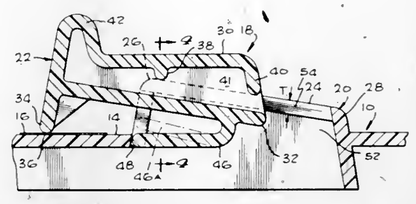
A cap and pocket clip assembly for a writing instrument in which the clip body has an offset located over the end of the cap and a bracket which extends through the cap wall and into the bore of the cap to receive a retaining spring thus to mount the clip for limited pivotal movement of the clip body away from the cap against the action of the spring.

3,638,281
BELT SPLICES
Edgar Francois, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.
Filed June 18, 1970, Ser. No. 47,444
Int. Cl. F16g *3/00*
U.S. Cl. 24—31 B 13 Claims



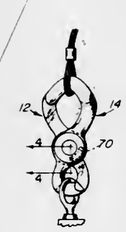
The invention disclosed is a splice for connecting the ends of conveyor belting and the like formed from at least two relatively rigid fasteners. Each fastener is attached to at least one of the belt ends to be spliced by rivets through the fastener and the belt end. The rivets are arranged in two or more rows. The first row of rivets is mounted in holes in the fastener of such a shape as to allow substantially no relative movement between the fastener, the belt and the rivets passing therethrough. At least one other row of rivets is positioned further from the end of the belt than the first row and is mounted through the fastener in elongated slots inclined at an angle to the longitudinal centerline of the belt so that longitudinal movement between the rivets and the fastener in a direction along the belt is allowed concurrently with the transfer of load between the belt and the fastener.

3,638,282
PAPER HOLDDOWN CLIP
Ake L. Larsson, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 13, 1971, Ser. No. 106,072
Int. Cl. B42f *1/00*
U.S. Cl. 24—67.3 7 Claims



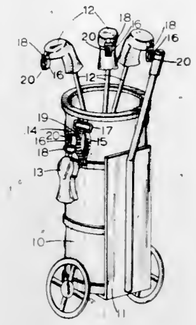
An economical drawing board including a sheet-holding frame with brackets formed thereon, and a pair of clamps for sliding along the brackets to hold down a sheet of paper against the frame. Each bracket has an inclined guide wall, and each clamp has a pair of runners for moving along the guide wall and a paper-engaging portion depending from one end of the runners to engage and hold down a sheet of paper. In order to prevent removal and loss of the clamps, the frame has a slot below each guide wall, and one runner has an elongated retainer member that abuts an end wall of the slot when the clamp is slid in a direction to remove it from the bracket.

3,638,283
INTERCONNECTING MEMBER FOR TENSION LOADS
Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed May 12, 1970, Ser. No. 36,524
Int. Cl. A43c *11/08*
U.S. Cl. 24—73 HR 3 Claims



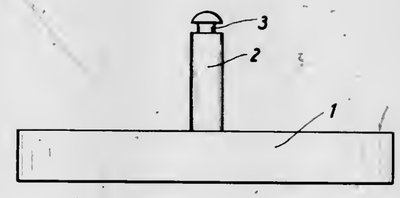
An interconnecting member having a figure-8 configuration by which two loops or eyes are formed. Two S-shaped bodies constitute the principal parts of the member and are pivotally connected so that the loops or eyes can be opened for access to the loops. The pivotal connection is formed by a keyed pin that is spring biased to a position to lock the two members into a figure-8 shape The pin is axially slidable to permit the loop to be opened and is provided with a locking device that prevents inadvertent sliding movement.

3,638,284
GOLF CLUB HEAD COVER TEMPORARY RETAINING DEVICE
Robert H. Baker, 3612 Pallos Verdas, Dallas, Tex.
Filed Oct. 15, 1969, Ser. No. 866,573
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 CF 8 Claims



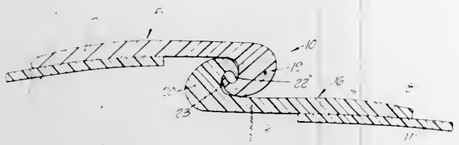
A convenience holding device on a golf bag for temporarily holding removed golf club head covers as the clubs are being used.

3,638,285
TWO-PART LOCK BUTTON
Jose Humberto Sanchez Giraldez, Am Rathenaupark 3, D-2000, Hamburg, Germany
Filed Apr. 8, 1970, Ser. No. 26,577
Claims priority, application Germany, Aug. 21, 1969, P 19 42 535.5; Mar. 3, 1970, P 20 09 760.3; Jan. 24, 1970, P 20 03 164.5
Int. Cl. A44b *1/38, 17/00*
U.S. Cl. 24—108 7 Claims



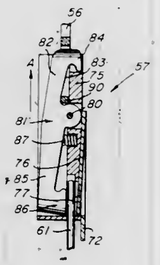
A two-part lock button consists of a male and a female button half and the male part comprises a locking bolt member which is provided with one or several locking grooves and can be inserted into an opening in the female part. The female button half comprises one pair or several pairs of retaining discs which upon insertion of the male button half into the female button half will come into engagement with the one or several locking grooves of the male part thus firmly locking together these two parts. Release of the button halves can be effected by means of a mechanical or magnetic key.

3,638,286
SELF-LOCKING SEPARABLE SEAM ASSEMBLY
Frank D. Eichberg, Scottsdale, Ariz., assignor to Walter A. Plummer, Sherman Oaks, Calif.
Filed Apr. 30, 1970, Ser. No. 33,368
Int. Cl. A44b *17/00, 19/14*
U.S. Cl. 24—201 6 Claims



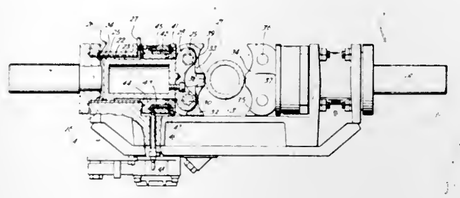
A self-locking separable seam assembly comprising a pair of strips of identical J-shape in cross section extruded from semirigid thermoplastic material featuring a thick semirigid return bend portion bordered by a relatively thin low-height lip positioned to interfere with the corresponding lip of the other strip as the strips are pulled crosswise of one another into interlocking engagement. The seam separates as the two strips are forced past one another in a direction opposite to the assembly operation.

3,638,287
PARACHUTE DEPLOYMENT SYSTEMS
David A. Wright, Fort Erie, Ontario, Canada, and Lorenz Palm, Manhattan Beach, Calif., assignors to Irvin Air Chute Limited, Fort Erie, Ontario, Canada
Filed May 24, 1968, Ser. No. 731,766
Claims priority, application Canada, May 25, 1967, 991,444
Int. Cl. A44b *21/00;* B64d *17/54*
U.S. Cl. 24—230 5 Claims



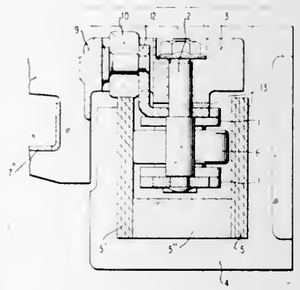
A parachute deployment system and a connector for use in this system. The deployment system utilizes a pyrotechnic device to launch a weighted projectile which is connected to the ripcord and pilot chute of a parachute pack. The connector is to be interposed between the projectile and the ripcord and comprises a mounting plate and a support releasably retained thereon. The support carries a movable member which, when pressure is exerted on a part thereof, releases the support from the mounting plate and completes a connection between the projectile and the ripcord and pilot chute.

3,638,288
GRIPPER
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Original application Sept. 19, 1969, Ser. No. 859,489.
Divided and this application Jan. 18, 1971, Ser. No. 107,124
Int. Cl. B65h *17/34*
U.S. Cl. 24—263 D 9 Claims



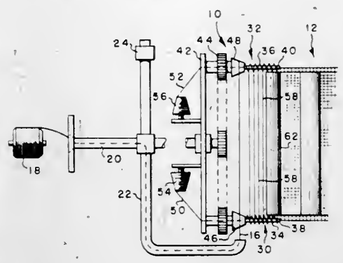
A retractor having an endless train made up of a plurality of grippers. The grippers have contoured gripping faces which are contoured to grip pipe of different sizes and the degree of movement of the grippers toward and away from pipe engaging positions is selectively controlled relatively to the size of pipe being gripped. The grippers are mounted on pivot pins at positions to either side of the center line of the piston supplying the gripping force to increase the resultant gripping force exerted by the grippers.

3,638,289
TENTER FRAME ASSEMBLY
Peter Dornier, and Fritz Gageur, both of Lindau, Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany
Filed Oct. 17, 1969, Ser. No. 867,317
Claims priority, application Germany, May 17, 1969, P 19 25 284.7
Int. Cl. D06c *3/04*
U.S. Cl. 26—61 B 9 Claims



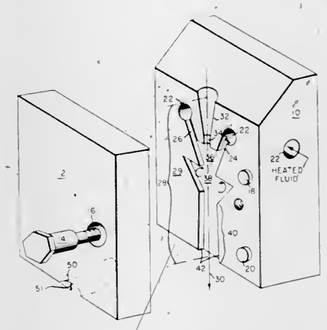
This invention relates to a clip chain assembly for tenter clips comprising a vertical guide rail, a plurality of connected tenter clips each supporting a clip table on one side of the guide rail, first guide roller means secured to each tenter clip and being supported by the guide rail, and second guide roller means mounted between the tenter clips and contacting the side of the guide rail facing away from the clip table.

3,638,290
APPARATUS FOR PRODUCING NONWOVEN FABRICS
Ralph A. Johnson, Moore, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Sept. 4, 1970, Ser. No. 69,847
Int. Cl. D02g *3/00;* D04h *3/08*
U.S. Cl. 28—1 CL 7 Claims



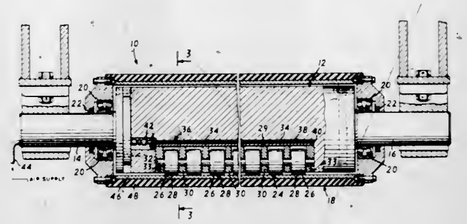
Apparatus for producing nonwoven scrim fabrics wherein the weft thread sheet-forming support means comprises a helical member having a centrally disposed thread support element extending along the axis of the helical member for supporting the weft thread reaches during weft sheet formation.

3,638,291
YARN-TREATING JET
Paul Wesley Yngve, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 1, 1970, Ser. No. 77,140
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 8 Claims



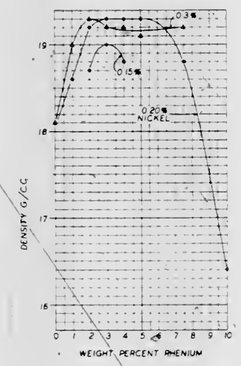
A yarn-treating jet comprising a body and a flat cover clamped together and having two air conduits of equal rectangular cross section for directing heated fluid on a yarn advancing through a passage in the surface of the jet body contiguous with the cover. The passage includes an expansion zone located downstream from the air conduits which has an entrance larger than its exit for the purpose of providing an extended static pressure zone in the jet to improve heat transfer between the heated fluid and the yarn. The cover plate has a guiding surface adjacent the exit of the jet for diverting fluid and entrained yarn outwardly away from the jet exit.

3,638,292
ROLL FOR APPLYING UNIFORM PRESSURE
Stephen B. Gaghan, Franklin Lakes, N.J., assignor to Van Vlaanderen Machine Company, Paterson, N.J.
Filed Oct. 29, 1969, Ser. No. 872,202
Int. Cl. B21b *31/32*
U.S. Cl. 29—113 AD 4 Claims



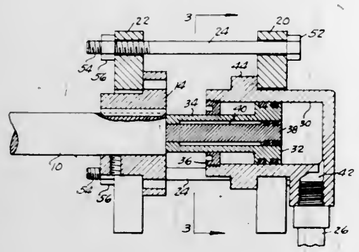
A roll for applying uniform pressure has a stationary inner structure mounted between two supporting shafts. A cylindrical outer structure surrounds the stationary inner structure and is rotatably mounted on the shafts. A plurality of inner rollers is disposed in a slot formed in the inner structure and contacts a colinear series of locations along the inside of the outer structure. An inflatable bag is disposed within the slot and, when inflated with a fluid, applies a uniform pressure to the inner rollers. These rollers prevent the outer structure from deflecting and cause it to apply a uniform pressure to an opposing surface.

3,638,293
HIGH-DENSITY TUNGSTEN-RHENIUM-NICKEL ALLOYS AND ARTICLES
Sven Torsten Lennart Peterson, Vendelso, Sweden, assignor to Lumalampan Aktiebolag, Stockholm, Sweden
Filed Sept. 12, 1969, Ser. No. 857,478
Int. Cl. B22f *3/00*
U.S. Cl. 29—182 14 Claims



Sintered alloys of tungsten containing between about 1 percent and 7.5 percent rhenium and between about 0.15 percent and 0.3 percent nickel and electrical articles, particularly contacts, prepared from said alloys. The invention also includes a method of improving the density of tungsten alloys.

3,638,294
WHEEL PULLER
Walter F. Durant, 664 Noank Road, Mystic, Conn.
Filed Jan. 20, 1970, Ser. No. 4,353
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 8 Claims

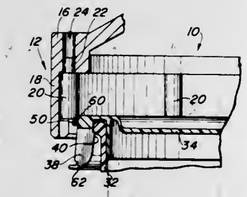


A wheel puller based on a cylinder containing at least two telescoping pistons. The cylinder has a peripheral flange. A U-shaped collar slips over the cylinder and engages the flange. A second U-shaped collar slips over a shaft and engages a wheel to be pulled. Tie rods connect the two collars and a piston rod connected to one of the pistons engages the shaft end.

3,638,295
PROCESS FOR MANUFACTURE OF A GRIP FOR HAND-POWERED EQUIPMENT
William J. Sparks, 5129 Granada Blvd., Coral Gables, Fla.
Filed Aug. 7, 1970, Ser. No. 62,140
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 10 Claims

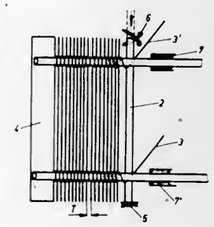
This disclosure relates to a process for manufacture of grips for hand-powered equipment in which an assortment of grips are manufactured, each having a hardness within the range of that of the human hand. The hardness profile of the hand contact area of an individual operator who is to use the grip is measured, and a grip is selected, the hardness of which is correlated with the hardness of the hand contact area of the individual. This grip is installed on the hand-powered equipment for the use of that individual.

3,638,296
CONTAINER CLOSURE TOOL AND METHOD FOR USE THEREOF
George Yates, Jr., Glendale, Calif., assignor to Growth International Industries Corp., Cleveland, Ohio
Continuation-in-part of application Ser. No. 781,556, Dec. 5, 1968, now Patent No. 3,499,574, dated Mar. 10, 1970. This application Feb. 9, 1970, Ser. No. 9,617
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—400 6 Claims



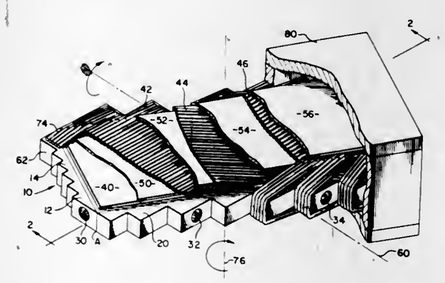
A tool which may be used to lock a closure having a movable sealing member over the opening of a container body comprises a rim corresponding in shape to the configuration on the closure but having dimensions slightly larger than the closure so that it may be slipped downwardly thereover. A handle is attached to the rim, and a series of studs disposed on the inner surface of the rim are adapted to contact the movable sealing member and move it into a locked position when the rim is lowered over the closure. A method of using the tool to lock a closure having a movable sealing member over the open end of the container body comprises placing the closure over the open end of the container body with the sealing member in an unlocked position, positioning the tool over the closure so that the series of studs contacts the closure member and causing relative movement between the tool and the closure so that the tool causes the sealing member to move to a locked position.

3,638,297
METHOD OF MAKING A LOOM REED
Friedhold Ditscherlein, Bocholt, Germany, assignor to Max Spaleck GmbH, Bocholt, Germany
Filed July 22, 1969, Ser. No. 843,731
Claims priority, application Germany, July 22, 1968, P 17 60 943.7
Int. Cl. B23p *11/02*; D03d *49/62*
U.S. Cl. 29—446 3 Claims



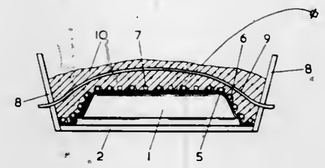
The dents of a reed have ends tied by wire to the backs and shaped so that one of the two parallel faces is convex, the other concave. The dent ends are assembled under resilient, compressive stress to compensate for dimensional inaccuracy in the dents and the binding wire.

3,638,298
STRESS-ORIENTED FILAMENT WINDING IN COMPOSITE PANELS
David I. Sinizer, Playadel Rey; Albert Toy, Gardena; David G. Atteridge, Santa Monica, and Louis H. Fanelli, Los Angeles, all of Calif., assignors to North American Rockwell Corporation
Filed Feb. 9, 1970, Ser. No. 9,771
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 2 Claims



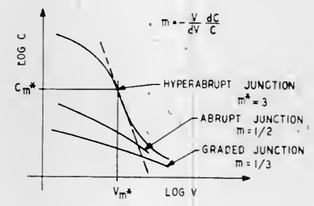
Removable terraced peripheral edges on a rotating mandrel are adapted to receive successive windings of thin filament in a plurality of separate layers to form reinforced composite panels. The mandrel edges are reversed in position between each winding step to permit winding of filaments at stress-oriented cross-ply angles with a minimum of filament wastage, after which the workpiece components are diffusion bonded together. Rare earth oxides are used in stopoff coatings to prevent bonding of workpiece materials in mandrel surfaces.

3,638,299
PROCESS FOR THE PRODUCTION OF MOLDS
Paul Johnson Garner, and Thomas Robert Stephen Collins, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Dec. 16, 1969, Ser. No. 885,463
Claims priority, application Great Britain, Dec. 30, 1968, 61,659/68; Nov. 3, 1969, 53,693/69
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.2 17 Claims



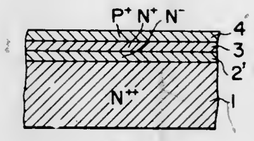
Producing a mold by forming a metal shell around a model, the model being provided with a lip around its base over which the metal shell is formed to key it to the model.

3,638,300
FORMING IMPURITY REGIONS IN SEMICONDUCTORS
George Frederic Foxhall, Spring Township, Berks County, Pa., and Robert Alan Moline, Gillette, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 21, 1970, Ser. No. 39,378
Int. Cl. B01j *17/00*; H01l *7/02*
U.S. Cl. 29—589 5 Claims



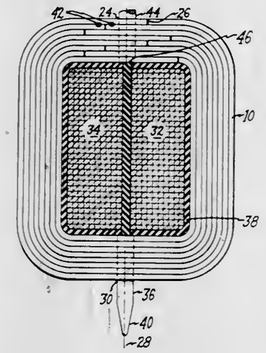
The specification describes a technique for fabricating hyperabrupt silicon diodes with unusually sharp C-V characteristics and with a high degree of control. The technique employs an ion bombardment predeposit and a thermal diffusion "drive-in" according to specifically prescribed conditions.

3,638,301
METHOD FOR MANUFACTURING A VARIABLE CAPACITANCE DIODE
Shigeo Matsuura, Yokohama, Japan, assignor to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan
Filed June 29, 1970, Ser. No. 50,810
Claims priority, application Japan, June 27, 1969, 44/50411
Int. Cl. B01j *17/00*; H01l *7/02*
U.S. Cl. 29—589 8 Claims



A variable capacitance diode having an improved stepped junction therein formed by epitaxially depositing a P⁻ type layer on a N+ silicon substrate, forming an N+ type layer on the P⁻ type layer, heating the produced segment to a high temperature to cause the impurities contained in the N+ type layer and the N+ type substrate to diffuse into the P⁻ type layer, whereby the P⁻ type layer is converted to an N⁻ type layer, and thereafter forming a P+ type layer on the N+ type layer.

3,638,302
METHOD OF MAKING ELECTROMAGNETIC CORES
Edmund J. Wilk, Adams, Mass., assignor to General Electric Company
Filed Sept. 21, 1967, Ser. No. 669,624
Int. Cl. H01f *7/06*
U.S. Cl. 29—606 3 Claims

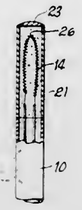


A concentric magnetic core is assembled from a plurality of precut laminations formed into the desired shape and annealed. A pilot hole is then drilled in the centerline of the uncut yoke of the formed core. The core is then linked with a preformed coil or coils, with the pilot hole being used to insure positive registration of the laminations during lacing about the preformed coil or coils. A second pilot hole may be drilled within the cut yoke to aid in closing the joints if desired. A vibrating pilot pin may be used in the second pilot hole to assure positive closure of the joint in each lamination.

3,638,303
METHOD OF MAKING SENSING ELEMENTS FOR RESISTANCE-TEMPERATURE PROBES

Mitsuaki Mochizuki, Kobe, Japan, assignor to Okazaki Manufacturing Company, Kobe, Japan

Filed Sept. 2, 1969, Ser. No. 854,415
Claims priority, application Japan, Sept. 6, 1968, 43/064097
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—614 1 Claim



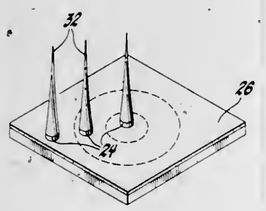
Resistance temperature probes having novel sensing elements are disclosed. The resistance element is not wound on a rigid support but is supported in a body of particulate, dielectric refractory material. The disclosure includes methods of fabricating the probes including calibration of the resistance in situ.

An important feature resides in the method of incorporating the particulate refractory material into the probe. Since it is important to provide the most direct path for exchange of heat between the environment and the sensing element, this latter is allowed to be free-standing and the space between the same and the sheath, is filled with the refractory material. In order not to deform or displace the sensing element, the particulate material is deposited in a manner calculated to provide such support, but not to subject the delicate resistance wire to injurious forces.

3,638,304
SEMICONDUCTIVE CHIP ATTACHMENT METHOD

Carl E. Bleil, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1969, Ser. No. 874,516
Int. Cl. H05k 3/30
U.S. Cl. 29—626 5 Claims

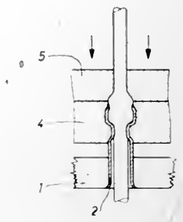


A method for mounting a semiconductive chip on a substrate, using integral leads, and a method for making the leads. The techniques described are particularly useful in making integral leads on a semiconductive chip which can be flipped onto a complementary conductor network. The leads are preferably formed on the chip while the chip is still part of a slice. The leads are simultaneously formed on the slice by progressive solidification from a melt material, and the slice subsequently diced to form the individual leaded chips.

3,638,305
METHOD FOR FORMING THE VACUUMTIGHT CLOSURE OF A THROUGH-CONNECTION

Karl-Heinz Bottcher, Munich-Schwabing, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 687,672, Dec. 4, 1967, now abandoned. This application May 7, 1970, Ser. No. 37,384
Int. Cl. H01r 43/00
U.S. Cl. 29—628 R 2 Claims

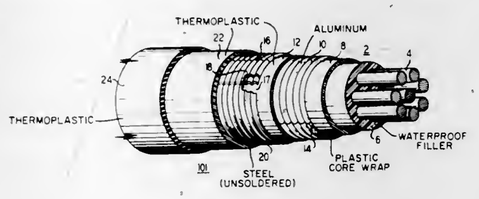


A method of hermetically sealing a wire, such as a lead-in conductor for an electrical device, in a metal tube in which the wire is passed through the tube, a portion of the tube constricted about the wire, and forcing the wire into one end of the tube which causes the tube to bulge out and the wire thickened beyond the initial diameter of the tube.

3,638,306
METHOD OF MAKING A COMMUNICATIONS CABLE

Henry N. Padowicz, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1970, Ser. No. 75,072
Int. Cl. H01b 13/26
U.S. Cl. 29—624 3 Claims



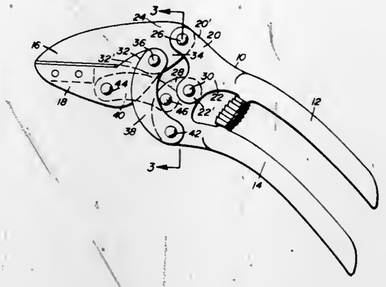
A communications cable comprises a waterproof core of conductors and a sheath including an unsoldered steel layer for providing mechanical and rodent protection. The steel layer is stretch-formed to attain a tightly registered longitudinal seam which eliminates the necessity of soldering or other means of mechanically joining the seam. Coatings of appropriate thermoplastic materials are placed on the surfaces of the steel layer and drawn into the seam by capillary action to provide a seal against water ingress.

3,638,307
CUTTING SHEARS

Charlie G. Stewart, P.O. Box 327, Fairfield, Ala.

Filed Oct. 30, 1969, Ser. No. 872,615
Int. Cl. B26b 13/26
U.S. Cl. 30—193 7 Claims

A pair of shears including relatively swingable jaws and relatively swingable levers. The jaws are pivotally connected for relative swinging about a first axis stationarily positioned relative to both jaws and the levers are also connected for relative swinging movement. The levers are further operatively connected to the jaws for relative swinging of the latter in response to relative swinging of the levers with the axis of relative swinging of the jaws shifting relative to both levers during relative swinging of the jaws.



3,638,308
RAZOR BLADES

Irwin W. Fischbein, Canton, Mass.; John D. Galligan; Anthony M. Schwartz, both of Washington, D.C., and William S. Youngquist, Belmont, Mass., assignors to The Gillette Company, Boston, Mass.

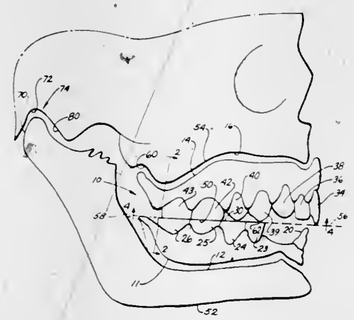
Filed Feb. 1, 1968, Ser. No. 702,212
Int. Cl. B26b 21/54; B30b 15/08
U.S. Cl. 30—346.53 19 Claims

The present invention is concerned with improving the shaving properties of razor blades. Generally the improvements are brought about by applying a solid, water-resistant polymeric polyether coating to the blade edge.

3,638,309
ARTIFICIAL DENTURE

John P. Frush, 704 Highland Drive, Pasadena, Calif.

Filed Jan. 29, 1970, Ser. No. 6,904
Int. Cl. A61c 13/00
U.S. Cl. 32—2 16 Claims

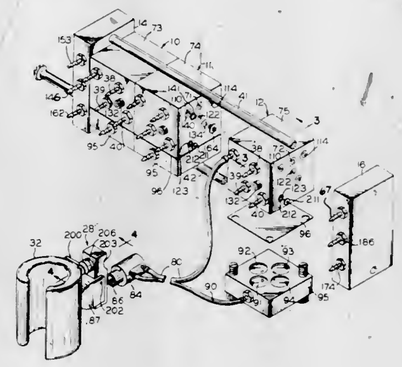


A denture is constructed with molars in a first denture base having flat chewing surfaces in a common plane. Elongated ridges on opposing molars in a second denture base provide a biting edge which makes continuous linear contact in centric occlusion with the flat surfaces in the same common plane. The plane passes through upper portions of the retromolar pads and the incisal edges of the central incisors, and is also substantially parallel to a line passing through the hamular notches. Parallel transverse ridges on the upper first or second bicuspids engage the lower posterior biting edge in protrusive movement to keep the denture bases seated.

3,638,310
DENTAL HANDPIECE CONTROL

George K. Austin, Jr., 604 Holly Drive, Newberg, Oreg.

Filed Oct. 24, 1969, Ser. No. 869,088
Int. Cl. A61c 9/00
U.S. Cl. 32—22 21 Claims

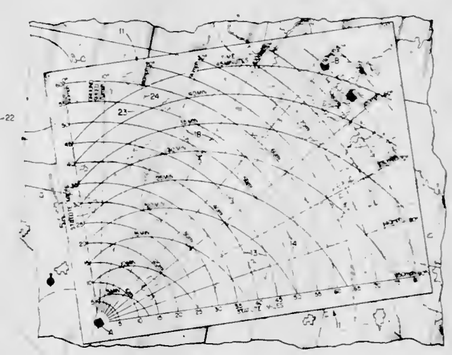


A plurality of module control block assemblies individually control to a plurality of dental handpieces the supplies of drive air to the handpiece motors, and air and water coolants, and also supply drive air pressure to a gauge. The control block assemblies are clamped in series between distributing end blocks. A hanger assembly normally adapted to actuate a control block assembly when a handpiece is lifted from the hanger assembly has a manually operable lockout lever which prevents such actuation to permit changing of burrs of the handpiece or to inactivate that control block assembly.

3,638,311
NAVIGATIONAL CALCULATOR

Henry Chin, 1 Davida Road, Burlington, Mass.

Filed May 20, 1970, Ser. No. 39,109
Int. Cl. G09b 29/00; G06g 1/00
U.S. Cl. 33—1 6 Claims



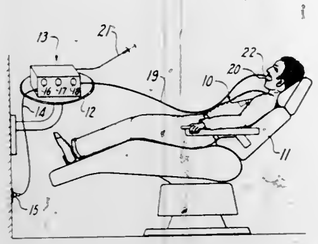
A calculator for solving navigational problems, particularly adaptable for use by pilots of light planes. The calculator is a

single sheet of flexible, transparent material having a set of curves which, when used in conjunction with a navigational chart, provide direct readings of speed, distance, time and direction.

3,638,312
APPARATUS FOR CONCENTRATING ULTRAVIOLET RADIATION, FOR CURING POLYMERIZABLE COMPOSITIONS AND METHOD FOR HARDENING FILLING COMPOSITIONS IN DENTAL CAVITIES

John J. Szwarc, North Versailles, Pa., and Thomas E. Doyle, Port Washington, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Filed Dec. 29, 1969, Ser. No. 888,350
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **1 Claim**

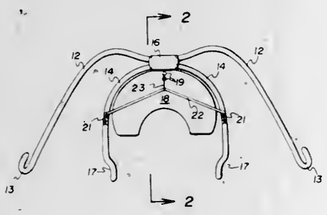


Method for curing polymerizable compositions employing ultraviolet radiation exposure. The concentrated ultraviolet radiation may be employed to cure certain polymerizable resinous compositions which can be initiated by exposure to ultraviolet radiation. The method is particularly useful for curing dental cavity filling compositions quickly and with nearly insignificant polymerization exotherm.

3,638,313
EXTRA ORAL DENTAL RETRACTOR AND BITE OPENER

Alberto J. Cervera, Miquel Angel, 1, DPDO, Madrid, 10, Spain

Filed July 14, 1970, Ser. No. 54,729
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 D **5 Claims**

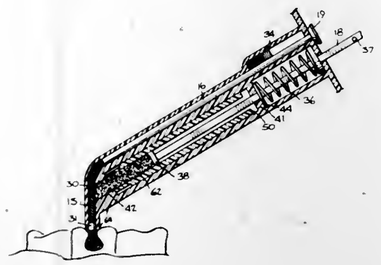


An extra oral dental retractor and bite opener having a U-shaped outer arch wire for coupling to a wearer's neckband and the U-shaped inner arch wire coupled in the center portion thereof to the center portion of the U-shaped outer arch wire; a flat bite plate coupled to the center portion of one or both U-shaped arch wires and extending rearwardly therefrom for separating the upper and lower front teeth of the wearer; an elastic band coupled across the inner U-shaped arch wire for resting on the front teeth of the wearer and having a center portion pivotally attached by a wire to the front portion of the bite plate for limiting the travel of the elastic band.

3,638,314
AMALGAM CARRIER AND DISPENSER WITH PRELOAD CAPSULE

Oscar Lopez, 50 Edgewater Road, Cliffside Park, N.J., and Juan Cesar Valdes, 404 46th St., Union City, N.J.

Filed June 25, 1970, Ser. No. 49,653
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 **5 Claims**

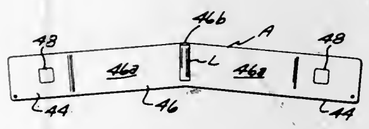


An amalgam carrier and ejector with preload capsule comprises two parallel, elongated tubular members. The tubular members each have a plunger and a common nozzle. One member is adapted to receive an amalgam capsule from which amalgam is extruded into the nozzle by the plunger of one tubular member and is ejected by the plunger of the other tubular member. The capsule has a tubular body, the interior of which is of increasing area toward the nozzle end thereby eliminating any tendency to clog during the extrusion of the amalgam.

3,638,315
DAM RETAINING DENTAL BAND ASSEMBLY

I. Edward Brenner, 800 West Amerige Ave., Fullerton, Calif.

Filed Nov. 3, 1970, Ser. No. 86,397
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 **5 Claims**



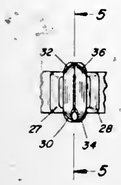
An elongate resilient dental band that may be disposed to form a tensioned loop that encircles a patient's tooth, and when so situated have an apertured pliable sheet guided downwardly thereover to contact the gingival, and the sheet acting as a dam to isolate the banded tooth to maintain the latter in a dry condition. An elongate appliance is provided that is operatively associated with the band, with the appliance serving a twofold purpose, first to apply a desired degree of tension to the band to maintain it in an encircling position about a tooth, and secondly, to act as a guide to permit an apertured dam to be slid longitudinally therealong, and then downwardly over the banded tooth to engage the gingival of the patient. The band is provided with dam-retaining means that permit downward movement of the dam thereover, but which engage the portion of the dam adjacent

the band to prevent the dam being inadvertently dislodged from the tooth by an upward force being exerted thereon by the patient's tongue.

3,638,316
PLIER-TYPE BAND PRY AND CUTTING TOOL FOR ORTHODONTISTS

Anthony J. Cusato, Closter, N.J., assignor to Henry Mann, Inc., Feasterville, Pa.

Filed Dec. 1, 1970, Ser. No. 94,131
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **10 Claims**



This invention pertains to a plier-type handtool for orthodontists in which is provided jaws having either two separate mating pairs or a dual purpose single pair of specially contoured jaws. In the preferred embodiment in which the jaws have separate mating pairs on of the pairs is beak-shaped to provide a pincer or pry means disposed to enter the crack between a thin stainless steel band mounted on the tooth of a patient and by urging the jaws toward each other to bend or displace the band locally outwardly from the tooth. The other pair of specially contoured jaw members are cutting members disposed to compression cut the band at the locally displaced area previously formed by the beak-shaped pair of jaw portions. In another embodiment the beak-shaped jaw pry portions are combined with compression-type cutting segments or portions to provide means for simultaneously prying from and cutting a thin metal band mounted on a tooth of a patient.

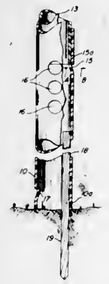
ERRATUM

For Class 33—1 see:
Patent No. 3,638,311

3,638,317
SURVEY ROD

Paul A. Felix, P.O. Box 32, Coolidge, Ariz.

Filed Oct. 13, 1969, Ser. No. 865,671
Int. Cl. G01c *15/06*
U.S. Cl. 33—74 **1 Claim**

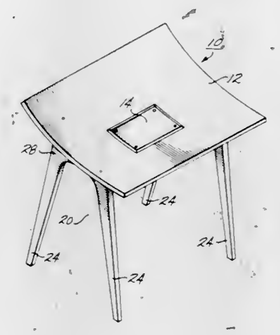


A lightweight survey rod assembly which includes an elongate hollow formed of fusible plastic and having visible survey indicia graduations carried in the external surface of the hollow member. The lower end of the hollow member is sized and shaped to accommodate the upwardly extending exposed end of a survey stake to support the rod in substantially vertical position, facilitating one-man surveying operations. In one embodiment, a second hollow member is coaxially telescoped within the hollow member described above and manually displaceable resilient stop means formed in the outer member are provided to releasably position the inner hollow member at a fully telescoped position and at a raised position.

3,638,318
DRAFTING APPARATUS AND METHOD OF USE THEREOF

Thomas R. Herrmann, 5256 46th S.W., Seattle, Wash.

Filed Apr. 6, 1970, Ser. No. 25,988
Int. Cl. A47b *27/00*
U.S. Cl. 33—75 **19 Claims**



A curved drawing board and an associatedly curved rectangular parallel ruling slider mounted thereon. The rectangular parallel ruling slider including glides extending from each corner and making substantially point contact with the curved drawing board such that when all glides are in contact with the drawing board the edges of said parallel ruling slider assume a constant spatial relationship with the surface of said board such that lines drawn on a sheet of paper on said board along these edges are either horizontal or vertical.

A method of drawing horizontal or vertical lines by positioning a rectangular frame on a curved drawing board and using the edges of said frame as a guide for drawing said lines.

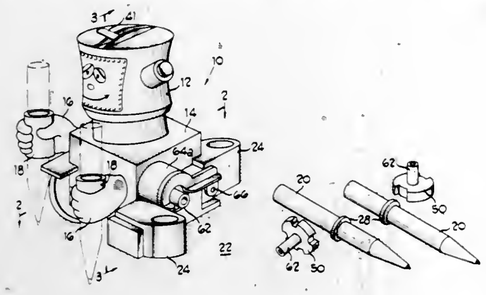
3,638,319
DESIGNING TOY

Gordon A. Barlow, Evanston; Burton C. Meyer, and Marvin I. Glass, both of Chicago, all of Ill., assignors to Marvin Glass & Associates

Filed Aug. 11, 1969, Ser. No. 848,856
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **7 Claims**

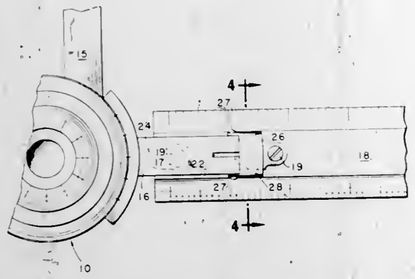
A mechanized drawing device which includes a frame on which is mounted a plurality of power-operated movable members such as a pair of wheels for moving the frame about a marking surface. A battery-operated motor is mounted on the frame to rotate the wheels and move the frame in a given direction or path. A cam-operated device is driven by the motor and is associated with one of the wheels to intermittently render that wheel inoperative whereby the frame will intermittently pivot about that wheel to move the frame out of the given direction of travel. A marking member is

mounted on the frame to trace the pattern of movement of the frame on the marking surface. The cam device is readily



replaceable by other cams having different configurations so as to provide for varying tracing patterns.

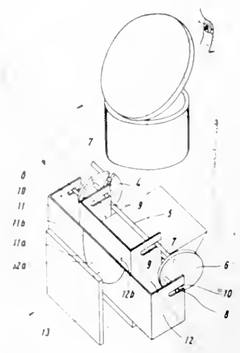
3,638,320
DRAFTING MACHINE SCALE LOCKING DEVICE
Allister L. Baker, Denville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed May 22, 1970, Ser. No. 39,845
Int. Cl. B43l *13/02*
U.S. Cl. 33—79 R **7 Claims**



The jam-fit connection between the tapered channel of a drafting machine protractor head scale arm and a like-tapered chuckplate of a drafting scale or rule is relieved by a split in the channel portion of the scale arm. A detachable retainer clip laterally containing the split portion of the scale arm ensures a firm union between the scale arm and the scale chuckplate during drafting operations, yet may readily be removed to allow the channeled portion of the scale arm to spread and release the engaged scale chuckplate. Scales may thus be readily removed and replaced without excessive force being applied to the protractor head.

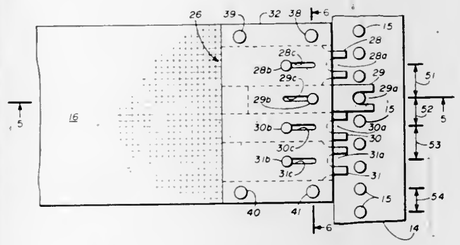
3,638,321
AIMING DEVICE FOR LIGHT WEAPONS PARTICULARLY FOR COMBATING MOVING AIR TARGETS
Hans Eglin, Geneva, Switzerland, assignor to Mathema Corporation, reg. Trust, Vaduz, Liechtenstein
Filed Nov. 5, 1969, Ser. No. 874,232
Claims priority, application Germany, Dec. 20, 1968, P 18 15 992.7
Int. Cl. F41g *3/08*
U.S. Cl. 33—49 B **8 Claims**

A device for determining lead values, appears with the lead directions being represented as apparent flight directions, in the viewing field of a telescope or reflex sight, in the form of radial line markings. The radial line markings are associated with at least one lead curve which is movable relative to the line markings and is driven only as a function of the elevation



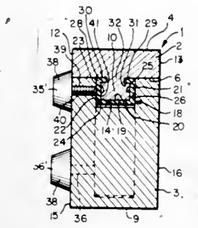
aiming movement of the weapon. Two lead curves are provided, each assigned to a respective different target speed. The lead curve assigned to the faster target speed is driven in accordance with the sine function of the elevation angle of the weapon, and the lead curve assigned to the slower target speed is driven in accordance with the cosine function of the elevation angle of the weapon. The radial line markings present lead markings formed by interruptions therein as well as by their inner ends adjacent the cross hairs of the viewing field.

3,638,322
GUIDEBAR
Elmer Harold Cunningham, Box 552, Bowie, Tex.
Filed Dec. 23, 1969, Ser. No. 887,536
Int. Cl. B43l *13/24*
U.S. Cl. 33—81 **8 Claims**



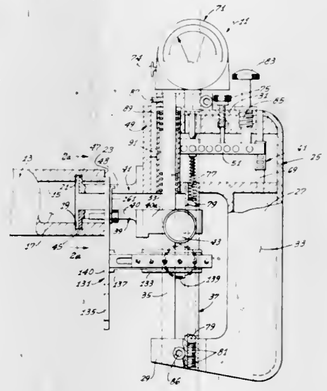
A guidebar which may be positioned at intervals over a work surface by affixing fastening elements on the ends of the guidebar to evenly spaced mating members positioned along the margins of the work surface. The guidebar has two or more fastening elements on each end. The fastening elements on each end are at an interval unequal to that between the mating members along the margins so that the guidebar may be fixed at intervals on the work surface which are equal or unequal to the distance between the mating members positioned along the margins of the work surface.

3,638,323
MEASURING DEVICE
Robert O. Groe, 3328 N. Page St., Chicago, Ill.
Filed Mar. 31, 1970, Ser. No. 5,779
Int. Cl. G01b *3/20*
U.S. Cl. 33—162 **9 Claims**



A measuring instrument comprising a pair of triangular relatively suitable blocks having hypotenusal mating surfaces and parallel base surfaces, correlated registering measuring indicia on respective sides of the blocks, a tongue and groove interlock between said blocks, and a resilient deformable material such as nylon interposed between the tongue and groove releasably holding the parts in incrementally adjusted positions as the blocks are relatively moved along the mating surfaces, and a screw threaded through one block and engageable with the tongue on the other block for locking the blocks against accidental displacement.

3,638,324
GAGE
Cass Kaifesh, 9947 Corella, Whittier, Calif.
Filed July 31, 1969, Ser. No. 846,356
Int. Cl. G01b *5/12, 5/16, 5/28*
U.S. Cl. 33—174 **23 Claims**



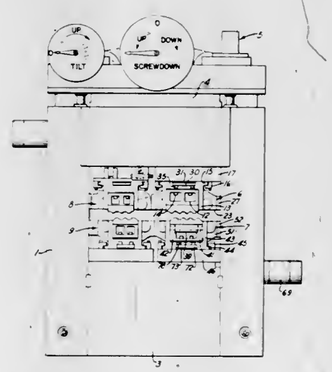
A gage including a supporting structure, a first finger element mountable in fixed relationship on the supporting structure and a second finger element movably mounted on the supporting structure. The finger elements are insertable into a bore to provide a measurement thereof. A squaring member is mounted on the supporting structure and is engageable with the outer face of the work to control the angle at which the fingers project into the bore.

3,638,325
VERTICAL ALIGNMENT GAUGE
Albert V. Petrik, 2866 Joyce Road, Roslyn, Pa.
Filed Oct. 16, 1969, Ser. No. 866,995
Int. Cl. G01c *15/10*
U.S. Cl. 33—216 **2 Claims**



A telescopically adjustable tubular construction for upright arrangement having a central opening in its upper end and permanent magnet means extending laterally from an upper region of the tubular construction for holding engagement with a doorjamb or the like, a standoff member adjacent to a lower region of the tubular construction, a window provided in a lower region of the tubular construction, and plumb bob means suspended interiorly of the tubular construction visually accessible through the window.

3,638,326
ROLLER LEVELER WITH QUICK LIFT UPPER ROLL UNIT
Elbert Gordon Thompson, State College, and Max F. Alters, Pleasant Gap, both of Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.
Filed Jan. 29, 1970, Ser. No. 6,749
Int. Cl. G01b *3/38*
U.S. Cl. 33—182 **6 Claims**



A roller leveler housing has end frames at the opposite ends of a bed and vertically movable top beam. Between the

bed and beam is a vertically spaced pair of roll units, the upper one of which is suspended from the beam. At the ends of the housing there are vertical screws, the lower ends of which are connected to the upper part of the end frames for limited vertical movement. Nuts mounted on the screws are rotatably connected to the top beam, and means are provided for turning the nuts to adjust the beam up and down the screws. Connecting the top beam to the bed of the housing are fluid pressure operated means that normally hold the screws in their lower position, but can be reversed to quickly lift the top beam until the screws reach their upper position.

3,638,327
PROCESS FOR PRODUCING ALUMINUM CHLORHYDROXIDES

Edward F. Levy, Newtonville; Roy H. Karlson, Newton, and Ursula E. Hornig, Jamaica Plain, all of Mass., assignors to The Gillette Company, Boston, Mass.

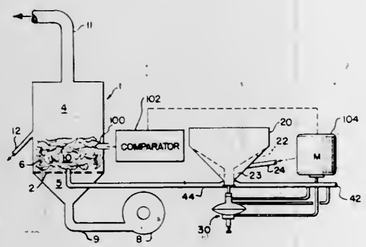
Filed Apr. 17, 1969, Ser. No. 817,153
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **2 Claims**

The present invention is concerned with novel aluminum chlorhydroxides which have substantially improved solubility in alcohols and with processes for preparing such chlorhydroxides. Generally, the chlorhydroxides of the present invention are produced by freeze drying aluminum chlorhydroxides from aqueous solutions.

3,638,328
FEED CONTROL SYSTEM FOR PROCESSING EQUIPMENT

Paul E. Solt, Allentown, Pa., assignor to Fuller Company

Filed Aug. 27, 1970, Ser. No. 67,447
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **10 Claims**

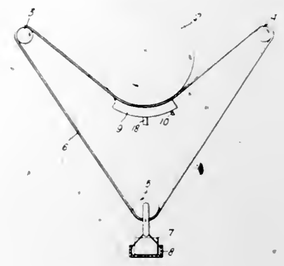


An arrangement for controlling the supply of material to processing equipment such as a fluidized bed reactor. The system employs a material-regulating valve which is responsive to the flow of gaseous fluid through the system. The gaseous fluid entrains the material and feeds it to the processing equipment. A condition such as the temperature of the processing equipment is continuously monitored and compared to a standard. The difference between the standard and the actual condition is used to control a variable restriction in the gaseous fluid supply line which in turn controls the amount of material admitted to the gaseous fluid supply line.

3,638,329
APPARATUS FOR TREATMENT OF SHEET STRUCTURES

William Geoffrey Parr, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 7, 1970, Ser. No. 35,521
Claims priority, application Great Britain, May 19, 1969, 25,492/69
Int. Cl. F26b *11/02*
U.S. Cl. 34—122 **10 Claims**

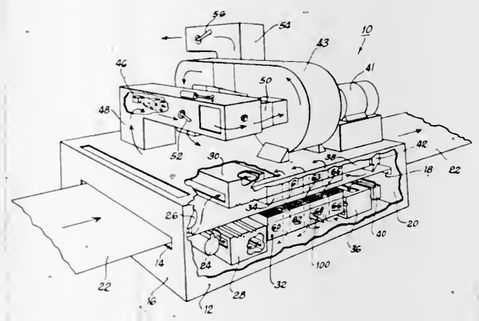


Apparatus for the continuous treatment of sheet structures with a gaseous fluid under low controlled mechanical pressures, in which the sheet structure is supported between a nondeformable, impervious movable member and a porous, conformable, movable member, the porous member forming for at least part of the distance over which it and the rigid member are in contact with the sheet structure a wall of a chamber within which the treatment fluid is maintained.

3,638,330
WEB SUPPORT NOZZLES FOR DRIER

Arthur G. Stout, Lincolnwood, Ill., assignor to Web Press Engineering, Inc.

Filed May 8, 1970, Ser. No. 35,855
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **12 Claims**

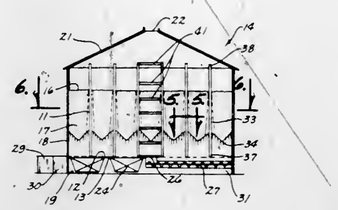


A nozzle structure for a web-drying apparatus, in which a web is supported between upper and lower pressurized airflows, is provided by a plurality of airflow passageways arranged in a honeycomb configuration, each passageway being supplied through a supply orifice of smaller cross section than the cross section of the passageway, and with the honeycomb providing multiple transverse rows in juxtaposition so as to provide an elongated layer of air between the nozzle and the web which operates to prevent contact between the web and the nozzle during high-speed transport through the drier.

3,638,331
GRAIN-DRYING DEVICE

Vincent B. Steffen, 3 N. Walnut Ave., New Hampton, Iowa

Filed Mar. 12, 1970, Ser. No. 18,985
Int. Cl. F26b *19/00*; **A01f** *25/00*
U.S. Cl. 34—231 **9 Claims**

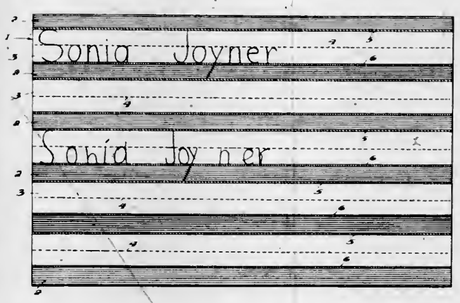


An improvement for drying grain in a grain bin is disclosed herein. This improvement comprises a plurality of staves having, in cross section, an undulating configuration. The staves are disposed in an upright manner and in spaced relation in a drying bin. Dry air from the plenum chamber moves vertically up the staves in the undulations and creates a vertical drying front in addition to the horizontal drying front. Additionally, dry air is introduced into the apex of the bin by these staves thereby keeping it dry and minimizing spoilage of the upper layers.

3,638,332
WRITING READINESS PAPER

Ann M. Jones, Route 1, Box 286, Greenville, N.C.

Filed Mar. 6, 1970, Ser. No. 17,067
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 **5 Claims**

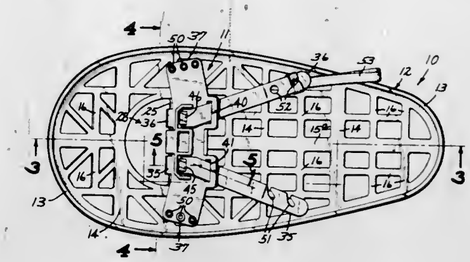


Writing readiness paper for aiding teachers in teaching very young children to print on the proper lines thereof consisting of a sheet of paper having a plurality of series of different colored horizontal parallel lines thereon, each of the series of colored lines comprising an upper green line and a lower red line, the green and red lines being separated by a first writing band, a yellow line dividing the first writing band substantially in half, a second writing band of a width substantially half that of the first writing band for separating each of the series of colored lines, the second writing band being colored so as to visibly distinguish the second writing band from the first writing band.

3,638,333
SNOWSHOE AND HARNESS

Hans W. Sprandel, 7715 Beach St. N.E., Minneapolis, Minn.

Filed July 20, 1970, Ser. No. 56,543
Int. Cl. A63c *13/00*
U.S. Cl. 36—4.5 **8 Claims**

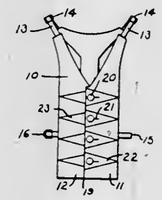


A molded plastic snowshoe including a frame with webbing therebetween and a transversely extending pivot with a horizontal opening defined in the snowshoe immediately in front of the pivot. A one-piece molded plastic harness includes two straps which encircle the pivot and extend around the rear of a boot and a third strap that forms a loop to receive and hold the toe of the boot. Thus, the harness pivotally engages the boot on the snowshoe and the opening in the snowshoe allows the toe of the boot to pass therethrough during perambulation.

3,638,334
TRAINING GARMENT

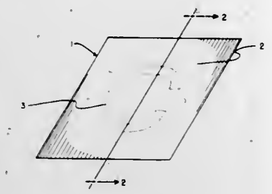
Ethel M. Malikowski, South 150 Chestnut, Spokane, Wash.

Filed July 28, 1970, Ser. No. 58,812
Int. Cl. G09b *1/00*
U.S. Cl. 35—8 R **2 Claims**



A training garment for assisting in teaching persons to fasten articles of clothing. A simulated vest or trouser front is provided with sensory identifying fastening elements corresponding to those found on conventional articles of clothing. Indicia such as color is used to assist in the recognition of the proper operative relationship of the fastener elements. Specifically, matching colors, buttons and buttonholes and contrasting zipper elements are provided.

3,638,335
EDUCATIONAL DEVICE
Allan A. Gundersen, Sinking Spring, and Fred T. Ramsey, Oley, both of Pa., assignors to Wyomissing Corporation
Filed Feb. 2, 1970, Ser. No. 7,777
Int. Cl. G09b *11/04*
U.S. Cl. 35—36 9 Claims



A self-instructive, autocorrective device is provided as may be useful, for example, for teaching the formation of characters, such as letters, geometric shapes and indicia. The device comprises a work surface having first and second areas initially indistinguishable from each other. A color change or formation can be induced in either the first or second area by contacting them with a marking element. The areas differ from each other in that the color change or development in the first area is substantially instantaneous while the color change or development in the second area does not become visible for a delayed period of time. Accordingly, the device is self-instructive since it provides an immediate reward to the student when the writing instrument is moved within the first area, and it is autocorrective since, after the exercise has been completed, a color change or development becomes visible in the second area to indicate the extent to which the student may have strayed from the first area in performing the prescribed exercise.

ERRATUM

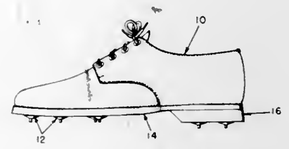
For Class 36—4.5 see:
Patent No. 3,638,333

3,638,336
PROTECTIVE SHOE INSERT
Jack J. Silverman, 15 Cypress Road, Eastchester, N.Y.
Filed Apr. 7, 1970, Ser. No. 26,345
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 3 Claims



A protective insert for a shoe, the insert being contoured to conform to the insole of the shoe and having a sculptured heel portion to cup the heel of the wearer in the space between the counter of the shoe and the insole. The insert is formed by an underlayer of foamed, closed-cell, flexible plastic material of high density, laminated to a face layer of a fabric which is longitudinally stretchable to facilitate sliding of the foot within the shoe.

3,638,337
SHOE CLEAT CONSTRUCTION
Harry C. Dollar, Jr., Mebane, N.C., assignor to Econo-Kleat Company, Incorporated
Filed May 18, 1970, Ser. No. 38,042
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 R 8 Claims



A shoe having one or more cleats rigidly secured to the outer surface thereof by adhesive. Each cleat includes integral shank and base portions of plastic or metal having depressions with the base portion positioned adjacent the shoe sole or heel.

3,638,338
APPARATUS AND METHOD FOR DEEP SEA DREDGING
Arthur J. Nelson, 3304 Shasta Drive, San Mateo, Calif.
Filed Nov. 4, 1969, Ser. No. 873,985
Int. Cl. E02f *3/88*
U.S. Cl. 37—65 11 Claims

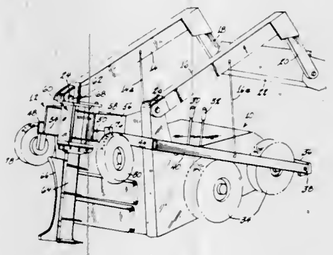


A pair of cutters and a dredge pump mounted to a lowermost pontoon is immersed to penetrate the floor of a body of water employing an indicator to limit the depth of cut for the pendulous traverse over a selected floor area. Anchors are selectively embedded into the floor remote to the dredged area to which wires are connected extending from powered winches mounted on the lowermost pontoon. The extended anchored wires are intermediately supported by a buoyed pendant so as to elevate those wires off the floor to avoid

prolonged dragging and contaminating effect to them. Consequential with the catenary curve resulting from that elevation, a tension is developed creating an artificial demand of a slacked wire paid off one of a pair of identical winches at a greater rate than the opposite wire hauled-in to effect the pendulous swing established by a wire fixed to an anchor axially central with but remote to the selected area. Each pendulous swing is at a radius shortened by a winch oriented in mounting with the two identical winches so that all wires lead from the winch as tangent lines direct to the anchor. The anchors are relocated by towing on a surfaced conduit pendant extending to a lower buoy of adjustable support capacity secured by a cable pendant to the anchor whereby the buoy lift capacity is increased to free the embedded anchor off the floor.

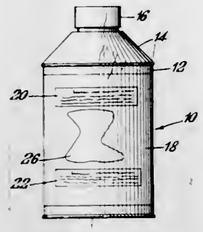
An articulative conduit in fluid communication between the pump and a delivery terminal on a surfaced service station is supported as a suspended tensioned array stabilized by immersed pontoons of selected and automatically adjusted support capacity responsive to changes encountered. An arrangement of hoists, structural provisions and utilization of pontoons common with the array facilitate the transfer of objects to and from the service station and the array to modify the dredging apparatus.

3,638,339
SLIT TRENCH DIGGING APPARATUS
Albam M. Vik, New Brighton, Minn., assignor to Inventors Engineering Inc., Fridley, Minn.
Continuation of application Ser. No. 732,970, May 29, 1968, now abandoned. This application Aug. 6, 1970, Ser. No. 61,828
Int. Cl. E02f *5/02*
U.S. Cl. 37—98 9 Claims



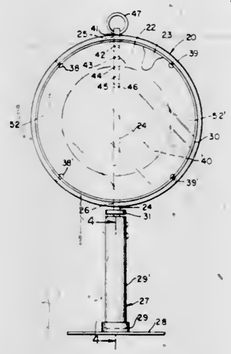
An excavating blade projects downwardly from a framework into the earth with an energizing mechanism connected to the blade for intermittently forcing portions of the blade laterally against the sidewalls of the trench to compress the earth adjacent to the blade. The trench is in this way formed by lateral pressure. The blade can be mounted for oscillation through an arc of 20° about a vertical axis. A motor oscillates the blade about this axis at a frequency of about 150–400 cycles per minute.

3,638,340
COMBINATION LABEL FOR PACKAGED PRODUCT AND PRINTED-ON REMOVABLE DECAL
Lawrence A. Gottschalk, Montrose, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,574
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 3 Claims



Disclosed is the novel combination of a label for a packaged product and a removable, water-soluble decal printed onto the label.

3,638,341
ROTARY SIGN DEVICE
John E. Holmes, Leeds, N. Dak.
Filed Nov. 4, 1969, Ser. No. 873,981
Int. Cl. G09f *11/02, 7/02*
U.S. Cl. 40—39 2 Claims

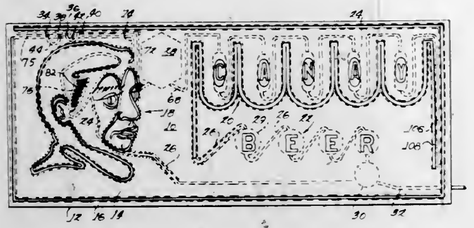


The invention comprises a transparent sign having a pair of transparent center panels fitted into a sleeve. The center panels surround a display card and the sign has wind receiving recesses which receive the wind for rotating the sign.

3,638,342
DISPLAY APPARATUS
Frank T. Winslow, 4611 South Whipple, Chicago, Ill., and Robert B. Stanish, 3023 South Farrell, Chicago, Ill.
Filed Oct. 13, 1969, Ser. No. 865,925
Int. Cl. G09f *13/24*
U.S. Cl. 40—106.21 13 Claims

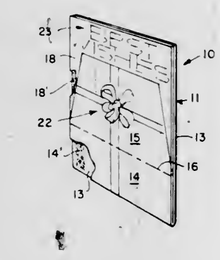
A liquid that is opaque or translucent and colored is drawn out of passageways in one or several aligned transparent plastic vacuum-formed passageway panels from one or more

than one outlet in each panel to uncover lines and areas on one or several design panes, which lines and areas overlie portions of the passageways to form a design of either of two types, which are: (1) formed of lines that are opaque on an opaque background of different color with the design being positioned behind a passageway panel so that the lines of the design are uncovered to daylight as the liquid is drained out of the passageway panel; and (2) with the lines forming the



design being transparent or translucent with an opaque background and aligned with a lamp so that the passageways permit light to shine through the transparent or translucent lines and areas as the liquid is withdrawn. In each of the embodiments special display effects are obtainable through the use of bubbles, ultraviolet light and color mixing.

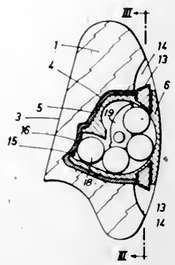
3,638,343
OCCASIONAL CARD
Clyde S. West, 620 Comet Drive, San Mateo, Calif.
Filed Mar. 10, 1970, Ser. No. 18,121
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **13 Claims**



An occasional card comprises a flat back panel having a front panel portion secured at marginal edges thereof to the back panel to form a pocket therebetween. A cover panel is hingedly connected to the front panel portion by a scoreline to form a receptacle along with the pocket adapted to have an insert card positioned therein.

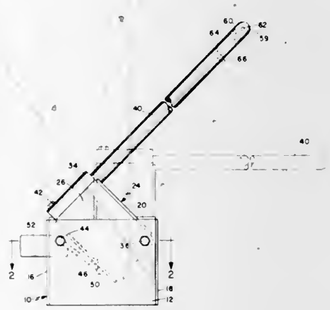
3,638,344
RIFLE STOCK WITH A DETACHABLE SPARE MAGAZINE CONTAINED THEREIN
Karl Wagner, and Horst Wesp, both of Steyr, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria
Filed Sept. 10, 1969, Ser. No. 857,637
Claims priority, application Austria, Sept. 27, 1968, A 9422/68
Int. Cl. F41c *23/00, 25/00*
U.S. Cl. 42—71 R **4 Claims**

The butt of the rifle is formed on its right-hand side with a well, in which a drum-shaped spare magazine is removably accommodated, which closes the well and conforms to the outside surface of the butt on the right-hand side thereof. Detent means are carried by said magazine and said butt and



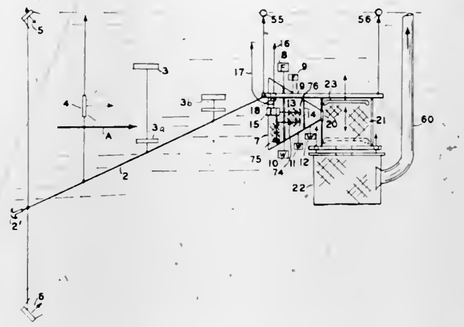
releasably hold said magazine in position in said well. Said detent means comprise at least one spring-loaded detent element which is carried by said magazine and interlocks with said butt.

3,638,345
ADJUSTABLE PURSE RING STRIPPER
Morris L. Whaley, 4140 The Hill Road, Bonita, Calif.
Filed Oct. 6, 1969, Ser. No. 864,138
Int. Cl. A01k *73/12*
U.S. Cl. 43—8 **9 Claims**



In the operation of recovering a purse seine loaded with fish, a pickup line is passed through the gathered purse rings and attached at one end to a prong mounted on the side of the boat. By hoisting the other end of the pickup line the rings are made to slide on the prong and are retained in order, without the need for manual handling. When the empty net is being stowed, the rings strip off the prong in proper order. The prong is adjustable to an angularly upwardly extending position for purse seining, wherein the net is hauled through an overhead power block for stowage, and to a generally horizontal position for drum seining, wherein the stowed net is rolled on a drum.

3,638,346
FISHING TRAP
Julian Stein, 338 Farrway Drive, Franklin Square, N.Y.
Continuation-in-part of application Ser. No. 770,032, Oct. 23, 1968, now Patent No. 3,494,064. This application Feb. 9, 1970, Ser. No. 9,539
Int. Cl. A01k *79/02, 71/00*
U.S. Cl. 43—17.1 **11 Claims**



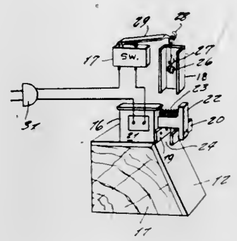
A fishing trap enclosure having a trapping section and a storage section connected thereto by a gate. The trapping section has an opening with cone-shaped guide ends connected to it. The enclosure is held with the opening facing the direction of current flow. Simulated flotsam and/or chum pots are located in a gathering area in front of the opening. Long-range directional sonic repelling devices are spaced around the gathering area so as to concentrate the fish into the gathering area. Other directional sonic devices drive the concentration of fish into the trap.

3,638,347
SINKER
Rudolph J. Kochevar, 252 Arbolada Drive, Arcadia, Calif.
Filed Jan. 22, 1970, Ser. No. 4,823
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.39 **17 Claims**



A sinker comprising a particulate mass of sinker composition of readily manually moldable, substantially heavy material is attachable to a fishing line assembly. The sinker composition has a generally puttylike consistency and may be of the hardening or nonhardening type. A readily deformable binder may be used with the sinker composition to hold the particles together.

3,638,348
EVERSET ELECTRIC RODENT TRAP
William J. Lusk, 9452 W. 130th St., Strongsville, Ohio
Filed Apr. 15, 1970, Ser. No. 28,863
Int. Cl. A01m *23/38*
U.S. Cl. 43—75 **1 Claim**

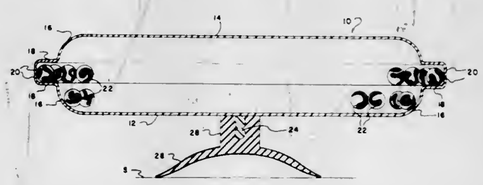


A base having an inclined forward wall, a housing mounted upon the base with a forward end of the housing extending over the inclined wall, the lower end of the housing having an access opening for a rodent, the housing containing an electric solenoid for closing together a pair of jaws against a rodent therebetween and who has been reaching toward a bait in a bait chute above the jaws, the tugged bait closing an electric switch for completing an electric circuit to the solenoid and closing the jaws.

3,638,349
OIL COMPOSITIONS CONTAINING COPOLYMERS OF ETHYLENE AND VINYL ESTERS OF C_2 TO C_5 MONOCARBOXYLIC ACID ETHYLENICALLY UNSATURATED
Max J. Wisotsky, Edison, and Harold N. Miller, Millington, both of N.J., assignors to Esso Research and Engineering Company
Filed Apr. 1, 1968, Ser. No. 717,914
Int. Cl. C10l *1/14*
U.S. Cl. 44—62 **4 Claims**

Copolymers of 6,500 to 50,000 and preferably of 7,000 to 15,000 number average molecular weight, comprising 3 to 40 molar proportions of ethylene per molar proportion of vinyl ester of C_2 to C_5 monocarboxylic acid are flow improvers for distillate mineral oil, e.g. middle distillate fuel oil.

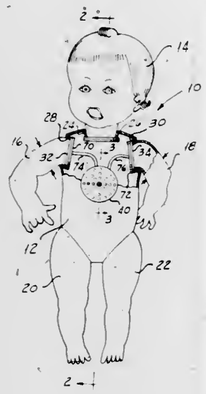
3,638,350
TOY
Lyle A. Wiggen, Fort Collins, Colo., assignor to Fantastic Futures Inc., Fort Collins, Colo.
Filed Sept. 2, 1970, Ser. No. 68,955
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 **1 Claim**



A toy of the type in which movement of a plurality of balls or marbles is controlled by manipulation of a ball-supporting surface. A hollow annular casing is supported upon a resilient pedestal with the casing axis in a normally maintained verti-

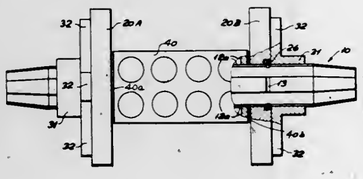
cal position. By tilting the casing upon its pedestal, balls or marbles within the casing may be set into or maintained in motion in one or more circular paths defined by annular shoulders within the casing.

3,638,351
DUAL ACTION PHONETIC DOLL
Witold W. Kosicki, Columbia, and Charles M. Hollingsworth, West Columbia, both of S.C., assignors to Horsman Dolls Inc., Columbia, S.C.
Filed Apr. 13, 1970, Ser. No. 27,861
Int. Cl. A63h *5/00*
U.S. Cl. 46—117 **13 Claims**



A dual action phonetic doll in which a single tweeter mechanism is actuated both by gravity when the doll is laid on its back and in response to squeezing of one or both of its arms to cause the doll to emit a cry, the character of which can be modified by varying the manner in which the arms are squeezed.

3,638,352
SPLINED SHAFT AND WHEEL RETAINED THEREON BY SPRING AND HUB ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Jan. 29, 1970, Ser. No. 6,718
Claims priority, application Denmark, Feb. 3, 1969, 573/69
Int. Cl. A63h *33/10*
U.S. Cl. 46—23 **1 Claim**



A construction toy including a splined shaft and a wheel element nonrotatably fitting thereon and retained by a spring ring which grips the shaft. A hub element is detachably secured to the wheel, with the spring occupying a recess between wheel and hub elements to limit their movement on the shaft.

A. The Problem

Small children playing with mechanical toy building sets often have difficulties in securing pinions, pulleys, discs and similar wheel elements on shafts when building vehicles or other mechanical devices. Fastening such wheel elements on the shafts generally requires the use of tools or accessories which are difficult to handle for small children.

B. The Solution

Two essential features are required for solving this problem, and the invention consists in the combination of these features:

a. To provide a shaft having a noncircular cross section and wheel elements having a complementary hole, so as to enable the child to mount the wheels on the shaft by pushing them thereon from one end, thereby fixing the wheels on the shaft so as to prevent relative rotational movement.

b. To provide a frictional fit between the shaft and the wheels so that axial displacement can only be effected by overcoming the friction therebetween. To this end a cylindrical recess is provided in the wheel element surrounding the central hole therein and an annular spring is located in the cylindrical recess in such a manner as to exert a radial pressure against the shaft, thereby increasing the frictional resistance against axial displacement of the wheels relatively to the shaft. The functioning of this spring is automatic and requires no skill or attention on the part of the user.

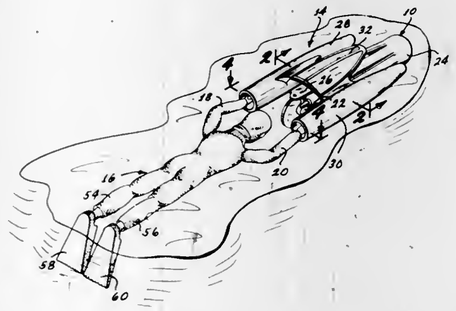
c. The shaft may be tapered at one end, so as to facilitate the mounting of the wheels.

d. The width of the cylindrical recess or cavity within the wheel is greater than the thickness of the spring to prevent the spring from being jammed within the cylindrical recess.

e. The cylindrical cavity or recess is closed so as to totally enclose the annular spring by means of a hub element assembled with the side of the wheel

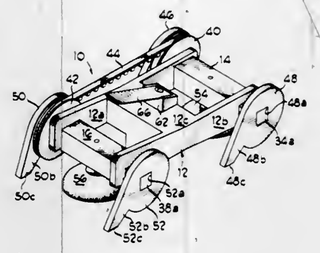
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3,638,353
AQUANAUT TOY PROPULSION ASSEMBLY
Oldrich Fryc, Inglewood, Calif.; David T. Okada, Piscataway, N.J., and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 3, 1970, Ser. No. 8,279
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 **2 Claims**



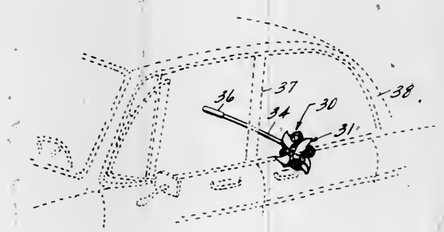
A toy propulsion unit which pulls an aquanaut figure through the water, the figure being bendable so that it can be angled to cause the unit to dive or run in a circle. A frame for coupling the figure to the drive unit includes a pair of laterally spaced pontoon-shaped members joined together by a pair of vertically spaced connecting members, the drive unit being held between the connecting members. Each pontoon-shaped member has a hollow rear end for receiving a hand of the aquanaut figure, and a vertically oriented pin that traps the hand of the figure therein.

3,638,354
MOBILE TOY
Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates
Filed Aug. 8, 1969, Ser. No. 848,575
Int. Cl. A63h *11/04*
U.S. Cl. 46—132 **5 Claims**



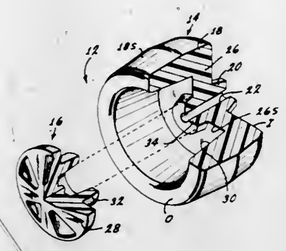
A mobile toy of the type having suction cups connected medially to tandem axles pivoted in a frame. The axles are paired together for rotation. Feet members are mounted on opposite ends of each of the axles to hold one axle against rotation while the frame pivots about the axle and the other axle pivots relative to the frame and first axle. Fingerlike prying members project forwardly and rearwardly from above and below the frame for prying the suction cups loose from the supporting surface as the mobile toy advances in an end over end fashion. The toy is particularly suited for end over end movement downwardly of a generally upright supporting surface with the movement of the toy being responsive to the force of gravity.

3,638,355
WHISTLE FOR MOVING THROUGH AIR
Carl E. Stoecklin, 4171 Homelawn Ave, Cheviot, Ohio
Filed Dec. 14, 1970, Ser. No. 97,838
Int. Cl. A63h *17/00*
U.S. Cl. 46—179 **7 Claims**



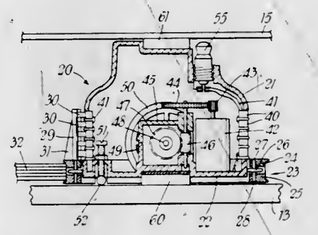
A air whistle which includes spaced annular plates, a tubular wall connecting the plates and surrounding openings in the plates, and a tubular stem mounted on one of the plates surrounding the opening thereof and extending outwardly thereof. When the whistle is drawn through the air, stem first, it emits a piercing sound.

3,638,356
WHEEL FOR A TOY CAR
Harvey W. La Branche, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 25, 1970, Ser. No. 66,671
Int. Cl. A63h *17/26*
U.S. Cl. 46—221 **7 Claims**



A wheel which simulates a wide track tire with a decorative hub comprising a tire member which can receive a variety of different "mag wheels" or hubcap members. The tire member is cup shaped, with tapered inner walls for tightly receiving a hubcap member pressed therein. The hubcap member has a tubular portion which receives a protruding hub portion of the tire member as the hubcap member is pressed into place, to prevent tilting of the hubcap member.

3,638,357
MECHANISM WHICH INCLUDES AN OBJECT ARRANGED TO TRAVEL FREELY ON A SURFACE
Karl Heinz Groh, 2, 8752 Mainsschaff uber Aschaffenburg, Sandweg, Germany
Filed July 2, 1969, Ser. No. 838,399
Claims priority, application Germany, July 8, 1968, P 17 03 770.6
Int. Cl. A63h *33/26*
U.S. Cl. 46—240 **10 Claims**

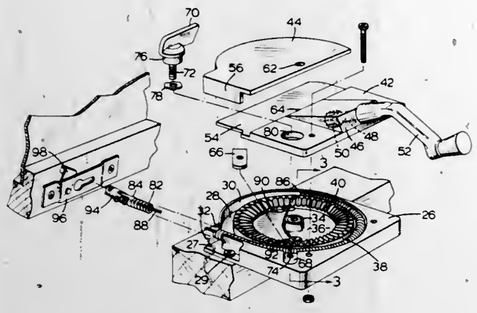


A device for use as a toy or in driver instruction in which a toy or model vehicle is guided over a marked upper surface by a motor-driven object that is freely movable over an underlying lower surface. A magnetic link is established between the object and the toy or model vehicle and the object is steered by controlling the speeds of rotation of its wheels. A flat striplike cable supplies electric power to the object and tangling of the cable is avoided by surrounding the object with a member which is rotatable relative thereto, the cable extending between said member and a fixed control panel.

3,638,358
WINDOW-OPERATING APPARATUS

Gordon A. Mason, 41 Lamont Ave., Agincourt, Ontario, Canada

Filed Apr. 30, 1970, Ser. No. 33,194
Int. Cl. E05f *11/00*
U.S. Cl. 49—325 10 Claims

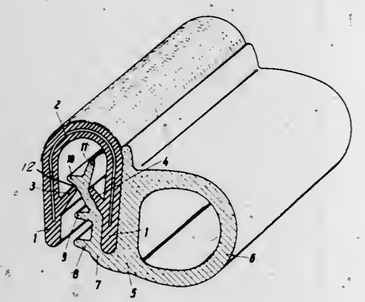


A push-pull actuator device for opening and closing windows and the like. The actuator device consists of a housing having a winding drum rotatably mounted therein and a flexible extensible member mounted on the winding drum. The flexible extensible member is in the form of a tightly coiled spring which may be stored within the housing by winding it on to the winding drum or it may extend from the housing in a straight line to open a window and hold the window in the open position.

3,638,359
PROTECTIVE SEALING STRIP

Werner Kruschwitz, Viersen/Rhineland, Germany, assignor to Draftex, GmbH, Viersen, Rhineland, Germany

Filed Mar. 9, 1970, Ser. No. 17,709
Claims priority, application Germany, July 24, 1969, P 19 38 223.1
Int. Cl. E06b *7/23*
U.S. Cl. 49—490 6 Claims

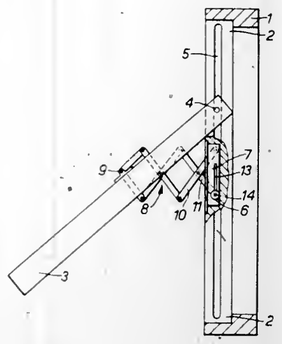


A U-shaped protective sealing strip adapted to be mounted on a support, especially for sealing doors and trunk lids of automobiles, comprising a sealing profile connected to one leg of the U-shaped sealing strip and having a portion extending about such one leg into the space between such one leg and the other leg of the U-shaped sealing strip, the profile portion being provided with holding ribs for engagement with the support.

3,638,360
PIVOT WINDOW

Dyre Vaa, 3890 Ytre Vinje, Norway

Filed May 7, 1970, Ser. No. 35,328
Claims priority, application Norway, May 19, 1969, 2040/69
Int. Cl. E05d *15/40*
U.S. Cl. 49—248 2 Claims

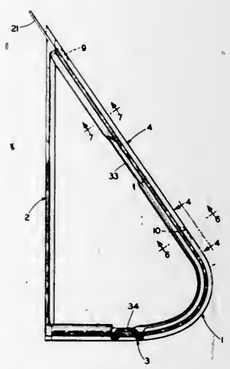


Pivot window which, at two opposing corners of the sash, preferably the two upper corners, is slidably connected to the frame by means of a groove/pivot means; a mounting on both sides of the window supporting the window sash during pivotal movement thereof beyond the frame. The mountings are arranged at the center of the frame portions which are provided with grooves, and the mountings are constituted by extendible arms which are rigidly connected to the frame and articulated to the sash. The extendible arms are effected on the lazy-tong principle.

3,638,361
RUBBER MOLDINGS FOR AUTOMOBILE WINDOWS

Herman S. Church, Cuyahoga Falls, Ohio, assignor to Teledyne Mid-America Corporation, Hartville, Ohio

Filed May 11, 1970, Ser. No. 36,342
Int. Cl. E06b *7/23*
U.S. Cl. 49—479 6 Claims

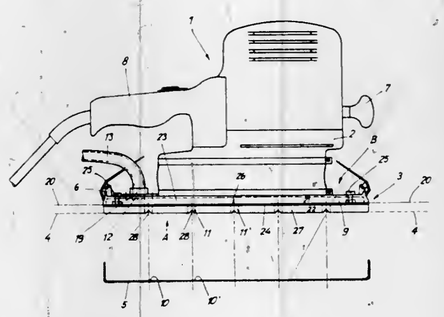


A generally triangular reinforced rubber gasket for automobile quarter vent windows having a metal reinforcing strip embedded and molded in two of the triangular gasket leg members. The diagonal reinforcing strip leg has integral offset attachment means and a bendable end tab for mounting the gasket in a window frame. The reinforced horizontal gasket leg is formed with drain means and an opening for a window pivot post. The reinforced gasket has usual flanges for sealing with the window frame and also with the window glass when the latter is in closed position.

3,638,362
PORTABLE GRINDER APPARATUS

Gottlieb Stoll, Waldackerweg 58, 73 Esslingen am Neckar, Germany

Filed July 23, 1970, Ser. No. 57,643
Claims priority, application Germany, July 29, 1969, P 19 38 350.7
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 MT 9 Claims



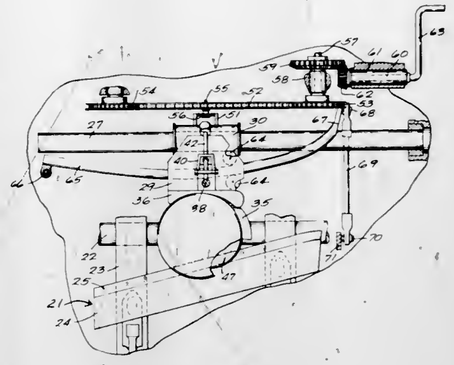
A portable grinding apparatus has a working plate movably mounted on a casing and oscillatable by a motor carried by the casing. The plate includes a top member having downwardly directed flanges and a bottom member adapted to carry on its lower surface on abrasive material and closing the open bottom of the top member. A pipe for connection to a suction device extends through the top member into the interior of the space between the top and bottom members. The bottom member and the grinding material have aligned holes to allow the flow of air and entained chips through the space to the outlet pipe.

3,638,363
SHARPENERS FOR CUTTING REELS

Wilmer E. Witt; Eugene A. Sousek, and Clyde A. Clish, all of Appleton, Wis., assignors to Koehring Company, Milwaukee, Wis.

Continuation of application Ser. No. 687,528, Dec. 4, 1967. This application June 15, 1970, Ser. No. 46,192
Int. Cl. B24b *19/00*
U.S. Cl. 51—249 20 Claims

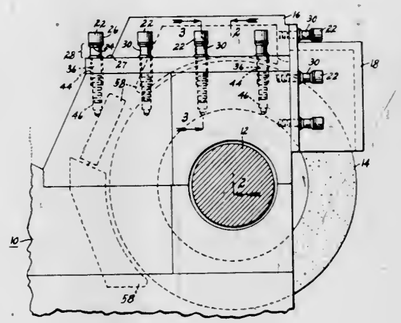
A rotatable grinding disk is supported on the frame of a cutting reel for movement in a straight line, back and forth across the knife cylinder assembly. It is also supported, in conjunction with a cover, for swinging movement into and out of operative position. There is means including a cam rod and mechanical linkages for transmitting rotary motion to the knife cylinder as the grinding stone progresses axially so that all portions of the cutting edge of an angled or helical knife are presented in proper sharpening relationship to the end face of the stone. There is also means for indexing the knife cylinder to present a new knife for sharpening after sharpening of one knife has been completed.



3,638,364
GUARD DEVICE FOR MACHINE TOOLS

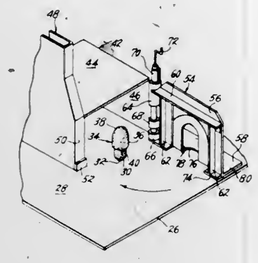
George L. Grove, Cincinnati; Irving J. Stewart, Montgomery, and Lloyd W. Helson, Milford, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 19, 1970, Ser. No. 12,619
Int. Cl. B24b *55/04*
U.S. Cl. 51—269 3 Claims



An improved cutting tool guard system utilizing a deformable spacer as an energy dissipator. The deformable spacer is placed between a cutting tool guard and rigid structure by which the guard is secured to the machine base. In the event of a sudden energy release caused by cutting tool fracture, the deformable spacer dissipates excess energy during deformation by allowing displacement of the cutting tool guard.

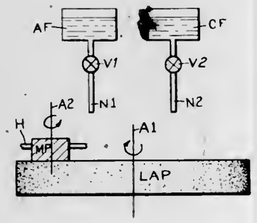
3,638,365
METHOD AND APPARATUS FOR FORMING FITTING COVERS
Dillard Breeding, Nashville, Tenn., assignor to Breeding Insulation Company, Inc., Nashville, Tenn.
Original application June 3, 1968, Ser. No. 734,017, now Patent No. 3,574,972. Divided and this application Apr. 30, 1970, Ser. No. 43,620
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 8 Claims



Abrasive means are employed to shape covers for conduit fittings from blocks of insulation material, illustratively foam plastic or fiberglas. The covers are formed in half sections and are employed in pairs; and

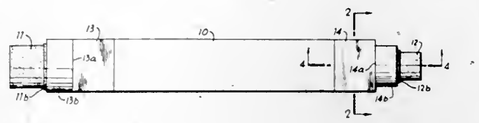
Apparatus for use in a system of forming insulation for pipe fittings such as elbow and T-sections, the apparatus including a work support and a rotatable shapping element projecting thereabove, in which a block of insulation material is moved against the shaping element in a controlled path of travel.

3,638,366
LAPPING METHOD FOR METALLIC WORKPIECES
Norman M. Gamache, Worcester, Mass., assignor to Norton Company, Worcester, Mass.
Filed Dec. 3, 1969, Ser. No. 881,867
Int. Cl. B24b *1/00*
U.S. Cl. 51—326 1 Claim



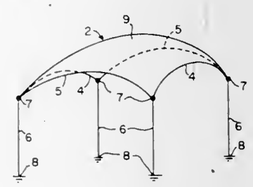
A process for providing clean lapped surfaces on metallic workpieces supported in operative relation to the working surface of a bonded abrasive lap for sliding and rotary movement relative to such working surface throughout a single continuous lapping operation including a first predetermined time period during which an abrasive slurry is supplied to the working surfaces of the lap and a second predetermined time period during which the working surface of the lap is flooded continuously with a nonabrasive cleaning fluid effective to wash clean the working surface of the lap and the lapped surfaces of the workpieces.

3,638,367
ABRASIVE PLUMBER'S TOOL
Erich A. Dreger, 32 School Lane, Cherry Hill, N.J.
Filed Nov. 29, 1968, Ser. No. 779,677
Int. Cl. B24d *15/00*
U.S. Cl. 51—392 3 Claims



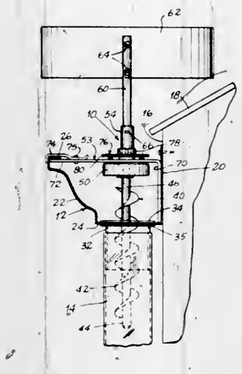
The invention is concerned with an abrasive plumber's tool for precleaning metal surfaces, particularly tubes and fittings, preparatory to soldering. The inventive plumber's tool comprises a strap of abrasive material for cleaning the end portions of tubes or pipes and having a cylindrical plug of abrasive material connected to each end for cleaning mating portions of standard fittings, each plug being dimensioned for a different size fitting. Essentially, the plug diameters are designed slightly oversize to insure a uniform abrasive pressure about the interior circumferential area of a fitting and the lengths are designed to insure cleaning of the tube or pipe stop within the fitting. A shoulder is provided extending radially from each plug to fix the extent of insertion within the fitting and to abut and clean the traverse end of the fitting.

3,638,368
INFLATABLE SHELTER AND METHOD OF ERECTION
Robert M. Pierson, Hudson, Ohio, assignor to Environmental Structures, Inc., Cleveland, Ohio
Filed Mar. 9, 1970, Ser. No. 17,675
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 19 Claims



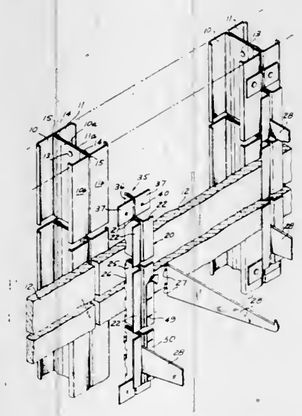
A lightweight flexible inflatable shelter for enclosing large areas in applications such as greenhouses, warehouses, recreation areas and other large enclosures, and in various methods of air and water pollution control. The shelter has an envelope of lightweight, low-modulus sheet material such as stretchable fabric or plastic film having high elongation properties. The sheet material is restrained by a cable grid system having heavy-duty, longitudinal parallel cables running in one direction and lighter parallel cables running transversely across the longitudinal cables. The cable grid system is tethered to restraint cables or masts at spaced points throughout the structure to restrain the grid system and the sheet material at predetermined elevations from the ground and cause the building, when inflated, to form a plurality of substantially identical dome-shaped roof sections, with the cable grid system and the tether restraint means uniformly distributing stresses throughout the structure. The shelter may be completely assembled on the site by erecting a series of perpendicular masts, draping the cable grid system across the tops of the masts, attaching long strips of sheet material between the rows of draped cables, anchoring the ends of the cables and the sheet material to the ground and inducing internal inflation pressure into the assembled structure.

3,638,369
DEVICE FOR PREVENTING THE CLOGGING OF GUTTERS AND DOWNSPOUTS
Robert E. Albrecht, 77 Thorncliff, St. Louis, Mo.
Filed Oct. 22, 1970, Ser. No. 82,941
Int. Cl. E04d *13/00*
U.S. Cl. 52—16 12 Claims



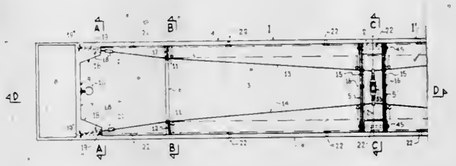
This invention comprises a device for preventing the clogging of gutters and downspouts with leaves and other debris and includes an auger means which extends into the mouth of the downspout, and means responsive to the wind for rotating the auger means within the mouth of the downspout in a direction to drive the leaves and other debris downward through the downspout.

3,638,370
FASTENING STRUCTURE FOR SECURING SUPPORT BRACKETS TO A WALL
Peter H. Miller, Newark, N.J., assignor to Evon Industries, Inc., Newark, N.J.
Filed June 24, 1970, Ser. No. 49,434
Int. Cl. E04b *1/41*
U.S. Cl. 52—36 9 Claims



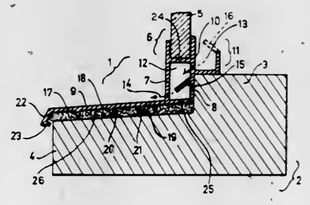
Shelf brackets having a mounting hook at one end are releasably secured to a wall constructed of spaced pairs of channeled studs secured to each other, web to web, at localized areas and spanned by wallboards by inserting the mounting hooks of the brackets into slots formed at the end of the long arm of a T-shaped spline forced between the webs. A marker attached to an end of the spline constitutes a reference point for determining the location of the slots in the spline. As these slots are concealed after insertion of the spline between the webs of the studs such reference point facilitates the attachment of the brackets to the wall.

3,638,371
PRECAST PANEL BUILDING STRUCTURE AND METHOD OF ERECTING THE SAME
Vladimir D. Liska, 2335 Broadway, Long Island City, N.Y.
Filed Nov. 6, 1968, Ser. No. 773,752
Int. Cl. E04c *3/22*; E04g *21/12*
U.S. Cl. 52—91 16 Claims



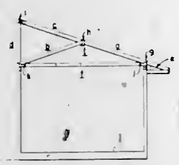
Disclosed are panel twins having a pair of stressed steel bars of tendons extending over the entire span of the twins and being transversely deflected to increase tension forces therein and thereby prestress the twins and a method of post-tensioning panel twins by means of adjustable couplers and turn buckles.

3,638,372
WINDOW SASH REBATE PROFILE WITH A CONDENSATE RECEPTION GUTTER
Carl Rosenthal, Willem de Zwijgerplantsoen 3, Utrecht, Netherlands
Filed July 2, 1969, Ser. No. 838,432
Int. Cl. E06b *7/14*
U.S. Cl. 52—97 5 Claims



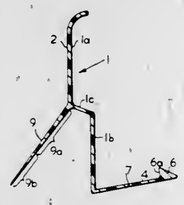
A window sash rebate profile adapted to be made from plastic material and comprising a longitudinal condensate eduction channel having parallel sidewalls supporting the window rim sash the channel bottom being continued outwardly from the channel from wall into a window frame cover plate, a condensate reception gutter being attached to the outer side of the channel backwall at a short distance below the rim sash bottom, slit-shaped apertures through said backwall just above the bottom of said gutter leading into the said channel and similar openings through the channel front wall leading to the outside above the said cover plate.

3,638,373
COLLAPSABLE ROOF FOR PREASSEMBLED BUILDING
Grosvenor Chapman, Washington, D.C., assignor to Chapman & Miller Architects, Washington, D.C.
Filed July 31, 1969, Ser. No. 846,551
Int. Cl. E04b 1/32; 7/16
U.S. Cl. 52—92 3 Claims



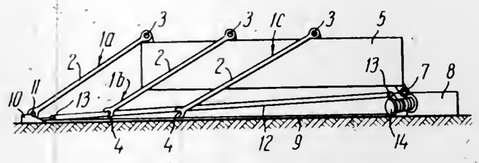
The purpose of the invention is to provide a system for using normal and high-pitched roofs for buildings preassembled in boxlike units at a factory and transported to the building site over the highway or other means, wherein low road clearances and other restrictions prohibit the use of assembled units exceeding a certain height and width. The invention permits the roof, which otherwise would exceed the height limitation, to be unfolded after delivery at the building site in such a manner that it will assume the desired position with a minimum of site labor. The system is not limited to any particular structural, roof deck, or roofing material nor to a building of any particular size or number of stories.

3,638,374
WALL BASE MEMBER
Bernard M. Harby, West Vancouver, British Columbia, Canada, assignor to Bernard Harby Limited, Vancouver, British Columbia, Canada
Filed Jan. 12, 1970, Ser. No. 2,170
Claims priority, application Canada, Dec. 8, 1969, 069,251
Int. Cl. E04f 19/04
U.S. Cl. 52—100 4 Claims



A skirting member for fitting around the base of a wall or partition comprising an elongated plastic molding having a vertical forwardly facing decorative flange, a rearwardly extending base flange and a flexible flap for concealing the cut edges of flooring material, this flap being in effect a continuation of the decorative flange. The base flange may either be attached to a floor by rivets or screws, or may be held in place by being inserted into the gap under a partition.

3,638,375
HOISTING EQUIPMENT AND METHOD OF USE
Mikhail Ivanovich Vasiliev, Varshavskoe shosse, 10, kv. 141, and Evgraf Vladimirovich Gruzinov, 3-y Nizhne-Likhoborsky proezd, 2/12, kv. 77, both of Moscow, U.S.S.R.
Filed Aug. 4, 1970, Ser. No. 60,904
Int. Cl. B66f 11/02; E04h 12/34
U.S. Cl. 52—116 6 Claims



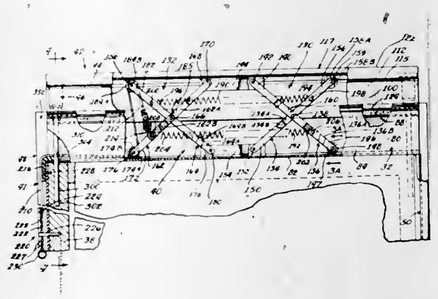
The present invention relates to hoisting equipment, and more specifically to a method of mounting a long-size heavy object into vertical or close to vertical, position by turning this object about a fixed axle, and to a device for realizing this method.

The invention can most successfully be used for mounting into vertical position, or close to it, column- and tower-type apparatuses, transmission line and cableway supports, metal smoke and air chimneys, masts of communication means, pile drivers, and other vertical-type constructions with a weight of 1,000–1,500 tons and more, with lateral dimensions of up to 10 m. and more, and a length of up to 150–200 m. and more.

The method according to the invention provides for moving the bottom ends of frame supports in a definite succession towards the supposed axis of turn of the object to be erected, whereto the frame supports are attached by their span pieces.

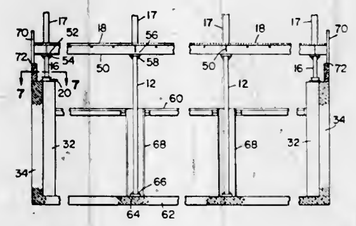
The method cuts the time of erection, and permits using winches of relatively small load capacity.

3,638,376
PORTABLE PARTITION
Edward P. Howes, Hayward, Calif., and John A. Gillham, Beloit, Wis., assignors to Hough Manufacturing Corporation
Filed Jan. 5, 1970, Ser. No. 721
Int. Cl. E04b 2/72
U.S. Cl. 52—122 11 Claims



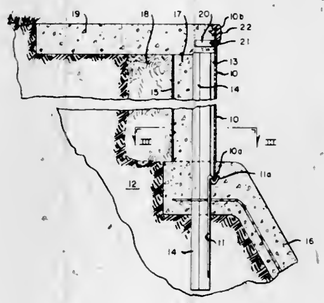
A portable partition for providing removable partitions for rooms, in which the partition is in the form of separate panel units each having an expansion element in the form of a grip member that engages the room ceiling to abut the panel units in place, in which the grip member is spring pressed against the ceiling by a spring mechanism that provides an increase in upward spring pressure as the grip member moves toward its extended position. The side rails of the panel units are of complementary configuration so that adjacent units can be erected in edge to edge interconnected relation, with an interconnecting adapter element being employed between the grip members of adjacent panel units. The bottom rail or shoe of each panel unit is adjustable to accommodate canted floors. The grip members of the respective units are arranged to provide an upward movement on the order of 3 inches relative to the panel, with the upward spring pressure and grip member stabilization being such that the panel units have significant ability to withstand lateral loadings and accommodate seismic and/or ceiling load deflection conditions.

3,638,377
EARTHQUAKE-RESISTANT MULTISTORY STRUCTURE
Marc S. Caspe, 1809 Ralston Ave., Belmont, Calif.
Continuation-in-part of application Ser. No. 767,767, Oct. 15, 1968, now abandoned. This application Dec. 3, 1969, Ser. No. 881,810
Int. Cl. E04h 9/02
U.S. Cl. 52—167 24 Claims



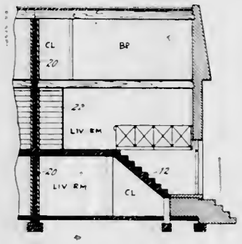
An earthquake-resistant multistory structure that effectively isolates the superstructure from the ground motions during a major earthquake by permitting relative displacement between the superstructure and the foundation, the structure incorporating means which effectively control both the magnitude of the base shear force required to initiate relative displacement and the magnitude of relative displacement.

3,638,378
WALLED STRUCTURES SUCH AS SWIMMING POOLS
Willard J. Russ, Jr., c/o Pacific Pool and Contracting, Inc. 4761 Route 8, Allison Park, Pa.
Filed Sept. 25, 1969, Ser. No. 861,058
Int. Cl. E04b 1/18
U.S. Cl. 52—169 5 Claims



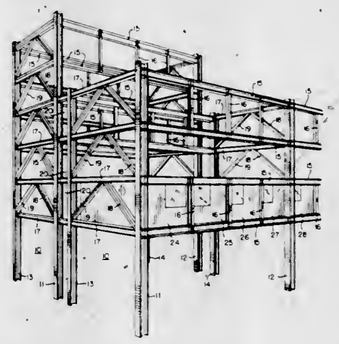
A walled structure of cast concrete is provided having a vertical sheet of flexible corrosion-resistant sheet material formed to the desired wall contour and having an exposed face surface, a series of vertical ribs on the sheet opposite the face surface, a series of spaced support members engaged in a base support having a U-shaped receptacle on the top thereof receiving the bottom edge of said sheet to hold the bottom edge in a desired selected position, a plurality of spaced vertical standards engaged in said base support and extending to a point adjacent the top edge of the vertical sheet and engaged with the ribs on said sheet and a continuous cast concrete layer surrounding the vertical sheet opposite the face surface from a point adjacent the top edge to the base support and extending beneath and engaging a portion of the lower edge of said sheet.

3,638,379
DWELLING
Thomas V. Williams, 415 Dreshertown Road, Fort Washington, Pa.
Filed May 20, 1969, Ser. No. 826,145
Int. Cl. E04h 1/04
U.S. Cl. 52—185 3 Claims



A trilevel dwelling unit comprising a monolevel residence and two bilevel residences. Each residence is connected to the exterior of the dwelling unit by a separate passageway thereby eliminating the need for a common passageway. In addition, each residence is separated from its adjacent residences by partitions of masonry construction.

3,638,380
MODULAR HIGH-RISE STRUCTURE
Joseph G. Perri, New York, N.Y., assignor to Walter Kidde Constructors Incorporated, New York, N.Y.
Filed Oct. 10, 1969, Ser. No. 865,284
Int. Cl. E04h 1/04
U.S. Cl. 52—236 6 Claims



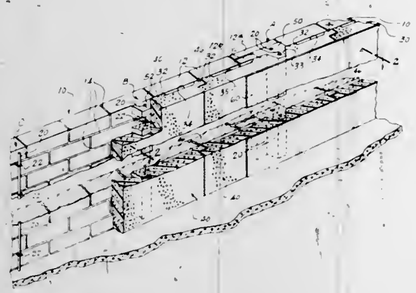
The invention is directed to new and improved structural concepts for so-called high-rise buildings, providing for op-

timum utilization of prefabricated apartment modules and providing for highly economic construction techniques and economic utilization of space. The structure is of generally peristylar form, in that all of the principal vertical support columns are located about the exterior of the structure. A unique arrangement is provided for supporting prefabricated apartment modules, comprising special horizontal support beams, extending transversely in the structure and which are supported at their ends by longitudinal beams engaging the vertical support columns. The transverse beams are so designed that their webs and flanges lie in two intersecting planes, and T-beams are ideally suited for this purpose. The prefabricated apartment modules are supported by their edges on the transverse beams, in such manner that the webs and flanges of the beams are received between very narrow vertical and horizontal clearance spaces between apartment modules. To great advantage, the longitudinal support beams of the peristylar structure are comprised of Vierendeel trusses located at alternate story levels of the structure and spanning a vertical distance of one story. The arrangement of Vierendeel trusses is structurally advantageous and has pleasing architectural characteristics.

3,638,381
INSULATED MASONRY BUILDING WALL CONSTRUCTION

Alan L. Robertson, Newington, Conn., and Arthur A. Rady-Pentek, Metuchen, N.J., assignors to BASF Corporation, New York, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,794
Int. Cl. E04c *2/10*; **E04b** *1/62*
U.S. Cl. 52—309 **10 Claims**

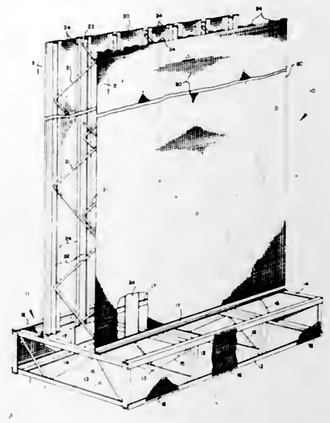


Highly heat insulated masonry building walls are made economically with required strength yet with less thickness and much less weight than a typical cavity wall by building up a masonry structure of limited thickness having the compressive strength but not all the lateral strength required; erecting metal reinforcing rods at intervals next to a side of the masonry structure; then attaching over it, as by strips of adhesive, preformed stiff panel sections made of a durable lightweight heat insulating material, e.g., of polystyrene foam, which form with the masonry structure separate vertical pockets enclosing the rod locations and shallow anticondensation cavities between them; and finally filling the pockets with a masonry binder such as grout and hardening the cast masses of binder about the rods to form in the pockets reinforcing ribs bound monolithically to the masonry structure. A new form of molded, mating insulating panel sections is provided for constructing the walls.

3,638,382
FORM FOR A CONCRETE WALL STRUCTURE

Ronald E. Merrill, 153 Terra Linda, Eugene, Oreg.

Filed Dec. 22, 1969, Ser. No. 887,175
Int. Cl. E04b *5/52*
U.S. Cl. 52—359 **2 Claims**

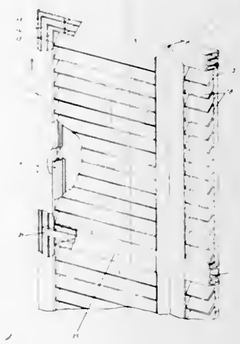


A permanent wall form for construction of a concrete wall including expanded metal lath side members tied in spaced-apart relationship by wire truss members in place intermediate the metal laths. Channels on the lath receive the inserted truss members for secure assembly of the lath side members. The lath permits migration of the concrete therethrough for subsequent smooth finishing by troweling. Provision is made for the including of insulative strips on one side of the form prior to concrete pouring.

3,638,383
LOUVER DOOR WITH FIXED LOUVER- OR LUFFER-BOARDS

Enrique Escudero Ribas, Calle Aushas March, 94-96, Barcelona, Spain

Filed Mar. 27, 1970, Ser. No. 23,384
Claims priority, application Spain, Mar. 27, 1969, 365788
Int. Cl. E06b *7/08*
U.S. Cl. 52—473 **6 Claims**



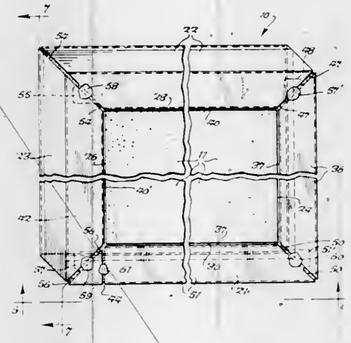
Louver door with fixed louver- or luffer-boards, made of prismatic hollow elements of plastic material, which are formed into door stiles and door rails defining a frame, and a number of louver- or luffer-boards located within the frame's interior joined together by means of ribs and slots.

Between the door stiles and louver- or luffer-boards are located intermediate longitudinal pieces provided with lengthwise ribs which fit, through sliding, the corresponding slots of the stiles' and louver-boards' or luffer-boards' ends.

3,638,384
STRUCTURAL CEMENT-WOOD FIBER PANEL

Charles A. Martin, Williamsville, N.Y., assignor to Martin Fireproofing Corporation, Buffalo, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,578
Int. Cl. E04c *1/10, 2/10, 2/38*
U.S. Cl. 52—589 **10 Claims**

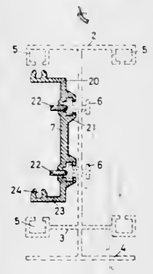


A cement-wood fiber panel comprising a body portion of substantially solid rectangular configuration having a pair of opposed faces and four edges, a grooved configuration formed in a pair of adjacent edges and a tongue configuration formed in another pair of adjacent edges, preformed metal edge members having portions which cover said edges in complementary mating relationship and have flanges thereon received in slots in the opposite faces of the body portion, and welded joints at adjacent mitered ends of the metal edge members.

3,638,385
FACADE SCREEN

Yvan M. L. C. Nobels, 80 rue Joseph Bens, and Elie P. Mas, 107 rue De Koninck, both of Brussels, 8, Belgium

Filed Jan. 21, 1970, Ser. No. 4,608
Int. Cl. E04b *2/88*; **E06b** *3/62*; **F16b** *7/18*
U.S. Cl. 52—665 **3 Claims**

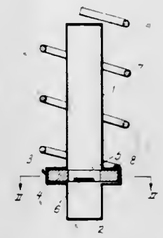


A facade screen for a building which can be assembled on site. Each screen consists essentially of I-shaped vertical members, sliding supports running on fins on the vertical members, and horizontal members affixed to the supports. Both vertical and horizontal members are adapted to receive flexible seals which extend between the members and glass or other panels forming part of the screen. Assembly of the frame uses a minimum of screwed fixtures, most of the parts being sprung or slid into position.

3,638,386
SLEEVE ELEMENT AND APPURTENANT BOLT ELEMENT

Thor Waerner, Graf. Reckstr. 160, Dusseldorf, Germany

Filed Dec. 12, 1969, Ser. No. 884,608
Int. Cl. E04b *1/41*
U.S. Cl. 52—704 **1 Claim**



A universally utilizable mounting anchor, particularly for cementing into a concrete element, is provided. A bolt element having a locking wing formed on one end is insertable in a sleeve element, the said locking wing being adapted to be engaged in a locking groove in the sleeve, the locking groove being formed on the rear side of an intermediate bottom in the sleeve, said bottom being provided with an opening for through passage of the locking wing when the bolt is inserted into the sleeve.

3,638,387
METHOD OF ERECTING A WALL PANEL SUPPORTING STRUCTURE

Robert Paul Lickliter, Hamburg, and John F. Reeves, Tonawanda, both of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

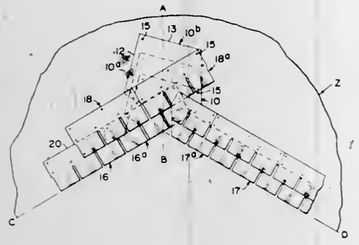
Filed Mar. 10, 1970, Ser. No. 18,073
Int. Cl. E04b *2/30, 2/60*
U.S. Cl. 52—741 **7 Claims**



A method of erecting a wall panel supporting structure formed of horizontally and vertically extending panel connector assemblies by suspending the supporting structure from a ceiling for free lateral swinging movement thereof to automatically achieve self-plumbing prior to wall panel at-

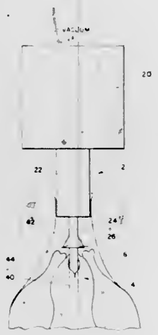
tachment. When correct plumb is achieved, an adjustable channel member connected to the lower horizontally extending panel connector assembly is lowered against the floor to provide a supporting structure accurately plumbed and positioned from ceiling to floor for receiving wall panel members.

3,638,388
METHOD OF APPLYING SHINGLES
Anthony J. Crookston, 302 Beaver St., Akron, Ohio
Filed Jan. 22, 1970, Ser. No. 4,933
Int. Cl. E04g *21/14*
U.S. Cl. 52—748 **5 Claims**



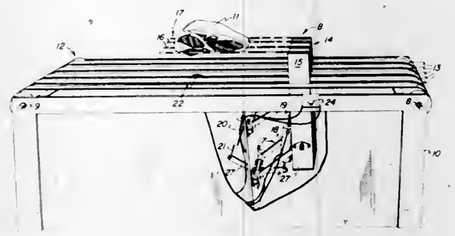
The method includes applying a vertically overlapped course of undercover shingles to the valley formed between two adjoining roof sections and then applying conventional courses of top shingles which are of shorter vertical extent than the undercover shingles to the adjacent roof sections and progressively partially covering the undercover shingles with courses of top or cover shingles whereby an improved shingle covering unit is provided for the valley formed between the roof sections.

3,638,389
PROCESS AND APPARATUS FOR VACUUM PACKAGING POULTRY
Robert Edward Sherwood, Cincinnati, Ohio, assignor to W. R. Grace & Co., Duncan, S.C.
Filed Mar. 3, 1970, Ser. No. 16,080
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 B **3 Claims**



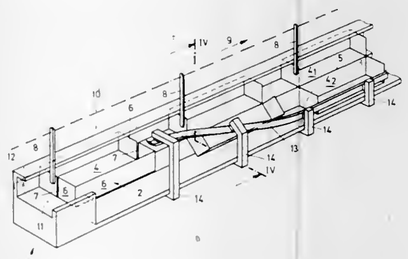
A process for vacuum packaging poultry in bags of shrinking films in which the eviscerated poultry is placed in the bag, a vacuum is created in the bag and the bag is hermetically sealed, the novel features being that a tube protruding toward the outside is inserted into the body cavity of the poultry, a vacuum is created in the body cavity and the bag by means of a vacuum device equipped with a vacuum mouthpiece, the mouthpiece is withdrawn and the bag sealed, the tube either remaining in the bag or being withdrawn together with the vacuum mouthpiece.

3,638,390
PACKAGING METHOD AND APPARATUS
Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,542
Int. Cl. B65b *5/00*
U.S. Cl. 53—35 **6 Claims**



A method and apparatus for packaging an article in a flexible bag comprises the use of a conveyor for transporting the article to a loading station where the article is raised from the conveyor to a bagging position by a plurality of horizontally disposed, vertically movable fingers supporting the article. A flexible bag is placed over the article and over the fingers, the fingers are then lowered to a slack bag pulling position and thence to their initial position while depositing the bagged article onto the conveyor which removes it from the fingers and from the loading station.

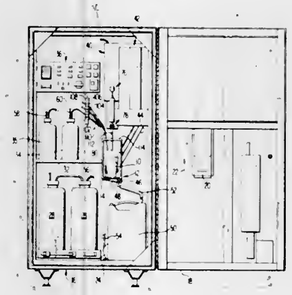
3,638,391
METHOD AND DEVICE FOR INSERTING BISCUITS INTO BOXES
Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Aug. 26, 1970, Ser. No. 67,083
Claims priority, application Switzerland, Sept. 1, 1969, 13,241/69
Int. Cl. B65b *5/10, 23/14, 23/16*
U.S. Cl. 53—35 **11 Claims**



A longitudinal rectangular open box having a bottom wall and upright walls of which the end walls are vertically slit in their center is folded downwardly about the longitudinal centerline of the bottom wall, while moved lengthwise along a horizontal guide bed so that the downwardly folded one-half of the box will have its bottom half disposed vertically and its longitudinal sidewall horizontally.

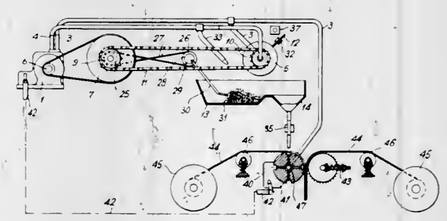
Now vertical stacks of biscuits are slidably inserted, either by hand or by feeding devices placed along the guide bed, into the upper half of the box and into the lower half of the box. Then the filled lower half of the box is folded upwardly again so that both bottom wall halves are disposed in the same horizontal plane and the box is closed by a cover, by a sleevelike wrapper, or by merely attaching an adhesive strip over the slit in the end walls.

3,638,392
AUTOMATICS SLUSH DISPENSING MACHINE
Harry Logue Welker, Jr., 3240 S. Cincinnati, Apt. 351, and Michael Blaker Burton, 3818 S. Ann, both of Tulsa, Okla.
Filed Feb. 20, 1970, Ser. No. 13,249
Int. Cl. B65b *63/08*
U.S. Cl. 53—123 **13 Claims**



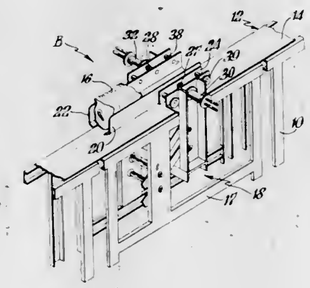
A measuring container of defined volume employs electrodes for premeasuring slush for constant volume slug discharge into an underlying vend cup. Multiple safety features are incorporated in the electronic circuitry of the completely automated coin operated dispenser to shut down operation under emergency conditions.

3,638,393
SEED HANDLING
Ranjit Kanti Datta, Reading, England, assignor to National Research Development Corporation, London, England
Filed Jan. 13, 1970, Ser. No. 2,463
Claims priority, application Great Britain, Jan. 14, 1969, 2,270/69
Int. Cl. B65b *9/04, 47/10*
U.S. Cl. 53—180 **12 Claims**



Apparatus for handling seedlike small articles, comprising: a longitudinally bored elongate member mounted at one end for cyclic movement of the other, free end around a closed path through an article supply station and past an article receiving station; valve means for selectively applying a vacuum to the bore of said member during movement through the supply station and to the receiving station whereat the vacuum is cut off from said member; and means for vibrating and applying draught over said member after movement through said supply station and before reaching said receiving station.

3,638,394
PACKAGING APPARATUS
Louis L. Winokur, Evanston, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,538
Int. Cl. B65b *5/04, 39/02, 67/04*
U.S. Cl. 53—255 **10 Claims**



A method and an apparatus for packaging articles in flexible bags comprise the use of a conveyor for delivering an article to a gripping assembly intermediate the conveyor. The assembly comprises at least two gripping members laterally positioned on opposite sides of the conveyor and movable towards and away from each other and vertically with respect to the conveyor. The gripping members clasp the article, elevate it above the conveyor and hold it until a bag has been placed thereover. The gripping members then lower the article in the bag onto the conveyor, release their grip of the article which is then transported in the bag by the conveyor and removed from the gripping assembly.

3,638,395
STIRRUP LEATHER BUCKLING SYSTEM
Guy M. Reidhead, 406 South First St., Phoenix, Ariz.
Filed Feb. 19, 1970, Ser. No. 12,737
Int. Cl. B68c *1/16*
U.S. Cl. 54—46 **2 Claims**

A top and a bottom stirrup leather are secured against relative longitudinal movement through the utilization of a rigid buckle member having a shank extending substantially perpendicular from the bottom stirrup leather and terminating in a tongue formed integrally therewith extending approximately parallel to the stirrup leather. A tab is also provided and extends perpendicularly to the bottom stirrup leather. The top stirrup leather is provided with a plurality of regularly spaced holes aligned along a centerline thereof. The shank and tab prevent longitudinal relative movement between the stirrup leathers while the tongue maintains the two in approximate contact to prevent the shank and tab

from moving out of the holes. A leather strap is utilized to augment the tongue and is secured to the bottom stirrup



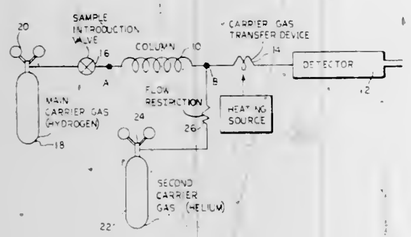
leather and is looped through a pair of holes in the top stirrup leather.

3,638,396

GAS CHROMATOGRAPH INTERFACING SYSTEM AND METHOD

James E. Lovelock, Bowerchalke, Wilts, England, assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 25, 1969, Ser. No. 852,690
Claims priority, application Great Britain, Sept. 11, 1968, 43,260/68
Int. Cl. B01d *15/08*
U.S. Cl. 55—16 **16 Claims**



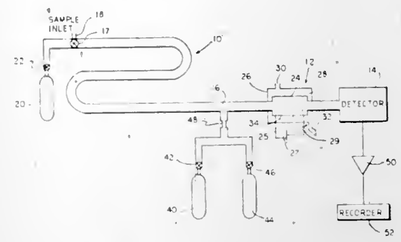
A gas-analyzing system including in sequence a chromatographic gas separator, a second carrier gas inlet, a carrier gas transfer device and a gas component detector such as a gas density balance, thermal conductivity, ionization cross section detector or a mass spectrometer. A minor amount of sample dispersed in a major amount of a first carrier gas is flowed through the chromatographic separator and the effluent from the separator mixes with the second carrier gas before entering the transfer device. The transfer device is selectively permeable to the first carrier gas and in the case of hydrogen may be a heated palladium tube. The hydrogen selectively and totally transfers through the tube and a stream enriched in a sample dispersed in the second carrier gas remains with no loss of sample.

3,638,397

GAS ANALYSIS SYSTEM AND METHOD

Kyle W. Charlton, Oxnard, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 25, 1969, Ser. No. 852,770
Int. Cl. B01d *15/08*
U.S. Cl. 55—16 **8 Claims**



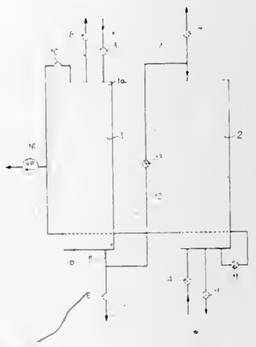
A gas sample dispersed in a first carrier gas such as hydrogen is enriched by introducing into the dispersion at a controlled flow rate a mixture of a second carrier gas such as helium diluted with first carrier gas and passing the dispersion through a gas transfer device such as a heated palladium tube which is selectively permeable to the first carrier gas.

3,638,398

METHOD OF SEPARATION BY SUBSTANTIALLY ISOTHERMAL SELECTIVE ADSORPTION OF A GASEOUS MIXTURE

Daniel Domine, Meudon, and Leon Jay, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude

Filed Aug. 1, 1969, Ser. No. 846,668
Claims priority, application France, Aug. 8, 1968, 162344
Int. Cl. B01d *3/04*
U.S. Cl. 55—25 **1 Claim**



A method of separation by substantially isothermal adsorption of a gaseous mixture in the presence of an impurity, with desorption by the sole action of a vacuum, in which there is admitted through a first zone of a chamber, a gaseous mixture to be separated, a gaseous fraction enriched in the less adsorbable main constituent being extracted through a second zone of the chamber by expansion, a gaseous fraction enriched in the more adsorbable main constituent and in impurity is extracted through the first zone by the action of a vacuum, and the gaseous fraction enriched in the less adsorbable main constituent separated out during the previous cycle is admitted through the second zone.

3,638,399

PROCESS FOR THE PURIFICATION OF HYDROCARBON PYROLYSIS GAS STREAMS

David G. Walker, Baytown, Tex., assignor to Tenneco Chamicals Inc.

Filed Apr. 6, 1970, Ser. No. 26,062
Int. Cl. B01d *53/04*; **C07c** *11/24*
U.S. Cl. 55—59 **7 Claims**

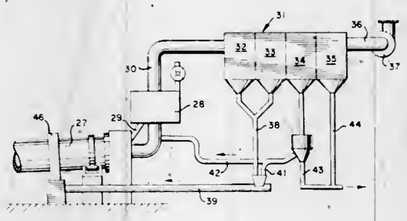
Acetylene-containing pyrolysis gases are purified by contacting them with activated carbon. In this process the activated carbon adsorbs triacetylene and other polyacetylene precursors and catalyzes their polymerization and at the same time adsorbs naphthalene and other foulants that are present in the gas stream.

3,638,400

SEPARATION OF ALKALI-RICH DUST FROM CEMENT KILNS

Thorbjorn Heilmann, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.

Continuation of application Ser. No. 566,547, July 20, 1966, now abandoned. This application Feb. 14, 1969, Ser. No. 805,937
Claims priority, application Denmark, July 22, 1965, 31330/65
Int. Cl. B01d *46/02*; **B03c** *3/01*
U.S. Cl. 55—69 **4 Claims**



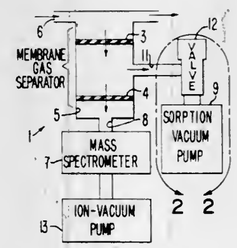
The alkali content of cement clinker is controlled by recycling a fraction of dust having a particle size larger than 5 to 15 microns recovered from the exhaust gas of the cement kiln cooled to below the precipitation temperature of the alkali.

3,638,401

VACUUM CONNECTOR FOR CONNECTING REPLACEABLE EVACUATED DEVICES TO AN EVACUATED SYSTEM

Donald J. Kabler, Fremont, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 24, 1969, Ser. No. 809,858
Int. Cl. B01d *53/22*, *50/00*
U.S. Cl. 55—158 **1 Claim**



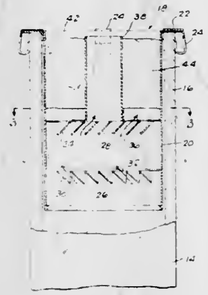
A vacuum connector is disclosed for connecting secondary replaceable evacuated devices to a primary evacuated system without contamination of the primary system. A gas passageway is connected to the primary evacuated system. A valve spring loaded to the normally closed position, is provided in the gas passageway closing same. The secondary evacuated structure, to be connected to the primary evacuated system, is sealed by means of a diaphragm. An O-ring seal is provided for sealing the secondary replaceable evacuated structure to the wall of the gas passageway. A cutting tool is provided in the gas passageway between the valve and the diaphragm for cutting the diaphragm, thereby opening same. The cutting tool also engages the valve for opening the valve against the spring bias to place the secondary evacuated structure into gas communication with the primary evacuated system through the valve. Removal of the secondary evacuated structure causes the spring bias force to close the valve, thereby sealing the primary evacuated system for subsequent connection to a second replaceable secondary evacuated device.

3,638,402

VENT FOR SOIL PIPE STACK

Clarence H. Thomas, 18240 Sycamore Ave., Roseville, Mich.

Filed June 2, 1970, Ser. No. 42,765
Int. Cl. E03f *5/08*
U.S. Cl. 55—307 **15 Claims**



A soil pipe vent stack having a cartridge-type filter telescopically arranged within the open upper end thereof, the filter being adapted to control the emission of obnoxious gases from the vent stack.

3,638,403

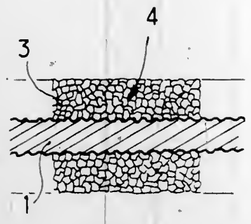
GAS-ADSORBING ELEMENTS, THEIR METHOD OF MANUFACTURE, AND DEVICES INCORPORATING SUCH ADSORBENT ELEMENTS

Pierre Delacour, Noyarey; Pierre Langlade, and Michel Renard, both of Grenoble, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude

Filed June 30, 1969, Ser. No. 837,517
Claims priority, application France, July 5, 1968, 158111
Int. Cl. B01d *53/04*; **B05b** *7/14*
U.S. Cl. 55—389 **24 Claims**

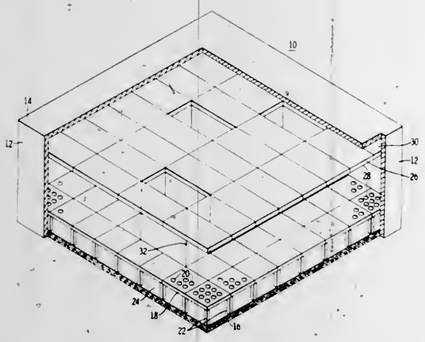
A gas-adsorbing element associated with a thermal source which is successively a cold source and then a hot source, and so on. The gas-adsorbent element is constituted by a ductile metallic support having an extended surface and, on at least one surface of said support, a coating of a gas-adsorbing product such as zeolite, constituted by material in the form of particles incrusted by compression between each other and on the support of ductile metal. This adsorbent element is prepared, for example by passing an aluminum tape between two cylinders of a rolling mill on which particles of

the adsorbent product are deposited by hoppers. An adsorbent element of this kind can be incorporated in a vacuum



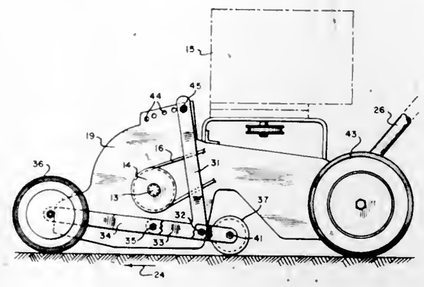
pump, in a purification device, a compressor or a refrigerator.

3,638,404
VERTICAL LAMINAR-FLOW CLEAN ROOM OF FLEXIBLE DESIGN
Charles J. Moll, and William C. Anderson, both of Grand Rapids, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1969, Ser. No. 862,430
Int. Cl. B01d *31/00*
U.S. Cl. 55—473 **6 Claims**



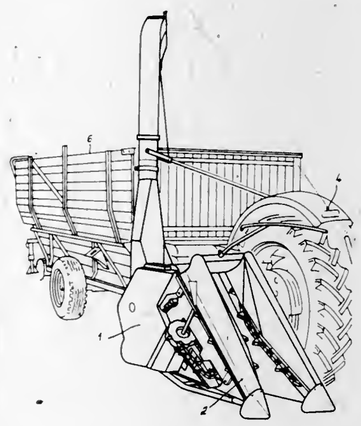
A vertical laminar-flow clean room is contained within a bounding enclosure which is substantially airtight. The clean room floor is raised and has apertures therein. The floor and the bottom of the bounding enclosure form an air-receiving plenum. A dropped ceiling is formed of an assembly of blower-hood-filter units, with the space directly above the dropped ceiling constituting an air-supply plenum. Air return plenums are contained entirely within the bounding enclosure and preferably incorporate prefilters and air-conditioning equipment, and the air return plenums connect the air-receiving plenum to the air-supply plenum. The blower-hood-filter units and air return plenums are all of a similar size, in order to facilitate a modular-type of construction and flexibility of design.

3,638,405
LAWNMOWER SUSPENSION
Hugo S. Ferguson, Averill Park, N.Y., assignor to Reel Vortex, Inc., Poestenkill, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,659
Int. Cl. A01d *53/02*
U.S. Cl. 56—10.4 **7 Claims**



A suspension is provided for a lawnmower having a reel and blower conduit forming a crossflow blower which mows without the aid of a fixed bed knife. The front of the mower is supported by a pair of side support members rotatably mounted on respective sides of the mower at points in approximate vertical alignment with the reel axis. Front and intermediate rolling means are mounted on the side support members forwardly and rearwardly of the reel axis, preferably a pair of front wheels and an intermediate roller. Rear rolling means is provided, preferably a pair of wheels. For height adjustment, the side support members are mounted on angularly adjustable lever arms.

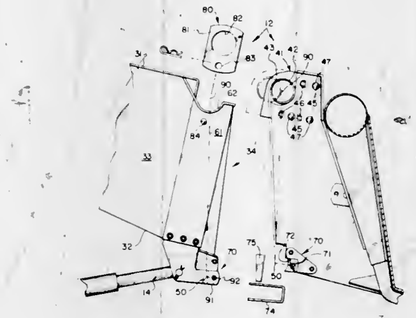
3,638,406
FIELD CHOPPING MACHINE ATTACHABLE TO A TRACTOR
Lorenz Scherer, Oberelchingen; Heinrich Bellan, Thalfingen; Rudolf Wohrle, Rieden, and Alfred Eggenmuller, Ulm, all of Germany, assignors to Gebruder Eberhardt, Ulm, Germany
Filed July 24, 1968, Ser. No. 747,285
Claims priority, application Germany, July 26, 1967, E 25545
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.9 **14 Claims**



A field chopping machine including a chaff-cutting device

provided with feeding, pressing, cutting implements, and a pickup or receiving apparatus, said device and apparatus being of substantially the same width and attached to a tractor, oriented in the longitudinal axis thereof and disposed laterally adjacent the rear wheel of the tractor; the pickup apparatus comprises a tandem cutting assembly which is separable, horizontally arranged in operating position and upwardly pivotable to a travel position; the tractor drive means is coupled to the field chopper such as to enable attaching a wagon thereto and to operate the field chopper off the tractor drive, the total width of tractor and field chopper during travel being no more than 2.73 yards, thereby meeting public road traffic regulations for vehicles with hitched-on equipment.

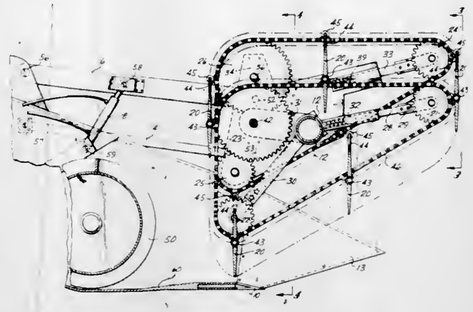
3,638,407
PLATFORM KNIFE-CUTTING ANGLE ADJUSTMENT
Paul G. Togami, East Moline, Ill., assignor to International Company, Chicago, Ill.
Filed Dec. 12, 1969, Ser. No. 884,427
Int. Cl. A01d *41/02*
U.S. Cl. 56—15.6 **7 Claims**



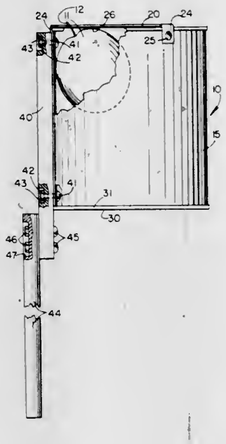
A quick detachable apparatus for connecting a harvesting platform to its feeder housing at various angles thereto. The location of the upper coupling element carried by the feeder housing is adjustable about an underlying axis and the arcuate abutting surfaces of the lower coupling are generated about this same axis. Thus regardless of the location of the upper coupler, the abutting surfaces of the lower coupler are always aligned.

3,638,408
REEL ASSEMBLY FOR HARVESTER
Garland L. Swanson, P.O. Box 324, Ione, Oreg.
Filed Feb. 24, 1970, Ser. No. 13,439
Int. Cl. A01d *57/00*
U.S. Cl. 56—219 **10 Claims**

A noncircular reel apparatus for use with agricultural harvesting equipment is described. The reel assembly is positioned above the cutter bar of a harvesting machine header. A plurality of slats traverse a substantially triangular path to sweep the agricultural product onto the header. The slats are maintained at a predetermined pitch through the use of a crank and eccentric apparatus, the crank travelling in a path substantially congruent to that of the noncircular path of the slats. The reel apparatus is supported at each end by a pair of support arms, each of which is pivotally attached to the header at one end and to the reel mechanism at the other end, permitting the raising and lowering of the reel assembly without changing angular orientation of the reel with respect to the header. The path of the slats causes them to enter the grain or other agricultural plant being harvested and sweep them across the cutter assembly without undue shattering and loss of the product. Short stalked plants are prevented from falling forward out the harvesting assembly after being cut.

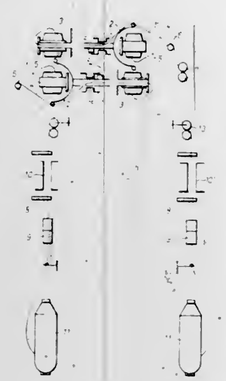


3,638,409
FRUIT PICKER
Henry Kuska, 2810 South Harvey, Berwyn, Ill.
Filed Aug. 12, 1970, Ser. No. 63,154
Int. Cl. A01g *19/08*
U.S. Cl. 56—339 **1 Claim**



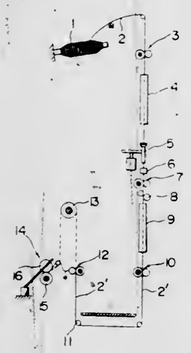
A fruit picker includes a container having an open end, a handle on the container and a slotted stripper member on the open end of the container. An individual holds the handle to raise the container into position to encompass a piece of fruit. The container is then moved laterally to cause the stem to enter the slot, whereupon the individual pulls downwardly causing the piece of fruit to bear against the interior surface of the stripper member until it becomes separated and falls into the container.

3,638,410
METHOD AND AN APPARATUS FOR THE PRODUCTION OF CRIMPED SYNTHETIC FILAMENTS
Herbert Scherzberg; Herbert Neumann; Robert Schnegg, and Theo Dietrich, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 12, 1969, Ser. No. 849,377
Claims priority, application Germany, Aug. 2, 1968, P 17 85 180.8
Int. Cl. D02g *1/02, 1/06*
U.S. Cl. 57—34 HS 3 Claims



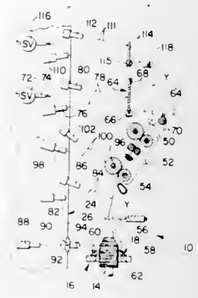
This invention relates to a method for the production of crimped endless filaments of synthetic high-molecular weight polymers by fixing the crimp by twist displacement which comprises twisting two filaments by means of a cording spindle.

3,638,411
FALSE TWIST CRIMPING APPARATUS
Kazuyuki Tsugawa, and Yasuhiro Sato, both of Matsuyama-shi, Japan, assignors to Teijin Seiki Co., Ltd., Higashi-ku, Osaka, Japan
Filed Dec. 8, 1969, Ser. No. 882,878
Int. Cl. D02g *1/02*; D02j *13/00*
U.S. Cl. 57—34 HS 4 Claims



A false twist device to impart false twist to thermoplastic synthetic filament yarn such as polyesters polyamides, etc. The yarn led from the supply package is passed through feed rollers, a first heating device, a false twist spindle, a broken yarn detector, first delivery rollers, a twist adjuster, a second heating device, second delivery rollers, and third delivery rollers, and further fourth delivery rollers if need be, and the yarn is finally led to a takeup device. The yarn thus false twisted with this false twist machine has the woollike bulkiness, stretch, and covering power to be used as the yarn for various fabrics.

3,638,412
TEXTILE MACHINE
Arthur Rebsamen, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed May 1, 1970, Ser. No. 33,682
Int. Cl. D01h *9/10*
U.S. Cl. 57—52 17 Claims

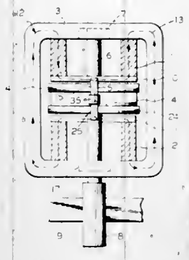


Strand handling apparatus including a system for controlling a cycling carriage which scans and services bobbin winding stations on a spinning machine, or the like. The control system provides a signal indicating when a station being scanned is operational and service signals indicating when the station requires servicing. Upon receipt of both the operational and servicing signals the control system initiates a work cycle of the carriage to service the station. The service signals include both a full bobbin signal and a strand interruption signal. If there are more than a predetermined number of interruption signals during a cycle, the control system does not cause servicing of the stations responsive to this signal. If a roll-wrap occurs on a drafting roll of a station the strand is broken and does not enter the drafting rolls and the operational signal is not provided at this station so that the carriage bypasses the station until it is again placed in operational condition by an attendant. Upon starting-up with fresh bobbins at all of the stations, most of the stations would be ready to have their full bobbins doffed at about the same time, and the carriage would be overworked. Therefore, at startup the control system provides for doffing the stations in succession at timed intervals, and in conjunction with the operational and the servicing signals, to randomize the future doffing cycle of the stations.

3,638,413
MAGNETIC FALSE TWIST SPINDLE
Josef Raschle, Oberdorf, Switzerland, assignor to Moulinage & Retorderie de Chavanoz, Chavanoz, France
Filed Aug. 17, 1970, Ser. No. 64,511
Int. Cl. D02g *3/00*; D01h *7/92*
U.S. Cl. 57—77.45 2 Claims

An improved magnetic false twist spindle comprising a tubular spindlette having a locking means for the false twist, a single driving roller attached to a driving shaft, said roller

being capable of rotating at high speeds, and annular magnets, said magnets holding the spindlette against the driving roller such that the spindlette is centered axially and laterally. The improvement resides in that the annular mag-



nets are coaxially located at the two ends of the driving roller and in close contact with the enveloping support of the spindle. The poles of the magnets are so located that a complete magnetic circuit results.

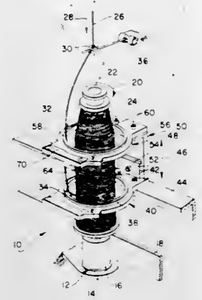
3,638,414
PROGRAMMED SPINDLE SPEED
David M. Williams, Greenville, S.C., assignor to Fiber Industries, Inc.
Filed Nov. 7, 1969, Ser. No. 874,742
Int. Cl. D01h *1/26, 1/36*
U.S. Cl. 57—93 10 Claims



An improved method and apparatus for programming the slowdown period of a yarn overend winding apparatus including draw rolls and a spindle wherein the draw roll and spindle are programmed in relationship to each other until the draw rolls reach a set predetermined low speed and then the spindle is brought to rest after the draw rolls have become stationary.

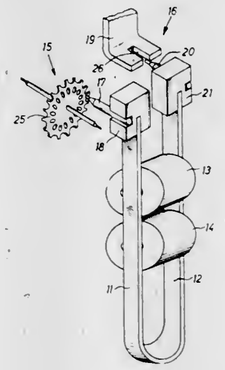
3,638,415
BALLOON BREAKER
Bernard Andrews, Johnston, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Feb. 11, 1970, Ser. No. 10,528
Int. Cl. D01h *1/42, 7/18, 13/30*
U.S. Cl. 57—108 6 Claims

A ring twister having lubricated balloon control rings which facilitate handling yarns at substantially higher speeds. The rings may be of porous material for passage of the lubricant therethrough, or they may be nonporous material having



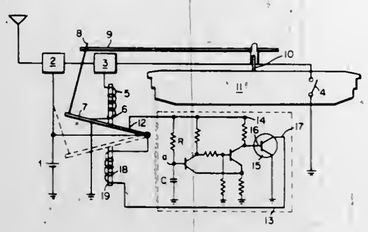
ports for passage of the lubricant to the yarn. The rings are generally applicable to spinning frames and any other equipment on which control of a ballooning strand is desired.

3,638,416
TUNING FORK DRIVE FOR CLOCKS
Klaus Kaltenbach, Triberg, Germany, assignor to Firma Jahresunhren-Fabrik GmbH, Aug. Schatz & Sohne, Triberg, Black Forest, Germany
Filed Apr. 13, 1970, Ser. No. 27,470
Claims priority, application Germany, Apr. 29, 1969, P 19 21 795.9
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 TF 8 Claims



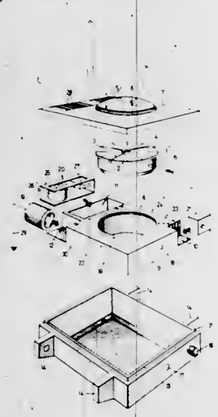
A timepiece is provided with a drive mechanism comprises a tuning fork having an electromagnetic oscillator located between the bight thereof, energized by an electronic amplifying system connected to a battery source of current. One tine of the tuning fork is magnetically connected to a spoked gearwheel forming in combination therewith an escapement mechanism for the timepiece. The other tine is provided with a permanent magnet extending transversely to the direction of oscillation and which cooperates with a magnetic polar piece to create an isochronous compensator for the tuning fork.

3,638,417
TIMEPIECE WITH AN AUTOMATIC HAND-SET MECHANISM BY STANDARD TIME ANNOUNCEMENT
Yoshiyuki Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Siekosha, Tokyo, Japan
Filed Mar. 5, 1970, Ser. No. 16,807
Claims priority, application Japan, Mar. 17, 1969, 44/19626
Int. Cl. G04c *13/08, 9/02*
U.S. Cl. 58—26 **5 Claims**



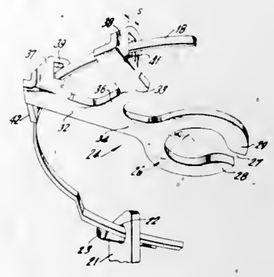
The present invention relates to a timepiece which is automatically corrected by responding to the standard time announcement on radio, television, etc., every hour at "zero" time. In the invention, the timepiece is previously adjusted to be slightly fast. As soon as the radio set receives a standard time signal, a stopper stretches out at a certain point i.e., at the point of 30 seconds) on the dial and the second hand in motion stops against this stopper at the point. On the other hand, the stopper is released by means of an electronic timer at a certain time interval (30 seconds) after said radio set receives a standard time signal and the second hand starts at the correct time.

3,638,418
ALARM WRISTWATCH
Paolo Spadini, 88, Avenue Leopold-Robert, La Chaux-de-Fonds, (Canton of Neuchatel), Switzerland
Filed June 16, 1969, Ser. No. 833,596
Claims priority, application Switzerland, June 17, 1968, 8968/68
Int. Cl. G04c *21/34*
U.S. Cl. 58—57.5 **15 Claims**



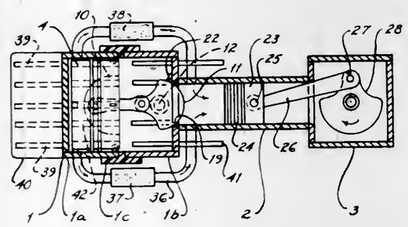
The alarm device of the watch comprises a switch controlled by the watch movement for switching on the alarm at the desired time. This switch is mounted directly on the watch movement coaxially to the watch hands. The remaining elements of the alarm device (buzzer, battery, switch, interrupter, setting mechanism) are all together carried by a supporting member arranged for receiving the watch movement and holding it firmly within the watch case.

3,638,419
HOROLOGICAL HAIRSPRING REGULATOR
Gunther Rudolph Diersbock, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Mar. 22, 1971, Ser. No. 126,741
Int. Cl. G04b *17/14*
U.S. Cl. 58—109 **6 Claims**



A horological instrument includes an oscillator assembly and a hairspring. The hairspring is fastened at one end to the oscillator assembly and is anchored to the frame or bridge at its opposite end. A regulator includes two spaced apart arms having slots which surround the hairspring. The regulator is designed to impart a positive isochronism characteristic to the hairspring in order to permit synchronizing of the balance wheel motor. The frequency of balance oscillation is thus made dependent on amplitude of oscillation.

3,638,420
THERMAL ISOLATION FOR STIRLING CYCLE ENGINE MODULES AND/ MODULAR SYSTEM
Donald A. Kelly, 5806 67th Place, Maspeth, N.Y., and James J. Hladek, 35 Avenue A, New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,876
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **5 Claims**



The Stirling cycle engine module is a conventional single cylinder, twin-piston displacer-type engine, with the addition of a rotary valve/crankdisc which times and isolates the thermal phases of the cycle, so that effective thermal separation is maintained for maximum operating effectiveness.

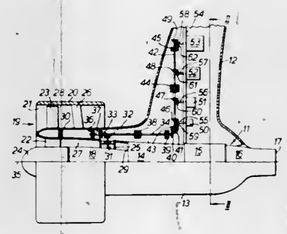
Multiple hot and cold conduction threaded rods are uniformly placed within the respective displacer zones for more effective heat transfer.

A modular system is adopted of ganging individual engine modules into a custom power package, to suit various applications. Each module is secured in a cradle frame with each fly wheel drive gear meshing with pinions on a common drive shaft extension.

An evaporative cooling arrangement is included for more effective heat sinking and reduced cooling surface area.

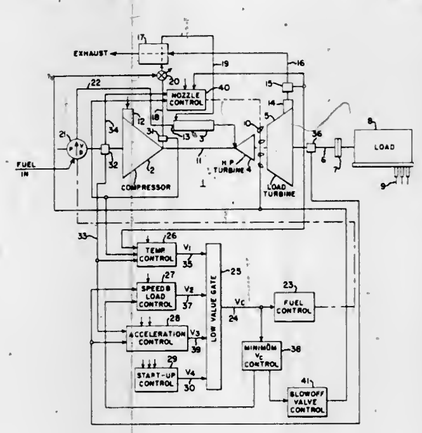
A "V" engine module type is described which features thermal isolation techniques as an alternate engine modular system.

3,638,421
ENGINE INSTALLATIONS
John Alfred Chilman, Painswick, England, assignor to Dowty Rotal Limited, Gloucester, England
Filed Apr. 7, 1970, Ser. No. 26,214
Claims priority, application Great Britain, May 3, 1969, 22,682/69
Int. Cl. F02c *7/20*
U.S. Cl. 60—39.31 **9 Claims**



An engine installation including an engine, a hollow supporting strut connected to the engine and at least one accessory unit mounted within the hollow strut and drivable by power takeoff means from the engine.

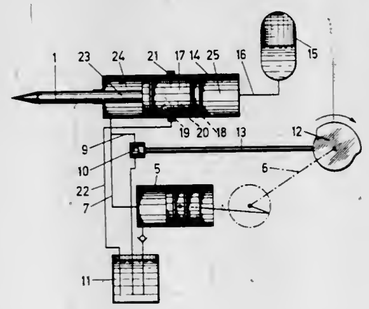
3,638,422
TWO-SHAFT GAS TURBINE CONTROL SYSTEM
Arne Loft, Scotia, and Daniel Johnson, Schenectady, both of N.Y., assignors to General Electric Company
Filed June 26, 1970, Ser. No. 50,286
Int. Cl. F02c *9/08;* **B63h** *3/10*
U.S. Cl. 60—39.28 **6 Claims**



In a two-shaft gas turbine having an adjustable nozzle between the compressor high-pressure turbine and the load turbine, a control system is provided in which a biasing signal is added to the fuel temperature control increasing its base reference so that on an increase in called for speed or load the gas turbine is able to dynamically respond in an improved manner. The steady-state temperature limits are exceeded transiently without damage to the gas turbine until the system returns to its new steady-state condition.

Also provided for the two-shaft gas turbine is an acceleration limiting control whereby the overall gas turbine is allowed to accelerate at the maximum allowable value of either of the two shafts. Further provision is made for a blowoff valve control whereby excess energy from a regenerator is diverted from the turbines so that the speed and load control will remain in command, thus preventing overspeed conditions and/or subsequent shutdown.

3,638,423
PNEUMATIC TOOL
Willem Jan Van Heijst, Delft, Netherlands, assignor to N.V. Industrieele Handelscombinatie, Netherlands
Filed Apr. 22, 1970, Ser. No. 30,833
Claims priority, application Netherlands, Apr. 24, 1969, 06350
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 **3 Claims**



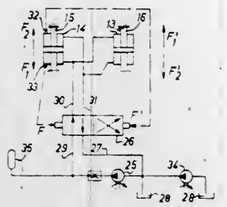
A reciprocatory pneumatic tool has a positive displacement pump for introducing a constant volume of liquid into the tool side of the piston upon each return stroke, and a valve operated in timed sequence with the pump for exhausting liquid upon each return stroke. The air on the opposite side of the piston is confined and of constant quantity, so that when the tool encounters high resistance, the tool will not advance as far on the working stroke and liquid will tend to accumulate on the tool side of the piston and the air will be more greatly compressed to deliver a more powerful working stroke. Conversely, when the tool encounters less resistance, the tool advances farther on the working stroke and more liquid is pumped out than is pumped into the cylinder, so that the compressed air is expanded and delivers a less powerful stroke. The force of impact is thus automatically adjusted in accordance with the resistance encountered. In a modification, liquid can be pumped through the piston one way in the direction of the air, and an outlet port normally covered by the piston can be exposed when the piston moves too far in either direction.

3,638,424
DEVICE FOR DRIVING A HUB IN CONTINUOUS UNIDIRECTIONAL ROTATION BY MEANS OF RECTILINEAR TOOTHED RACKS
Alfred Valantin, Oise, France, assignor to Charbonnages De France, Paris, France
Filed Dec. 1, 1970, Ser. No. 94,083
Int. Cl. F03c *1/06*
U.S. Cl. 60—51 **7 Claims**

A device for driving a hub in continuous rotation in one single direction by means of two rectilinear actuating racks

which have alternating rectilinear movements simultaneously in opposite directions and of two alternately rotating driving members coupled to the hub when they rotate in a given direction.

Each driving member is provided with a curved tooth rack continuously engaging with one of the rectilinear actuating

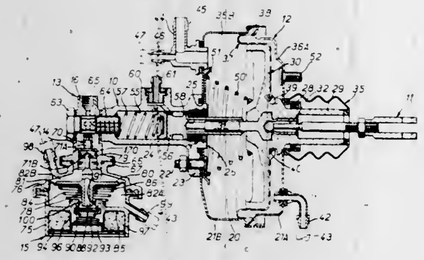


racks s while two rectilinear synchronizing racks are each rigidly fixed for translation to one of the actuating racks and are simultaneously and continuously engaged with a toothed synchronizing pinion having an axis of rotation fixed with respect to the said rectilinear racks.

3,638,425
ASSISTED CONTROL ESPECIALLY FOR AUTOMOBILE VEHICLES

Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Dec. 28, 1970, Ser. No. 101,514
Claims priority, application France, Jan. 5, 1970, 7000121
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 P **7 Claims**

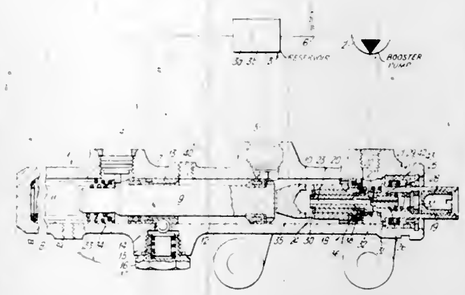


A device for the assisted control of two braking or declutching circuits having independent master cylinders, especially for automobile vehicles, of the kind comprising an operating pedal, at least one master cylinder in which a master piston is adapted to slide under the action of said operating pedal, an assistance cylinder in which slides a piston coupled for movement, at least unidirectionally, to said master piston, means for applying pressures on the two faces of said assistance piston, and a piloting valve which, when at rest, ensures equality of the pressures applied to the two faces of the piston of said assistance cylinder and which, responsive to the movement of said operating pedal, ensures an unbalance between said pressures so as to permit the piston of said assitance cylinder to act on said master piston. In this device, each of said braking circuits is associated with an independent master cylinder arranged parallel to the master cylinder of the other braking circuit, the assistance cylinder being disposed between said brake pedal and said master cylinders, a distribution compensating bar is provided in said assistance cylinder and is interposed between the master pistons of said master cylinders and the piston of said assistance cylinder, said piloting valve being controlled by a pressure equal to the pressure existing in at least one of said braking circuits.

3,638,426
POWER ASSISTED BRAKE

Juan Belart, Walldorf, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,045
Claims priority, application Germany, Feb. 25, 1969, P 19 09 399.3
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 P **3 Claims**

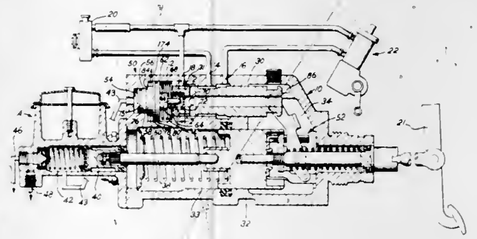


A power assisted brake of the type in which a booster pump supplies brake fluid to a booster chamber between the master cylinder piston and the actuator to supplement the brake pedal effort including an easily removable booster valve subassembly comprising a movable part which is slidable in a control sleeve to provide throttling of the flow from the booster chamber to the system reservoir.

3,638,427
SPOOL VALVE CONTROL FOR A HYDRAULIC POWER BOOST

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation

Filed Apr. 27, 1970, Ser. No. 32,241
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 P **12 Claims**



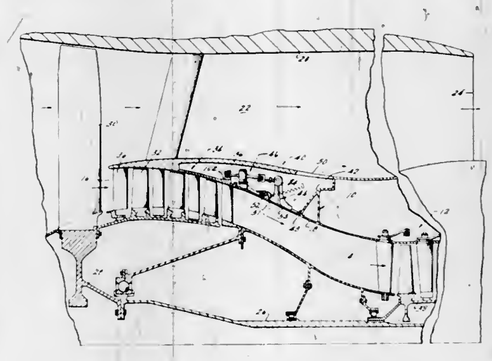
A control for a hydraulic power boost assembly in a braking system. Located within a housing of the boost assembly is a control piston which has a projection extending therefrom for abutting a spool valve in a valve chamber. The spool valve is responsive to movement of a brake pedal and regulates hydraulic fluid pressure to move a power piston which

activates the master cylinder which in turn supplies fluid pressure to the wheel cylinders of a vehicle. The control piston is a stepped diameter piston which has one end thereof exposed to the fluid pressure in the master cylinder and the other end thereof exposed to the fluid pressure acting on the power piston. Upon manual activation by the brake pedal, the fluid pressure from the master cylinder moves the stepped control piston into engagement with the spool valve thereby preventing it from moving until the brake pedal is released. Such an arrangement prevents sudden surges of hydraulic fluid to the power piston in the power chamber which would cause an abrupt stop of the vehicle.

3,638,428
BYPASS VALVE MECHANISM

Gerald E. Shipley, and Robert R. Girard, both of Cincinnati, Ohio, assignors to General Electric Company

Filed May 4, 1970, Ser. No. 34,071
Int. Cl. F02k *3/04*; **F04d** *27/02*
U.S. Cl. 60—226 **8 Claims**



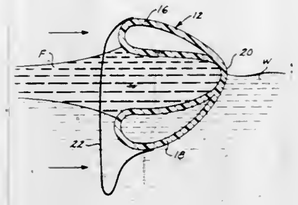
A bypass valve arrangement for a gas turbine engine having two independently rotatable axial flow compressors arranged in serial flow relationship along a common flow passage, the valve arrangement includes a plurality of bypass passages opening to the flow passage intermediate the compressors. Each bypass passage is provided with a hinged valve member which is movable between a closed position, wherein the valve member forms a streamline continuation of the passage outer wall, and a variably open position. Means including an actuator, unison ring and bellcranks are provided for positioning the valve members.

3,638,429
APPARATUS FOR CONFINING MATERIAL FLOATING ON WATER

Theodore E. Sladek, La Mesa; John E. Palmer, Santa Ana, and Michael F. Steele, Costa Mesa, all of Calif., assignors to The Susquehanna Corporation, Fairfax, Va.

Filed May 18, 1970, Ser. No. 38,111
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **8 Claims**

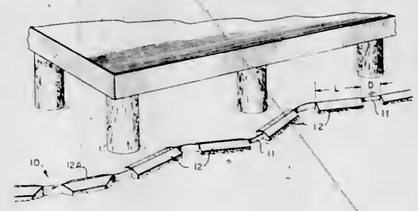
Apparatus for confining material floating on water, comprising a floating barrier having upper and lower pivotally connected sections. The upper section is buoyant and thus seeks the water surface, and the lower section is of neutral buoyancy so as to provide ballast and to remain below the surface of the water. A restraint strap is connected to the upper and lower sections to limit the relative movement therebetween. In operation, when there is an upward movement of the water surface, the upper section pivots upwardly to seek the water surface and the lower section remains below the water surface, thereby preventing the floating material from moving over or under the barrier. The restraint strap limits the movement of the upper section from a substantially horizontal position adjacent the lower section to a substantially vertical position when subjected to wave motion.



3,638,430
HIGH-STRENGTH FIRE-RESISTANT SPILL CONTROL BOOMS

Millard F. Smith, P.O. Box 295, Saugatuck, Conn.

Filed Apr. 14, 1969, Ser. No. 815,663
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **9 Claims**



Rugged high-strength fire-resistant floating booms, each incorporating a continuous flexible fin suspended at and extending below the surface of a body of water, supported by short floats formed of highly fire-resistant material, such as foamed aluminum blocks, spaced apart longitudinally along the upper edge of the fin to permit flexing and accordion folding of the structure and to provide flexible articulating movement with surface waves; all parts of each spill control boom being formed of highly fire-resistant and high-strength materials substantially impervious to impact, bending or snagging between vessels, docks, pilings and similar structures, and optionally incorporating resilient fender materials protecting the hulls of adjacent vessels and barges as well as docks and pilings from impact damage, while retaining spilled petroleum products or other floating materials discharged from a dockside vessel in the immediate vicinity of the spill, and preventing the movement of such spilled material under docks and other structures.

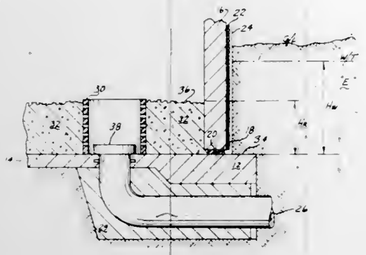
3,638,431
STORAGE TANK

Charles P. Shelander, Dix Hills, N.Y., assignor to Preload Company, Inc., Garden City, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,753
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **3 Claims**

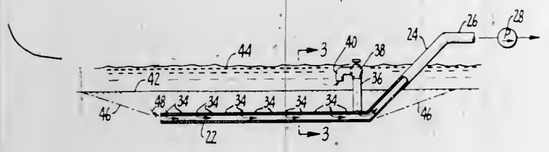
A storage tank for storing liquid is adapted for construction in soil having a high-water table. The tank has sidewalls

and a floor with the upper level of the floor being set below the height of the water table in the soil. To stabilize the tank



and counter the effect of the uplift of the water in the soil, a ballast voided fill is placed within the tank.

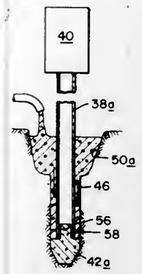
3,638,432
STATIONARY DREDGING APPARATUS
Townsend L. Schoonmaker, 265 Summit Ave., San Rafael, Calif.
Filed Apr. 28, 1969, Ser. No. 819,715
Int. Cl. E02b *3/02*; **E02f** *5/28*
U.S. Cl. 61—2 **10 Claims**



This application discloses apparatus for removing sand and other sedimentary materials from waterways and other submerged locations comprising a generally horizontal perforated pipe extending across the bottom of the waterway and connected to a suction pump above the water level with a high-volume clear water supply conduit entering the perforated conduit near the perforations closest to the pump. The clear water supply may be provided by a suction apparatus or a pressure apparatus, and where the perforations are provided in the bottom of the perforated pipe, the pipe may dig its own channel in the bottom of a waterway.

3,638,433
METHOD AND APPARATUS FOR FORMING STRUCTURES IN THE GROUND
James L. Sherard, 70 Hillcrest Road, Berkeley, Calif.
Filed Mar. 28, 1969, Ser. No. 812,574
Int. Cl. E02d *3/12, 5/34, 5/72*
U.S. Cl. 61—11 **14 Claims**

A method for making an elongated liquid-filled hole extending downwardly in the ground which may be used in the construction of foundation piling, water wells, sand drains, tension anchors and related installations, the method comprising generally the steps of providing a rigid, elongated drive member or mandrel having a drive foot on its lower end; forcing the mandrel drive foot through and displacing the soil to form a space with a cross-sectional area greater than the mandrel stem in the wake of the drive foot; and simultaneously filling this space with a preselected liquid supplied at the ground surface, the liquid thereby flowing downwardly with the mandrel behind its drive foot. For some embodiments of the invention, the liquid is left in the hole formed where it becomes part of the body of the completed structure, such as in cast-in-place concrete piles or sand



drains. The drive foot of the mandrel in all cases is left within the hole and in some instances the mandrel stem is detachable from the drive foot and is removed from the hole formed, either before or after additional liquid is applied, depending on the type of structure being built.

3,638,434
FLEXIBLE STRUCTURAL PLATE PIPES AND THE LIKE
Albert Henri Delaere, Waterloo, Belgium, assignor to Davum, Villeneuve La Garenne, France
Filed Jan. 20, 1970, Ser. No. 4,371
Int. Cl. F16l *9/22*; **E21d** *11/20*
U.S. Cl. 61—16 **8 Claims**



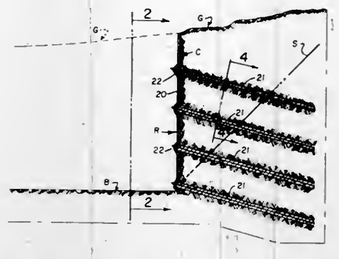
A curved quadrilateral corrugated plate for constructing flexible segmented curved-section structures such as structural plate pipes. The plate comprises on each of its four edge portions assembly apertures which are formed in the flanks of the corrugations. The positions of the apertures on the flanks are such that when two identical plates are assembled by overlapping their edge portions, all the pairs of apertures of the plates are respectively in coaxial superimposed relation to each other.

A flexible curved-section segmented structure comprising an assembly of said corrugated plates is disclosed.

3,638,435
METHOD FOR THE CONSTRUCTION OF A RETAINING WALL
Edward E. Mason, 314 Marine Bldg., Vancouver, III, British Columbia, Canada
Filed Apr. 1, 1970, Ser. No. 24,510
Int. Cl. E02d *5/18, 5/36*
U.S. Cl. 61—39 **7 Claims**

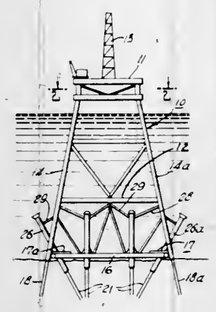
A retaining wall for supporting the embankment of a cut excavation. The wall structure consists of a skin of concrete, an array of rows and columns of dowels or tendons extending from the skin into the cut embankment and rows of wale beams at the juncture of dowels and the face of the skin tying the components together. The retaining wall is built as the cut proceeds. A cut to a selected depth is covered by a skin

of pneumatically applied concrete. The dowels are formed as reinforcing, grout-filled boreholes and the wale beams are



formed as reinforced concrete members pneumatically sprayed against the skin.

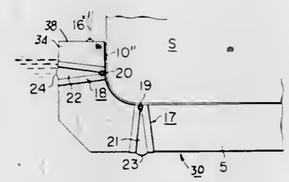
3,638,436
REVERSED SLOPE SKIRT PILE MARINE PLATFORM ANCHORING
Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Oct. 17, 1969, Ser. No. 867,244
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **6 Claims**



The invention relates to a marine platform for supporting a deck or a similar working structure above the water's surface at an offshore location. The platform includes an uprightly positioned support jacket that extends to the sea floor, having anchoring means at the lower end for fixedly positioning the jacket in place. The anchoring means is so arranged with respect to the jacket to firmly locate the latter even though the anchoring substratum be underconsolidated, or characterized by generally poor holding ability. Said anchoring means embodies a series of peripherally located skirt piles that are sloped inwardly at an angle toward the support jacket interior to increase the resistance of the jacket to being displaced or upset from a vertical disposition. Lateral storm loads imposed against the jacket are thus transferred to the foundation strata by axial pile loads only. Safety, stability against overturning and total collapse of the entire marine structure is thereby improved.

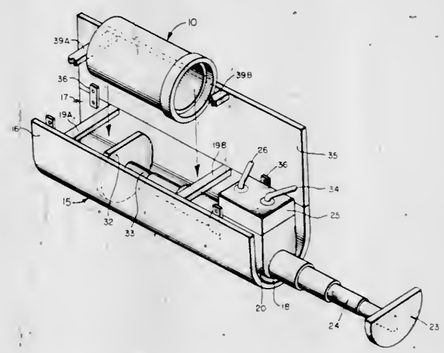
3,638,437
FLOATABLE CASTING FOR WORKING ON HULL STRUCTURES BELOW WATER LEVEL
Shozo Fukuda, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,757
Claims priority, application Japan, Dec. 13, 1968, 43/91445
Int. Cl. B63c *1/02*
U.S. Cl. 61—64 **6 Claims**

A floatable casing which is adapted to be positioned around two hull sections of a vessel to be joined while they are in the water includes two sections or portions which are hinged together centrally and each of which includes a plurality of tanks which are adapted to be filled or emptied of sea water for the purposes of floating them, or positioning them in place around the bottom and sides of a hull section to be welded to another section. Each section includes a vertically elongated tank at each side which is adapted to extend upwardly on each side of the vessel to be joined together. Each section defines a continuous beltlike working space preferably at least as high as a man which is adapted to be enclosed in a watertight manner when the device is applied around the hull sections to be joined in a manner such that the separation plane of the hull sections lies in the working space. The device is first floated to the area of the two hull sections and then is submerged by filling the tanks at each end to cause the sections to pivot to an opened form and permit them to be inserted below the bottom of the vessel sections. The sections are moved together and the tanks of the



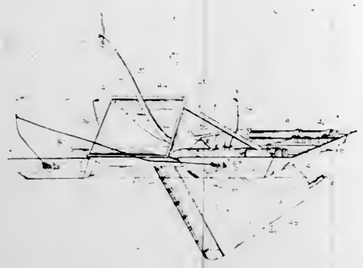
casing structure are then ballasted to give sufficient buoyancy to the device to cause it to bear with resilient water proof portions thereof tightly against the two hull portions which are to be joined together. Thereafter the working space which is aligned with the dividing plane of the two hull sections is freed of sea water by pumping the water out of the space. The side sections are sufficiently high to permit entry of workmen from either side of the vessel and complete movement of the workmen in the passage space defined by the device, to effect the joining of the vessel parts together.

3,638,438
TRENCH-FORMING, PIPELAYING AND TRENCH WALL SUPPORTING MACHINE
Walter F. Kinnucan, Jr., 140 Blackstone, La Grange, Ill.
Filed Mar. 24, 1970, Ser. No. 22,334
Int. Cl. F16l *1/00*; **E21d** *11/00*
U.S. Cl. 61—72.1 **6 Claims**



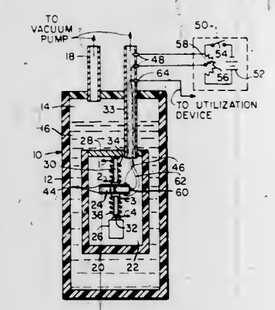
A generally U-shaped body has a pump mounted near one end to displace a digging plate having a semicircular profile. This produces a trench with a semicircular bottom, shaped to receive and support a pipe section of approximately the same radius as the radius of the curved trench bottom.

3,638,439
EMBEDDING CABLELIKE MEMBERS
Otto C. Niederer, Old Lyme, Conn., assignor to Aqua-Tech, Inc., Norwick, Conn.
Filed Mar. 16, 1970, Ser. No. 19,853
Int. Cl. F16l *1/00*; E02f *5/02*
U.S. Cl. 61—72.4 18 Claims



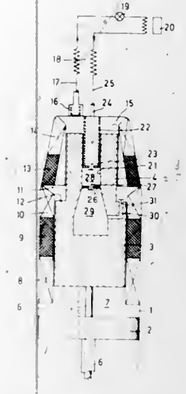
Cable embedment with apparatus comprising a water bed contacting support assembly, an entrance guide having a longitudinal axis, a depressor extending generally along a continuation of the axis rearward of the entrance, a jet assembly extending beneath the depressor, and, connected to the jet assembly, a source of fluid under pressure for creating a jet flow at a flow rate sufficiently high and a pressure sufficiently low to temporarily liquify water bed soil in the path of the cable without substantial permanent soil displacement.

3,638,440
CLOSED-CYCLE ELECTROCALORIC REFRIGERATOR AND METHOD
William N. Lawless, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 20, 1970, Ser. No. 91,445
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 22 Claims



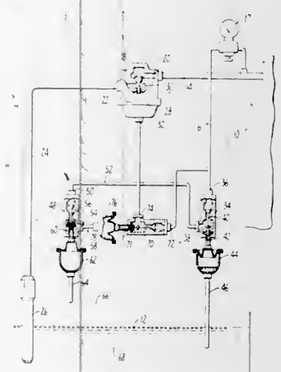
A closed-cycle solid state refrigerator is disclosed that is capable of accurately and efficiently achieving extremely low temperatures. A second stage of the refrigerator comprises an evacuated chamber in which is disposed a solid state refrigerant that is connected by a first thermal valve to a first stage such as a cryostat and by a second thermal valve to a heat generating load that is to be cooled. The refrigerant consists of a polarizable electrocaloric material, the entropy of which can be substantially reduced by changing an electric field set up therein by a pair of electrodes disposed on opposite sides thereof. The refrigerant and the load are cooled by cycling the refrigerator through a given sequence of steps including opening and closing the thermal valves and changing the value of the applied electric field.

3,638,441
DEVICE FOR PRODUCING COLD AT LOW TEMPERATURES
Johan Adriaan Rietdijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 3, 1970, Ser. No. 16,150
Claims priority, application Netherlands, Mar. 6, 1969, 69/03436
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 9 Claims



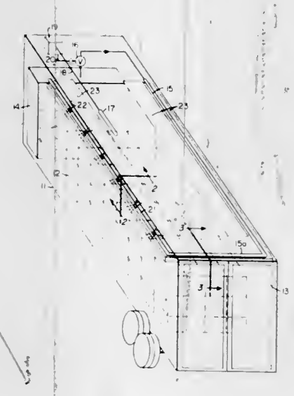
A cold gas refrigerator operable with an expansion device where a fluid medium is further expanded and cooled, and a compressor to raise the pressure of said further expanded medium, the compressor formed of a compression chamber within the axially movable displacer of the refrigerator and a piston fixed to the refrigerator housing and extending into the chamber.

3,638,442
CRYOGENIC LIQUID LEVEL CONTROL
Albert V. Hedstrom, Pinole, Calif., assignor to Almac Cryogenics, Inc., Oakland, Calif.
Filed Aug. 1, 1968, Ser. No. 749,363
Int. Cl. F17c *7/00*
U.S. Cl. 62—49 7 Claims



A pneumatically operated automatic control for the liquid level of cryogenic liquids in which a start valve controls the starting of cryogenic liquid delivery which continues until the level of the cryogenic liquid reaches a temperature-sensitive sensor. A delivery valve for the cryogenic liquid is held open by a body of entrapped gas under pressure which is first pressurized by the start valve. A metering valve may be employed to release the entrapped gas at a predetermined rate to limit the duration of each filling cycle regardless of the height of liquid level reaches after operation of the start valve. A second temperature-responsive means may be employed for operating the start valve to provide automatic incremental control of liquid level between minimum and maximum levels, and the delivery valve may be employed for controlling the main line valve where evaporative cooling in the main line valve has a tendency to condense pressurized gas at the control port of the line valve.

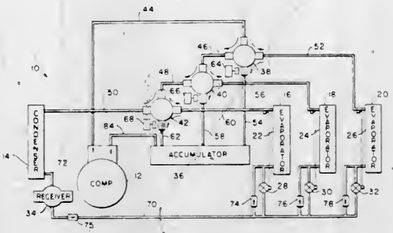
3,638,443
SPRAY REFRIGERATION SYSTEM FOR FREEZE-SENSITIVE PRODUCT
David Paul Maurer, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Original application Nov. 25, 1968, Ser. No. 778,424, now Patent No. 3,525,235. Divided and this application Jan. 22, 1969, Ser. No. 871,187
Int. Cl. F25d *3/10*
U.S. Cl. 62—52 5 Claims



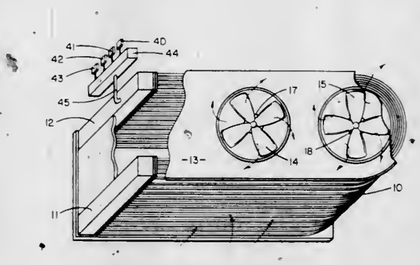
A system for spray refrigeration of freeze-sensitive product to avoid freeze damage and provide more uniform refrigeration, in which a heat-conductive metal extended surface member joins the thermally insulated vaporizer and overhead spray conduits, and spaced nozzles preferably communicate with the spray conduit upper portion to insure only gas-phase refrigerant discharge when liquid flow is terminated.

3,638,444
HOT GAS REFRIGERATION DEFROST STRUCTURE AND METHOD
Herbert S. Lindahl, Danville, Ill., assignor to Gulf & Western Metals Forming Company, Detroit, Mich.
Filed Feb. 12, 1970, Ser. No. 10,933
Int. Cl. F25b *41/00*
U.S. Cl. 62—81 20 Claims

A hot gas refrigeration defrost system is disclosed including a compressor and condenser in series with a plurality of series expansion means and evaporators connected in parallel, and a plurality of diverting valves connected between the evaporators and compressor input in parallel and connected in series between the compressor output and condenser. The diverting valves are operable to change the flow of the hot gas from the compressor to one of the evaporators to defrost the one evaporator and are simultaneously operable to isolate the condenser from the compressor output. A check valve is provided in the high side of the refrigeration system between the condenser and evaporators and a check valve is provided around each of the expansion means whereby hot compressor gas passed through an evaporator to defrost the evaporator is bypassed around the associated expansion means, is prevented from returning to the condenser and is passed through the expansion means associated with the remaining evaporators and back to the compressor. An accumulator is provided between the evaporators and compressor to prevent slugs of liquid refrigerant returning to the compressor at the end of the defrost cycle when the cooling cycle is resumed.



3,638,445
AIR-COOLED CONDENSER APPARATUS
William J. Lavigne, Jr., and Gordon L. Mount, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,973
Int. Cl. F25b *39/04*
U.S. Cl. 62—184 4 Claims

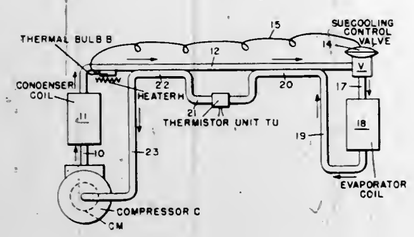


A pair of fans are employed for circulating a flow of cooling air over a condensing coil. The fans are driven by constant speed reversible electric motors. A number of pressure responsive switches are installed in the coil and are operating successively upon rise and fall of pressure in the coil. The switches actuate motor control relays for selectively operating the motors in forward and reverse direction to vary the volume of airflow over the condensing coil according to the pressure therein.

3,638,446
LOW AMBIENT CONTROL OF SUBCOOLING CONTROL VALVE
Robert T. Palmer, 15 Pleasant St., Sharon, Mass.
Filed June 27, 1969, Ser. No. 837,172
Int. Cl. F25b *41/04*
U.S. Cl. 62—202 18 Claims

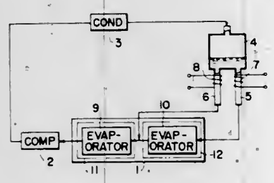
A refrigeration system has a condenser coil cooled by outdoor air, and has a subcooling control valve with its thermal

bulb in heat exchange contact with the liquid line from the condenser coil. The bulb is normally heated by an electric heater, and the valve is adjusted to provide a desired amount of subcooling of the liquid when the heat applied to the bulb



by the electric heater is maximum. At low outdoor temperatures when the condenser pressure decreases so that a conventional subcooling control valve would not open sufficiently, the electric heat is automatically reduced so that the valve opens wider.

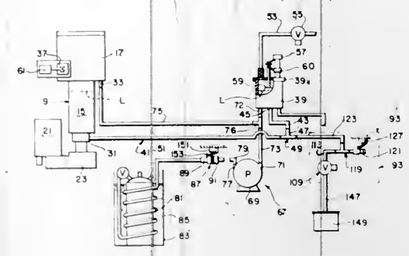
3,638,447
REFRIGERATOR WITH CAPILLARY CONTROL MEANS
Yoritsune Abe, Tochigi-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 19, 1969, Ser. No. 851,215
Claims priority, application Japan, Sept. 27, 1968, 43/69455
Int. Cl. F25b *41/04*
U.S. Cl. 62—222 **2 Claims**



A refrigerator having a refrigerating vessel divided into a plurality of compartments comprising either cold storage compartments or at least one cold storage compartment and one freezing compartment each of which is provided with an evaporator for the refrigeration thereof. Capillary tubes are provided for supplying the refrigerant to the individual evaporators in the compartments, and heating coils are wound around portions of the capillary tubes. An electric current is caused to flow through the heating coils in order to provide individual control of the supply of the quantity of refrigerant.

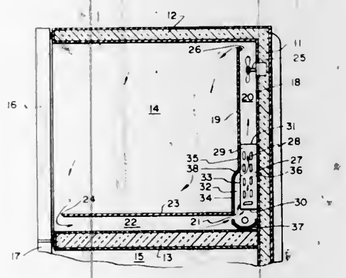
3,638,448
CLEANING SYSTEM FOR THE ICE MAKER OF A VENDOR
Doyle Raymer, High Ridge, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.
Filed May 6, 1970, Ser. No. 35,078
Int. Cl. F25c *1/14*
U.S. Cl. 62—233 **19 Claims**

A cleaning system for the ice maker and appurtenant water lines of a postmix cold drink vendor in which provision is made for connecting the outlet of the water pump of the vendor to the ice maker for circulating water through the ice maker, and having a drain valve for draining the ice maker. A programmer controls the operation of the pump and drain valve for operation through a cleaning cycle involving circu-



lation of water with a cleaning agent therein through the ice maker followed by draining of the ice maker and rinsing with clear water.

3,638,449
REFRIGERATION APPARATUS
Harley Lichtenberger, Evansville, Ind., assignor to Whirlpool Corporation
Filed Apr. 15, 1970, Ser. No. 28,877
Int. Cl. F25d *21/00*
U.S. Cl. 62—272 **6 Claims**

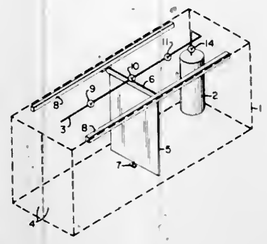


A refrigeration apparatus for chilling a storage chamber comprising air moving means for moving air through an air permeable refrigerant evaporator for chilling air flowing into the chamber and a duct air bypass exteriorly of the evaporator for flowing air around the evaporator in the region of the air entrance thereto and then back into the evaporator prior to the exit thereof in order to provide continuous flow and chilling of air through the exit portion of the evaporator in spite of frost accumulation on the evaporator. A method of chilling air in a storage space comprising directing the air from the space through a subfreezing chilling means having an entrance and an exit and bypassing the air around this entrance and back into the chilling means upon accumulation of frost at the entrance with the result that the chilling of the air is continued during the accumulation of the frost and prior to its eventual removal.

3,638,450
FLEXIBLE PARTITION FOR REFRIGERATED STORAGE CHAMBER
Henry J. Falk, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,633
Int. Cl. F25d *23/08*
U.S. Cl. 62—329 **8 Claims**

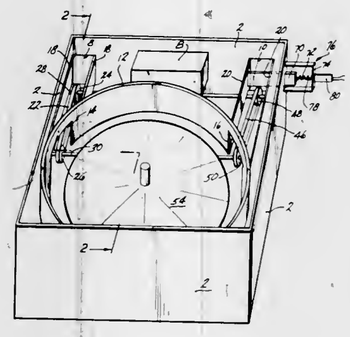
A flexible convection partition for dividing a refrigerated storage chamber into multiple nongastight compartments,

which partition is substantially vertically retractable and is



storable near the ceiling of said refrigerated chamber.

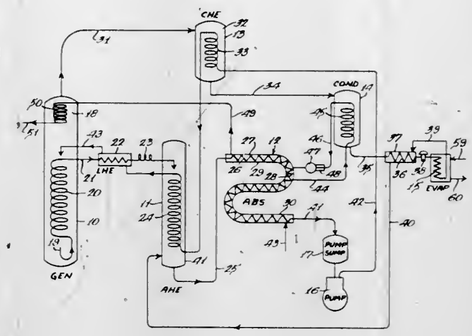
3,638,451
APPARATUS FOR STORING HOLLOW ICE BODIES
William L. Brandt, Lebanon, Mo., assignor to Olin Corporation
Filed July 6, 1970, Ser. No. 52,643
Int. Cl. F25c *5/18*; **B65** *1/06*
U.S. Cl. 62—344 **7 Claims**



Storage of frangible, hollow bodies of ice which are used as targets for shooters is accomplished by feeding the bodies so as to tumble them or change their relative attitudes with respect to each other thus preventing the stored bodies from adhering to each other. A conical supporting plate or floor is mounted in a chamber and constantly rotates therein. An annular side plate is mounted in the chamber, the side plate being spaced apart a predetermined distance from the side edge of the supporting plate, and the side plate is preferably immobilized in the chamber. Bodies are fed onto the supporting plate where they migrate toward its edge due to its conical shape. The combination of the moving supporting plate and immobile sideplate acting upon the bodies causes them to move through the chamber and to tumble as they move.

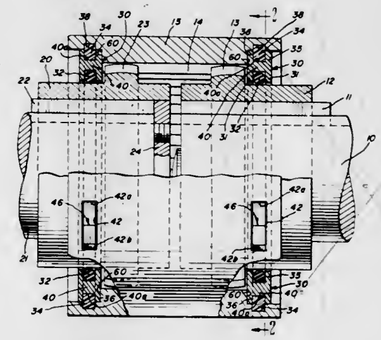
3,638,452
SERIES WATER-COOLING CIRCUIT FOR GAS HEAT PUMP
Roy W. Kruggel, St. Joseph, Mich., assignor to Whirlpool Corporation
Filed Oct. 20, 1969, Ser. No. 867,748
Int. Cl. F25b *15/04*
U.S. Cl. 62—485 **5 Claims**

A heat pump for an absorption refrigeration system which efficiently extracts heat from the system with coolant liquid flowing in series in heat exchange relation, first with the coolest portion of an absorber, then with the condenser, and



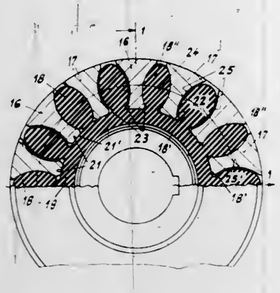
then with the hottest portion of the absorber. In the preferred structure, the coolant is then directed through a reflux condenser in the gaseous refrigerant section of the generator.

3,638,453
RETAINER SEAL FOR GEAR-TYPE FLEXIBLE COUPLINGS
John B. Ehret, 20860 Greenwood Drive, Olympia Fields, Ill.
Filed Sept. 28, 1970, Ser. No. 76,005
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **19 Claims**



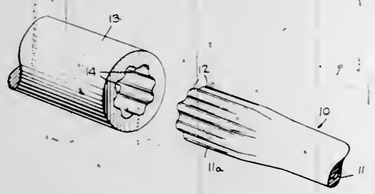
A retainer for securing gear-type coupling sleeves and hubs together against endwise separation. A tapered key of flexible material such as nylon, polyurethane or other plastic which has physical characteristics that permit the key to be pushed endwise, with its smallest end first, through an exterior opening in the coupling sleeve into a complementarily tapered keyway groove between the coupling parts, and to be pulled out of the groove when desired. The key fills the groove, has ends mated, and acts as a key and a seal against loss of lubricant from within the coupling parts.

3,638,454
FLEXIBLE COUPLING
Louis Paul Croset, Fixby, England, assignor to Forjors A.G., Zug, Switzerland
Filed Dec. 12, 1969, Ser. No. 884,540
Claims priority, application Switzerland, Dec. 12, 1968, 18548/68
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 **10 Claims**



A flexible coupling comprises two concentric (coaxial) flanged members with alternate blades which define circumferentially spaced apertures in which are fitted the radial arms of an elastic load transmission member. The load transmission member has a central annular or ring portion to which the radial arms are secured and at the junction of the arms with the central ring, there are axial recesses to maintain contact between the annular ring and the confronting circular inner blade surfaces when the radial arms are deformed during torque transmittance.

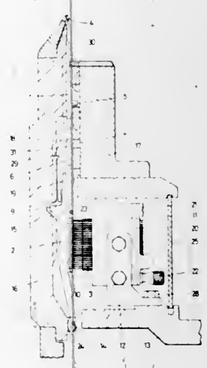
3,638,455
FILAMENT-WOUND RESIN TORSION TUBES WITH MOLDED END SPLINES
Edgar Francois, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.
Filed July 8, 1970, Ser. No. 53,071
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **23 Claims**



A cylindrical, open-ended, filament-wound resin tube capable of use as a torsion bar or spring, a drive shaft, etc., and having in at least one end region thereof a set of integral molded splines designed to provide for a positive connection of the tube to a cooperatively splined adjunct of the structural members to be interconnected, is disclosed. The splines, which are formed without machining by applying radially directed pressure to the respective end region of the tube, before the final curing thereof, to shape the same against an appropriately contoured mold, are contoured in width along at least a part of their length in the direction away from the proximate open tube end, to provide for a gradual stress transfer to the splines over the entire effective lengths thereof. Added support for the splines may be provided by means of a backup sleeve of metal or filament-wound resin secured to the back surface of the splined end region of the tube.

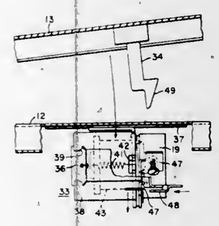
The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,638,456
DEVICE FOR CIRCULAR KNITTING MACHINES
Jose Maria Dalmau Guell, Badalona, Spain, assignor to Jumberca, S.A., Barcelona, Spain
Filed Oct. 21, 1969, Ser. No. 868,046
Claims priority, application Spain, Oct. 31, 1968, 359,788; Oct. 24, 1968, 359,468
U.S. Cl. 66—50 R **3 Claims**



A circular knitting machine pattern mechanism comprising a plurality of jacks each having one only intermediate jack between a selector jack and the needle. Cams operating the jacks have two notches, and a locking lever fits into one of the notches of each cam when in locking position.

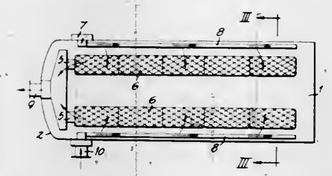
3,638,457
ELECTROMECHANICAL INTERLOCK
Edmund H. Filipak, Lexington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 6, 1968, Ser. No. 735,123
Int. Cl. D06f *37/18, 37/42*
U.S. Cl. 68—12 R **4 Claims**



Interlock for the access door of a clothes washing machine which prevents opening of the door during certain portions of the operating cycle, for example, the spin portion thereof. A catch member carried by the door cooperates with a solenoid-actuated latch bar to lock the door during the spin portion of the cycle. The catch also serves to actuate, in the lid-

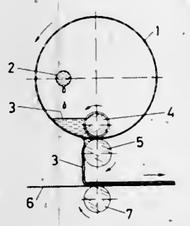
closed position, a microswitch which enables the washer motor to function. A tab member provided as part of the latch bar prevents inadvertent actuation of the microswitch while the door is open and a cam provided on the catch member enables closure of the door, during normal use even though the latch bar has been actuated.

3,638,458
TANK FOR TREATING FIBERS
Pierre Libbrecht, Tournai, Belgium, assignor to Teinturerie des Francs, Tourcoing, France, a part interest
Filed Nov. 20, 1969, Ser. No. 878,395
Claims priority, application Belgium, Nov. 22, 1968, 724,291
Int. Cl. B05c *8/02*
U.S. Cl. 68—189 **1 Claim**



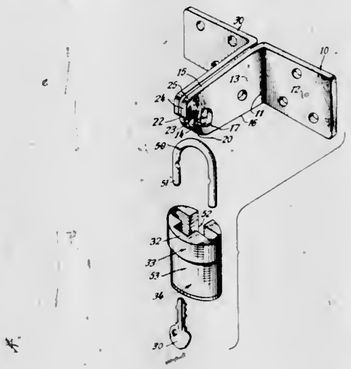
A working tank for treating fibers has distributor means located along the inner wall of said working tank to provide a flow extending substantially at right angles to sleeves consisting of rolled fibers and located inside the tank.

3,638,459
DEVICE FOR APPLYING A LIQUID AGENT TO A FLAT MATERIAL
Peter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria
Filed Dec. 8, 1969, Ser. No. 882,877
Claims priority, application Austria, Dec. 10, 1968, A 12026/68
Int. Cl. B05c *5/00*
U.S. Cl. 68—200 **5 Claims**



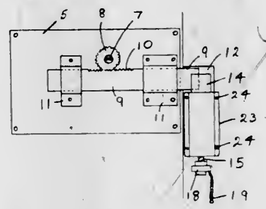
An improved device for applying a liquid agent such as dye in the form of a thin film to and more uniformly across the whole breadth of a flat sheet material, such as textile fabrics, which material is moved relatively past and separated from the applying device. The novel applying device includes a rotary screen cylinder positioned above the sheet material and having an internally disposed pressure or stow squeegee acting on the inner wall thereof in cooperation with an externally disposed doctor or counterpressure squeegee engaging the outer surface thereof and preferably with the squeegees arranged perpendicularly below the axis of the rotary screen. The opposed squeegees may be cylindrical or generally flat or combinations of both and preferably are magnetically attracted to one another through the rotary screen. Another form utilizes a further cylindrical roller disposed parallel to a cylindrical external doctor squeegee and placed below the surface of the sheet material to which the liquid agent is applied. In this latter form, both of said rollers rotatively work together in a common rotative direction, with said doctor squeegee rolling in a counterdirection to a depending flow of the liquid agent issuing from the rotary screen adjacent to the external doctor roller.

3,638,460
LOCKING BARS
Daniel Victor Berry, Bracknell, and Stanley Gerald Thomas Knott, Wadhurst, both of England, assignors to Ingersoll Locks Limited, London, England
Continuation of application Ser. No. 73, Jan. 2, 1970. This application Jan. 5, 1971, Ser. No. 95,257
Claims priority, application Great Britain, Jan. 3, 1969, 521/69
Int. Cl. E05b *67/02, 67/22*
U.S. Cl. 70—52 **7 Claims**



A locking bar adapted to cooperate with a shackle of a padlock, which locking bar comprises a shackle-receiving orifice and an abutment provided on the surface of said bar, the arrangement being such that with the padlock secured to the bar by means of a padlock shackle passing through said orifice, the abutment is adapted to engage with the body and/or shackle of the padlock to restrain substantial rotation of said padlock about the orifice in said bar.

3,638,461
DOOR LOCK
George Watson, 4520 Gothard St., Vancouver 16, British Columbia, Canada
Filed May 11, 1970, Ser. No. 36,006
Claims priority, application Canada, May 14, 1969, 051538
Int. Cl. E05c *15/02*; **E05b** *15/02*
U.S. Cl. 70—92 **4 Claims**



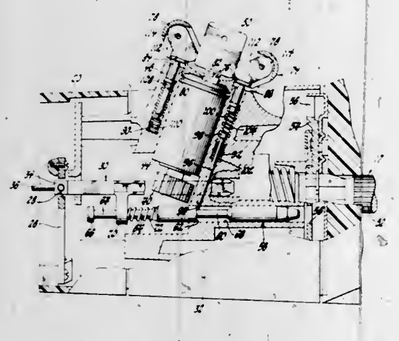
A door lock is provided which is capable of use as a night latch. It includes a pin tumbler cylinder lock so that the key can only be removed when the lock is in a locked position, a

pinion engaging with a rack on a bolt adapted to be retained in a recess in the jamb of the door frame, when the door is closed, by a latching mechanism, lying perpendicular to the bolt. The latching mechanism is provided with a release mechanism whereby the door lock can be easily opened in an emergency by, for example, a child whereby the door can be quickly opened and the child escape through the door opening.

3,638,462
COINCIDENTAL LOCK

Robert L. White, Frankenmuth, and John W. Creed, Jr., Saiginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,622
Int. Cl. B60r *25/02*
U.S. Cl. 70—186 **3 Claims**



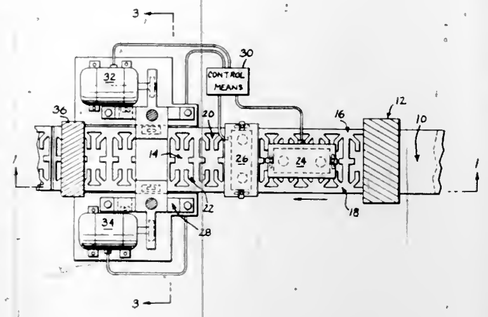
A coincidental lock adapted for vehicle steering column applications includes a steering shaft lock bolt movable between locking and unlocking positions, lock means operable by a key to move the lock bolt between its positions, and inhibitor means operable to prevent locking movement of the lock bolt as long as the key is inserted in the lock means, the inhibitor means including an inhibitor pin, a slipring, a key bezel rotatable with the key, cam means on the key bezel engageable on the slipring, and means connecting the slipring and the inhibitor pin. The key, when inserted in the bezel, displaces the cam means to a position depressing the slipring and the latter, when so depressed, functions to yieldingly urge the inhibitor pin to a position preventing locking movement of the lock bolt once the latter achieves the unlocking position.

3,638,463
METHOD AND APPARATUS FOR MANUFACTURING APERTURED STRIP

Philip L. Cala, Jamestown, N.Y., assignor to Sylvania Electric Products Inc.

Filed May 28, 1970, Ser. No. 41,318
Int. Cl. B21b *37/00;* **B21d** *38/00;* **B26d** *5/20*
U.S. Cl. 72—12 **7 Claims**

An improvement in the process for manufacturing apertured strip can be achieved by stamping a metal strip at a pitch less than desired, advancing the strip to a pitch-sensing station, wherein the growth of the pitch is measured, indenting the carrier strip a sufficient amount to achieve the desired pitch. A subassembly is useful in the process comprising a stamping means for stamping at less than the ultimate desired pitch, a pitch-sensing means that measures the growth of the pitch spaced apart from said stamping die, an indenting means for indenting the carrier strips a sufficient amount to achieve desired pitch said indenting means being

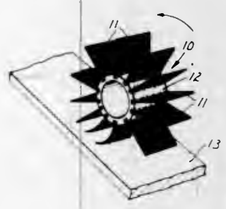


spaced apart from said pitch-sensing means and a cutting means for cutting said strip into predetermined lengths.

3,638,464
SHOT PEENING

Phillip M. Winter, White Bear Lake, and Gary A. Gardner, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 22, 1968, Ser. No. 746,366
Int. Cl. C21d *7/06*
U.S. Cl. 72—53 **8 Claims**



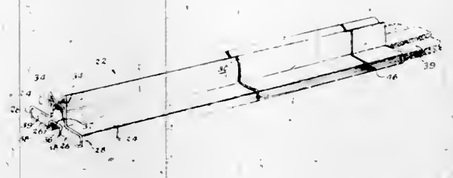
A rotary wheel, in which spheroidal peening particles are affixed to radially extending circumferentially spaced flaps of fibrous sheet material, is used to impart compressive stress to, or aid in shaping, metallic substrates.

3,638,465
METHOD OF FORMING A STRUCTURAL ELEMENT

Robert Paul Lickliter; Earl Abbot, both of Hamburg, and John F. Reeves, Tonawanda, all of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Continuation-in-part of application Ser. No. 777,438, Nov. 20, 1968, now Patent No. 3,537,222, which is a continuation-in-part of application Ser. No. 703,955, Feb. 8, 1968, now Patent No. 3,537,217. This application Mar. 10, 1969, Ser. No. 805,542
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **5 Claims**

A method of forming a structural element comprising feeding a continuous strip of material through a series of forming rolls to progressively bend the elongated strip into a desired transverse configuration. Insulating material is applied to the material as it is being formed. The continuous strip of material is notched to provide longitudinally spaced transverse

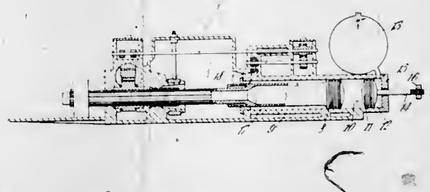


grooves in the strip prior to forming and is severed at the grooves after the strip has been formed into the desired shape.

3,638,466
RECOIL DEVICE FOR A ROTARY FORGING MILL

Jean-Paul Calmes, En Pernessy, Le Mont-sur-Lausanne, Switzerland

Filed June 19, 1969, Ser. No. 834,832
Claims priority, application Germany, June 20, 1968, P 17 52 603.3
Int. Cl. B21j *9/12*
U.S. Cl. 72—208 **6 Claims**

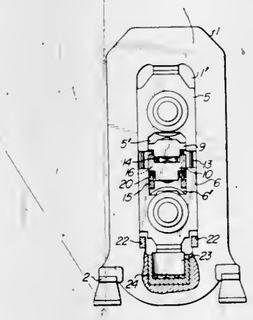


Operating a rotary forging mill with a gas recoil device by compressing the recoil gas to a limit pressure and then keeping the recoil gas at approximately the same pressure as the recoil piston continues its rearward travel.

3,638,467
ROLLING MILL

Nobuhiro Fujino, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,066
Claims priority, application Japan, Oct. 30, 1968, 43/78506
Int. Cl. B21b *31/10*
U.S. Cl. 72—237 **9 Claims**

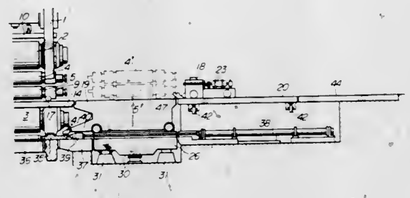


A rolling mill in which a spacer is permanently incorporated in a roll housing to be used for forming a required space between the top and bottom rolls to provide for a roll-changing operation. The spacer is automatically operated incident to the roll-changing operation, to form the space between the top and bottom rolls.

3,638,468
ROLL-CHANGING MEANS FOR FOUR-HIGH ROLLING MILL

Kakichi Fukui, and Shiro Imai, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 30, 1969, Ser. No. 862,331
Claims priority, application Japan, Oct. 2, 1968, 43/71121
Int. Cl. B21b *31/10*
U.S. Cl. 72—238 **17 Claims**

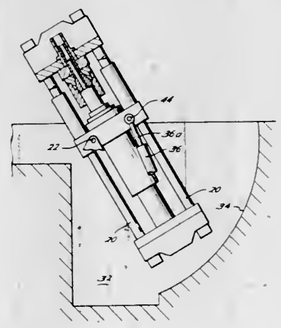


Roll changing means for a four-high rolling mill for automatically and rapidly changing top and bottom working rolls and top and bottom backup rolls without necessitating the use of a crane by combining a working roll changing truck and a backup roll changing truck in a double-sled shifted sidewise manner.

3,638,469
EXTRUSION APPARATUS AND METHOD

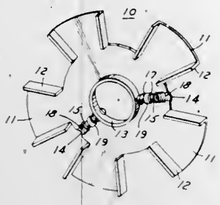
Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jan. 21, 1970, Ser. No. 4,542
Int. Cl. B21c *23/00;* **A23b ; A23l** *3/34*
U.S. Cl. 72—263 **14 Claims**



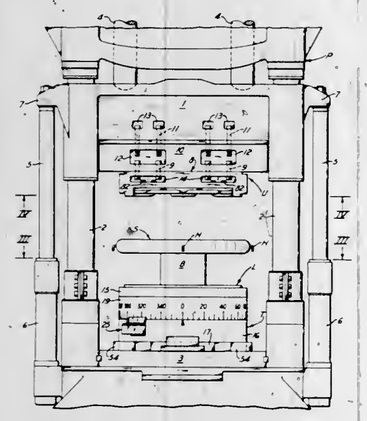
A preform of the material to be extruded is positioned in the die between the platens of a press, when the press is in a vertical position. In this position the sides of the die that require lubrication do not support the preform and the preform can be better aligned with the die. As extrusion begins, the die is rotated to extrude the preform in a horizontal direction where it can be supported conveniently as it leaves the die.

3,638,470
METHOD OF MAKING A FAN
Allen Gilbert Ostrognai, Fort Wayne, Ind., assignor to General Electric Company
Filed June 6, 1969, Ser. No. 831,072
Int. Cl. B21d 43/28; B21c 37/02; B21k 3/04
U.S. Cl. 72—324 3 Claims



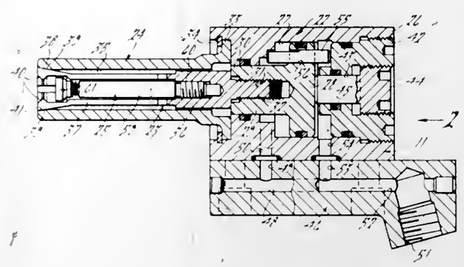
A setscrew aperture is produced on the surface of a sheet metal workpiece by deforming a portion of the workpiece surface, as by lancing and crimping or by bending a pair of spaced, aligned punched tabs, to define a setscrew passageway which may be threaded coincidentally with the deforming step or in a later step.

3,638,471
HEAVY PRESS FORGING APPARATUS AND METHOD
Wayne A. Martin, Wilkins Township, Allegheny, Pa., assignor to United States Steel Corporation
Filed Nov. 28, 1969, Ser. No. 880,628
Int. Cl. B21j 9/02
U.S. Cl. 72—377 21 Claims



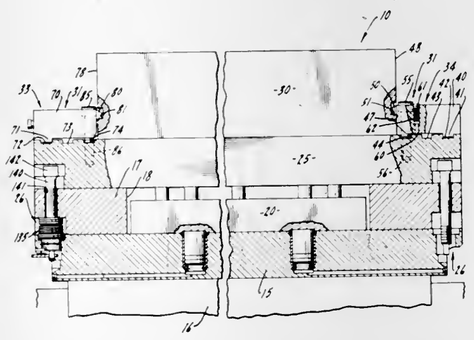
A heavy press forging apparatus and method according to which a contoured lower die in a fixed vertical position is rotated in a horizontal plane relative to a contoured upper die, which is vertically reciprocated to forge a heated blank on the lower die, the contours of the upper and lower dies being formed to the desired shape of opposite sides of a forging. The upper die has a smaller working surface compared to that of the lower die, and the rotating movement of the lower die between vertical forging strokes renders the upper die effective to forge a heated bloom over the entire surface of the lower die.

3,638,472
FASTENER INSTALLATION AND CRIMPING TOOL
John F. Orloff, Mt. Clemens, and William E. Pinkerton, Dearborn Heights, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.
Filed Jan. 30, 1970, Ser. No. 7,113
Int. Cl. B21d 9/05; B23p 11/00
U.S. Cl. 72—391 2 Claims



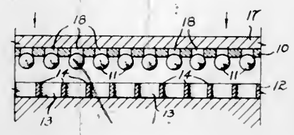
The present invention relates to improvements in crimping tools particularly of the type which are used for the installation of fasteners.

3,638,473
BLOCK AND DIE SHOE CLAMPING ASSEMBLY
Howard J. McElroy, South Holland, Ill., assignor to Wyman-Gordon Company, Worchester, Mass.
Filed Nov. 19, 1969, Ser. No. 878,160
Int. Cl. B21d 37/14
U.S. Cl. 72—448 9 Claims



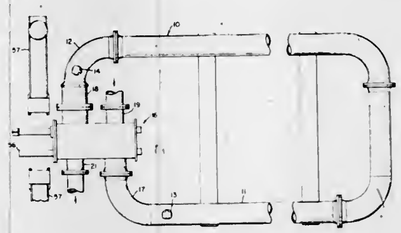
A die-clamping arrangement for a large forging press. The die-clamping arrangement includes a die-clamping assembly and a die shoe clamping assembly, each of which clamps a corresponding die or die shoe in place with great spring force effective through clamping means. To relieve the spring force, the springs are hydraulically loaded and compressed. Threaded adjustment pins or rods can then be turned. In the die-clamping assembly, this backs off the spring support, allowing the spring to expand freely when hydraulic pressure is relieved. In the die shoe clamping assembly, this unkeys the clamping heads.

3,638,474
CONSTRUCTION OF PUNCH DIES
Hedley G. Hannaford, 936 Port Road, Woodville West, South Australia (5011), Australia
Filed Aug. 13, 1969, Ser. No. 849,750
Int. Cl. B21d 37/20
U.S. Cl. 72—476 7 Claims



A punch die for punching depressions in a member for the separation by length of grain or the like, in which the punching face comprises a plurality of balls secured within a substantially common plane and in a fixed spaced relationship by being affixed to a backing plate.

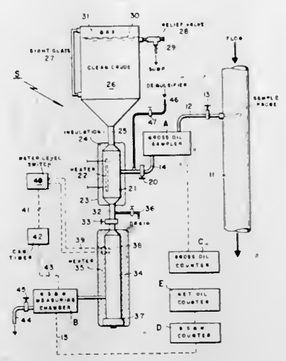
3,638,475
METER-PROVING METHOD AND APPARATUS
Marvin H. Grove, and Lyle R. Van Arsdale, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.
Filed Apr. 9, 1970, Ser. No. 26,834
Int. Cl. G01f 25/00
U.S. Cl. 73—3 12 Claims



Meter-proving method and apparatus for calibrating liquid flow metering devices. It employs a metering pipe or loop through which the flow is diverted. A plug or sphere is launched into the inlet end of the pipe and is propelled through the pipe by the liquid flow during a proving run. A special sphere-launching device is provided to launch the sphere into the inlet end of the metering pipe, and also to retain the sphere after it has cleared the pipe, whereby it is ready for the next prover run. This device is constructed to establish seals between the inlet and outlet ends of the proving pipe during and after a run. Its inner shuttle part is movable between sphere retaining and launching positions, and in both positions line flow occurs directly through the device. The inner shuttle part can be withdrawn for replacement of a sphere. Leak detecting means is associated with the seals of the device to detect any leakage.

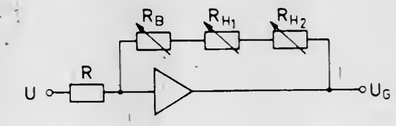
3,638,476
OIL AND SAMPLING SYSTEM
Gerald E. Paterson, 11756 Duart, Houston, Tex., and Daniel D. Compton, 9012 Greiner, Houston, Tex., assignors to Esso Research and Engineering Co.
Filed Dec. 8, 1969, Ser. No. 882,982
Int. Cl. G01n 1/10, 33/26
U.S. Cl. 73—61.1 R 11 Claims

The amount of oil in an oil stream containing water an; other separable contaminants flowing through a pipeline is determined by withdrawing from said pipeline a portion of the oil and separating water and other separable contaminants while registering the total flow of oil, the amount of water and other separable contaminants and the net amount



of oil over a selected period of time. Apparatus for separating water and other separable contaminants from a representative sample of oil and for determining the amount of water and other separable contaminants automatically and registering the several amounts is described.

3,638,477
DEVICE FOR DETERMINING THE CENTER OF GRAVITY AND/OR THE WEIGHT OF AIRPLANES
Hans Brummer, Frankfurt am Main, Germany, assignor to Bevauge A.G., Zug, Switzerland
Filed Feb. 13, 1969, Ser. No. 798,922
Int. Cl. G01m 1/12; G01g 3/14
U.S. Cl. 73—65 15 Claims

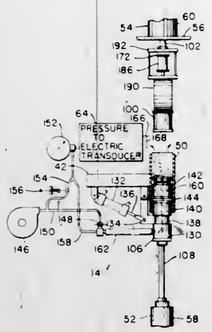


Device for determining the center of gravity and the weight of airplanes with potentiometric pressure indicators by means of which latter the bearing loads being transmitted to the landing gear may be represented as electrical resistance values, comprising an analog computing circuit being charged with a constant input voltage and in the form of a counter coupled operational amplifier equipped with a series resistance and a feedback resistance, wherein the ratio of the feedback resistance to the series resistance is determined by the pressure-indicating potentiometers and whose output voltage serves as indication for the location of the center of gravity and the weight.

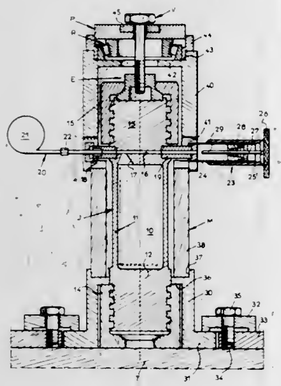
3,638,478
STRUCTURE FOR SAND TESTING
Harry W. Dietert, Kerrville, Tex., and Ralph E. Steinmueller, Detroit, Mich., assignors to Harry W. Dietert Co., Detroit, Mich.
Filed Oct. 6, 1969, Ser. No. 864,078
Int. Cl. G01n 5/02, 3/08
U.S. Cl. 73—73 4 Claims

Automatic structure is disclosed for sequentially testing moisture content and compactability, permeability, and

deformation and strength of a sample of foundry sand. The moisture content and compactability and the deformation and strength of the sand may be tested simultaneously. The sample of foundry sand is positioned in a cylinder and compacted by a pair of opposed plungers movable into and out of the cylinder. One of the pistons includes moisture-sensing probes therein. The compacted sand sample is exactly positioned in the cylinder and air is blown therethrough to determine the permeability of the sand after which the specimen is moved out of the cylinder into contact with one of the pistons and the sand specimen is deformed and broken. The compactability, deformation and strength of the sand sample are determined through the use of linear differential transformers registering movement of the pistons with respect to each other.

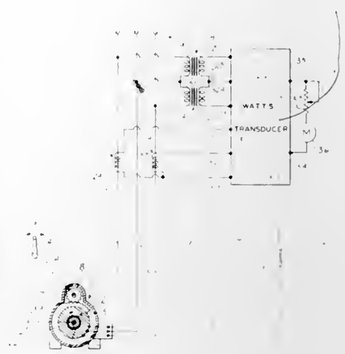


3,638,479
TESTING DEVICE FOR THREADED ASSEMBLING MEANS OR FASTENERS
Jean Boutet, Chatou, France, assignor to Chrysler France, Paris, France
Filed Mar. 30, 1970, Ser. No. 23,837
Claims priority, application France, Apr. 2, 1969, 6910022
Int. Cl. G01n *3/08*
U.S. Cl. 73—88 F **10 Claims**



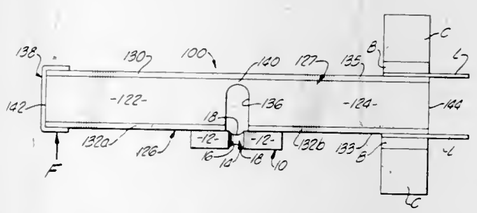
A threaded assembling means to be tested is mounted between a rotatable annular plate and a stationary endpiece respectively carried by one end of a generally tubular fixture and the corresponding end of an extensometer gauge, the opposite ends of which are screwed to a common base member. Said gauge consists of a hollow cylindrical body, the internal space of which is filled with a liquid and communicates with an external capillary tube.

3,638,480
DUAL-STATOR INDUCTION MOTOR TORQUE SENSOR AC DYNAMOMETER
Romeo T. Calud, Beloit, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.
Filed Nov. 21, 1969, Ser. No. 878,860
Int. Cl. G01l *3/00*
U.S. Cl. 73—134 **4 Claims**



A dual-stator induction motor has a rotor and a stator, which has two segments mounted for relative rotatable adjustment. The rotatable stator segment has a gear sector on it which meshes with a pinion of an actuator motor. The stator segments are energized from a three-phase line. Stator current and voltage are inductively sensed by a watts transducer the output of which is connected to an ammeter. The watts transducer originates at its output an electrical signal proportional to primary watts which accurately reflects torque output. An embodiment of the invention is employed as a dynamometer.

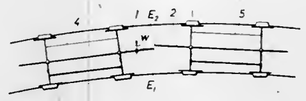
3,638,481
PRESSURE SENSOR
Leslie B. Wilner, Palo Alto, Calif., assignor to Becton Dickinson Electronics Company, Pasadena, Calif.
Filed Mar. 4, 1969, Ser. No. 804,066
Int. Cl. G01l *1/22*; **G01b** *7/16*
U.S. Cl. 73—141 A **11 Claims**



A pressure sensor is provided with a resilient diaphragm responsive to pressure which produces a corresponding actuating force on a unitary piezoresistive semiconductor element which is prestressed to exhibit a conductance that is a

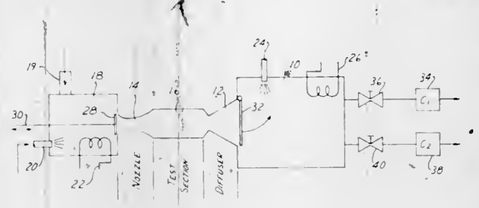
linear function of the actuating force over an extended range of compression forces so that electrical signals produced by the pressure sensor are a linear function of the applied pressure or force.

3,638,482
METHOD AND APPARATUS FOR INDICATING TRACK CONDITIONS
Egon Schubert, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen, Vienna, Austria
Filed May 8, 1969, Ser. No. 822,966
Claims priority, application Austria, June 25, 1968, A 6104/68
Int. Cl. B61k *9/08*
U.S. Cl. 73—146 **8 Claims**



Changes in acceleration caused by local track conditions are directly or indirectly measured as a car moves over a track section. The resultant signals are totalled to produce a signal or parameter characteristic of the track section condition, and this is compared with a comparison signal characteristic of a track condition norm.

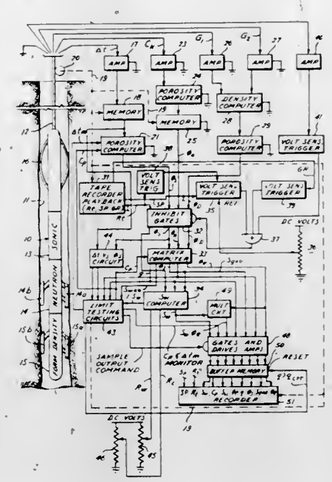
3,638,483
METHOD AND MEANS FOR REDUCING POWER REQUIREMENTS OF SUPERSONIC WIND TUNNELS
Ahmad R. Shouman, 1710 S. Pecos St., Las Cruces, N. Mex.
Filed June 1, 1970, Ser. No. 42,264
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **6 Claims**



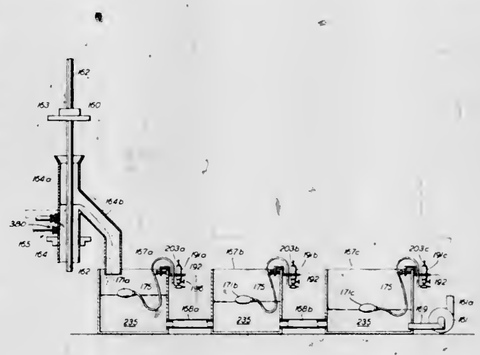
A system for reducing the power requirements of supersonic wind tunnels of the type having variable geometry diffusers which involves especially a pumping system which is capable of creating the pressure ratio across the tunnel necessary for starting conditions in a blow down configuration at small mass flow rate of air and which at the same time is sufficiently variable or flexible that it is capable of pumping the designed mass flow rate of air through the tunnel at a lower pressure ratio when the tunnel achieves a steady-state condition.

3,638,484
METHODS OF PROCESSING WELL LOGGING DATA
Maurice P. Tixier, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Nov. 5, 1968, Ser. No. 773,592
Int. Cl. E21b *47/08*
U.S. Cl. 73—152 **44 Claims**

In accordance with illustrative embodiments of the present invention, techniques for determining certain formation characteristics in shaly sands are disclosed. In one embodiment, porosity data derived from sonic, neutron and formation density logging tools are combined with noninvaded zone resistivity data and various "assumed value" parameters to produce computed indications of shale or clay content, total and effective, nonclay filled porosity, hydrocarbon and water saturation, and formation pressure. In other embodiments, porosity data from only two of the three porosity tools can be combined with resistivity data and "assumed value" parameters to produce the computed indications. In all embodiments, the computed indications are tested for feasibility, and if not feasible, certain ones of the "assumed value" parameters are adjusted to make the computed indication feasible. Additionally, spontaneous potential, natural gamma ray, and borehole diameter data may be used to inhibit the computations under certain borehole and formation conditions.



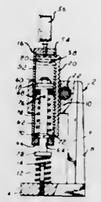
3,638,485
APPARATUS FOR TOTALIZING LIQUID VOLUMES IN A PLURALITY OF CONTAINERS
Walter T. Knauth, 1334 W. Grey, Houston, Tex.
Filed June 5, 1969, Ser. No. 830,760
Int. Cl. E21b *47/10*
U.S. Cl. 73—155 **23 Claims**



The apparatus provides a turning moment that is proportional to the total volume of liquid in the liquid containers

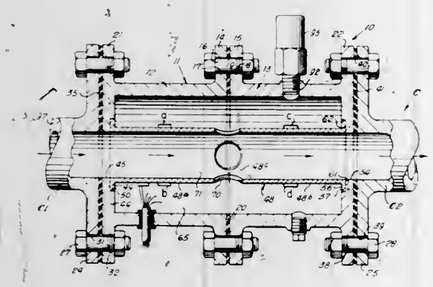
being monitored. This turning moment controls the pressure in a conduit by controlling the rate gas can bleed from the conduit so the pressure in the conduit is proportional to that total volume of the containers.

3,638,486
VALVE SPRING TESTER
James H. Lambert, Dallas, Tex., assignor to Frank L. Kehr, Dallas, Tex.
Filed Apr. 26, 1968, Ser. No. 724,522
Int. Cl. G01l *1/04*
U.S. Cl. 73—161 **3 Claims**



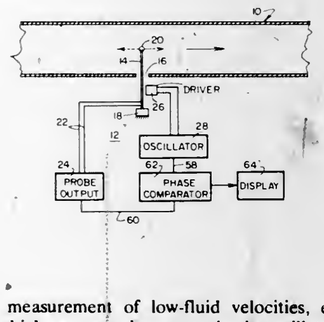
A device for testing the strength of a spring at a predetermined installed height comprising a movable cylinder having a pressure gauge secured thereto and a piston slidably disposed in the cylinder such that force exerted on the piston is registered on the gauge. An adjustable height limiter is secured to the device so that the force exerted by a spring being tested, when compressed to the height set on the limiter, is registered on the gauge.

3,638,487
FLUID CHARACTERISTIC SENSING DEVICE
Seymour H. Raskin, Dallas, Tex., assignor to Sands Measurement Corporation, Dallas, Tex.
Filed Nov. 14, 1969, Ser. No. 876,628
Int. Cl. G01f *1/06*
U.S. Cl. 73—194 E **18 Claims**



A device for sensing a characteristic, such as velocity or viscosity, of a fluid flowing through a flow conductor, the device having a housing connectable to the flow conductor and a tubular strain member having a longitudinal passage of the same internal diameter as the flow conductor disposed within the housing and constituting a section of the flow conductor, the strain member and the housing providing an annular chamber about the strain member, the fluid pressure of a fluid flowing through the flow conductor being communicated to the annular chamber by ports in the strain member or by a bypass conductor, and a plurality of strain gages spaced longitudinally of and bonded to the strain member and connected in a Wheatstone bridge circuit, the resistances of the strain gages at an upstream portion of the strain member varying as tension forces imposed on the upstream portion of the strain member and the resistances of strain gages at a downstream portion of the strain member varying as the compression forces imposed on the downstream portion by fluid flowing therethrough. The Wheatstone bridge provides an output voltage or signal which varies in accordance with the velocity of flow of the fluid through the strain member if the velocity of flow may vary and thus acts as a flow meter, or which varies in accordance with the viscosity of the fluid flowing through the strain member if the velocity of the fluid is constant and its viscosity may vary. The sensing device may also include means for sensing the temperature of the fluid to provide an output signal to a computer to which the output of the Wheatstone bridge is also transmitted so that the computer may provide an output signal, which is indicative of a certain characteristic of the fluid flowing therethrough, to a controlled device, such as a transducer, electrically operable valve, recorder and the like.

3,638,488
FLUID VELOCITY MEASURING DEVICE AND METHOD
Robert S. Meijer, Chicago, Ill., assignor to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Chicago, Ill.
Filed Aug. 17, 1970, Ser. No. 64,312
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 B **8 Claims**



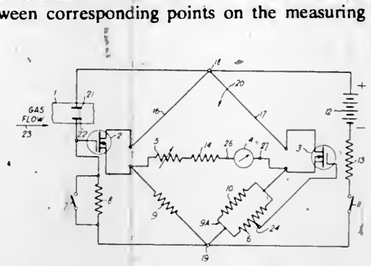
For the measurement of low-fluid velocities, especially velocities which are very low, a probe is oscillated in the stream of fluid in a simple harmonic motion and in a plane that is parallel to the fluid flow. The probe carries a transducer of a type whose output is some function of relative air flow over the transducer. The frequency or amplitude of the oscillation is chosen so that at some point in the cyclic movement, the velocity of the transducer relative to the fluid stream will be zero. The output of the transducer is compared with the mechanical oscillation of the probe to find the angular positions of the probe at which there is zero relative speed and these positions are related to fluid velocity in accordance with the expression

$$V_f = A\omega \cos \theta,$$

where V_f is the velocity of the fluid medium, A is the amplitude of the vibration of the probe, ω is the angular frequency of the vibration and θ is the angular position of the probe when velocity of transducer relative to the fluid medium is zero.

3,638,489
STABLE IONIZATION-TYPE ANEMOMETER HAVING AN OPTIMALLY ADJUSTABLE MEASUREMENT RANGE
Vojtech Buran, Brno; Jaromir Kuba, Troubsko Ubrna; Adolf Uncovsky, and Karel Zouhar, both of Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia
Filed Oct. 13, 1969, Ser. No. 865,901
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 E **4 Claims**

A gas whose velocity is to be measured is passed through an ionization tube, and a first voltage proportional to the resulting ionization current is applied to one of two measurement arms of a bridge. A second voltage equal in magnitude to the first voltage when the velocity of the gas through the tube is zero is applied to a second arm of the bridge to set a zero reference on an ionization current meter connected between corresponding points on the measuring arms. The



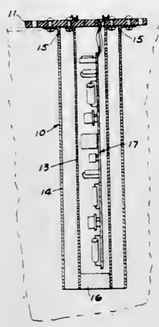
meter is then adjusted for full-scale deflection when the first voltage is reduced to zero to set the upper limit of the measuring range. The ionization current read on the meter during actual gas flow will now be accurately indicative of the flow velocity irrespective of the density and composition of the gas.

3,638,490
FLUID FLOW MEASURING DEVICE
Carl F. Buettner, 9501 Pine Spray Court, Crestwood, Mo.
Filed Jan. 17, 1969, Ser. No. 791,948
Int. Cl. G01f *1/00*
U.S. Cl. 73—212 **21 Claims**

Means for determining the velocity and depth of a flowing body of fluid such as fluid flowing in a water or sewer main, said means including conduit means immersed in the flowing fluid, means forcing gas out through the immersed conduit means into the fluid, and other means responsive to the force or pressure required to force gas into the stream, said last-named means being calibrated to indicate and/or record information from which the depth and/or velocity of the fluid body can be determined.

3,638,491
FUEL-GAUGING DEVICE
Atlee S. Hart, 8776 Woodside Park Drive, Oak Park, Mich.
Filed Dec. 4, 1967, Ser. No. 687,724
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 C **18 Claims**

A fuel-gauging device including concentric tubes that are adapted to be mounted within the fuel tank and circuitry positioned within the inner tube and connected to an external gauge. The circuitry includes an oscillator to which direct current is supplied from a source such as the battery of the aircraft through a zener diode. The output of the oscillator is supplied to a capacitance bridge, one leg of which is formed by the concentric tubes. The output of the capacitance bridge is in turn supplied to an amplifier which includes oppositely disposed transistors, namely, a PNP- and NPN-transistor, connected in a manner to compensate for temperature changes in the transistor characteristics. The output of the amplifier is supplied through a voltage divider to the

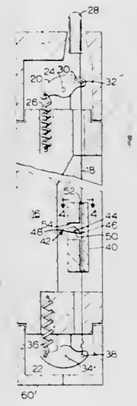


fuel-indicating meter.

Means are provided for metering the flow of fuel into and out of the space between the concentric tubes to provide for a damping action and thereby prevent undue fluttering or erratic action of the fuel-indicating meter.

For use in fuel tanks provided in the wings of airplanes having a substantial dihedral angle, two fuel-gauging sensors are connected in a bridge circuit to operate a single fuel-indicating meter.

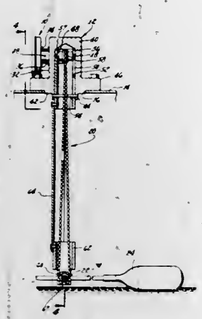
3,638,492
LIQUID LEVEL MEASURING DEVICE
Thomas A. Fling, 524 Post St., San Francisco, Calif., and William F. Fling, 351 South Fuller St., Los Angeles, Calif.
Filed May 7, 1970, Ser. No. 35,333
Int. Cl. G01f *23/06*
U.S. Cl. 73—315 **3 Claims**



A liquid level measuring device is provided with a frame and a float member in near association with a guide. A gripper member is mounted on the float and engages the

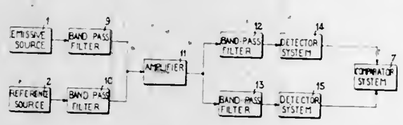
guide. Means connected to the guide selectively disengage the gripper member from the guide.

3,638,493
FLUID LEVEL GAUGE ASSEMBLY
Charles F. Schoepflin, 8321 Crenshaw Blvd., Los Angeles, Calif.
Filed Dec. 28, 1970, Ser. No. 101,450
Int. Cl. G01f *23/12*
U.S. Cl. 73—317 **3 Claims**



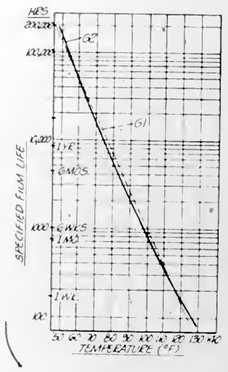
An easy to construct and install gauge assembly for continuously monitoring the level of fluid in a tank in response to movement of a float secured to a lower shaft of the assembly. The assembly comprises a gauge on a support body over a small opening in the top of the tank and responsive to turning of an upper shaft within the support body. Upper and lower brackets connected by a support arm extend from the body within the tank. The upper bracket is releasably secured in a vertical bore in the body adjacent the gauge. The upper and lower brackets include a pair of upper and lower open-ended slots, respectively, for receiving the upper and lower shafts and sprockets for supporting a continuous loop of chain. The pairs of upper and lower slots and hence the upper and lower shafts are angularly displaced at an angle greater than 90° and less than 180° whereby the chain is twisted to remove undesired slack and such that vertically extending portions of the chain are spaced from the support arm from each other.

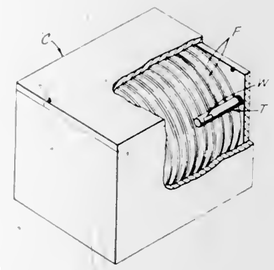
3,638,494
RADIOMETER SYSTEMS
Georges Broussaud, and Claude Tinet, both of Paris, France, assignors to Thomson-CSF
Filed June 3, 1969, Ser. No. 829,995
Claims priority, application France, June 20, 1968, 155733
Int. Cl. G01j *5/00;* **G01r** *23/00*
U.S. Cl. 73—355 R **5 Claims**



A radiometer system comprising two filters, for respectively selecting two adjacent spectrum portions of the signals respectively radiated by the source whose temperature is to be measured and by a reference source, and two other filters for separating said spectrum portions after amplification in a single amplifier. The corresponding energy fractions are then detected and applied to a differential comparator.

3,638,495
METHOD FOR DETECTING AGING OF ARTICLES
Donald R. Sessler, Temple City, Calif., assignor to Dynametric, Inc., Pasadena, Calif.
Filed Aug. 7, 1968, Ser. No. 750,810
Int. Cl. G01k *3/04, 7/24*
U.S. Cl. 73—362 AR **2 Claims**



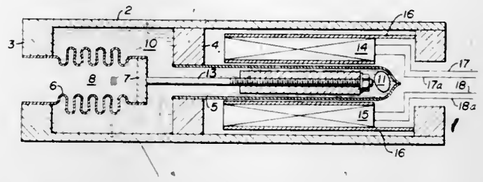


An age indicator which indicates the effect of temperature on the useful life of articles, particularly unused photosensitive sheet material, is exposed to the same temperature conditions as the article itself. The age indicator deposits metal or other material by electrochemical deposition in accordance with Faraday's law. The rate of deposition is made proportional to the known aging rate of the article at various temperatures, so that a correct indication of aging can be obtained even though the article is exposed to unknown, widely variable, temperature conditions. The age indicator is conveniently placed in close proximity to the article, such as inside a container with the article, thereby being exposed to the same unknown, widely variable, temperature conditions as the article itself. Such temperatures occur, for example, in the transportation or storage of articles through or in zones of extremely high temperatures. During the period of exposure, the age indicator will provide an indication of the remaining or consumed useful life of the article.

3,638,496
PRESSURE TRANSDUCER
Earle C. King, Evans City, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 45,995
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **3 Claims**

A pressure transducer has a chamber partitioned into two compartments by a movable wall; one compartment is open

to the fluid pressure to be measured; the other compartment is closed and filled with a liquid and a predetermined amount



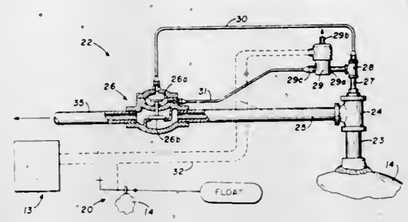
of gas. The movable wall assumes a position that equalizes the pressure in the two compartments and electrical means indicate the position of the movable wall.

3,638,497
PRESSURE AND FORCE TRANSDUCER MEANS
Amotz Frenkel, Lansdale, Pa., assignor to Transducer Systems, Inc., Willow Grove, Pa.
Filed July 16, 1969, Ser. No. 842,100
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **11 Claims**

A transducer means including a tubular housing having a resilient diaphragm mounted therein and extending thereacross adjacent one end of the housing. A mounting block is secure in the other end of the housing. A proximity transducer is mounted on the mounting block and extends into the housing. The proximity transducer has a core which projects from the end of the proximity transducer which is adjacent the diaphragm. A deflection core of metal is secured to the surface of the diaphragm which faces the core of the proximity transducer. A closure member is secured in the one end of the housing and includes means for applying to the diaphragm the pressure or force to be measured.

3,638,498
FLUID STREAM SAMPLING APPARATUS
Jimmie J. Nelms, Luling, Tex., assignor to Mobil Oil Corporation
Filed Mar. 11, 1968, Ser. No. 712,015
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 TC **5 Claims**

An apparatus for obtaining samples from a fluid stream having a gas-eliminating section, a sampling section, and a control section. A probe is positioned in the main conduit through which the stream flows to continuously divert a portion of the stream into a sample chamber. At desired intervals, the control section actuates valve means to isolate fluid



in the sample chamber and to allow gas from the gas eliminator to displace the fluid from the chamber into a sample container.

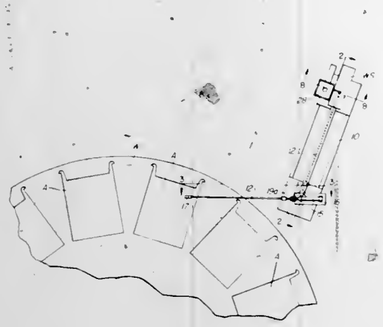
3,638,499
DEVICE FOR SAMPLING FLUID OF HYDRAULIC CIRCUIT
Robert Saint-Andre, 95, av. de Naugeat, 87 Limoges, France
Filed May 13, 1969, Ser. No. 824,172
Claims priority, application France, May 13, 1968, 151567
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 R **9 Claims**

A device for taking samples of fluid from a hydraulic circuit while operating under pressure comprises a hollow body having a chamber which is connected into the circuit through a very small opening which is normally closed by a point at the end of a spring-pressed plunger slidable in the chamber and having near its point lateral channels leading into a central longitudinal channel through which the sample is discharged when the plunger is pulled down against its spring so as to open the opening. A controlled-leakage passage prevents accumulation of solid particles and keeps the device clean so that subsequent samplings are not contaminated.

3,638,500
APPARATUS FOR TAKING SAMPLES OF MOLTEN METAL
Mayo R. Wetzel, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,247
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 **10 Claims**

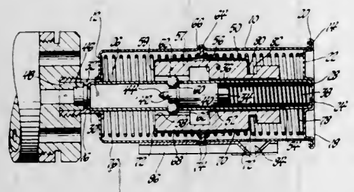
A sample of molten metal is taken by swinging an elongate arm over the molten metal from a safe distance and by lower-

ing a carried sampling tube into the molten metal to extract a sample. The sample-containing tube is raised and swung to a collecting station, where it is released. The sampling arm is pivotally mounted to swing on a vertical axis and has a receiving clamp at its free end for holding an evacuated sampling tube. Means are also provided for lowering the sampling tube into and lifting it from the molten metal. Individual empty sampling tubes are successively inserted into



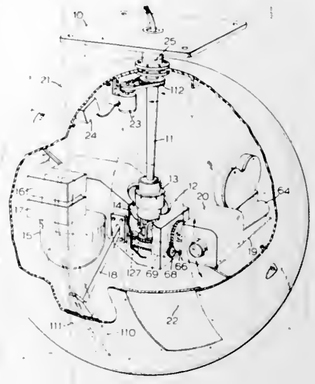
the receiving clamp by injecting mechanism located at a work station a safe distance from the molten metal but within the lateral swing path of the free end of the arm. The tubes are individually supplied to the injecting mechanism, preferably from storage, by dispensing mechanism. The apparatus can be programmed to execute its sampling cycles automatically at desired frequency, and is preferably mounted upon a movable platform for convenient placement with respect to molten metal to be sampled.

3,638,501
SENSOR
Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 27, 1970, Ser. No. 32,090
Int. Cl. G01p *15/04*; H01h *35/14*
U.S. Cl. 73—492 **6 Claims**



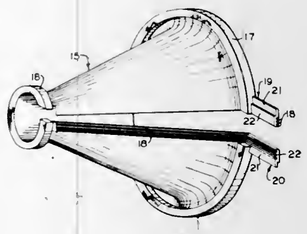
A bidirectional sensor having an operator mounted within a tubular guide and spring biased in one direction. The operator is constrained against movement by the engagement of a plurality of balls with a shoulder thereof. The balls are held against being cammed outwardly through apertures in the guide by an internal annular wall of a seismic mass. Spring seats extending between spaced annular walls of the mass and a common stop on the sensor housing are engageable by opposing threshold springs.

3,638,502
STABILIZED CAMERA MOUNT
John N. Leavitt, West Flamboro, Ontario; Raigo Alas, Hamilton, Ontario, and Edwin C. Dafoe, Dundas, Ontario, all of Canada, assignors to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada
Filed Dec. 1, 1969, Ser. No. 881,244
Int. Cl. G01c *19/30*
U.S. Cl. 74—5.34 **7 Claims**



Vehicle-mounted cameras require stabilization to compensate for the erratic movement of the vehicle. This invention provides a stabilized platform for mounting on a vehicle and supporting a camera. The platform is made slightly pendulous so that it is self-erecting to the local vertical and is stabilized first by means of plurality of gyroscopes which provide an artificially amplified mass; and secondly by the movement of suitable real masses, the whole assembly being arranged within a protective fairing and controllable from a remote operators position.

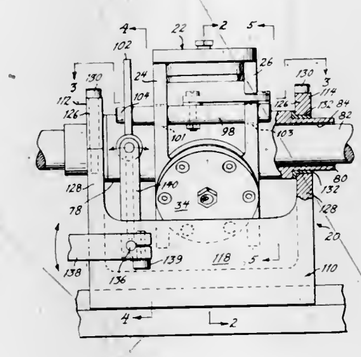
3,638,503
DUST BOOT FOR TREAD BRAKE UNITS
Joseph G. Stipanovic, McKeesport, and Earl E. Allan, Monroeville, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Oct. 3, 1969, Ser. No. 863,550
Int. Cl. F16j *15/50*
U.S. Cl. 74—18 **4 Claims**

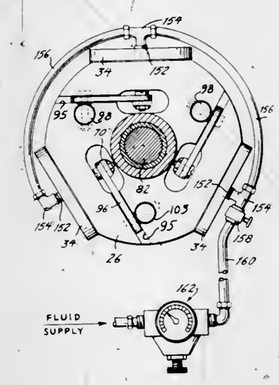


A split- or seam-type cone-shaped replaceable dust boot for surrounding the brake rod of a tread brake assembly wherein the boot is disposed in surrounding relation to the brake rod so as to be readily removable and replaceable without disassembly or removal of the associated brake assembly parts. This seam-type dust boot is installed in surrounding relation to the brake rod while the edges of the split

seam are separated, following which these edges are secured together in a sealed relationship by overlapping and interlocking ribs on the mating edges. If desired, a slide-fastener element may be employed to effectuate the interlocking of the ribs on the mating edges.

3,638,504
VARIABLE PITCH LINEAR ACTUATOR WITH VARIABLE THRUST
Wenzel Zaruba, East Paterson, N.J., assignor to Textol Systems Inc., Meadow Lane, N.J.
Filed Aug. 19, 1969, Ser. No. 851,421
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **10 Claims**

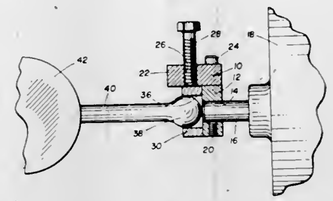




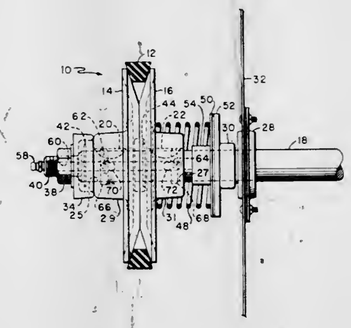
A linear actuator which has a housing with a longitudinally extending cylindrical bore and a plurality of wheels mounted in the housing. A shaft is rotatably and slidably mounted in the bore with the wheels being disposed adjacent the bore and urged against the shaft for controlling the movement of the shaft with respect to the housing. The wheels are urged against the shaft by a pressure controlled diaphragm. Thrust of the linear actuator can therefore be varied from a remote source.

3,638,505
MOTION TRANSFER DEVICE
Stewart W. Wortley, 1814 S. Cheyenne, Tulsa, Okla.
Filed Mar. 11, 1970, Ser. No. 18,453
Int. Cl. F16h *25/08*; G05g *1/00*
U.S. Cl. 74—54 **5 Claims**

An adjustable motion transfer device for transmitting movement from a drive member to a driven member, and particularly for transferring rotational motion to linear motion. The device is particularly designed for transmitting motion from a power source or motor drive shaft to a pump piston and may be quickly and easily adjusted to provide substantially any desired length of linear movement or reciprocal movement for the pump piston. The device may be connected directly to the drive shaft of the motor and carries an adjustable cam drive member for connection with the pump piston for transmitting the linear motion thereto. The cam drive member may be substantially infinitely adjusted to provide substantially any desired drive or speed ratio between the drive shaft and piston.



3,638,506
VARIABLE PULLEY ASSEMBLY
David L. Wolf, and Robert A. Stelzer, both of Coldwater, Ohio, assignors to Avco Corporation, Coldwater, Ohio
Filed Aug. 3, 1970, Ser. No. 60,521
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **6 Claims**

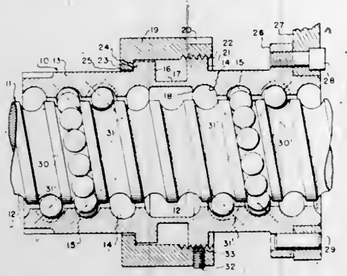


The disclosure illustrates a variable pulley assembly that may only be adjusted in a nonrotating state. When the pulley assembly is tightened in this state one of the sheaves making up the pulley is displaced away from the other sheave against a spring. The spring returns the displaced sheave to its proper position when the pulley assembly rotates.

3,638,507
PRELOADED BALL-BEARING SCREW AND NUT MECHANISM
Harry Orner, 2479 Glenn Canyon Road, Altadena, Calif.
Filed Feb. 26, 1970, Ser. No. 14,372
Int. Cl. F16h *1/18*, *55/18*, *55/02*
U.S. Cl. 74—424.8 **14 Claims**

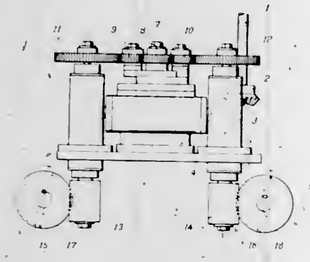
This invention is a device for adjustably preloading a ball bearing screw and nut mechanism. The nut structure is provided with an intermediate reduced area section including an annular member with a coacting screw mechanism adjustably

actuated to axially stress the reduced area section to change the relative position of the helical groove in the nut structure



on each side of the intermediate section, relative to the helical groove of the screw, to remove the end play of the nut to the screw.

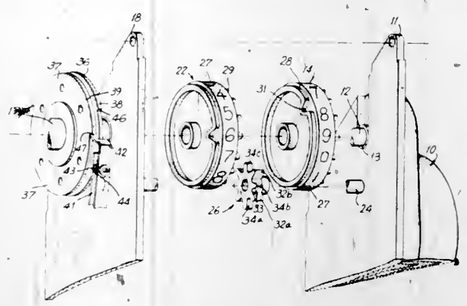
3,638,508
INTERMITTENT DRIVING DEVICE
Tomoyasu Ikeda, 2600, Imaizumicho, Utsunomiya-shi, Tochigi-ken, Japan
Filed Apr. 24, 1970, Ser. No. 31,648
Int. Cl. F16h *1/16*
U.S. Cl. 74—426 **2 Claims**



Intermittent driving structure comprising a worm gear, a worm meshed with the worm gear having teeth, each including an arcuate portion which portions are aligned axially of the worm and which together extend the length of the worm engaged with the worm gear and which arcuate portions have no pitch whereby the teeth over this arcuate portion of the worm extend perpendicular to the axis of rotation of the worm so that on each rotation of the worm the worm gear is driven intermittently.

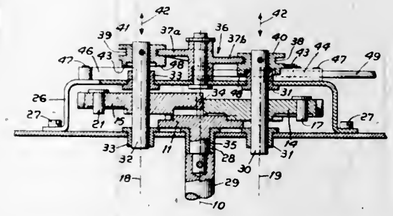
3,638,509
GENEVA DRIVE REPEAT CYCLE TIMER
Charles A. Hunt, 512 Bound Line Road, Wolcott, Conn.; assignor to North American Philips Corp., New York, N.Y.
Filed June 4, 1970, Ser. No. 43,356
Int. Cl. F16h *55/04*; **G01c** *22/00*; **G06c** *7/10*
U.S. Cl. 74—436 **8 Claims**

A timer having means to rotate a shaft on which there is a first geneva wheel that engages the geneva pinion for a limited part of each revolution. The pinion is in mesh with a second wheel and moves that second wheel in short intervals of motion spaced by relatively long intervals of no motion. If the wheels are the same diameter, the second wheel will rotate at the same instantaneous speed as the first wheel during the time the first wheel drives the pinion. The wheel and pinion may be arranged to provide an overall stepdown speed ratio of, for example, 10:1 between the first and second wheels but by arranging the second wheel to move at the same speed as the first wheel and by locating the electrical contact to be actuated by the second wheel, the timing of the actuation of the contact can be controlled much more accurately than by actuating the contact directly from the first



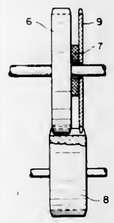
wheel, provided it is acceptable to actuate the contacts during only certain limited intervals of time.

3,638,510
SHIFTING ARRANGEMENT USING A REVERSIBLE GENEVA DRIVE
Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Nov. 26, 1969, Ser. No. 880,256
Int. Cl. F16h *27/06*, *3/40*
U.S. Cl. 74—436 **10 Claims**



An arrangement to shift a carriage carrying characters of printers from one position to another by means of a geneva drive. The same drive is used to reverse the shift of the carriage by means of a control camming means such that only one driving pin can engage the geneva gear at a given time.

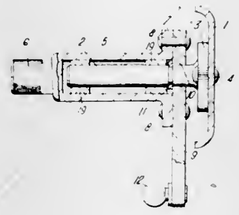
3,638,511
ASSEMBLY UNIT OF TOOTHED ELEMENTS FOR MOTOR VEHICLES
Peter Kirschner, Wolfsburg, Germany, assignor to Volkswagenwerk AKG, Wolfsburg, Germany
Filed Apr. 23, 1970, Ser. No. 43,298
Claims priority, application Germany, Apr. 25, 1969, P 19 21 099.2
Int. Cl. F16h *55/18*; **F16d** *3/18*, *3/54*
U.S. Cl. 74—440 **3 Claims**



An assembly unit of toothed elements for motor vehicles and particularly for passenger cars having cooperating tooth

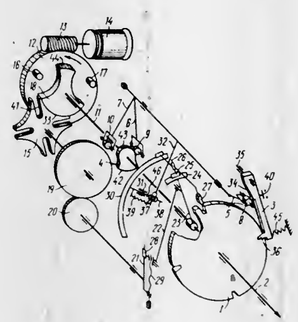
elements and a spring to brace the elements counter to the operational direction of rotation.

3,638,512
WINDSCREEN WIPERS
Derek Norman Stevens, and Peter James Underwood, both of Dunstable, England, assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1970, Ser. No. 71,440
Claims priority, application Great Britain, Sept. 12, 1969, 45,228/69
Int. Cl. B60s *1/34*
U.S. Cl. 74—595 **3 Claims**



In contrast to the customary windscreen wiper actuator mechanisms in which a rotary spindle, journaled in a fixed housing, carries a crank at one end and has a wiper arm fixed on the other end, the present invention provides an arrangement in which a rotary tubular housing is journaled on a fixed spindle secured to a frame member, the housing being a hollow cylinder closed at one end and serrated at the closed end so as to carry the wiper arm and the open end of the cylinder having a radial flange to which the crank is secured.

3,638,513
INDEXING ATTACHMENTS USED IN MACHINES FOR SHARPENING MULTIPOINT TOOLS
Vladimir Romanovich Poludetkin, ulitsa I Smolenskaya, 8, Korpus 4, kv. 93; Iosif Donatovich Menitsky, ulitsa Pravdy, 49, kv. 60, and Jury Abramovich Kaplan, ulitsa Zhestkova, 21, kv. 4, all of Vitebsk, U.S.S.R.
Filed Sept. 4, 1970, Ser. No. 69,611
Claims priority, application U.S.S.R., Oct. 19, 1969, 1374231
Int. Cl. B23b *29/32*
U.S. Cl. 74—820 **1 Claim**

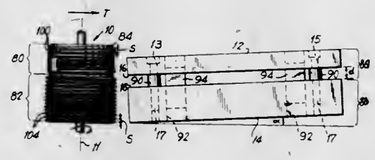


The invention relates to indexing attachments in multipoint tool-sharpening machines.

The indexing attachment according to the invention is characterized in that the index plate is turned through the angle of indexing by means of a driving Geneva motion, which is kinematically connected with the index plate through a four-link crank-and-rocker mechanism.

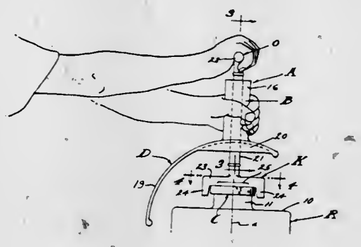
The indexing attachment is intended mainly for use in hob-sharpening machines.

3,638,514
METHOD FOR PRODUCING THREAD ROLL DIES
Mark Richard Carpenter, Oreland, and Albert P. Ludwig, Richboro, both of Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Sept. 4, 1970, Ser. No. 69,873
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 B **11 Claims**



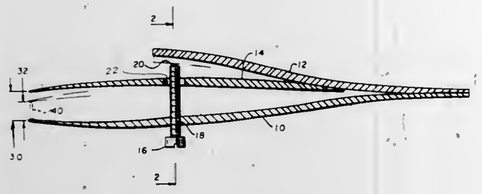
A method for making a thread roll die which is adapted to roll a single continuous pitch thread having two dissimilar thread form sections on a cylindrical bolt blank. A crusher roll having two groups of equally spaced ridges and grooves on its cylindrical surface is pressed against, and rolled over, the top surface of a pair of spaced die blanks. The blanks are positioned at an angle to the path of travel of the roll which is equal to the lead angle of the threads to be rolled and each blank is associated with the only one of the groups of the ridges and grooves on the crusher roll. As the crusher roll is moved over the blanks a complementary pattern of ridges and grooves is formed on each blank by each of the groups. After the rolling operation is completed, the blanks are clamped together along adjacent sides to form a completed unitary thread roll die.

3,638,515
FLUID-DEFLECTING CAP REMOVER
Albert P. Lentz, 9125 Borson St., Downey, and Danny J. Pool, 6512 Rhaeton Ave., Pico Rivera, both of Calif.
Filed Aug. 22, 1969, Ser. No. 852,327
Int. Cl. B67b *7/44*; **B25b** *29/00*
U.S. Cl. 81—3.1 R **4 Claims**



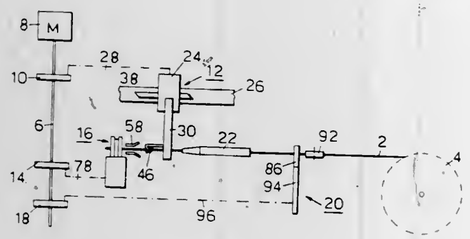
This invention relates to a safety device for the removal of caps from radiators and the like, and provided mechanism for the remote manipulation of a cap for its removal and which incorporates a deflection shield that turns any dangerous flow of fluid in harmless directions, whereby a person can safely open a radiator even when under abnormal pressures that would present dangerous conditions.

3,638,516
TWEEZER WITH ADJUSTABLE PRECISION GRIP
Raymond S. Wondowski, 17 B Hampton Arms, Hightstown, N.J.
Filed Aug. 27, 1970, Ser. No. 67,312
Int. Cl. B25b *9/02*
U.S. Cl. 81—43 7 Claims



There is disclosed a tweezer for gripping small fragile electronic parts and the like with a determined maximum gripping force. One of the jaw ends of the tweezer is the distal end of an intermediate leg member attached at and by its other end to a shortened leg member of the tweezer. The opposing jaw end is the distal end of the other leg member which also carries a stop screw disposed to engage the shortened leg member to adjustably limit the movement of the outer leg members and the jaw ends toward each other.

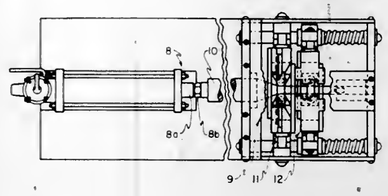
3,638,517
APPARATUS FOR SEVERING AND STRIPPING INSULATED WIRE
Joseph Averbuch, 10 Rechov Dizengoff, Tel Aviv, Israel
Filed Apr. 15, 1970, Ser. No. 28,609
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 4 Claims



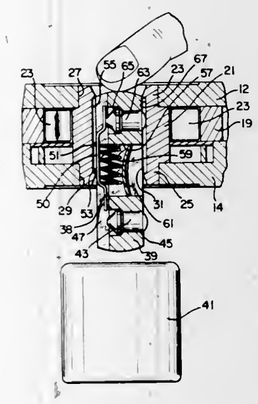
Apparatus for severing and stripping insulated wire comprises a reciprocating advancing device, a cutter for periodically severing a predetermined length of the insulating wire, a slitter for simultaneously slitting insulation at a location adjacent to the cut end, and a back-stepping device for periodically moving the unsevered part of the insulated wire while holding the slit portion of the insulated wire, thereby to strip it from the wire.

3,638,518
STRIPPING MACHINE FOR ELECTRICAL CONDUCTORS
Gilbert R. Parker, Lorain, Ohio, assignor to Lorain Products Corporation
Filed Aug. 14, 1970, Ser. No. 63,733
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 12 Claims

A machine for stripping the insulation from the end of an electrical conductor. An insulated conductor is placed between first and second cutter blades each having a size and shape suitable for use with the size of conductor being stripped and between first and second gripping jaws. Cam followers are attached to each cutter blade and each gripping jaw. A control member having a tapered end and a cylindrical body is longitudinally driven against the followers. The cutter blades are arranged to travel inwardly to sever an end section of the insulation when the followers associated therewith are in moving contact with the tapered end of the control member and to trap the severed end section of the insulation when the followers are in contact with the cylindrical body of the control member. The gripping jaws are arranged to grip the conductor with increasing pressure when the followers associated therewith are in moving contact with the tapered end of the control member. As the latter followers travel along the taper, the gripping jaws and the conductor held therebetween move with the control member away from the cutter blades to pull the main body of the conductor away from the trapped end section of insulation.

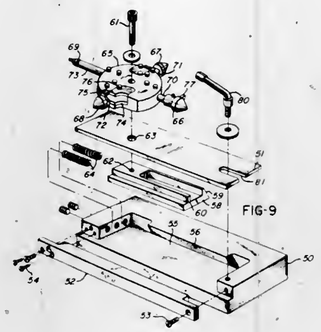


3,638,519
SOCKET RELEASE CONSTRUCTION FOR SOCKET WRENCH
Jerome I. Rebold, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed June 8, 1970, Ser. No. 44,048
Int. Cl. B25b *13/00*; B25g *1/00*
U.S. Cl. 81—177 G 14 Claims



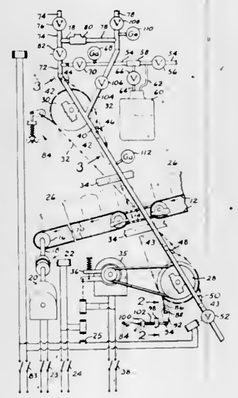
A wrench comprising an elongated housing having a transverse output rotary shaft at one end thereof. An oscillating pneumatic motor is disposed within the housing and is connected by a one-way clutch to the shaft to rotate the latter. A socket shaft extends through the output shaft and is adapted to extend beyond one end or the other of the output shaft and to have a socket mounted thereon. The socket shaft includes novel detent means to retain the socket thereon and to readily release the socket therefrom when desired.

3,638,520
MACHINE TOOL
Jack D. Martin, 5157 Osceola Drive, Dayton, Ohio
Filed Sept. 11, 1969, Ser. No. 857,001
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 3 Claims


FIG. 9

An eccentricity-correcting machine tool comprising a reference surface-following bearing member and a cutter in fixed spacial relationship to said bearing which, in response to the influence of the bearing, will cut in a predetermined pattern in constant relationship to the reference surface regardless of the eccentric or other erratic mounting or movement of the total workpiece of which the reference surface is a part.

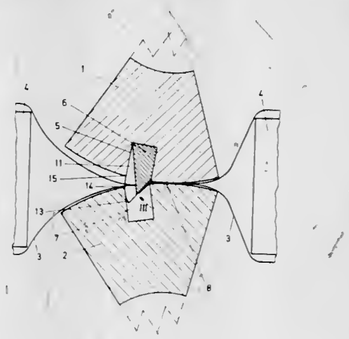
3,638,521
METHOD AND APPARATUS FOR SLICING BREAD AND OTHER BAKERY PRODUCTS
Edward I. Marckx, Portland, and Harvey F. Stines, Gresham, both of Oreg., assignors to Stinemark Corporation, Gresham, Oreg.
Continuation-in-part of application Ser. No. 836,485, June 25, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 681,870, Nov. 9, 1967, now abandoned.
This application Nov. 5, 1970, Ser. No. 87,255
Int. Cl. B26d *7/08*
U.S. Cl. 83—22 8 Claims



Raisin bread, fruit cake, and other sugary bakery products are sliced by applying a film of moisture continuously to a slicing blade and traversing the products and the blade relative to each other in a cutting path. The moisture film may be applied by subjecting the blade to an aqueous mist or by directing against the blade a spray of steam. In the latter case, a sufficient temperature differential is maintained between the blade and steam to cause the steam to condense on the blade, thereby producing the desired moisture film.

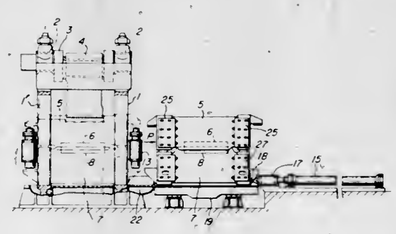
Additionally, a lubricating and cleansing oil film may be applied by subjecting the blade to a mist of an edible oil suspended in a gaseous vehicle therefor.

3,638,522
CUTTING DEVICE WITH ZIGZAG KNIFE
Hans-Ulrich Bolli, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Apr. 30, 1970, Ser. No. 33,229
Claims priority, application Switzerland, May 6, 1969, 6924/69
Int. Cl. B26d *1/40*
U.S. Cl. 83—345 1 Claim



A cutting device comprising two oppositely rotating roller sectors of which one has attached thereto an axially extending knife with a zigzag-shaped cutting edge which during the rotation of the roller sectors enters an axially extending groove in the other roller sector so as to cut effectively through one or more layers of foil-shaped material which is clamped between the circumferences of said roller sectors.

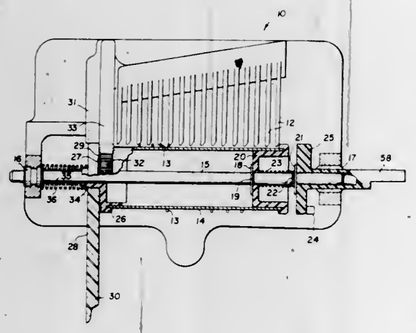
3,638,523
SHEARING MACHINE OF THE INTERCHANGEABLE KNIFE-HOLDER-TYPE
Tetutaro Yasuda, and Tsuneo Nakanishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 13, 1970, Ser. No. 36,757
Claims priority, application Japan, May 14, 1969, 44/36561
Int. Cl. B26d *7/26*
U.S. Cl. 83—700 4 Claims



A shearing machine of the interchangeable knife-holder-type in which the knife holders are able to be laterally

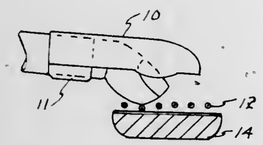
removed together with the movable and stationary knives supported thereon out of the machine. The movable and stationary knife holders are provided with adjusting wedges respectively so that each wedge disposed in the knife holder may independently adjust the clearance at the knife holder slide guide and the clearance between the movable and stationary knives. Thus is obviated the adjusting operation of the above-described clearances after the knife holders are mounted to the machine.

3,638,524
MULTITUNE MUSIC BOX
Paul A. Martin, East Aurora, N.Y., assignor to The Quaker Oats Company
Filed July 17, 1970, Ser. No. 55,849
Int. Cl. G10f *1/06*
U.S. Cl. 84—95 **31 Claims**



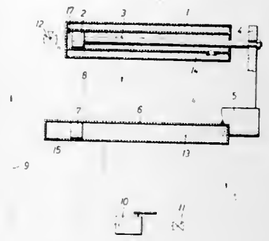
A multitune music box of the drum and comb type has an improved means for axially shifting the drum to play different tunes. The drum is axially movable on a supporting shaft having a stop for limiting the movement of the drum in one axial direction. The shaft is also axially movable, and a cam and follower limits the axial motion of the shaft in the opposite direction. A first spring between the drum and the cam normally urges the drum against the stop, and a second spring urges the drum against the bias of the first spring to press the first spring against the cam and the cam against the follower. Such spring support of the drum prevents any breaking of comb teeth as the drum and its pins are moved axially to shift tunes.

3,638,525
FINGER GLIDE BAR
Edward Sciurba, Lyndhurst, and Sal Chiappone, Bellville, both of N.J., assignors to Ring Products, Newark, N.J.
Filed Sept. 21, 1970, Ser. No. 73,941
Int. Cl. G10b *3/00*
U.S. Cl. 84—319 **4 Claims**



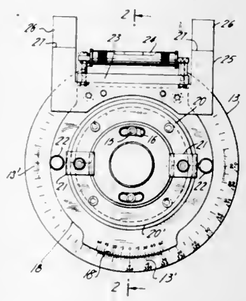
A guitar steel or glide bar for the finger of a guitar player in which the body of the guitar steel or glide bar is long enough on its face to cover the fret board of the guitar and the body is half round in form with a resilient finger fitting ring that may be elastic or a split plastic to permit mounting on the finger but retain a frictional grip, said guitar steel or glide bar formed of a hard material such as metal or plastic to present a frictionless face in contact with the strings of the musical instrument.

3,638,526
GUN BARREL MOVING DEVICE
Hans Klapdohr, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed May 15, 1969, Ser. No. 824,852
Int. Cl. F41f *19/14*
U.S. Cl. 89—43 **1 Claim**



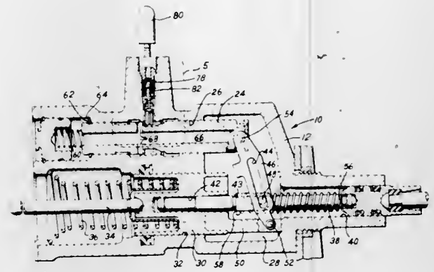
A barrel-moving device for guns which comprises a pneumatic counter-recoil cylinder having a hydraulically operated barrel-moving cylinder. A driver connects operatively the counter-recoil cylinder with a gun barrel. The barrel-moving cylinder is in communication with the counter-recoil cylinder hydraulically and pneumatically and a hydraulic connection conduit is disposed between the barrel-moving cylinder and the counter-recoil cylinder. Finally, a manually operated pump is effective selectively in two feeding directions and is disposed in the connection conduit.

3,638,527
INDEXING FIXTURE
Bruno Weissenberg, Valhalla, N.Y., assignor to Wood Industries, Inc., Plainfield, N.J.
Filed Oct. 20, 1969, Ser. No. 867,521
Int. Cl. B23f *23/08*
U.S. Cl. 90—57 **4 Claims**



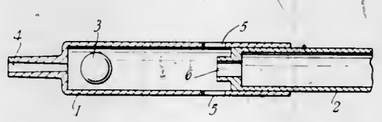
The fixture has a conventional three-clamp scroll chucking device for clamping it at the end of a shaft or a pinion, and a dial attached to this device. A vernier plate with a water level or a similar leveling means is rotatably mounted on the dial plate for precisely indexing the shaft or pinion to which the device is attached, to any required angular setting for machining operations on the shaft or pinion such as milling, drilling, planing and the like operations.

3,638,528
HYDRAULIC BOOST DEVICE WITH AUXILIARY FLUID SUPPLY
Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation
Filed June 17, 1970, Ser. No. 47,066
Int. Cl. F01b *25/00*
U.S. Cl. 91—6 **13 Claims**



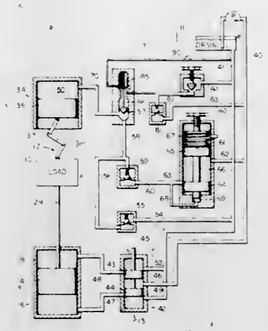
A hydraulic brake booster is disclosed which provides a power assist to the vehicle operator during a brake application. Pressurized hydraulic fluid is supplied to the booster from the vehicle's power steering pump. A charging valve carried in the booster housing permits flow of fluid into an accumulator when the fluid pressure level at the booster inlet exceeds the fluid pressure level in the accumulator. When flow of fluid to the inlet is terminated the charging valve is opened during a brake application to permit flow of fluid from the accumulator to the booster thereby allowing normal operation of the booster for a limited number of brake applications.

3,638,529
APPARATUS FOR GENERATING AN OSCILLATORY MOTION
Donald MacDougal Paterson, London, England, assignor to Paterson Products Limited, London, England
Filed July 23, 1968, Ser. No. 746,891
Claims priority, application Great Britain, July 26, 1967, 34,366/67
Int. Cl. F01l *21/02*; **F15b** *15/22*; **F01l** *15/02*
U.S. Cl. 91—50 **6 Claims**



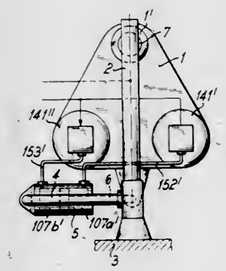
A fluid piston/cylinder mechanism for generating oscillatory motion consists of a cylinder having an inlet port in one end and outlet ports in its walls, uncovered when the piston is remote from that one end, and an outlet port for fluid in the piston, which can be closed to hinder flow of fluid from the cylinder when the piston is adjacent the said one end of the cylinder, but opens when the outlet ports in the walls of the cylinder are uncovered. The closure member for said port may be a freely moveable ball located in the cylinder.

3,638,530
HYDRAULIC COUNTERWEIGHT
John I. Hollister, Tampa, Fla., assignor to Jackson Products Company, Tampa, Fla.
Filed Sept. 4, 1969, Ser. No. 855,263
Int. Cl. F15b *11/08, 13/042*; **F01b** *1/00*
U.S. Cl. 91—172 **6 Claims**



Hydraulic fluid counterbalance system employing a piston and cylinder one of which, being arranged for connection to the load to be counterbalanced, is connected to the pantograph motion translating mechanism of a position controller or transfer machine. The piston and cylinder are part of a hydraulic system employing check and relief valves to insure constant pressure in the cylinder at any piston position. A pilot-operated check valve response rapidly to system pressure loss to preclude flow from the cylinder and continue the counterweight function despite loss of system pressure.

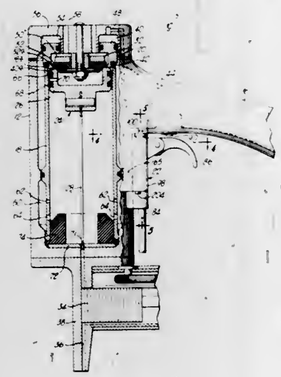
3,638,531
MINING PIT PROP ADJUSTING DEVICE
Hans Rieschel, Miltenberg, and Oskar Jacobi, Blankenstein, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany
Filed Nov. 26, 1969, Ser. No. 880,062
Claims priority, application Germany, Nov. 26, 1968, P 18 10 869.5
Int. Cl. F15b *11/16*
U.S. Cl. 91—189 **7 Claims**

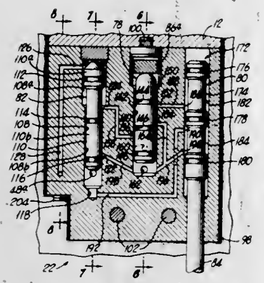


A control system for adjusting the angular disposition of pit props of a traveling mine-roof support system comprising a command pendulum-type switch which has a rockable housing in which is a plumb-bob from which depends a swinging element. When the plumb-bob rocks to a position for measuring the angle of incidence, actuating means is activated for accordingly moving the switch housing and move-

ment of the latter operates to emit signals to switching devices carried by the individual pit props for determining the correct angular disposition thereof in accordance with that of the command switch.

3,638,532
FASTENER DRIVING TOOL
Raymond F. Novak, Schiller Park, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Filed June 30, 1969, Ser. No. 837,696
Int. Cl. F01b *25/04*; **F01l** *21/04, 25/06*
U.S. Cl. 91—220 **19 Claims**

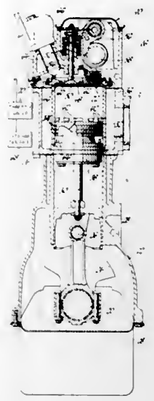




There is provided a fastener driving tool having a control valve arrangement including a trigger valve, a cycling valve and a safety valve. The cycling valve is adapted to repetitively cycle the driving piston of the fastener driving tool through power and return strokes or to provide for single-cycling of the piston through a drive and return stroke in response to the position of the trigger. In addition there is provided an arrangement wherein the operation of the piston is arrested when the bumper cushioning the power stroke of the piston is excessively worn.

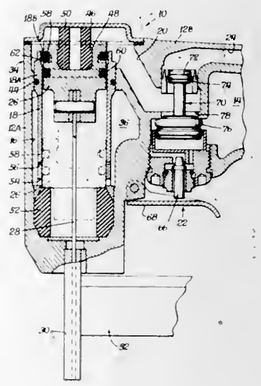
3,638,533
CONDENSABLE VAPOR ENGINE CONSTRUCTION
David Carl Sheridan, Utica; Charles A. Amann, Bloomfield Hills, and James M. Ricketts, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 29, 1970, Ser. No. 32,980
Int. Cl. F01l *25/06, 15/16*
U.S. Cl. 91—241 **2 Claims**

A condensable vapor engine, such as a steam engine, wherein the piston reciprocates between a top dead center position adjacent the closed end of the cylinder and a bottom dead center position in which vapor outlet ports are uncovered and the vapor escapes. The engine includes a valve located in the cylinder head and in communication with the source of vapor, this valve being disposed in a cavity having a



cylindrical caging surface and facing a valve seat. The valve is arranged in spaced relation to the cylindrical surface so as to permit freedom of opening and closing movement and tilt, and the valve and valve seat define cone-to-sphere cooperating surfaces providing full seating engagement despite tilt of the valve body.

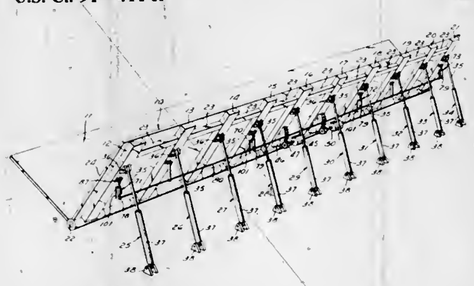
3,638,534
FASTENER DRIVING TOOL WITH IMPROVED PNEUMATIC PISTON RETAINING MEANS
Howard B. Ramspeck, Chicago, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Filed Aug. 18, 1969, Ser. No. 850,809
Int. Cl. F15b *15/22, 15/17, 13/042*
U.S. Cl. 91—399 **20 Claims**



A fastener driving tool includes a cylinder slidably receiving a piston for operating a driver to drive fasteners successively supplied beneath the driver. A main valve selectively supplies compressed air to and exhausts air from above the top of the cylinder to control movement of the piston between normal and displaced positions. The piston is

returned by air supplied from a return air space communicating with the bottom of the cylinder when the top of the cylinder is exhausted. Since this return air leaks to the atmosphere as or after the piston is returned, the uppermost part only of the cylinder is provided with different diameter portions cooperating with two spaced sealing means on the piston which trap or are supplied with compressed air to provide an upwardly directed pneumatic bias for releasably holding the piston in its normal position, this bias being removed as soon as the piston moves downwardly into the uniform diameter portion of the cylinder. The piston biasing air is derived directly from the reservoir air or from a valve carried on the piston.

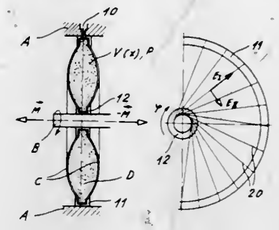
3,638,535
LEVEL MEANS
Robert J. Ponter, Glenshaw, Pa., assignor to Ritter Engineering Company
Filed Oct. 1, 1970, Ser. No. 77,057
Int. Cl. F15b *11/22*
U.S. Cl. 91—411 R **5 Claims**



A system for raising and lowering a platen, which is hinged along one edge, by a plurality of rams which have their piston rods pivoted adjacent to the opposite edge of the platen while maintaining the platen in a substantially level condition even if the platen is unequally loaded. The system includes a master ram and a plurality of slave rams. The master ram is operated in response to a command signal which is modulated by an error correcting feedback signal. The feedback signal is generated by an angular position-sensing potentiometer. The slave rams are operated in response to a signal generated in response to transient fluid pressures developed in the master ram so that the slave rams all attain the same pressure as that present in the master ram. A level-comparing device is provided which compares the actual extended level of at least one slave ram on the one hand with the actual extended level of at least one other slave ram on the other hand. A signal is generated in response to any difference in the level of the slave rams and this signal is employed to correct and modulate the signal generated in response to pressure in the master ram.

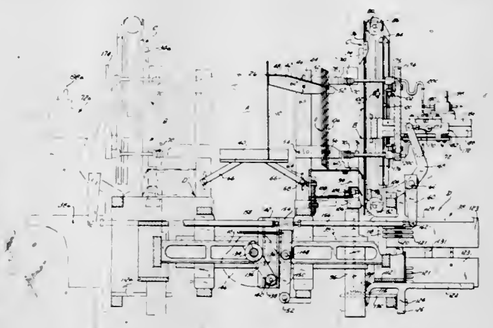
3,638,536
DEVICE WITH A PRESSURIZABLE VARIABLE CAPACITY CHAMBER FOR TRANSFORMING A FLUID PRESSURE INTO A MOTION
Hans Kleinwachter, 105, Kreuzstrasse, 785 Lorrach, and Jens Geerk, Lorrach, both of Germany, assignors to said Kleinwachter, by said Geerk
Filed July 14, 1970, Ser. No. 54,763
Claims priority, application Germany, July 23, 1969, P 19 37 402.8
Int. Cl. F16j *3/00*
U.S. Cl. 92—92 **8 Claims**

A device for the transformation of a fluid pressure, that is to say of the pressure of a liquid, a vapor, or a gas, into a motion capable of performing mechanical work, which comprises a pressurizable variable capacity chamber. This chamber is wholly or partly formed by a bag-shaped



diaphragm which is elastically stretchable in preferably only one direction and attached to at least two rigid relatively movable members.

3,638,537
TRAY FORMING MACHINE
Carl P. Cato, Lynchburg, Va., assignor to Dacam Corporation, Lynchburg, Va.
Filed Apr. 11, 1969, Ser. No. 815,474
Int. Cl. B31b *1/30, 1/46, 17/26*
U.S. Cl. 93—51 R **19 Claims**

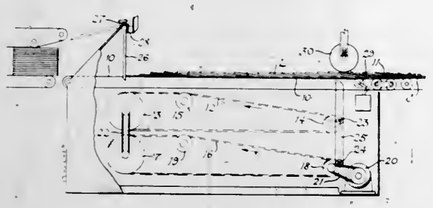


A box forming machine comprises a pair of box forming dies and a double-ended ram which engages and inserts a blank into one die, and on its withdrawing movement from that die inserts a blank into the other die. The blank is initially stored in a substantially vertical stack and moved from that stack to a conveyor during which time a part of the blank is folded. The blank is then positively delivered to the die by means also effective to maintain the folded part of the blank in its folded condition.

3,638,538
CONTAINER MACHINERY
John Anthony Sullivan, Stockport, England, assignor to Henry Simon Limited, Stockport, England
Filed July 2, 1970, Ser. No. 51,919
Claims priority, application Great Britain, July 24, 1969, 37,202/69
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **15 Claims**

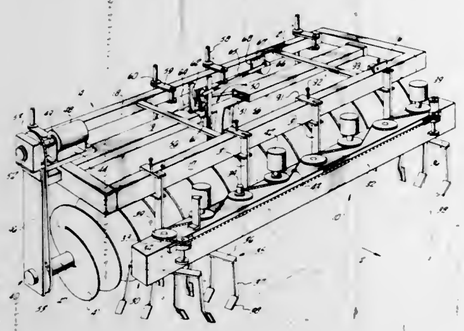
A method of forming a stack of cases from a moving line of cases in shingled configuration comprising the steps of providing means to engage the trailing edge of a case in said

line and progressing said means forwardly at a speed greater than the speed of movement of said line so that successive trailing edges are in turn engaged by said means whereby that



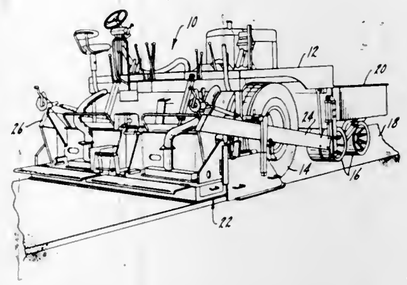
portion of the line forward of said first-mentioned trailing edge is gathered to form a stack of horizontal superimposed cases, and a machine for performing such method.

3,638,539
ROAD BASE BUILDING APPARATUS
William Hurst Lewis, Norwalk, Calif., assignor to Gerald L. Revell, Rolling Hills, Calif.
Filed Nov. 13, 1969, Ser. No. 876,342
Int. Cl. E01c *19/12*
U.S. Cl. 94—44 **30 Claims**



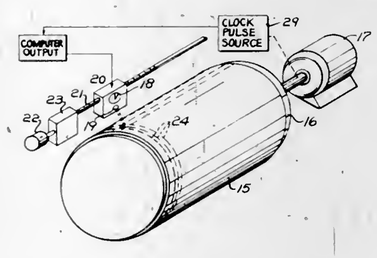
A road base building apparatus is described that is adapted to be attached to the support ring of a conventional road grader. The apparatus includes a mounting frame for supporting a plurality of rotating scarifiers, a shoveling assembly and a split moldboard strikeoff with the two portions thereof oscillating in opposite directions. The scarifiers are adapted to loosen and/or mix the rock base material to a uniform consistency. The shoveling assembly functions to laterally distribute the material while the pair of strikeoff portions operate to effect a leveling and smoothing of the material. A V-plow is also adapted to be attached to the conventional road grader forward of the rotating scarifiers for laterally distributing the earth or base material deposited ahead of the apparatus. The various components of the apparatus are driven by hydraulic motors operatively connected to a hydraulic pump which, in turn, is connected to the engine of the road grader through a power takeoff located at the rear of the grader.

3,638,540
PHOTOCELL GRADE SENSOR AND BUOYANCY SLOPE SENSOR
Loren Williams, Calhoun, Ill., assignor to Blaw-Knox Construction Equipment Company, Inc., Mattoon, Ill.
Filed Dec. 29, 1969, Ser. No. 888,672
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 R **3 Claims**



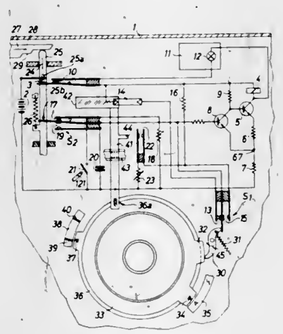
In a paving machine having a tractor and a screed means extending transversely across the rear end and connected to the tractor pulling arms on each side thereof, a control system automatically maintains the grade and slope of the screed as the tractor moves over an irregular surface. A photoelectric sensing means measures vertical deviation from a reference plane, produces a signal that is amplified to actuate an electrically operated valve means actuating a power means that controls the grade of one side of the screed. A second photoelectric sensing means measures the vertical movement of the opposite side relative to the first side, and produces a signal that is amplified to control a second electrically operated valve means that controls a second power means and said opposite side of the screed, thereby maintaining the screed at a constant slope.

3,638,541
METHOD FOR RECORDING JUSTIFIED LINES OF TYPOGRAPHIC CHARACTERS
Dong W. Lew, Briarcliff Manor, N.Y., and Ralph A. Proud, Jr., Sommerset, N.J., assignors to Harris-Intertype Corporation, Cleveland, Ohio, by said Proud
Filed Nov. 20, 1968, Ser. No. 784,987
Int. Cl. B41b *19/08*
U.S. Cl. 95—4.5 **2 Claims**



In the present method a digital computer receives a "raw" test input, which it justifies line by line, and stores in its memory the coded identity and location of each typographic character in the justified text. Also stored in the computer memory are the character-generating data for every typographic character which may appear in the text. The computer is programmed to scan its memory electronically in accordance with the scanning operation of a photographic recorder to provide binary output signals to the recorder which cause the latter to record narrow segments of the typographic characters at the proper locations on the record page.

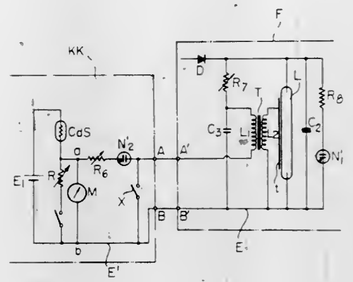
3,638,542
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL
Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 26, 1970, Ser. No. 22,773
Claims priority, application Germany, Mar. 28, 1969, P 19 15 871.5
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **15 Claims**



An exposure control for photographic cameras wherein a ring-shaped setting member can influence the exposure of a photosensitive resistor to scene light as a function of film speed and is also designed to connect in the exposure control circuit a resistor which is variable as a function of the film speed. The influencing of the exposure of photosensitive receiver to scene light accounts for the film speed during exposures in daylight and the variable resistor influences the exposure time when an exposure is made with artificial illumination of the subject or scene.

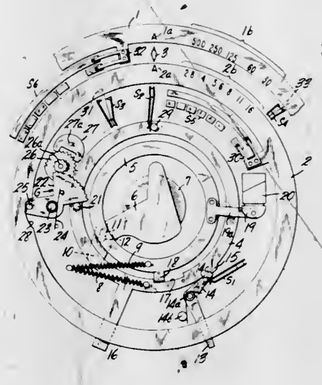
3,638,543
AUTOMATIC EXPOSURE SYSTEM FOR PHOTOGRAPHIC CAMERA
Isao Kondo, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan
Filed July 17, 1970, Ser. No. 55,839
Claims priority, application Japan, Aug. 25, 1969, 44/67068; 44/67069; Oct. 27, 1969, 44/86183; Oct. 28, 1969, 44/102847; Oct. 3, 1969, 44/87785; Nov. 6, 1969, 44/89580; Nov. 20, 1969, 44/93434
Int. Cl. G03b *9/70*
U.S. Cl. 95—10 CE **11 Claims**

An automatic exposure system for use with a camera of the type which includes a light-sensing device and a diaphragm-adjusting mechanism actuated thereby. The exposure system includes a first variable resistor serially connected to the diaphragm-adjusting mechanism but mechanically altered as the focus of the camera is altered. The flash unit with which the camera operates includes a second variable resistor which is adjusted according to the guide number of the flash unit. When the flash unit is coupled to the camera, the first and second variable resistors are placed in series, via the same leads that connect to the synchronization contacts on the camera shutter, with the automatic diaphragm. In this manner, the correct exposure is ensured, since the division of



the camera-to-object distance into the guide number is done automatically by the current-limiting effects of the first and second resistors.

3,638,544
SHUTTER OPERATING MECHANISM
Kiyoshi Kitai, 54, Tomihisa-cho, Shinguku-ku, Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,473
Claims priority, application Japan, Dec. 16, 1968, 43/91849
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT **10 Claims**

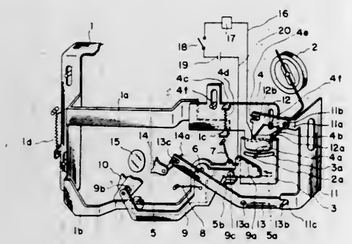


A shutter operating mechanism with an electrically controlled shutter has three modes of operation, namely an automatic mode in which the rate of opening of the shutter is controlled by a governor and the exposure time is controlled by a photocell sensing the brightness of the subject being photographed, a semiautomatic mode in which the aperture is set manually and the exposure time is controlled according to the setting for the aperture and the brightness of the subject, and a nonautomatic mode in which both the aperture and exposure time are set manually. Selection is made by concentric rings for controlling aperture and exposure time respectively. Each of the rings can be set for automatic operation or for a selected value.

3,638,545
DEVICE FOR CONTROLLING A FLASH CIRCUIT IN A CAMERA

Tatsuo Kobayashi, Kaizuka-shi, and Yoshikazu Hasegawa, Osaka-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 30, 1969, Ser. No. 845,951
Claims priority, application Japan, Aug. 7, 1968, 43/56247
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R 3 Claims

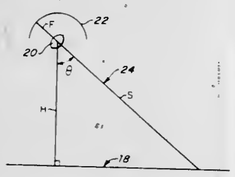


A device for controlling a flash in a camera in accordance with depression of the shutter release mechanism, a desired diaphragm setting, a predetermined range of movement of a distance adjusting mechanism, and a predetermined setting of an exposure control mechanism. The flash circuit is actuated when a first switch contact, moved by rotation of a pointer keeper mechanism in accordance with the setting of the distance adjusting mechanism, contacts a second switch contact, moved by rotation of a control lever rotated in accordance with the setting of the diaphragm control means.

3,638,546
CONSTANT SCALE PANORAMIC CAMERA

Robert Aaron Rubenstein, and John Thaxter Watson, both of Framingham, Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 20, 1970, Ser. No. 4,251
Int. Cl. G03b *37/00*
U.S. Cl. 95—15 10 Claims



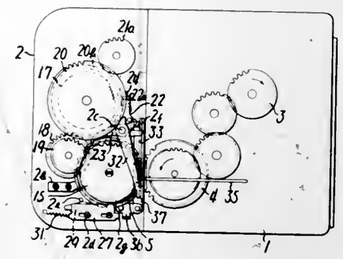
A method and apparatus are disclosed for maintaining a constant image scale in a panoramic camera by modifying the size of the image at the film in a first direction as a function of the scan angle and in a second direction as that function squared of the scan angle.

3,638,547
FILM WINDING APPARATUS IN CAMERA WITH INTERCHANGEABLE FILM BACK

Minoru Sekida, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed Aug. 4, 1969, Ser. No. 847,233
Claims priority, application Japan, Aug. 16, 1968, 43/71043; Oct. 25, 1968, 43/78101; Apr. 23, 1969, 44/31618
Int. Cl. G03b *19/04, 17/42, 1/62*
U.S. Cl. 95—31 R 10 Claims

A film winding apparatus comprises a reciprocal rotation member in a film back which is rotated interrelatedly with a winding knob in a camera body, a ratchet wheel to drive a film winding spool in the film back, a clutch pawl provided on the rotation member and another ratchet wheel which causes the clutch pawl to engage with or disengaged from the ratchet wheel for film winding. With the use of this apparatus

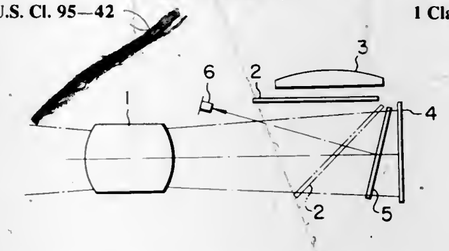


the film back can be mounted on the camera body irrespective of the state of shutter and film before or after effecting exposure. The apparatus also includes means for making multiple exposures.

3,638,548
EXPOSURE METER SYSTEM FOR CAMERAS

Makoto Kurihara, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 21, 1969, Ser. No. 868,123
Claims priority, application Japan, Oct. 29, 1968, 43/78714
Int. Cl. G03l *19/12*
U.S. Cl. 95—42 1 Claim

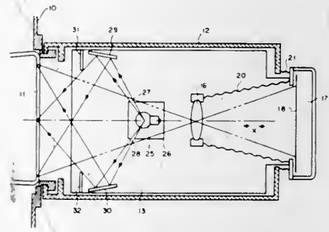


A device for measuring the intensity of exposure light by a photometric element placed so as to receive light reflected by a semitransparent reflecting mirror interposed between a hinged mirror of a single-lens reflex camera and a film plane thereof.

3,638,549
PHOTOGRAPHING SYSTEM FOR OSCILLOSCOPE

Kazu Suzuki, Tokyo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 24, 1970, Ser. No. 13,391
Claims priority, application Japan, July 29, 1969, 44/71400
Int. Cl. G03b *27/54*
U.S. Cl. 95—44 3 Claims



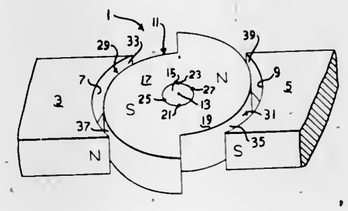
A pair of light beams are projected at an angle onto a display surface such as the display screen of a cathode-ray tube

in order to provide regions of illumination of the display screen which move apart or together as the light beam source and photographic apparatus mounted to move with the light beam source is moved normal to the display surface. When the regions of illumination are just overlapping and the oscilloscope surface is evenly illuminated, the camera is in focus.

3,638,550
ROTARY ELECTROMAGNETIC ACTUATOR

John R. Hereford, 2400 Bluegrass Lane, Florissant, Mo.

Filed Dec. 30, 1966, Ser. No. 606,184
Int. Cl. G03b *9/10*
U.S. Cl. 95—53 E 10 Claims

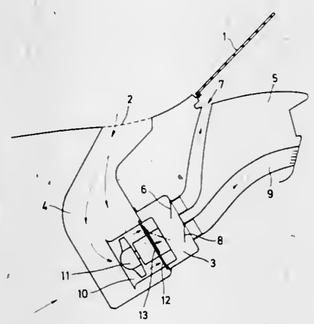


An electromagnetic actuator of the limited travel rotary-type having general servomechanism application. The actuator directly produces torque through the rotation of a rotor in a magnetic field, the rotor being formed of a pair of offset semicircular rotor portions.

3,638,551
FRESH AIR DEVICE FOR POWER VEHICLES

Wolfgang Morchen; Wolf Heinrich Hucho, and Lutz Joachim Janssen, all of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Mar. 31, 1970, Ser. No. 24,070
Claims priority, application Germany, Apr. 1, 1969, P 19 16 638.2
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.16 4 Claims

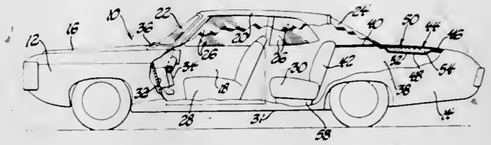


A fresh air ventilator for power vehicles mounted below the windshield of the vehicle having an air inlet channel leading to a fan blower connected through flap valves to two outlet vents, one directed toward the inside of the windshield and the other into the interior of the vehicle.

3,638,552
AUTOMOBILE TRUNK LID WITH VENTILATION MEANS

Richard L. Dettloff, Harper Woods, and Victor Hlavaty, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1970, Ser. No. 70,861
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.18 4 Claims



In preferred form, a trunk compartment deck lid for an automobile having a two-way ventilation system for the passenger compartment including an opening to atmosphere through the exterior of the automobile. The deck lid has spaced interior and exterior panels with an opening to atmosphere in the exterior panel and openings to the trunk compartment in the interior panel. Ribs formed in the interior panel and offset toward the exterior panel provide a curved flow path for separating water flow from airflow and causing the water to collect in a troughlike space near the rear edge of the deck lid. The ribs extend laterally between the troughlike space and the openings in the interior panel to prevent movement of water into the trunk compartment upon deceleration of the automobile.

3,638,553
METHOD OF TREATMENT OF COCOA BUTTER-CONTAINING MOLTEN CHOCOLATE MASS

Walter Kreuter, Essener Str. 104, Hamburg 62, Germany

Filed Sept. 4, 1969, Ser. No. 855,318
Int. Cl. A23g *1/00*
U.S. Cl. 99—23 11 Claims

A method of treatment of substances containing cocoa butter, particularly chocolates, which is suitable for coating machines, wherein the material containing cocoa butter is first heated slightly above the highest melting point of cocoa butter, then subjected to a two stage cooling step whereby the material in first cooled to a range approximately 30° to 31° C. by a cooling medium having a temperature only slightly lower than this range and secondly cooling the mass to 28° to 29° C. by a cooling medium having a temperature only slightly lower than this range, and then heating the material to 33° to 34° C. and subjecting to further processing (i.e. coating). The material after this treatment is in a thermostable condition, has a substantially constant viscosity and may be stored indefinitely under stirring and when maintaining the temperature of the temperature of the material.

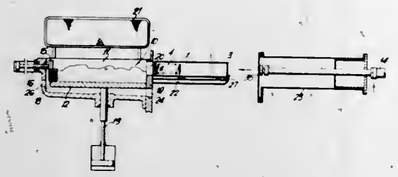
3,638,554
PRODUCTION OF COOKED MEATS

Harry Briggs Ackroyd, Bletchley, England, assignor to Scot Meat Products Limited, Bletchley, England

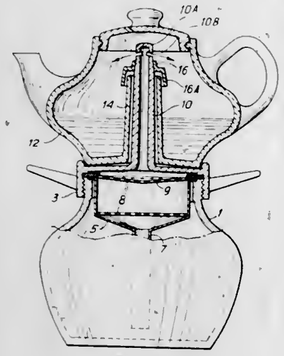
Filed Feb. 13, 1970, Ser. No. 11,267
Claims priority, application Great Britain, Feb. 13, 1969, 7,880/69
Int. Cl. A22c *18/00*; A23b *1/00*
U.S. Cl. 99—107 7 Claims

Cooked meat in units having uniform cross section and quality is prepared by arranging meat in a trough, evacuating the trough and compressing the meat therein into a unit of the desired cross section, sliding the unit of meat bodily into a container of the desired cross section while maintaining

vacuum and compression, and cooling and cooling the meat while maintaining compression thereon. A container is used comprising a tubular body containing two slidable plugs between which the meat is confined, and a spring maintaining pressure on the meat, and a meat press to fill the containers comprising an evacuable trough in which the meat is arranged, and oppositely acting rams of unequal force operative to compress the meat in the trough and slide it bodily from the trough into the container.

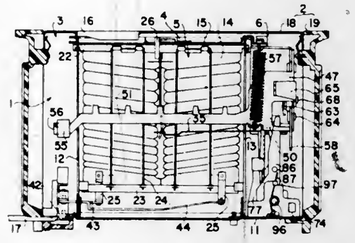


3,638,555
DEVICE FOR PRODUCING AN INFUSED LIQUID, PARTICULARLY COFFEE
Luciano Mancioli, Altopascio, Lucca, Italy
Filed Dec. 29, 1969, Ser. No. 888,675
Claims priority, application Italy, Dec. 30, 1968, 4872 A/68
Int. Cl. A47j *31/057*
U.S. Cl. 99—303 **4 Claims**



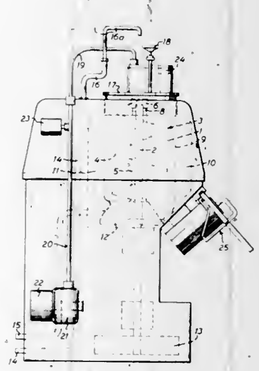
A device for producing an infused liquid, particularly coffee, comprises a sealed vessel in which the liquid is heated. An outlet for the heated liquid from the vessel comprises a first tube extending upwardly from the bottom portion of the vessel into a cup which contains an infusible substance, for example ground coffee, and a second tube extending upwardly from the container and having apertures through which infused liquid is discharged. The tube extends through a tubular inlet of a container removably supported on the vessel, infused liquid discharged from the tube being collected in the container. In order to prevent penetration of liquid between the tube and the inlet, the upper end portion of the tube extends through a passage in a sealing element which acts as a shield to prevent such penetration, both the upper end portion of the tube and the passage in the element being tapered. The element which has a depending skirt surrounding the end portion of the inlet, is removed by the end of the inlet from the tube upon removal of the container from the vessel, and is replaced upon the tube upon replacement of the container.

3,638,556
TOASTER
Hosei Sato, Nishinomiya; Katsuyuki Natsumeda, Shijonawate, and Kaichi Murakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Aug. 28, 1970, Ser. No. 67,960
Claims priority, application Japan, Sept. 2, 1969, 44/70861
Int. Cl. A47j *37/08*
U.S. Cl. 99—329 **6 Claims**



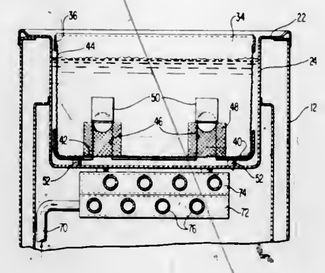
A toaster so designed that when a slice of bread has been toasted, the end of the toasting operation is detected by a toasting detector and a weight is dropped by the motion of the toasting detector, so that a bread carrier frame latching mechanism is released by the dropping force of the weight, whereby the bread carrier frame is returned from a bread toasting or lower position to a bread removing or upper position.

3,638,557
MACHINE FOR PREPARING MASHED POTATOES
Per-Henrik Ljung, Skolgatan 20, 211 52 Malmo, Sweden
Filed July 14, 1969, Ser. No. 841,364
Claims priority, application Sweden, Jan. 7, 1969, 116/69
Int. Cl. A47j *27/17*
U.S. Cl. 99—348 **4 Claims**



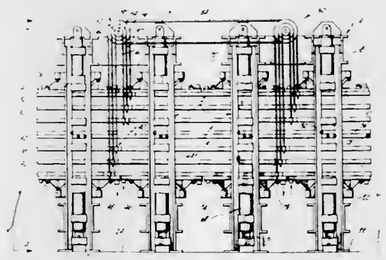
A method of preparing mashed potatoes from a powdery or flaky potato material, comprising mixing the material and the liquid, subjecting the mix to a superatmospheric gas pressure, and maintaining said pressure during the time the mix is kept in readiness for serving and also during the intermittent dispensing of the mix.

3,638,558
COOKING APPARATUS FOR COMESTIBLES IMMERSED IN HEATED OIL
Alden H. Bennett, and Leslie G. Williams, both of Miami, Fla., assignors to Burger King Corporation
Filed Mar. 26, 1970, Ser. No. 22,888
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 **14 Claims**



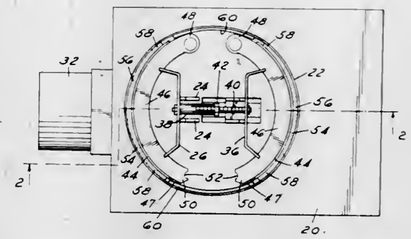
Heated cooking oil is continuously circulated from laterally spaced outlets adjacent the one end of a cooking pot through a heating unit mounted immediately below the bottom of the cooking pot and returned to the cooking pot through laterally spaced inlets opening through the wall at the opposite end of the cooking pot. A fuel burner is disposed in the lower open end of a combustion chamber, such chamber enclosing the heating unit and a substantial part of the lower end of the cooking pot. A removable basket for comestibles to be cooked constructed of imperforate sheet material has limited portions thereof cut out and covered by perforate material and the forward front wall of such basket is slotted and covered with perforate material to enable safe insertion and removal of such basket from the cooking pot during continuous circulation of the hot cooking oil.

3,638,559
PRESS
Russell A. Parker, Pasadena, Calif., assignor to L & F Machine Co., Huntington Park, Calif.
Continuation-in-part of application Ser. No. 845,341, July 28, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 801,622, Feb. 24, 1969, now abandoned.
This application Mar. 9, 1970, Ser. No. 17,690
Int. Cl. B30b *7/02, 15/34*
U.S. Cl. 100—93 P **20 Claims**



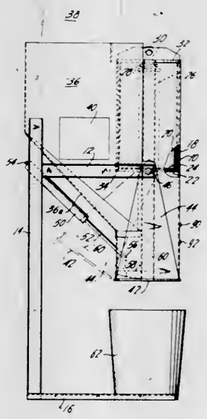
A hydraulic press having a stationary center platen secured to a supporting framework and a plurality of movable platens disposed above and below the center platen. The movable platens are supported from the framework by a differential gearing system comprised of fixed-length roller chains secured to the platens and engaged with variable-sized overhead sprocket wheels mounted on a common shaft. The weight of each upper platen is counterbalanced by a corresponding lower platen.

3,638,560
APPARATUS FOR BONDING BRAKE BLOCKS
Thomas E. Morgan, Sr., and Thomas E. Morgan, Jr., both of 4815 Bellevue, Detroit, Mich.
Filed Dec. 29, 1969, Ser. No. 888,650
Int. Cl. B02c *11/08*
U.S. Cl. 100—93 PB **15 Claims**



An apparatus for bonding brake blocks to brakeshoes and particularly that type of brake block which is used for large vehicles and has a changing radial dimension such that it is thicker at one end than the other. The concept includes a very high pressure system using a pressure band which encircles two opposed brakeshoes, these being separated by manually operated spreaders, there being an improved means for bridging the bands at the opposed ends of the brakeshoes to insure positive contact with, and uniform pressure on, the brake blocks in relation to the shoes during the bonding action, this means including relief holes in the band and a stress absorbing plate overlying the bridging portion to transmit force while eliminating destructive distortion and a strain absorber for lateral pressure distribution.

3,638,561
REFUSE COMPACTOR
Howard Price, Kings Point, N.Y.; Seymour Wallick, Clifton, N.J., and Irwin Math, Beechhurst, N.Y., assignors to International Patents & Development, Kings Point, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,705
Int. Cl. B30b *15/30, 15/32*
U.S. Cl. 100—215 **13 Claims**



A vertical refuse compactor in which the ramming piston used to compact the refuse also ejects the refuse from the

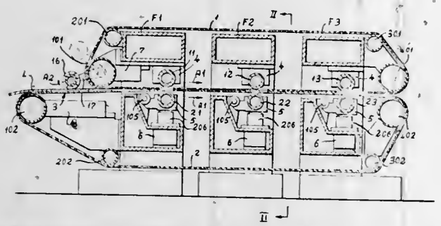
compactor after it has been compressed into a reduced bale. A vertical tubular housing is held in place through structural members and contains the hydraulically operated ramming piston. Refuse enters the ramming chamber from a hopper and through an opening below the piston when retracted. A door at the bottom of the tubular cylinder serves simultaneously as the ejecting door and the base upon which the refuse is compacted. The door is pivotally mounted and operated through hydraulic cylinders supported by the structural members. A refuse receiving can or container located beneath the ejecting door receives the compacted bales of refuse after the door has been swung open through actuation of the respective hydraulic cylinders.

3,638,562

SAMMYING PRESSES

Milin Karaghiosoff, Genoa, Italy, assignor to Paolo Bocciardo, Genoa, Italy

Filed Nov. 5, 1969, Ser. No. 874,340
Claims priority, application Italy, Nov. 8, 1968, 7464 A/68; Oct. 7, 1969, 7365 A/69
Int. Cl. B30b *9/24, 5/04*
U.S. Cl. 100—118 **5 Claims**



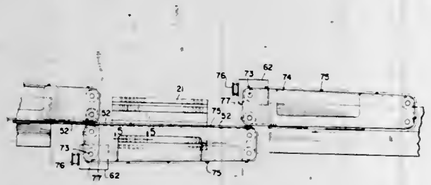
This invention relates to continuous sammying presses, i.e., machines for squeezing moisture from hides, leather or the like. Ordinarily, such presses employ endless revolving belts made of porous material, such as felt, and have two straight runs, one above the other, between which the hide is sandwiched. The belts are moved in the same direction and at the same speed between cooperating press rolls that are pressed one against the other. In order to reduce pressure on the belts, which is brought about by the use of the normal single pair of press rolls, the invention provides that there shall be at least two pairs of sequentially arranged press rolls. This arrangement enables the pressure at any one point to be reduced but without, however, increasing the time of processing.

3,638,563

HIGH-SPEED AUTOMATIC CARD EMBOSSER

Jacob H. Drillick, Hackensack, N.J., assignor to Data Card Corporation, St. Paul, Minn.

Continuation-in-part of application Ser. No. 769,245, Oct. 21, 1968, Continuation-in-part of application Ser. No. 861,432, Sept. 26, 1969. This application July 24, 1970, Ser. No. 57,960
Int. Cl. B41j *7/40*
U.S. Cl. 101—18 **3 Claims**



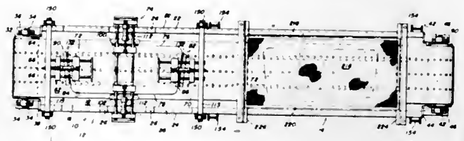
A machine for embossing credit cards having data reading means, a computer controlling selectively operable embossing punches corresponding to each character, and indexing means for moving the card past each embossing punch.

3,638,564

METHOD AND APPARATUS FOR SILK SCREENING A PATTERN ON AN UNDERLYING SUBSTRATE

Bernard H. Prange, and Dean W. Gintert, both of Hollidaysburg, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1970, Ser. No. 3,867
Int. Cl. B41f *17/00;* **B65h** *29/24*
U.S. Cl. 101—35 **10 Claims**



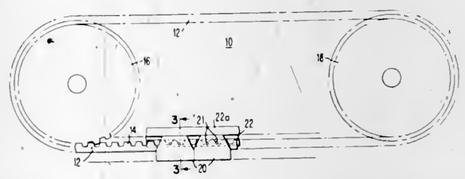
An elongated worktable has an endless foraminous conveyor belt with an upper conveying run supported on the tabletop surface. The worktable has an orienting station and a coating station. A glass sheet is conveyed by the conveyor belt to the orienting station where a pair of edge engaging members and a pair of end engaging members engage the glass sheet and orient the glass sheet longitudinally and laterally on the conveyor belt. A positive air pressure is applied upwardly through the conveyor belt to urge the glass sheet away from the upper surface of the conveyor belt while the engaging members are orienting the sheet. After the sheet is oriented, the positive upwardly flowing air pressure is stopped and a suction is applied to the conveyor belt to engage the oriented sheet to the upper conveying run of the belt. The conveyor belt, with the glass sheet engaged thereto, is moved a precise measured distance along the work table to the coating station. A silk screen with a predetermined pattern thereon is lowered onto the upper surface of the oriented glass sheet after the upper surface of the silk screen has been flooded with a coating material. A wiper is moved across the upper surface of the silk screen and coating material is forced therethrough onto the upper surface of the glass sheet. While the sheet is being coated, it remains oriented and engaged to the conveyor belt by suction. After the sheet is coated, the silk screen is raised and the coated glass sheet is conveyed along the table while the upper surface of the silk screen is again flooded with coating material.

3,638,565

PRINT TYPE CARRIER

John E. Drejza; Michael A. Hendel, both of Endwell, N.Y., and William F. Morgan, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,206
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **2 Claims**



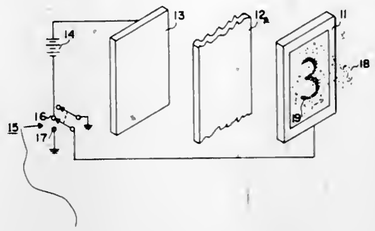
A type carrier comprises a flexible, toothed timing belt having U-shaped type carrier members which are attached to the belt by pins through the legs of each member on either side of a belt tooth and which have flexible supports secured thereto each with a type character at the free end.

3,638,566

STENCIL RECORDING APPARATUS

Robert B. Greenly, Santa Clara, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed Dec. 31, 1968, Ser. No. 788,150
Int. Cl. B41f *15/00*
U.S. Cl. 101—114 **4 Claims**



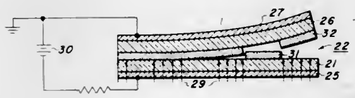
The device of this invention uses electrostatic recording to apply original titles, legends, or other indicia to discrete record receivers. The system includes changeable stencils which, for the purposes of this description, are constructed as counters. The desired information is set up, a voltage is applied between the stencil and an electrode behind a record receiver, ionized pigmented particles are attracted through the stencils to the record receiver, and the record receiver is moved to a fixing station. By rendering the individual items of information changeable, any desired information within the range of the apparatus can be applied to an appropriate record receiver.

3,638,567

METHOD OF PREPARING AND UTILIZING A GRAVURE PRINTING MASTER

Lewis E. Walkup, and Rexford W. Jones, both of Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.

Filed May 13, 1969, Ser. No. 834,576
Int. Cl. B41m *1/10, 5/00;* **G03g** *13/06*
U.S. Cl. 101—170 **10 Claims**



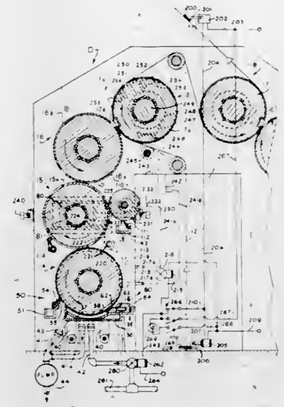
There is disclosed a method of preparing a gravure printing master wherein a photosensitive imaging composition is interpositioned between two substrates to form a dual electrode imaging configuration. Upon selective exposure to electromagnetic radiation in the presence of an electric field and subsequent separation of the configuration complementary images are formed on the respective surfaces. At least one of said images may then be transferred selectively to a uniformly prepared gravure member so as to selectively occlude specific areas and produce the gravure master.

3,638,568

ROTARY NEWSPAPER PRINTING PRESS HAVING AUTOMATIC INTERRUPTERS FOR PRESS CYLINDERS

Wallace H. Granger, P.O. Box 157, Kentfield, Calif.

Continuation-in-part of application Ser. No. 650,453, June 30, 1967, now abandoned, Continuation-in-part of application Ser. No. 735,388, June 7, 1968, now abandoned, Continuation-in-part of application Ser. No. 784,599, Dec. 18, 1968. This application Aug. 7, 1970, Ser. No. 61,985
Int. Cl. B41f *13/40, 31/36, 33/14*
U.S. Cl. 101—219 **7 Claims**



A rotary printing press is provided including an impression cylinder and a plate cylinder and wherein a continuous web passes between the impression and plate cylinders. Automatic means are provided to move two of the cylinders in the event of a break in the web whereby contact between all cylinders of the press is broken and damage from excessive windup of the broken web on one or more cylinders is avoided. Upon breakage of the web of paper the continuous flow of ink to the press is also stopped.

3,638,569

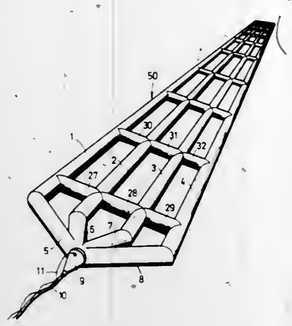
METHOD AND EQUIPMENT FOR THE ELIMINATION OF MINE BLOCKADES

Frank Rudolf Thomanek, Sandizell, Germany, assignor to Messerschmitt-Bolkow Gesellschaft Mit Beschrankter Hoftung

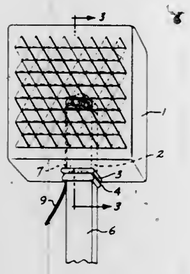
Filed July 28, 1969, Ser. No. 845,148
Claims priority, application Germany, Aug. 1, 1968, P 17 03 933.7
Int. Cl. F42d *3/00*
U.S. Cl. 102—22 **11 Claims**

A method for eliminating mine blockades or similar obstacles comprises arranging a blasting charge in the form of an explosive gas or gas mixture or a liquid and/or solid component-gas mixture, such as a foam, over the area to be cleared; and igniting the charge to cause a detonation over the area to effect a detonation of the mines to render them harmless. The explosive is applied to the area by means of an elastic grid formed of a plurality of interconnected hose elements which are gastight and pressuretight and which may be unwound such as by inflation so as to extend outwardly across the mined area. The hose elements of the grid form a receptacle for the blasting gases or the explosive gas liquid or gas solid mixtures such as a foaming material forming the explosive. Alternatively the explosive may be applied to the minefield by means of a rocket or other vehicle containing the explosive foam or its ingredients through a discharge nozzle for ejecting and spreading the explosive over the

blockaded area. The recoil from the ejected explosive is utilized to propel the rocket forward and or upward. The explosive may also be ejected through a nozzle gun connected to a container on a land vehicle such as a tank.



3,638,570
SECONDARY BLASTING CHARGE AND CONTAINER THEREFOR
Raymond A. Johnson, Salt Lake City, Utah, assignor to Intermountain Research and Engineering Co., Inc.
Filed Feb. 28, 1969, Ser. No. 803,206
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 **1 Claim**



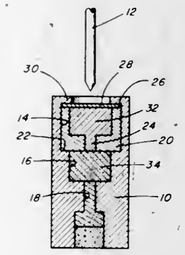
A secondary blasting charge for removing "hang-ups" of ore, protruding rock formations, and other problem formations in mines and other blasting areas, comprises a molded plastic container designed to be supported on a pole or prop stick and capable of holding a blasting charge of adequate size and suitable configuration. A hole or socket element, which can be formed integrally with the container, is provided for receiving a supporting stick or pole. It serves also to house a primer or booster in detonating position within the charge and can serve also as a closure for a filler opening.

3,638,571
RECOILLESS PRACTICE CARTRIDGE
Heinz Gawlick, and Rudolf Stahlmann, both of Furth, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Sept. 6, 1968, Ser. No. 757,902
Claims priority, application Germany, Sept. 6, 1967, D 54039
Int. Cl. F42b *5/22*
U.S. Cl. 102—41 **13 Claims**

The recoilless practice cartridge is to be fired from the subcaliber barrel insert of a recoilless firearm and is provided with a projectile having a rearwardly opening central bore communicating with radial bores opening against an annular propellant charge surrounding a portion of the projectile. The practice cartridge case is provided with a bottom piece having one or more bores for receiving a detonator for ignition the propellant charge by passing a flame through the bores of the projectile and for thereafter conducting the propellant gas rearwardly through the cartridge case to counteract the recoil of firing the projectile from the cartridge case. Tamping means are provided for the propellant charge on the projectile and for the bottom piece bores.

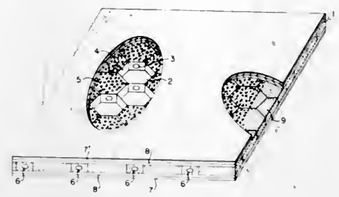


3,638,572
DELAY TRAIN FOR ORDNANCE FUSE
Vincent J. Menichelli, Panorama City, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 18, 1969, Ser. No. 800,203
Int. Cl. F42c *9/10*; **F42b** *1/04*; **F42c** *19/08*
U.S. Cl. 102—75 **2 Claims**



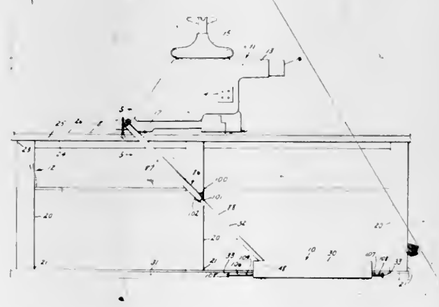
A delay train for an ordnance fuse having a body with two tandem chambers at the front end communicating via an axial bore with the main charge located in the rear end. A cup with an apertured bottom fits in the first of the tandem chambers and, except for the aperture, closes the second of the tandem chambers. A primer mix fills the cup and a delay composition fills the second chamber. Initiation of the primer mix by a firing pin is propagated via the cup aperture to the delay composition which reacts at a known slow rate, thus contributing the greater part of the time delay. Lead azide in the axial bore is initiated by the delay composition and, in turn, initiates a length of pyrocore along which the initiation is propagated to a main charge.

3,638,573
SELF-DESTRUCTIBLE HONEYCOMB LAMINATES
Hugh W. Campbell, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 25, 1968, Ser. No. 715,761
Int. Cl. F42b *11/24*
U.S. Cl. 102—90 **10 Claims**



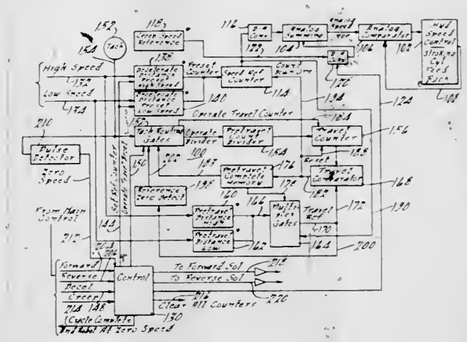
This disclosure is directed to on-command, self-destructible, laminated honeycomb structures, e.g., printed circuit assemblies, having a honeycomb core the polygonal cells of which contain a material capable of rapid yet nonexplosive combustion e.g., incendiary or pyrotechnic material, and wherein the cell walls are substantially perpendicular to the longitudinal axis of substantially parallel facing sheets which can be secured directly or indirectly thereto. One of the facing sheets can constitute or contain a printed circuit and a portion or all of the incendiary material can be encapsulated to render it inactive at ambient conditions until the desired time for ignition. Ignition wells and igniters can be provided to communicate with a portion of the incendiary composition and the honeycomb cell walls can have small openings to interconnect some or all of the cells for migration of gases and flame propagation therebetween. An edge sealant, e.g., potting composition, can be used to aid in insulating the incendiary material from exposure to degradative influences and directionally channel the burning to the major desired area(s) to be destroyed, e.g., the facing sheet area(s) containing the printed circuitry.

3,638,574
PLATFORM FOR CLOTH-LAYING MACHINES
Stephen Paterson, Forest Hills, N.Y., assignor to Cutting Room Appliances Corp., New York, N.Y.
Filed May 27, 1970, Ser. No. 40,765
Int. Cl. B65h *29/00*
U.S. Cl. 104—1 **4 Claims**



A selectively operable platform interconnected to a cloth-laying machine carriage and the cloth-laying table upon which it is supported for reciprocation with the former and with respect to the latter, whereby an operator may stand upon the upper surface of said platform to manipulate controls upon said carriage during movement. The platform is supported upon wheels in direct contact with a supporting floor and has separate wheels engaging a guiding track upon the side of the table. Interconnection with the carriage is by a collapsible self-storing bar which is operative position is angled at approximately 45° with respect to the horizontal. In inoperative position, the bar is stored within a recess in the platform, and a major portion of the platform may be rotated about a horizontal axis to be latched in a vertical orientation to means on a side of said table, whereby it may be out of the way when not required. Bumper means is provided on each end of the platform which telescopes on contact with an object lying in the path of travel of the platform, this motion being utilized to open a circuit providing power to the carriage, whereby the interconnected carriage and platform are immediately stopped.

3,638,575
ANALOG CONTROL SYSTEM
Ralph R. Griner, Mount Clemens, Mich., assignor to Palmer-Shile Company, Detroit, Mich.
Filed July 3, 1969, Ser. No. 838,767
Int. Cl. B65g *43/00*
U.S. Cl. 104—1 **71 Claims**

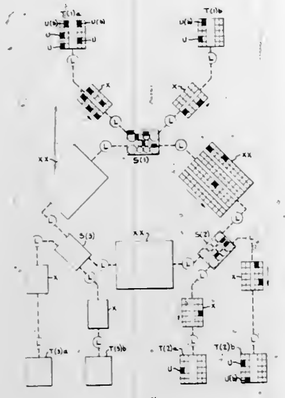


A feedback control system for use in connection with automatic material-handling apparatus for controlling the acceleration and/or deceleration curve of a movable material-handling assembly, as for example, an automatic or semiautomatic robot used in conjunction with delivering and retrieving material from a storage warehouse, wherein the distance from a fixed or variably selectable point is sensed and utilized to generate a speed curve for controlling the incremental variation in speed of the material-handling apparatus up to a preselected maximum speed or down to zero speed.

3,638,576
TRANSFER SYSTEM
Peter P. Schauffler, 7701 Cresheim Road, Philadelphia, Pa.
Filed Nov. 12, 1969, Ser. No. 876,004
Int. Cl. B61b *1/00*
U.S. Cl. 104—1 **8 Claims**

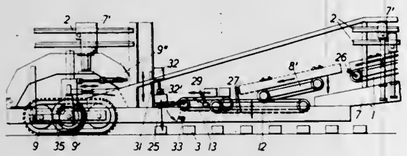
In a transportation system which interconnects multiple origin and destination points, coupled seat and baggage units for individual passengers are carried by different types of vehicles. Automatic sorters at transfer points uncouple and

sort and recouple these units for transfer from one type of vehicle to another, so that a passenger and his baggage can



travel from his origin to his destination on several different vehicles without leaving his assigned unit.

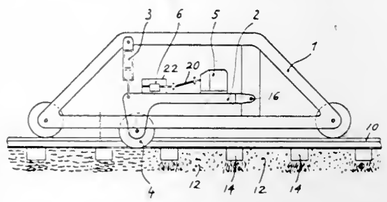
3,638,577
MOBILE APPARATUS FOR LAYING TRACK TIES
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria
Filed Oct. 7, 1969, Ser. No. 864,383
Claims priority, application Austria, Oct. 18, 1968, 10087/68
Int. Cl. E01b *29/13*; **B65g** *7/12*
U.S. Cl. 104—6 **17 Claims**



In a mobile track renewal apparatus which includes a series of cooperating tie conveyors leading to and from the track section where ties are to be picked up and/or laid, control means is arranged in the tie conveyor path and actuatable by a tie in the path for controlling the movement of selected conveyors.

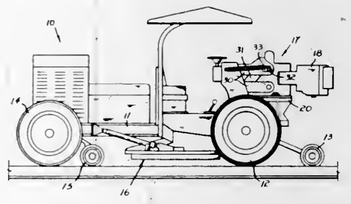
3,638,578
APPARATUS FOR CONSOLIDATING A TRACK BED
Heinrich Helgemeir, Munich, Germany, assignor to Robel & Co., Munich, Germany
Filed Apr. 16, 1969, Ser. No. 816,548
Claims priority, application Germany, Apr. 24, 1968, P 17 59 351.0
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **1 Claim**

Apparatus for consolidating a track bed comprising a vehicle movable along the track with at least one pressure-applying wheel carried thereby, the engagement of the wheel with



the track bed being controlled to rollingly consolidate the track bed as the vehicle moves.

3,638,579
CONVERTIBLE RAIL-HIGHWAY SHUNTING LOCOMOTIVE
William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, Australia
Filed Nov. 12, 1969, Ser. No. 875,758
Int. Cl. B61c *13/00*; **B61d** *15/00*; **B61f** *9/00*
U.S. Cl. 105—26 R **5 Claims**



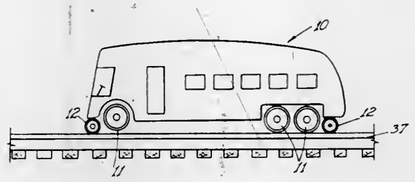
A shunting vehicle for positioning trucks on a railway line wherein the coupling is rotatable, not about a central pin as an axis but by movement guided by angled slots to thereby throw the center of rotation forwardly and avoid displacement of the shunting vehicle wheels from the rails.

3,638,580
CONVERTIBLE RAIL-HIGHWAY VEHICLE
William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, South Australia, Australia
Filed Mar. 4, 1970, Ser. No. 16,368
Claims priority, application Australia, Mar. 4, 1969, 51,409/69
Int. Cl. B61d *15/00*; **B61f** *9/00*; **B62d** *61/12*
U.S. Cl. 105—215 C **6 Claims**



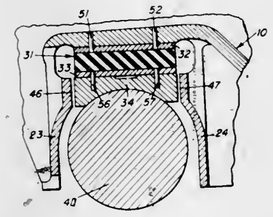
Means for retaining flanged wheels in contact with rails on a convertible rail-highway vehicle in which traction is effected through the normal highway-engaging pneumatic tired wheels riding on the rails, utilizing a load transfer arm pivoted to the chassis of the vehicle in such a way that a portion of the weight of the vehicle is applied to the flanged wheels thereby reducing danger of derailment.

3,638,581
CONVERTIBLE RAIL-HIGHWAY VEHICLE TILT CONTROL
William James Yard, Cavan, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, Australia
Filed Mar. 4, 1970, Ser. No. 16,369
Claims priority, application Australia, Mar. 4, 1969, 51,408/69
Int. Cl. B61d *15/00*; **B61f** *9/00*; **B62d** *61/12*
U.S. Cl. 105—215 C **10 Claims**



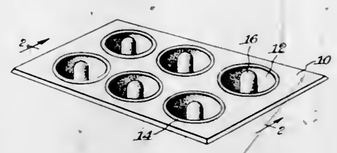
Tilt control means for a rail vehicle effective in making the vehicle chassis tilt upwardly in the direction of displacement while negotiating a curve so that the vehicle leans into the curve, by utilizing pivoted control arms between the chassis and the vehicle wheels, the control arms diverging downwardly.

3,638,582
RESILIENT BEARING MOUNTING
Joseph A. Beebe, Columbus, Ohio, assignor to The Buckeye Steel Castings Company, Columbus, Ohio
Filed Dec. 3, 1969, Ser. No. 881,641
Int. Cl. B61f *5/30*, *5/38*, *15/02*
U.S. Cl. 105—218 R **2 Claims**



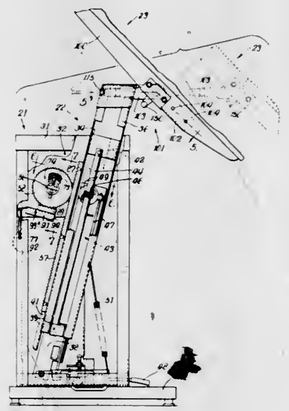
An elastomeric pad positioned between the bearing assembly and the load bearing portion of a railway truck side frame. The pad is deformed when the truck negotiates a curve to accommodate a nonparallel condition of the axles and thereby avoid slippage between the wheels with respect to the rails. The elastomeric element is stressed during such displacement of a truck axle and this energy serves to restore the axle to a position at right angles to the track when the truck proceeds onto a track section which is tangent to the curve.

3,638,583
APPARATUS FOR BAKING DOUGHNUTS A GOODY-ER DONUT BAKER
Vera M. Goodier, and Kenneth C. Goodier, both of 135 12th St. S.E., South East Puyallup, Wash.
Filed Feb. 4, 1969, Ser. No. 796,443
Int. Cl. A47j *37/01*
U.S. Cl. 249—122 **1 Claim**



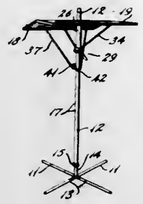
Apparatus for producing donuts by a baking rather than frying process in the form of a baking tin having a plurality of spaced apart wells or bowllike member, each with a prong extending axially therein. In use each well receives a proper amount of baking dough with the prong assisting by maintaining a hole in the center of the dough. After baking, each well contains a donut which can be easily removed for further decoration, icing and/or eating.

3,638,584
DRAFTING TABLE CONSTRUCTION
Earl J. Cisler, and William A. Gelbuda, both of Two Rivers, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed May 21, 1969, Ser. No. 826,478
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **8 Claims**



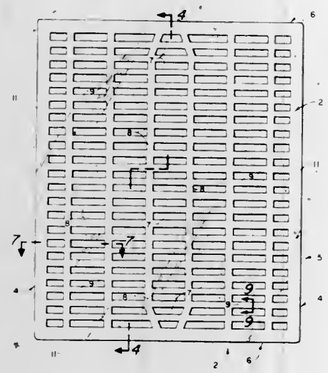
A drafting table including a pedestal, support columns mounted on said pedestal for generally vertical movement, and a drafting board mounted for tilting movement on the upper end of said support columns. The tiltable mounting for the drafting board includes pivotally connected first and second parts, the first part being secured to the board and the second part being secured to the support columns by a fastener and wedge arrangement. A counterbalancing mechanism is provided between the pedestal and the support columns to assist in raising and lowering the columns and the board. The mechanism includes means for adjusting the amount of counterbalancing force by braking or anchoring one end of a spring and raising or lowering the column assembly.

3,638,585
COMBINATION LECTERN AND TABLE
James Clyde Futrell, 1007 Drake St., Roanoke Rapids, N.C.
Filed Nov. 18, 1969, Ser. No. 877,734
Int. Cl. A47f 5/12
U.S. Cl. 108—9 1 Claim



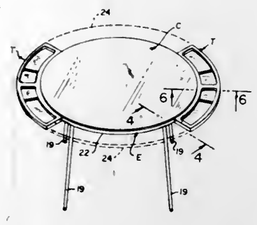
A combination lectern and table having a two-part base and a two-part top with a supporting shaft. Each of the halves of the top may be disposed horizontally or at a desired angle, the entire table may be adjusted vertically and the base may be supported on one-half and both the base and the top may be detached from the supporting post or column.

3,638,586
PALLET
Anthony E. Elshout, San Francisco, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed June 5, 1970, Ser. No. 43,682
Int. Cl. B65d 19/18
U.S. Cl. 108—58 5 Claims



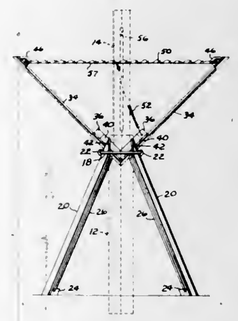
A four-way entry pallet of a construction enabling it to be made of molded plastic material to provide lightness without sacrifice of strength, comprises top and bottom walls, two pairs of opposite sidewalls having openings for receiving tines of a lift fork, reinforcing connecting columns between the top and bottom walls, and openings in the top and bottom walls, providing lightness. The top wall comprises T-shaped reinforcing ribs which provide strength and rigidity. Some of the openings in the bottom wall are enlarged to accommodate supporting wheels on tines of a lift fork, and have opposite bevelled edges providing ramps for such wheels; and lower edges of openings in the sidewalls are also bevelled to provide such ramps.

3,638,587
TRAY FOR GAME TABLE
Tim M. Uyeda, S. San Gabriel, Calif., and Harry W. Thurman, Murfreesboro, Tenn., assignors to Samsonite Corporation, Denver, Colo.
Filed Feb. 19, 1970, Ser. No. 12,612
Int. Cl. A47b 1/00
U.S. Cl. 108—66 9 Claims



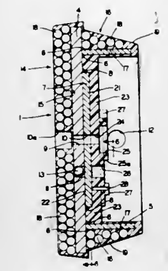
A lightweight, arcuate plastic tray for a circular table, a series of which may be secured to the edge of the table to outstand therefrom. Each tray includes a suitable arrangement of depressed sections or wells to hold poker chips, glasses and food dishes. The tray has radial ribs which engage the outside of a depending edge structure of the table and an inside lip adapted to rest on the edge structure. The tray is reinforced at its underside by a framework adapted to rigidify the same and permit it to be securely connected to the table, as by a latch engaging the inside of the edge structure. This framework includes a radial bar, attached to the underside of the center of the tray and adjacent the inner end of which the latch is mounted, and a chord bar attached centrally to the radial bar and at each end to the underside of the tray. The three points of attachment of the framework, in a triangular arrangement, rigidify the tray so that it may be formed of thinner plastic and thus appreciably reduce its weight.

3,638,588
COLLAPSIBLE STOOL
Bobby R. Abbott, 3808 S.W. 40th Pl., Oklahoma City, Okla.
Filed Nov. 19, 1969, Ser. No. 877,941
Int. Cl. A47c 4/30
U.S. Cl. 108—128 4 Claims



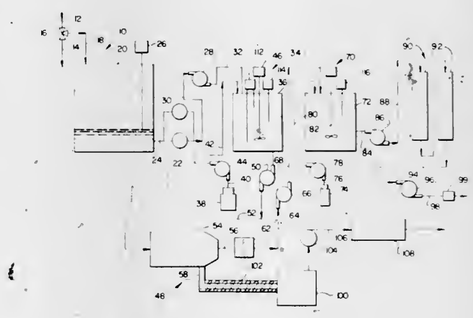
A plurality of part-cylindrical legs are pivotally joined to a like plurality of struts so that the legs and struts extend away from each other in diverging directions for respectively resting on the earth and supporting a seat. When the struts are in a collapsed position they form a cylindrical seat nesting tube telescopically received by the tube formed by the legs when collapsed.

3,638,589
PROTECTIVE DOOR STRUCTURE
James D. Shoop, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio
Filed Feb. 2, 1970, Ser. No. 7,506
Int. Cl. E05g 1/02
U.S. Cl. 109—76 14 Claims



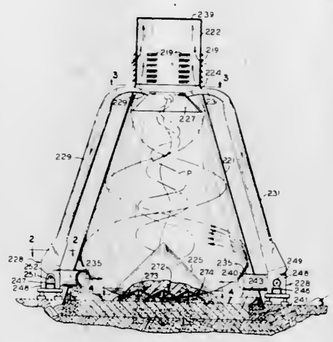
The protective door structure for filing cases, safes, vaults, and the like to protect against illegal, forced or surreptitious entry has a central body portion composed of a metal plate with a metal ring secured thereto with a casehardened steel plate located within the ring. A matrix of urethane plastic material completely encases the central body portion of the door and forms the external door shape. The plastic portions exposed to attack have a tight pattern of hardened steel balls or shot embedded in the matrix. The entire assembly is formed with properly spaced openings for housing the lock mechanism.

3,638,590
WASTEWATER TREATMENT SYSTEM
William F. Roberts, and Edmund L. Kaminsky, both of 150 Strafford Road, Wayne, Pa.
Filed Sept. 18, 1970, Ser. No. 73,510
Int. Cl. F23b 1/28
U.S. Cl. 110—7 16 Claims



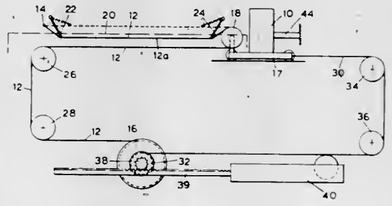
In a shipboard system, wastewater is withdrawn from a storage tank and is comminuted to reduce the size of waste solids. Coagulant is added, and the wastewater is centrifuged. Solid wastes are incinerated. The liquid wastes are disinfected and dissolved organic material is adsorbed in activated carbon. An effluent of tertiary quality is discharged.

3,638,591
BURNER HAVING MEANS INCLUDING UNDERFIRE AIR MEANS FOR ELIMINATING SMOKE
Jerry S. Lausmann, P.O. Box 1608, Medford, Oreg.
Continuation-in-part of application Ser. No. 828,113, May 26, 1969. This application Apr. 13, 1970, Ser. No. 27,576
Int. Cl. F23g 7/00
U.S. Cl. 110—7 A 11 Claims



Tepee burners having means for concentrating, collecting and reintroducing unburned particles are provided with underfire air systems which uniformly distribute air to the fire piles. An early underfire air system (FIG. 1) includes inclined pipe sections having downwardly directed nozzle tubes. A later underfire air system (FIG. 10) includes nozzles having partially embedded, slotted burner pots and caplike grates having diffuser plates setting in the slots in the pots. A latest underfire air system (FIGS. 16 and 18) includes partially embedded burner pots and caps having radial nozzles positioned on the pots. The means for concentrating, collecting and reintroducing the unburned particles include crown collectors from which ducts lead to blowers which draw the unburned particles and gases from the collectors and blow them with ambient air chordally into the burners so as to aid the coriolis effect, one of the burners (FIGS. 13–15) having adjustable blower outlet nozzles.

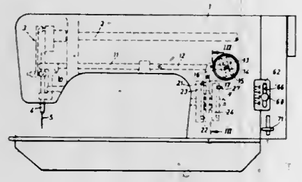
3,638,592
FOLDING OF FLEXIBLE SHEET MATERIALS
Leslie Alva Fryatt, 24 Highergate Road, Huncoat, Accrington, Lancashire, England, J. H. Fenner & Co. Limited, Marfleet, Hull, Yorkshire, England
Filed June 19, 1970, Ser. No. 47,799
Claims priority, application Great Britain, June 27, 1969, 32,495/69
Int. Cl. D05b 3/00, 35/02
U.S. Cl. 112—121.14 14 Claims



The present invention provides apparatus for forming a fold in a length of flexible sheet material comprising a

horizontal support for supporting a length of flexible sheet with a portion thereof to be folded lying over a transverse edge of the support, a horizontal cord arranged above and beyond said edge of the support, means for downwardly deforming the cord so that at least a portion thereof lies below the level of said support beneath said portion of the sheet to be folded when a sheet is present on the support, and means for tensioning the cord against the action of said deforming means to straighten the cord and to thereby raise said portion of the sheet, forming a fold therein around the cord. The apparatus is intended to be used primarily in a hemming machine having a machine head, for forming a seam in a fold made in the sheet, displaceably mounted for movement in a direction parallel to said transverse edge of the support, such that the head traverses longitudinally along a fold formed by the cord.

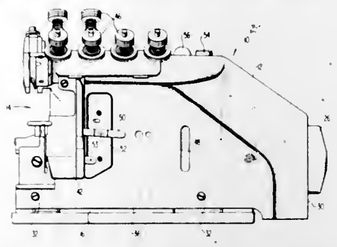
3,638,593
ZIGZAG SEWING MACHINE
Kurt Vollmar, Lambsborn, and Herbert Wenz, Kaiserslautern, both of Germany, assignors to G. M. Pfaff AG., Kaiserslautern, Germany
Filed Sept. 14, 1970, Ser. No. 71,996
Claims priority, application Germany, Sept. 16, 1969, P 19 46 700.6
Int. Cl. D05b *27/00*
U.S. Cl. 112—210 **3 Claims**



Zigzag sewing machine having a setting member controlled by a rotatably driven control disk, the position of which determines the magnitude and direction of the feeding movements of the feed dog, and a setting arrangement having a setting shaft connected in the transmission train between the scanning member of the control disk and the setting member, for changing the transmission ratio of the control impulses emitted by the control disk, in which the setting shaft of the resetting device is journaled in a lever arm that is pivotally mounted in the machine housing, and extends essentially parallel to a link disposed in the transmission train and engages the pivot point between the transmission train and the setting device, and where the axis of the setting shaft extends through one end point of the rocking range of this pivot point produced by the control disk.

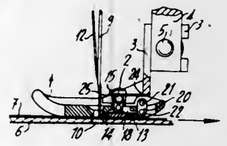
3,638,594
SEWING MACHINE COOLING SYSTEM
George B. Armstead, Jr., Glastonbury, and Edward A. Kelly, Wethersfield, both of Conn., assignors to The Merrow Machine Company, Hartford, Conn.
Filed Mar. 10, 1970, Ser. No. 18,062
Int. Cl. D05b *71/00;* **F24h** *3/00*
U.S. Cl. 112—218 R **9 Claims**

A cooling system for an industrial sewing machine of the overseaming type, including a hollow, shell-like shroud positioned over and closely surrounding the sewing machine housing and a fan mounted on the machine's main drive shaft adjacent an opening in the shroud to force air through the shroud over the outer surface of the machine and out through open spaces along the bottom of the shroud and at the end of the machine opposite the fan. The shroud being



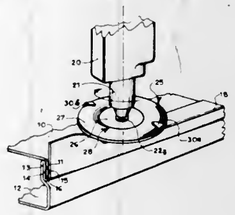
spaced from the surface of the machine is cool to the touch and assists in muffling the sound of the machine.

3,638,595
MULTIPURPOSE PRESSER FOOT
Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Sept. 3, 1970, Ser. No. 69,387
Claims priority, application Switzerland, Sept. 9, 1969, 14151/69
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **4 Claims**



A multipurpose presser foot for sewing machines comprises a sole pivotally mounted to a flange-plate for attaching the foot to a presser bar with an alignment so that, in operation, a part of the lower surface of the sole is adjacent to completed stitching. So as to facilitate passage thereunder of raised stitching, this part is retractable from the lower plane of the sole against the action of a spring. The retractable part is connected to the rest of the sole in the manner of a deformable parallelogram by means of a set of articulated members so that the retractable part, when displaced, remains parallel to the said plane.

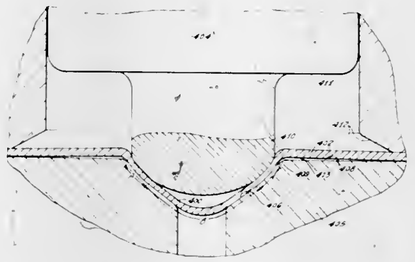
3,638,596
DEVICE FOR FORMING SHEET METAL JOINTS AND SEAMS
Joe H. Kemp, 204 West Dallas Road, Grapevine, Tex.
Filed June 8, 1970, Ser. No. 44,320
Int. Cl. B21d *31/06*
U.S. Cl. 113—54 **10 Claims**



A rotary hammer device for working sheet metal, particularly for closing sheet metal joints of the type commonly known as "Pittsburgh Lock," wherein the hammer is reversi-

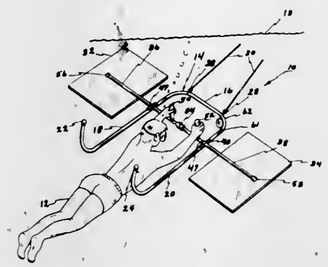
ble and is operable from both sides, so as to be movable in either longitudinal direction along the seam or joint.

3,638,597
METHOD OF FORMING A RIVET
Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio
Continuation-in-part of application Ser. No. 617,128, Feb. 20, 1967, and a continuation-in-part of 704,766, Feb. 12, 1968.
This application Sept. 26, 1969, Ser. No. 866,064
Int. Cl. B21d *51/00, 51/26*
U.S. Cl. 113—116 FF **72 Claims**



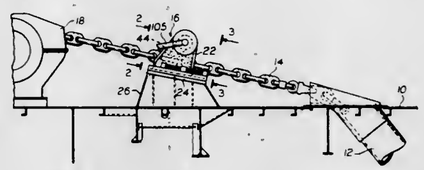
A hollow rivet is formed in sheet metal by first forming a dimple or hollow boss and then converting the dimple into the hollow rivet. Attenuation of sheet metal to form the dimple is carried out by initially stretching metal and subsequently squeezing the sloping wall of the dimple to extrude the sheet metal in opposite directions. The squeezing step to complete the attenuation makes it possible to keep the stretching of the metal within acceptable limits by a wide margin.

3,638,598
WATER VEHICLE
John J. Vlad, 30232 Tecla Drive, Warren, Mich.
Filed Jan. 7, 1970, Ser. No. 1,251
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 A **15 Claims**



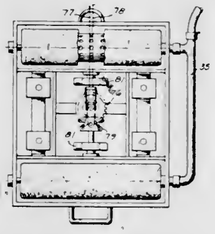
A water vehicle on which a rider may be towed by a boat or the like either on or beneath the surface of the water. The water vehicle comprises a substantially U-shaped frame member having the arm members of a pair of plane or planar members rotatably mounted to each leg thereof and including a pair of handles carried by each arm member to permit the rider of the water vehicle to independently rotate the planes relative to one another and to the frame member to thereby control the motion of the water vehicle while it is being towed by the boat. The ends of each leg of the U-shaped frame member are curved outwardly therefrom and are adapted to cooperate with the arm handles to permit the water vehicle to be mounted to the sides of a boat or the like whereby the water vehicle functions as a ladder to permit entry into the boat.

3,638,599
ADJUSTABLE CHAIN STOPPER
Harold E. Nilsen, 1425 Homestead Ave., Metairie, La.
Filed July 25, 1969, Ser. No. 844,886
Int. Cl. B63b *21/18*
U.S. Cl. 114—200 **11 Claims**



An improved chain stopper that will eliminate the need for using a devil's claw, pelican hook, or other device for properly holding a vessel's anchor in stowed position or for measuring tension in a vessel's anchor chain when it is riding at anchor. A pawl on the chain stopper is carried by a frame which is adjustable to bring the pawl into position immediately adjacent to one of the chain links to hold the chain.

3,638,600
APPARATUS FOR TREATING FERROUS SURFACES
Henry J. Modrey, 158 Eagle Drive, Stamford, Conn.
Filed Aug. 21, 1969, Ser. No. 851,920
Int. Cl. B63b *59/00*
U.S. Cl. 114—222 **9 Claims**

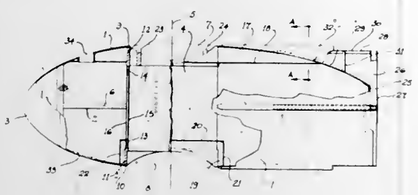


This disclosure teaches a device for treating a ferrous surface and contemplates such applications as painting or scrubbing a ship's hull. Preferably, one or more rollers are engaged to the ferrous surface by magnets which are connected to the rollers within the width thereof by means of spring members. Thus engaged, the rollers are easily moved over the surface. Suitable paint applying devices or scrubbing brushes with drives are furnished on the rollers.

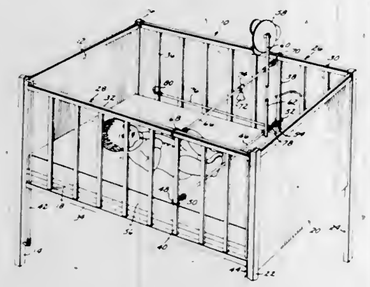
3,638,601
ACOUSTICALLY TRANSPARENT HYDRODYNAMIC TOWED BODY FOR UNDERWATER EXPLORATION AND THE LIKE
Neville E. Hale, Port Credit, Ontario, and Kenneth Gardner, Mimico, Ontario, both of Canada, assignors to Fathom Oceanology Limited, Port Credit, Ontario, Canada
Filed Aug. 11, 1969, Ser. No. 848,877
Claims priority, application Great Britain, Sept. 3, 1968, 41,756/68
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **7 Claims**

A submersible towable body for underwater acoustic purposes comprising an acoustically transparent shell which is

supported by an internal body structure in the form of an acoustically transparent compartment for receiving a transducer and having a transducer removably mounted in the compartment so that the towed body retains its structural integrity independently of the transducer.



3,638,602
EDUCATIONAL TOY
Fernando Carreno, 10225 Traylor Way, Garden Grove, Calif.
Filed Apr. 14, 1969, Ser. No. 815,964
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **8 Claims**

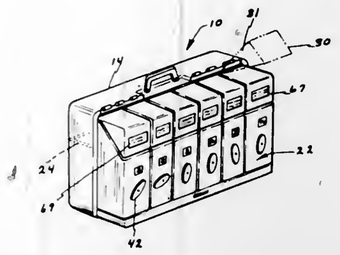


This invention relates to educational toys for attachment to infants' cribs. In one embodiment which is explained in detail in the specification, the toy includes a resilient line terminating in hooks by which it is extended taut across the crib in a position and at a level for engagement by the feet of an infant occupying the crib. It includes a second elastic line connected at one end to a point along the length of the first and having a hook at its other end by which it can be connected to the side of the crib and there held taut in a position and at a level for engagement by an arm of an infant occupying the crib. The toy also includes a bell and brightly colored discs and connected to and carried by the elastic lines so that the bell is rung and the discs are moved when the elastic lines are moved as an incident to engagement by the infant's limbs.

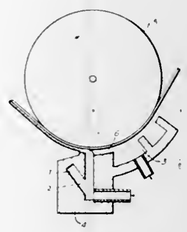
Another embodiment includes a frame connected to the crib so that it extends upright above the crib wall. An arm of the frame extends over the crib and carries a mobile which is actuated by a cord interconnecting the mobile with an elastic cord which is stretched across the crib in position for engagement by one of the infant's limbs.

3,638,603
CONTAINER FOR STORING AND DISPENSING MEDICATION
McClellan B. Conover, 1209 Kensington Ave., Flint, Mich.
Filed Mar. 9, 1970, Ser. No. 17,388
Int. Cl. G09f *9/00*
U.S. Cl. 116—121 **16 Claims**

A container for storing and dispensing medication having means for recording and indicating the number of times such medication is dispensed during a selected period of time, comprising a plurality of compartments arranged in a side-by-side fashion, each compartment having a hinged locked cover to permit individual access to interior A disc is rotatably mounted on an interior wall of each compartment and has a portion viewable through an opening in the forward wall of each compartment. A locking mechanism carried by each container cooperates with the disc to unlock the cover as the disc is rotated to the next position and at each position of the disc information in the form of an indication of successive time intervals is provided on the portion of the disc viewable through the wall of the container to provide a record as to the dispensing of the medication.

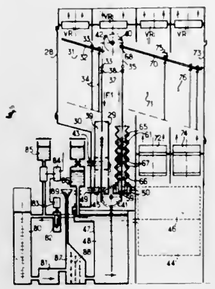


3,638,604
APPARATUS FOR COATING STRIP-FORM SUBSTRATES
Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Rolf Behr, Leverkusen; Fritz Maus, Cologne-Flittard; Wolfgang Schweicher; Willi Wasser, both of Leverkusen; Josef Friedsam, Langenfeld, and Kurt Browatzki, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 10, 1969, Ser. No. 797,809
Int. Cl. B05c *5/02*
U.S. Cl. 118—50 **2 Claims**



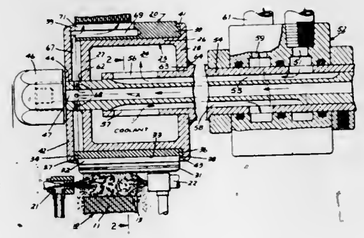
A machine for coating a layer of a viscous emulsion on a movable support having a feed means operatively associated with the support with a narrow gap between the feed means and the support for forming the viscous emulsion into a layer on the movable support. The feed means contains a chamber opening into the narrow gap, and the machine is arranged so that the viscous emulsion fed from the chamber and formed by the narrow gap is under an adjustable static differential in pressure between the inlet end of the narrow gap which has a lower pressure on the emulsion and the outlet end of the gap which has a higher pressure. A cavity in a wall-adjoining the chamber in the feed means has one opening into the chamber sidewall and containing a compressible gas acts as an air cushion and reduces the variations in pressure on the feed material during feeding as the gas is enclosable within the cavity by the passage of feed material through the chamber.

3,638,605
FABRICATION OF PRINTED CIRCUITS
Pierre J. Grandgirard, Livry-Gargan, France, assignor to Societe Industrielle Bull-General Electric (Societe Anonyme), Paris, France
Filed June 3, 1970, Ser. No. 42,943
Claims priority, application France, June 5, 1968, 6918464
Int. Cl. B05c *11/00*
U.S. Cl. 118—50.1 **6 Claims**



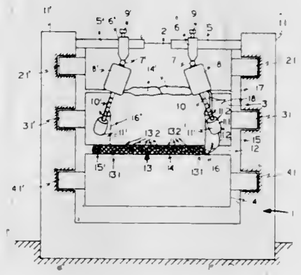
An assemblage for lacquering metallized boards provided with metallized holes therethrough, wherein, in a dustproof enclosure each board is first dehydrated by heating, lowered vertically into a tank of lacquer, moved through the lacquer in a direction perpendicular to the plane of the board, raised vertically from the tank, and passed through a drying chamber. Said drying chamber includes a lacquer setting chamber having a hot air feed therein and surmounted thereon a drying passageway including radiant and convection-type heaters.

3,638,606
APPARATUS FOR CONTROLLING THE COATING OF SELECTED SURFACES OF AN ARTICLE OF MANUFACTURE
Louis W. Pieper, and Robert O. Kerr, both of Fort Wayne, Ind., assignors to General Electric Company
Original application Mar. 4, 1968, Ser. No. 710,103. Divided and this application Nov. 21, 1969, Ser. No. 878,624
Int. Cl. B05b *15/04*
U.S. Cl. 118—69 **2 Claims**



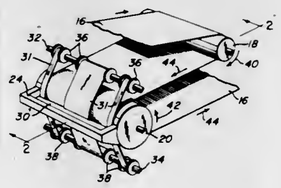
Apparatus for masking selected surfaces of an article of manufacture, for instance restricted entrances and beyond of stator cores, while other selected surfaces are being coated with coating material. A member having extensions formed with enlarged free ends disposed beyond the restricted entrances in spaced relationship therewith is detachably mounted in heat exchange relation on a cooling jacket sealed at a number of locations. During the coating of the other selected surfaces, fluid is supplied in the spaces between the member and the selected article surfaces to prevent material buildup on the article. Coolant is circulated through the jacket to maintain temperature of certain regions of the member and jacket below the melting temperature of the coating material. In this way, the selected surfaces of the article are efficiently and effectively masked while at the same time certain components, such as the member having the extensions, may be rapidly disassembled and reassembled without disturbing the sealed nature of the jacket.

3,638,607
RUBBER COATING APPARATUS WITH EXCESS RUBBER RECOVERY MECHANISM
Heinz K. E. Jaffke, Adapazari, Turkey, assignor to Uniroyal Endustri Turk, A.S., Adapazari, Turkey
Filed Aug. 8, 1969, Ser. No. 848,508
Int. Cl. B05c *1/08*
U.S. Cl. 118—249 **11 Claims**



In rubber-coating apparatus including calender rollers which define a coating gap therebetween for applying rubber to a fabric web, and in which excess rubber accumulates outside the lateral edges of the web, a new type of excess rubber recovery apparatus includes a pair of excess rubber control bodies, each having the shape of a solid of revolution. Each of these bodies is suspended by a flexible rotary drive shaft from a drive unit connected by a universal joint to a carriage which is adjustable along a horizontal rail. The mechanism rotates the control bodies in a manner to displace the excess rubber toward the central region of the fabric and permit it to be conveyed back to the coating gap by one of the calender rollers.

3,638,608
TRAILING BLADE STRIPING APPARATUS
Henry Gabbard, Xenia, Ohio, assignor to The Standard Register Company
Filed Apr. 10, 1969, Ser. No. 815,115
Int. Cl. B05c *3/02, 1/16*
U.S. Cl. 118—406 **12 Claims**



Coating apparatus of the trailing blade type which includes means for providing a coating to a surface of a continuous web, in which the coating consists of one or more stripes thereof. Each stripe may be relatively wide or relatively nar-

row. The coating material may be of the hot melt type, in which the coating material is solid at normal room temperature and is a liquid only at temperatures considerably above room temperature. The coating material may be of the solvent type or ot the water emulsion type, or which is a liquid at normal room temperatures and in which a drying process removes a vehicle from the material and a solid coating remains. A thin flexible shield which engages selected portions of the web is disposed between the trailing blade and the web to prevent coating of the web in the portion thereof which is engaged by the shield.

3,638,609

ELECTROSTATIC IMAGE DEVELOPING DEVICE

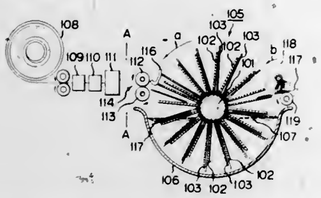
Sadanao Ando, and Funihiro Miyagawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,673

Claims priority, application Japan, Dec. 4, 1967, 42/77802; 42/77803; Dec. 13, 1967, 42/79948; 42/79949; 42/79950; 42/79951

Int. Cl. B05c *11/14*

U.S. Cl. 118—426 **3 Claims**



An electrostatic image developing device has a photosensitive copy paper transporting body rotatable about a horizontal axis and having a plurality of photosensitive copy paper receiving plates equiangularly disposed and extending radially peripherally of the body. Copy papers bearing electrostatic images are held in position between adjacent receiving plates by hinged holding plates which press them against the receiving plates. Rotation of the transporting body sweeps them through a developing tank.

3,638,610

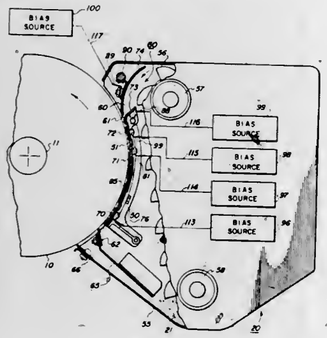
DEVELOPMENT APPARATUS

James M. Lyles, Fairport; Robert E. Hewitt, Penfield; Glenn L. Hilt, and James E. Britt, both of Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,778

Int. Cl. G03g *13/00*

U.S. Cl. 118—636 **14 Claims**



Apparatus for developing a latent electrostatic image on an image support member in which a series of electrically isolated electrodes are supported in close parallel relation with the member to form a continuous, enclosed, development zone. A continuous flow of two-component developer material is passed through the development zone and the electrodes biased so that the distribution of material in the flow stream is controlled to first develop and then clean the photoconductive plate surface.

3,638,611

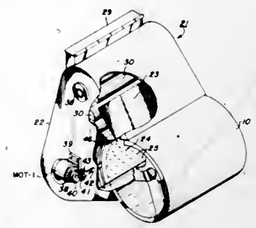
ELECTRODED DEVELOPMENT DEVICE

Ernest A. Weiler, Rochester, and Frederick W. Hudson, West Henrietta, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,818

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **4 Claims**



A development system is herein disclosed for making visible a latent electrostatic image supported on an image retaining member. The apparatus includes an elongated biased electrode positioned in close parallel relation to the image-retaining member to form an enclosed development zone in which a flow of two component developer material is maintained. A series of pins are mounted on the electrode and extend into the development zone to disperse the developer material while the material is under the influence of an electroded force field wherein the concentration of toner in the flow stream is controlled.

3,638,612

APPARATUS FOR MARKING CONDUCTOR CABLES

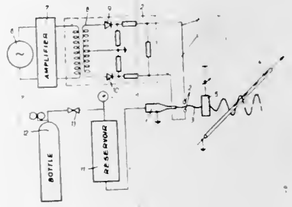
Hans Joachim Haise, Ditzingen, and Hans Harbort, Ludwigsburg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,903

Claims priority, application Germany, Apr. 24, 1969, P 19 20 966.6

Int. Cl. B05b *5/00*

U.S. Cl. 118—625 **9 Claims**



A longitudinally advancing conductor cable freshly extruded with plastic insulation is marked by a stream of a fluid material of a predetermined color as follows: The stream is first ejected from a high-pressure nozzle, sinusoidally deflected by electrical deflection means, and then the deflection is amplified to be substantially larger than the cross-sectional dimension of the cable by an electrical amplifying means before the stream is applied transversely to the cable. Where a complete band mark needs to be made around the cable, a second stream may be applied to the cable opposite to the side being marked by the first stream, by deflecting and amplifying the second stream in the same manner as the first stream. Using a displacement electrode and varying the DC potential applied thereto, the band marks made by each stream may be matched more precisely by bending the second stream toward the advancing direction of the cable and by controlling the degree of bending to match the first stream as the two streams hit the cable. A plurality of streams of different or the same color materials may be applied to the cable simultaneously at given intervals after being deflected and amplified in the same manner as the first stream.

3,638,613

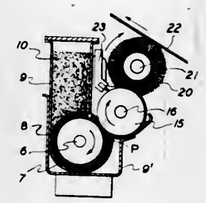
TONER DEVELOPER SYSTEM

Uldis Klavsons, Pittsford; William D. Perun, Webster; Denzel D. Stoops, Rochester, and David M. Terry, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,766

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **7 Claims**



A developer apparatus wherein a transfer or donor roller triboelectrically attracts to its surface toner contained in a sump or reservoir. The toner in the sump is prevented from agglomerating by an agitator device. A fur brush picks up toner from the transfer or donor roller and deposits it upon a charged surface whereby the image thereon is rendered visible.

3,638,614

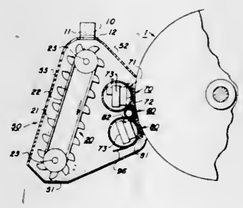
ELECTROSTATIC LATENT IMAGE DEVELOPMENT APPARATUS

Eugene F. Young, Henrietta, and Ryland F. Rogers, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,002

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **12 Claims**



Apparatus for effecting development of an electrostatic latent image comprising a plurality of magnetic developing rollers positioned with intersecting magnetic force fields for effecting a blanket of developing material extending about and between the developing rollers adjacent an electrostatic latent image-bearing surface. A cylindrical roller, which may be electrically biased, is positioned between the magnetic developing rollers adjacent the electrostatic latent image bearing surface to enhance image development.

3,638,615

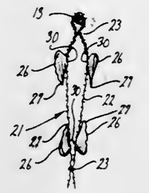
METHOD OF GROWING OYSTERS

William W. Budge, Hillsborough, and Malcolm Donald, Woodside, both of Calif., assignors to Pacific Mariculture, Inc., Pescadero, Calif.

Filed June 1, 1970, Ser. No. 42,253

Int. Cl. A01k *61/00*

U.S. Cl. 119—4 **8 Claims**



Apparatus for growing oysters in sea water comprising a member mounted in sea water so that it is above the bottom level of the sea water at all times and below the top surface of the sea water for a substantial period of each 24 hours. A plurality of seed oysters are provided and a cement other than that excreted by the oyster seed secures the oyster seed to the member. The oysters are arranged in a predetermined pattern and are spaced in such a manner that the oysters can grow to a substantially larger size on the member without deforming each other.

In the method, a member is positioned in the sea water so that it is disposed above the bottom level of the sea water and for a substantial period of time of each 24 hours, below the top surface of the sea water. Seed oysters are secured to the member using an adhesive and the oysters are arranged in a predetermined pattern and are spaced in such a manner so that they can grow to a substantially larger size without deforming each other.

3,638,616

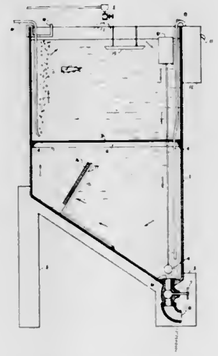
FISH-GROWING AQUARIUM

William Jeter Carmouche, 353 Stanford Ave., Baton Rouge, La.

Filed Sept. 14, 1970, Ser. No. 71,762

Int. Cl. A01k *63/00*

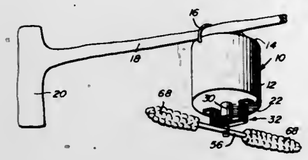
U.S. Cl. 119—5 **1 Claim**



An aquarium with fresh water supply above for growing large quantities of fish in a minimum of space. A screen

across aquarium confines fish to upper levels and prevents them from mixing descending waste particles below with fresher water above. Slanted bottom of aquarium converges to an adjustable outlet through which sediments are forced by the weight of water above. An air pump releases bubbles at end of tubing near screen to aerate water and create circulation causing contaminants to fall by gravitational and centrifugal forces. A ball valve with float closes outlet when water level falls too low. A siphon and auxiliary tank prevents overflow. Fresh water entering presses water with contaminants away from fish through screen below and out of discharge opening, removing pollutants and replacing water at required intervals to permit the crowded fish to grow for years. A filter retards the return of the heavier particles of pollutants and nitrogenous substances to the space occupied by the fish. A small propeller aerator strengthens the circulation.

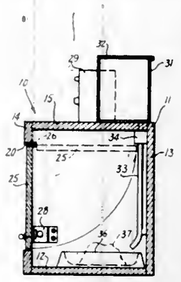
3,638,617
DEER AND WILD TURKEY FEEDER
Matthew G. White, P.O. Box 1601, Uvalde, Tex.
Filed Aug. 13, 1970, Ser. No. 63,577
Int. Cl. A01k *5/00*
U.S. Cl. 119—51 **11 Claims**



A granular feed hopper for animals including a lower downwardly opening gravity outlet. A generally horizontal panel member is disposed in vertical registry with the outlet only slightly spaced below the latter such that the angle of repose of granular feed being gravity discharged through the outlet will fall within the plan area of the panel member. However, the spacing of the panel member below the outlet is appreciably greater than the largest dimension of individual feed particles to be dispensed from the hopper and the panel member is mounted for rotation about an upstanding axis, whereby the feed being discharged from the outlet and resting upon the panel will be disturbed and moved from beneath the pile of feed resting upon the panel member as the latter is rotated. In addition, the panel member includes peripherally spaced portions which are disposed appreciably radially outwardly from the axis of rotation of the panel member and exposed for attachment of feed thereto. These outer peripheral portions of the panel member attract the birds to be fed and the birds, by pecking at the feed supported from these outer peripheral portions of the panel member, cause the latter to rotate and thus feed from the hopper to be pulled from the bottom of the pile of feed resting upon the panel member.

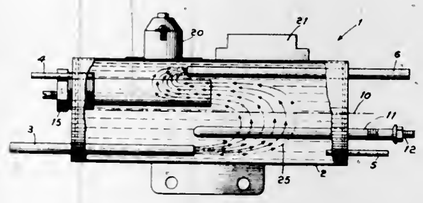
3,638,618
AUTOMATIC PET FEEDER
John Strother, 175 W. 137th St., New York, N.Y.
Filed July 31, 1970, Ser. No. 60,074
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.12 **1 Claim**

An automatic pet feeder controlled by a timer which releases a door to a feed compartment and simultaneously rings a bell to signal the pet that the door has been opened. A second door is released by the same timer at a later time for a second feeding also with a simultaneous ringing of the bell. A supply of water is released by the same timer simultaneously with the opening of one of the doors with the water



supply being fed into one of the feeder dishes to moisten dry pet food at the time of its being made available to the pet.

3,638,619
THERMOSTATICALLY CONTROLLED LIQUID-HEATING TANK
Henry B. Hall, Hamilton, Mass., and Norman W. Hill, Rochester, N.H., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 17, 1970, Ser. No. 47,054
Int. Cl. F22b *5/00*
U.S. Cl. 122—13 A **6 Claims**

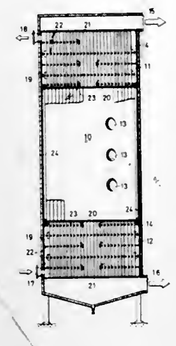


An apparatus for heating a liquid for use in medical, dental and other services comprising a receptacle for heating the liquid, thermostatic means for determining the temperature of the liquid as it exits from the receptacle, inlet and outlet means for said receptacle, said inlet and outlet means extending into the interior of the receptacle for some distance. The thermostatic control means are located adjacent the outlet means, and the heater means for the liquid are disposed adjacent the inlet means.

3,638,620
STEAM OR HOT-WATER BOILER
Nils Axel Ambjorn Ostbo, Goteborg, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden
Filed Apr. 6, 1970, Ser. No. 25,623
Claims priority, application Sweden, Apr. 23, 1969, 5756/69
Int. Cl. F22b *9/04*
U.S. Cl. 122—115 **2 Claims**

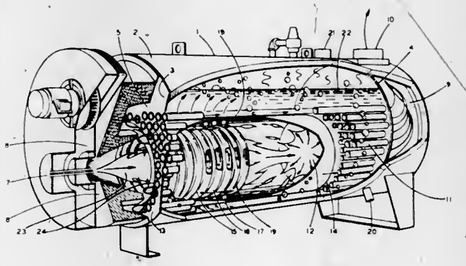
In a steam or hot-water boiler of the type, which consists of a radiant heat combustion chamber and at least one convection part connected directly thereto, the end plate of the convection part turned towards to the combustion chamber will be intensely heated. In order to ensure that this plate is efficiently cooled one baffle plate within the water space of the convection part is more closely placed with respect to the end plate than the ordinary spacing between the baffle plates,

in such a manner that an increased velocity of the waterflow is obtained, which means a higher rate of heat transfer and



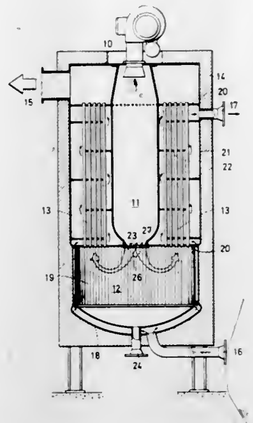
also a safe removal of possible steam bubbles from the inside of the end plate.

3,638,621
COMBINATION FIRE AND WATER TUBE BOILER
Glenn D. Craig, Menomonee Falls, Wis., assignor to Aqua-Chem, Inc., Waukesha, Wis.
Filed Aug. 26, 1969, Ser. No. 853,023
Int. Cl. F22b *7/06*
U.S. Cl. 122—140 R **17 Claims**



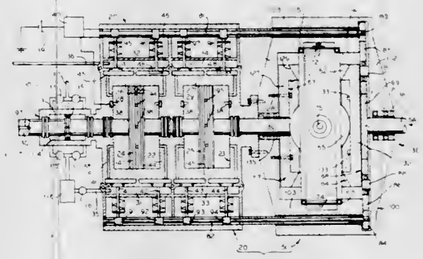
A natural circulation, shockproof, horizontal furnace, combination water tube and fire tube boiler. The water tubes comprise a plurality of membrane-connected, ring-shaped tubes, defining a substantial portion of the primary combustion cylinder for the burner flame, surrounded by a larger diameter, secondary combustion cylinder which defines the remaining portion of the longitudinal combustion zone, and which redirects the combustion gases in a return path back over the outer surface of the water tube-membrane structure. The secondary combustion cylinder is connected only at one end and is free to expand and contract due to temperature changes without stressing the boiler or the combustion cylinder. The combustion gases then reverse direction a second time in a reversal chamber to pass through horizontal fire tubes extending the length of the boiler directly through the large outer shell containing the water to be heated, and then out through the flue gas outlet. This novel boiler unit can be used to generate steam, or for hot water applications with minor modifications.

3,638,622
RETURN FLOW BOILER
Nils Axel Ambjorn Ostbo, Goteborg, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden
Filed Apr. 6, 1970, Ser. No. 25,622
Claims priority, application Sweden, Apr. 23, 1969, 5757/69
Int. Cl. F22b *7/12*
U.S. Cl. 122—182 R **1 Claim**



In return flow boilers the gases flowing along the wall of the flue tube will be cooled, whereby the combustion in the marginal portions of the flame will be considerably less complete than in the core thereof, which will have undesirable consequences when the flame emerges into the return chamber. In order to bring about a complete combustion also of the marginal portions of the flame the outlet of the flue tube is considerably restricted as compared to the main part of the tube, whereby the portions of the flame having flown along the wall of the flue tube will be forced into the core of the flame, when this emerges into the return chamber.

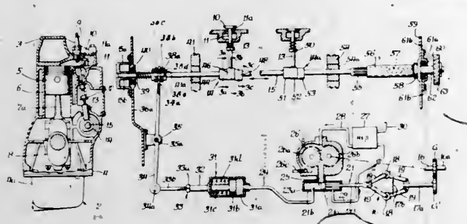
3,638,623
SPINNING PISTON ENGINES AND SYSTEM AND PROCESS OF OPERATION
James A. Weinheimer, P.O. Box 1365, Panhandle, Tex.
Filed Mar. 23, 1970, Ser. No. 21,665
Int. Cl. F02b *53/00*; **F16h** *1/30*; **F04b** *17/00*
U.S. Cl. 123—45 **10 Claims**



The piston shaft of an internal combustion engine, which shaft moves in a straight line path powered by combustion gasses within a cylinder, connects to a gear train assembly

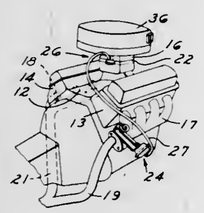
rotatably attached to the cylinder and continuously rotates the piston about its straight line path during its motion in such path and provides for reversible direction and variable speed of the engine output shaft.

3,638,624
ENGINE VALVE CONTROL MEANS
Donald J. O'Grady, 7634 W. Clarence Ave., Chicago, Ill.
Filed Apr. 13, 1970, Ser. No. 27,658
Int. Cl. F01l *7/34, 1/08*
U.S. Cl. 123—90.18 **12 Claims**



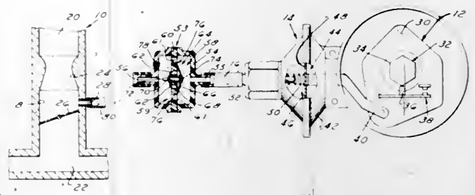
An engine valve operating control mechanism for an internal combustion engine having a transmission output driven gear pump and governor controlling the output of the oil pressure from the pump in direct proportion to the engine load whereby a hydraulic cylinder and piston unit operated by the pump pivots a cam-shifting lever which shifts the camshaft to move one of three different contoured cam lobe means in contact with the engine valves for opening and closing the intake and exhaust valves at one of three operating conditions for low, medium or high engine speed operation under load conditions.

3,638,625
EXHAUST MANIFOLD HEAT VALVE CONTROL SYSTEM
Angelo Jaimee, Union Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 23, 1969, Ser. No. 835,369
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 H **2 Claims**



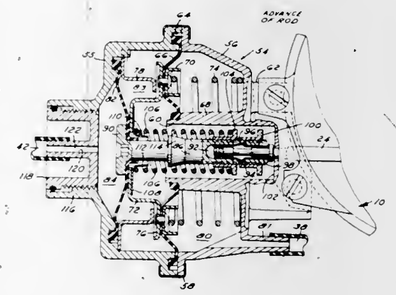
An exhaust heat valve control system for an internal combustion engine in which the position of the heat valve is dependent on the carburetor flange temperature. A temperature responsive bimetal valve opens and closes a vent to a vacuum chamber in response to the carburetor flange temperature. A vacuum motor connected to the vacuum chamber displaces the exhaust heat valve in response to variations in the vacuum chamber pressures.

3,638,626
ENGINE SPARK TIMING CONTROL DEVICE
John R. Marshall, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,326
Int. Cl. F02p *5/06*
U.S. Cl. 123—117 A **5 Claims**



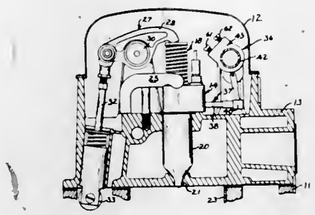
An internal-combustion engine has a vacuum servo connected to the distributor breaker plate for moving it as a function of the change in carburetor spark port vacuum as controlled by a mechanical device between the servo and spark port having sintered metal flow restriction and a one-way check valve in parallel flow circuits, the check valve unseating during rapid vehicle accelerations to quickly reduce the spark advance setting to a lower level, for better performance, the sintered metal flow restriction providing a delayed rate of return to an advanced spark timing setting during relatively slower accelerations, to minimize the emission of undesirable exhaust gas elements.

3,638,627
VARIABLE ADVANCE ENGINE IGNITION TIMING CONTROL
Garry E. Beard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 3, 1970, Ser. No. 16,164
Int. Cl. F02p *5/10;* **F01b** *19/00*
U.S. Cl. 123—117.1 **12 Claims**



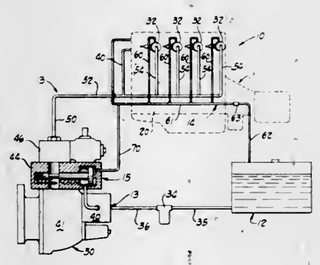
A dual diaphragm servo has one diaphragm operatively connected to the engine distributor advance plate and operatively interconnected with the other, the two diaphragms being operatively controlled in their movements by vacuum from induction passage ports at opposite sides of the carburetor throttle valve, the vacuum to the diaphragms being selectively controlled as functions of changes in vehicle speed and for engine or ambient operating temperatures, to modulate the timing advance in a variable manner with changes in vacuum level.

3,638,628
FUEL CONTROL ASSEMBLY FOR INTERNAL COMBUSTION ENGINES HAVING FUEL INJECTORS
Henry Stanford Stolworthy, Box 1508, Chelan, Wash.
Filed Sept. 18, 1970, Ser. No. 73,297
Int. Cl. F02m *39/00;* **F02b** *77/08*
U.S. Cl. 123—139 R **6 Claims**



A fuel control assembly is described for injector fed internal combustion engines having a common injector control tube connected to a plurality of injector racks to normally move the racks in unison. Control rack levers are mounted on the control tube and extend radially therefrom to connect with the racks. A safety feature is provided to enable the control tube to move the remaining racks to an idle position when one of the racks become frozen to prevent the engine from overspeeding. The safety feature is incorporated in the control rack levers to release the connection between the tube and the frozen rack and enable the tube to control the remaining racks.

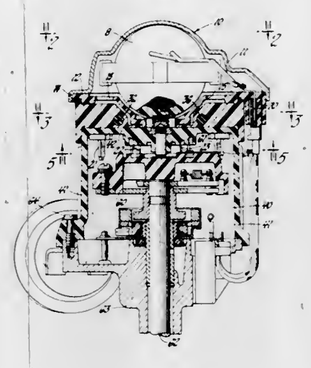
3,638,629
FUEL INJECTION SYSTEM
Charles L. Moon, Brecksville, Ohio, assignor to White Motor Corporation, Cleveland, Ohio
Filed Oct. 2, 1969, Ser. No. 863,310
Int. Cl. F02m *39/00;* **F02d** *1/04*
U.S. Cl. 123—139.6 **9 Claims**



A fuel injection system for an internal combustion engine is disclosed. The system includes a fuel supply tank, a fuel supply system between the tank and the engine, a fuel return system for returning fuel to the tank from the engine and a fuel flow governor controlling fuel flow in the supply system in response to fuel pressure in the return system.

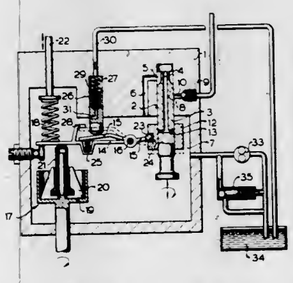
The supply system includes a fuel injection pump which normally supplies quantities of fuel to fuel injectors in excess of the fuel injected into the engine. The flow governor includes a fuel control valve for modulating the flow of fuel to the injectors in response to the level of fuel pressure in the fuel return system to prevent oversupply of fuel to the engine.

3,638,630
INTERNAL COMBUSTION ENGINE IGNITION DISTRIBUTOR CAP AND COIL ASSEMBLY
Lewis R. Hetzler; Robert E. Campbell; Charles R. Carlson, and Gerald O. Huntzinger, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 20, 1970, Ser. No. 38,988
Int. Cl. F02p *7/00*
U.S. Cl. 123—148 D **2 Claims**



An internal combustion engine ignition distributor cap and coil assembly. An intermediate member of insulating material supports a plurality of elongated electrical terminals arranged in a circular pattern, one for each cylinder of the engine, and an equal number of elongated conductors, each of which is connected to one end of a corresponding one of the elongated terminals and extends substantially normal to the axis of the circular pattern of terminals. An ignition coil housing member, within which the ignition coil windings are enclosed, is secured to a cap member with the intermediate member disposed therebetween and the free end of each terminal extending through a corresponding terminal accommodating opening through the closed end portion of the cap member to provide a three-section assembly.

3,638,631
RPM. REGULATOR FOR FUEL INJECTION PUMPS
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 27, 1970, Ser. No. 15,085
Claims priority, application Germany, Mar. 8, 1969, P 19 11 913.2
Int. Cl. F02n *17/08, 39/00;* **F02d** *1/04*
U.S. Cl. 123—179 L **3 Claims**



In an r.p.m. regulator, the cutoff of additional fuel quantities required for the starting of an internal combustion engine, is effected by an r.p.m.-dependent pressure which displaces a starting piston against the force of a starting spring.

In this manner, the starting spring, which, during starting r.p.m.s, causes the delivery of said additional fuel quantities, is neutralized and does not affect the fuel quantity control during normal engine operation.

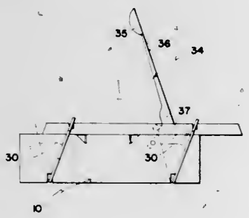
3,638,632
MOTORCYCLE COMPRESSION RELEASE
James Willard Boling, 2060 Almanor St., Oxnard, Calif.
Filed May 6, 1970, Ser. No. 35,058
Int. Cl. F01l *13/06, 13/08*
U.S. Cl. 123—182 **10 Claims**



A compression release structure for a motorcycle includes the customary exit valve communicating with the combustion cylinder interior and may be lifted from its seat by manual operation of a pull cable in order to expel combustion product and gases under compression from the cylinder. When the cylinder pressure is diminished to a point where ambient air would otherwise tend to enter the cylinder with its contaminants the air is prevented from entering and fouling the cylinder and lubricants by a spring-biased one-way check valve.

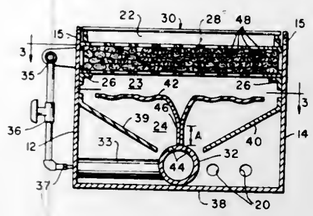
The one-way check valve is self-centering and of conical shape to swiftly establish a positive seal with its seat and block out the atmospheric air.

3,638,633
TOY CATAPULT
Alvena F. Clark, Saskatoon, Saskatchewan, Canada, assignor to Catapult Toy Co., Ltd., Saskatoon, Saskatchewan, Canada
Filed Feb. 27, 1970, Ser. No. 14,958
Int. Cl. F41b *3/02*
U.S. Cl. 124—4 **2 Claims**



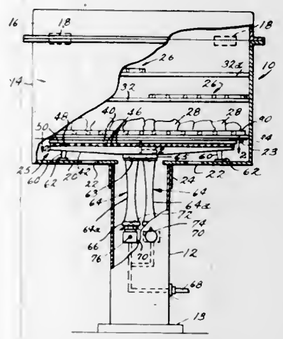
A toy catapult comprising a supporting structure upon which slides a pair of parallel side members. The side members are moved by a pair of pivoted brackets which are both interlocked with each side member. A crossbar attached between the side members engages a cam on the underside of a sling component. When the brackets are pivoted forward, the side members and crossbar are slid forward causing the crossbar to engage the cam near the pivot to the sling component which in turn causes the sling component to be flipped forward in a vertical arc.

3,638,634
BROILER
Walter J. Bolitho, 30005 West 13 Mile Road, Farmington, Mich.
Filed May 28, 1970, Ser. No. 41,492
Int. Cl. A47j *37/00*; **F24c** *3/04*
U.S. Cl. 126—41 R **7 Claims**



A gas-fired broiler having a compacted volume of trap rock interposed between a grill which supports the edibles and a primary source of heat which cooks the edibles. The trap rock provides both a substantially uniform temperature cooking surface and a noncombustible collector and absorber of liquid animal fats. A member capable of being heated to incandescence is positioned between the primary source of heat and the trap rock pack acting as a distributor of the heat from the burner to the whole area of the trap rock pack.

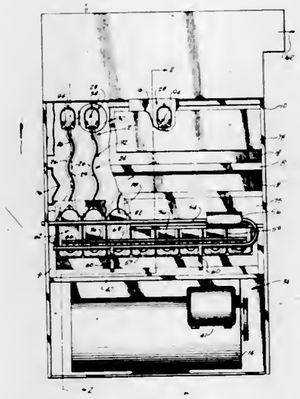
3,638,635
SPLIT GAS BURNER
Wendell M. Drennan, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.
Filed Sept. 18, 1969, Ser. No. 859,156
Int. Cl. A47j *37/07*; **F23d** *13/00*
U.S. Cl. 126—41 R **8 Claims**



A gas-fired cooking grill includes a cooking and smoke-retaining enclosure and a gas burner within the enclosure, the burner being an integral cast hollow structure having two distinct, independently controlled burner portions serving different parts of the cooking rack.

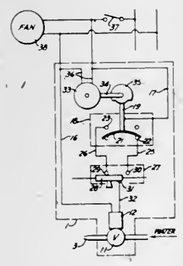
3,638,636
AIR HEATER
William A. Marshall; Bernard Paul Lunkwicz, both of Centralia, and Henry Meresz, Wheeling, all of Ill., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 22, 1970, Ser. No. 4,881
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 R **17 Claims**

A plurality of adjacent shell-type heat exchange shells are disposed in a furnace casing above a blower with an air passage between adjacent heat exchange shells. Each heat exchange shell includes a lower combustion chamber which opens into an intermediate heat exchange section, and a flue gas collector duct above the heat exchange section connected to a vent. Gas burners are disposed in each combustion chamber to create products of combustion which flow upwardly through each heat exchange shell. The walls of each heat exchange section are convoluted to produce a serpentine passageway with considerable heat transfer surface



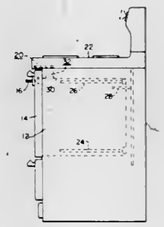
for the rising combustion gases. A baffle located at the inlet to the collector duct produces even gas flow through the heat exchange section and diverts gases to heat the walls of the duct. Each heat exchange shell is constructed of sheet metal and comprises a pair of complementary half-shells welded together such that an outer peripheral seam is formed. The seam follows the line of the convoluted walls of the heat exchange section to reduce thermal stresses. The heat exchange shells are mounted in the casing with the use of a floating joint to enable vertical expansion of the shells.

3,638,637
SPRAY HUMIDIFIER
William H. Coffman, Jr., Mt. Pleasant, Pa., assignor to Lewbill Industries Inc., Scottdale, Pa.
Filed May 21, 1970, Ser. No. 39,445
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **3 Claims**



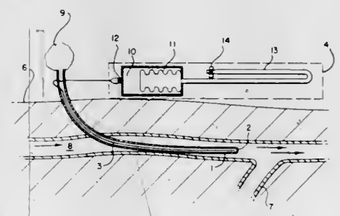
A normally closed solenoid valve connects a source of water under pressure to the spray nozzle of a humidifier. An electric switch is connected with the solenoid for energizing it to open the valve. This switch is actuated between on and off positions by means of a normally inactive timer that includes means for holding the switch in each of its positions a predetermined length of time. The timer is provided with means for connecting it in the fan circuit of a forced warm air furnace so that the timer will operate whenever the fan is running.

3,638,638
LATCHING AND LOCKING ARRANGEMENT FOR SELF-CLEANING OVEN DOOR
Clarence Gary Phifer, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 26, 1970, Ser. No. 40,495
Int. Cl. F24c *15/02*
U.S. Cl. 126—197 **10 Claims**



A bimetal-operated locking arrangement for a latched door of a self-cleaning oven which includes a second bimetal means having negative deflection characteristics below a certain temperature cooperating with the main bimetal means to aid the movement of the locking means toward a locked position during a period of oven temperature rise, and to aid the movement of the locking means away from the locked position during the period of falling oven temperatures following a heat cleaning operation.

3,638,639
APPARATUS FOR REMOVING LIPIDS FROM THE HUMAN BLOODSTREAM
Edward W. Merrill, Cambridge, Mass.; assignor to Hans H. Estin; Leonard W. Cronkhite, Jr., and William W., trustees of The Charles Riber Foundation Wolbach
Filed Feb. 24, 1970, Ser. No. 13,279
Int. Cl. A61b *05/14*
U.S. Cl. 128—2 F **6 Claims**

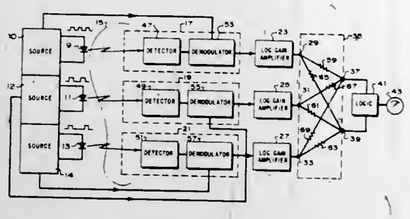


A catheter for monitoring the concentration of lipids in the bloodstream made from a material that selectively absorbs lipids. The catheter is inserted in the bloodstream while the interior wall of the catheter is washed continuously or periodically with a nontoxic solvent delivered through a lipid-impermeable fiber to dissolve the absorbed lipids. The lipid-rich solvent is contacted with an absorbent located at the open end of the catheter and outside the epidermis to evaporate the solvent. The absorbent is analyzed periodically for lipids.

3,638,640
OXIMETER AND METHOD FOR IN VIVO DETERMINATION OF OXYGEN SATURATION IN BLOOD USING THREE OR MORE DIFFERENT WAVELENGTHS

Robert F. Shaw, 2316 Leavenworth St., San Francisco, Calif.

Filed Nov. 1, 1967, Ser. No. 679,920
Int. Cl. A61b 5/00
U.S. Cl. 128—2 R 36 Claims

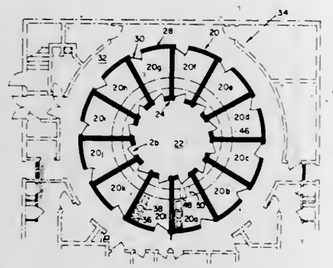


Oximeter method and apparatus uses a test appliance that includes a source for directing radiation into skin tissue or other blood-confining container at three or more wavelengths and a detector for sensing the radiation intensity emanating from the skin tissue or other container at each wavelength. The oximeter method and apparatus also uses circuitry for combining the detector outputs in a predetermined manner to provide an indication of the oxygen saturation of the blood independently of position or movement of the test appliance on the patient and without first calibrating the indication on each patient.

3,638,641
MULTIPHASIC MEDICAL EXAMINATIONS SCREENING LABORATORY CONSTRUCTION

John C. Abromavage, Tempe, and James F. George, Phoenix, both of Ariz., assignors to Arcoa, Incorporated, Phoenix, Ariz.

Filed Nov. 19, 1969, Ser. No. 878,094
Int. Cl. A61b 05/10
U.S. Cl. 128—2 R 13 Claims

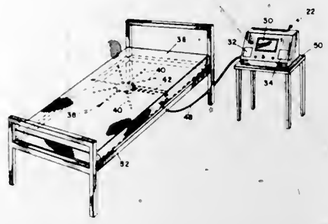


Multiphasic medical examinations screening laboratory of a type where a test sequence phase is separated from a self-administered history phase, wherein a plurality of wedge-shaped test chambers surround a central core area and constitute the test sequence phase area, each test chamber containing all instruments and leads to perform predetermined tests, inexpensive instruments being located in each test chamber and expensive equipment being centrally located in the central core and interconnected with each test chamber via a cable, with still further expensive equipment mounted on a track above the wedge-shaped test chambers adapted for selective placement in each chamber, wherein the construction and arrangement of various features are such as to provide optimum facility use, convenience, privacy, safety and practice of medical examinations within the purview of the process.

3,638,642
PATIENT MONITORING SYSTEM WITH BEDSHEET-MOUNTED ANTENNA

Albert E. Heflin, Sr., El Cajon, Calif., assignor to Teledoc Corporation, El Cajon, Calif.

Filed Mar. 13, 1970, Ser. No. 19,439
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1 A 3 Claims

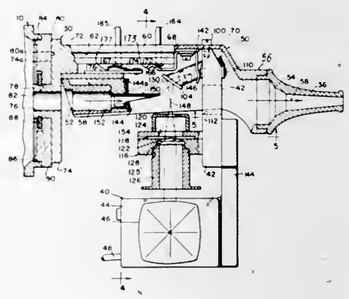


A patient monitoring system in which biological data are sensed by a self-contained unit attached to the patient, the unit containing a very low-powered radio transmitter. A radio receiver is coupled to an antenna which is incorporated in the bed covering in such a manner as to pickup signals from the transmitter regardless of the position of the patient on the bed, the antenna being flexible to avoid discomfort to the patient and to withstand motion of the patient. The metal bedframe acts as a shield against unwanted radio frequency signals. Suitable display and recording apparatus can be connected to the receiver at the bedside or at a remote location.

3,638,643
ENDOSCOPE FOR PHOTOGRAPHIC RECORDING

John E. Hotchkiss, Corte Madera, Calif., assignor to Hotchkiss Instruments, Inc.

Continuation-in-part of application Ser. No. 675,811, Oct. 17, 1967, now abandoned. This application Aug. 29, 1968, Ser. No. 756,112
Int. Cl. A61b 1/22, 1/04
U.S. Cl. 128—9 13 Claims

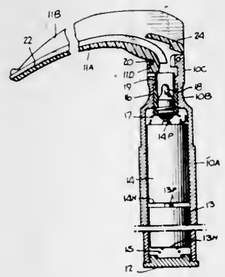


An endoscope having a housing with a viewing aperture aligned with a sight aperture and a sight passage therebetween. A light source directs focusing and photographic flashlight rays onto a mirror mounted to the housing between the apertures for the coaxial reflection of such light rays along the axis of the sight passage and through the sight aperture. A mounting member connects a camera with the endoscope so that the optical axis of the camera is aligned with the sight passage whereby the exact area being photographed is coaxially illuminated by both focusing and photographic flashlight rays. Terminals electrically couple a light source mounted to the housing for illumination of a cavity to be photographed with an electric power source. The terminals furthermore mechanically secure the mounting member to the housing. A universally movable support structure mounts the camera and the endoscope and permits their alignment with the organ.

3,638,644
ILLUMINATED SURGICAL SPECULUM

Franklin G. Reick, Westwood, N.J., assignor to Michael Elbert, Mamaroneck, N.Y.; Frederick R. Picut, Mountainside; Franklin G. Reick, Westwood, N.J. and Joseph R. Wilder, New York, N.Y., part interest to each

Filed Mar. 5, 1969, Ser. No. 804,530
Int. Cl. A61b 1/06
U.S. Cl. 128—16 4 Claims



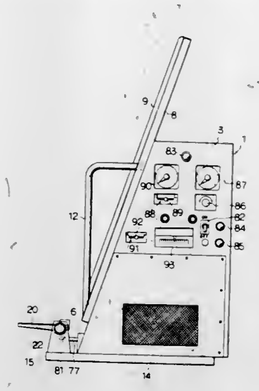
An illuminated medical appliance for surgical and diagnostic purposes, the appliance including an applicator, such as a tongue depressor or retractor blade, formed of a strong, heat-resistant resin capable of withstanding the mechanical stresses to which the device is subjected when inserted. The inner surface of the applicator is contoured to engage tissue or whatever other organic material forms the wall of the cavity or region of insertion. Detachably mounted on the outer surface of the applicator and conforming to the curvature thereof, is a plastic, light-transmitting strip whose front end portion is adapted to disperse light laterally over a relatively broad zone adequately to illuminate the region of interest, the other end being optically coupled to a light source which is housed and energized in the handle of the appliance.

3,638,645
APPARATUS FOR REHABILITATIVE EXERCISE OF FEET

Isao Kitada, 7-10, Sanban-cho, Chiyoda-ku, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,674
Int. Cl. A61h 1/02
U.S. Cl. 128—25 B 9 Claims

Apparatus for rehabilitative exercise of feet is comprised of a cabinet having a pair of motor-driven footboards which swing up and down on their common shaft in the alternatingly opposite directions, while a rehabilitant with his feet on these footboards reclines against a backboard secured to the cabinet. The motor adapted to drive the footboards has a speed control device thereby to controllably vary the speed of their swinging movements. Two additional motors are provided inside the cabinet, one for the adjustment of the angle through which the backboards are permitted to swing and the other for the adjustment of the angle between the centerline of the angle of swing of the backboards and the plane of the horizon, so that the rehabilitant may have his feet exercised the way most suiting his particular case of disability.



3,638,646
THERAPEUTIC TABLE

Marcel M. Draux, 57 rue de Rempart, 59 Valenciennes, France

Filed Sept. 12, 1969, Ser. No. 857,416
Claims priority, application France, Oct. 16, 1968, 170146
Int. Cl. A61h 1/00
U.S. Cl. 128—33 13 Claims

A therapeutic table having a frame and at least three patient supporting platforms slidably mounted on the frame. The table is characterized by the frame being pivotable about a pedestal so that either end of the patient supporting portion may be elevated. The table is further characterized by a vibrator supported from the frame and being operatively connected to means for supporting an extremity of a patient on the table.

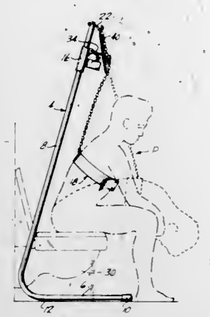
3,638,647
TOILET SYNCOPE GUARD

Raymond C. Creelman, 532 Fifth St., Bremerton, Wash.

Continuation-in-part of application Ser. No. 736,659, June 13, 1968, now abandoned. This application Mar. 2, 1970, Ser. No. 15,467
Int. Cl. A61f 5/37
U.S. Cl. 128—133 18 Claims

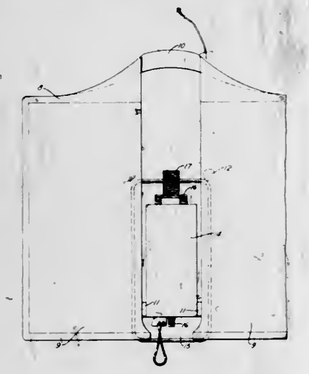
A syncope guard is disclosed for use with a person sitting on a toilet, or chair, or some other form of seat above a floor. The guard comprises a stand that is adapted to be mounted adjacent the seat, and a harness which is attachable to the body of the person sitting on the seat, and interconnected with the stand so that when the person has a syncope reaction, his head and upper trunk can fall forward from the sitting position into a slumped downward condition above the floor, but once he is in the latter position, the harness arrests his fall and retains his head and upper trunk above the floor.

It also comprises an alarm device, and an actuator which is connectable to the body of the person and operative to sound



the alarm when the person's body slumps into the aforesaid downward position above the floor.

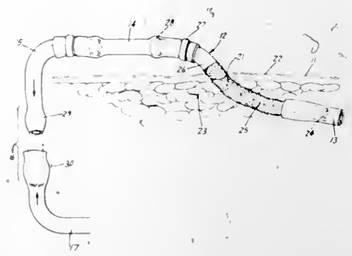
3,638,648
BREATHING BAGS
Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,202
Int. Cl. A62b *7/00*
U.S. Cl. 128—202 **6 Claims**



A single strip of flexible and impervious material is folded lengthwise upon itself to form a double-thickness member, which is provided midway between its ends with a recess extending inwardly from one edge. The edges of the strip and substantially all of the area between the recess and the other edge of said member are sealed together so that two longitudinally spaced breathing bags are formed that are integrally connected at their inner ends by a band adapted to extend around the back of the neck to suspend the bags over the chest. Each bag has an opening therein near its outer or lower end.

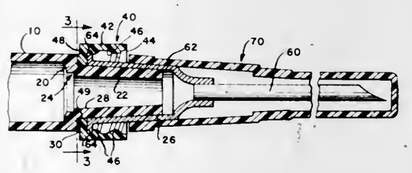
3,638,649
IMPLANTABLE PROSTHETIC PASS-THROUGH DEVICE
Robert A. Ersek, St. Louis Park, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed July 7, 1969, Ser. No. 839,297
Int. Cl. A61m *05/00, 25/00*
U.S. Cl. 128—214 R **11 Claims**

An implantable through-the-skin prosthetic device for the permanent entry into the body for passage of liquid, conductors or the like. The device includes a roughened synthetic resinous member that courses through the skin and subcutaneous tissues and into the body. This special roughening promotes tissue ingrowth and thus effects a firm mechanical seal. Animal experimentation and clinical success imply that the seal is also dry and germproof. One form of such a device



is an arteriovenous shunt for use in artificial dialysis. A roughened plastic cannula passes through the skin into the blood vessel itself. A ball joint fitting for connection to the external circuits allows for one-handed operation by a trained patient. A special reamer is provided for use with the shunt.

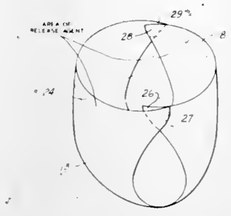
3,638,650
SYRINGE AND NEEDLE ADAPTER ASSEMBLY AND METHOD OF MAKING SAME
George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed Apr. 29, 1970, Ser. No. 32,789
Int. Cl. A61m *5/00*
U.S. Cl. 128—221 **7 Claims**



A needle adapter is supported in surrounding relationship to the boss on a syringe and has attaching portions to mount a hypodermic needle having attaching flanges on the hub thereof. The needle adapter includes a plurality of tapered spaced portions which are ultrasonically fused to spaced portions of the annular shoulder on the barrel of the syringe surrounding a boss extending therefrom.

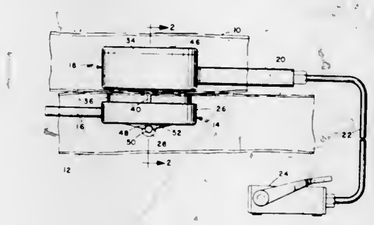
3,638,651
DIAPERS
David Torr, Oyster Bay, N.Y., assignor to Georgia-Pacific Corporation, Stamford, Conn.
Filed Oct. 8, 1969, Ser. No. 864,836
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **15 Claims**

Disposable diapers, to be used without pins, which have a pressure-sensitive adhesive area at at least one corner at each side of the diaper and have surface layers of release agent



which are in contact with the adhesive areas when the diapers are packed in a carton.

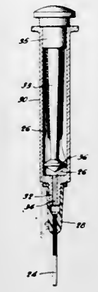
3,638,652
SURGICAL INSTRUMENT FOR INTRALUMINAL ANASTOMOSIS
James L. Kelley, 3111 Kellogg, San Diego, Calif.
Filed June 1, 1970, Ser. No. 42,075
Int. Cl. A61b *17/32, 17/11*
U.S. Cl. 128—305 **8 Claims**



An instrument for use by surgeons particularly in cases involving resection and anastomosis of vascular and digestive tract organs. The instrument is dimensioned for insertion of the principal parts of the instrument into the open ends of or through stab wounds in the lumena after resection and the actual anastomosis is by stapling the tissue entirely around the stoma which is formed by an endless knife, illustrated as annular, and the tissue cut away to form the stoma is conveniently removed with instrument. The staples and knife are in a replaceable cartridge. Remote power means connected by a flexible conduit allows maximized ease of maneuverability of the principal parts of the instrument during actual surgical procedure.

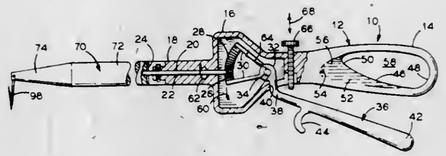
3,638,653
SUTURING DEVICE
H. Lee Berry, 1414 Laburnum St., McLean, Va.
Filed July 31, 1969, Ser. No. 846,566
Int. Cl. A61b *17/06;* **A61l** *17/02;* **D05b** *1/00*
U.S. Cl. 128—340 **1 Claim**

A combination of elements for use in surgery, particularly suturing. The combination includes a conventional needle holder with a second element, namely a needle-suture assembly combining a suture storage chamber and a hollow needle through which the suture is drawn. The needle-suture assembly is associated with the needle holder in order that suturing is accomplished by manipulation of the handles of the needle holder. The needle-suture assembly is attached to the needle holder by grasping the needle with the needle holder and also by means associated with the suture storage chamber, which attaches the unit to the needle holder on the opposite side of the pivot point from the needle. The latter attaching means serves also to effectively lock the needle holder against inadvertent opening during the suturing operation. The suture storage chamber includes a storage spool which serves to seal the storage chamber, store the thread,



and to restrain the suture against rapid, undesirable dispensing.

3,638,654
SUTURING INSTRUMENT
Uche Akuba, 30 Park Ave., Suite 19F, New York, N.Y.
Filed July 11, 1969, Ser. No. 841,051
Int. Cl. A61b *17/04;* **D05b** *91/00;* **D05c** *15/00*
U.S. Cl. 128—340 **10 Claims**



A surgical suturing instrument for applying sutures to a wound or the like comprising a first handle movably mounting a second handle which is operable to rotate a shaft when moved from a first position to a second position. Needle means including a needle is affixed to the shaft so that movement of the second handle affects rotation of the needle. Provided in the needle is a suture-retaining slot which carries a suture so that as said needle is rotated through tissue it automatically threads the sutures.

3,638,655
INTUBATION TUBES
George O. Doherty, 2301 River Road, Missoula, Mont.
Continuation of application Ser. No. 628,593, Apr. 5, 1967, now abandoned. This application May 18, 1970, Ser. No. 37,462
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **13 Claims**

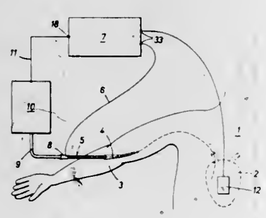
An intubation, endotracheal, or other tube having a tubular portion provided with a bulbous cuff encirclingly disposed on its distal end. The cuff is formed from an easily compressible or distortable material which constantly seeks to revert to its original shape, yet, when distorted, exerts pressure of

small magnitude on the distorting object. The cuff sealingwise engages the walls of a patient's encircling tracheal lin-



ing. The cuff of one embodiment is reduced in diameter at its center for accommodation of the patient's vocal cords.

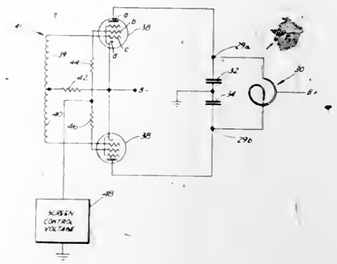
3,638,656
METHOD AND APPARATUS FOR MONITORING AND STIMULATING THE ACTIVITY OF THE HEART
Theo Grandjean, Lausanne; Juan Ulrich Zumstein, Bolligen, and Alfred Liechti, Bern, all of Switzerland, assignors to Fred Liechti Aktiengesellschaft, Bern, Switzerland
Filed Aug. 14, 1969, Ser. No. 850,116
Claims priority, application Switzerland, Aug. 26, 1968, 12746/68
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P **9 Claims**



The intensity of the stimulation pulses from the output stage is increased step-by-step to an adjustable maximum value by a regulating stage. The latter is fed pulses derived from the activity of the heart. When these pulses are absent or late, the value of a shunt combination of resistances is increased in steps until an adjustable maximum value is reached, as determined by a potentiometer connected in parallel with these resistances and also connected to the control electrode of a component in the output stage.

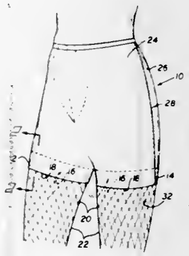
3,638,657
SHORT WAVE DIATHERMY CIRCUIT
Hal C. Mettler, 680 Westbridge Place, Pasadena, Calif.
Filed July 30, 1969, Ser. No. 846,012
Int. Cl. A61n *1/40*
U.S. Cl. 128—422 **11 Claims**

A diathermy having a vacuum tube in a tuned plate, tuned grid oscillator circuit. A coil is placed in the tuned plate circuit for applying short wave signals to a patient undergoing treatment. The tube has at least a control grid connected to the tuned grid circuit and a screen grid. A circuit is coupled to the screen grid for enabling a signal to be fed back from the plate circuit through the screen grid to the control grid and comprises an impedance for coupling the screen grid to a



source of control signals for controlling the power delivered by the coil to a patient undergoing treatment.

3,638,658
GIRDLE GRIPPING SURFACE
Marvin Becker, 276 Newtown Turnpike, Wilton, Conn., and Harold Belmuth, 8 Highwood Lane, Westport, Conn.
Filed Aug. 11, 1969, Ser. No. 849,007
Int. Cl. A41c *1/00*
U.S. Cl. 128—535 **1 Claim**



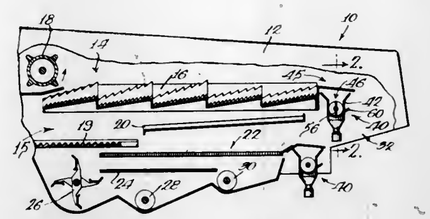
A girdle friction or gripping surface for stockings, panty hose or the like, the surface being applied directly to the leg portion surfaces bounding the garment leg openings rather than being applied to lace or other fabric which is sewn to the completed garment. The friction surface, in a preferred embodiment, consists of a dispersion of small mass or deposits of latex, elastomeric or plastic material which project through the stocking interstices and, in this manner, prevent the stockings from falling.

3,638,659
GRAIN LOSS MONITORING DEVICE
Robert L. Dahlquist, Rock Island, and Maurice Klee, Rockton, both of Ill., assignors to J. I. Case Company
Filed Apr. 3, 1970, Ser. No. 25,421
Int. Cl. A01f *12/44*
U.S. Cl. 130—27 W **12 Claims**

A monitoring device for indicating the loss of grain across the exit end of a crop separating mechanism supported within a crop receiving passageway. The monitoring device includes a conveyor extending across and below the exit end of the crop separating mechanism with the conveyor delivering any grain received therein to a flowmeter in communication therewith. The flowmeter is in the form of a vertical passageway with a platen disposed in the passageway and having a convex surface exposed to the path of flow of the grain. The platen is pivoted adjacent the side of the

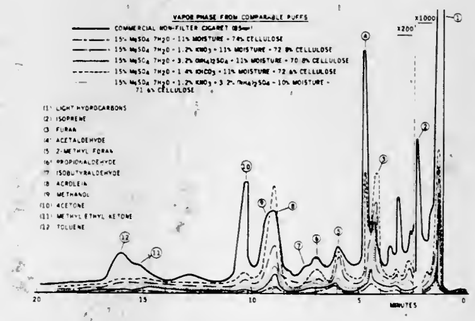
passageway and has an end portion extending beyond the pivot to cooperate with signal-generating means for indicating flow of grain through the flowmeter.

In one embodiment, the signal generating means takes the form of a circuit having a warning light and a switch with the



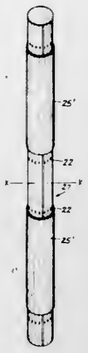
switch actuated by the paddle in response to the flow of grain through the flowmeter. In another embodiment, the signal generating means is a circuit having an indicator and a variable resistor, the resistance of which is controlled by the paddle.

3,638,660
METHOD FOR MAKING A TOBACCO SUBSTITUTE COMPOSITION
Howard J. Davis, 8 Old Farm Road, RD. 2, Martinsville, N.J.
Continuation-in-part of application Ser. No. 473,916, July 21, 1965, which is a continuation-in-part of application Ser. No. 32,211, May 27, 1960, now abandoned , which is a continuation-in-part of application Ser. No. 9,763, Feb. 9, 1960, now abandoned. This application Sept. 10, 1968, Ser. No. 758,872
Int. Cl. A24b *03/14*
U.S. Cl. 131—2 **5 Claims**



A method of making a tobacco substitute material is disclosed which involves the use of fibrous woodpulp which contains at least 90 percent of alpha cellulose. The selected wood pulp of high alpha cellulose count is lightly beaten to a Canadian Standard Freeness of between 400–700 ml. and is then combined with a nontoxic combustion modifier and formed into a sheet having a density of 12–35 lbs./ft.^{3}. The combustion modifiers useable are the potassium, sodium and magnesium sulphates, magnesium and potassium chlorides, sodium, potassium, magnesium and ammonium carbonates and bicarbonates, potassium nitrate, ferric oxide, ferric hydroxide, alumina, magnesium gluconate, citrate, citrate and acetate and gluconic acid. The metallic compounds utilized are preferably used in their hydrated form.

3,638,661
METHOD OF FORMING FILTER CIGARETTES
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Nov. 13, 1969, Ser. No. 876,237
Int. Cl. A24c *05/48, 05/52, 05/58*
U.S. Cl. 131—94 **2 Claims**

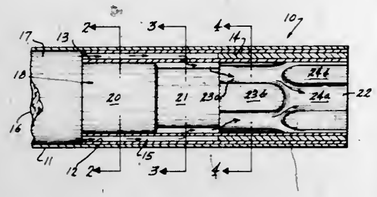


A smoke filter is provided which is adapted to be combined with a tobacco rod to form a filter cigarette. The filter includes an elongated core piece of smoke impervious material, a first sleeve of thin perforated material encompassing said core piece, and a second sleeve of smoke impervious material encompassing said first sleeve and an end of the tobacco rod. The second sleeve has a portion thereof spaced from the first sleeve and cooperating therewith to form a first sleeve and cooperating therewith to form a first elongated annular passageway, one end of which communicates with the tobacco rod end. The perforations of the first sleeve form a core piece-encircling row which is in registration with a second elongated annular passageway formed by the first sleeve and an exterior portion of the core piece. The smoke passes at a high velocity from the first passageway to the second passageway through the row of perforations and impinges against the exterior portion of the core piece. The space between the first and second sleeves is formed by a short third sleeve interposed between the first and second sleeves. A method of forming the article is provided in which a multiple length filter is formed with said first sleeve being continuous and said third sleeve being applied as axially spaced portions around said first sleeve, after which the assemblage is severed into double length filter portions which are interposed between two cigarette portions and joined thereto by said second sleeve.

3,638,662
SMOKE FILTER
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Feb. 19, 1970, Ser. No. 12,745
Int. Cl. A24d *01/04;* **A24f** *07/04, 13/06*
U.S. Cl. 131—261 B **5 Claims**

A smoke filter is provided which is adapted to be affixed to one end of a tobacco rod. The filter includes an elongated core piece formed from smoke impervious material and having a cylindrical upstream end section, a cylindrical center section of lesser diameter than said end section, and a fluted downstream end section. The fluted section is provided with a first set of elongated flutes extending downstream from the center section and a second set of elongated flutes annularly offset from said first set and extending downstream therefrom. One set of flutes is of greater depth than the other and forms a trap for smoke particles. The core piece is encompassed by an inner sleeve provided with a plurality of

perforations arranged in encircling relation with respect to the center section. The inner sleeve cooperates with the center section to form a shallow annular first passageway. An outer sleeve encompasses the inner sleeve and is spaced therefrom to form an annular second passageway which communicates with the first passageway only through the perforations. The smoke flows through the perforations as high velocity jets which impinge against the exterior of the core piece center section. Subsequent to the jet impingement, the smoke flows downstream past the fluted end section.

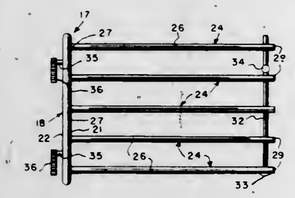


3,638,663

ADJUSTABLE HAIR FOUNDATION

Deloris J. Harbison, 2500 Independence Ave., Kansas City, Mo.

Filed June 16, 1970, Ser. No. 46,777
Int. Cl. A41g *5/00*
U.S. Cl. 132—54 **8 Claims**



A hair foundation or lift for application to a lady's head, having spaced-apart slats which extend upwardly from the scalp, and over which the hair, located between the slats, is drawn for bouffanting or puffing the hair. The foundation includes a base member or bar to which the slats are detachably and adjustably connected, enabling the slats to be disposed in vertical planes or inclined in a direction corresponding to the direction that the hair is drawn over the slats. The base member may include detachable sections, each capable of supporting a slat for increasing the length of the foundation and the number of slats utilized. A rod detachably engages through the ends of the slats, disposed remote from the base member, for confining the hair between said rod and the base member. Clips carried by the base member are clamped to the hair for securing the foundation in a desired location on the head.

3,638,664

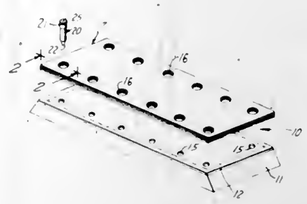
COMBINATION DISPLAY, STORAGE AND DISPENSING MEANS

Jerry Cohn, 1546 Broadway, New York, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,101
Int. Cl. A45d *40/00*
U.S. Cl. 139—79 C **7 Claims**

The present invention relates to a combination display, storing and dispensing instrumentality, in particular for use in connection with coloring matters, cosmetic, and semisolid and similar plastic masses and applies more specifically to lipstick testing and like makeup equipment, which is generally exposed to view and generally tested when employed in specialty stores on counters thereof and other establishments.

Such equipment is of simplified construction and affords after use by successive persons that through separation of the



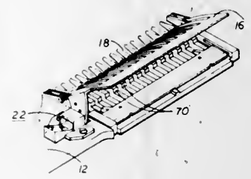
top surface layer of superposed, preferably absorbent sheet material stapled or adhesively maintained in pad formation, the aesthetic outer appearance and ready function of the equipment will be at all times kept in a clean, antiseptic and tidy array.

3,638,665

HAIR COMB WITH ADJUSTABLY TAPERED TEETH

Broussard Staffas, Sr., 2100 St. Bernard Ave., New Orleans, La.

Filed Mar. 25, 1971, Ser. No. 127,975
Int. Cl. A45d *24/36*
U.S. Cl. 132—129 **7 Claims**



A comb having combination teeth in which two sets of teeth are congruently pivoted adjacent their free ends to swing angularly about said pivot to adjustably vary the taper of said combination teeth, and a bar slidably mounted intermediate said sets of teeth for varying the effective lengths of said teeth directly with said adjustable taper.

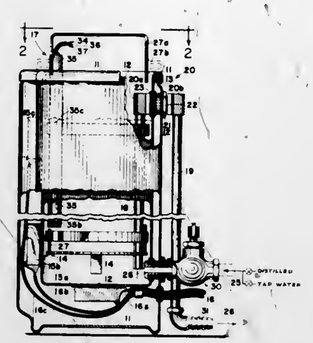
3,638,666

APPARATUS FOR ULTRASONIC PIPET WASHING

Sherman S. Fishman, 1961 Stockton St., San Francisco, Calif.

Filed Oct. 24, 1965, Ser. No. 504,777. The portion of the term of the patent subsequent to Aug. 1, 1988, has been disclaimed.
Int. Cl. B08b *7/02, 3/10*
U.S. Cl. 134—57 R **6 Claims**

An ultrasonic pipet washer for very complete decontamination of laboratory glass pipets, functioning to give an ultrasonic wash and more importantly an ultrasonic rinse; standard acoustic intensities are obtained with transducers on the bottom of the tank and high intensity is obtained by putting additional transducers on the sidewall. Transducers on the sidewall must be inactive when the solution level lowers past it during emptying and this is done with a liquid level switch. Emptying is through a siphon whose inside arm extends to about 1 inch above the bottom which assures that



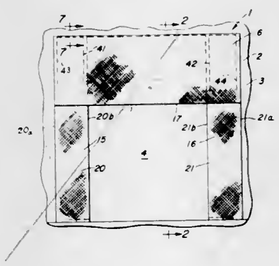
depth of solution remaining in the tank allowing the bottom transducers to remain active.

3,638,667

LOADING DOCK SHELTERS

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed May 5, 1970, Ser. No. 34,793
Int. Cl. E04f *13/00*
U.S. Cl. 135—5 A **7 Claims**



An extensible loading dock shelter having side curtains which are pulled into draping engagement with the sides of a truck retracting the shelter.

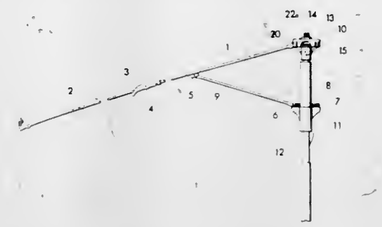
3,638,668

FOLDING UMBRELLA

Nobutoshi Kida, Osaka, Japan, assignor to Wakabayashi & Co., Ltd., Tokyo, Japan, a part interest

Filed May 5, 1969, Ser. No. 821,630
Claims priority, application Japan, Sept. 19, 1968, 43/81727
Int. Cl. A45b *11/00, 19/04, 19/10*
U.S. Cl. 135—20 R **1 Claim**

A folding umbrella which comprises a contractile pole on the top end of which an upper rib holder of an elongate form is fixedly mounted, a plurality of main ribs having an end rib each and pivotally held at their ends by said upper rib holder on its both sides in the manner of twofold division, a lower rib holder having an elongate form and slidably secured to said pole piercing therethrough and support ribs supporting said main ribs and pivotally held at their ends by said lower rib holder on its both sides in the manner of twofold division,



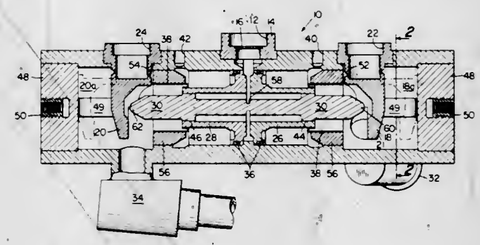
thereby enabling the folding umbrella to be folded in a flat and compact form.

3,638,669

CANTILEVERED BREAKAWAY FUEL AND OXIDIZER RELEASE

Robert A. Feight, Canoga Park; De Lacy F. Ferris, Van Nuys, and Frank B. Hunter, Woodland Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 22, 1970, Ser. No. 39,839
Int. Cl. F02c *7/26;* **F16k** *17/40*
U.S. Cl. 137—68 **7 Claims**



A normally closed propellant isolation valve utilized in a missile propulsion system is actuated by propellant tank pressure to rupture a diaphragm and allow pressurized gas to flow into a cavity between two opposed pistons which are joined by a frangible tie. When the cavity pressure reaches a predetermined level, the tie fractures and allows the pistons to separate. Each piston then strikes and breaks an adjacent cantilever cup to simultaneously open oxidizer and fuel orifices. Each piston also moves its cup out of the flow path, thereby eliminating the effect of any pressure drop variation on the system mixture ratio.

3,638,670

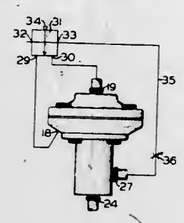
LOW TO HIGH FLUID PRESSURE INTERFACE APPARATUS

Clifford W. Allen, Lexington, Ky., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 25, 1970, Ser. No. 22,562
Int. Cl. F15c *1/14, 3/04*
U.S. Cl. 137—81.5 **4 Claims**

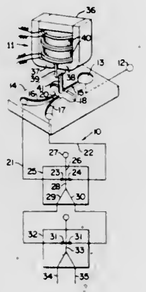
A piloted low to high pressure analog interface valve device is provided having a gain factor determined by the area relationship of a diaphragm piston subject to a differential control force and a bellows connected to the piston and subject to delivery pressure acting in a direction opposite to the control force. A two-way, metering-type supply valve controlled by movement of the piston/bellows assembly is

adapted to control the supply of fluid pressure to delivery. A bleed port continuously vents delivery chamber pressure which is established at a value determined by the valve gain factor and which is maintained against the bleed by metering action of the supply valve when the piston/bellows assembly stabilizes at some intermediate position as determined by the point at which the rate of supply pressure being metered to



the delivery is able to precisely match the rate of bleed. The interface valve is also adapted to be driven by the differential outputs of a pure fluid proportional amplifier to further increase the overall gain of the interface. Valve performance may be improved at the expense of gain through a feedback signal corresponding to delivery pressure connected to oppose the control signal at the fluid amplifier.

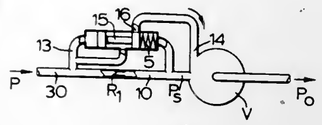
3,638,671
ELECTROFLUIDIC TRANSDUCER
Wirt T. Harvey, Phoenix, and John W. Merritt, Scottsdale, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 5, 1968, Ser. No. 781,555
Int. Cl. F15c *3/00*
U.S. Cl. 137—81.5 **8 Claims**



This transducer includes the usual fluid beam-forming nozzle and output ports from which variable fluid streams are designed to issue. The proportion of fluid output is determined by an electromagnetically actuated deflector disposed between the nozzle and output ports for movement in response to electrical signals. The deflector has a rounded fluid beam deflecting surface movable relative to the path of the fluid beam.

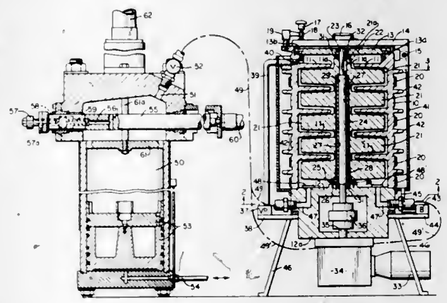
3,638,672
VALVES
Charles Philip Smith, Woverhampton, and Stanley George Glaze, Brierley Hill, both of England, assignors to H. M. Hobson Limited, London, England
Filed July 24, 1970, Ser. No. 58,069
Int. Cl. F15c *1/16, 3/02*
U.S. Cl. 137—81.5 **4 Claims**

Mechanism for providing constant or near constant flow of fluid in a conduit which comprises a fluidic vortex valve having its supply inlet and its outlet connected respectively to upstream and downstream sections of the conduit, a further valve sensitive to flow conditions in the conduit and controlling a flow line from the conduit to the control inlet of the



vortex valve, the further valve being normally closed and arranged to open when the flow in the conduit attains a predetermined magnitude, and a restrictor in the conduit between the inlet to the flow line and the supply inlet to the vortex valve.

3,638,673
WAX-CONDITIONING APPARATUS
Virgil V. Stanciu, Rocky River, Ohio, assignor to Lampcraft Tool & Mold, Inc., Cleveland, Ohio
Filed Dec. 23, 1969, Ser. No. 887,589
Int. Cl. B29f *1/08*
U.S. Cl. 137—205 **1 Claim**

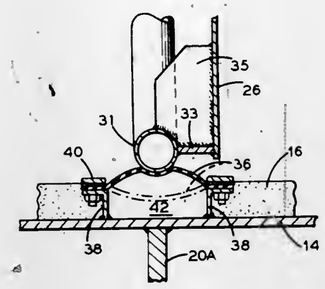


A wax-melting and conditioning device comprises an airtight tank of material providing fast heat transfer, heating means for the tank, inwardly extending fins to increase the heat transfer to the wax, outwardly extending fins, if necessary, to cool the wax quickly to suitable injection temperature, means for agitating the wax in the tank and a vacuum pump for deaerating the wax during the melting and curing period. The tank is also equipped with at least one heated flexible hose for direct connection to a hot wax reservoir of a wax-injection machine equipped to transfer the wax from the melting tank to the injection machine reservoir free of air by moving a piston in the reservoir in a manner to suck wax over from the tank.

3,638,674
GASTIGHT DAMPER HAVING AN INFLATABLE SEAL
Donald L. Forst, Barberton, and Edwin B. Schrengauer, Wadsworth, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Mar. 12, 1970, Ser. No. 18,987
Int. Cl. F16k *3/02*
U.S. Cl. 137—375 **4 Claims**

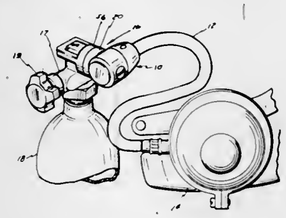
A structural member defining an opening. Pivotally mounted within the opening is a damper blade, the blade being movable between open and closed; means for so moving are also provided. An inflatable sealing member having a sealing surface for contact with the edge of the damper blade and responsive to changes in pressure within the sealing

member is attached in sealing relationship to an internal surface of the structural member and is positioned in a plane



transverse to gas flow through the opening. There is further provided a means for inflating and deflating the sealing member.

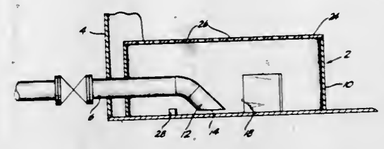
3,638,675
PNEUMATIC CLAMP
Denzel J. Dockery, G-4142 Fenton Road, Flint, Mich.
Continuation-in-part of application Ser. No. 710,856, Mar. 4, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 673,662, Oct. 9, 1971, now Patent No. 3,434,994. This application July 29, 1970, Ser. No. 59,119
Int. Cl. F16l *33/16;* **B63c** *11/00*
U.S. Cl. 137—550 **13 Claims**



A fitting for providing a connection between a tank of compressed gas and a diving mask including a body provided with an arm arranged to loosely embrace the outlet valve of the tank of compressed air. A piston is slidably mounted with respect to the bore and includes an inlet disposed to register with the outlet valve of the compressed air tank and an outlet adapted for connection to the diving mask. A filter is disposed within the inlet. A spring urges the piston and the body toward a position in which the arm clamps about the outlet valve of the compressed air tank and the inlet of the piston receives air from the outlet valve. A passage bypassing the filter and connected with the inlet directs air to an area of the piston to aid the spring in producing a tight engagement between the inlet provided in the piston and the outlet valve.

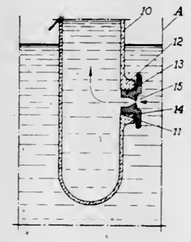
3,638,676
INLET DISTRIBUTOR FOR STORAGE TANKS
Charles O. Burch, 645 S. Walnut Ave., Arlington Heights, Ill., and David H. May, 1336 Central Ave., Wilmette, Ill.
Filed Nov. 3, 1969, Ser. No. 873,551
Int. Cl. B65d *25/04;* **B67d** *5/04*
U.S. Cl. 137—576 **8 Claims**

A small distributor tank with perforated top is provided for installation on the floor of a larger storage tank, whereby petroleum products to be stored can be introduced through an inlet line to the distributor tank without agitating sediment on the bottom of the storage tank, and with a minimum of



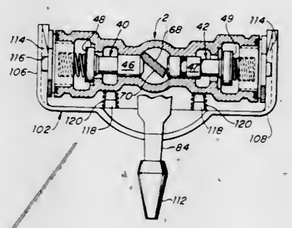
splashing friction which in conventional tank-filling devices tends to generate static electricity. Optional flow-directing baffles may also be included within the distributor tank.

3,638,677
DEVICE FOR USE WITH APPARATUS FOR THE COUNTING OF PARTICLES IN SUSPENSION
Soemia Baccarini, Via Costantino Mias 89, Rome, Italy
Filed Dec. 17, 1969, Ser. No. 885,845
Int. Cl. G01n *27/02, 27/06*
U.S. Cl. 137—576 **5 Claims**



Device for use with apparatus for counting microscopic particles, which apparatus includes a phial having a ruby in a wall thereof wherein the ruby has a microscopic hole through which must pass a suspension of the particles to be counted, which device comprises an apertured plug removably seated in the wall of the phial, and wherein the ruby is itself removably mounted in the aperture of the plug, whereby the ruby is easily removed for replacement or for unblocking of the hole.

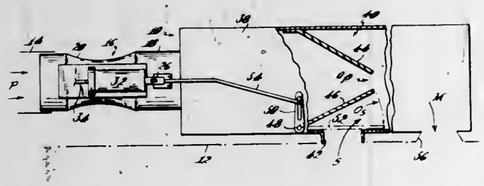
3,638,678
DUPLEX VALVE
Paul C. Symmons, Newton, Mass., assignor to Symmons Industries, Incorporated, Braintree, Mass.
Filed May 6, 1970, Ser. No. 35,053
Int. Cl. F16k *11/10*
U.S. Cl. 137—595 **6 Claims**



A hot and cold water supply valve for a washing machine adapted by operation of a single control lever to (a) prevent

flow of both hot and cold water to the machine, (b) pass only cold water, or (c) pass both hot and cold water.

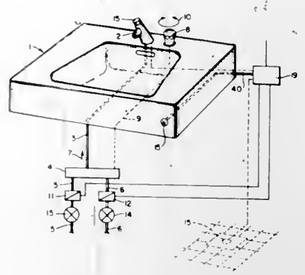
3,638,679
INDUCTION SYSTEM HAVING VARIABLE PRIMARY VOLUME AND VARIABLE INDUCTION
Dimiter Gorchev, c/o Mitco Corporation, 440 Somerville Ave., Somerville, Mass.
Filed Nov. 20, 1969, Ser. No. 878,433
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **3 Claims**



An induction-type fluid supply apparatus having an input for primary fluid under pressure, an induction means downstream of the primary input which introduces secondary fluid, and an output downstream of the induction means which emits mixed primary and secondary fluids. Between the primary fluid input and the induction means there is an adjustable valve of the type which, for each adjustment position, will pass fluid at a rate that is constant over a corresponding range of differential pressures. This valve is to be governed by a control device to indicate the rate at which the primary fluid is to be supplied, and means responding to the control device to adjust the valve to different positions. The induction means has a primary orifice through which the primary fluid flows and, adjacent to and downstream of the primary orifice, a secondary orifice through which the secondary fluid flows. Means for oppositely varying the areas of the primary and secondary orifices are provided to change the rate of flow of the induced secondary fluid. In one embodiment the primary and secondary orifices have their areas controlled by adjustable valves interlinked to simultaneously and oppositely change the areas. Flow of primary fluid through the adjustable valve, and flow of secondary fluid into the induction means, are interrelated by means interconnecting the adjustable valve and the means for varying the areas of the primary and secondary orifices. The interconnection, by means of mechanical linkages or reference to a common control, increases the rate of induction as the flow rate of primary fluid is decreased so that the output will be maximum. When the flow of primary fluid is maximum, induction is minimum, or completely closed off.

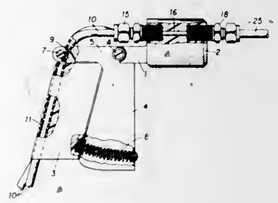
3,638,680
TABLE WITH LIQUID OUTLET
Hans W. Kopp, c/o Oederlin and Co., Ltd., Baden, Switzerland
Filed Feb. 25, 1970, Ser. No. 14,057
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 **15 Claims**

The present invention relates to a washing table with a liquid or water outlet apparatus having a supply line with an electrically operated valve, such as a solenoid valve, controlled by a relay having a control circuit. The circuit includes a pressure-sensitive switch means operated through a



fluid-containing control tube line, a pressure-applying trigger means and a diaphragm to permit facile control of the valve.

3,638,681
REGULATOR CONTROLLING VOLUME OF ONE OR MORE STREAMS OF FLUID
Paul A. Moore, and Homer T. Boyles, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed May 27, 1970, Ser. No. 40,835
Int. Cl. F16k *7/04, 19/00*
U.S. Cl. 137—607 **9 Claims**

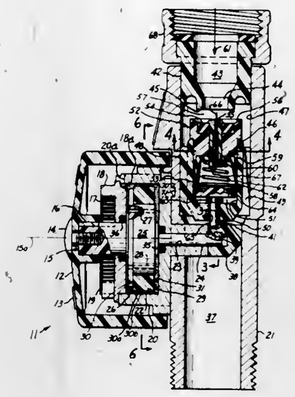


This invention relates to regulators, and more particularly to noncorrosive and nonclogging regulators which can control the volume of one or more separate streams of fluid passing therethrough.

3,638,682
TIMER VALVE
William T. Heyer, 225 Mohawk Road, and Dale F. Soukup, 318 Mohawk Road, both of Santa Barbara, Calif.
Filed Apr. 6, 1970, Ser. No. 25,763
Int. Cl. F16k *21/06*
U.S. Cl. 137—624.12 **17 Claims**

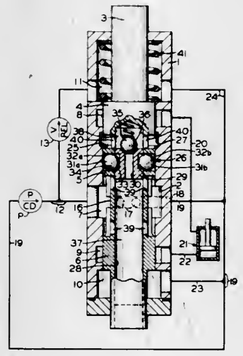
A timer for actuating a device for a preselected period of time, and a timer valve incorporating said timer. The timer includes a windable driving spring engaged to a shaft. The shaft carries an actuator element such as a cam for actuating a device such as a valve. Turning the shaft in one direction winds the spring, and the wound spring will drive the shaft in the other direction. A clock-ring is rotatable in a reservoir that contains a silicone fluid. The silicone fluid fills a peripheral spacing between an outer wall on the clock-ring and an inner wall of the reservoir. The walls are concentric surfaces of revolution. A clutch couples the shaft and the clock-ring for mutual revolving motion, but enables them to be disengaged in at least one direction of rotation in order

that the shaft may turn in that direction without the clockring. A preferred timer valve incorporated in this timer has



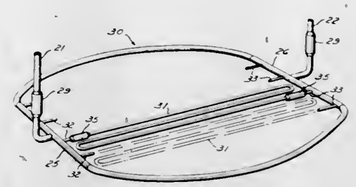
its valve workings disposed in the flow passage of a conduit with a cam means of the timer also disposed therein.

3,638,683
HYDRAULIC DIRECTIONAL CONTROL VALVES
Horst Krieter, Stollenweg, Germany, assignor to Westinghouse Bremsen- und Apparate-bau G.m.b.H., Hannover, Germany
Filed Mar. 30, 1970, Ser. No. 23,787
Claims priority, application Germany, May 29, 1969, P 19 27 465.8
Int. Cl. F16k *11/07*
U.S. Cl. 137—624.27 **8 Claims**



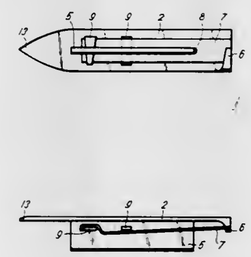
This invention relates to a manually operable spool-type fluid pressure control valve that has a releasable locking mechanism to maintain the spool valve in certain of its positions until subjected to an axial force in excess of a chosen value. This locking mechanism comprises a plurality of balls and a pair of cam surfaces along which the balls roll when the spool valve is manually moved from one position to another. A fluid pressure force effective on one of the cam surfaces biases it against the balls to maintain them in either of two positions until the spool valve is subject to an external force in excess of the chosen value.

3,638,684
METHOD OF REPAIRING TUBE STRUCTURES
Stanley J. Pavilon, Shaker Heights, Ohio, assignor to Arthur G. McKee & Company, Cleveland, Ohio
Filed Mar. 16, 1970, Ser. No. 19,611
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 **5 Claims**



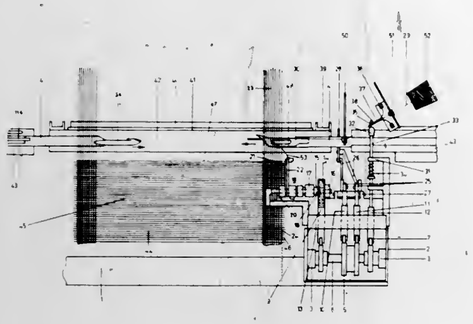
A method for repairing tubes that, during use, develop on the tube surfaces contaminating layers that prevent joining of new tube sections, as in fluid circulating heat transfer installations for chemical reactors. At least two surrounding protective sleeves are initially joined as by welding, to a tube at spaced locations on the tube to protect underlying portions of the tube from development of such layers. If a defect occurs between the sleeves, the defective tube may be removed by cutting through the sleeves and the tube underneath, removing the cut tube section, removing the remaining cut sleeve portions from the adjacent tube ends, and then joining a replacement tube section to the portions of the unremoved tube that were protected by the sleeves, preferably with new sleeves fixed in place over the resulting joints.

3,638,685
WEFT YARN INSERTING GRIPPER
Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex-Zavody Textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Apr. 23, 1970, Ser. No. 31,123
Claims priority, application Czechoslovakia, Apr. 30, 1969, 3053
Int. Cl. D03j *5/06*
U.S. Cl. 139—125 **5 Claims**



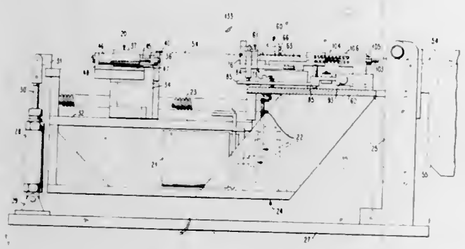
An inserting gripper for weft yarn comprising a body having a sliding surface and a rib extending normally thereto along the length of the body. A spur is located on the body and the body is provided with a flat spring arranged to cooperate with the spur for receiving and holding the yarn. The flat spring has a longitudinal recess which is adapted to receive the rib to which it is fastened.

3,638,686
CARRIERS FOR FILLING INSERTION IN A WEAVING MACHINE
Ramon Sole, and Othmar Bruhwiler, both of Brugg, Switzerland, assignors to Georg Fischer AG., Aargau, Brugg, Switzerland
Filed Nov. 23, 1970, Ser. No. 91,988
Claims priority, application Switzerland, Nov. 27, 1969, 17767/69
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 5 Claims



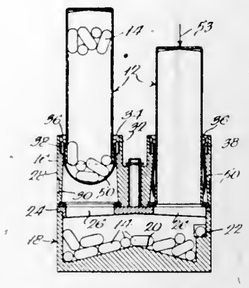
The invention relates to a pair of carriers for filling insertion from a filling supply package positioned outside of the warp shed in a weaving machine, said carriers consisting of an inserting carrier and of a withdrawing carrier, both of which are provided with a thread clamping device or thread end holding means.

3,638,687
WIRE-FORMING MACHINE
Gerald B. Bardo, Nichols, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 6, 1970, Ser. No. 52,338
Int. Cl. B21f 1/00
U.S. Cl. 140—71 24 Claims



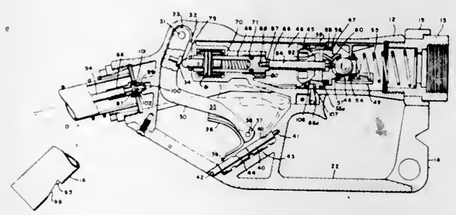
A wire-working machine in which the free end of a strand of wire is forced through a tunnel in a bending die to form a loop. The end of the strand of wire is held rigid by a brake mechanism and a movable wire guide. A drive mechanism moves the bending die forward causing the wire guide to be displaced longitudinally along the wire, thus forcing the end of the wire through the tunnel. A clamp and cut bar operated by a variable stroke toggle mechanism clamps the leading end of the wire as it emerges from the die tunnel. The bending die is driven in reverse from the die tunnel. The bending die is driven in reverse direction to draw wire from a supply through the wire guide which moves with the bending die a portion of the return distance. The clamp and cut bar is again operated by the variable stroke toggle to sever the loop from the strand and to unclamp the severed loop to permit removal by an article carrier to a subsequent work station.

3,638,688
CODED ORAL SOLIDS MAGAZINE AND DISPENSER
Robert M. Conklin, Muskegon; Albert P. Rogers, Spring Lake, and Walter L. Bessinger, Muskegon, all of Mich., assignors to Brunswick Corporation, by said Conklin and said Rogers
Filed Feb. 24, 1970, Ser. No. 13,465
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—98 12 Claims



A pill-containing magazine and dispensing receptacle combination for use in pill-dispensing systems of the type having a plurality of receptacles, each for dispensing a different type of pill. Each magazine is provided with a code representing the type of pill contained therein and each receptacle from which the pills are to be dispensed is provided with a code sensing means that precludes operative association of a magazine bearing the wrong code, and therefore containing the wrong type of pill, with the receptacle to insure that only the correct type of pill can be dispensed from a given receptacle.

3,638,689
AUTOMATIC DISPENSING NOZZLE
Hans Erik Eklund, Malmo, Sweden, assignor to AB Ljungmans Verkstader, Malmo, Sweden
Filed May 29, 1969, Ser. No. 828,940
Int. Cl. B67d 5/373
U.S. Cl. 141—214 4 Claims



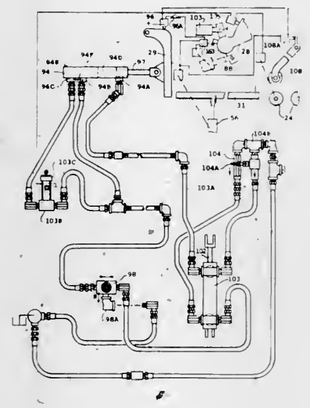
A lightweight, pistol-grip, automatic shutoff dispensing nozzle having a valve mechanism that is finger trigger actuated to control fluid flow through the nozzle with a fluid level sensing means at the discharge of the nozzle for automatically deactivating the valve mechanism upon fluid detection at a predetermined level or upon tilting of the nozzle beyond a predetermined angle thereby precluding fluid flow without resetting the valve mechanism or repositioning of the nozzle.

3,638,690
TIGHTENING BODY FOR GAS DISPENSERS
Poul Bjerregaard, 32 Neptunvej, Aarhus, Denmark
Continuation of application Ser. No. 529,430, Feb. 23, 1966, now abandoned. This application Mar. 19, 1969, Ser. No. 871,412
Int. Cl. B65b 1/04
U.S. Cl. 141—354 12 Claims



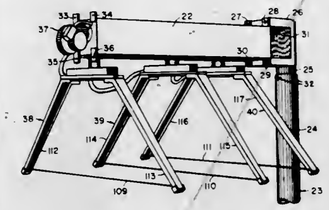
A gas dispenser used for filling gas lighters carries a tightening body enclosing a filling tube extending form the neck of the dispenser. The front end of the tightening body fits around the front end of the filling tube and is resiliently adjustable so as to enclose the filling opening of a gas lighter and be adaptable to various shapes of gas lighters. The rear end of the tightening body is adapted to fit upon the neck of the dispenser and has a lesser axial resiliency than the front end.

3,638,691
POSITIONING SYSTEM WITH BUMPER RECEDING FROM STOPPED POSITION
Robert A. Larson, L'anse, Mich., assignor to Pettibone Corporation, Chicago, Ill.
Filed Feb. 9, 1970, Ser. No. 9,612
Int. Cl. B27b 5/02, 31/00
U.S. Cl. 143—46 F 6 Claims



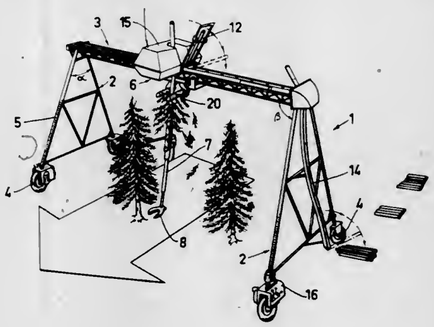
In a bumper system suitable for stopping tree trunks fed lengthwise in positions for cutting successive equal lengths from the trunk, a bumper system is provided which absorbs tree trunk momentum by dissipation of energy and stops the tree trunk in position for sawing. Subsequent binding of the cut lengths between the face of the bumper and the saw is prevented by further receding movement of the bumper. Using a three-port cylinder, the impact moves the piston inward to expel hydraulic fluid through the intermediate port in series with a relief valve which provides resistive back pressure. At the predetermined correct measuring position, the piston closes this intermediate port, temporarily stopping the bumper and the tree trunk. During cutting, the more remote port is opened and oil is supplied to the near port to retract the bumper out of the way.

3,638,692
SHADOW LINE DEVICE
Andrew G. Carter, and Charles L. Morgan, both of Grand Rapids, Mich., assignors to Carter Products Company, Inc., Grand Rapids, Mich.
Filed Nov. 25, 1969, Ser. No. 879,730
Int. Cl. B27b 27/02
U.S. Cl. 143—168 B 6 Claims



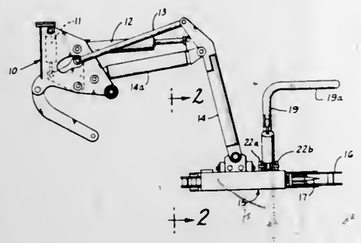
A shadow line device having a group of independent projector units, each of these including a light source, a shadow-producing line, and a carrier. The carriers are mounted on a guideway transverse to the shadow lines, and are positioned along the guideway by a cable system to produce movement of the shadow line corresponding to the movement of a selected machine component associated exclusively with that particular shadow line.

3,638,693
FOREST HARVESTER
Ulf Hjalmar Sundberg, 36, Villavagen, Stocksund, Sweden
Filed Mar. 4, 1970, Ser. No. 16,536
Int. Cl. A01g 23/02
U.S. Cl. 144—3 D 11 Claims



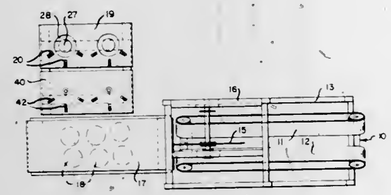
A forest-harvesting machine of the type intended for separating standing trees, for processing the trees thus separated and for collecting the trees thus processed or parts thereof. The invention, more precisely, relates to a forest harvester comprising a mobile carrying structure which is upright in operation position and supports thereon a tree-processing arrangement comprising at least separating and limbing means, preferably also cutting and/or barking means.

3,638,694
PUSH ARM
Ramon H. Robinson, Dallas; Charles A. Ramsel, Giddings, and Charles A. Deckert, Deer Park, all of Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 20, 1970, Ser. No. 21,381
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 A **3 Claims**



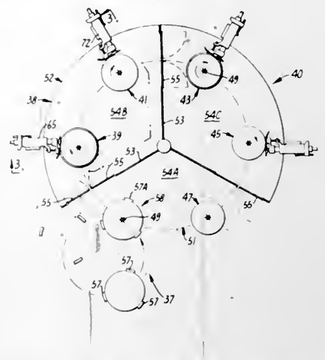
A shear for timber harvesting having a push arm for pushing the tree being felled in the desired direction during the shearing operation.

3,638,695
APPARATUS FOR PREPARING CITRUS HALVES
Hans W. Grotewald, Sebring, Fla., and Don S. Bryan, Box 154, Bartow, Fla.
Filed Jan. 26, 1970, Ser. No. 5,611
Int. Cl. A23n *15/02*
U.S. Cl. 146—3 R **8 Claims**



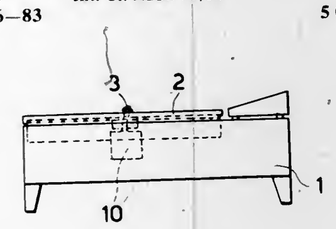
An apparatus and method are provided for preparing citrus halves such as grapefruit for the table, comprising a Vee trough conveyor means receiving and transferring a generally spherical fruit with its axis transverse to its path of travel, a cutter in the path of said conveyor bisecting the angle of the Vee trough and cutting the fruit carried thereby, a moving table receiving the cut portions of fruit from the Vee conveyor and moving such portions away from the cutter, a cutter table adjacent said moving table, a first driven shaft moving vertically axially beneath said table, said shaft having a radial arm on the upper end thereof, a vertical cutter adjustable on said arm, an annular opening in the table through which said cutter projects when said first shaft is raised, means acting on said first shaft selectively to raise and lower the same, a second driven shaft spaced from the first, movable vertically axially beneath the table, a hole cutter on said shaft, an opening in the table through which said hole cutter extends when said second shaft is raised, means acting on said second shaft selectively to raise and lower the same, stop means on the tabletop adjacent each of the annular opening and the hole cutter opening whereby halves of fruit are positioned and drive means acting on each of the first and second shafts.

3,638,696
MEANS FOR PEELING PINEAPPLES
Malcolm W. Loveland, Orinda, Calif., assignor to Atlas Pacific Engineering Company
Continuation-in-part of application Ser. No. 612,584, Jan. 30, 1967, now Patent No. 3,473,588. This application Aug. 22, 1969, Ser. No. 852,251
Int. Cl. A23n *7/00*
U.S. Cl. 146—6 **11 Claims**



Means are provided for peeling and preparing pineapples with a minimum of hand labor and a maximum yield of fruit for canning and other uses.

3,638,697
APPARATUS FOR TOPPING ONIONS OR SIMILAR BULBCROPS
Gerardus Wilhelmus Marie Krekelberg, Roerzicht 36, Roermond, Netherlands
Filed Apr. 9, 1969, Ser. No. 814,750
Claims priority, application Belgium, Apr. 11, 1968, 713,522
Int. Cl. A23n *15/04*
U.S. Cl. 146—83 **5 Claims**

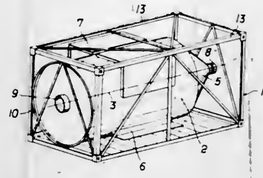


The present invention provides a device for cutting the tailings from onions or other bulblike crops and generally provides for a sieve which is driven by a mechanism so as to impart to the sieve a three-dimensional movement. Preferably, the motor which drives the sieve also serves as the means for driving the cutters.

3,638,698
CROSSLINKED CARBOXYMETHYL CELLULOSE NITRATES PROPELLANTS
Alan L. Woodman, and Arnold Adicoff, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 30, 1966, Ser. No. 584,059
Int. Cl. C06c *5/02*; **C06d** *5/06*
U.S. Cl. 149—2 **6 Claims**

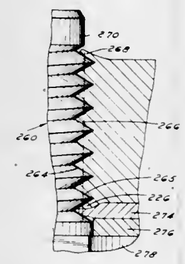
1. The composition consisting essentially of carboxymethyl cellulose nitrate, pentaerythritol trinitrate, ethyl centralite, and a cross-linking agent selected from the group consisting of ethylene bis(2-metyl-1-aziridine carboxylate), tris(2-methyl-1-aziridinyl)phosphine oxide, bisphenol A-epichlorohydrin diepoxide, and a mixture composed of butyl glycidyl ether and bisphenol-epichlorohydrin diepoxide.

3,638,699
STRUCTURE FOR TRANSPORTING AND STORING FLOWABLE MATERIALS
Bruno Hillinger, Vienna, Austria, assignor to Waagner-Biro Ag., Vienna, Austria
Filed July 30, 1969, Ser. No. 846,173
Claims priority, application Austria, Aug. 2, 1968, A 7537/68
Int. Cl. B65d *33/14*
U.S. Cl. 150—.5 **5 Claims**



A structure for transporting and storing flowable materials. The structure includes a silo compartment, which has a central axis, this compartment being adapted to receive and discharge flowable materials when its axis is upright and being adapted to transport the materials when its axis is in a substantially horizontal attitude. The silo compartment is made of a foldable sheet material so that it can be readily placed in a collapsed condition when it is not used. A supporting framework extends around and is operatively connected with the silo compartment to support the latter both with its axis upright and with its axis in the substantially horizontal attitude.

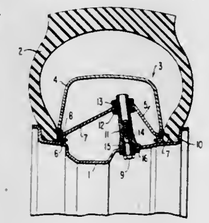
3,638,700
FASTENER AND METHOD OF FORMING SAME
George R. Onufer, Bloomfield Hills, Mich., assignor to Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N.Y.
Filed Mar. 11, 1969, Ser. No. 806,119
Int. Cl. F16b *29/00, 37/00, 39/02, 39/22*
U.S. Cl. 151—69 **3 Claims**



A nut member having a relatively smooth walled aperture for receiving a male threaded member, and a pair of radially extending spiral lip portions adjacent the opening to the aperture, which receive the threaded portion of the male member and guide it into the aperture, forming a female thread. The male threaded member may have an unthreaded cylindrical end which has a diameter approximately equal to the diameter of the aperture, which is the pitch diameter of the threads, which prevents inadvertant removal of the male member after it is threadably received through the aperture. The male member may then be partially withdrawn, deforming the crest portions adjacent the cylindrical end of the male member, permanently locking the assembly.

The method disclosed herein includes forming the body portion of the unthreaded member including the circular aperture, and forming the spiral lip portions by impacting the end. A mandrel having radial slots may be disposed within the aperture to form the lip portions.

3,638,701
EMERGENCY RUNNING RING FOR TUBELESS VEHICLE TIRES
Heinrich Georgi F. Rossler, Baden-Baden; Heinrich Baumann, and Falk Zeidler, both of Gaggenau, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 18, 1970, Ser. No. 12,326
Claims priority, application Germany, Feb. 19, 1969, P 19 08 204.3
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 **12 Claims**



An emergency running ring for tubeless vehicle tires in which several hollow ring segments abutting against one another with the end faces and having a cross section matched to the tube shape, are provided with expanding inserts arranged on the inside of the hollow ring segments; the expanding inserts are supported at the hollow ring segments and are clamped against the rim bed by means of a clamping screw or bolt, whereby a spacer sleeve is associated with each expanding insert and the clamping bolt or screw engages in the spacer sleeve.

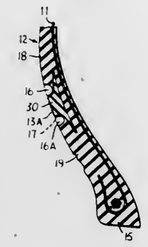
3,638,702
TIRE TREAD COMPOSITIONS
Norman G. Endter, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 23, 1968, Ser. No. 707,487
Int. Cl. B60c *11/00*; **C08g** *51/08*
U.S. Cl. 152—330 **10 Claims**

Vehicle tires possessing a tread composition containing rubbery polymers, a methylene acceptor, a methylene donor and a low level of sulfur.

3,638,703
HEAT STABLE POLYESTER CORD REINFORCED RUBBER STRUCTURE
Norman G. Endter, 5 Rue Albert Roze, Amiens 80, France, and Frank J. Jenkins, 564 Alandale Drive, Tallmadge, Ohio
Filed Jan. 29, 1968, Ser. No. 701,093
Int. Cl. B60c *1/00*; **B29h** *5/01*
U.S. Cl. 152—330 **9 Claims**

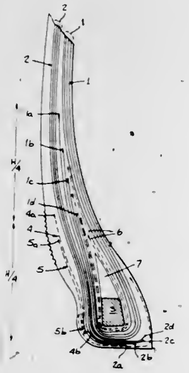
Polyester cord reinforced rubber structures such as pneumatic tires are protected against heat degradation by the use of an acid reaction product of a methylene donor such as hexamethylenetetramine in combination with a methylene acceptor such as resorcinol.

3,638,704
PNEUMATIC TIRE
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Dec. 3, 1968, Ser. No. 780,841
Claims priority, application France, Dec. 18, 1967, 132766; Feb. 3, 1968, 141171
Int. Cl. B60c *13/00*
U.S. Cl. 152—353 4 Claims



A tire of the radial-carcass-type having a decorative circumferential band or ring on one sidewall is formed with grooves in the sidewall on either side of the circumferential ring to relieve the elastomer of which the ring is formed from the alternating stresses of tension and compression when the tire is in service and thereby retard the aging of the elastomer.

3,638,705
PNEUMATIC TIRE
Andre Devienne, and Jean Trzepaez, both of Compiegne (Oise), France, assignors to Uniroyal Englebert France S.A., Neuilly sur Seine, France
Filed Nov. 19, 1969, Ser. No. 878,112
Claims priority, application France, Dec. 31, 1968, 182,994
Int. Cl. B60c *15/06*
U.S. Cl. 152—356 10 Claims

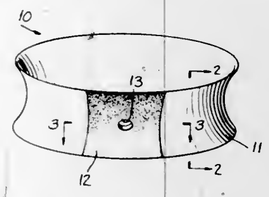


A heavy-duty, radial ply, pneumatic tire having normally flexible sidewall zones, reinforced, rigid bead zones, and transition zones of gradually decreasing stiffness extending outwardly from the bead zones to the sidewall zones. Each side of the tire includes: (1) an inner group of radial carcass plies, the ends of such plies being turned outwardly over a bead wire bundle and being staged so as to terminate at least at two different points in the transition zone; (2) an outer group of radial carcass plies, the ends of such plies being turned inwardly over the bead wire bundle and being staged so as to terminate at least at two different points in the bead zone; (3) a plurality of chafers having staged upper ends terminating at a plurality of different points in the transition zone; and (4) one or more flippers which encircle the bead wire bundle and at least a portion of an apex strip adjacent to the bead wire bundle.

3,638,706
MACROFILAMENTARY TIRE YARNS
Donald James Wilson, and Derek Kenyon, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Nov. 3, 1969, Ser. No. 874,088
Claims priority, application Great Britain, May 11, 1968, 52,416/68
Int. Cl. B60c *9/00*; D02g *3/48*
U.S. Cl. 152—359 9 Claims

A pneumatic tire reinforcement element comprising a single bundle of continuous macrofilaments of synthetic polymeric material selected from the group consisting of polyester and polyamide, wherein each macrofilament has a denier in the range 100 to 1,500, and the bundle has a total denier of 1,000 to 10,000 and a twist level not exceeding 4 turns per inch.

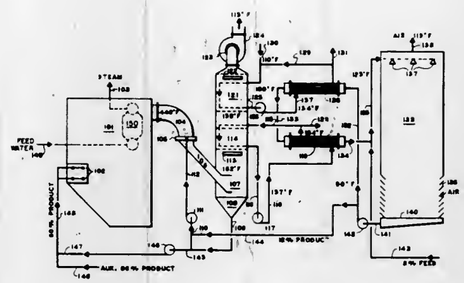
3,638,707
LOCALLY STRENGTHENED TIRE FLAPS
Jacques Le Gall, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Filed Jan. 10, 1969, Ser. No. 790,409
Claims priority, application France, Feb. 16, 1968, 140249
Int. Cl. B60c *21/04*
U.S. Cl. 152—365 9 Claims



A novel construction for locally strengthened tire flaps made of rubber and having circumferentially uniform cross-sectional characteristics is disclosed, together with a method of producing such flaps. In the preferred form of the invention, the major portion of the flap is made of a standard soft rubber stock, while the remaining minor portion of the flap, in which the valve-stem-accommodating hole is provided, is made of a different rubber stock having, when cured, a greater hardness and resistance to distortion or tearing stresses than the standard rubber stock. The flap is produced by splicing the two ends of an appropriately short length of the raw hard rubber stock to the respective ends of an appropriately longer strip of the raw soft rubber stock, thereby forming a ring, and then introducing the ring into any suitable annular mold, e.g. a compression mold, for final shaping and curing by which the two rubber sections are vulcanized into an integral continuous structure.

3,638,708
METHODS OF MULTIPLE STAGE EVAPORATION FROM HEAT SOURCES OTHER THAN STEAM
William G. Farin, 707 Elm St., Neenah, Wis., Marathon Engineering Inc., Menasha, Wis.
Filed June 11, 1969, Ser. No. 832,309
Int. Cl. B01d *1/00, 1/16*
U.S. Cl. 159—47 WL 3 Claims

A method of multiple stage evaporation incorporating direct contact evaporation, with the flue gas utilized to heat water, the heated water utilized to heat liquor for flash evaporation to a vacuum. The condensed vapors are then used to heat liquor that is air contact evaporated to provide 3 stages of evaporation. Low-quality flue gas heat is also used to heat liquor for air contact evaporation.



3,638,709
METHOD OF SUSPENDING IMMOBILIZED BIOLOGICAL SPECIMENS IN A TRANSPARENT GEL IN A TRANSPARENT CONTAINER
John H. Brown, Jr., and Bobby L. Atkins, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 11, 1969, Ser. No. 884,344
Int. Cl. A01n *1/00, 3/00*
U.S. Cl. 156—57 7 Claims

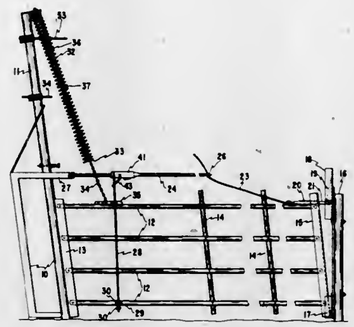
A visible immobilized specimen suspended in a stable, continuous gel where the gel is a transparent adduct of a cross-linked vinyl polymer and a water-soluble aldehyde. Such immobilized specimen is prepared by providing an optically transparent container, introducing into the container a liquid phase containing a water-soluble vinyl monomer, a water-soluble aldehyde, a cross-linking agent and a free radical producing catalyst. A specimen is positioned in the liquid phase and held in position until the polymerization of the liquid phase produces sufficient gel strength to immobilize the specimen. The container is then sealed to prevent evaporation.

ERRATUM

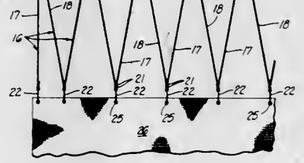
For Class 159—471 see:
Patent No. 3,638,708

3,638,710
LIFTING GATE
Henry L. Sundermann, Box 79, Rte. 4, Sioux Falls, S. Dak.
Filed Apr. 27, 1970, Ser. No. 32,023
Int. Cl. E06b *3/92*
U.S. Cl. 160—144 5 Claims

A farm gate adapted to be opened by collapsing vertically. Ropes fastened to the gate and runover pulleys to posts adjacent the track entering and leaving the gate provide means for raising the gate. An over-the-center arrangement holds the gate open until another pull on the rope triggers a release mechanism to close the gate.



3,638,711
CUBICLE CURTAIN SUSPENSION APPARATUS
Victor A. Mazzarelle, West Covina, Calif., assignor to Kassler Investment Corporation, Covina, Calif.
Filed June 12, 1970, Ser. No. 45,849
Int. Cl. A47h *1/00*
U.S. Cl. 160—330 5 Claims



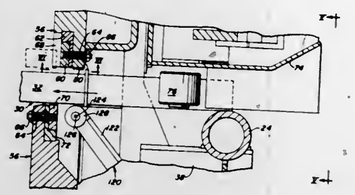
An apparatus for suspending cubicle curtains or the like, particularly those used in hospitals, nursing homes, etc. from a plurality of carriers mounted for sliding movement along an overhead track. A cord is suspended at its upper end from the carriers and connected at its lower end to the upper portion of the curtain. The cord comprises a plurality of strands directed diagonally to each other to form a sawtooth pattern which provides automatic self-alignment of the carriers. The cord is preferably formed of synthetic material which is capable of being cleaned.

3,638,712
BILLET-MARKING APPARATUS AND METHOD OF MARKING
Walter B. Rudov, Pittsburgh, Pa., assignor to United States Steel Corporation
Filed Aug. 17, 1970, Ser. No. 64,480
Int. Cl. B22d *11/12*; B44b *5/02*
U.S. Cl. 164—76 24 Claims

A marking device for a continuous billet-casting apparatus and a method of marking a billet are disclosed. The marking device is associated with a shearing device of the continuous billet-casting apparatus for shearing a longitudinal member and such marking device has a marking member on one

blade of the stationary blade and the movable blade. The marking member is operable by relative movement between the stationary blade and the movable blade to shear the longitudinal member into a billet and to mark a predetermined indicia on the longitudinal member and the billet.

The method of marking a billet formed from a longitudinal



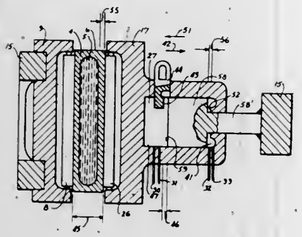
member produced by a continuous billet casting apparatus includes the steps of simultaneously shearing the longitudinal member into a billet of predetermined length and marking one member of the billet and the longitudinal member, moving the billet to a marking station and further marking the billet at the marking station.

3,638,713

CONTINUOUS CASTING METHOD INCLUDING STRAND SUPPORT ADJUSTMENT

Bernard Knell, Thalwil, Switzerland; Paul Desfossez, Dillingen-Saar; Walter Hess, and Hans-Dieter Schulz, both of Dusseldorf, all of Germany, assignors to Concast Aktiengesellschaft, Zurich and Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 8, 1969, Ser. No. 814,247
Claims priority, application Switzerland, Apr. 9, 1968, 5272/68
Int. Cl. B22d *11/12*
U.S. Cl. 164—82 **2 Claims**



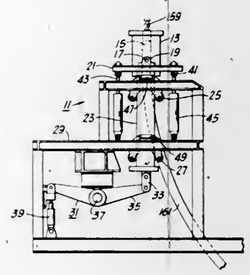
A continuous casting method wherein a support and guide for a continuously cast metal strand that has a still-molten core within a solidified shell includes a plurality of members each mounted for movement toward and away from the strand at one side thereof. Each member carries a number of rolls or other contact elements adapted to engage the strand, and each has one stop adjustably positioned to stop movement of the member, and its contact elements, away from the strand at a specific predetermined point and thereby limit bulging of the strand (from ferrostatic pressure of the core) to an acceptable amount. Another stop is provided on each member to stop movement of each member toward the strand at a point at which the contact elements can engage the thinnest portion of the strand, or the dummy bar used for starting the casting. In the form illustrated the members are guided, and may be moved, by pistons and cylinders. Gravity, fluid pressure or spring pressure may be utilized to urge the contact elements into engagement with the strand.

3,638,714

METHOD AND APPARATUS FOR OSCILLATING A CONTINUOUS CASTING MOLD

Henry S. Newhall, Allison Park, and Rufus Easton, Pittsburgh, both of Pa., assignors to Koppers Company, Inc.

Filed Jan. 5, 1970, Ser. No. 639
Int. Cl. B22d *11/02, 27/08*
U.S. Cl. 164—83 **13 Claims**



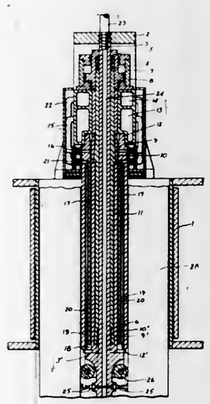
A continuous casting mold, having either a straight or a curved casting cavity, is pivotally mounted to a frame that reciprocates vertically and pivots upon a horizontal axis through the mold as it reciprocates. A cast strand emerging from the mold curves toward the horizontal under the combined influence of the pivotal and reciprocal motion of the mold.

3,638,715

METHOD FOR THE CONTINUOUS CASTING OF TUBES

Willi Simons, Duesseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Feb. 26, 1970, Ser. No. 14,298
Claims priority, application Germany, Feb. 27, 1969, P 19 09 881.8
Int. Cl. B22d *11/00*
U.S. Cl. 164—85 **3 Claims**



Apparatus for the continuous casting of tubes includes a mandrel which extends into the mold. The diameter of the

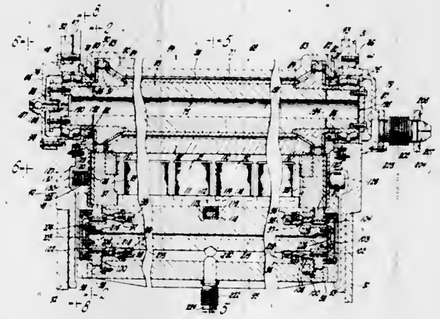
mandrel is expandable and contractable, suitably by having the mandrel composed of radially movable segments. During casting the diameter of the mandrel is expanded when there is no relative movement between the tube being formed and the mandrel, and is contracted when the tube moves relatively off the mandrel. In oscillating molds, in which the mandrel also oscillates, there would be no relative movement between the mandrel and the tube during the downward movement of the mandrel, during which the mandrel is expanded. On the upward movement the mandrel would be contracted.

3,638,716

REGENERATOR SEAL

Jack P. Hart, Hinsdale, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1969, Ser. No. 879,729
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **3 Claims**



A rotary regenerator of the drum-matrix-type. The regenerator matrix is located and supported by two parallel rollers engaging the matrix rims at the inner or hot face of the matrix adjacent the bulkhead. The main seals are pivoted adjacent the drive rollers so that they can rotate to align with the matrix notwithstanding expansion and distortion. The angular position of the main seals is determined by aligning rollers engaging the outer or cold face of the matrix and mounted on the main seal frame. These are biased into engagement with the matrix by springs. The particular subject matter is improved structure of the main seals including the frame, roller mounts, cooling provisions, side seals, the secondary seal, and connection of the frame to the regenerator bulkhead.

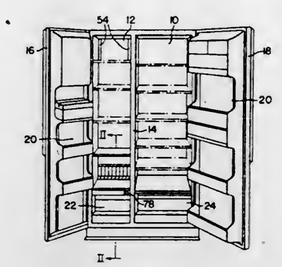
3,638,717

REFRIGERATOR-FREEZER WITH MEAT KEEPER

Philip F. Harbour, and Anthony J. Swaneck, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 725,853, May 1, 1968, now abandoned. This application Aug. 25, 1969, Ser. No. 852,628
Int. Cl. F25b *29/00*
U.S. Cl. 165—30 **14 Claims**

A side-by-side refrigerator-freezer having a meat keeper compartment located at the bottom of the freezer section in a space substantially isolated from the main freezer section by insulated partitions in a first position, the partitions being movable to a second position to change the airflow path so



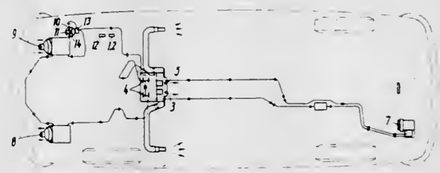
that the meat keeper compartment space is converted to supplemental freezing space.

3,638,718

APPARATUS FOR THE AUTOMATIC CONTROL OF BLOWERS FOR THE CONTROLLED VENTILATION OF HEAT EXCHANGERS

Manfred Illg, Aldingen, Germany, assignor to Firma Suddeutsche Kuhlerfabrik Julius Fr. Behr, Stuttgart-Feuerbach, Germany

Filed Mar. 11, 1970, Ser. No. 18,527
Claims priority, application Germany, Mar. 12, 1969, P 19 12 613.7
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 **6 Claims**



Apparatus for automatically controlling ventilators of heat exchangers, especially for ventilating condensers of an air conditioning plant with two heat exchangers having each a blower with a temperature controlled changeover switch (11) in the current supply line for the blower motors (8, 9) for shifting the blower motors from series to parallel operation when a selectable temperature is exceeded.

3,638,719

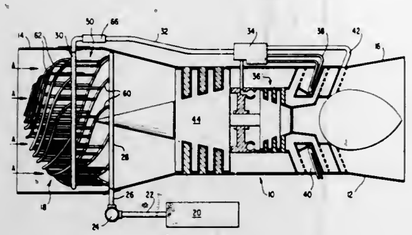
HEAT EXCHANGER

Rodney McGann, Northridge, Calif., assignor to Texaco, Inc., New York, N.Y.

Filed Feb. 20, 1964, Ser. No. 346,197
Int. Cl. F28d *7/04*
U.S. Cl. 165—164 **5 Claims**

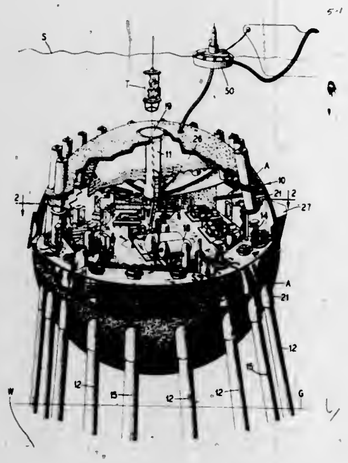
A heat exchanger comprising a bundle of substantially parallel pipes, the ends of said pipes presenting a convex configuration at one end of the bundle and a concave configuration at the other end of the bundle, the length and the relative displacement of the pipes in said bundle being such that

the total transverse area of the pipes in any transverse plane through said bundle is substantially less than the total projected transverse area of the pipes of the bundle, input



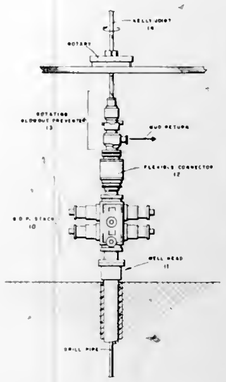
header means supplying fluid to one end of the pipes in said bundle, and outlet header means withdrawing fluid from the other end of the pipes in said bundle.

3,638,720
METHOD AND APPARATUS FOR PRODUCING OIL FROM UNDERWATER WELLS
John P. Thomas, Brooklyn, N.Y., assignor to Ocean Systems, Inc.
Filed Sept. 24, 1968, Ser. No. 762,050
Int. Cl. E21b *7/12, 43/01*
U.S. Cl. 166—.5 **10 Claims**



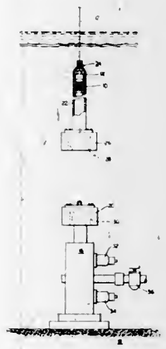
A buoyant capsule for producing oil from a plurality of underwater wells, the buoyant capsule being held in submerged position by conduit means anchored in the floor of the body of water which permit controlled lateral movement of the capsule resulting from wave action. The pressure within the capsule is regulated to maintain an ambient environment, and means are provided within the capsule for compounding a nonexplosive, noncombustible gas mixture conductive to human operation.

3,638,721
FLEXIBLE CONNECTION FOR ROTATING BLOWOUT PREVENTER
Otto R. Harrison, New Orleans, La., assignor to Esso Production Research Company
Filed Dec. 10, 1969, Ser. No. 883,727
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **7 Claims**



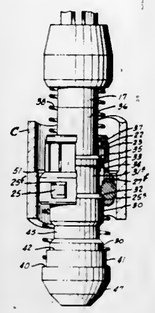
A rotating blowout preventer or wellhead mounted on and above but not rigidly attached to a blowout preventer stack. The attachment between the blowout preventer and the blowout preventer stack is flexible but pressuretight. The attachment allows lateral movement of the blowout preventer or rotating head and the drill string or kelly so that stresses resulting from a crooked or nonaligned kelly or eccentric location of a drill string are not created in the rotating blowout preventer or head while stationary or while rotating.

3,638,722
METHOD AND APPARATUS FOR REENTRY OF SUBSEA WELLHEADS
William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation
Filed Dec. 11, 1969, Ser. No. 884,110
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **8 Claims**



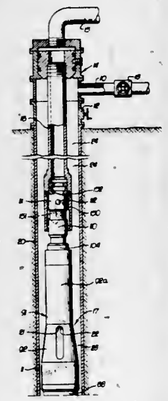
A lubricator for use in reentry of a subsea well and a workover tool enshrouded within the lubrication are lowered from the surface to a subsea wellhead on a wire line. The lubricator is then connected to the wellhead by a hydraulically actuated latch and the workover tool is lowered into the well to perform a workover operation.

3,638,723
LOCATOR DEVICES
Albert W. Carroll, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed June 22, 1970, Ser. No. 48,264
Int. Cl. E21b *23/00*
U.S. Cl. 166—215 **24 Claims**



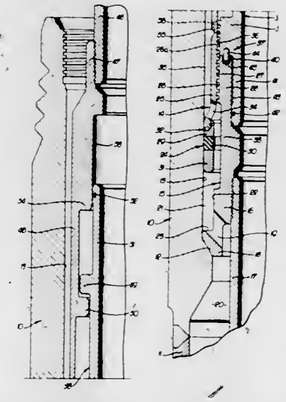
A locating tool for use in a well flow conductor for locating each or any one of a plurality of oppositely facing shoulders in said conductor and usable with well tools for locating said tools at predetermined positions with respect to selected ones of said shoulders, and more particularly usable in connection with a running tool and a well locking and sealing mandrel device for locating said locking and sealing mandrel device in registry with any one of a plurality of receptacles in said conductor for supporting a well tool therein. The running tool is operable to set the locking and sealing mandrel device in the selected receptacle only after the locator device has located the receptacle and is releasable from the mandrel device only after the same has been locked in place in the receptacle. The locking device is also operable to engage and shift any one of a plurality of sliding sleeve side opening valves in a flow conductor. The locator device is adapted to be operated by either flexible line mechanism or by through flow line pumpdown operating mechanisms.

3,638,724
SAFETY SHUTOFF VALVE FOR CONTROLLING FLUID FLOW FROM GAS STORAGE WELLS AND RESERVOIRS
John V. Salerni, Whittier, Calif., assignor to Baker Oil Tools, Inc., Commerce, Calif.
Original application Mar. 2, 1970, Ser. No. 15,403, now Patent No. 3,580,332. Divided and this application Apr. 27, 1970, Ser. No. 31,974
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 **26 Claims**



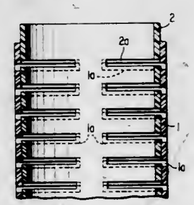
A control valve is run and set in a cased well bore, and preferably in connection with a packer, or the like, secured to the well bore casing. A plug is set in the valve, after which a tubing is connected to the plug and fluid pressure applied thereto to open the valve so that gas from the well or reservoir can flow through the packer, or the like, and open valve into the tubing-casing annulus and into a gas delivery line at the top of the well bore. The valve is tapered to provide a greater annular area between it and the well casing to allow unrestricted flow of gas from the well at a very high rate. In the event of damage to the surface equipment, the well pressure automatically closes the control valve.

3,638,725
DIRECT DRIVE CASING HANGER APPARATUS
Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed May 15, 1970, Ser. No. 37,527
Int. Cl. E21b *33/00*
U.S. Cl. 166—226 **16 Claims**



Well bore casing hanger apparatus in which a hanger body has a pack-off or seal structure threadedly mounted thereon, the seal structure also being threadedly connected to a lower portion of a running tool swivelly related to an upper portion of the running tool, the upper running tool portion being secured to a running string for lowering the apparatus to bring its body into engagement with a seat within an underwater wellhead housing, at which time a fluid circulation path or passage between the body and housing is open. The upper running string portion is rotated to thread the seal structure downwardly along the body to passage-closing position and to also unthread the seal structure from the lower running tool portion, which permits the running string and running tool to be elevated from the hanger apparatus and withdrawn to the drilling rig.

3,638,726
WELL SCREENS
David L. Sibley, Woodwyn Lane, Paragould, Ark.
Filed Nov. 5, 1969, Ser. No. 874,315
Int. Cl. E03b *3/20;* **E21b** *43/08*
U.S. Cl. 166—236 **4 Claims**



The well screen has an outer tube and a telescoping inner tube. The tubes have identical horizontal series of slots

therein. The outer tube is initially adjusted longitudinally with respect to the outer tube to gauge the slot openings through the communicating slots of the tubes. Solvent cement is used for securing the tubes in adjusted position.

3,638,727
METHOD OF TREATING A SUBTERRANEAN HYDROCARBON-BEARING FORMATION
Joseph C. Allen, Bellaire, Tex., and Charles L. Bauer, New York, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Sept. 27, 1968, Ser. No. 786,791
Int. Cl. E21b *43/24*
U.S. Cl. 166—259 **4 Claims**

Improved treatment of a subterranean hydrocarbon-bearing formation is effected by fracturing the formation using a fracturing mixture composed of a hydrocarbon liquid containing, in addition to a particulate propping agent, finely suspended charcoal, whereby additional fracturing is attained after a conventional fracturing procedure by in situ combustion of the fracturing mixture, and thereafter quenching the combustion with water.

3,638,728
SECONDARY OIL RECOVERY PROCESS WITH INCREMENTAL INJECTION OF SURFACTANT SLUGS
Harold J. Hill, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,734
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **6 Claims**

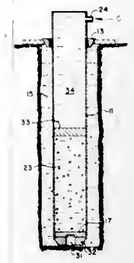
An improved method for recovering oil from underground formations by prior to waterflooding, treating said formations with at least two chemical slugs each containing a synergistic mixture of particular surfactants namely sulfonate-sulfate mixture wherein one slug is compatible with water of high salinity and hardness and the other slug is compatible with the floodwater which optionally can contain a thickener.

3,638,729
WATER FLOODING METHOD USING GEL AND VISCOSITY-INCREASING MATERIALS
Harry W. Parker, Lubbock, Tex., assignor to Phillips Petroleum Company
Filed May 27, 1970, Ser. No. 41,066
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **9 Claims**

A water flooding method wherein gel and viscosity-increasing materials are separately, intermittently injected into a stream of floodwater being injected into one or more wells to develop and maintain a uniform flood front.

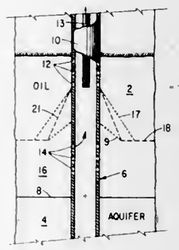
3,638,730
METHOD AND APPARATUS FOR CEMENTING A WELL CONDUIT
Hubert Irvin Smith, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,543
Int. Cl. E21b *33/13, 33/16*
U.S. Cl. 166—291 **6 Claims**

A method and apparatus for cementing a well conduit disposed within a well borehole extending into a subterranean earth formation, the conduit being open at the bottom thereof and having drilling mud therein and an annulus formed between the conduit and the well borehole. A solidifiable slurry is pumped down the well conduit thereby



displacing the drilling mud out the bottom of the conduit and up the annulus. A displacement fluid is pumped down the well conduit thereby displacing the solidifiable slurry out the opening at the bottom of the conduit during the displacement of at least an initial portion of the solidifiable slurry.

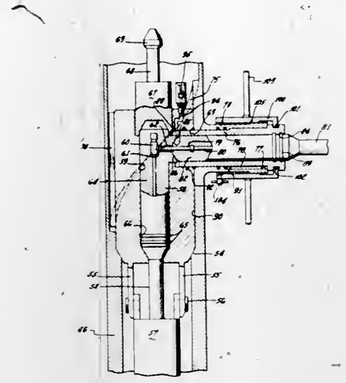
3,638,731
MULTIPLE PRODUCING INTERVALS TO SUPPRESS CONING
Vance J. Driscoll, Fort Worth, Tex., assignor to Amoco Production Company, Tulsa, Okla.
Filed Aug. 17, 1970, Ser. No. 64,451
Int. Cl. E21b *43/00, 43/119*
U.S. Cl. 166—314 **10 Claims**



In wells subject to water and/or gas coning, hydrocarbons and undesired fluids are produced into the well in commingled form from separate spaced intervals. The well is produced at such a rate that an equal pressure drop —and therefore the same pressure profile for a given distance away from the well —occurs at all producing levels. This permits the oil-producing level to be rate independent provided undesired fluids from the other producing level(s) are produced in the proportion required.

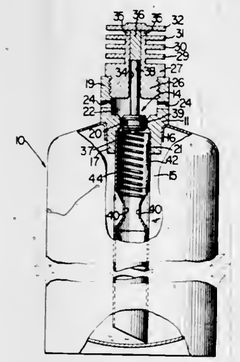
3,638,732
UNDERWATER WELLHEAD ELECTRIC CONNECTION APPARATUS FOR SUBMERGED ELECTRIC MOTOR DRIVEN WELL PUMPS AND METHOD OF INSTALLATION
Fritz R. Huntsinger, and James W. E. Hanes, both of Ventura, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Jan. 12, 1970, Ser. No. 2,241
Int. Cl. E21b *33/035, 43/01, 23/04*
U.S. Cl. 166—315 **29 Claims**

An underwater bottom hole electrically driven well pump has an electric power cable extending to the wellhead, a connectable and disconnectable electrical connection being provided at the wellhead between the cable and the power cable adapted to extend to a power source, the connection being



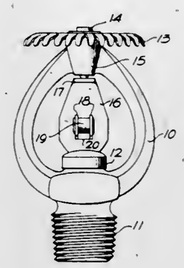
disconnectable and connectable at the wellhead to permit the pump to be pulled from the well, or run back into the well, through the wellhead and production tree without necessitating removal of the wellhead and production tree.

3,638,733
HEAT OPERATED FIRE EXTINGUISHER
Matthew De Rouville, Kinnelon; Alfred John Munn, Wayne, both of N.J., and Arne H. Hansen, New City, N.Y., assignors to Walter Kidde & Company, Inc., Belleville, N.J.
Filed Mar. 3, 1970, Ser. No. 16,039
Int. Cl. A62c *37/06*
U.S. Cl. 169—19 **4 Claims**



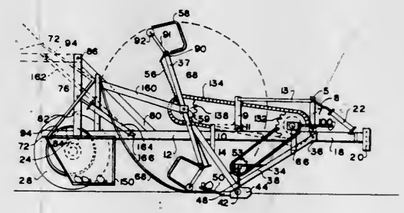
A heat operated fire extinguisher wherein a piston closing the mouth of the extinguishing agent pressure vessel is held in the sealing position by a plug of heat fusible material. This plug melts releasing the piston and discharging the pressure vessel when the ambient temperature indicates the presence of a fire.

3,638,734
REINFORCED FUSIBLE ELEMENT
Wayne E. Ault, Aurora, Ohio, assignor to A-T-O Inc., Willoughby, Ohio
Continuation-in-part of application Ser. No. 806,123, Mar. 11, 1969. This application Sept. 23, 1970, Ser. No. 74,810
Int. Cl. A62c *37/30*
U.S. Cl. 169—42 **6 Claims**



A reinforced fusible element useful in fire extinguishing sprinklers, fusible links on fire doors and the like is disclosed wherein the fusible material usually solder of a lead alloy or the like is provided with a thin frangible covering for stabilizing its size and shape by acting to prevent cold flow of the alloy as a result of compressive or tension forces thereagainst. Specifically a fusible element may be provided with a thin plated metal coating restricting growth due to cold flow in any direction.

3,638,735
ROCK PICKUP MACHINE
Nick Deneky, General Delivery, Stirling, Alberta, Canada
Filed Nov. 26, 1969, Ser. No. 880,098
Int. Cl. A01b *43/00*
U.S. Cl. 171—63 **21 Claims**

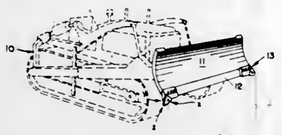


A pickup reel has tracks and rollers which position pickup fingers as the reel is rotated. A step formed in the track causes the fingers to shake during rotation thus clearing same and the fingers are resiliently hinged to clear immovable objects they might encounter.

3,638,736
CORNER BIT STRUCTURE
Frederick C. Hahn, Beaverton, Oreg., assignor to Esco Corporation, Portland, Oreg.
Filed June 25, 1969, Ser. No. 836,539
Int. Cl. A01b *15/00, 35/32*
U.S. Cl. 172—719 **3 Claims**

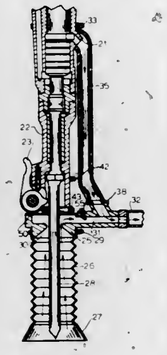
A corner bit for an earth-working element such as a dozer blade adapted to be mounted forwardly of a tractor or the

like, the bit being an essentially triangular plate having flanges providing a mounting groove and releasably secured



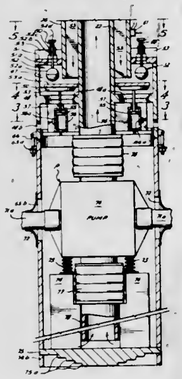
to the earth-working element by means of a shear block centrally of the plate.

3,638,737
PNEUMATIC DRILL NOISE MUFFLER AND DUST REMOVAL APPARATUS
David G. Moates, P.O. Box 2352, New Bern, N.C.
Filed Jan. 13, 1970, Ser. No. 2,538
Int. Cl. E21c *7/02*
U.S. Cl. 173—60 **1 Claim**



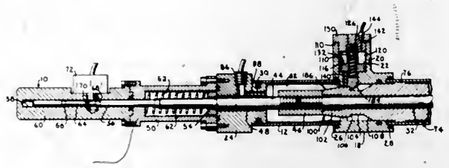
A modified pneumatic drill muffles the exhaust air noise and channels the air either by itself or combined with other compressed air to create a suction effect which removes drill dust, small rock bits and the like from the hole being drilled.

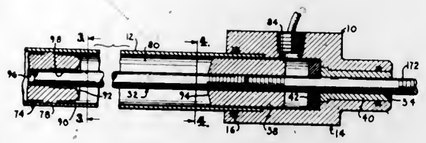
3,638,738
PILE DRIVING APPARATUS
Dexter L. Varnell, 4200 Scotland St., Apt. 82, Houston, Tex.
Filed Aug. 3, 1970, Ser. No. 60,289
Int. Cl. E02d *7/00*
U.S. Cl. 173—90 **10 Claims**



Pile driving apparatus adapted to apply a driving force to casing or piling to force same into the ground, wherein successive slugs of water are dropped under pressure to impart successive down blows to the apparatus, which blows are transmitted to the casing or piling, whereby increased blows can be imparted with a minimum weight for the apparatus.

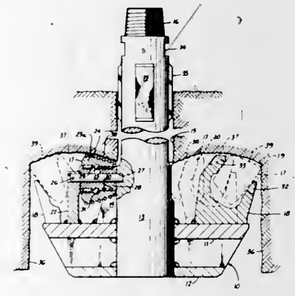
3,638,739
PNEUMATIC TRANSDUCER
Gordon H. Burke, 6115 Noland Road, Shawnee, Kans.
Filed June 2, 1970, Ser. No. 42,814
Int. Cl. B25d *9/00*; **E21c** *3/00*
U.S. Cl. 173—114 **12 Claims**





An elongated cylinder having an axially extending rod projecting from one end and adapted for attachment to a tool such as a punch or the like. A massive piston in the cylinder and slidable on the rod is forced by air pressure into impactive engagement with a collar anvil mounted on the rod. The force of impact drives the rod longitudinally to operate the tool and valves control the air for reciprocating the piston to and from its initial, latched position. The striking faces of the piston and anvil are tapered to avoid damage from the forces of impact.

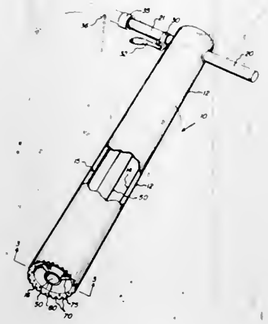
3,638,740
RAISE DRILLING BIT
Dan B. Justman, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Mar. 30, 1970, Ser. No. 23,583
Int. Cl. E21b *9/22*
U.S. Cl. 175—53 **7 Claims**



A rotary drill for producing a raise bore including a body having roller cutter assemblies arranged to cut the working face of an earth formation so that the plane of an inner portion of the working face inclines downwardly and inwardly towards a pilot hole, and the plane of an outer portion of the working face inclines downwardly and outwardly towards the

gage of the raise bore, and the plane of an intermediate portion of the working face extends between the inner and outer inclined portions. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,638,741
POST HOLE BORER
Joseph P. Zizak, 5791-2½ St. N.E., Minneapolis, Minn.
Filed Mar. 9, 1970, Ser. No. 17,368
Int. Cl. E21b *21/00*
U.S. Cl. 175—215 **9 Claims**



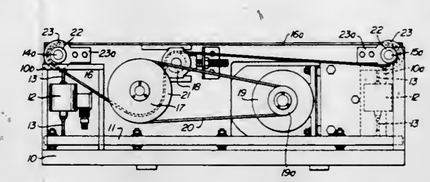
A hydraulic boring tool or post hole borer in the form of a cylindrical structure having an inner cylinder member spaced therefrom to define an area into which water under pressure is introduced with a discharge of the water to take place at the bottom of the structure and on an inclined plane to erode the soil within the cylindrical structure and below the same for the purpose of digging post holes.

3,638,742
WELL BORE SEAL APPARATUS FOR CLOSED FLUID CIRCULATION ASSEMBLY
William A. Wallace, 2438 Lord Baronof Ave., Anchorage, Alaska
Filed Jan. 6, 1970, Ser. No. 850
Int. Cl. E21b *17/10*; **E21c** *9/00*
U.S. Cl. 175—325 **7 Claims**



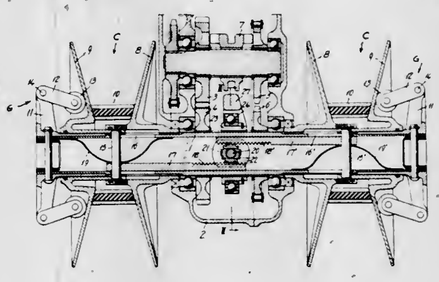
A well bore seal apparatus for a closed fluid circulation assembly, wherein one or more seal means are disposed to engage a well bore for sealing off the annulus externally of the closed fluid circulation assembly so that air, drilling mud, water and other fluids are sealed off from the annulus during drilling operations. This invention is especially suitable for drilling in permafrost, solid frozen ground and other solid formations which might be adversely affected by the presence of fluid in the annulus during drilling. The seal apparatus may also serve as a stabilizer during drilling, particularly when seal means are disposed at longitudinally spaced points on the assembly.

3,638,743
BELT CONVEYOR WEIGH SCALE
Edwin J. Douglas, Whittier, Calif., assignor to Hardy Scales Company, Maywood, Calif.
Filed Mar. 5, 1970, Ser. No. 16,695
Int. Cl. G01g *11/14*
U.S. Cl. 177—16 **14 Claims**



A base platform is suspended from within a supporting framework by load cells, preferably arranged as a three-point suspension. Belt conveyor pulleys, mounted between uprights rising from the base platform, provide a flat and elongate upper run for a conveyor belt adapted to receive and convey material such as parcel post packages to be weighed. Drive means are also supported by the base platform, and special belt-aligning means are provided to keep the belt tracking properly.

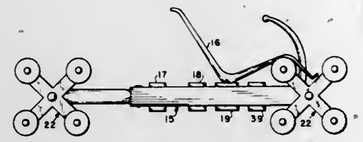
3,638,744
VEHICLE SPEED-CHANGE AND STEERING APPARATUS
Yoshikazu Washizawa, Fujimi-machi, Iruma-gun, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1970, Ser. No. 29,020
Claims priority, application Japan, Apr. 18, 1969, 44/29636
Int. Cl. B62d *11/10*
U.S. Cl. 180—6.2 **7 Claims**



A vehicle speed-change and steering apparatus comprises a pair of right and left stepless speed-change mechanisms each having a stationary pulley, a movable pulley and a belt interposed between the two pulleys, the pulleys being mounted on a driving shaft. A pair of rack rods are respectively connected to the right and left movable pulleys, and the rack rods are meshed with a single common pinion, such that the right and left movable pulleys are constrained to be moved in equal quantities in mutually opposite directions by the opera-

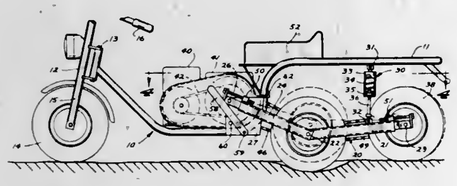
tion of a rotation detecting mechanism on the driving shaft and engaging the moving pulleys. Additionally, the right and left pulleys may be moved in the same directions by moving the pinion to the right or left to effect differential variation of speed of the belts of the speed-change mechanisms.

3,638,745
HYDRAULIC POWERED STAIR NEGOTIATING WHEEL CHAIR OR UNEVEN TERRAIN NEGOTIATING VEHICLE
Johnnie E. Floyd, 2609 East Side Drive, Austin, Tex.
Filed Jan. 27, 1970, Ser. No. 6,239
Int. Cl. B62b *5/02*
U.S. Cl. 180—8 A **11 Claims**



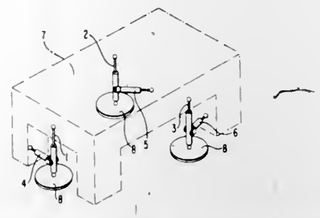
The vehicle comprising an adjustable length chassis, rotary spider arm wheel assemblies, including rotary peripheral minor wheels, a central propulsion means including a power source, a motor, and a pump which through a hydraulic system of flow dividers, check and control valves "T" and conduits applies a controlled differential action through a hydraulic wheel transmission to the wheel assemblies driving spider arms and rotating the peripheral wheels as required to accomplish a desired maneuver. The vehicle is capable of ascending and descending stairs or negotiating uneven terrain, maneuvering and spinning in place.

3,638,746
MOTORCYCLE HAVING TWO TANDEM DRIVING WHEELS
Lawrence A. Gostomski, Thorp, Wis., assignor to Right-Way Mfg. Corp., Owen, Wis.
Filed July 27, 1970, Ser. No. 58,359
Int. Cl. B62k *5/00*
U.S. Cl. 180—25 R **8 Claims**



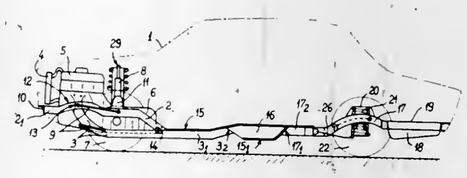
A three-wheeled motorcycle for use on rough terrain has a main frame and a front guide wheel pivotally mounted thereto. A pair of linkage arms are pivotally mounted at front ends to an intermediate point on the main frame. Rear ends of these arms pivotally support a wheel support frame including a pair of parallel spaced-apart bolsters. Two rear wheels are tandem mounted between the bolsters, the axle carrying the forward wheel of the pair forming the pivot for the connection between the arms and the bolsters, and the axle for the rear wheel of the pair being carried in bearings at rear ends of the bolsters. A pair of parallel, substantially vertical main frame support links are pivotally mounted to the wheel support frame at the bolsters one-third of the bolster length from the rear thereof and are pivotally mounted to the main frame substantially directly above the connection to the wheel support frame. A positive chain drive is provided from sprockets pivotally mounted concentrically with the mounting point of the linkage arms to the main frame to sprockets driving on said wheel axles. Means is provided for limiting downward pivotal movement of the linkage arms during steep hill climbing use of the vehicle on rough terrain.

3,638,747
WALKING MECHANISM FOR MOVING HEAVY LOADS
Heinz Althoff, Dehme, Germany, assignor to Eisenwerk Weserhutte A. G., Bad Oeynhausen, Germany
Filed Sept. 15, 1969, Ser. No. 857,958
Claims priority, application Germany, Sept. 27, 1968, G 57 51 749; G 67 51 750; G 67 51 752
Int. Cl. B62d *57/02*
U.S. Cl. 180—8 D **5 Claims**



This invention relates to a walking mechanism for moving heavy loads comprising variable length lifting legs and variable-length moving legs articulated to at least one baseplate, each of the moving legs being connected, by means including universally movable articulation means, at one end to a load and at the opposite end to one of the lifting legs at the axis of the latter.

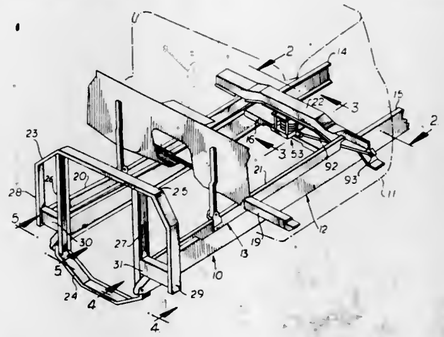
3,638,748
AUTOMOTIVE CHASSIS-FRAME STRUCTURES
Michel Tixier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France
Filed June 15, 1970, Ser. No. 46,035
Claims priority, application France, July 22, 1969, 6924906
Int. Cl. B62d *21/00*
U.S. Cl. 180—64 R **7 Claims**



Chassis-frame structure of automotive vehicle, notably of vehicle having a front power unit and transmission mechanism assembly, with driving front wheels connected through thrust links to the chassis frame, characterized in that it comprises a compound chassis consisting of an assembly of three main elements, that is, a front element constituted by a pair of lower parallel longitudinal members upswept at their front ends, and by a pair of upper longitudinal members each rigidly assembled at two junction nodes with one of said lower longitudinal members so as to double same along a portion corresponding to the cradle of the power unit, transmission and front-wheel assembly by means of an upswept curved portion having an outswept forward extension beyond said lower longitudinal members and their ends assembled by means of a curved horizontal cross member, said lower longitudinal members having rear extensions, the

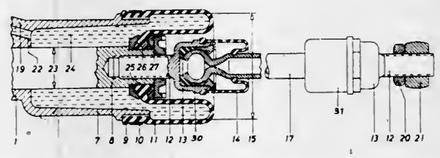
second element consisting of an intermediate chassis member in the form of a steel pressing formed in the conventional fashion with pressed reinforcing ribs and constituting the floor of the passengers' compartment and comprising likewise pressed wells for the feet of the rear seat passengers, and finally a third or rear element consisting of a pair of parallel longitudinal members having a different relative spacing in comparison with said front longitudinal members.

3,638,749
VEHICLE CAB MOUNTING
Stanford G. Graham, Fort Wayne; Ernest R. Sewelin, Waterloo; Richard L. Staadt, Fort Wayne, all of Ind., and Jimmie D. Pinney, Phoenix, Ariz., assignors to International Harvester Company, Chicago, Ill.
Filed Oct. 15, 1969, Ser. No. 866,594
Int. Cl. B60k *11/02*
U.S. Cl. 180—68 **12 Claims**



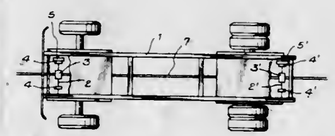
Motor truck body structure and radiator mounting means for resiliently supporting the engine heat exchanger or radiator and the vehicle body structure, which includes an operator's compartment, hood, fenders and radiator grille panel, on the chassis frame whereby such motor truck components and parts are movable in a controlled manner with respect to the chassis frame as a structural composite unit in order to mitigate the transmission of forces, shocks and vibrations thereto. The mounting means includes a subframe to which the aforesaid motor truck parts are directly connected and a single helically wound compression spring and shock absorber assembly for interconnecting the subframe and the chassis frame.

3,638,750
RACK-STEERING MECHANISM WITH HYDRAULIC OR PNEUMATIC STEERING ASSISTANCE, PARTICULARLY FOR MOTOR VEHICLES
Leopold F. Schmid, Leharstrasse 8, 7000 Stuttgart 1, Germany
Filed Mar. 23, 1970, Ser. No. 21,587
Claims priority, application Germany, Apr. 8, 1969, P 19 17 789.0
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 R **3 Claims**



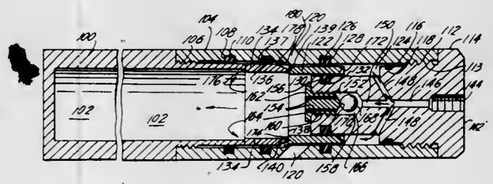
A rack-steering mechanism for a motor vehicle is provided with a hydraulic or pneumatic steering assistance comprising a piston formed by a tubular rolling bellows or diaphragm, one end of which is sealingly connected to the steering gear housing and the other end to the toothed rack extending axially through the steering gear housing. The end of the diaphragm connected to the toothed rack is provided with an annular enlargement through which the toothed rack extends. A ball and socket joint connected by a rack rod with the steering knuckle has a housing with an axial threaded projection thereon which is threadedly connected with one end of the toothed rack and locked thereto by a counternut which at the same time axially compresses the enlargement on the diaphragm and clamps it in sealing engagement with the toothed rack.

3,638,751
APPARATUS FOR AUTOMATICALLY STEERING POWERED VEHICLES
Hans H. Moll, and Werner Hundt, both of Munich, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Germany
Filed Apr. 21, 1969, Ser. No. 817,715
Int. Cl. B62d *1/24*
U.S. Cl. 180—98 **4 Claims**



Vehicles steered by signals received from a line placed along a roadway have impulse-receiving means sensitive across the width of the vehicle to signals received from said line.

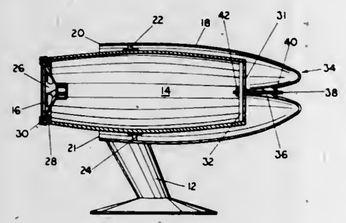
3,638,752
SEISMIC SIGNAL GENERATOR
Ralph V. Wakefield, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Continuation-in-part of application Ser. No. 755,457, Aug. 26, 1968, now abandoned , Continuation-in-part of application Ser. No. 591,243, Nov. 1, 1966, now abandoned , Continuation-in-part of application Ser. No. 800,332, Jan. 24, 1969, now abandoned , Continuation-in-part of application Ser. No. 639,941, May 15, 1967, now abandoned , Continuation-in-part of application Ser. No. 415,876, Dec. 4, 1964, now abandoned. This application Sept. 13, 1968, Ser. No. 795,368
Int. Cl. G01v *1/00*
U.S. Cl. 181—0.5 R **38 Claims**



An assembly for creating pneumatic impulses, e.g., forming a seismic signal comprising a casing including a gas differential pressure system defining a main chamber and a smaller control chamber connected by an orifice, each adapted to contain a high-pressure gas. Impulse producing exhaust ports are provided in the main chamber, gas inlet

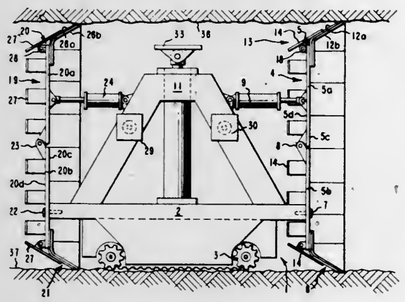
means are included for either of the main and control chambers and secondary exhaust means are provided for the control chamber. The differential pressure system includes a slidable element for opening and closing the impulse producing exhaust ports responsive to a force differential across the main and control chambers, the force applied to the slidable element in closed position from the control chamber being greater than that applied from the main chamber, and external valve means for rapidly reducing the control chamber pressure. Different embodiments of the assembly include means for directing the impulse and assemblies wherein high-pressure gas may be continuously fed to the main chamber.

3,638,753
BARREL SPEAKER ENCLOSURE
Paul E. Cunningham, 22 Curtis St., Athens, Ohio
Filed Aug. 31, 1970, Ser. No. 68,199
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—31 B **5 Claims**



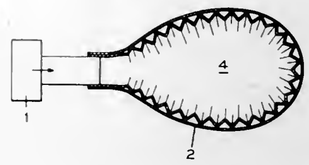
A speaker enclosure having a barrel-shaped drum with an open front end and an open rear end. The speaker is axially mounted across the open front of the drum and an aerodynamically curved, dome-shaped reflector is mounted to surround the rear portion of the drum and is spaced therefrom. The open end of the reflector is thus aligned to direct sound emitted from it in a substantially forward axial direction.

3,638,754
PRESSURE AND SOUND SHIELD FOR BLAST EXCAVATION OF TUNNELS AND THE LIKE
Edward J. Sosnowicz, Colwyn, Pa., and Frank M. Willis, Hedgesville, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 16, 1970, Ser. No. 98,826
Int. Cl. F01n *3/00*; **E21c** *23/00*; **E21f** *5/00*
U.S. Cl. 181—33 R **11 Claims**



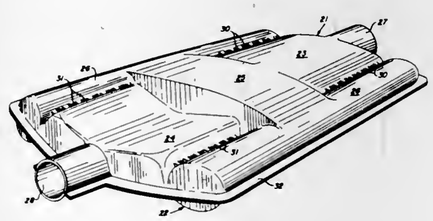
An apparatus for attenuating pressure and sound comprising a frame mounted on motion-transmitting means, and a transverse barrier mounted on said frame, said barrier comprising a rigid core and a deformable sealing member completely surrounding the periphery of said core, said sealing member being extensible and retractable with localized radial variability, thereby giving the barrier a variable edge contour.

3,638,755
OUTER ENERGY ABSORBER FOR AIR-BAG-RESTRAINT SYSTEM
John J. Sack, Bloomfield Hills, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,635
Int. Cl. F01n *1/22*; **B60r** *21/02, 21/08*
U.S. Cl. 181—36 R **7 Claims**



Energy absorption in a two-bag air bag combination, one bag contained within the other.

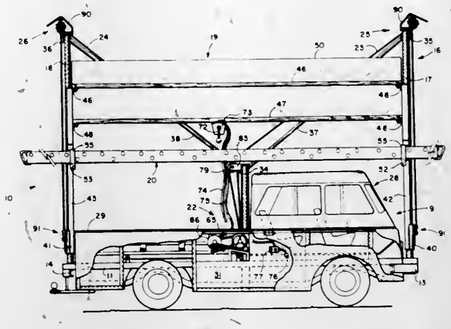
3,638,756
VEHICLE MUFFLER AND METHOD OF ASSEMBLY
Robert E. Thiele, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed Dec. 30, 1969, Ser. No. 889,102
Int. Cl. F01n *1/02, 1/08, 7/18*
U.S. Cl. 181—57 **8 Claims**



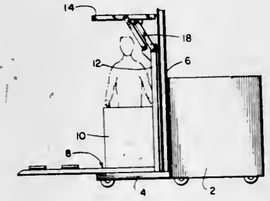
A muffler for vehicles propelled by internal combustion engines. The muffler is formed of two pieces, preferably metal stampings, in which the various chambers and passages are indented or embossed. The two pieces are joined at their peripheral edges. The muffler is tuned by adjusting the relative size and arrangement of chambers and passages. In one modification the position of the pieces may be adjusted relatively to each other to permit variable tuning.

3,638,757
MOBILE ELEVATING SCAFFOLDS
Ralph D. Sampson, 145 Penfield St., Guelph, Ontario, Canada
Filed May 22, 1970, Ser. No. 39,614
Int. Cl. E04g *1/18*
U.S. Cl. 182—63 **9 Claims**

A mobile elevating scaffold includes an elongated scaffold platform or walkway which is supported by a scaffold frame structure which can be raised or lowered within a fixed upright frame structure mounted on a truck chassis. Movement of the scaffold frame structure is effected by first and second cables extending from winch drums mounted on the chassis and over first and second primary cable pulleys and terminally connected to the scaffold frame structure to provide a two-point suspension for that structure. The scaffold platform or walkway is usefully longitudinally adjustably supported on arms extending transversely outwardly from the scaffold frame structure.



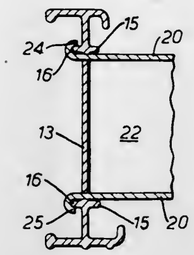
3,638,758
OVERHEAD GUARD
Alexander Weisker, Easton, Conn., assignor to C & M Manufacturing Company, Inc., Bethesda, Md.
Filed Mar. 27, 1970, Ser. No. 23,257
Int. Cl. E04g *1/26*
U.S. Cl. 182—112 **13 Claims**



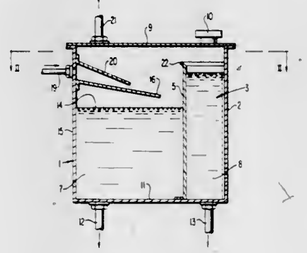
An operator's platform which moves up and down with a carriage on a stacker mast has an overhead guard which is hinged for lowering so that the operator's platform and carriage may be moved close to the roof of a warehouse. The operator moves the guard over to a position where it rests upon the mast. Upward movement of the carriage lowers the guard, and downward movement of the carriage raises the guard to an intermediate position. The operator returns the guard to the protective position. Switches prevent upward movement of the carriage beyond a predetermined mast position when the guard is up and prevent downward movement of the carriage below a predetermined mast position when the guard is inoperative.

3,638,759
METAL LADDERS
Robert Anton Englhardt, Etobicoke, Ontario, Canada, assignor to Indal Canada Limited, Ontario, Canada
Filed Mar. 30, 1970, Ser. No. 23,738
Claims priority, application Great Britain, Jan. 16, 1970, 2,138/70
Int. Cl. E06c *7/50*
U.S. Cl. 182—194 **4 Claims**

A metal ladder, in which each stile has a pair of spaced parallel ribs on its inner and outer faces, and is formed with pairs of slots close to the ribs, and each rung has a cross section in the form of a hollow parallelogram, with two spaced parallel tabs projecting at each end. The tabs are inserted through the slots and crimped over the outer ribs, and the sidewalls of the rungs locate against the ribs on the inwardly facing surfaces of the stiles.



3,638,760
OIL TANK FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE WITH DRY-SUMP LUBRICATION
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Baimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Mar. 31, 1970, Ser. No. 24,279
Claims priority, application Germany, Apr. 2, 1969, P 19 16 967.6
Int. Cl. F16n *39/00*
U.S. Cl. 184—6.23 **18 Claims**

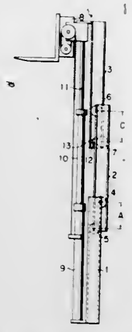


An oil tank for a rotary piston internal combustion engine, especially of trochoidal type of construction, with a dry sump lubrication for the drive unit and with a metered fresh oil lubrication for the piston cam surface in the housing casing; the oil tank for the dry sump lubrication includes inlet, outlet, venting and filler connections whereby a second tank for the fresh oil lubrication is arranged on the inside of the oil tank at a place substantially directly below the filler inlet and is in communication with the oil tank by way of an overflow while having its own outlet.

3,638,761
THREE-STAGE MAST ASSEMBLY FOR A LIFT TRUCK
Shuji Ohta, Toyohashi, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi Prefecture, Japan
Filed Feb. 11, 1970, Ser. No. 10,481
Claims priority, application Japan, Feb. 25, 1969, 44/14404
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **2 Claims**

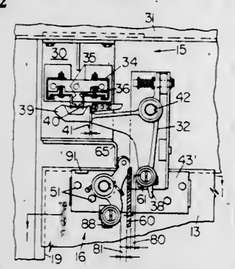
A three-stage mast assembly for a lift truck, consisting of an outer mast channel, an intermediate mast channel and an inner mast channel, all of I- or L-shaped cross section,

wherein the forward and rearward flanges, respectively, of the intermediate mast channel are arranged rearwardly from



the forward and rearward flanges, respectively, of the outer and inner mast channels.

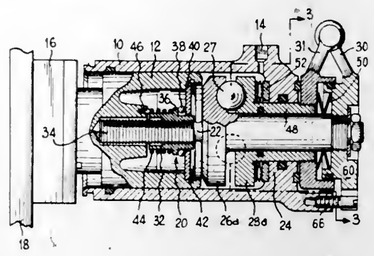
3,638,762
DOOR-COUPLING APPARATUS FOR ELEVATORS
Calvin Edward Johns, Tucker, Ga., assignor to Otis Elevator Company, New York, N.Y.
Filed Aug. 11, 1969, Ser. No. 848,981
Int. Cl. B66d *13/16*
U.S. Cl. 187—52 **8 Claims**



Door interlock and coupling apparatus for an elevator installation for coupling an elevator car sliding door to a hoistway sliding door for movement of the doors between open and closed positions, wherein the door interlock and coupling apparatus includes an interlock mechanism and a coupling mechanism. The interlock mechanism has a catch portion fixedly mounted adjacent to the hoistway door and has a locking lever pivotally mounted on the hoistway door for locking the hoistway door in its closed position. The coupling mechanism includes a vane and a magnetized roller assembly, wherein the vane is composed of a magnetic material and is mounted on the car door, and wherein the magnetized roller assembly is supported by the locking lever and is operative to apply a magnetic force on the vane for coupling the vane and the car door to the hoistway door for movement of the coupled doors between the open position and the closed position until the locking lever operates to lock the hoistway door in its closed position.

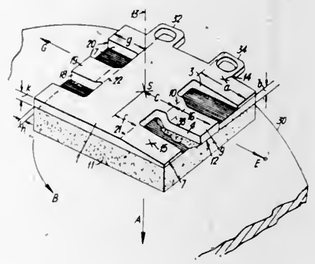
3,638,763
MECHANICAL ACTUATING MECHANISM FOR DISC BRAKE
Bernard Laverdant, Vincennes, France, assignor to Societe Anonyme D.B.A.
Filed Apr. 22, 1970, Ser. No. 30,726
Claims priority, application France, Apr. 22, 1969, 6912597
Int. Cl. F16d *55/26*
U.S. Cl. 188—72.6 **4 Claims**

A parking actuator for a disc brake is disclosed which includes a pair of relatively rotatable actuating members. Oppositely facing recesses having inclined sides are provided in each of the members, and force-transmitting elements are received in these recesses. One of the members carries a nut which advances into engagement with the actuating piston of the brake when the one member is rotated relative to the brake housing. When a parking application is effected, the



one member is first rotated relative to the housing to move the nut into engagement with the piston, whereupon the other member is rotated relative to the one member to drive the force-transmitting elements up the sides of the recesses to urge the one member and the piston in a brake-applying direction.

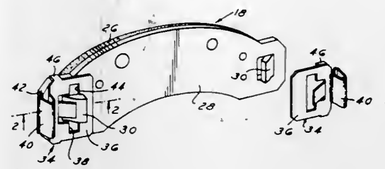
3,638,764
BRAKESHOE FOR SPOT-TYPE DISC BRAKES
Hans Joachim Anders, Frankfurt, am Main, Germany assignor to International Telephone and Telegraph Corporation, New York
Filed Apr. 23, 1970, Ser. No. 31,274
Claims priority, application Germany, Apr. 23, 1969, P 19 20 582.4
Int. Cl. F16d *66/02*
U.S. Cl. 188—73.1 **4 Claims**



A spot-type disc brakeshoe having a brake lining and a backing plate with the backing plate having lateral lugs, at least one of which is bent toward the brake disc while the others are chamfered to form an acute angle with respect to the actuator piston whereby the brakeshoe will rotate thereby creating an audible signal when the brake lining is worn down and the bent lug contacts the brake disc.

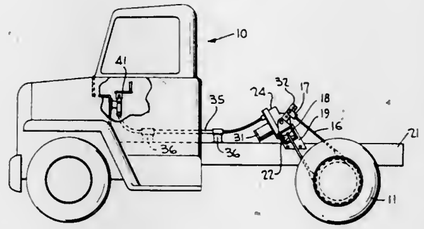
3,638,765
DISC BRAKE WITH NOISE ARRESTER
Bernard M. Flaherty, Birmingham, and Lewis L. Knight, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 18, 1970, Ser. No. 20,692
Int. Cl. F16d *65/00*
U.S. Cl. 188—73.5 **7 Claims**

A disc brake including a noise arrester means that dampens vibrations between the brake pad backing plate and the caliper assembly. The noise arrester comprises a spring metal clip that engages the end of the backing plate and exerts a



spring force on an abutment tab protruding from the backside of the brake pad backing plate.

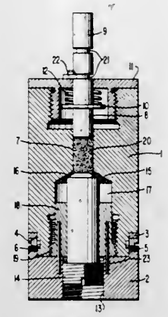
3,638,766
MANUAL CONTROL FOR AUXILIARY BRAKE DEVICE
Kirk Besoyan, Blythe, Calif., assignor to Safety Vee Brake, Inc., Blythe, Calif.
Filed July 10, 1970, Ser. No. 53,795
Int. Cl. F16d *65/34*
U.S. Cl. 188—106 P **8 Claims**



An auxiliary brake device comprising a continuous flexible cable extending about a pair of sheaves secured to opposite ends of a vehicle axle, friction elements carried by the cable and engaging the sheave walls for braking the vehicle as the cable is drawn tight, a manual control means for optionally operating an automatic control to actuate the cable for applying the brake in the event of automatic control failure.

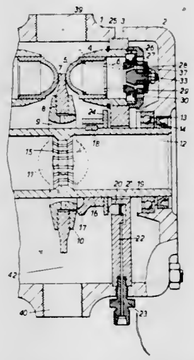
3,638,767
MECHANICAL DELAY DEVICE
Fritz Elsner, Sieglar; Franz Becker, Bonn, and Heinreich Kolf, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Continuation of application Ser. No. 744,095, July 11, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 11,936
Int. Cl. F16f *9/30*
U.S. Cl. 188—268 **8 Claims**

A mechanical delay device provided with a throttle passage between two sealed chambers, with a piston in one chamber to displace a plastically deformable flowable mass from the one chamber to the second chamber. A pin extends through the second chamber to adjust the throttle passage and to surround it with a reset piston movable in the second



annular chamber by relative rotation of two housing parts to move the flowable mass back into the first chamber.

3,638,768
HYDROSTATIC BRAKE
Fritz Ostwald, Buchschlag, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 26, 1970, Ser. No. 22,853
Claims priority, application Germany, Mar. 29, 1969, P 19 16 333.8
Int. Cl. F16d *57/06*
U.S. Cl. 188—294 **8 Claims**

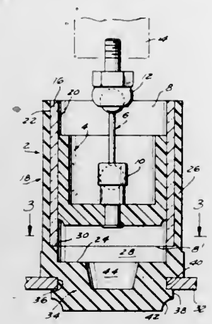


A hydrostatic brake having a swashplate which actuates a series of circularly spaced pistons movable in cylinders having energy dissipating suction and discharge valves. The angle of the swashplate is variable in response to a brake signal to increase the stroke of the pistons and thereby the load on the shaft rotating the swashplate.

3,638,769
DASHPOT ASSEMBLY
Arthur M. Cohen, Westport, Conn., assignor to Airpot Corporation, Norwalk, Conn.
Filed Sept. 15, 1969, Ser. No. 857,697
Int. Cl. F16f *9/54*
U.S. Cl. 188—298 **17 Claims**

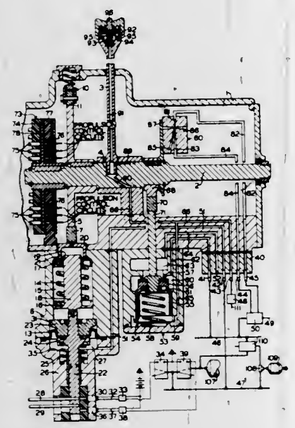
The cylinder of a dashpot is formed from an accurately dimensioned rigid tube which is received within a soft plastic

sheath, the latter surrounding the sidewalls of the tube and also closing the end of that tube. The sheath is preferably



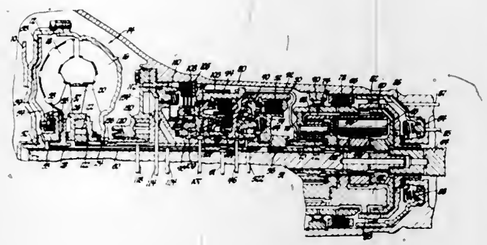
provided with a downwardly extending part which facilitates the mounting of the assembly on an appropriate support.

3,638,770
BRAKE AND PROPULSION CONTROLLER
Richard K. Frill, Pittsburgh, and Michael T. Zoric, North Versailles, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Oct. 6, 1969, Ser. No. 863,951
Int. Cl. F16d *67/02*
U.S. Cl. 192—2 **7 Claims**



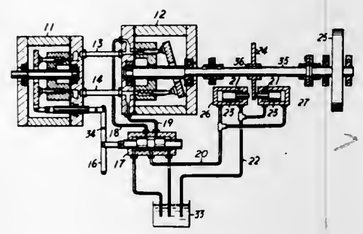
An improved railway vehicle operator's brake and propulsion controller combining the use of fluidic devices and light-responsive devices with fluid pressure responsive devices for controlling braking as well as propulsion functions of the vehicle, such arrangement thus providing a compact controller requiring less space than present controllers when installed. Operation of the several devices is effected by a manually rotatable shaft having rotary cams arranged thereon for operating certain ones of the devices and which also carries perforated disc members by which light-responsive elements are selectively exposed to or shielded from a light source, depending upon the angular position of the respective disc members to thereby control closing or opening of respective electrical control circuits.

3,638,771
AUTOMATIC TRANSMISSION AND CONTROLS
Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of application Ser. No. 880,779, Nov. 28, 1969. This application July 30, 1970, Ser. No. 59,467
Int. Cl. F16d *67/00*; **F02d** *11/02*; **B60k** *17/02*
U.S. Cl. 192—3.33 **12 Claims**



Power transmission having torque converter drivingly connected to a planetary gear unit conditionable by selective engagement of friction drive establishing devices to provide for four forward drives and one reverse drive. A converter clutch normally held from engagement by the feed of fluid into the converter through a clutch control chamber can be engaged by converter pressure in response to an upshift signal and subsequent exhaust of fluid from the control chamber to permit mechanical drive of the gear unit. A shift valve forming part of hydraulic controls provides a signal pressure to open a converter feed restrictor valve to permit the converter to be fed with operating oil through a second feed passage. The signal from this valve also activates an accumulator valve system which controls the engagement of the converter clutch so that converter clutch capacity is gradually increased to a maximum. There is a detent valve which provides for 3–2 and 4–3 part throttle downshifts and 4–2, 3–2 and 2–1 full throttle downshifts.

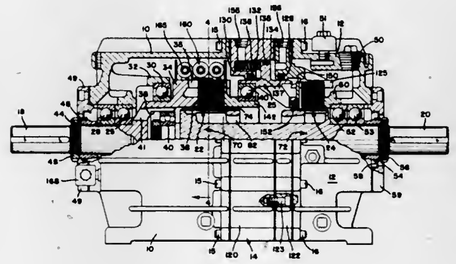
3,638,772
MEANS FOR PREVENTING REVERSE DRIVE THROUGH A HYDROSTATIC TRANSMISSION
Kenji Ninomiya, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho (Komatsu Ltd.), Akasaka, Tokyo, Japan
Filed Nov. 6, 1969, Ser. No. 874,644
Claims priority, application Japan, Dec. 27, 1968, 43/95521
Int. Cl. F16d *67/00*; **B60k** *29/00, 21/00*
U.S. Cl. 192—4 B **3 Claims**



A means for automatically preventing a motor, which is hydraulically driven by a pump and mechanically drives an

inertial load from a pumping action of the motor caused by being driven by said inertial load, comprising blocking a reverse power transmission. The blocking may be done by brake disc fixed to a transmission shaft or by declutching a pair of clutching members arranged across the shaft. The automatic actuation of the blocking action may be either mechanically or electrically effected.

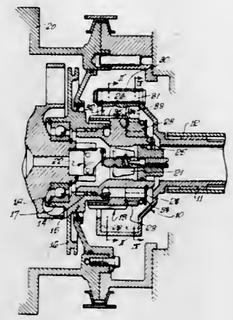
3,638,773
CLUTCH BRAKE UNIT
William E. Lewis, Fairfield, and Dennis Dobrinich, Cincinnati, both of Ohio, assignors to Force Control Industries, Inc., Fairfield, Ohio
Filed Mar. 31, 1970, Ser. No. 24,191
Int. Cl. F16d *11/06*
U.S. Cl. 192—18 A **9 Claims**



A clutch-brake unit incorporates a clutch disk pack, and a separate brake disk pack with an interposed piston unit which is coupled in one direction to engage the clutch and in the opposite direction to engage the brake. The housing is formed in three major sections which includes an input section generally enclosing the input shaft and the clutch pack. An output housing generally contains the output shaft and the brake pack, and an intermediate piston housing generally contains the actuated piston and associated fluid pressure inputs. The output shaft is provided with integral impellers and oil access apertures for delivering a constant supply of oil to the clutch and brake packs and for providing an inlet in which the oil may flow by centrifugal force when the output shaft is not turning. A heat exchanger consists of a heat exchange subassembly forming a series of finned tubes which assembly may be inserted in surrounding relation to the clutch pack. A shrouded fan assembly may be substituted where thermal capacity does not require internal cooling.

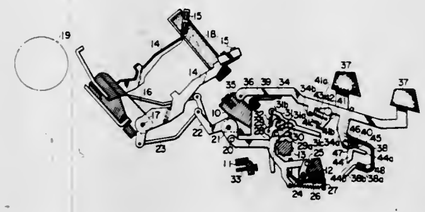
3,638,774
PAWL AND RATCHET CLUTCH
Darrel W. Burch, and Arthur H. Jacomet, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed May 6, 1970, Ser. No. 34,955
Int. Cl. F16d *13/04*
U.S. Cl. 192—42 **14 Claims**

A pawl and ratchet clutch for use between a starter and a gas turbine engine in which the pawls of the clutch are held in engagement with ratchet teeth by both resilient and centrifugal force, during the engine starting operation. After self-sustaining engine speed is attained, the pawls are disengaged and held in such condition, also by centrifugal force, during engine operation. When engine operation is discontinued and its speed is reduced sufficiently, the pawls will be resiliently urged toward the ratchet teeth and a light ratcheting will occur. If the starter is energized during engine coastdown, the pawls may be moved into engagement with the ratchet teeth



by centrifugally responsive actuating means in addition to the resilient force.

3,638,775
REPEAT ACTION MECHANISM FOR POWER-OPERATED TYPEWRITERS
Yukio Hishida; Takami Kato, and Hisao Kurachi, all of Nagaya, Japan, assignors to Brother Industries Ltd., Nagaya, Japan
Filed Jan. 8, 1969, Ser. No. 789,776
Int. Cl. B41j *23/08*
U.S. Cl. 197—17 **5 Claims**

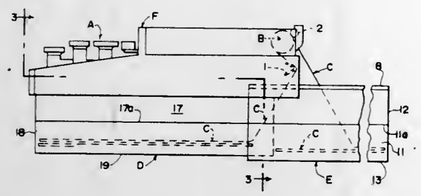


A repeat action mechanism for operating a type bar having a part operatively connected to said type bar, a control lever pivotally mounted on a key lever depressible to first and second positions, the control lever including a first portion for initiating a transitory connection with said part and a power roll upon depression of the key lever thereby to begin operating said type bar, and a second portion for repeatedly causing said transitory connection upon depression of the key lever to the second position. The second position is adjustable independently of the first position.

3,638,776
STENOGRAPHIC MACHINE WITH COLLAPSIBLE PAPER WEB HOLDERS
Ben C. Ridge, 2107 Sir Francis Drake Blvd., Fairfax, Calif.
Filed June 30, 1969, Ser. No. 837,426
Int. Cl. B41j *29/02*
U.S. Cl. 197—186 A **2 Claims**

A stenographic machine with collapsible paper web holders that reduces the overall height of the secretarial machine by about 1½ inches and reduces the height of the court reporter model by about 2½ to 3 inches. This permits the improved stenographic machine to be carried in a casing of considerably less width than is now possible with the stan-

dard stenographic machine. Novel means is provided for mounting the improved stenographic machine on a tripod support, the actual connection between the machine and the



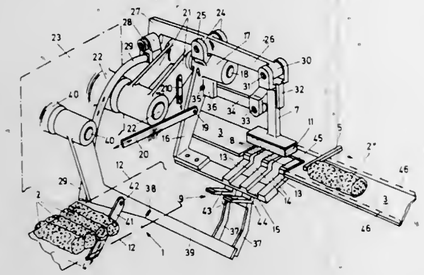
support being made at one side of the collapsible paper web holders so as not to interfere with these holders when they are enlarged for holding the paper web.

3,638,777

METHOD AND DEVICE FOR SEPARATING ARTICLES ARRANGED IN CLOSE SUCCESSION ON A CONVEYOR

Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to Schwerzerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 4, 1970, Ser. No. 34,075
Claims priority, application Switzerland, May 8, 1969, 7029/69
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 **8 Claims**



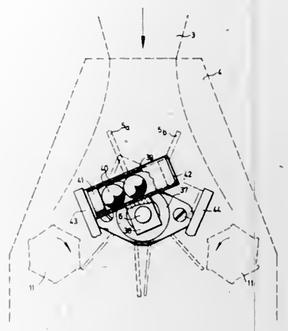
A method and device for separating closely successive articles which are fed by an input conveyor toward a packaging machine. Each article reaching the end of the input conveyor is transferred to a movable bottom member lying initially flush with the conveyor. A first vertically movable holding post holds the last article on the end of the conveyor while a second holding post engages the preceding article on the bottom member and when the latter is tilted with the second holding post and the article therebetween the two mentioned articles, which may stick together, are separated along an axis forming the line of contact between said articles. The preceding article is then transferred from the bottom member to a lower disposed stationary slide track extending at a right angle to the input conveyor. The second holding post releases the article which then is moved by a tappet along the slide track to a packaging machine.

3,638,778

APPARATUS FOR SWITCHING OBJECTS BETWEEN TWO PATHS

Franz Remensperger, St. Georgen, Black Forest, Germany, assignor to Fr. Winkler Kg. Spezialfabrik fuer Baeckereimaschinen und Backoefen, Villingen, Black Forest, Germany

Filed Feb. 13, 1970, Ser. No. 11,234
Claims priority, application Germany, Oct. 17, 1969, G 69 40 463
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AC **9 Claims**



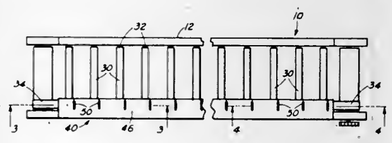
Successive pieces of dough are fed to a mechanical distributing switch which is shifted by alternate pieces between two end positions for guiding the pieces alternatingly between two different paths. Dead-center-arresting means including a movable weight, hold the distributing switch in either end position until the same is shifted by the next following piece to and beyond a dead center position and assumes the respective other end position.

3,638,779

CONVEYOR

Carl J. Milazzo, Tonawanda, N.Y., assignor to Hohl Machine & Conveyor Co., Inc., Buffalo, N.Y.

Filed June 27, 1969, Ser. No. 837,118
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **7 Claims**



An accumulating transfer conveyor comprising a series of live rollers driven by an endless drive member having one side in frictional contact with said rollers adjacent one end thereof. A pair of pads are secured to the other side of the endless drive member at equally spaced-apart distances. As the pads move along with the drive member, they engage detent means which snub the pads and the underlying drive member radially against the rollers to increase the frictional contact between the endless drive member and the rollers.

3,638,780

CONVEYOR SYSTEM

Clarence P. Snow, 868 E. Snedden Drive, Sandy, Utah

Filed May 14, 1970, Ser. No. 37,164
Int. Cl. B61b *11/00*; **B65g** *17/20*
U.S. Cl. 198—130 **15 Claims**

A conveyor system which includes an endless conveyor link supported above ground level with spaced supports; at least one support bracket affixed to the link to extend outwardly away from one side thereof and the downwardly below the link; turning means coacting with the link for changing its direction of travel away from the one side of the link; turning means coacting with the link for changing its direction of travel towards the opposite side of the link; and drive means coacting with the link for longitudinally propelling it.

3,638,781

CONVEYOR BELT-TENSIONING MEANS

Peter Donald Heywood Comley, Glasgow, England, assignor to Movor & Coulson Limited, Great Britain

Filed Jan. 29, 1971, Ser. No. 110,827
Claims priority, application Great Britain, Jan. 30, 1970, 04,525/70
Int. Cl. B65g *15/30*
U.S. Cl. 198—208 **7 Claims**



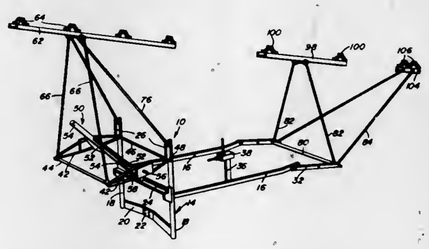
An endless conveyor has belt-tensioning means comprising two devices adapted and arranged to sense and signal variations in the tensions in the working and return runs of the belt respectively due to change of load conditions, a drum around which the return run of the belt passes and which is displacable so as to vary the tensions in the belt, speed-variable driving gear adapted to effect said displacement of the drum, and means adapted to effect actuation of said driving gear in response to signals emitted by said devices when said tensions are not at a predetermined ratio, and to effect variation in the speed of said gear, and hence of the displacement of the drum, in accordance with the signal characteristics which vary in accordance with the rate at which tension change in the belt takes place due to variation in load conditions.

3,638,782

TRACTOR MOUNTED GRAIN AUGER

Sidney S. Cotton, Box 386, and Richard A. Cotton, P.O. Box 502, both of Glasgow, Mont.

Filed June 29, 1970, Ser. No. 50,859
Int. Cl. B65g *41/00*
U.S. Cl. 198—233 **6 Claims**



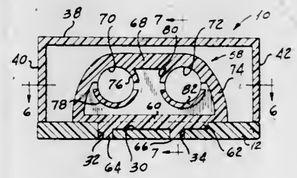
A mobile grain elevator including an elongated auger conveyor assembly disposed above and extending lengthwise of a mobile support having front and rear ends. The mobile support includes front and rear lift arm assemblies having free ends swingable through upright planes extending longitudinally of the mobile support and to which one pair of ends of a pair of support arm assemblies are pivotally secured for relative oscillation about horizontal transverse axes. Further, the other pair of ends of the support arm assemblies are pivotally attached to longitudinally spaced portions of the conveyor assembly and structure is provided to control relative oscillation between one of the lift arm assemblies and the corresponding support arm, whereby uncontrolled longitudinal shifting of the conveyor assembly relative to the lift arm assemblies is prevented. Also, the mobile support is provided with means for selectively swinging both the front and rear lift arm assemblies relative thereto whereby the front and rear ends of the auger conveyor assembly may be adjusted in elevation.

3,638,783

PEN AND PENCIL BOX

Richard K. Enseki, Glen Rock, and Michael P. Arnone, North Bergen, both of N.J., assignors to Kreisler Manufacturing Corporation, North Bergen, N.J.

Filed Jan. 7, 1970, Ser. No. 1,249
Int. Cl. B65d *25/10*, *25/54*
U.S. Cl. 206—45.14 **1 Claim**



A box for storing and displaying elongated articles such as pens and pencils in which an elongated flat base has a laterally extending recess in its upper surface provided with eccentrically positioned spaced holes for receiving locating pins on an article holder boss adapted to mate with the recess so as correctly to orient the article tips with relation to the box. The holder is formed with one or more resilient sockets tapered in the direction toward which the article tips are to be oriented. A transparent cover pivoted on the base includes means for receiving snap-locking bosses on the base when the cover is closed.

3,638,784

TWO COMPARTMENT UNITARY BAG

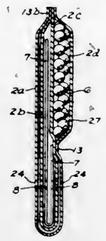
William A. Bodolay, 15 Fern Glen Road, East Longmeadow, Mass., and Stephen M. Bodolay, 15 Daviston St., Springfield, Mass.

Continuation-in-part of application Ser. No. 743,140, July 8, 1968, now Patent No. 3,540,183. This application June 4, 1970, Ser. No. 43,335
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.34 **7 Claims**

A bag is formed having a double fold of transparent material so that there are two separate compartments. The header label may be inserted between two of the layers and the material may be inserted between the double layer and a single layer or this procedure may be reversed as desired.

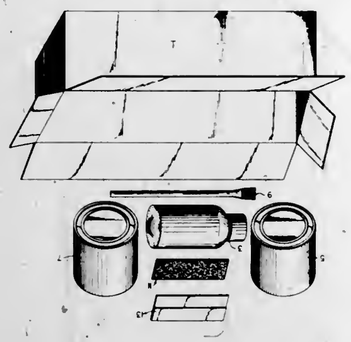
The bag that is formed is a two compartment bag. The bag

is especially designed for use with hardware items, such as safety pins, bolts, screws, nuts, etc. In one compartment is



the advertising media and in the compartment opposite this compartment are the hardware items or the like.

3,638,785
KIT FOR MODIFYING FOOTWEAR TRACTION
Charles P. Casteel, 719 Grand Ave., and Roy E. Vanderhoof, Box 490, both of Glenwood Springs, Colo.
Filed Apr. 7, 1970, Ser. No. 26,289
Int. Cl. B65d *81/32, 85/00*
U.S. Cl. 206—47 R **9 Claims**

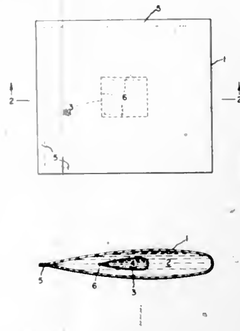


A kit and process for applying a highly slip resistant surface to the soles and heels of ordinary footwear of a great many types including fishing boots and shoes used for boating. The kit includes a quantity of very hard grit particles, an elastic cement, a substance to remove resinous impregnants from the surface of soles, and ordinary sandpaper. In use, the soles of conventional footwear are cleaned and roughened with the sandpaper, the surface is treated with a resin removing substance, and then treated with a chlorine bleach. Then the adhesive is applied. The grit is applied on that adhesive and covered with another layer of the adhesive. For soles of felt and the like a prime coat is first applied and dried before applying the coat for the grit. The so treated soles give a very sure and safe grip on a wide variety of different surfaces, and are comparatively resistant to wear and deterioration.

3,638,786
PACKAGE FOR PREPARATION AND DISPENSING OF HEATED FOAM
William Joseph Borecki, and Frederick John Gradishar, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 12, 1969, Ser. No. 875,649
Int. Cl. C09k *3/30;* **A61k** *7/14*
U.S. Cl. 206—47 A **5 Claims**

A package adapted for preparing and dispensing heated foam, which comprises a manually openable sealed outer container and a manually rupturable sealed inner container, said package containing

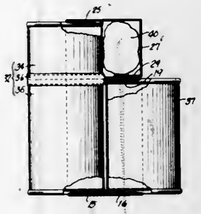
A. an aqueous dispersion of a foamable composition,
B. hydrogen peroxide,
C. a reductant composition,



D. an organic propellant selected from
a. 1,2-Dichlorohexafluoropropane
b. 1,2-Dichloro-1,2,2-trifluoroethane
c. Perfluorodimethylcyclobutane
d. 1,2-Dichloroperfluorocyclobutane

wherein materials (B) and (C) are isolated from each other in the separate containers of said package.

3,638,787
PACKAGE FOR HOLDING TWO CAN UNITS AND A MORE FRAGILE UNIT AND BLANK FOR MAKING SAME
Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed July 7, 1970, Ser. No. 52,976
Int. Cl. B65d *65/24, 5/48, 5/54*
U.S. Cl. 206—47 R **6 Claims**

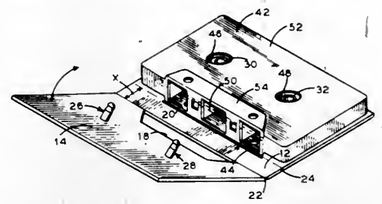


A package for holding two chime-ended can units with a more fragile unit, comprising a wrapper extending longitudinally around the can units and provided at one end with a set of flaps and a partition wall to define a storage space for the fragile unit. Each of the can units is locked in the wrapper by chime-locking tabs. The can unit aligned with the packaging space for the more fragile unit is shorter than the other can unit. Either can unit may consist of a single can or may be two cans taped together.

3,638,788
CASSETTE COVER
Nathan L. Solomon, P.O. Box 550, Englewood, N.J.
Filed Oct. 9, 1969, Ser. No. 865,125
Int. Cl. B65d *85/67;* **B65h** *55/00*
U.S. Cl. 206—52 R **6 Claims**

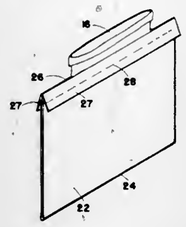
A sheet of material which can be bent to enclose a tape cassette, engaging means coupled to the material, and, if

desired, positioned to pass through the centers of the tape spools of the cassette to lock the bent material to the cassette



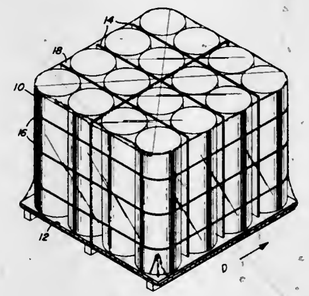
to form an enclosure. The sheet of material can be composed of plastic and molded having lines of reduced thickness which provide bending of the plastic along defined lines.

3,638,789
DISPOSABLE FINGER PROTECTING CLEANSING MITT
Marian Stanislak Tuszewski, 915 49th Ave. S.W., Calgary, Alberta, Canada
Filed Jan. 26, 1970, Ser. No. 5,590
Int. Cl. A47k *7/03;* **A61b** *19/02*
U.S. Cl. 206—63.2 R **10 Claims**



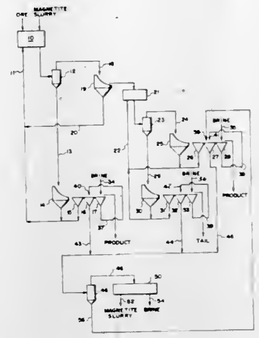
A mitt or glove is provided with a sponge or pad on one face thereof and is detachably sealed within an envelope in a sterile condition. The finger engaging cuff of the mitt extends from the envelope so that the mitt can be engaged over the finger of the user wherefrom the protective envelope can be peeled back and removed.

3,638,790
PALLETIZED PACKAGING OF CYLINDRICAL OBJECTS
Richard O. Schmid, East Brunswick, and Harold Alda, Colonia, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,673
Int. Cl. B65d *71/04, 85/62*
U.S. Cl. 206—65 S **37 Claims**



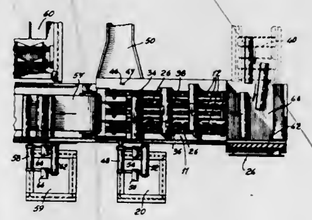
Cylindrical objects, particularly end-capped rolls of sheeting and the like, are loaded on a pallet in the vertical position and bound into a stable unit by horizontal strapping and baffles placed between rows of the cylindrical objects. The stabilized unitized group of cylindrical objects is secured to a pallet by strapping or by a heat-shrunk plastic shroud covering and protecting the cylinder, or by both.

3,638,791
METHOD FOR TREATMENT OF HEAVY MEDIA
Marvin H. Harrison, Carlsbad, N. Mex., assignor to International Minerals & Chemical Corporation
Filed Apr. 13, 1970, Ser. No. 27,811
Int. Cl. B03b *9/00*
U.S. Cl. 209—12 **8 Claims**



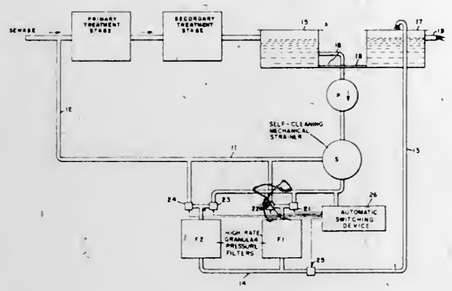
In heavy media beneficiation magnetite is rinsed from ore fractions and recovered from rinse liquor by magnetic separators. The efficiency of the magnetic separation step is improved by separating the wash liquor in a hydrocyclone into a first fraction substantially free of ore contaminants and a second fraction containing most of the ore contaminants in the wash liquor. The contaminant-free wash liquor is treated conventionally in magnetic separators and the contaminants are recycled to the rinse screens or other suitable separation device.

3,638,792
GRINDER-FEEDING SYSTEM
Georges A. Bilocq, Plessisville, Quebec, Canada, assignor to Forano Limited, Plessisville, Quebec, Canada
Filed Dec. 24, 1970, Ser. No. 101,365
Int. Cl. B65g *47/22, 47/18;* **B01d** *37/00*
U.S. Cl. 209—73 **13 Claims**



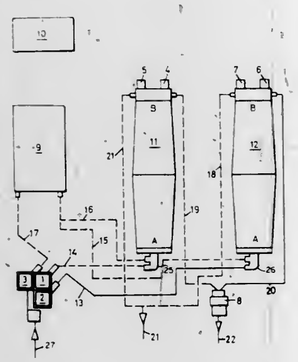
A grinder-feeding system including a log aligning device comprising a log-feeding box adapted to receive logs, and a conveyor including at least two power-driven upwardly sloping chains carrying a plurality of transverse cross pieces for receiving the logs from the feeding box and aligning such logs as they are moved up the slope by the chains. A butting wall is mounted parallel to the chains and on one side of the conveyor, and spiral rolls synchronized with the chains are mounted between each pair of chains for pushing the logs against the butting wall.

3,638,793
SEWAGE TREATMENT SYSTEM
Lawrence J. Peck, 4 Barney Road, Elnora, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,676
Int. Cl. B01d *37/04*
U.S. Cl. 210—73 **10 Claims**



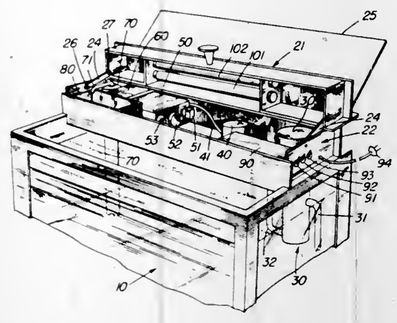
The effluent from a conventional primary or secondary sewage treatment plant is passed through a self-cleaning mechanical strainer and then into a high-rate, granular, pressure filter. A portion of the filtered effluent is recirculated through the strainer and filter in order to maintain a uniform flow rate on the filter. Suspended solids collected by the strainer and the high-rate filter are returned to the entrance of the primary treatment area for retreatment.

3,638,794
WATER SOFTENER
Walter Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland
Filed Sept. 4, 1969, Ser. No. 855,335
Claims priority, application Germany, Sept. 5, 1968, P 17 92 469.5
Int. Cl. B01d *35/12*
U.S. Cl. 210—98 **2 Claims**



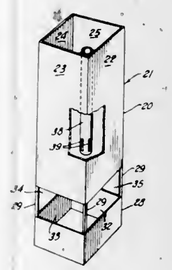
A water softener having two equal sized ion exchangers programmed with a regenerating unit so that one ion exchanger is regenerating while the other ion exchanger provides soft water. The two ion exchangers being so dimensioned that the time for the maximum production of soft water of one ion exchanger corresponds exactly to the time which is required to regenerate the other ion exchanger. The outlet of the regenerating unit is connected to each ion exchanger to give impulses to a program control unit to control the cycling of the water softener.

3,638,795
POWER HOOD
Henry A. Feddern, and John A. Sabol, both of Miami, Fla., assignors to Precision Valve Corporation, Yonkers, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,392
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **7 Claims**



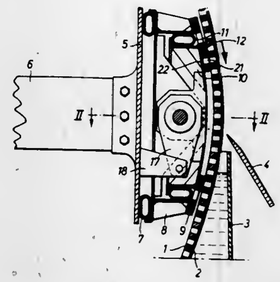
A covering hood for an aquarium tank incorporates water and air pumps, a filter, heater means, ultraviolet irradiation means, lights and an organic-material-removal device into a two-section structure wherein the front section is hinged for access to the aquarium. The hood is particularly adapted to cooperate with a gravel bed filter unit located near the bottom of the aquarium to form therewith a complete aquarium water treatment and circulation system.

3,638,796
APPARATUS FOR PREVENTING OIL POLLUTION
Ray Tuggle; Richard H. Graves, both of Houston, Tex., and Ray J. De Rouen, New Iberia, La., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 31, 1968, Ser. No. 816,876
Int. Cl. B01d *21/24*
U.S. Cl. 210—170 **5 Claims**



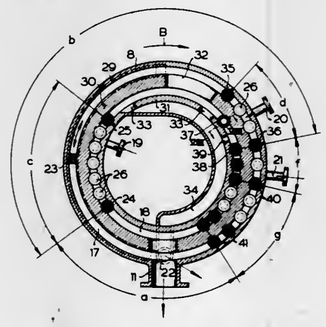
An oil pollution control apparatus that isolates a portion of a substantial body of water. The portion isolated extends from above the surface to near the bottom of the body of water. A structural example is a vertical caisson with its base extending into the bottom of the body of water and with openings just above that bottom to permit circulation of the water at that level.

3,638,797
NONCELLULAR ROTARY VACUUM FILTER
Wolfgang Heckmann, Bergisch-Gladbach, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Mulheim, Germany
Filed Apr. 23, 1970, Ser. No. 31,207
Claims priority, application Germany, Apr. 29, 1969, P 19 21 717.5
Int. Cl. B01d *33/06*
U.S. Cl. 210—393 **9 Claims**



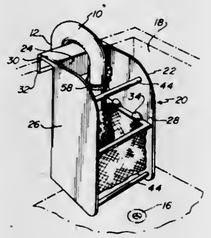
A noncellular vacuum filter is provided in its interior with a blast chamber supplied with compressed air which is used for removing the filter cake from the outer circumference of a cylindrical filter drum. The blast chamber is formed by two telescoping sealing frames, both of which carry each a continuous flexible sealing bar extending all around the frames and which are adapted to engage the inner wall of the filter drum when the frames are radially moved outwardly by eccentrics on an eccentric shaft mounted in bearings carried by a baseplate closing the outer sealing frame opposite the side which has said sealing bar mounted thereon. A slot in the upper portion of the sealing bar attached to the inner sealing frame is in communication with apertures in said inner sealing frame so that compressed air from the blasting chamber is jetlike discharged and directed through the wall of the filter drum to remove the filter cake from the outer face of said drum.

3,638,798
FILTER STRUCTURE
Klaus Basfeld, and Heinrich Schreiber, both of Grevenbroich, Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany
Filed Sept. 26, 1969, Ser. No. 863,417
Claims priority, application Germany, Sept. 18, 1968, P 17 86 325.1
Int. Cl. B01d *33/06*
U.S. Cl. 210—404 **12 Claims**



A rotatable filter drum has a plurality of internal filter cells which orbit about the axis of rotation of the drum in an endless path in which they are alternately immersed into and emerge from a bath of liquid to be filtered. Suction means communicates with the cells for drawing liquid in form of the initial filtrate into the cells when the same are immersed, with concomitant buildup of a filter cake on the exterior of the drum in the area of the respective cells. Dispensing means dispenses a wash solution onto the cells when the same are emerged from the bath so that the wash solution penetrates the filter cake and enters into the cells as a wash filtrate. A leading and a trailing conduit communicate with each of the cells in the respective leading and trailing regions thereof for evacuating the initial and wash filtrate therefrom. Control valve means defines two concentric annular interior channels one of which communicates with the leading conduits and the other of which communicates with the trailing conduits. First and second outlet means communicate with both of the channels, and adjustable control means in the annular channels is operative for diverting initial filtrate into the first outlet means and wash filtrate into the second outlet means to thereby separate the initial filtrate and the wash filtrate from one another.

3,638,799
CLAMPING UNIT AND DRAIN FILTER FOR WASHING MACHINE DRAIN LINES
Gilbert J. Serowiecki, 5552 N. Luna Ave., Chicago, Ill.
Filed Sept. 3, 1970, Ser. No. 69,371
Int. Cl. B01d *23/00*
U.S. Cl. 210—462 **5 Claims**

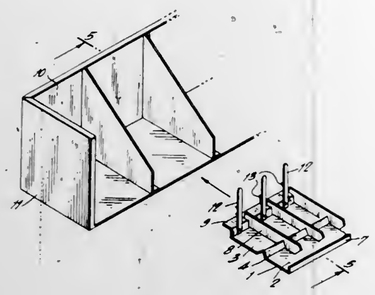


A clamping unit and drain filter for washing machine drain lines including a three-walled frame, a bracket for detachably mounting the frame to a laundry tray, a filter basket with a screen element for trapping lint, and an adjustable clamp for securing the drain line to the frame above the filter basket, including a concave support mounted to the frame with a backface and a concave front face forming a seat for the drain line and an adjustable ring clamp for securing the drain line to the concave support. The concave support includes a narrow width clamping portion at the top and a relatively wider width seat portion at the bottom so as to accommodate various sizes of washing machine drain lines.

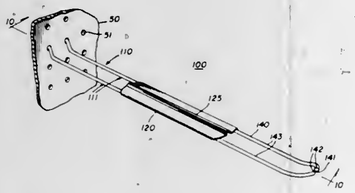
3,638,800
STORAGE DEVICE FOR ROLLABLE OBJECTS
Martin B. Frederick, Brooklyn, and John P. Posa, Mineola, both of N.Y., assignors to Supreme Equipment & System Corporation
Filed May 4, 1970, Ser. No. 34,392
Int. Cl. A47g *29/00*
U.S. Cl. 211—40 **15 Claims**

A support is adapted to receive a rollable object in a normal position behind a stop. Means responsive to the application of rearward force to the object are provided behind the

object. When a rearward force is applied to the object, the means impart sufficient forward motion to the object to permit the object to roll over the stop, at which point the object is readily retrievable.



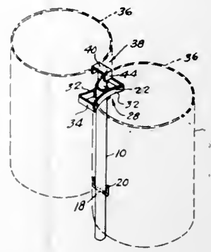
3,638,801
ADJUSTABLE HANGER DEVICE
Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.
Filed Apr. 2, 1969, Ser. No. 812,644The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed.
Int. Cl. A47f *7/00*
U.S. Cl. 211—57 **5 Claims**



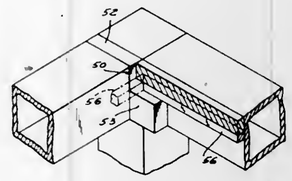
A hanger device comprises a support member with two spaced-apart, substantially parallel arms, and a sleevelike member which includes an upper portion and two side portions. The upper portion is disposed on the arms and the side portions are disposed therearound to enable the sleevelike member to be slid along the support member. A longitudinally extending ridge is formed in the upper portion to center hanging articles. There may also be provided an extension hook including two spaced-apart, substantially parallel arms also slidably disposed in the sleevelike member.

3,638,802
TRASH CONTAINER HOLDER
Elmer L. Westerfield, 2184 Cypress Drive, Lexington, Ky.
Filed Oct. 3, 1969, Ser. No. 863,463
Int. Cl. A47g *29/00*
U.S. Cl. 211—71 **1 Claim**

A trash container holder for supporting a pair of trash containers on a base. A telescopic standard extends up from the base and has a U-shaped bottom flange engaging member rigidly secured to the standard with the legs of the U projecting upwardly slightly from the base. A second inverted U-shaped member is secured to the upper member of the telescoping standard with its legs projecting downwardly to engage over the upper edges of a container. A spacer member is secured to the upper end portion of the lower standard member to prevent the trash containers from rotating about the standard. The telescoping standard members can be locked to prevent relative movement during use.



3,638,803
MODULAR CONSTRUCTION FRAME
Daniel C. MacMillan, Rte. 1, Box 856, Winter Haven, Fla.
Original application June 20, 1969, Ser. No. 842,770, now Patent No. 3,545,625, which is a division of application Ser. No. 685,064, Nov. 22, 1967, now abandoned. Divided and this application July 17, 1970, Ser. No. 55,673
Int. Cl. A47f *5/00*; **F16b** *7/00*
U.S. Cl. 211—148 **5 Claims**



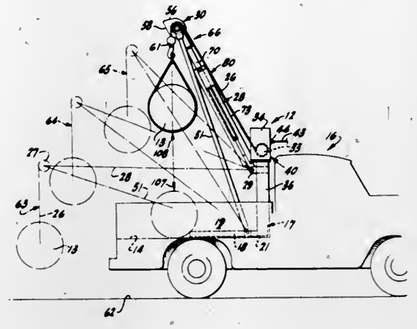
A shelf support apparatus for use with corner lock joints having a prong extending into a tube for locking therein. The shelf support has a sleeve slidably mounted on the prong between the end of the tube and the base of the corner lock joint and a projection extending from the sleeve to form a shoulder, which shoulder may support elongated tubular members for supporting shelves, table tops or similar structural members for use in modular construction, furniture, or the like.

ERRATUM

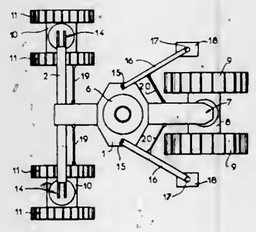
For Class 211—177 see:
Patent No. 3,638,814

3,638,804
HOISTING APPARATUS
Carman H. Blakeway, and Darold D. Stone, both of Sacramento, Calif., assignors to Pacific Gas Equipment Company
Filed Sept. 17, 1969, Ser. No. 858,609
Int. Cl. B66c *23/04*
U.S. Cl. 212—8 **5 Claims**

A telescoping boom is pivotally mounted at one end on a base framework, the other end of the boom carrying a sheave over which is led a cable connected at one end to a power winch. The other end of the cable carries a hook, or the like for attachment to a load. A remotely operated clamping mechanism on the boom controls the lifting and lowering of the load in conjunction with operation of the winch, the clamping mechanism selectively serving to grip or release a translatable portion of the boom at the appropriate juncture, as determined by the operator and depending upon the attitude of the boom and the horizontal location of the load.



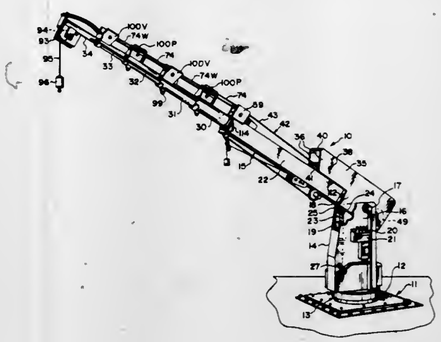
3,638,805
MOBILE CHASSIS FOR CARRYING A TOWER CRANE
Andre Garnier, Artaix, France, assignor to Potain, Chevilly Larue (Val de Marne), France
Filed Sept. 17, 1969, Ser. No. 858,691
Claims priority, application France, Sept. 19, 1968, 50404
Int. Cl. B60s *9/12*; **B62d** *61/08*
U.S. Cl. 212—38 **4 Claims**



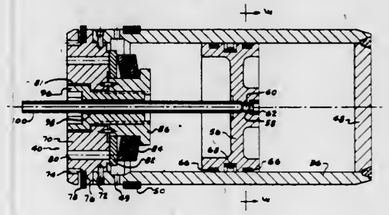
A traveling crane is provided with three bogies, one front and two rear, to provide for the support and transport of the crane. Support arms having retractable jacks are pivoted to the base of the crane to provide additional stabilizing support on opposite sides of the front bogie. The rear bogies may be mounted at opposite ends of a transverse beam or may be mounted on the free ends of two pivoted arms. In either case, the bogies are connected by means of a pivoted lever arrangement to provide for leveling of the chassis. The bogies may be provided with endless tracks or wheels.

3,638,806
PORTABLE CRANE WITH EXTENDABLE BOOM
Wilburn L. Hippach, San Gabriel, Calif., assignor to Bliss & Laughlin Industries, Incorporated, Oakbrook, Ill.
Filed Aug. 1, 1969, Ser. No. 846,825
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **18 Claims**

Portable crane with extendable boom of concentrically and eccentrically disposed telescoping tubes in which the first section is a rigid, high-strength square tube and the remaining sections are of progressively reduced diameters with a large diameter cylindrical tube as a second section defining with the first section triangular channels therebetween at the four corners to house sheaves and cable flights of an extension cable system that provides a mechanical advantage greater than two to one for extending the second section and the remaining telescoped tube sections proportionately.



3,638,807
HYDRAULIC FRICTION DRAFT GEAR
Robert L. Carlson, Chicago, and Rolf A. Madland, Palos Heights, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.
Filed Jan. 21, 1970, Ser. No. 4,663
Int. Cl. B61g *9/10*, *11/14*
U.S. Cl. 213—22 **2 Claims**

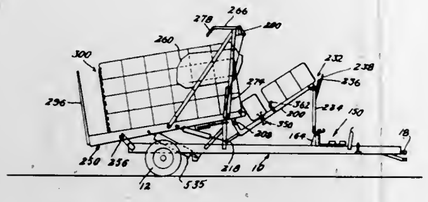


A hydraulic friction draft gear having a movable hollow ram casing defining with an interior floating accumulator piston assembly a gas chamber which is charged with gas through the accumulator piston assembly.

3,638,808
BALE WAGON
Donald M. Grey, Selma; Lee D. Butler, Kingsburg; Jerry W. Welker, Selma, all of Calif., and Jack W. Crane, New Holland, Pa., assignors to Sperry-Rand Corporation, New Holland, Pa.
Original application Aug. 26, 1968, Ser. No. 755,141, now Patent No. 3,502,230. Divided and this application June 6, 1969, Ser. No. 870,828
Int. Cl. B65g *60/00*
U.S. Cl. 214—6 B **4 Claims**

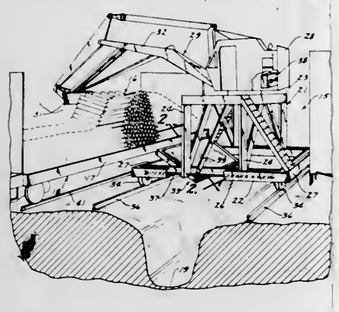
A bale wagon which unloads bales one at a time. The wagon is provided with a bale pickup, a bale tier former, and a load rack which receives the tiers of bales from the bale tier former. A cross conveyor is mounted on the bale tier former, and when discharging the bales are dropped a tier at

a time from the load rack onto the bale tier former, the lowest layer of bales on the tier being engaged by the cross



conveyor and discharged, while the layer next above the lowest layer is held from interference with the lowest layer.

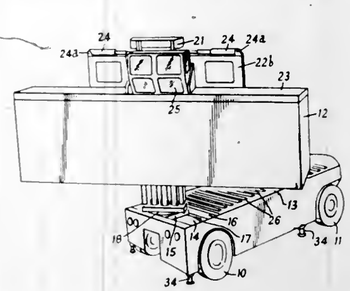
3,638,809
PULPWOOD GANTRY RAKE
John L. Grundon, E. 16th & Howard Drive, Des Moines, Iowa
Filed Sept. 15, 1970, Ser. No. 72,384
Int. Cl. B65g *67/26*
U.S. Cl. 214—57 **5 Claims**



The invention has a gantry frame structure including an elevated platform on which is mounted a crane unit for rotational movement about a vertical axis. The frame assembly extends across a flume or conveyor means and is self-propelled longitudinally of the conveyor means. Open to one end of the frame structure and mounted thereon for movement transversely of the frame structure is downwardly and inwardly inclined chute means of a length to extend between the conveyor and a car positioned along one side of the gantry frame structure. The cute means is movable to an inner position, whenever the gantry frame structure is moved longitudinally of the conveyor means, and to an outer position contiguous with a flat car deck to be unloaded, when the gantry frame structure is in a moved position.

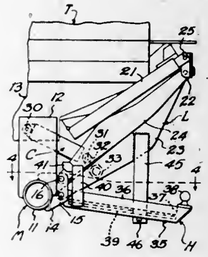
3,638,810
LOAD HANDLING VEHICLE
Leonard Stanley Mathew, Sutton Place Farm, Abinger Hammer near Dorking, Surrey, England
Filed May 8, 1969, Ser. No. 822,928
Claims priority, application Great Britain, May 13, 1968, 22,699/68
Int. Cl. B60p *1/52*
U.S. Cl. 214—75 G **4 Claims**

A vehicle for handling a freight container, comprises a wheeled chassis, a carriage which is traversible on guide means across the width of the vehicle at or adjacent one end of the vehicle, a vertical mast structure mounted for rotation about a vertical axis on said carriage and a clamping frame for supporting a container by its upper corners and/or edges. The clamping frame is supported for up-and-down movement



on the mast structure so that the clamping frame can be disposed to handle a container disposed beyond said one end and to either side of the vehicle, and the vehicle having a deck or equivalent supporting means on which a container can be placed by the clamping frame.

3,638,811
VEHICLE LIFT WITH TRAILER HITCH OR THE LIKE
Morris D. Robinson, 1509 W. 132nd St., Gardena, Calif.
Filed Apr. 6, 1970, Ser. No. 25,905
Int. Cl. B60p *1/44*
U.S. Cl. 214—77 P **8 Claims**

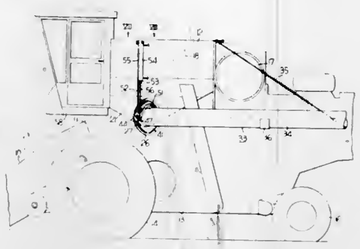


A trailer hitch or other auxiliary member is attached to the rear end of a vehicle (e.g. a cargo truck) in associated relation to a rear end lift, such that the hitch is free to move independently of the lift linkage when the lift is lowered for loading or unloading its deck, whereby the hitch may assume a noninterfering relation both to the ground surface and the lift linkage in such lowered position; whereas the movement of the lift to a stored position will automatically lock the hitch to the vehicle in rigid relation thereto such that it will properly function as a hitch when towing a trailer.

3,638,812
TILTING GRAIN AUGER
William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 7, 1970, Ser. No. 26,221
Int. Cl. B60p *1/42*
U.S. Cl. 214—83.26 **1 Claim**

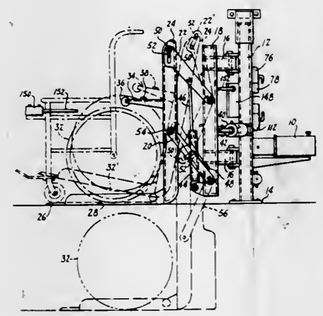
This disclosure relates to a power-operated swingable auger conveyor which can be moved from operative

discharge position to an inoperative discharge position



without the operator leaving his station on the combine and without breaking the power train from grain bin to auger.

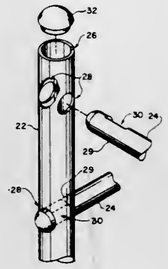
3,638,813
WHEELCHAIR LIFTING DEVICE
John H. Strong, 1049 10th Ave., Sacramento, Calif. (Irene Strong, Sacramento, California, surviving wife and benificiary under the Last Will and Testament of said John H. Strong, deceased.)
Filed Nov. 25, 1969, Ser. No. 879,651
Int. Cl. B66c *23/00*
U.S. Cl. 214—148 **5 Claims**



A chair lift having a mount, lifting arms supporting a chair platform, and horizontal swivel arms for rotating the chair platform about the mount, a power supply and electrical circuitry being provided for controlling hydraulic pressure in cylinders connected to move the lifting and swivel arms.

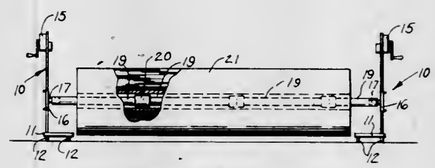
3,638,814
SUPPORT STAND
Mae H. Lowery, Cherokee Apartments, Oneonta, Ala.
Filed June 18, 1970, Ser. No. 47,281
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **8 Claims**

The disclosure relates to a knockdown support stand having a plurality of upright members adapted to interlockingly engage a plurality of interconnecting crossmembers. The ends of each crossmember is notched and yieldingly retained within an aperture in the upright member. The upright member is fabricated from pliable tubular material and is provided with a longitudinal slot to permit flexibility in the diametrical direction. The tubular member is molded to resiliently bear against the notched portion of the crossmember, much in the manner of a spring clip, and will thus firmly hold the crossmember in position. The tubular member can further be urged radially inward to facilitate entry or removal of the crossmember into or out of the aperture during assembly or disassembly of the support stand. An



extension member is provided for attachment to one or more of the upright members in order to anchor the support stand to the surrounding surface. The notched portions of the crossmember and the apertures in the upright members are shown in several modified embodiments and furthermore the general configuration of the support stand as shown may be rectangular, circular, or triangular.

3,638,815
PORTABLE CARPET LIFT
Ray Fincher, 8570 Sweetwater, Dallas, Tex.
Filed May 20, 1970, Ser. No. 39,007
Int. Cl. B60p *3/40*
U.S. Cl. 214—390 **1 Claim**

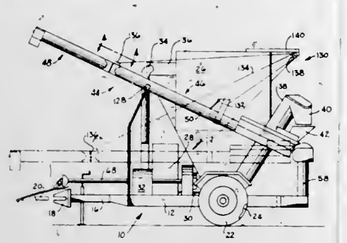


This device is used in pairs to support, raise and lower carpets. The devices include a slideable frame which is moveable vertically by a manually operated wench and the base portion of the device carries casters so that the devices may be easily moved about.

3,638,816
HINGED UNLOADING AUGER FOR GRINDER-MIXER
William W. Mann, Talmage, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Mar. 30, 1970, Ser. No. 23,546
Int. Cl. B60p *1/42*
U.S. Cl. 214—521 **7 Claims**

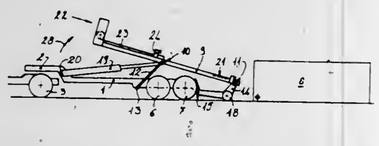
A hinged auger extension for a portable grinder-mixer. The main auger assembly is hingedly secured to the grinder-mixer for swinging movement about vertical and horizontal axes,

and the auger extension is hinged for swinging movement between an extended position and a folded position. Winch



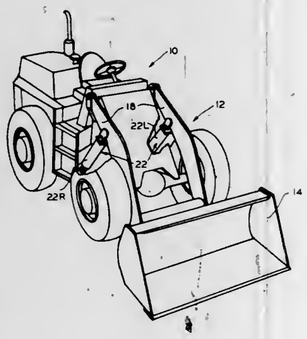
means are provided for supporting the auger in various positions of adjustment.

3,638,817
CONTAINER HANDLING AND TRANSPORTING DEVICE
Antoine Corompt, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne, France
Filed Aug. 7, 1969, Ser. No. 848,293
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **2 Claims**



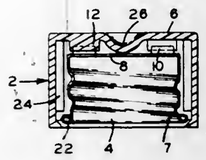
A device for loading heavy containers on to a semitrailer comprises a false chassis connected to the chassis of the semitrailer by two pairs of pivoted levers, and adapted to be raised and lowered by a ram-and-cylinder device. The pivoted lever arrangement provides a deformable quadrilateral such that when the false chassis is lifted from a tilted position where it receives the container, it also moves forwardly on the chassis of the semitrailer.

3,638,818
TRACTOR SHOVEL-FAST LOWERING
James F. King, Cupertino, Calif., assignor to Clark Equipment Company
Filed Apr. 22, 1970, Ser. No. 30,740
Int. Cl. B66f *9/00*
U.S. Cl. 214—762 **1 Claim**



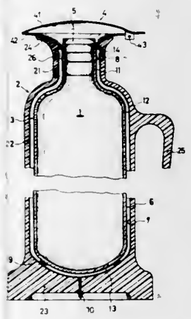
A tractor shovel having a pair of actuators for raising the shovel, and power down means for lowering it in an arrangement in which the power (hydraulic fluid) is applied to only one of the actuators so that the shovel is lowered at a faster rate than if the same quantity of fluid were applied to both the actuators.

3,638,819
CHILD-SAFE CLOSURE
Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.
Continuation of application Ser. No. 812,004, Apr. 1, 1969, now abandoned. This application July 22, 1970, Ser. No. 64,037
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **2 Claims**



The closure is made to require a certain manipulation to remove the closure from a container and, hopefully, this manipulation is beyond the skill of a child. The closure comprises an inner metal cap and an outer plastic cap. A one-way engagement means between the metal cap and plastic cap permits the closure to be placed upon the bottle, but prevents removal of the closure from the container. An interlock structure requiring the downward movement of the plastic cap relative to the metal cap for engagement is used for removal of the closure from the container. The resiliency of the dome of the plastic cap keeps the interlock structure normally out of engagement.

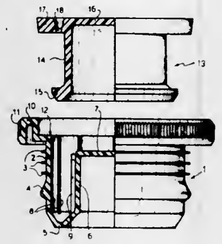
3,638,820
VACUUM BOTTLE
Sadayuki Misu, 2-12, Ohtsukacho 3-chome, Takatsuki, Osaka-fu, Japan
Filed Nov. 28, 1969, Ser. No. 880,761
Int. Cl. A47j *41/00*
U.S. Cl. 215—13 **3 Claims**



A vacuum-type bottle having a single-layer glass bottle forming the liquid-receiving container thereof, and having a heat-reflecting layer on the outer surface thereof. The outer shell is positioned around the outside of the single-layer glass bottle and is spaced therefrom, and a heat-reflecting layer is positioned on the inner surface of the outer shell. The space

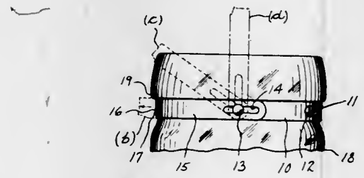
between the glass bottle and the outer shell is evacuated. The heat-reflecting layers are separated from each other in the vicinity of the mouth portions of the glass bottle and the outer shell to prevent conduction of heat therebetween.

3,638,821
CLOSURE FOR BOTTLES AND SIMILAR CONTAINERS
Piergiacomo Guala, Alessandria, Italy, assignor to Soc. Angelo Guala Di Piergiocomo & Roberto Guala & C.S.A.S., Alessandria, Italy
Filed July 7, 1970, Ser. No. 52,905
Claims priority, application Italy, Apr. 1, 1970, 68095-A/70
Int. Cl. B65d *39/00*
U.S. Cl. 215—48 **7 Claims**



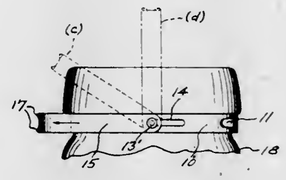
A closure for a container with an internal undercut in its neck consists in a flexible main member and rigid auxiliary member. The main member has a top flange which seats on the mouth of the container and a stopper portion in the form of an inner and an outer coaxial wall, separated by a clearance. A bulge is formed on the outer surface of the outer wall, and when the closure is fitted in place engages in the undercut. The auxiliary member has a tubular wall which extends into the clearance, with an external annular projection near its end. When the closure is in place the two annular projections are aligned, and the closure cannot be removed intact. For removal, the auxiliary member is pressed further in to force the projection on its tubular wall to pass the projection on the outer wall of the main member and allow the main member to be deformed and withdrawn.

3,638,822
BAIL BAND ASSEMBLY FOR INTRAVENOUS LIQUID CONTAINERS
John J. McCoy, Milwaukee, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.
Filed Apr. 10, 1970, Ser. No. 27,352
Int. Cl. B65d *23/10*
U.S. Cl. 215—100 A **10 Claims**



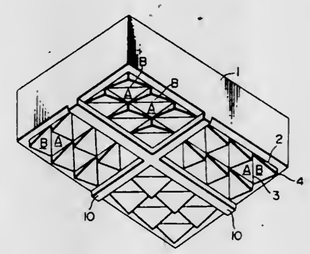
A thin, flexible attaching band is detachably connected beneath a shoulder at the lower end of a bottle. A shorter flexible bail-forming band having a finger recess is superimposed on the first band and connected thereby oppositely disposed rivets which slideably engage in longitudinal slots of the shorter band whereby the latter may be pulled outwardly and then swung upwardly to form a bail.

3,638,823
BAIL BAND ASSEMBLY FOR INTRAVENOUS LIQUID CONTAINERS
John J. McCoy, Milwaukee, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.
Filed July 9, 1970, Ser. No. 53,493
Int. Cl. B65d *23/10*
U.S. Cl. 215—100 A **7 Claims**



A thin, flexible attaching band is detachably connected beneath a shoulder at the lower end of a bottle. A shorter flexible bail-forming band is superimposed on the first band and pivotally connected thereto by rivets at the ends of the bail-forming band, at least one of which is slidably engageable in a longitudinal slot in the first band whereby the shorter band may be pulled outwardly and then swung upwardly on the rivets to form a bail.

3,638,824
PLASTIC CONTAINER
Takashi Sekiguchi, Sagamihara-shi; Shohei Tokiura; Sadahide Ogihara; Rokuro Yamamoto, all of Osaka-fu, and Akihiro Ikeuchi, Osaka, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan and Ube Industries, Ltd., Ube-shi, Japan
Filed Dec. 24, 1969, Ser. No. 887,888
Claims priority, application Japan, Dec. 28, 1968, 43/114492
Int. Cl. B65d *1/24*, *21/02*
U.S. Cl. 220—21 **10 Claims**



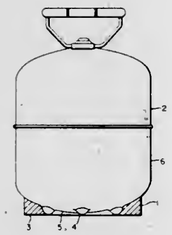
The improvement of a rectangular, bottomed container of plastic opening upwardly and having a plurality of bottle compartments divided by means of a latticelike partition. The underside of each of said divided compartments comprises, with the diagonal thereof as a boundary, a flat triangular zone and a triangular zone which gradually rises to an apex with said diagonal as a base, at least one of said triangular zones which gradually rise to an apex sloping in a direction different from the others.

3,638,825
CAN ENDS
Jozef Tadeusz Franek, and Peter Rhodes, both of Boreham Wood, England, assignors to The Metal Box Company Limited, London, England
Filed June 22, 1970, Ser. No. 48,003
Claims priority, application Great Britain, July 16, 1969, 35755
Int. Cl. B65d *7/42*
U.S. Cl. 220—66 **10 Claims**



A sheet metal end for a container has a chuck wall which fits in a container and a seam-forming panel by which the end is end seamed to the container. The lower end of the chuck wall merges into a radiused portion which defines a channel and in accordance with the invention the radiused portion merges into a raised zone of the end through contiguous first and second portions which slope upwards from the radiused portion to a third portion which is contiguous with the second portion and merges into a central portion of the end. The second portion slopes upwards less steeply than the first portion. The third portion may be connected with the central portion through a fourth portion which slopes downwards less steeply than the third portion. A score for easy opening may be provided in a convex portion connecting the second and third portions.

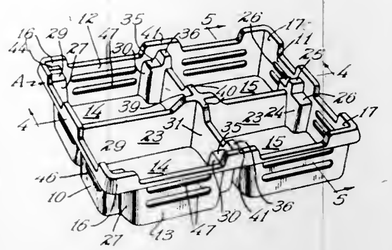
3,638,826
VESSEL WITH STABILIZER
Arthur Frederick Barker, Newark, and Edward John Nack, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 26, 1970, Ser. No. 5,543
Int. Cl. B65d *25/20*
U.S. Cl. 220—69 **6 Claims**



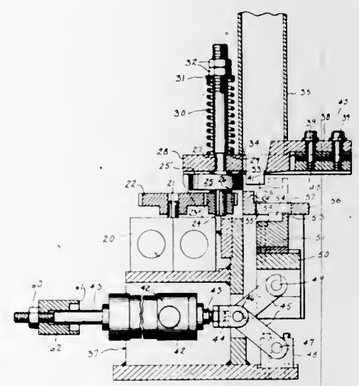
A vessel with a convex bottom having adhered to said convex bottom a stabilizing member of a low-density rigid plastic foam.

3,638,827
NESTABLE TRAY
John F. Lau, Jr., Minneapolis, and Glen E. Paulsen, Bloomington, both of Minn., assignors to T. O. Plastics, Inc., Hennepin, Minn.
Filed June 12, 1969, Ser. No. 832,657
Int. Cl. B65d *21/04*
U.S. Cl. 220—97 D **7 Claims**

A nestable tray is provided having tapered side and end walls which slope upwardly and outwardly to nest together. Supporting posts are provided adjoining opposite ends of each tray or container, the walls of which slopes to permit nesting. The supporting posts terminate on a common plane below the level of the side and end walls. The supporting posts at one end of the tray are located differently from those at the other end. When turned end for end, the supporting posts of the lower tray support the bottom of the upper tray.

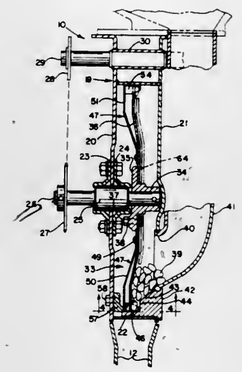


3,638,828
DEVICE FOR SELECTING AND REMOVING STACKS OF FLAT ITEMS FROM A MAGAZINE
Lester M. Koelsch, Brookfield, Wis., assignor to Ro-Band Corporation, Menomonee Falls, Wis.
Filed Dec. 15, 1969, Ser. No. 884,836
Int. Cl. B65h *5/00*
U.S. Cl. 221—176 **16 Claims**



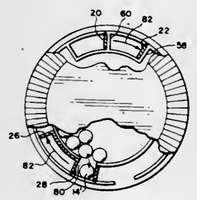
An eccentric having a top cam surface is rotatable from a position in which it supports laminations in a magazine to a position in which a stack of laminations of predetermined height is permitted to fall onto a locating nest, the eccentric being then movable to shift the selected stack into a laterally offset located position on the nest from which it can be deposited by the nest onto a transfer platform. During the latter movement the eccentric either moves an uppermost critically positioned lamination beneath a cutoff blade at the bottom of the magazine, or if said lamination will not pass beneath the cutoff blade, a spring allows the cam surface to move beneath said lamination so that lateral movement of the selected stack is accomplished without interference from the critically positioned lamination, the eccentric then supporting the laminations in the magazine until the next selecting cycle begins.

3,638,829
FINGER-TYPE PLANTER
Roland J. Frase, Roselle, and Gordon R. O'Neil, Westmont, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed May 14, 1970, Ser. No. 37,231
Int. Cl. A01c *7/12*
U.S. Cl. 221—219 **4 Claims**



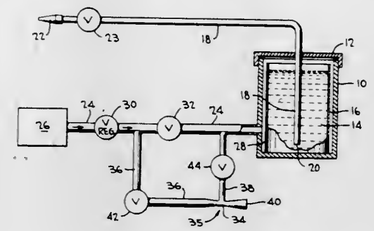
Seed metering apparatus for planters which includes a housing having a seed supply and a seed selecting disk rotatable in the housing with its lower peripheral portion disposed in the seed supply, the disk having spring fingers mounted thereon with seed clasping portions yieldable to an open or seed receiving position and axially biased to a closed or seed clasping position, actuating means being provided in the housing and successively engageable with the fingers to open and close the seed clasping portions thereof.

3,638,830
PILL DISPENSER WITH TOP ROTATABLE RELATIVE TO BASE
Paul Belokin, Jr., 6919 W. 43rd St., Berwyn, Ill.
Filed Oct. 6, 1969, Ser. No. 863,998
Int. Cl. B65d *83/04*
U.S. Cl. 221—246 **11 Claims**



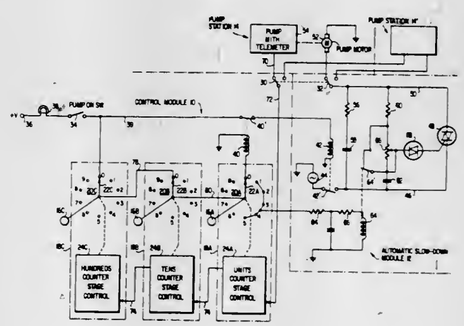
Pocket-size, easy-operating and simply constructed pill or tablet boxes are disclosed having two essentially flat disc-shaped cover and bottom members rotatable relative to each other and defining a central pill compartment and outlet openings between nested interlocking depending sidewalls wherein movement of the cover and bottom members to one position encloses the pills against dust and dirt, movement of the members to a second position entraps a selected pill in a walled recess, and movement of the members to the first position again closes the compartment and dispenses the selected pill or tablet.

3,638,831
DISPENSING OF HARDENABLE LIQUIDS
William A. Pauwels, Southfield, Mich., and Robert G. Nystrom, Glastonbury, Conn., assignors to Loctite Corporation, Newington, Conn.
Filed Mar. 25, 1970, Ser. No. 22,456
Int. Cl. B65d *83/00*
U.S. Cl. 222—1 **10 Claims**



An enclosed vessel for containing a supply of hardenable liquid to be dispensed together with selectively operable pressurizing means for introducing air into the container to exert a superatmospheric pressure on the surface of said liquid, whereby to discharge such liquid from the container into the atmosphere through a discharge line controlled by a dispensing valve and having an intake end submerged within the liquid. There are provided evacuating means operable during discontinuance of the pressurizing operation to evacuate air from the container whereby to withdraw liquid from the discharge line back into the vessel and, optionally, to maintain a reverse flow of air through the discharge line so that the air is introduced into the liquid at a submerged location to thence bubble upwardly through the liquid. In a modified version, the pressurizing air also is introduced into the vessel at a location beneath the surface of the liquid so that it, too, bubbles up through the liquid.

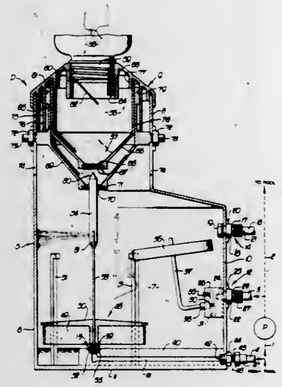
3,638,832
AUTOMATIC SLOWDOWN AND CUTOFF SYSTEM
Charles R. Sauber, Raleigh, and Roy A. Parker, Fayetteville, both of N.C., assignors to Aerotron, Inc., Raleigh, N.C., by said Sauber
Filed Jan. 13, 1970, Ser. No. 2,612
Int. Cl. B67d *5/30*
U.S. Cl. 222—16 **6 Claims**



A system for dispensing a precise quantity of a fluid. When power is applied to a motor, the motor drives a pump to dispense fluid at a relatively high rate. However, in response

to an indication that a quantity of fluid, slightly less than the desired quantity, has been dispensed, power to the motor is substantially reduced. This slows the dispensing rate so that power may be removed from the motor and the pump stopped when precisely the desired quantity of fluid has been dispensed.

3,638,833
MEANS FOR CHLORINATING SWIMMING POOLS
Robert S. Lucas, Harbor City, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Feb. 9, 1970, Ser. No. 9,900
Int. Cl. B67d *5/08*
U.S. Cl. 222—57 **14 Claims**



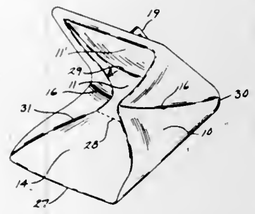
Apparatus for sanitizing swimming pools in which the sanitizing agent such as chlorine-containing powder or tablets is metered into circulating water to avoid undue concentrations of agent in water. The treated water is withdrawn to the pool and not permitted to stand in the lines between filtering cycles. separately valved inlet and outlet ports in the agent-water mixing chamber are opened or closed by independent floats which maintain a desired water level in the mixing chamber during water circulation and enables closing of the chamber outlet after gravity draining of water from the chamber.

3,638,834
COLLAPSIBLE SANITARY CONTAINER
Eugene E. Goodrich, 819 S. Western Ave., Park Ridge, Ill., and Paul J. Daniels, 880 Siesta Drive, Sarasota, Fla.
Filed Oct. 24, 1969, Ser. No. 869,117
Int. Cl. B65d *35/08*
U.S. Cl. 222—105 **9 Claims**



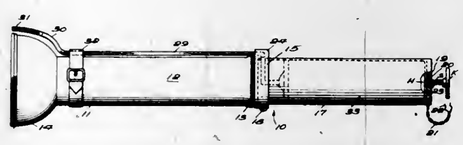
A generally rectangular polyethylene container for liquids such as milk having a collapsible spout along one corner of the top and having an integral foldable handle on the top, the container being adapted to be folded to collapsed condition by folding which is so arranged that the spout and handle are enclosed within the folds and accommodated in recesses between folded portions, the container being automatically opened out when it is filled with liquid and being self-supporting when thus filled. The foldable handle has an inclined outer edge and the handle is adapted to open out so that its inclined edge tilts the container toward the spout when the container in the dispensing cabinet is partially emptied, and the handle has an opening in a corner which is adapted to receive the dispensing tube during transit of the filled container.

3,638,835
COLLAPSIBLE SANITARY CONTAINER
Eugene E. Goodrich, 819 S. Western Ave., Park Ridge, Ill., and Paul J. Daniels, 880 Siesta Drive, Sarasota, Fla.
Original application Feb. 1, 1968, Ser. No. 702,257. Divided and this application Oct. 29, 1969, Ser. No. 872,276
Int. Cl. B65d *25/16*
U.S. Cl. 222—107 **4 Claims**



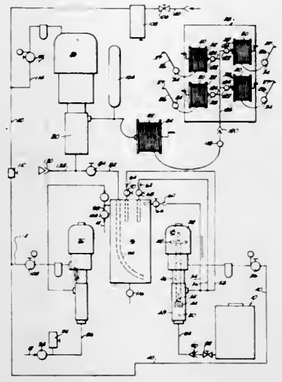
A generally rectangular polyethylene container for liquids such as milk having a retractable spout with spaced annular supporting ribs and adapted to be folded to collapsed condition and sealed promptly after manufacture, the material being so constructed and of such nature as to permit said folding but having sufficient strength that the container may be suspended from one of the supporting ribs of the spout prior to filling so that it may be filled without bottom support, the container being automatically opened out by the filling process and being self-supporting when filled with liquid.

3,638,836
COMBINED FLASHLIGHT AND CHEMICAL EXPELLING DEVICE
Charles W. Vickers, III, Jacksonville, Fla., assignor to Percy Rosenbloom, Jr.
Continuation of application Ser. No. 757,856, Sept. 6, 1968, now abandoned. This application Feb. 4, 1970, Ser. No. 9,254
Int. Cl. B67d *5/66*
U.S. Cl. 222—113 **10 Claims**



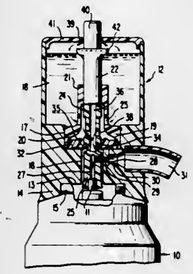
A can of aerosol expelled chemical is combined with a flashlight, and chemical from the can passes through a conduit and out through a dispensing nozzle arranged so that the chemical is dispensed toward the same point on which the flashlight beam impinges. Means are provided for selectively dispensing the chemical from the can.

3,638,837
PROPORTIONING AND CLEANING DEVICE
Donald E. Fullerton, Miami, Fla., assignor to B & B Chemical Company, Inc., Miami, Fla.
Filed June 20, 1969, Ser. No. 835,153
Int. Cl. B67d *5/46*
U.S. Cl. 222—134 **3 Claims**



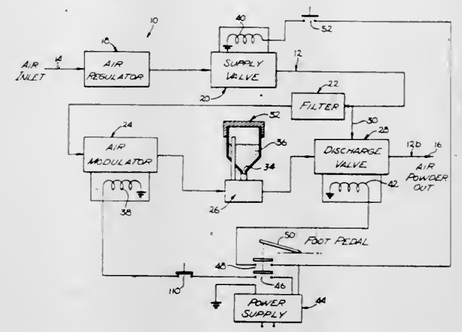
A device to preselect and maintain a ratio of two liquids and have the ratio remain substantially constant and to maintain sufficient pressure to supply cleaning equipment, positioned up to several hundred feet away, with the correctly proportioned mixture, the device being composed of three systems, one for feeding the two liquids, one for mixing the two liquids and the third for pumping the mixture to the cleaning equipment, the first two systems being adapted to be shut off completely while the third system is connected to a source of supply of a chemical such as a paint stripper for pumping same to a remote point for usage. The two liquids are preferably a chemical and a solvent therefore.

3,638,838
TWO FLUID AEROSOL DISPENSER WITH EXTERNAL SECONDARY FLUID CONTAINER
Leonard L. Marraffino, deceased, late of Fort Lauderdale, Fla., and Roger H. Harper, executor, 2560 S.E. 9th St., Pompano Beach, Fla.
Filed May 27, 1969, Ser. No. 828,276
Int. Cl. B67d *5/52*
U.S. Cl. 222—136 **1 Claim**



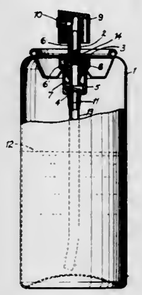
A primary fluid is held in a pressurized container having a conventional outlet valve. An attachment container for a secondary fluid is constructed for coupling engagement with the pressurized container so that an integral dispenser may be formed. The discharge of secondary fluid is regulated by a distortable valve element and the secondary fluid becomes entrained in a jetstream of primary fluid in a common outlet nozzle.

3,638,839
APPARATUS FOR DISPENSING POWDER SUCH AS ABRASIVE POWDER
Herbert G. Weightman, Los Angeles, Calif., assignor to Comco Supply, Inc., Burbank, Calif.
Filed July 18, 1969, Ser. No. 842,881
Int. Cl. B65g *53/16*
U.S. Cl. 222—193 **12 Claims**



Apparatus for dispensing powder, such as abrasive powder, at a controlled rate from a supply tank to a mixing chamber within a conduit through which flows a gas for conveying the powder to a point of use. A gas pressure modulating valve is installed within the conduit upstream of the mixing chamber for alternately opening and closing the conduit passage at a selected cyclic frequency to modulate the pressure within the mixing chamber between selected high- and low-pressure levels. The powder tank is continuously pressurized to a pressure level greater than the lower pressure level within the mixing chamber, whereby the pulsating pressure within the mixing chamber effects intermittent dispensing of powder at a controlled rate from the tank to the mixing chamber. Valves of unique design and arrangement are provided for controlling gas flow through the apparatus. The principal application of the apparatus involves controlled dispensing of abrasive powder in a high-precision abrasive cutting tool.

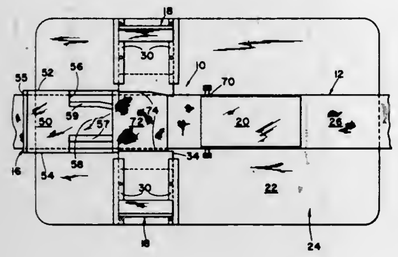
3,638,840
SAFETY VALVE FOR AEROSOL CONTAINERS
Mitsuo Ishida, 9, Ageba, Shinjuku-ku, Tokyo, Japan
Filed July 9, 1969, Ser. No. 840,355
Int. Cl. B65d *47/10*
U.S. Cl. 222—402.24 **9 Claims**



A safety valve for an aerosol container which permits the discharge of the residual propellant gases in a used container

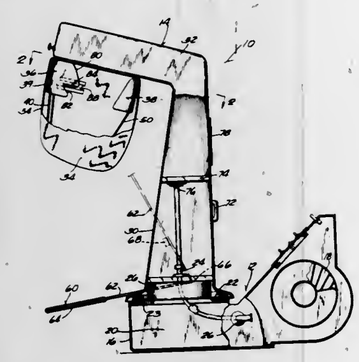
when the valve stem is broken off. The container is thereby rendered safe from explosion caused by heat and also cannot be refilled.

3,638,841
MATERIAL FOLDING AND CREASING DEVICE
Anthony G. Tucci, 96-02 103rd Ave., Ozone Park, N.Y.
Continuation-in-part of application Ser. No. 711,007, Mar. 6, 1968, now Patent No. 3,491,926. This application Jan. 19, 1970, Ser. No. 3,970
Int. Cl. A41h *33/00*
U.S. Cl. 223—38 **5 Claims**



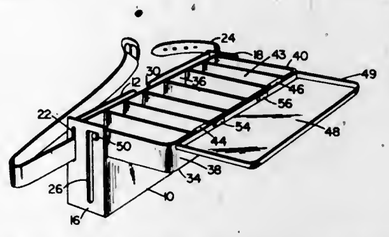
A device for folding and creasing cloth in the manufacture of garments and specifically to a device for folding the edges, in fixed position, of a piece of suitable material, such as, for example, in the manufacture of cloth belts, pockets, pocket flaps, epaulets and the like. The device comprises means for folding a piece of material into the desired configuration in combination with holding means which serve to hold the material in folded condition until it can be creased, the folding and holding means acting in association with a movable conveyor belt, the actuation of which draws the workpiece into a suitable pressing unit resulting in the folds being rendered in a creased condition. The device is also shown having means for operating the folding and holding means automatically in predetermined timed relationship.

3,638,842
PANTS TOPPER COMBINATION
Norman A. Buckley, Wauwatosa, and Peter D. Rasmussen, Cedarburg, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Oct. 29, 1970, Ser. No. 84,992
Int. Cl. D06c *5/00*
U.S. Cl. 223—73 **16 Claims**



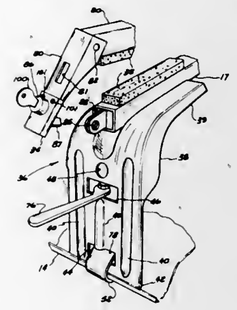
A pants topper combination suitable to be operatively associated with a steam air finisher having a horizontal annular seat surrounding means for discharging a conditioning fluid such as steam and/or air upwardly of the seat, the topper combination including a hollow form disposed on the finisher seat and conveying the conditioning fluid for discharge to within a downwardly depending bag about which a pair of pants can be dressed, a front support and a movable rear support being provided inside the bag opening fully the waist of differing size pants, and the front support having vertically spaced support areas of differing size with the smallest area at the bottom so that even small pants can fit over the support areas, and the bag being free to inflate against the pants dressed thereon and having a vent open to the fly area of the pants.

3,638,843
WEARABLE FISHERMAN'S LURE AND FLY CARRIER
Samuel J. Ortynski, 9717 Dedaker St., Philadelphia, Pa.
Filed Oct. 7, 1970, Ser. No. 78,665
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 G **6 Claims**



A carrier for holding lures and flies has a box divided into compartments, and is received in an open top holder which has a backwall, a shorter front wall and sidewalls. The box is slidably secured in the holder through pins cooperating with elongated slots in the sides of the holder. Remote from the pins, the box has an outfolding lid hinged thereto and stops below the hinges so that the lid can serve as a horizontally disposed handling surface. Belt receiving slots are provided in the sidewalls of the holder adjacent the backwall for slidably receiving a belt secured to the wearer. The respective dimensions of the box and holder define a space therebetween which provides a sliding channel for the belt.

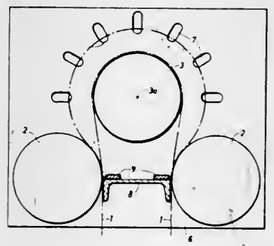
3,638,844
CAR TOP CARRIER STRUCTURE WITH LOCKING MEANS
Joseph Bronson, 15397 Cruse Ave., Detroit, Mich.
Continuation-in-part of application Ser. No. 732,378, May 27, 1968, Pat No. 3,525,461. This application Aug. 14, 1969, Ser. No. 850,185
Int. Cl. B60m *9/00*
U.S. Cl. 224—42.1 F **15 Claims**



A carrier structure for carrying articles above the roof of an automobile including a frame for the articles which

mounts transversely of the roof by a pair of clamping devices that are attachable with the rain gutters along the sides of the roof. A key-operated lock on each clamping assembly prevents unauthorized removal of the carrier structure from the vehicle. In a second embodiment, a ski carrier is disclosed having a key-operated lock for securing the skis to the carrier and the carrier to the automobile.

3,638,845
DEFLECTING GUIDE MECHANISM FOR BANDS COATED ON ONE SIDE
Peter Herzhoff, Leverkusen; Wolfgang Schweicher, Leverkusen-Wiesdorf; Fritz Maus, Cologne; Willi Wasser, Leverkusen; Kurt Browatzki, Opladen, and Hans Gref, Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 5, 1970, Ser. No. 43,855
Claims priority, application Germany, July 16, 1969, P 19 36 175.2
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **3 Claims**

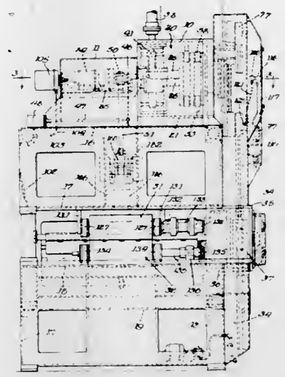


In a deflecting guide mechanism for webs coated on one side, especially for drying chambers, a fixed support is arranged transversely of the direction of travel of the web in the vicinity of the guide loop and carries at both its ends side screens which are arranged perpendicularly of the surface of the web parallel to one another and which have openings arranged on an arc concentric to the deflection axis of the web. Means are provided for supplying compressed air to the space formed between the support, the side screens and the web, whose reverse side is guided over part of the periphery of the guide rollers.

3,638,846
FEEDING APPARATUS USING RACK AND PINION MECHANISM HAVING DWELL PERIODS
Chester M. Wiig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.
Filed Aug. 10, 1970, Ser. No. 62,523
Int. Cl. B65h *17/22*
U.S. Cl. 226—142 **20 Claims**

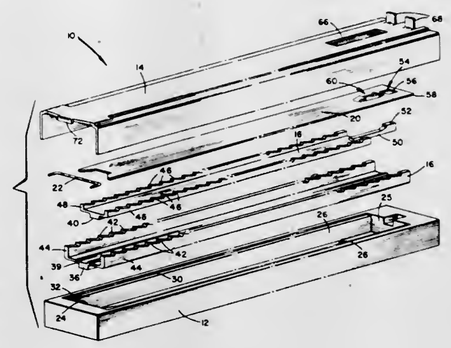
For intermittently feeding strip material the invention provides rack and pinion mechanism, the rack operating on the pinion as the rack is caused to reciprocate by crank arm structure including a trunnion member carried in an adjustable manner on a rotating faceplate by means of a threaded shaft journaled for rotation within the faceplate. The threaded shaft can be rotated during operation of the apparatus to vary the position of the trunnion member on the faceplate for obtaining the desired feed lengths. A constantly rotating camshaft carrying conjugate cams produces intermittent rotation of the cam follower shaft which carries the faceplate, the said intermittent rotation being characterized by a dwell period at the end of each reciprocating stroke. The pinion is part of clutch structure which is duplicated for the lower and upper feed rolls. Each reciprocation of the rack produces a power stroke since on the downstroke one clutch structure is rendered operative and on the upstroke the other clutch structure is made operative.

In operation of the present apparatus, the strip material is fed or advanced by the rotating upper and lower feed rolls



for a predetermined feed length on each up and down reciprocating power stroke of the rack. During the dwell periods, the feed rolls and also the strip material remain at rest.

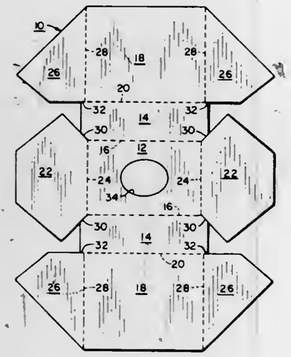
3,638,847
RATCHET-DRIVEN CARTRIDGE FOR SURGICAL INSTRUMENTS
Douglas G. Noiles, Ridgefield, and Graham W. Bryan, New Canaan, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.
Filed July 6, 1970, Ser. No. 52,337
Int. Cl. B25c *5/16*
U.S. Cl. 227—120 **11 Claims**



A disposable staple-housing cartridge adapted for mounting on a surgical instrument and particularly suited for stapling skin and fascia. The cartridge comprises, basically, a stationary sawtooth staple-retaining member, a sawtooth staple-driving member mounted for reciprocating movement, an anvil, and a staple pusher. For each reciprocation of the staple-driving member, each of the staples housed in the cartridge is driven forward from one tooth to the next successive tooth of the retaining member. The pusher element controls the movement of the reciprocating drive member, advances each of the staples, ejects a staple from the cartridge and

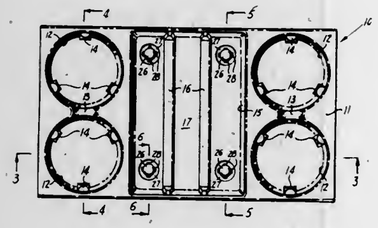
bends the ejected staple around the anvil; this occurs for each drive cycle of the pusher. The pusher is, in turn, operated by the associated surgical instrument.

3,638,848
CARTON FOR BULBOUS ARTICLES
Ernest R. Heyworth, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,076
Int. Cl. B65d *5/08*
U.S. Cl. 229—16 **9 Claims**



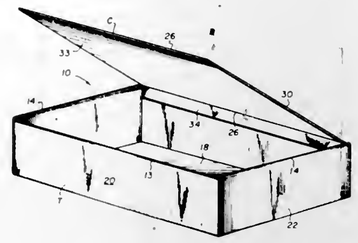
A protective carton for bulbous articles having substantially parallel end surfaces of polygonal configuration connected by planar rectangular wall portions to form a compact septrahedronal prismatic carton closure.

3,638,849
FOLDING PLASTIC TRAY
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed July 14, 1970, Ser. No. 54,688
Int. Cl. B65d *1/36*
U.S. Cl. 229—28 R **5 Claims**



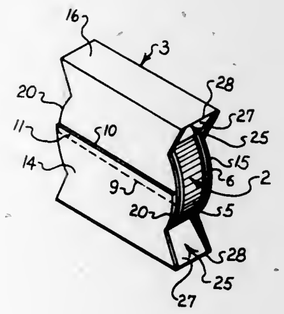
A folding plastic tray for supporting solid food and beverages in cups, bottles, or cans on the seat of a motor vehicle. The tray has side members which fold down to engage the seat with the side members each having a lower edge which is straight for a portion of its length and curves downwardly for the remaining portion of its length. A locking flap is hingedly connected to the straight portion of the edge of the side member and has male snap elements integrally formed thereon which snap through openings in the tray bottom to lock the sides in their erected position. Ribs in the bottom of the tray support the solid foodstuffs above the snaps to prevent accidental disengagement of the snaps from the snap openings due to the pressure of foodstuff thereon.

3,638,850
PAPERBOARD CONTAINER
William B. Dubey, Rockville Centre, N.Y., assignor to Alford Industries Incorporated, Ridgefield Park, N.J.
Filed Jan. 14, 1970, Ser. No. 2,812
Int. Cl. B65d *5/32*
U.S. Cl. 229—33 **10 Claims**



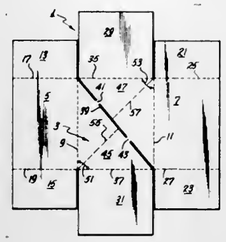
A container for cigars consisting of a tray and a cover that are made from corresponding paperboard blanks which are coated and preprinted on one surface. The tray front wall and sidewalls are double paneled. The cover includes a rigid triple-panel lid and a multipanel attaching unit which defines a pocket, is secured to the tray rear wall and constitutes, in effect, part of the container rear wall. One panel of the lid is hinged to the attaching unit along a first foldline and another panel of the lid is hinged to a tongue along a second foldline that is parallel and closely adjacent to the first foldline, said tongue projecting freely into the pocket.

3,638,851
CARTON FOR CYLINDRICAL ARTICLE
Robert J. Offer, and Eugene J. Samalon, both of Racine, Wis., assignors to Tenneco Inc., Racine, Wis.
Filed Jan. 9, 1970, Ser. No. 1,785
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **4 Claims**



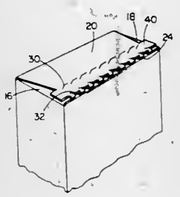
A carton for packaging a cylindrical article such as an automotive air filter. The carton comprises an open-ended container of thin material such as cardboard having inwardly folding tab portions to retain the cylindrical article in the carton. The open ends of the carton provide a view of the contents of the carton. The carton and open ends may be covered with a transparent film.

3,638,852
FULLY COLLAPSIBLE CORRUGATED BOX AND BLANK THEREFOR
Joseph Solanka, Baltimore, Md., assignor to Wagner Brothers Containers, Inc., Baltimore, Md.
Filed Oct. 12, 1970, Ser. No. 80,075
Int. Cl. B65d *5/36, 5/42*
U.S. Cl. 229—41 **5 Claims**



The bottom panel of the box is cut diagonally from one corner to the opposite diagonal corner, except for a pair of holding tabs, and the two similar, right triangle-shaped panels thus provided are creased along fold lines which bisect the right angle of the triangles and extend to the diagonal cut. After the box is erected, it may be fully collapsed by pushing inwardly or outwardly on the bottom panel to break the holding tabs and then folding the triangular-shaped panels on the fold lines thereof to collapse the erected panels.

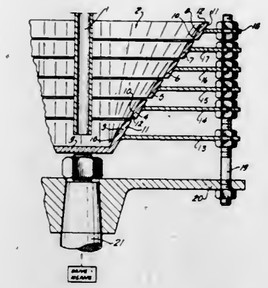
3,638,853
BOXBOARD CARTON CLOSURE
George S. Perry, Nashua, N.H., assignor to Universal Packaging Corporation, Concord, N.H.
Filed Oct. 15, 1970, Ser. No. 81,001
Int. Cl. B65d *5/54, 17/00*
U.S. Cl. 229—51 TS **7 Claims**



A boxboard carton has a closure which is sealed by activation of adhesive applied to facing surfaces of closure flaps near a corner of the carton, the facing surfaces being on the same side of the boxboard sheet from which the carton is made, the carton being openable without rupturing the adhesive seal.

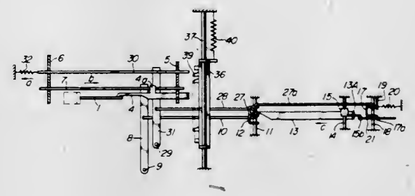
3,638,854
CENTRIFUGE CONSTRUCTION
Rudiger Elsner Von Gronow, Park Forest, Ill., assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Mar. 16, 1970, Ser. No. 19,699
Claims priority, application Germany, Mar. 14, 1969, G 69 10 274
Int. Cl. B04b *1/00*
U.S. Cl. 233—27 **12 Claims**

A drum for a centrifuge is mounted for rotation about its longitudinal axis and has a circumferential wall and an outlet end. It is composed of a plurality of slightly spaced axially adjacent rings each of which has an outer circumferential surface and an inner circumferential surface with the latter continuously diverging in direction towards the opening. Each of the rings has a minimal inner diameter greater than the



minimal inner diameter of the respective axially preceding ring and an axial end face facing said outlet end and extending from the inner to the outer circumferential surface. Admitting means admits mixture to be separated into the drum, and drive means rotates the drum about its axis.

3,638,855
NUMERAL PIN SETTING MECHANISM IN CALCULATING MACHINES AND THE LIKE APPARATUS
Kenji Miyake, Kunitachi-shi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 7, 1970, Ser. No. 1,153
Claims priority, application Japan, May 15, 1969, 44/37618
Int. Cl. G06c *23/04*
U.S. Cl. 235—60 TK **3 Claims**

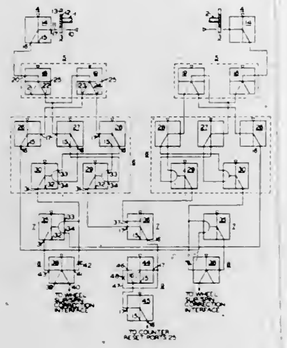


A numeral pin setting mechanism in a calculating machine or the like apparatus, wherein a mechanism is provided for operating a column shifting mechanism, and is operatively associated with the individual numeral keys by the drive of a motor.

3,638,856
WHEEL SLIP DETECTOR HAVING FLUID LOGIC DEVICES
Edward T. Dressler, Jr., Mars Estates, Md., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Dec. 30, 1969, Ser. No. 889,129
Int. Cl. G06m *3/02*
U.S. Cl. 235—201 **4 Claims**

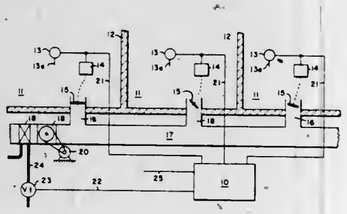
A fluidic wheel slip detector circuit for monitoring the synchronization or relative frequency of rotation of wheel/axle units of a railway vehicle by comparing the relative condition of a pair of fluidic binary counters driven in accordance with the rotational speed of the wheel/axle unit

with which each counter is associated. Fluidic digital decoding circuitry is provided to continuously sense and indicate the progression of the counters. Fluidic decision logic circuitry including comparator means responds to a predetermined signal from the decoding circuitry for comparing the progression of the respective counters associated with each wheel/axle unit and controls fluidic memory means which



produces an indication of which wheel/axle unit is rotating at the higher frequency in the absence of synchronization therebetween and maintains the signal until synchronization is restored. The decision logic circuitry also includes fluidic reset means responsive to another predetermined signal from the decoding circuitry to assure that the counters are reset in phase each cycle when either one of the counters first reaches a predetermined count.

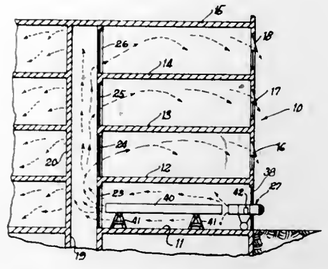
3,638,857
PRESSURE DISCRIMINATOR
Joseph E. Hogel, River Grove, and Donald H. Spethmann, Arlington Heights, both of Ill., assignors to Honeywell, Inc., Minneapolis, Minn.
Filed May 6, 1970, Ser. No. 34,944
Int. Cl. F24f *11/08*
U.S. Cl. 236—1 B **5 Claims**



A pneumatic pressure responsive apparatus utilizing diaphragm logic which selects and transmits the lowest pressure of a plurality of input pressures.

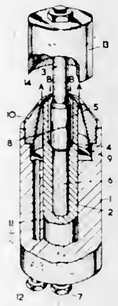
3,638,858
TEMPORARY HEATING SYSTEM FOR MULTILEVEL BUILDINGS
Erhard E. Alms, 419 Valencia Ave., Barrington, Ill.
Filed Jan. 5, 1970, Ser. No. 543
Int. Cl. F24d *5/02*
U.S. Cl. 237—50 **2 Claims**

A temporary heating system for buildings under construction requiring hot air for drying plaster, paint, mortar and the like. A portable high-capacity burner is placed in a doorway leading to the outside of the building on the lowest floor to be heated. The burner is baffled to have the burner intake outside the building and the hot products of combustion and



air blown inside into an elevator shaft which then conducts the hot air to the upper levels. The elevator doors and the windows of the building are used as flow regulators for their respective floors.

3,638,859
FLUID ATOMIZERS
John James MacFarlane, Church Crookham, England, assignor to National Research Development Corporation, London, England
Filed Aug. 1, 1969, Ser. No. 846,841
Claims priority, application Great Britain, Aug. 6, 1968, 37,396/68
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **6 Claims**

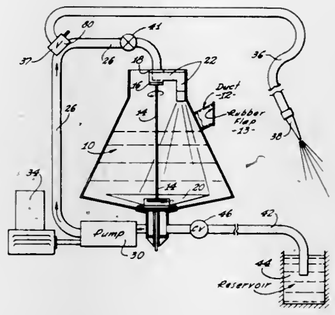


Air issuing at high velocity from an annular nozzle under choked flow conditions is directed at a resonator constituted by a well formed in a cup spaced from the nozzle and coaxial with it. The airflow is thus induced to vibrate and liquid is injected within the annular curtain and in the same direction to impinge on the vibrating air mass by which it is atomized into fine droplets.

3,638,860
AGRICULTURAL APPARATUS
Richard A. Carlyon, Jr., 1000 Sharrow Way, Carson City, Nev.
Original application Oct. 16, 1968, Ser. No. 768,038, now abandoned. Divided and this application May 26, 1970, Ser. No. 40,610
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 **2 Claims**

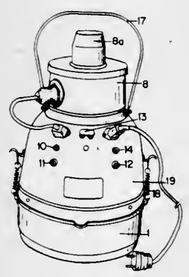
Improved agricultural apparatus is provided which, for example, may be mounted on the back of a truck, and which

may be used to mulch, fertilize and seed an area conveniently and efficiently. The apparatus to be described includes a tank containing a slurry of the seed, mulch and fertilizer. A circulating pump is coupled to the tank for circulating the slurry through the tank, and a spray-dispensing hose is coupled to the recirculating line for receiving a portion of the circulating



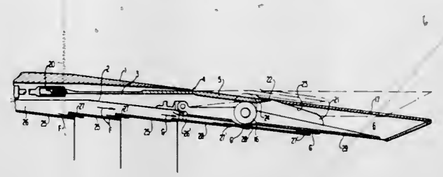
slurry to be sprayed thereby over the aforesaid area. The present invention is particularly concerned with an improved valve assembly for use in the apparatus, and which is positioned in a tangential manner with respect to the circulating conduit, so that there is no tendency for the cellulose in the mulch to congregate behind the valve and clog the valve, as is prevalent in the prior art structures.

3,638,861
MICROMIST AND AEROSOL GENERATORS
Pierre Nikel, Nice, France, assignor to Laboratoire Phagogene, Nice, France
Filed Mar. 24, 1969, Ser. No. 809,606
Claims priority, application France, Mar. 25, 1968, 22218
Int. Cl. B05b *3/02*
U.S. Cl. 239—216 **8 Claims**



A generator of micromist and aerosols is disclosed herein, and has a chamber for condensing and stabilizing a mist. The chamber is defined by a first dome which is disposed inside a second dome, so that there is provided an annular cavity between the two domes for housing electrical components. A baffle is provided inside the condensing chamber for limiting the size of particles expelled by the device.

3,638,862
THRUST NOZZLE OF TURBOJET ENGINES
Walter Wildner, Munich, Germany, assignor to Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany
Filed July 17, 1970, Ser. No. 55,702
Claims priority, application Germany, July 19, 1969, P 19 36 800.4
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.39 **14 Claims**



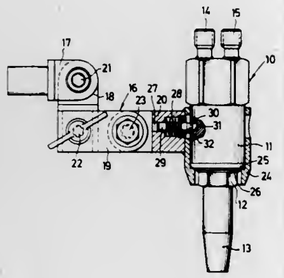
A thrust nozzle at a tapering fuselage or nacelle tail section of an aircraft which is located downstream and adjoins an afterburner tailpipe of a turbojet engine, the exhaust gas discharge cross section of the nozzle can be adjusted by means of nozzle flaps which are pivotal about axes disposed transversely to the flow direction of the engine exhaust gases; the flaps are adapted to be actuated by an axially displaceable shroud which includes one or more tapering sections adapted to be extended out of the engine cowling for increasing the exhaust gas discharge cross section, to engage in recesses provided in the nozzle flaps.

3,638,863
SPRINKLER UNIT
James C. Roberts, 1860 Jeffrey, Escondido, Calif.
Filed Jan. 25, 1971, Ser. No. 109,374
Int. Cl. A62c *31/22*
U.S. Cl. 239—276 **5 Claims**



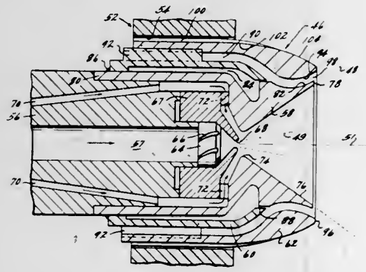
A sprinkler unit comprising a one-piece peglike element, which is inserted in the ground at the desired location. The upper end of the unit has a plug that fits into a water supply hose and the plug has a restricted channel that directs a stream of water against a platform that is open at one side and has angled walls to direct the spray out over a controlled area.

3,638,864
TORCH HOLDING LATCHING ARRANGEMENT
Georg Roeder, Frankfurt/Main, and Heinz Ginsberg, Ruppertshain/Taunus, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed May 8, 1970, Ser. No. 35,845
Claims priority, application Germany, June 6, 1969, P 19 28 851.8
Int. Cl. B05b *15/06*
U.S. Cl. 239—280.5 6 Claims



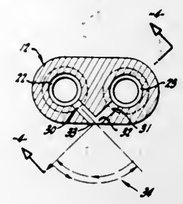
A holding arrangement for multiple machine cutting torches has a holder for each torch that includes a sleeve receiving the body of the torch; and latching means are provided between the holder and the torch body releasably latching the torch in an operating position.

3,638,865
FUEL SPRAY NOZZLE
Gregory E. McEneny, and Edward E. Ekstedt, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Aug. 31, 1970, Ser. No. 68,194
Int. Cl. B05b *7/06*
U.S. Cl. 239—424 5 Claims



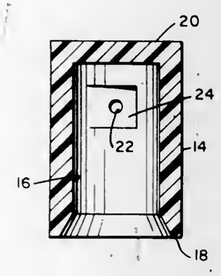
A fuel spray nozzle for delivery of a conical spray of fuel droplets into a gas turbine engine combustion apparatus includes a shrouded and shielded discharge head arranged to establish a stable fuel spray angle, maintain low-operating temperatures and prevent accumulations of deleterious matter on the surfaces of the nozzle which are exposed to the combustion process.

3,638,866
NOZZLE FOR MOUTH-FLUSHING APPARATUS
Robert J. Walker, 2942 Linden Ave., Berkeley, Calif.
Original application Aug. 17, 1966, Ser. No. 572,966, now Patent No. 3,507,275, dated Apr. 21, 1970. Divided and this application Jan. 23, 1970, Ser. No. 5,422
Int. Cl. B05b *1/26*
U.S. Cl. 239—544 5 Claims



Apparatus and method for flushing the teeth and gum tissues with a moving stream of water to remove debris therefrom. The apparatus includes a nozzle with a plurality of angularly related supply passages converging at a single orifice through which such stream of water discharges. The stream cyclically and repetitively traverses a path of travel while the orifice remains in a fixed position because of changes in the relative volumetric flows of water through the supply passages.

3,638,867
VARIABLE DISCHARGE AEROSOL SPRAY NOZZLE
Frank Venus, Jr., Watertown, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Sept. 14, 1970, Ser. No. 71,979
Int. Cl. B05b *1/32*
U.S. Cl. 239—573 8 Claims

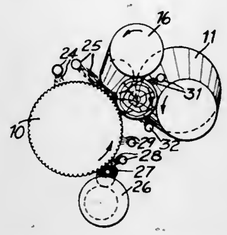


A spray nozzle is disclosed for a fluid dispenser, consisting of a button mounted on the end of a product discharge tube or valve stem of the dispenser. The button has a discharge orifice through which the fluid product is sprayed, and the button and stem are formed in their mating surfaces to provide a variable restriction to discharge of fluid from the orifice in different relative rotated positions of the button on the stem.

3,638,868
PULP GRINDING MACHINE HAVING A TAPERED CONTROL ROLL
Piero Bersano, Torino, Italy, assignor to Norton Company, Worcester, Mass.
Filed Apr. 23, 1969, Ser. No. 818,602
Int. Cl. B02c *11/08*
U.S. Cl. 241—44 13 Claims

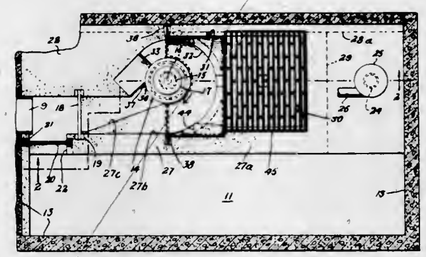
A log-grinding apparatus and process for making pulp including an improved process and log-grinding machine for

compressing and releasing of pressure on the surface of a log in the presence of fluid to cause the natural lignin and resin fiber binders to be softened and dissolved whereby excellent wood fiber or pulp is formed and then readily separated from the log by a grinding roll. The log is rotatably driven through the machine lengthwise by the interaction of a group of angularly spaced rolls bearing upon the periphery of the log while



liquid is applied to the log. The rollers engage the surface of the log at spaced points around the periphery thereof to apply pressure and squeeze fluid out of the log's surface and when pressure is released fluids are absorbed into the log's surface so that fluid is flushed in and out of the wood so that the fibers are thereafter easily separated from the log by the grinding roll that engages the log progressively from end-to-end.

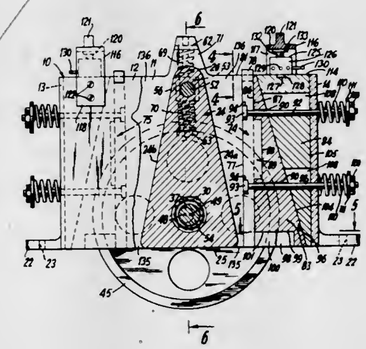
3,638,869
SEWAGE COMMINUTOR INSTALLATION
Lawrence C. Zimmerman, Harrisburg, Pa., assignor to F. B. Leopold Company, Inc., Zelienople, Pa.
Filed July 13, 1970, Ser. No. 54,532
Int. Cl. B02c *13/282*
U.S. Cl. 241—46 12 Claims



A basin and housing structure is disclosed for use with a generally cylindrical comminutor rotatable about an upright axis. The comminutor housing is generally scroll shaped to define a flow passage of progressively diminishing width wrapped around the cylindrical comminutor, and at least a major portion of the comminutor housing comprises a wall structure which is removable so as to provide improved or increased access to the comminutor and thereby facilitate maintenance and service work, especially when replacing comminutor comb bars, shear bars and cutting teeth.

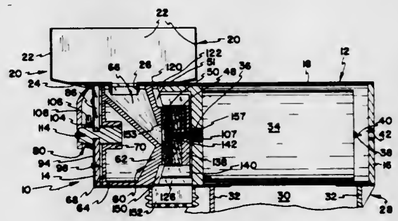
3,638,870
ROCK-CRUSHING MACHINE
Ford Ferris, Staten Island, N.Y., assignor to David Bourne, Brooklyn, N.Y. and Gail C. Moore, Wyalusing, Pa., part interest to each
Filed Dec. 16, 1969, Ser. No. 885,564
Int. Cl. B02c *1/02*
U.S. Cl. 241—140 4 Claims

A rock-crushing machine having a rectangular frame open at its top and bottom. A wedge-shaped jaw crusher is mounted at its lower wide end on a drive shaft having end shaft extensions eccentric to the axis of the shaft and supported by the sides of the frame, the shaft extensions extending outwardly of the frame and each carrying a pulley. The jaw crusher is vertically centrally positioned in the frame and is mounted on an upper shaft for swinging movement about the axis thereof. The ends of the shaft extend through slots in the same sides of the frame and are mounted in bearing blocks, each supported by a spring above and below the same to provide a resiliently mounted floating support for the upper shaft. The jaw crusher occilates within the frame under the action of the eccentrically driven drive shaft. Opposite each inclined side of the jaw crusher is a vertical stationary jaw element each slidably supported by the frame sides and mounted on the rear of each jaw element is a horizontally



movable inner wedge also slidably supported by the frame sides. A coacting vertically movable outer wedge having a vertical side is in sliding engagement with an end sidewall of the frame. Upper and lower tie bolts extend through the vertical jaw elements and through the wedges and outwardly of the end sidewalls, each tie bolt carrying a compression coil spring engaging the end sidewall and a nut-held washer on the tie bolt. The outer wedges are each provided with elongated vertical slots through which the tie bolts extend. A ram at the top of each outer wedge is operative to effect a downward vertical movement thereof to move the stationary jaw element towards the side of the jaw crusher opposite thereto so as to narrow the gap therebetween. This adjustment of the size of the gap will control the size of the particles of the rock being crushed and discharged from the bottom of the frame.

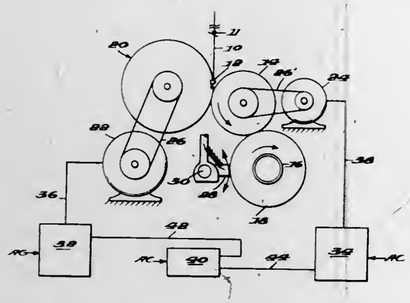
3,638,871
GRAIN GRINDER
Delos R. Barger, P.O. Box 221, Downey, Idaho
Filed May 14, 1970, Ser. No. 37,071
Int. Cl. B02c *7/06*
U.S. Cl. 241—255 9 Claims



A grain grinder having a rotor stone rotated by a power source and a stationary stator stone. The rotor stone has

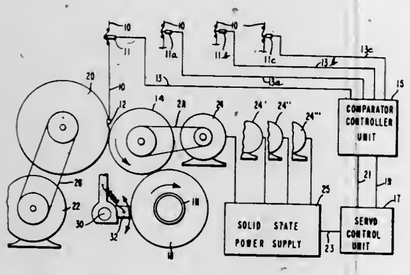
novel tapered and spirally configurated grooves therein for evenly distributing grain about the rotor stone so that grinding takes place uniformly around the periphery of the stone. Novel external adjustment structure is provided to vary the clearance between the stator stone and the rotor stone so that various grains may be ground to a desired texture by selecting a position on an indicator or display device which visually displays the clearance set between the rotor stone and the stator stone.

3,638,872
PROCESS FOR WINDING A YARN PACKAGE
Uel Duane Jennings, Signal Mountain, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 28, 1968, Ser. No. 716,731
Int. Cl. B65h *54/38*
U.S. Cl. 242—18.1 **1 Claim**



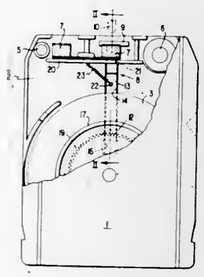
A process for winding yarn into a cylindrical-bodied substantially straight-ended package wherein the yarn is traverse wound in layers of helical coils on a bobbin and the helix angles of the coils are cyclically varied from a minimum to a maximum and back to a minimum value during a spaced periodic excursion by periodically increasing the traverse rate to a value above that used for ribbon breaking. The maximum value of the helix angle in the excursion is greater than the maximum positive value used in the ribbon-breaking portion of the cycle. Thread line tension variations due to these wide variations in helix angles may be compensated for by periodically decreasing the rate of peripheral package winding speed coincidently with and proportional to the periodic increases in traverse rate.

3,638,873
APPARATUS FOR WINDING YARN
Harold Wade Cole, Donelson, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 12, 1970, Ser. No. 63,102
Int. Cl. B65h *59/38*
U.S. Cl. 242—45 **4 Claims**



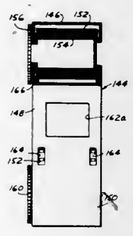
A system to control yarn tension in a multiposition winding apparatus in which a plurality of tension transducers are associated with preselected yarn lines for generating output signals indicative of yarn tension. A comparator controller system is coupled to the transducers to process and combine the transducer output signals to provide an error signal. A control unit responsive to the error signal changes the output of the windup motor power supply which, in turn, changes motor speed and, consequently, yarn tension. Circuitry is provided to monitor the error signal and inactivate the control unit if the error signal exceeds predetermined limits.

3,638,874
REEL BRAKE FOR AN ENDLESS TAPE CARTRIDGE
Nobuatsu Naito, Tokyo; Kasuhiko Nakajima, Fujisawa-Shi, and Yoshio Watanabe, Tokyo, all of Japan, assignors to Pioneer Electric Corporation and Apollon Music Industrial Corporation, both of Tokyo, Japan
Filed Oct. 13, 1969, Ser. No. 866,674
Claims priority, application Japan, Oct. 14, 1968, 43/88809
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **4 Claims**



An endless tape cartridge which comprises a rotatable reel carrying an endless tape, a tape guide roller, a pad and a pinch roller for feeding and guiding the endless tape, is further provided with a spring-biased, reciprocating reel-braking lever movable along a keyway guide groove in the bottom of the cartridge casing, with one toothed arcuate end engageable with a toothed annular recess within the reel and the other end engageable with a push rod mounted on the tape player to automatically release the brake acting on the reel upon insertion of the cartridge.

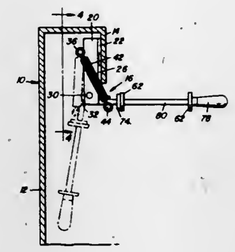
3,638,875
STRIP FILM PROJECTOR
Morris Schwartz; William Castedello, both of Plainville, Conn., and Edward K. Kaprelian, Mendham, N.J., assignors to The Kalart Company, Inc., Plainville, Conn.
Filed June 17, 1968, Ser. No. 737,697
Int. Cl. G03b *23/02, 21/00*
U.S. Cl. 242—71.2 **1 Claim**



A compact lightweight strip film projector in which the strip of still pictures is carried in a magazine attachable to

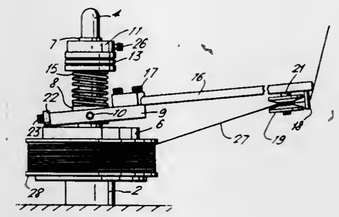
and detachable from the projector, and in which the film is rewound into its initial condition upon completion of projection by means of a power train driven by a motor in the projector. A film metering sprocket ends the rewinding step by stopping the motor after all film has been rewound. Projection is frame-by-frame and is accomplished manually or remotely through the action of the motor.

3,638,876
WATER SKI TOWROPE REEL
William W. Bullock, 1507 Ridgeway, Medford, Oreg.
Filed Mar. 9,1967, Ser. No. 621,820. The portion of the term of the patent subsequent to Feb. 1, 1987, has been disclaimed.
Int. Cl. B65h *75/38, 75/40*
U.S. Cl. 242—106 **5 Claims**



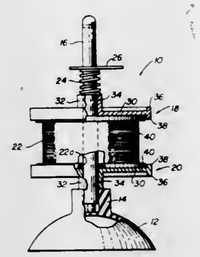
A winding reel assembly including a rotatable winding member including appreciably different major and minor dimensions in right angularly disposed directions in a plane extending generally normal to the axis of rotation of the winding member and a mounting assembly for the winding member whereby its axis of rotation may be angularly displaced approximately 90° or a greater or lesser amount as desired.

3,638,877
DEREELING APPARATUS
Donald George Clark, Bideford, and Derek J. Hicks, Woolfardisworthy, both of England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 4, 1970, Ser. No. 34,229
Claims priority, application Great Britain, May 14, 1969, 24,519/69
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 **5 Claims**



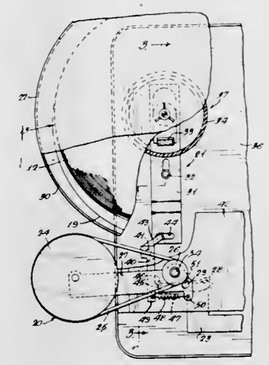
Dereeling apparatus including a dereeling head and a floating plate adapted to pivot in response to force exerted through a dereeling arm, the pivotal movement of the plate serving to increase or decrease the frictional force on the spool of material being dereeled.

3,638,878
FISHING LINE SPOOL HOLDER
Heber L. Morris, 3591 Roslyn Ave., Kettering, Ohio
Filed Aug. 12, 1970, Ser. No. 63,160
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 **10 Claims**



For holding fishing line spools in position for convenient dereeling of the line, a spindle is supported by a suction cup. The spool is slidably mounted on the spindle between a pair of slidably mounted retaining plates held on the spindle by a spiral spring coiled about the spindle and a retaining clip passing through an aperture in the spindle. The spring is compressed to resist rotation of the spool. Plural apertures are provided in the spindle for accommodating different lengths of spools. The spindle is of substantially the same diameter as the bores of commercially available spools and the retaining plates have hubs projecting from one surface thereof to provide bearings for spools having larger diameter bores.

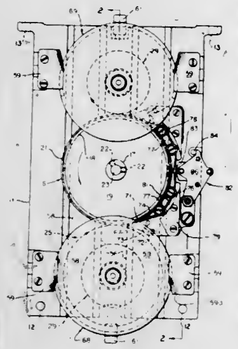
3,638,879
TAPE RECORDER THREADING CONTROL
Albert L. Eischen, Arlington Heights, Ill., assignor to Warwick Electronics Inc.
Filed Feb. 24, 1969, Ser. No. 801,702
Int. Cl. G11b *15/32, 15/66*
U.S. Cl. 242—192 **14 Claims**



Mechanism for effectively braking, or retarding, a tape supply reel, such as in a tape supply cartridge, to prevent tearing or deformation of the tape as may be caused in an automatic threading operation where the end portion of the tape is dereeled, indiscriminately bunched up, or otherwise

undesirably loose in the cartridge. The retarding operation is effected herein as a concomitant of the self-threading operation. A portion of the mechanism for effecting the self-threading operation also functions to effectively positively operate the retarding means to assure concurrent self-threading and supply reel retardation and to provide an improved initial feed of the tape in the self-threading operation. A connecting link is provided which is pivotally mounted to be responsive to the operation of the self-threading means for actuating the retarding means.

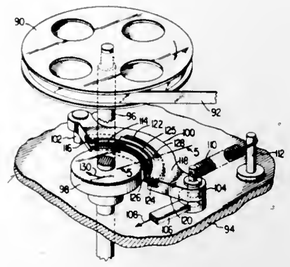
3,638,880
TAPE TRANSPORT APPARATUS AND CARTRIDGE THEREFOR
Ashley J. Hollingsworth, Atherton, Calif., assignor to Newell Industries Inc.
Filed Nov. 3, 1969, Ser. No. 873,283
Int. Cl. G11b *15/32, 23/10*
U.S. Cl. 242—192 **6 Claims**



A tape transport wherein supply and takeup rolls are engaged by a resilient drive body disposed between the rolls, and urged against the rolls by means independent of the tape. Unidirectional brake means restrain rotation of the supply roll so as to tension a span of tape disposed between the rolls during feeding thereof. In one embodiment, a motor drives the rotating body directly. The brakes, applied at the hub of the supply roll, are individual to that particular supply roll to be carried therewith for use on all machines. In another embodiment, the drive body serves as a transfer roller to transfer forces between the rolls whereby one of two motors respectively connected to supply and takeup rolls drives the takeup roll while the other motor applies a drag to the rotation of the supply roll. In reverse feeding of tape, the functions of the two motors are reversed.

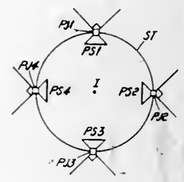
3,638,881
BRAKE APPARATUS
Ninko Tihomir Mirkovic, Indianapolis, Ind., assignor to RCA Corporation
Filed Oct. 16, 1969, Ser. No. 866,949
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—204 **5 Claims**

A braking arrangement wherein the amount of braking effected on a moving member is determined by the direction of movement of the braked member. Braking is applied to the member via a brakeshoe which is movably coupled to a lever means. In response to the contacting relation with the moving member, the brakeshoe is positioned along the lever means with respect to the fulcrum of the lever. The position of the brakeshoe with respect to the lever means fulcrum



determines the effective braking force transmitted to the moving member.

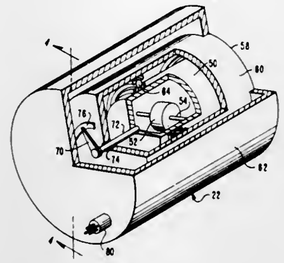
3,638,882
THUNDERSTORM OBSERVATION SATELLITE
Jean Emile Turriere, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 712,102, Mar. 11, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 12,791
Claims priority, application France, Mar. 31, 1967, 100914
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS **7 Claims**



This relates to equipment on board a spin-stabilized satellite for locating and counting lightning discharges. The discharges are detected by a plurality of $n \times n$ photocell matrices to deliver two quantized angles which define unambiguously the position of the discharge projected on the surface of the earth. The matrices effectively divide the earth surface into $2H \times 2H$ km. zones (H being equal to the altitude of the satellite) centered along the subsatellite great circle and each zone is quantized into $n \times n$ quadrilaterals. The angle values are processed to obtain coordinate values defining the quadrilateral where the discharges occurred. The coordinate value are stored in the appropriate one of $n \times n$ portions of the appropriate one of a plurality of zone memory. Further processing allows discrimination between long and short discharges which information is stored in the appropriate one of the $n \times n$ portions of the proper memory during the time the quadrilateral corresponding to the memory portion was observed by the satellite. The content of the memories are sent to ground stations at regular intervals.

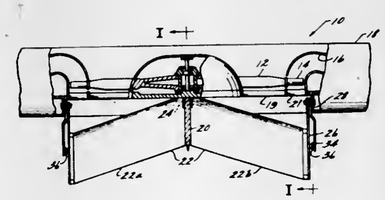
3,638,883
CROSS-RATE AXIS SENSOR
Andre Lanzaro, Albany, Calif., assignor to Dynasciences Corporation, Blue Bell, Pa.
Filed May 21, 1968, Ser. No. 730,776
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 **11 Claims**

A cross-rate axis sensor is provided for use with a moving vehicle, such as an elongated space vehicle, which undergoes both spinning and coning motion. The sensor which may be rotatably mounted about the longitudinal axis of the vehicle continually aligns itself with the instantaneous direction of transverse angular velocity or cross-rate axis of the vehicle due to coning motion, and the angular position of the rotatable sensor relative to the vehicle can be used to phase the torques provided by a thrust-producing nozzle mounted on the vehicle to reduce and eventually eliminate the coning



motion. The sensor includes a rotatively driven momentum wheel, the axis of rotation of which continuously follows the cross-rate axis, and a cylindrical member rotatably mounted about an axis parallel to the vehicle axis of the elongation within the vehicle and having a hollow interior within which the momentum wheel is rotatably mounted as a gyroscope element in a balanced single degree of freedom gimbal system.

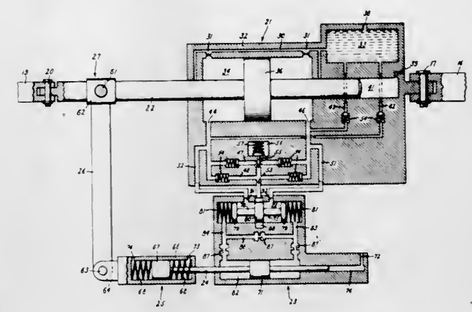
3,638,884
THRUST VECTORING LOUVER CASCADE
Eugene L. Timperman, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Sept. 15, 1969, Ser. No. 862,627
Int. Cl. B64c *15/08*
U.S. Cl. 244—12 D **2 Claims**



A thrust vectoring louver cascade is provided for a lift fan employed in the propulsion of V/STOL Aircraft. The V-shaped louvers of the cascade are pivoted about their apexes to provide increased mass flow of the propulsive gas stream, particularly when it is vectored to angle its output thrust from the vertical.

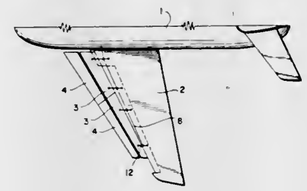
3,638,885
LAG FREQUENCY SELECTIVE DAMPER
Donald A. Reed, Springfield, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 9, 1970, Ser. No. 17,554
Int. Cl. B64c *27/42*
U.S. Cl. 244—17.27 **11 Claims**

A frequency selective damper for damping the low frequency natural lead-lag vibrations of an articulated helicopter rotor blade while leaving essentially unaffected the induced one per revolution frequency motion when the rotor is subjected to the combination of these motions. The damper comprises a hydraulic cylinder, a metering-type load valve connected via flow paths to either side of the cylinder piston, a three-way spool valve connected via flow paths to the load valve and to the flow paths connecting the load valve and the hydraulic cylinder, and a control cylinder connected mechanically to the piston rod of the hydraulic cylinder and via flow paths with the spool valve. The dis-



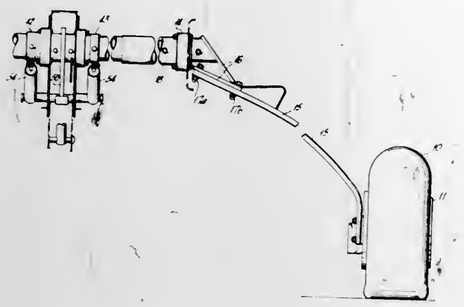
placement of the valve spool is proportional to the time integral of the displacement of the hydraulic cylinder piston. Consequently, when the hydraulic piston rod velocity and the valve spool displacement are both in the extended or retracted mode or sense, the fluid displaced by the hydraulic piston is forced across the load valve. If, however, the piston rod velocity and valve spool displacement are in the opposite sense, the spool valve provides a low resistance bypass around the load valve. This selective bypass provides improved low frequency damping when the damper is subjected to the combined natural and forced vibratory motion.

3,638,886
WING WITH SLOTTED FLAP MOUNTED AT THE LEADING EDGE AND/OR AT THE TRAILING EDGE
Herbert Zimmer, Friedrichshafen, Germany, assignor to Dornier G.m.b.H., Friedrichshafen, Bodensee, Germany
Filed Feb. 9, 1970, Ser. No. 9,790
Claims priority, application Germany, Apr. 5, 1969, P 19 17 532.7
Int. Cl. B64c *9/14*
U.S. Cl. 244—42 D **3 Claims**



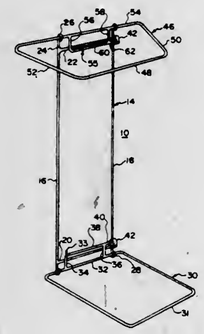
This invention relates to a slotted flap adapted to be mounted on at least one edge of a wing and adapted to be pivoted outwardly therefrom, comprising a first portion positioned uppermost in the retracted condition, and a second lower portion mounted on said first portion for pivotal movement about the outer edge of said first portion, both portions constituting independent slotted flaps in the extended condition thereof.

3,638,887
AIRPLANE RETRACTABLE LANDING GEAR
David B. Thurston, Springvale, Maine, assignor to Thurston Aircraft Corporation, Sanford, Maine
Filed Oct. 21, 1969, Ser. No. 867,998
Int. Cl. B64c 25/14
U.S. Cl. 244—102 SL 8 Claims



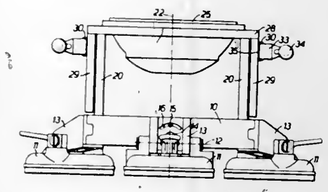
The main landing gear for an airplane includes a pair of retractable wheels. The wheels are retracted by hand operation of a lever. The landing gear mechanism also includes a pair of air cylinders and a release device which is operated to release the cylinders when the wheels are lowered in water.

3,638,888
LEAF BAG HOLDER
John A. Ross, Winthrop Harbor, Ill., assignor to Hall Industries, Inc., Chicago, Ill.
Filed Nov. 4, 1970, Ser. No. 86,855
Int. Cl. B65b 67/00
U.S. Cl. 248—97 11 Claims



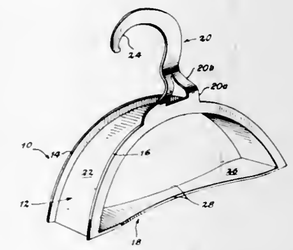
A foldable wire framework is disclosed for supporting a plastic refuse bag in either a vertical or horizontal attitude, which facilitates its use. The bag holder in one embodiment comprises top and bottom rectilinear frame members that are pivotally attached to a rectilinear upright. The top and bottom frame members fold, respectively, downwardly and upwardly flat against the back side of the upright member for convenient storage. The holder is adapted to support a plastic bag in such a manner that it can be laid on its side with the upright member upon the ground whereby the opening of the bag is in a convenient position to receive leaves and debris that are swept into the opening. The holder is lightweight and after a portion of debris has been swept therein the top frame functions as a handle by which to raise the entire holder and bag to a vertical position and allow the debris to fall to the bottom of the bag.

3,638,889
MOUNTING BRACKETS FOR CAMERAS AND OTHER OPTICAL INSTRUMENTS
David W. Samuelson, London, England, assignor to Samuelson Film Service Limited, London, England
Filed Dec. 23, 1969, Ser. No. 887,618
Claims priority, application Great Britain, Jan. 10, 1969, 1,570/69
Int. Cl. G03b 17/56
U.S. Cl. 248—206 R 2 Claims



The invention relates to an adjustable mounting bracket for a photographic or television camera or other optical instrument designed to enable the instrument to be supported on any vertical inclined or horizontal surface whether flat or curved, for the purpose of sighting or shooting.

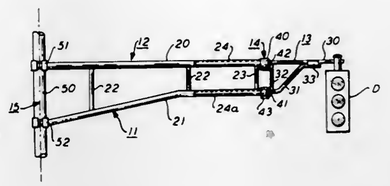
3,638,890
HOLDER FOR A HANDBAG AND COMPLEMENTARY WEARING APPAREL
Dean Wm. Burrell, 35 Jefferson St., and Addie M. Burell, 65 Elizabeth St., both of Ellicottville, N.Y.
Filed June 3, 1970, Ser. No. 42,993
Int. Cl. A47j 51/08
U.S. Cl. 248—215 4 Claims



A holder including an arcuate band portion having raised portions along the curved marginal edges thereof for supporting the handle of a handbag; a crossbar portion joining the ends of the band portion for supporting a piece of wearing apparel, such as a scarf; and a suspending hook portion extending upwardly from adjacent a curved marginal edge of and overlying the center of the band portion.

3,638,891
ADJUSTABLE SUPPORT ARM STRUCTURE
Francis G. Schlosser, Ridgefield Park, N.J., assignor to Pfaff & Kendall, Newark, N.J.
Filed Feb. 19, 1970, Ser. No. 12,616
Int. Cl. E04h 12/00
U.S. Cl. 248—221 4 Claims
An adjustable support arm structure, for adjustable extension of a support arm in a frame, such as an adjustable arm

or arms supporting a device on the outwardly extending end thereof, having novel structural features permitting simplified, convenient and efficient adjustment and extension of



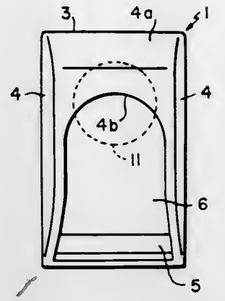
said structure in order to accommodate use with equal efficiency in connection with a variety of products of various dimensions and various conditions of use of the supported device.

3,638,892
FASTENING CLIP INTENDED TO BE FASTENED WITH NAIL-DRIVING TOOL
Erhard Boye, and Eric Landin, both of Gunnebobruk, Sweden, assignors to Gunnebo Bruks Aktiebolag, Gunnebobruk, Sweden
Filed June 12, 1969, Ser. No. 832,632
Claims priority, application Sweden, July 18, 1968, 9841/68
Int. Cl. F16l 3/00
U.S. Cl. 248—300 4 Claims



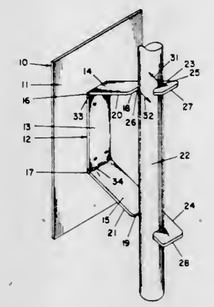
A fastening clip for fastening wires, pipes, etc. to a support comprises a plate including an opening from the edges of which two tongues of equal length extend. These tongues have a substantially S-shaped lengthwise cross section and are partly bent so as to extend with their ends over the opening in the plate thereby forming a passage for a nail to be driven into the support by a nail-driving gun. The clip, together with the nail which protrudes between the ends of the tongues, is retained in the muzzle of the gun by matching the outer outline of the tongues to the inner diameter of the muzzle. A washer is placed upon the end of the tongues for steadying the nail in the clip while the same is retained in the muzzle. The washer also serves to flatten the tongues against the support with the head of the nail pressing against the washer when the gun is fired.

3,638,893
MULTIPURPOSE HOLDER FOR BOTTLES
Gertrud Wendland, Neckarsteinacher Str. 58, Hirschhorn, Germany
Filed May 4, 1970, Ser. No. 34,207
Claims priority, application Germany, May 7, 1969, P 19 23 332.0
Int. Cl. A47j 45/04
U.S. Cl. 248—312 11 Claims
A multipurpose holder for bottles having a base support and a housing releasably attached thereto. The housing has a frontal opening cooperating with an extended opening in the base support. An elastic valve ball is rotatably mounted to sidewalls of the base support so that a part of the valve ball is accessible through said openings. A support means is positioned below the valve ball to hold a neck of a bottle and



place the opening of the bottle in closable cooperation with the valve ball. An opening claw can be provided below the support means.

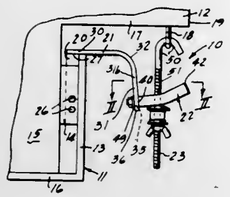
3,638,894
TEMPORARY SIGN BRACKETS
Nicolas W. Leutenegger, 2334-15th Ave., Monroe, Wis.
Filed June 22, 1970, Ser. No. 48,406
Int. Cl. G09f 17/00
U.S. Cl. 248—221 2 Claims



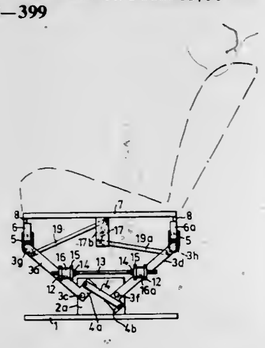
A sign bracket for temporarily hanging a sign board on a substantially upright post. The bracket has upper and lower panels that pivot about vertically spaced hinges having horizontally aligned axes. The upper and lower panels have recesses opening to one side for receiving and gripping the post.

3,638,895
SPEED MOUNT CAMPER BRACKET
Samuel H. Henson, P.O. Box 488, 1201 W. Prospect St., Kewanee, Ill.
Filed Mar. 24, 1970, Ser. No. 22,242
Int. Cl. B60p 3/32; B65j 1/22
U.S. Cl. 248—361 R 9 Claims
A bracket for attaching camper bodies to stake pocket equipped truck beds, wherein the bracket includes a portion fitting into the stake pocket of the truck having an outwardly and downwardly extending plate attached at the top thereof, a bore at the outer end of said plate and a hook-receiving member projecting outwardly from said plate pivotably attached thereto through said bore, the hook-receiving member having an angled abutment surface for contacting a

portion of the hook assembly and an elongated slot therethrough normal to said surface, the hook assembly including a J-bolt with an adjustable nut for enclamping an abutment washer against said abutment surface.

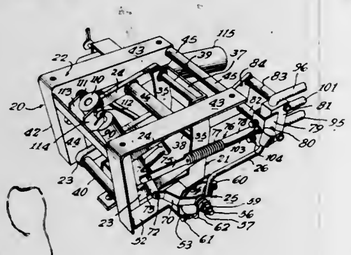


3,638,896
SHOCK ABSORBING DEVICE FOR A BOAT SEAT
John Werner Lindstrom, Rockneby, Sweden
Filed May 19, 1970, Ser. No. 38,732
Claims priority, application Sweden, May 22, 1969, 7227
Int. Cl. F16m *13/00*
U.S. Cl. 248—399 **3 Claims**



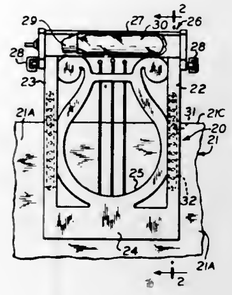
A shock absorbing device for a boat seat supported by a link system to move vertically downwardly against the action of spring means and damping means cooperating with the link system to damp upward and downward movements of the seat.

3,638,897
ELEVATION-ADJUSTING ASSEMBLY FOR SEAT
Arthur J. Harder, Jr., Franklin Park, and Raymond A. Bilancia, Palatine, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.
Filed Nov. 13, 1969, Ser. No. 876,397
Int. Cl. B60n *1/02*
U.S. Cl. 248—400 **24 Claims**



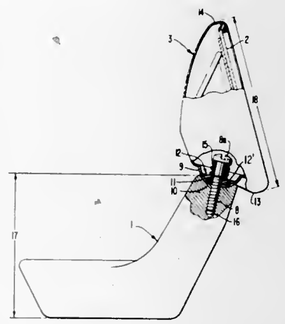
Seat for vehicle operator is mounted on an assembly which automatically moves seat vertically to a selected elevation corresponding to a setting on an elevation selector. Seat is automatically maintained at the selected elevation regardless of changes in the external load on the platform.

3,638,898
RACK AND STAND THEREFOR
George Shaw, Fresh Meadows, N.Y., assignor to Illumino Devices, Inc., New York, N.Y.
Filed Dec. 27, 1968, Ser. No. 787,498
Int. Cl. A47b *19/00*
U.S. Cl. 248—441 **16 Claims**



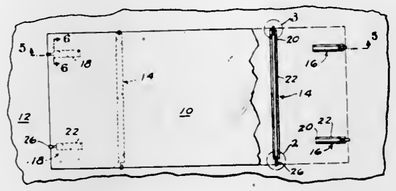
This disclosure is directed to a rack having detachably connected hangers to provide a two-point support for the rack on a suitable supporting surface with provision for adjusting the vertical height of the rack on such support. The rack is particularly constructed so as to be used independently or in combination with a stand, and in which a lighting means is provided for illuminating sheet music or the like supported thereon.

3,638,899
OUTSIDE MIRROR FOR MOTOR VEHICLES
Herbert Bonisch, Darmsheim; Heinz Gaiser; Guntram Huber, and Erwin Kolle, all of Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Aug. 9, 1968, Ser. No. 751,519
Claims priority, application Germany, Aug. 11, 1967, P 16 30 338.1
Int. Cl. B60r *1/06*
U.S. Cl. 248—483 **5 Claims**



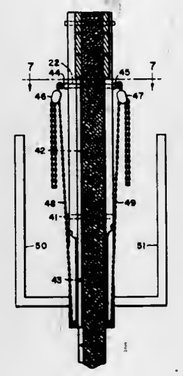
An outside mirror for motor vehicles which includes a base portion adapted to be secured at the vehicle body, in particular, to the outer wall of a front door, and a head portion that carries the mirror glass; the head portion is adjustably retained at the base portion at a place which is located on the side of the vehicle in relation to its vertical center axis, and is rotatable with respect to the base portion about an essentially vertical axis while a resistance opposes the relative rotary movement about this axis which is larger than the aerodynamic forces that occur normally.

3,638,900
TAMPERPROOF MIRROR MOUNTING
David A. Hard, Fenton, Mich., assignor to The Engineered Products Company, Flint, Mich.
Filed Nov. 10, 1969, Ser. No. 875,050
Int. Cl. A47f *7/14*
U.S. Cl. 248—488 **1 Claim**



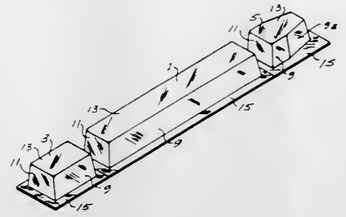
A tamperproof mirror mounting with vertically and horizontally extending channel sections adapted to underlie a mirror and be secured to a supporting wall with hooks attached to the channel sections and adapted to engage around the edges of the mirror. In mounting a rectangular mirror the hooks on two adjacent edges are fixedly attached to the channels. The hooks on the two opposed edges have legs with saw toothed abutments which are received by the channels and restrained from being removed by yieldably biased locking fingers on the channels.

3,638,901
WALL FORM SYSTEM
Chester I. Williams, 347 Greenbriar S.E., Grand Rapids, Mich.
Filed Mar. 25, 1969, Ser. No. 810,251
Int. Cl. E04g *11/22*
U.S. Cl. 249—20 **4 Claims**



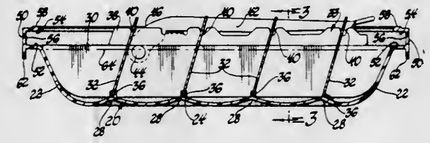
A form system based on a group of panels interconnected by junction beams preferably extending downward from the panels to form at least part of waler beam means normally secured to fastenings engaging the concrete. The junction beams have a cross section producing a ridge in the concrete intersected by the securing tie system holding the forms in position.

3,638,902
SYSTEM OF DOMES FOR USE IN MOLDING CONCRETE SLABS
Philipp O. Bergan, Box 747, Centralia, Ill.
Filed Nov. 24, 1969, Ser. No. 879,124
Int. Cl. E04g *11/40*
U.S. Cl. 249—28 **14 Claims**



A system of domes for use in pouring voided (i.e., ribbed) concrete slabs comprising relatively short end domes for use at the ends of a span and two or three relatively long intermediate domes for use between two end domes, and involving a set of different length end domes and a set of different length intermediate domes adapted, by suitable combination of the lengths, to bridge spans in a series of lengths differing by an increment such as 6 inches or 1 foot.

3,638,903
FREEZING CONTAINER WITH SPILLGUARD
Joe P. Pietrzak, Kettering; Lewis B. Campbell, Miamisburg, and Robert M. Strahan, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 9, 1970, Ser. No. 1,748
Int. Cl. F25c *1/24*
U.S. Cl. 249—69 **3 Claims**

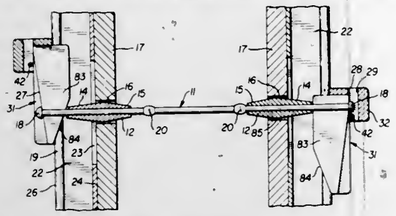


In the preferred form, spilling is diminished in a freezing container by providing sidewalls which are substantially upright at the top and extend downwardly and inwardly therefrom in a circular arc to the bottom wall of the container. The tops of the side and end walls are encircled with a continuous inturned U-shaped flange containing a large inwardly open groove having a width and height equal to about one-fifth the depth of the container.

3,638,904
CONE ELEMENT FOR CONCRETE FORMS
James W. Franklin, Albuquerque, N. Mex.; David R. Wells, and Elmer H. Schell, both of Westminster, Colo., assignors to Form-Eze Systems, by said Wells
Continuation-in-part of application Ser. No. 563,011, June 11, 1966, now Patent No. 3,482,813, Continuation-in-part of application Ser. No. 511,480, Dec. 3, 1965. This application Apr. 14, 1969, Ser. No. 827,443
Int. Cl. E04g *17/06*
U.S. Cl. 249—213 **5 Claims**

A cone-type device for use with form ties in concrete-forming systems to prevent escape of concrete and to facilitate form tie placing and form spacing operations. A cone device of size slightly smaller than the size of tie openings in the form elements is disposed on a form tie and is provided with a tapered end to facilitate introduction of said cones through the openings in the forms whereby the ties may be emplaced from a work station outside the form struc-

ture. The cone device is further used cooperatively with a form tie and a form lock as a spacer component to maintain



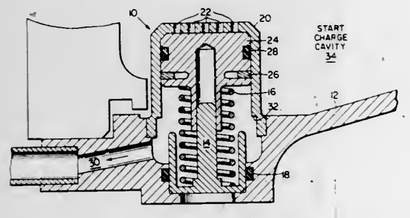
accurate spacing of the form walls before concrete is poured notwithstanding its freedom from engagement with the form walls.

3,638,905

PROPULSION SYSTEM SAFETY VENT

De Lacy F. Ferris, Van Nuys, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 17, 1970, Ser. No. 46,945
Int. Cl. F16k *35/00*
U.S. Cl. 251—94 **5 Claims**



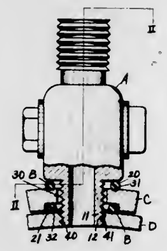
A spring loaded missile poppet valve is located adjacent the gas generator of a missile and is adapted, during missile storage, to vent overboard any fluid or gas the pressure of which exceeds the valve spring preload. During firing operations, the ignited starting charge creates a fuel and oxidizer expelling pressure which seals the vent by locking the poppet closed. Such action prevents loss of pressurization gas.

3,638,906

CORPORATION COCK FASTENING ARRANGEMENT

Shinkichi Yano, 137-1, Sakurazuka Dori, 7-chome, Toyonaka-shi, Osaka-fu, Japan

Filed May 13, 1969, Ser. No. 824,166
Int. Cl. F16k *51/00;* **F16l** *29/00*
U.S. Cl. 251—145 **3 Claims**



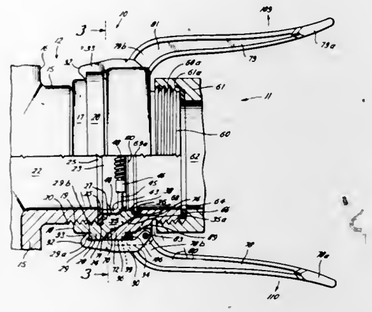
The externally threaded portion of the lower part of a corporation cock main body is screwed into a threaded hole bored in a part of a water-service pipe, with an annular packing of highly elastic material interposed under compression between the corporation cock main body and the water-service pipe, the repelling recovering elasticity of said annular packing serving to firm the fastening of the corporation cock to the water-service pipe and prevent leakage of water through the threaded connection.

3,638,907

QUICK COUPLING APPARATUS

Harold R. Graham, Houston, and Gerald A. Graham, Smith County, both of Tex., assignors to said Raymond L. Graham, by said Gerald A. Graham

Filed Oct. 10, 1969, Ser. No. 865,393
Int. Cl. F16l *29/00*
U.S. Cl. 251—148 **3 Claims**



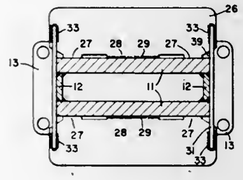
An assembly, including a male member for receiving a coupling latch mechanism mounted with a female member and a valve means mounted with the male member responsive to pressure to thereby open the valve means to enable fluids or gases to flow therethrough.

3,638,908

GATE VALVE BODY RIB REINFORCEMENT

Marvin H. Grove, Houston, Tex., assignor to M&J Valve Company, Houston, Tex.

Filed Apr. 29, 1970, Ser. No. 33,012
Int. Cl. F16k *27/04*
U.S. Cl. 251—329 **3 Claims**



A gate valve having a fabricated body comprising flat parallel end walls with aligned openings (i.e., flow passages) adapted to be connected to associated piping. The end walls are reinforced against forces applied to the piping which tend to deflect the end walls. The reinforcement consists of ribs which are applied to the end walls to reinforce them against both outward and inward deflection.

3,638,909

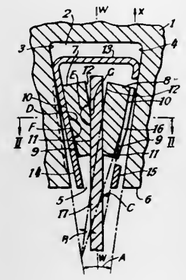
GRIPPING MEANS

Herbert Oliver Richard Dew, "Ross," George Street, Hintlesham, Ipswich, England

Filed Nov. 13, 1970, Ser. No. 89,386
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **23 Claims**

In a gripping means comprising a gripping jaw, or a pair of gripping jaws, mounted in a slot in a support means, said slot having an open mouth into which an object to be gripped can be entered for engagement by the gripping jaw or jaws and

opposed plane walls converging towards said open mouth, the or each gripping jaw has an inwardly facing surface comprising inner and outer portions inclined to one another at an obtuse angle and an outwardly facing surface comprising inner and outer portions also inclined to one another at an obtuse angle such that the gripping jaw has the inner portion of its inwardly facing surface inclined to the outer portion of its outwardly facing surface at an angle B which is smaller



than the angle C between the outer portion of its inwardly facing surface and the inner portion of its outwardly facing surface and spring means is provided normally urging the outer portion of the inwardly facing surface of the or each gripping jaw in a direction towards the object to be gripped.

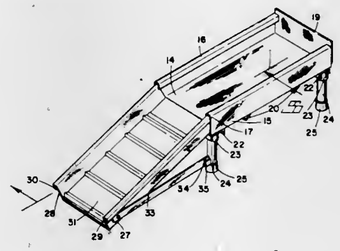
The gripping means is particularly suitable for use in withdrawing piles from the ground. It may also be used in quick-release shackles and tensioning devices.

3,638,910

CAR WHEEL SUPPORT

Guy I. Nellis, and Eugene E. Wiesenhofer, both of Phoenix, Ariz., assignors to said Nellis, by said Wiesenhofer

Filed June 1, 1970, Ser. No. 41,990
Int. Cl. B66f *19/00*
U.S. Cl. 254—88 **4 Claims**



A compact telescopic lightweight car wheel support.

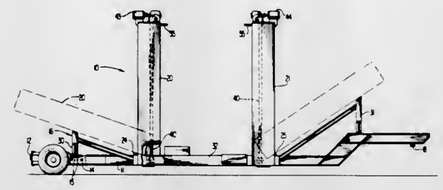
3,638,911

ASPHALT PLANT ERECTOR

Erbie G. Mize, and James D. Brock, both of Chattanooga, Tenn., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Feb. 6, 1970, Ser. No. 9,171
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 R **7 Claims**

An erector system and apparatus for erecting sectional asphalt plants, or the like. A wheeled support frame is positioned at the plant site and lowered into contact with the ground surface. Four support legs are moved from inclined traveling positions on the framework to upright spaced rectangular positions. A pair of parallel horizontal lifting beams are connected at their ends to the lower ends of the support legs. A series of wheeled plant sections are sequentially moved laterally across the framework across the lifting beams and the lifting beams and the plant sections are sequentially raised to the upper ends of the support legs to support the lowermost plant section. The process is repeated until all of the plant sections have been assembled and raised



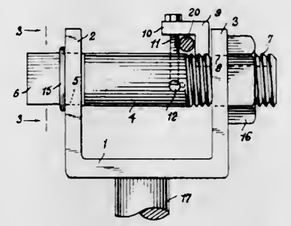
whereupon plant support legs are positioned beneath the lowermost plant section and the assembly is lowered to rest upon the plant support legs. The framework support legs are then lowered to their inclined positions, the framework raised back onto its wheels, and the framework and its related apparatus is then moved from beneath the assembled plant.

3,638,912

TENSIONING DEVICE FOR GUY WIRES

Albert M. Moreno, 2601 Sea Island Dr., Fort Lauderdale, Fla.

Filed May 25, 1970, Ser. No. 40,313
Int. Cl. B66f *13/00*
U.S. Cl. 254—161 **3 Claims**



A tensioning device for guy wires, cables and the like consisting of a substantially U-shaped bracket holding a spindle or bolt which is both rotatively and axially movable in the legs of the bracket. A nonround or square opening in one of the legs of the bracket normally engages a complementary nonround or square part of the spindle and prevents the spindle from normally turning. The spindle or bolt, when axially and manually moved, causes the nonround portion of it to be shifted out of the nonround opening in the bracket and the spindle can then be turned to wind up the guy wire upon it to the extent necessary to bring the wire to the required tension. A bracket mounted on the spindle carries a screw which engages the bracket and causes the same to clampingly hold the wire attached to the spindle or bolt.

3,638,913

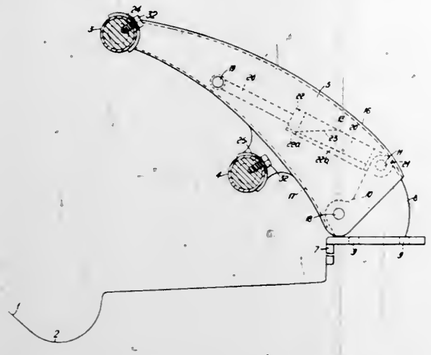
HIGHWAY GUARDRAIL DEVICES

Gunter Persicke, Dartford, England, assignor to Christiani & Nielsen Limited, London, England

Filed Jan. 19, 1970, Ser. No. 3,837
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **9 Claims**

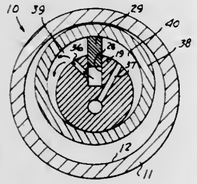
A guardrail support comprising a ground anchor with a bracket pivoted at one end thereto, at least two guardrail

connectors secured one to the free end of the bracket and the other between the ends of the bracket, and a resilient device between the anchor and bracket to maintain the



bracket at rest supporting the rails by the connectors with the upper rail closer to the highway than the lower rail and an impact of a vehicle from the highway permitting upward movement of the bracket and the rails.

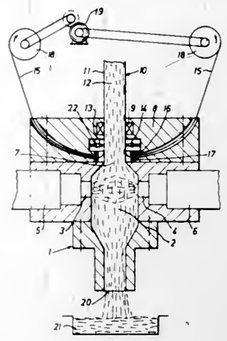
3,638,914
ROTATING PNEUMATIC VIBRATOR
Theodore S. Wadensten, 26 Snyder Ave., Ramsey, N.J.
Filed June 2, 1970, Ser. No. 42,791
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **6 Claims**



A rotating pneumatic vibrator in which a cylindrical housing is provided with an axial shaft spaced inwardly from the walls of the housing to provide a circular space between the shaft and the housing. A cylindrical rotor having a diameter greater than the shaft and smaller than the housing is mounted on the shaft for movement thereabout. A longitudinally extending radially moveable vane is mounted in the shaft and is arranged to be pneumatically pressed against the rotor. Air forces the vane against the rotor and escapes into the chamber formed between the shaft and the rotor; the air forces the rotor to move about the shaft and then escapes to the atmosphere with the rotor and vane returned to their beginning point. The motion is continuous and produces vibrations due to the movement of the rotor on the shaft.

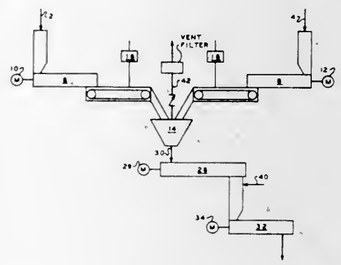
3,638,915
APPARATUS FOR INTRODUCING SUBSTANCES INTO A FOAMABLE MIXTURE FOR FORMING A FOAM MATERIAL
Karl Breer, Cologne, and Udo Lauterbach, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 15, 1970, Ser. No. 28,700
Claims priority, application Germany, Apr. 26, 1969, P 19 21 387.7
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **10 Claims**

For supplying a foamable mixture for the production of foam material with fillers, these fillers are packed in a flexible tube. This packed tube is conveyed to the mixing chamber in form of an endless rod and the tube is removed



just before the fillers are introduced into the mixing chamber.

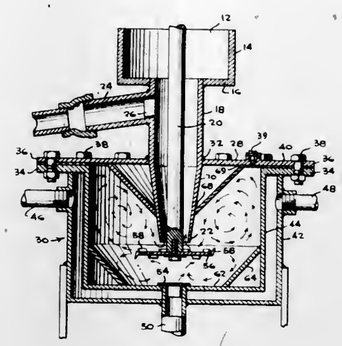
3,638,916
METHOD AND APPARATUS FOR BLENDING MATERIALS
Juan S. Ursic, Bogota, Colombia, and Cloral O. Rains, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Sept. 1, 1970, Ser. No. 68,641
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **5 Claims**



A blender continuously receives a plurality of components from material hoppers, continuously blends the components together at a preselected ratio, and discharges the blended material to a blended-material feeder which continuously discharges the blended material at a controlled rate to associated apparatus. The blended-material feeder is regulated to continuously discharge the blended material at a rate substantially equal to the summation of the rates of the material components entering the hopper.

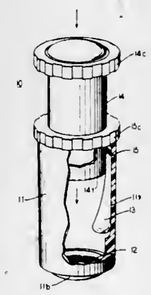
3,638,917
METHOD AND APPARATUS FOR CONTINUOUSLY DISPERSING MATERIALS
James C. Osten, 317 Sleepy Hollow, Temple Terrace, Fla.
Filed June 18, 1969, Ser. No. 834,470
Int. Cl. B01f *7/16*
U.S. Cl. 259—8 **22 Claims**

The method and apparatus of continuous high-shear dispersion of materials such as paint pigments in conventional vehicles and the like comprising: establishing a rotating zone of high-shear action along a horizontal plane with a conventional high-shear agitator, continuous admitting below the plane a supply of materials to be dispersed, inducing the materials to enter the zone, forming a consistent dynamic essentially curved laminar flow path for said materials after leaving the influence of said zone, repeating the influence of the high-shear action of said zone upon the same materials for a predetermined time to cause the materials to pass continuously through said path, confining the materials with the shape of the vessel to remain within said path to force said materials to repeatedly contact said zone, an outlet for



withdrawing a portion of said materials continuously from above said zone during the movement of said materials near said zone and prior to a reentry into said zone, whereby to provide highly dispersed materials having been subjected repeatedly to the action of said zone which controls the period of retention within the vessel by means of the location of the exit path and by controlling the input and withdrawing.

3,638,918
MIXING OF SUBSTANCES
Melvin Denholtz, Livingston, N.J., assignor to Dental Design Systems, East Orange, N.J.
Filed Mar. 9, 1970, Ser. No. 17,465
Int. Cl. B65d *25/08, 81/32;* **B01f** *3/12*
U.S. Cl. 259—48 **10 Claims**

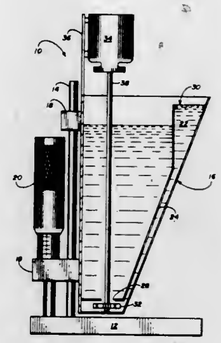


Method and apparatus for the intermixing of substances using a capsule formed by a receptacle with an internal sack and a movable, desirably hollow plunger that acts tangentially against the sack

The receptacle, illustratively of plastic, contains a first substance, such as a powder, and the sack, which is metallized to prevent loss of its contents, contains a second substance, such as a liquid. Illustratively, the liquid is monomer and the powder is a resin constituent. When the two substances are mixed, they produce a composite resin which may be used, for example, for dental fillings.

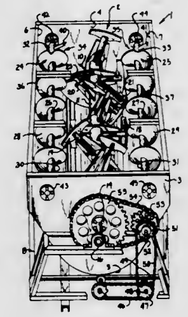
When the plunger, also of plastic, is depressed into the receptacle, it engages and squeezes the sack, expelling its contents into the receptacle, and thereafter sandwiches the sack between the plunger and a sidewall of the receptacle.

3,638,919
SLURRY AGITATOR
Larry K. Phipps, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 18, 1969, Ser. No. 850,874
Int. Cl. B01f *5/12*
U.S. Cl. 259—95 **2 Claims**



A slurry agitator includes a slurry container and an upwardly extending passageway. The passageway interconnects an opening at the bottom of the container and an open top positioned over the container. Slurry is continuously circulated through the passageway by a vane pump mounted in the passageway. The pump is driven by a motor mounted over the container. The motor is coupled to the pump by a shaft that extends through the opening. The position of the container is micrometer adjustable to control the position of slurry flowing out of the top of the passageway.

3,638,920
MATERIAL-MIXING APPARATUS
Ramsey H. Davis, 626 N. Nettleton, Bonner Springs, Kans.
Filed Nov. 27, 1970, Ser. No. 93,243
Int. Cl. B01f *7/04*
U.S. Cl. 259—104 **11 Claims**



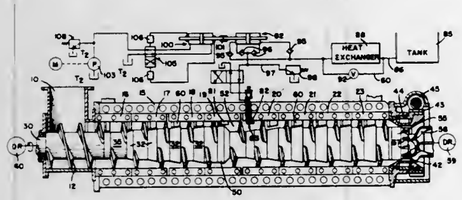
A material-mixing apparatus for mixing feeding ration includes an agitator rotatably mounted in a mixing chamber

and adapted to operate submerged beneath a mass of materials to be mixed and having a first plurality of upwardly and forwardly directed paddles and a second plurality of downwardly and rearwardly directed paddles and a screw conveyor adjacent each of opposed sidewalls of the mixing chamber with the screw conveyors being positioned at a higher level than the agitator and having edge portions of a flight thereof below an upper surface of the mass of materials. The agitator and the screw conveyors are rotated at different speeds to thoroughly blend the mass of materials within the mixing chamber.

3,638,921
APPARATUS FOR TREATING ELASTOMERIC MATERIALS

Dean K. Bredeson, and Robert Kent Slaby, both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Feb. 25, 1969, Ser. No. 802,029
Int. Cl. B01f *7/08*
U.S. Cl. 259—109 **3 Claims**

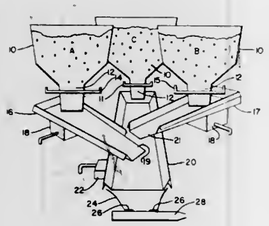


Apparatus for adding liquids such as oils to elastomeric materials such as rubber includes a continuous screw press with intermediate chambers where the material is worked under pressure. Liquid is supplied near the center of the chamber through injector bars, and is mixed into the material as it proceeds out of the chamber toward the press exit. The elastomeric materials may be first processed in the press to remove included moisture.

3,638,922
PROPORTIONATING BLENDER

Henry G. Guglietti, Fitchburg, Mass., assignor to Plastics Materials Systems, Inc., Fitchburg, Mass.

Filed Nov. 13, 1968, Ser. No. 775,265
Int. Cl. B28c *7/04*
U.S. Cl. 259—154 **11 Claims**

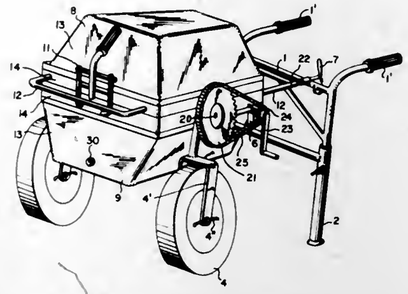


A blender is provided for proportionating and mixing fluid-particulate materials such as thermoplastic particles, wherein streams of material are dispensed from a plurality of hoppers to a plurality of vibrating channels, the channels converging to a final vibrating channel which blends all the materials.

3,638,923
MULTIPURPOSE CART AND MIXER

Pierre Pommier, 162 rue du Marechal Foch 95, Taverny, France

Filed Oct. 15, 1970, Ser. No. 80,940
Claims priority, application France, Feb. 11, 1970, 7004889; Oct. 16, 1969, 6935964
Int. Cl. B28c *5/18*
U.S. Cl. 259—177 **10 Claims**

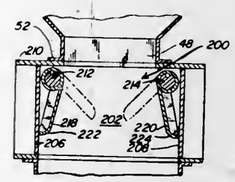


A cart having two coaxial wheels and two columns mounted on a frame supports a hopper consisting of two trough-shaped receptacles connected by releasable hinges, a latch, and a gasket. One of the troughs is rotatably mounted on the frame by trunnions and may be turned about the trunnion axis by bail handles provided on each trough or by a crank on the frame connected to one trunnion by a chain-and-sprocket drive. A removable partition in the container facilitates manual turning of the container by dividing the load.

3,638,924
SCRUBBERS WITH ADJUSTABLE VENTURIS

Ralph R. Calaceto, Ridgewood; Reuben H. Durst, Washington Township, Bergen County, and David Millar, Ridgewood, all of N.J., assignors to Slick Industrial Co., Summit, N.J., by said Calaceto and said Millar

Continuation-in-part of application Ser. No. 620,383, Mar. 3, 1967, now Patent No. 3,405,918. This application Aug. 22, 1968, Ser. No. 754,559
Int. Cl. B01f *3/04*; **B01d** *47/10, 47/06*
U.S. Cl. 261—62 **1 Claim**

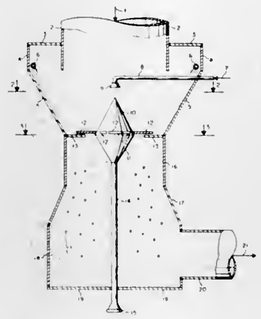


A gas scrubber having an adjustable Venturi throat which receives the gas which is to be cleaned and which also receives a liquid for cleaning the gas. The adjustable Venturi throat has a pair of inner straight parallel edges which extend perpendicularly with respect to the central axis of the Venturi and which are situated in a plane normal to the latter axis, these inner edges being equally and oppositely displaced by the adjustable Venturi to define the smallest throat area of the Venturi. This adjustable Venturi throat structure includes a pair of tiltable baffle plates having inner edges which define the inner edges of the Venturi throat and being equally and oppositely turnable about parallel turning axis which are also in a plane normal to the central Venturi axis. The liquid is supplied in sheets between which the gas flows centrally through the Venturi, so that the liquid is directed transversely across the gas at the Venturi throat with the accelerated gas bursting through the liquid so as to shatter it into minute droplets.

3,638,925
ADJUSTABLE ANNULAR VENTURI SCRUBBER

Frank C. Braemer, Teaneck, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,444
Int. Cl. B01d *47/10*
U.S. Cl. 261—62 **9 Claims**

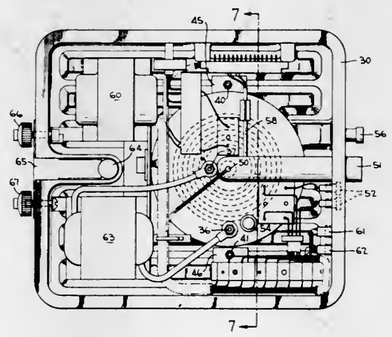


An annular venturi scrubber for scrubbing an impurity-laden gas stream with a liquid, in which spaced horizontal baffles are provided at the base of the central conical baffle and the lower extremity of the approach section, with the conical baffle being rotatable or adjustable about a vertical axis, so that the throat opening may be modified to compensate for changes in the gas flow rate.

3,638,926
HUMIDIFICATION

Alfred W. Melville, 255 Shirley Rd.; Frank W. Shacklock, 16 Watson Place, both of Papatoetoe, Auckland, and David H. O'Hare, 47 Litten Road, Howick, Auckland, all of New Zealand

Filed Sept. 26, 1968, Ser. No. 762,683
Claims priority, application New Zealand, Sept. 27, 1067, 150,212
Int. Cl. B01f *3/04*
U.S. Cl. 261—130 **15 Claims**

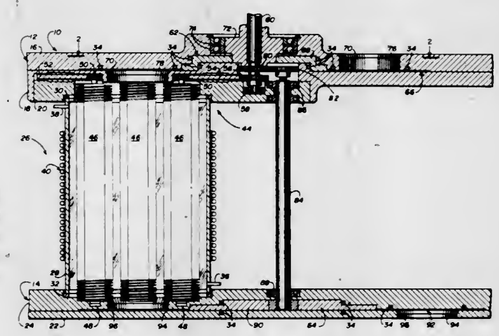


Humidification and heating apparatus preferably including a spirally wound resistance-heated plate with its axis vertical and one side in thermal contact with a sheet of water absorbent material. Both plate and material are partially immersed in water in a tank the lid of which is sealingly engaged with the spiral plate. When used for artificial respiration air from a respirator is admitted and discharged from the tank at points such that it must travel along the spiral passage formed by the plate, water surface and lid thus picking up heat and water vapor to emerge preferably substantially saturated at a temperature which does not exceed the maximum desired input temperature at the patient. To prevent condensation en route to the end user, sufficient further heat is imparted to balance that lost in passage. Preferably the interconnecting apparatus between the humidifier and patient is heated at least in portions along its length and preferably by electrically heated elements embedded in the wall of the usual flexible tube leading from the humidifier to the patient.

3,638,927
SLICE CONVEYOR FURNACE

Wallace Ogden Wells, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 1, 1969, Ser. No. 846,855
Int. Cl. F27b *9/14*; **F27d** *3/00*
U.S. Cl. 263—6 R **7 Claims**

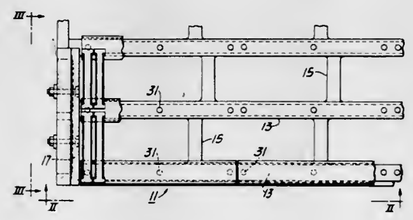


In a continuous flow asher furnace, an organic material removing environment is continuously maintained in a furnace chamber. Integrated circuit slices are continuously transported through the environment by lead screws positioned within the chamber. Disks mounted at opposite ends of the chamber are periodically indexed to rotate individual slices into and out of the furnace.

3,638,928
PALLET HEAT RIB SHIELD

Hartman Mitchell, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Aug. 28, 1969, Ser. No. 853,652
Int. Cl. F27b *9/00, 21/02*
U.S. Cl. 263—28 **4 Claims**



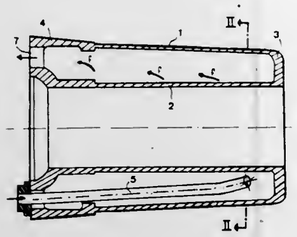
The ribs of a pallet used in sintering machines and the like has loosely fitting heat shields arranged in spaced-apart rela-

tion over the upper surface of the ribs, and such heat shields contact the pallet ribs only at selected spaced-apart locations.

3,638,929
DISCOVERY IN APPARATUS FOR COOLING A WALL SURFACE

Paul Brulhet, Nilvange, France, assignor to Societe Wendel-Sidelor, Societe Anonyme, Hayange, France

Filed May 11, 1970, Ser. No. 36,084
Claims priority, application France, May 14, 1969, 6915586
Int. Cl. F23m *5/08*; **C21b** *7/16*
U.S. Cl. 263—44 **8 Claims**

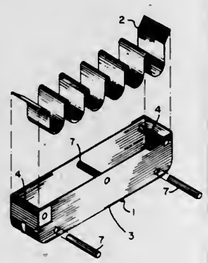


Apparatus for cooling a device that is exposed to extremely high temperatures (such as might be found, for example, within a blast furnace), characterized by the provision of means defining a helicoidal conduit adjacent the wall of the device. In accordance with an important feature of the invention, the cross-sectional area of the helicoidal conduit decreases as it approaches the hottest part of the device, whereby the flow speed of the cooling fluid at this point will be a maximum. In one embodiment, the cooling means comprises a tubular member that is inserted within an annular jacket that surrounds the nozzle means of a blast furnace tuyere. In a second embodiment, the cooling means is adapted for insertion in a blast furnace casing or cooling box to define a circulation passage for the cooling fluid, said passage including a helical outer supply portion arranged concentrically about an inner return portion.

3,638,930
REFRACTORY METAL BOAT FOR HEAT TREATING COILS

Halver Allen Hart, Jr., Waldoboro, Maine, assignor to Sylvania Electric Products Inc.

Filed Apr. 24, 1970, Ser. No. 31,559
Int. Cl. F27b *21/04*; **F27d** *5/00*
U.S. Cl. 263—47 R **5 Claims**



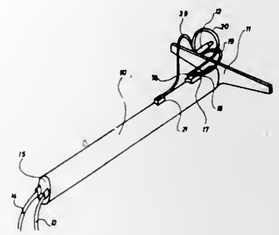
A boat for heat treating refractory wire coils comprises a molybdenum enclosure having a corrugated molybdenum sheet attached therein to form an integral compartmentalized boat. The corrugated sheet is locked to the boat in such a manner as to permit thermal expansion thereof independently of the boat.

Each curved hollow of the corrugated sheet can contain a plurality of coils in such a manner as to prevent distortion thereof during heat treating.

3,638,931
PORTABLE HAND GUIDED CUTTING TORCH

Gerhardt Lange, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Jan. 19, 1970, Ser. No. 3,831
Claims priority, application Germany, Feb. 11, 1969, P 19 06 732.4
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 R **11 Claims**



A portable hand guided cutting torch comprising a handle, a guiding device connected to one end of the handle, a carriage carrying the torch and movable along the guiding device and a driving device connected to the carriage for driving same along the guiding device.

3,638,932
COMBINED BURNER-LANCE FOR FUME SUPPRESSION IN MOLTEN METALS

Anthony J. Masella, Chicago, and Edward A. Grobel, Mundelein, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Filed Mar. 26, 1969, Ser. No. 810,727
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 L **1 Claim**

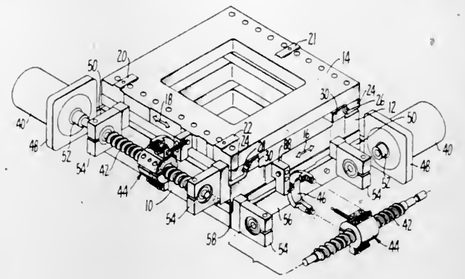


A burner-lance apparatus for burning large volumes of fluid fuels and especially adapted to fume suppression during refining of molten metals wherein a double flared passageway with a straight wall section therebetween is disposed in the nozzle for intermixing oxygen and natural gas. A tubular member for conveying oxygen terminates upstream of the passageway and natural gas is directed around the tubular member with the natural gas stream converging into the oxygen in the converging portion of the passageway. The intermixed gases pass through the straight wall section and then expand in the second flared or divergent passageway.

3,638,933
PRECISION X-Y POSITIONING TABLE

Robert W. Burnette, Berkeley; Harold L. Hoffman, San Pablo, and Richard V. Lukes, El Cerito, all of Calif., assignors to Yosemite Laboratory

Filed Aug. 10, 1970, Ser. No. 69,510
Int. Cl. B23q *3/18*
U.S. Cl. 269—60 **11 Claims**

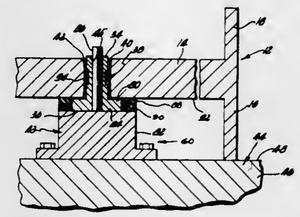


An X-Y positioning table assembly having a lead screw for advancing a follower to position at least one table or stage, the axis of the lead screw being slightly misaligned relative to the direction of stage travel, said assembly further comprising means interconnecting the follower with the table or stage as to allow the follower to be rotated, the axial misalignment of the lead screw producing a rotation of the follower to compensate for cumulative lead error in the lead screw. Additionally, a resilient member interconnects the follower with the table or stage, said member being vertically flexible to accommodate a slightly bowed lead screw and prevent a binding of parts in the positioning mechanism.

3,638,934
PRECISION POSITIONING TOOL

James Blum, Pasadena, Calif., and Robert P. Johnson, Pontiac, Mich., assignors to Bell & Howell Company, Chicago, Ill.

Original application Nov. 6, 1967, Ser. No. 680,830, now Patent No. 3,575,366. Divided and this application Mar. 3, 1970, Ser. No. 18,807
Int. Cl. B23q *3/18*
U.S. Cl. 269—311 **10 Claims**

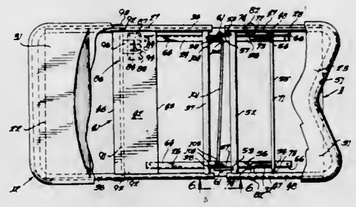


A production process for equipping a rough casting with a plurality of highly accurate surfaces at precisely predetermined locations on the casting without machining the casting. The casting includes a plurality of laterally spaced holes and is placed on a tool which supports a plurality of mounting bosses in the holes of the casting. The tool locates the bosses generally coaxial with the holes so that annular spaces are provided between the exterior of the bosses and the walls of the holes, which spaces are then filled with a bonding agent to secure the bosses to the casting. The tool positions selected faces of the bosses in desired relation to each other, preferably parallel to a reference surface defined by the tool. The tool seals an end of each annular space to prevent the bonding agent from flowing from the space as the agent cures. The tool comprises a rigid base such as, for example, granite on which are mounted fittings, each of which has a surface in a precisely predetermined position, and in a preferred embodiment the precisely positioned surfaces are in a common plane or a pair of parallel common planes. Each of these fittings receives one of the mounting bosses in engaging relation with the precisely positioned surface, and resiliently biases a seal around the mounting boss to seal the fluid bonding agent within the annular space.

3,638,935
PHYSICIAN'S EXAMINING TABLE CONSTRUCTION

Joseph J. Lelugas, Two Rivers, and Gene B. Lokken, Mishicot, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 29, 1969, Ser. No. 854,212
Int. Cl. A61g *13/00*
U.S. Cl. 269—324 **8 Claims**

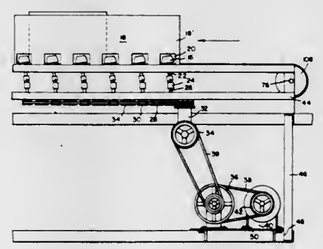


A physician's examining table having an upholstered top and cabinet, wherein the top has head and foot sections at least one of which is pivotable with said one section supported in inclined and horizontal positions. Said one head section has a frame member supported by support means located only at one side of the table and for this purpose is reinforced. A torsion bar having one end secured to said one section and the other end secured to the cabinet counterbalances the weight of said one section. The other section has support means comprising a support link which pivots on the frame of the section and engages the cabinet to hold the foot section in inclined positions.

3,638,936
METHOD FOR SEPARATING A BUNDLE OF PLURAL SHEETS

Charles H. Hart, Nazareth, Pa., and George R. Cashau, Philipsburg, N.J., assignors to American Newspaper Publishers Association Research Institute, Incorporated, Easton, Pa.

Filed Sept. 24, 1970, Ser. No. 75,099
Int. Cl. B65h *5/30*
U.S. Cl. 270—57 **8 Claims**



Method of separating a bundle of plural sheets of material, such as a folded newspaper, including lineally advancing the

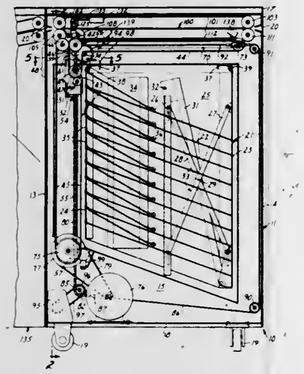
bundle in a vertical plane, rotatably grabbing the bottom edges of said bundle during said advancing, and pointedly probing the leading edge of said bundle at the top during said advancing so as to separate said sheets laterally from said vertical plane.

The method is particularly adapted to separating a printed newspaper prior to stuffing with inserts such as a TV guide, classified advertising, book review supplements, and the like.

3,638,937
COLLATOR

Leo J. Schulz, Woodbury Township, Washington County, and George L. Warner, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 1, 1969, Ser. No. 862,791
Int. Cl. B65h *39/06*
U.S. Cl. 270—58 **10 Claims**



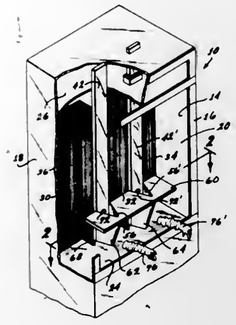
A collation distributor for use with a document-copying machine, a printer, stack feeder or the like which distributor is adapted to receive and collate sheets according to a predetermined pattern. The distributor comprises a plurality of shelves for receiving the copies, a conveyor of varying length for distributing sheets to the shelves of the receiver according to a predetermined pattern, and a transport conveyor which directs sheets fed the collating machine into the distributing conveyor or passes sheets through the collating machine into cooperating similar machines in accordance with a predetermined pattern. The collator can be adapted to accept sheets fed from either of two sides of the collator thus retaining or inverting in the receiver the uppermost side of the sheets as fed to effect a desired sheet orientation in the receiver.

3,638,938
MAGICAL DISPLAY APPARATUS

James Mark Wilson, 4149 Regal Oak Drive, Encino, Calif.

Filed Feb. 3, 1969, Ser. No. 795,837
Int. Cl. A63j *5/00*
U.S. Cl. 272—13 **6 Claims**

The device or apparatus of the invention is a magical display apparatus in which a pair of hands appears to be disembodied, yet capable of movement and manipulation of physical devices. The apparatus provides members having openings through which human hands can be inserted, the human being concealed behind the apparatus by way of mirrors which reflect surfaces making it appear that the apparent disembodied hands extend from members spaced from the background. The members having openings for the apparent disembodied hands themselves are mounted for directional movement such that their orientation remains the same relative to the concealing mirrors. Simulated artificial

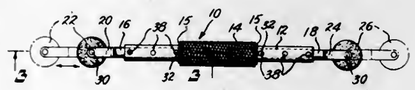


limbs (hands) are displayed. Means are provided to momentarily obscure or obstruct from view the openings while the said members are moving and at this moment live animate hands are substituted for the simulated inanimate ones.

3,638,939
BODY-ENGAGING EXTENSIBLE EXERCISING DEVICE

Charles J. Langley, 6649 Tower Drive, Alexandria, Va.

Filed Sept. 15, 1970, Ser. No. 72,403
Int. Cl. A63b *23/04, 23/02*
U.S. Cl. 272—79 R **3 Claims**



A device which is used for stretching various muscles of the anatomy including, a handle having two spaced rollers which are placed on the inside areas of the legs of the user and pulled toward the abdomen forcing the legs farther and farther apart thus stretching the muscles associated therewith. The distance the legs are forced apart can be regulated by the adjustable telescoping extensions on which the rollers are mounted. The telescoping extensions are adjustably fixed in position by means of a spring detent locking mechanism.

ERRATUM

For Class 350—184 see:
Patent No. 3,638,996

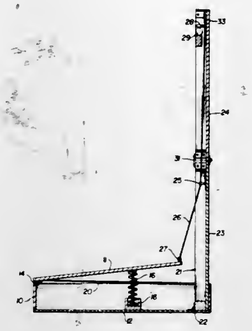
3,638,940
PORTABLE SPRING-BIASED INDOOR JOGGING MACHINE

Thomas M. Mehaulic, 32 East Wine St., Uniontown, Pa.

Filed July 2, 1970, Ser. No. 51,892
Int. Cl. A63b *21/00*
U.S. Cl. 272—83 R **6 Claims**

Spring-loaded platform provides a workload for jogging in place. The platform is attached to an upright post and to a counter positioned in the post at visible level. The counter

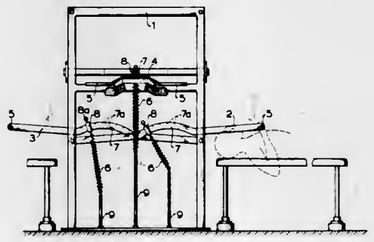
only operates upon a predetermined jog stroke length. The post is foldable and the platform pivotable into a handy carrying case. A horizontally positioned diaphragm provides a limit stop for the platform.



3,638,941
PHYSICAL EXERCISE APPARATUS WITH USER-ACTUATED ARM WHICH IS MOVABLE AGAINST A VARIABLE BIAS

Franz Kulkens, Kammeg 6, 4962 Obernkirchen, Germany

Filed Sept. 9, 1969, Ser. No. 856,378
Claims priority, application Germany, Sept. 10, 1968, G 67 50 684
Int. Cl. A63b *21/02, 21/10*
U.S. Cl. 272—83 R **6 Claims**



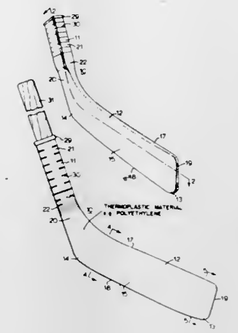
A stationary frame carries one or more actuating members which are forcibly movable with reference to the frame from a normal inactive position to a plurality of active positions in response to the application of requisite force upon an engagement portion provided. Springs are associated with the members and oppose their movement to active positions. Adjusting arrangements permit the opposing force offered by the springs to be varied.

3,638,942
REPLACEABLE BLADE AND SHANK FOR HOCKEY STICK AND A HOCKEY STICK MADE THEREWITH

Frank W. Bassett, St. Catharines, Ontario, Canada, assignor to Cooper of Canada Limited, Toronto, Ontario, Canada

Filed Nov. 17, 1969, Ser. No. 877,367
Int. Cl. A63b *59/14*
U.S. Cl. 273—67 A **10 Claims**

A replaceable blade and shank for a hockey stick is made of a thermoplastic synthetic polymeric material and has a socket into which an end of the shaft of a broken hockey stick can be inserted after the material has been heated to

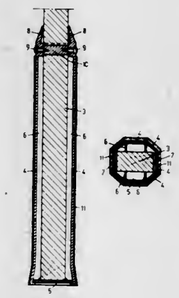


render it pliable, a secure fit between the shank and shaft resulting upon cooling of the material to a rigid condition.

3,638,943
HANDLE FOR A RACKET

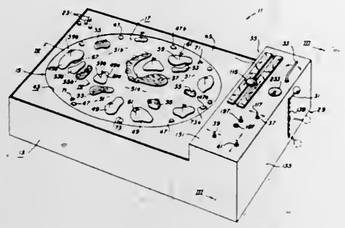
Karel Snauwaert, Roeselare, Belgium, assignor to Firma Snauwaert en Depla, Bevern, Roeselare, Belgium

Filed Dec. 8, 1969, Ser. No. 883,149
Claims priority, application Belgium, May 9, 1969, 73850
Int. Cl. A63b *49/08*
U.S. Cl. 273—73 J **3 Claims**



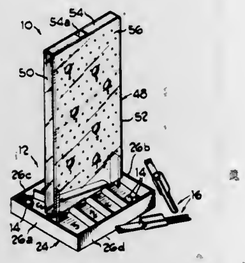
A racket having a frame with a handle extension and a shank secured on the handle extension. A one-piece handle fits on the shank, and the handle forms a tube open at both ends and provided on its inner side with ribs extending the longitudinal length of the handle. The handle is provided at its end nearest the frame with two lugs engaging the shank on opposite sides. The shank is provided between the lugs with an opening which runs transverse to the shank, and a plug extends through this opening. A screw is threadedly engaged in each lug at each end of the plug. The screws secure the handle to the shank. The end of the handle farthest from the frame projects inwardly and a bottom plate closes the handle at this farthest end and helps this end to hold its form.

3,638,944
SIMULATED GOLF GAME
James T. McQueen, Memphis, Tenn., assignor to George L. Rush, Memphis, Tenn., a part interest
Filed June 17, 1969, Ser. No. 834,035
Int. Cl. A63f *7/06*
U.S. Cl. 273—87 R **12 Claims**



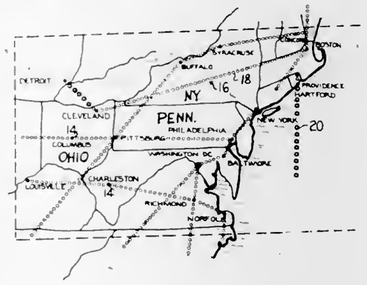
Indoor game apparatus particularly operative for simulating a regular outdoor game such as golf. The apparatus employs a playing field or golf course having a green-colored translucent plastic sheet simulating the golf course ground surface. Underneath the translucent ground surface sheet is arranged light beam means focused upwardly through the green plastic translucent sheet and exhibiting a small white spot of light on the top surface of the sheet and simulating a golf ball. The game apparatus includes means for guidingly supporting the light beam for movement in a horizontal plane and includes two bidirectionally operative electric motor units operative each motor unit for movement of the light beam in a direction perpendicular to the direction of light beam movement caused by the other motor. The light beam is arrangeable at any horizontal point by coordinated actuation of the two motors. The game apparatus includes selectively operative electric switch means for causing movement of the light beam "golf ball" in a desired direction. The game apparatus also includes selectively operative timer switch means for controlling the duration of movement of the "golf ball" light spot and thus the simulated distance or travel of the "ball." The timer switch means also preferably includes a series of automatically sequentially operative switch elements operative for causing an angular path of "ball" movement.

3,638,945
GAME DEVICE
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Aug. 8, 1969, Ser. No. 848,573
Int. Cl. A63f *7/02*
U.S. Cl. 273—95 R **4 Claims**



A game device of the type having an enclosure affording a tortuous passage for a playing piece to be deposited therein with openings in opposed faces of the enclosure for attempted interception of the playing piece as it travels through the tortuous passage. The openings are preferably misaligned. A supporting base is provided having separate compartments for storage of intercepted playing pieces and a further compartment for reception of those playing pieces which have completed traversal of the tortuous passageway. Scooplike interception tools are provided for insertion through the apertures in the enclosure for attempted interception of playing pieces.

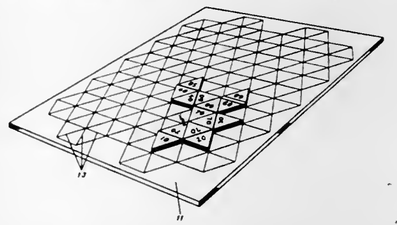
3,638,946
BOARD GAME APPARATUS
Bruce N. Bain, 3250 198 S.E., Issaquah, Wash.
Filed July 27, 1970, Ser. No. 58,626
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AC **8 Claims**



A game apparatus including a game board illustrating a map of the United States designating states and various locations, such as certain cities, interconnected by a network of graduated routes; playing cards each designating a city and state; an airplane flight time schedule book revealing departure time and route information corresponding to the locations and a clock indicating 24 hours of the day divided into 12 hours a.m. and 12 hours p.m.

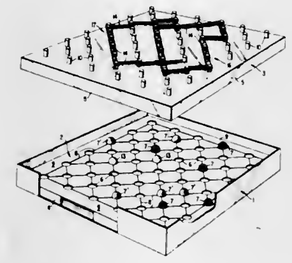
Each player will move or travel via a route from one location to another as per playing cards in his possession. The travel is accomplished by moving an object an equal total of route graduations as counted on a chance number indicator with the exception of predetermined travel acceleration when place of departure, time and destination are coincident with schedule book information and clock time indication. The winner is the first player to accomplish a predetermined total of trips.

3,638,947
GEOMETRIC PATTERNED BOARD GAME
Floyd W. Hardesty, 1238 2nd Ave., San Francisco, Calif.
Filed Mar. 2, 1970, Ser. No. 15,989
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **7 Claims**



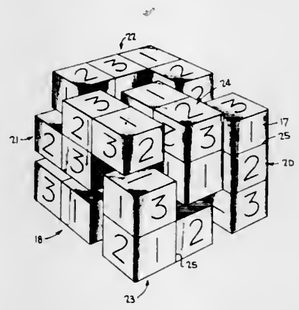
A board game comprising a board divided into a multiplicity of contiguous equal sized hexagonal areas marked in a variety of colors and playing members in the form of different subdivisions of the board's hexagonal areas also marked in the same colors, the playing members comprising triangular members and diamond-shaped members, some of the latter being of one color and others of two colors. The board areas and playing members are matched in shape and color in a sequence of plays among opposing players.

3,638,948
CHANCE-CONTROLLED MARBLE GAME
Richard D. Smith, 913 North Liberty St., Arlington, Va.
Filed Jan. 31, 1969, Ser. No. 795,582
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AA **6 Claims**



Chance-controlled game apparatus comprising a plurality of differently colored sets of marbles which are individually captured and retained by receiving cells in a base to form a like plurality of random-shaped patterns, a transparent cover overlying the base for viewing the patterns, upstanding posts on the cover in vertical alignment with each receiving cell, and color-matched rubberbands for selective connection of adjacent pairs of posts to form closed loops on the cover corresponding in color and shape to each of the patterns. Relocation of the marbles among the cells changes the shapes of the patterns.

3,638,949
COMPOSITE CUBE PUZZLE FORMED OF NUMERAL-BEARING COMPONENT CUBE GROUPS
Robert I. Thompson, 7444 St. Charles Ave., Apt. 3 F, New Orleans, La.
Filed Dec. 5, 1969, Ser. No. 882,447
Int. Cl. A63f *9/08*
U.S. Cl. 273—157 R **3 Claims**



A puzzle comprising a plurality of cube units several of which are interconnected into groups of cubes so that each group is capable of being assembled to form an overall cube, the exterior faces of each group having a designated numeral thereon so that the numerical total on the faces of adjacent cubes after being assembled is always the same along the several columns and rows of the six overall cube faces.

3,638,950
GOLFER'S STANCE GAUGE INCLUDING UNDUE SWAY INDICATOR
William Kenneth Hyotlaine, 461 West Ocean Blvd., Jupiter, Fla.
Filed Oct. 8, 1970, Ser. No. 79,017
Int. Cl. A63b *69/36*
U.S. Cl. 273—187 R **10 Claims**

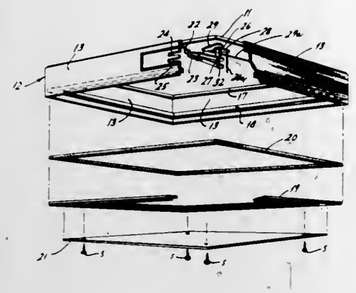


The stance gauge has a first strip to be straddled by the golfer's feet substantially normal to the desired line of flight of a golf ball. A replaceable rod is mounted on the front end of the strip for indicating the proper teeing position of the golf ball prior to swinging. A cross-strip is adjustable intermediate its ends on the first strip intermediate the ends of the first strip. A left foot positioning pad is pivotally adjustably mounted on the cross-strip to be engaged by the toe of the shoe of the golfer's left foot. A right foot positioning pad is pivotally and axially adjustably mounted on the cross-strip and is adapted to be engaged by the toe of the shoe of the golfer's right foot. A vertical rod is adjustably secured to the rear end of the first strip adapted to be positioned in rear of the golfer's left knee to indicate undue sway of the golfer's body during swinging. First indicia on the cross-strip cooperates with an edge of the left foot pad for indicating its proper angle adjustment; other indicia on the cross-strip cooperates with an edge of the right foot pad for indicating the spacing between the golfer's feet in relation to the golf ball during back swing. Further indicia on the cross-strip cooperates with an edge of the first strip for indicating lateral positioning of the cross-strip on the first strip. Still further indicia on the cross-strip cooperates with an edge of the first strip for indicating proper angular positioning of the said strip to allow for "hooking" and "slicing" the golf ball. And pins are provided for securing the strips down upon the ground surface after stance adjustments have been made.

3,638,951
PHONOGRAPH MOUNTING STRUCTURE
James L. Hess, Jr., Moorestown, N.J., and Harrison E. Dow, Wycombe, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed Dec. 22, 1969, Ser. No. 886,858
Int. Cl. G11b *1/00*
U.S. Cl. 274—2 **3 Claims**

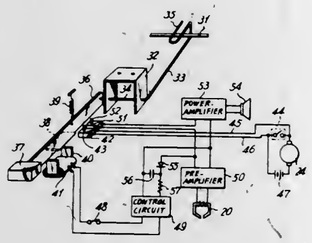
A phonograph turntable and record changer apparatus rigidly mounted upon cabinet structure provided with a dust

cover. Operating levers for control elements of the apparatus are accessible without removing the cover, since they extend through apertures in the front of the cabinet structure, and



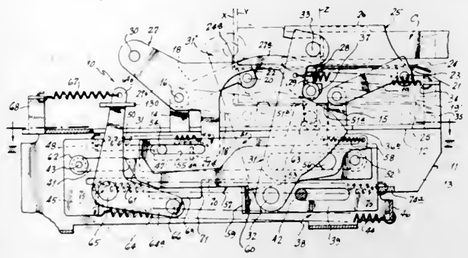
the entire structure is resiliently supported upon a base by foamed polyurethane spacer means disposed between confronting peripheral portions of the cabinet structure and its base.

3,638,952
TAPE DRIVE SPEED CHANGING APPARATUS
Itsuki Ban, 829, Higashi-Oizumimachi, Nerimu-ku, Tokyo, Japan
Filed Apr. 15, 1970, Ser. No. 28,599
Claims priority, application Japan, Apr. 17, 1969, 44/34690
Int. Cl. G11b *15/29, 15/44*
U.S. Cl. 274—4 D **7 Claims**



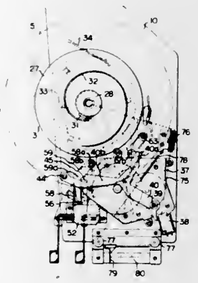
A tape drive speed changing apparatus for a magnetic tape player, comprising a motor attaining high or low speed, small and large drive pulleys connected to the output shaft of the motor, a flywheel attached to capstan for driving a magnetic tape, a belt normally trained between the small drive pulley and the flywheel, shift means moving the belt to the position where the belt is shifted from the small drive pulley to the large drive pulley, a changing switch actuated by the shift means to change over the rotational speed of the motor from low to high, lock means locking the shift means in the condition that the belt is moved to the position where the belt is trained to the large drive pulley, and control means controlling operation of the lock means whereby the magnetic tape may be rotated at normal playing speed or fast speed in relation to operation of the shift means.

3,638,953
RECORDING AND REPRODUCING APPARATUS USING MAGNETIC TAPE CASSETTE
Makoto Kodama, Kanagawa-ken, and Harunori Yamamoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 25, 1970, Ser. No. 39,992
Claims priority, application Japan, May 29, 1969, 44/42218
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E **10 Claims**



In an apparatus for recording and/or reproducing signals on a magnetic tape contained in a cassette, a cassette-handling mechanism includes a cassette holder into which a cassette is slidably insertable while actuating devices that load first, second and third springs. Upon the full insertion of the cassette into the holder, the first spring force is released to shift or depress the holder and the cassette therein from an elevated position to an operative position with respect to tape-driving elements and a recording and/or reproducing head. Upon actuation of an ejection control, the force of the second loaded spring is released to return the holder and the cassette therein to the elevated position of the holder, whereupon the force of the third loaded spring is automatically released to slidably propel the cassette substantially out of the holder.

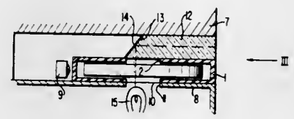
3,638,954
SPIRAL TRACK TYPE MAGNETIC RECORDING AND REPRODUCING DEVICE
Saburo Kato, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 22, 1969, Ser. No. 818,255
Claims priority, application Japan, Apr. 24, 1968, 43/27556
Int. Cl. G11b *5/80*
U.S. Cl. 274—4 J **3 Claims**



A spiral track type magnetic recording and reproducing device of the type in which upon depression of a first pushbutton (11) the recording or reproduction operation is

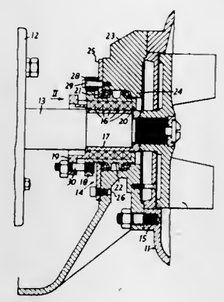
started; upon completion of said operation, a head is automatically returned to its initial position and said device is also stopped; upon depression of said pushbutton at an arbitrary time during the course of said operation, said operation can be interrupted temporarily upon depression of said pushbutton again, said interrupted operation can be restarted; and only a desired portion of the recording can be repetitively reproduced by depressing a second pushbutton (1) at an arbitrary time during said operation, keeping depressing for a desired time and then releasing said second pushbutton.

3,638,955
CASSETTE TAPE RECORDER
Eiichi Wada, Yokohama-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 7, 1969, Ser. No. 864,431
Claims priority, application Japan, Oct. 8, 1968, 43/87851
Int. Cl. G11b *5/78*
U.S. Cl. 274—4 C **1 Claim**



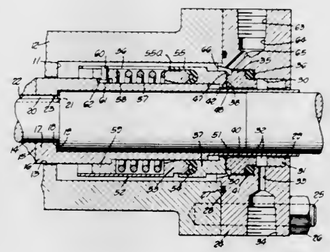
A tape recorder includes a light source disposed below a cassette for illuminating the tape occupying the takeup and return spools through a hole in the cassette wall and reflects the image toward a recorder viewing opening coplanar with the visible outer edge of the cassette.

3,638,956
STUFFING BOXES
Harold Lloyd Dagwell, London, England, assignor to Henry Sykes Limited, London, England
Filed Mar. 14, 1969, Ser. No. 807,381
Claims priority, application Great Britain, Mar. 14, 1968, 12,486/68
Int. Cl. F16j *15/16*
U.S. Cl. 277—30 **2 Claims**



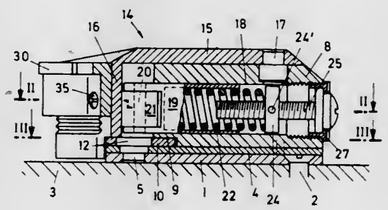
A stuffing box assembly between a driving device and a driven device is provided with an annular seal which encircles the cylindrical body of the stuffing box to provide flexible sealing between the cylindrical body and a socket in which it is accommodated, said seal comprising a length of rubberlike material formed into a ring with the then-adjacent ends of the length virtually abutting, whereby the seal can readily be replaced by feeding a fresh length of rubberlike material around the cylindrical body. The stuffing box also comprises a gland member formed with a peripheral recess to receive a stop in the form of a rubberlike sleeve on a bolt to hold the gland member and thus the stuffing box against tendency to turn with a rotating shaft but to permit limited radial movement of the stuffing box.

3,638,957
MECHANICAL SEAL WITH LUBRICATING MEANS
Joseph A. Marsi, Baldwin Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 19, 1970, Ser. No. 20,954
Int. Cl. F16j *15/34*
U.S. Cl. 277—96 **9 Claims**



A mechanical seal assembly of the type having a stationary sealing ring and a rotary sealing ring biased one toward the other to form an annular sealing interface between the relatively rotatable radial faces of the rings, one of the rings including a reservoir in its annular surface consisting of a lubricating groove or grooves providing groove portions oblique to the path of rotation of the rotary sealing ring, and having sealing face surfaces between the groove or grooves and the inner and outer peripheries of the annular interface.

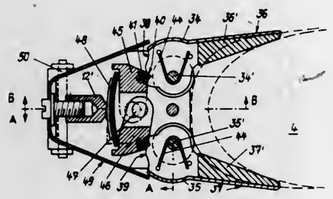
3,638,958
FRONT JAW FOR SAFETY SKI BINDINGS
Hans Dobler, Zurich, Switzerland, assignor to A. Attenhofer AG, Zurich, Switzerland
Filed June 5, 1970, Ser. No. 43,839
Claims priority, application Switzerland, June 11, 1969, 8935/69
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **7 Claims**



A front jaw for safety ski bindings and provided with a sole holder overlapping the shoe sole comprises a swivel jaw carrying the shoe sole holder and having a horizontal spring containing housing pivotally connected at its front end while the other end of the jaw has two downwardly extending projections which limit the horizontal swivel movement of the jaw relatively to a baseplate which is attachable to a ski. A spring operated roller in the spring containing housing engages the

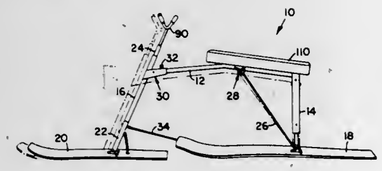
inner face of a V-shaped guiding surface provided on the rear end of the swivel jaw. The roller is normally disposed in the curved face formed at the apex between the leg portions of the V-shaped guiding surface for holding the jaw in its normal centered position with respect to the baseplate. The spring containing housing is pivotally mounted with its rear end on a vertical pin projecting from the baseplate.

3,638,959
TOE STOP MEMBER FOR SKI SAFETY BINDINGS
Henri Reuge, 26, rue des Rasses, 1450 Sainte-Croix, Vaud, Switzerland
Filed Aug. 19, 1970, Ser. No. 65,021
Claims priority, application Switzerland, Sept. 5, 1969, 12821/69
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



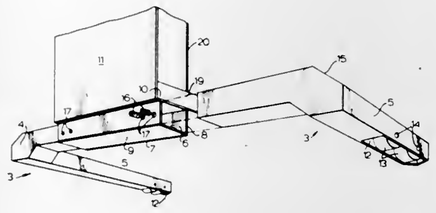
A toe stop member of a safety ski binding comprises a frame fixable onto a ski so as to be angularly fixed against movement in the plane of the ski. First and second rearwardly extending jaws are pivotally mounted on the frame about first and second axes perpendicular to the said plane of a ski, a front end of each jaw having a camlike surface comprising a hollow. Elastic means urge first and second rollers along lines of action passing at least approximately through the first and second axes into the hollows so as to releasably hold the jaws in an operative boot-gripping position in which the jaws can fit around at least a part of the toe end of a boot placed on a ski to which the stop member may be fitted. Abutment means, such as one or more rollers or even part of the jaws, are provided to bear against the toe end of a boot thus fixed to prevent forward motion thereof in relation to the ski. Part of the frame may be hinged about an axis in the plane of the ski to enable adjustment of the height of the jaws, for example to accommodate for a layer of snow between the boot and the ski.

3,638,960
FOLDABLE SKI-BOB
Earl V. Eaton, Petaluma, Calif., assignor to George E. Garcia, Novato, Calif.
Filed Feb. 25, 1970, Ser. No. 13,923
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **17 Claims**



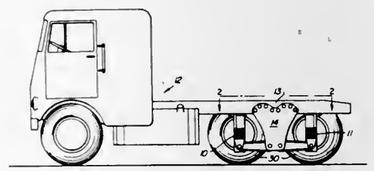
A ski-bob that is collapsible from its normal operating configuration to a folded configuration comprises a central frame section having a seat with a front frame section including a steering column and a rear frame section connected to opposite ends of the central frame section. A front steering ski is pivotally connected to the steering column and a rear ski is pivotally connected to the rear frame section which includes a resilient shock absorber. The frame is flexible to a degree that the front ski will extend forwardly from the rear ski in response to weight applied to the seat, a factor which increases running stability.

3,638,961
STRADDLE ASSEMBLY
Kurt K. Larsen, King, Ontario, Canada, assignor to Blue Giant Equipment of Canada Limited, Brampton, Ontario, Canada
Filed June 25, 1969, Ser. No. 842,429
Int. Cl. B60n *27/00*
U.S. Cl. 280—150 C **2 Claims**



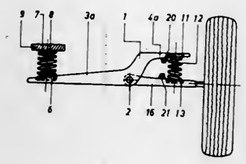
An adjustable straddle assembly for a materials-handling device which is telescopically adjustable to enable the device to be used with a variety of loads within its design limitations and which facilitates repairs to be made to the straddle members of the assembly without the necessity of taking the device itself out of service during the entire time required to make the repairs. The leg components of the assembly connect with the body components of the assembly in a close tolerance connection.

3,638,962
SUSPENSION SYSTEM FOR TANDEM AXLES OF AUTOMOTIVE VEHICLES
Edwin F. Gardner, 1228 West 8450 South, West Jordan, Utah
Filed Sept. 8, 1969, Ser. No. 855,990
Int. Cl. B60g *19/02*
U.S. Cl. 280—104.5 R **10 Claims**



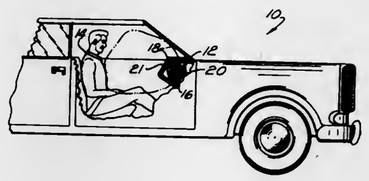
A superior riding suspension system for tandem axles of automotive vehicles, such as trucks, truck tractors, and trailers. Bellcranks are provided back-to-back between the axles, a set thereof being provided at each set of axle ends at opposite sides of the vehicle. The bellcranks are fulcrumed intermediate their lever arms to the frame of the vehicle, thereby individually suspending respective axles. Corresponding lever arms of the sets of bellcranks have their ends pivotally attached to the respective axle end portions; the other corresponding lever arms of the sets of bellcranks are coupled together for cooperative action and reaction, respectively. In this way the system provides for equalization of road shocks as well as a predetermined degree of self-steering. Either or both the coupling means and the coupled sets of corresponding arms have shock absorbing characteristics, so as to cushion road shocks.

3,638,963
SPRING SYSTEM
Gerrit Hendrik Van Leeuwen, Soesterenweg 2-4, Soestdijk, Netherlands
Filed Dec. 2, 1969, Ser. No. 888,199
Claims priority, application Netherlands, Dec. 3, 1968, 6817259
Int. Cl. B60g *3/00*
U.S. Cl. 280—124 **8 Claims**



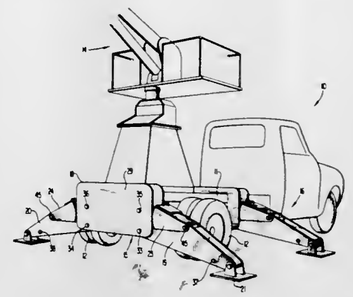
A spring suspension system comprises a first spring device and a spring arm adapted to turn about a pivot or a pivotal line of the spring-supported mass, and a second spring device connected between the spring arm and the spring-supported mass, the second spring device being capable of preferential action with respect to the first spring device.

3,638,964
VEHICLE SAFETY APPARATUS HAVING EXPANDABLE CONFINEMENT
Richard Chute, Huntington Woods, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Aug. 12, 1969, Ser. No. 849,394
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 AB **16 Claims**



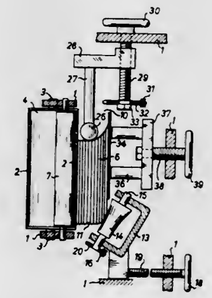
An improved safety apparatus for protecting an occupant of a vehicle during the occurrence of an accident includes an expandable confinement having a collapsed condition and an expanded condition for restraining an occupant of the vehicle during an accident. A unitary assembly for effecting expansion of the confinement includes a percussion-actuated explosive valve which is impacted with an actuator in response to the occurrence of an accident to effect operation of the valve to an open condition. Opening the valve enables fluid to flow from a source of fluid to the confinement to effect expansion of the confinement. The actuator can be either a mass which is impacted against the valve in response to the occurrence of an accident or a fixed member against which the valve is impacted. The flow of fluid from the source of fluid is at least partially stabilized by a flow regulator assembly to thereby tend to eliminate "peak" or excessively high rates of expansion of the confinement.

3,638,965
VEHICLE OUTRIGGERS
Samuel G. Cassady, Decatur, Ga., assignor to Roy A. Martin and W. R. Martin, Atlanta, Ga.
Filed Jan. 19, 1970, Ser. No. 3,647
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **8 Claims**



An outrigger mechanism for a truck or similar vehicle which includes a generally rectangular framework connectable to a vehicle and having generally vertical side portions and a generally horizontal top portion. Support legs are pivotally connected at their inner ends to the lower portion of each side of the framework and are moveable between upwardly extending stored positions and outwardly extending ground engaging positions on opposite sides of the vehicle. A locking link is pivotally connected to each support leg and is moveable between a position resting upon the upper horizontal surface of the framework when its support leg is in its upper stored position and a wedging position against the vertical side portion of the framework when its support leg is in its outwardly extending ground engaging position to lock the support leg in this position.

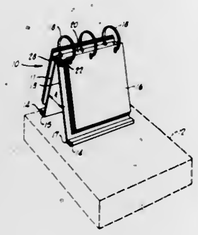
3,638,966
METHOD OF ROUNDING THE BACKS OF BOOKS AND A MACHINE FOR PERFORMING THE SAME
Frans Wiersma, Reiden, Switzerland, assignor to Firma Jos. Hunkeler, Wikon, Switzerland
Filed Dec. 9, 1969, Ser. No. 883,482
Claims priority, application Switzerland, Dec. 17, 1968, 18702/68
Int. Cl. B42d *1/00*; **B42c** *5/00*
U.S. Cl. 281—21 **10 Claims**



A method and a machine for rounding the backs of books by first rounding one side of the backs with a first set of shap-

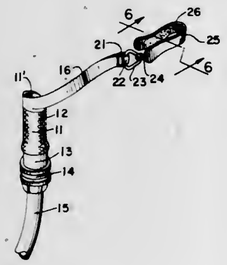
ing rolls progressively approaching the median central plane of the books; whilst the books are conveyed through the machine and by then rounding the other side of the backs with a second preferably similar set of shaping rolls as the books continue to be conveyed through the machine.

3,638,967
LOOSE LEAF RING BINDER
Donald L. Mullins, Wichita, Kans., assignor to Sanderson Films, Inc., Denver, Colo.
Filed Oct. 13, 1970, Ser. No. 80,287
Int. Cl. B42d *3/18*
U.S. Cl. 281—33 **9 Claims**



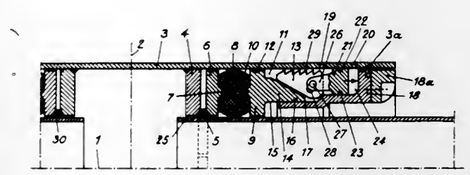
A loose leaf ring-type binder which also functions as a rigid viewing stand for a plurality of pages or flipover cards. The two covers of the binder include offset leg portions terminating at the hinge points with the back of the binder. When the covers are folded back at a certain angle, the leg portions of the covers are brought into juxtaposed contact with the back of the binder thereby restricting any movement of the back about the two hinge points to provide a rigid support for the cards carried in the binder.

3,638,968
FAUCET ADAPTER
Robert W. Barks, 112 Washington St., Delaware City, Del.
Filed Aug. 21, 1969, Ser. No. 851,979
Int. Cl. E03c *1/00*; **F16l** *21/00*
U.S. Cl. 285—8 **4 Claims**



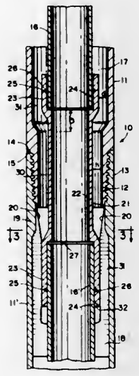
This invention relates to a faucet adapter device for flexibly connecting a pliant hose to a rigid faucet. The device includes a flexible tube having at one end a fastener made of elongated strips of flexible material which is wound around the joint between the device and a rigid faucet and secured in place. Affixed at the other end of the device is a rigid hose-threaded male coupling adapter for connection with a corresponding female structure located on the end of a pliant hose.

3,638,969
FLUID CONTROLLED PIPE CONNECTOR
Francisco M. Serrano, Paris, France, assignor to Compagnie Francaise des Petroles Societe Anonyme, Paris, France
Filed Nov. 24, 1969, Ser. No. 879,475
Claims priority, application France, Nov. 22, 1968, 174885
Int. Cl. F16l *17/02*
U.S. Cl. 285—18 **11 Claims**



A fluid controlled pipe connector which is capable of providing a removable connection between two adjoining pipe lengths regardless of their respective sizes. The connector utilizes a series of wedges that are activated in a gripping or nongripping position by motive fluid introduced into the appropriate orifice of the connector. Various sealing members are positioned between the connector and the pipes to provide a fluidtight connection.

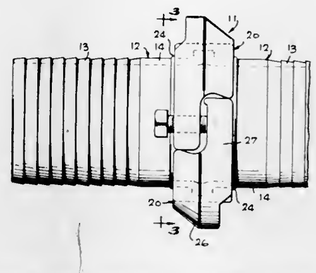
3,638,970
JOINT FOR DOUBLE-WALLED DRILL PIPE
Alvin V. Sandquist, and Floyd Walter Becker, both of Calgary, Alberta, Canada, assignors to Becker Drilling (Alberta) Ltd., Calgary, Alberta, Canada
Filed Feb. 12, 1968, Ser. No. 704,815
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 **5 Claims**



A length of double-wall pipe for a reverse circulation drill string having an outer pipe and a concentrically disposed inner pipe, the outer pipe of which has threaded box and pin ends and the inner pipe fixed coaxially in the outer pipe and disposed concentrically to provide an annular flow passage between said pipes by longitudinal spacing members engaging said inner and outer pipes and bridging said flow passage. A connector tube joining sections of inner pipe comprising a central portion having an inner diameter the same as the inner diameter of the inner pipe and having sleeve end portions formed with a coaxial bore having an inner diameter larger than the exterior diameter of the inner pipe for engaging the inner pipe as a free sliding fit and fluid seal means in

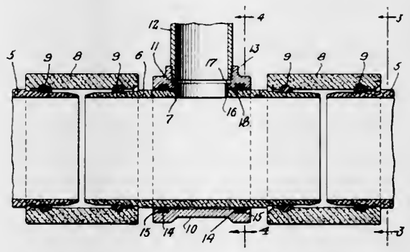
said sleeve end portions for frictionally engaging the ends of the inner pipe of adjacent pipe lengths connected together by threaded engagement of said box and pin ends.

3,638,971
COUPLING
Charles Harry Smith, Glendale, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed June 8, 1970, Ser. No. 44,148
Int. Cl. B60d *1/08*
U.S. Cl. 285—74 **5 Claims**



A coupling having identical collars on adapters with overlapping lugs and bolts to tighten the joint by exerting axial force tending to separate the overlapped lugs.

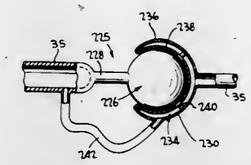
3,638,972
BRANCH PIPE FITTING FOR FLUID PRESSURE PIPELINE
Albert Earl Alpine, Norristown, Pa., assignor to Certain-Feed Products Corporation, Ardmore, Pa.
Filed Nov. 4, 1969, Ser. No. 873,831
Int. Cl. F16l *41/00*
U.S. Cl. 285—156 **1 Claim**



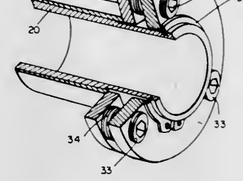
The device disclosed includes a conduit piece adapted to be connected into a pipeline and having an aperture in the sidewall for a branch connection, and a circumferentially unbroken and apertured sleeve surrounding the apertured portion of the circuit piece, with circumferentially unbroken packing rings between the sleeve and conduit piece at opposite sides of the apertures, providing for pressure equalization inside and outside of the conduit piece in the region of the connection.

3,638,973
JOINT MEANS FOR USE IN WORK SUPPORTING ARM
Charles Ellis Poletti, 5400 Pooks Hill Road, Bethesda, Md.
Filed June 4, 1969, Ser. No. 830,422
Int. Cl. F16l *27/00*
U.S. Cl. 285—184 **17 Claims**

A joint means for coupling two elements forming part of a work-supporting arm wherein the joint means is operable between a relaxed condition in which relative movement is permitted between the elements of the work-supporting arm and a rigidified condition in which the elements of the work-supporting arm are secured against relative movement. Pressurized fluid is utilized to effect rigidification with a continuous pressurized fluid system being operable to rigidify a plurality of joint means in a single work-supporting arm. Such a work-supporting arm is shown to be particularly useful in a surgical retractor wherein the arm includes retractor-retaining means, operable by the same pressurized fluid system to permit removal of the surgical retractor from the work-supporting arm.



3,638,974
MECHANICAL ROTARY SELF-INTERLOCKING DEVICE
Andrew Stratienko, 8503 Elliston Drive, Philadelphia, Pa.
Filed Apr. 1, 1971, Ser. No. 130,390
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.06 **3 Claims**

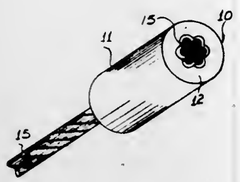


A keyless bushing comprises inner and outer wedge rings and securely holds a hubbed part, such as a gear, pulley, wheel, coupling and the like, on a shaft for transmitting torque and axial thrust. No key or keyway is required on either the hubbed part or the shaft. Calibrated springs preferably conical disc springs, of preselected size and number are provided and are used during the initial installation to avoid overloading and cracking of the hubbed part while at the same time assuring adequate gripping force to obtain the required clamping force between the hubbed part and the shaft.

3,638,975
WIRE ROPE FERRULE
Guenther Buettner, R.R. No. 1, Hemmingford, Quebec, Canada
Filed Apr. 8, 1970, Ser. No. 26,702
Int. Cl. F16g *11/02*, *11/14*
U.S. Cl. 287—75 **5 Claims**

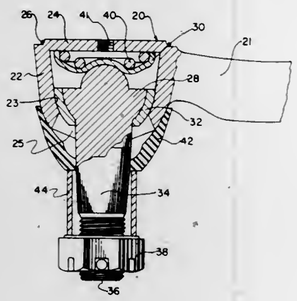
The invention relates to a swage ferrule for use in enclosing the end of a wire rope. The ferrule comprises a swagable metal body having a longitudinally extending bore preformed to provide integral, parallel, longitudinally extending, alternate ridges and grooves, the inner portions of the ferrule

ridges being adapted to lie within a circle of slightly less diameter than an imaginary circle enclosing the outermost



portion of the rope wires whereby, prior to swaging, the inner ferrule ridge portions lie within the grooves of the rope, causing straightening of the rope.

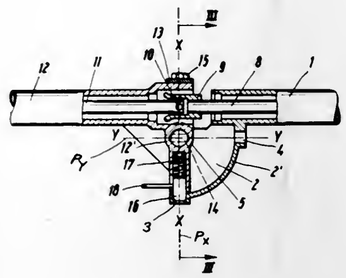
3,638,976
BALL JOINT
John R. Andrew, Columbus, Ohio, assignor to The Columbus Auto Parts Company, Columbus, Ohio
Filed Apr. 7, 1969, Ser. No. 813,900
Int. Cl. F16c *11/06*
U.S. Cl. 287—90 C **4 Claims**



A flexible joint construction such as is used in automotive steering linkages or the like wherein upper and lower electrically conductive housing portions are fused together at a junction such that the space between the inner housing surfaces is substantially equal to the stacked dimensions of the internal elements of the joints. The resulting swivel joints are characterized by precisely controlled swivel torque values and extended fatigue life during operational use.

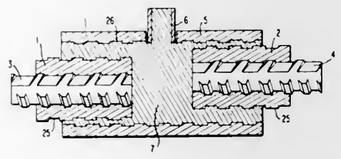
3,638,977
PIVOT ASSEMBLY FOR HAYMAKING MACHINES AND THE LIKE
Josef Purrer, Gottmadingen, Germany, assignor to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany
Filed June 19, 1967, Ser. No. 647,065
Claims priority, application Germany, June 24, 1966, M 69954
Int. Cl. F16c *11/00*
U.S. Cl. 287—99 **4 Claims**

A pivot assembly for the inwardly swingable outrigger beam of a rotary-rake haymaking implement having a pair of hollow beam sections relatively swingable to include an angle of 90° between them in one position thereof and axially aligned in another position thereof, a shaft extending through the beam sections and axially subdivided into a pair of interconnectable shaft sections disengaged from one another in said one position and mutually interconnected in said other position of the beam sections, and a ball joint interconnecting said beam sections for relative pivotal movement thereof between these positions about a vertical axis, laterally offset



from the shaft in said other position and perpendicular to the axis thereof, and a horizontal axis generally parallel to one of the shaft sections, the axes intersecting one another.

3,638,978
SLEEVE JOINT FOR CONNECTING STEEL INSERTS IN STEEL-CONCRETE CONSTRUCTION
Hans Guntermann, Essen-Steele, Germany, assignor to Elektro-Thermit G.m.b.H., Essen, Germany
Filed Dec. 21, 1967, Ser. No. 692,526
Claims priority, application Germany, Dec. 24, 1966, D 34794
Int. Cl. F16b *7/00*
U.S. Cl. 287—108 **10 Claims**

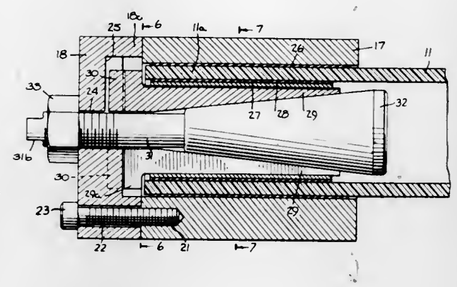


This invention relates to a sleeve joint for connecting steel inserts in steel-concrete construction which comprises shaped metal bodies secured to the ends of the inserts to be connected, sleeve means enclosing at least part of both of the shaped metal bodies and being of larger diameter than said bodies, and aluminothermically produced metal in the space between the sleeve means and said bodies.

3,638,979
FORCE-TRANSMITTING SYSTEMS
Edgar Francois, Wayne, N.J.; Edwin C. Uhlig, deceased, late of South Bend, Ind., and Doris L. Uhlig, administratrix, New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed Nov. 19, 1969, Ser. No. 878,046
Int. Cl. F16d *1/06*
U.S. Cl. 287—124 **15 Claims**

A force-transmitting system including a cylindrical fiber-reinforced resin tube to which stress is transferred simultaneously via both the outside and inside surfaces of the tube, is disclosed. The system utilizes a drivable fitting which includes an external rigid coupling sleeve and an internal radially expansible circumferential arrangement of elongated wedge elements, defining between the former and the latter an annular cylindrical space in which one end region of the tube wall can be received and radially clamped. Distribution

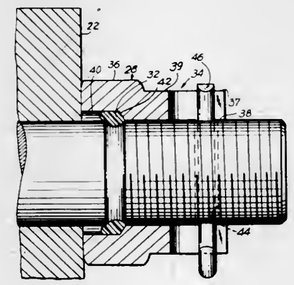
of stress transfer over the entire expanse of the clamped portion of the tube is provided for by means of a pair of substantially coextensive, circumferentially continuous, uniform thickness layers of elastomeric material bonded to the outside and inside tube surfaces, respectively. An expansible metal liner sleeve is bonded to the inner surface of the inner elastomer layer to prevent the latter from being extruded between the wedge elements, and the external surfaces of the



latter may be roughened for positive gripping engagement with the inner surface of the liner sleeve.

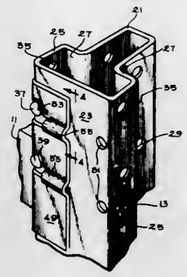
The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,638,980
SELF-RETAINED BOLT ASSEMBLY
Walter H. Kleinhenn, Flourtown, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Jan. 2, 1970, Ser. No. 270
Int. Cl. F16b *5/02, 39/04, 39/34*
U.S. Cl. 287—189.36 **6 Claims**



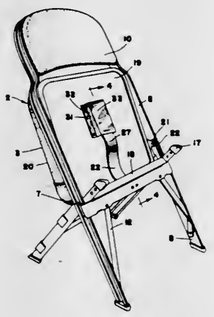
A self-retained bolt assembly including a bolt having a circumferentially compressible plastic ring carried in a groove at or adjacent the thread runout. The ring compresses as the bolt is inserted into or withdrawn from a workpiece. With the bolt installed in an aperture in a workpiece, with the ring having been passed completely through the workpiece, the ring diameter is greater than the diameter of the aperture, thereby holding the bolt in the workpiece even in the absence of a nut turned onto the bolt.

3,638,981
STRUCTURAL LOCK FOR CONNECTING HORIZONTAL AND VERTICAL MEMBERS
John J. Weider, Arlington Heights, Ill., assignor to Speedrack Inc., Skokie, Ill.
Filed Nov. 24, 1969, Ser. No. 879,116
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36 **4 Claims**



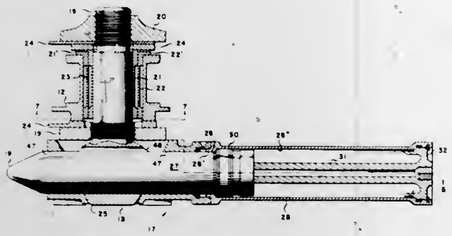
A structural lock for connecting a horizontal arm to a vertical column designed to positively prevent inadvertent disengagement. Two separate connections are made at opposite sides of the column to lock the end of the horizontal arm to the column. The first connection is pivotal about a vertical axis, and it is then required that the arm be pivoted into position to subsequently make the second connection on the opposite side of the column. Loading of the arm causes firmness of the lock to increase.

3,638,982
CHAIR WITH TILTABLE SEAT
Howard D. Chapman, and Vincent A. Panico, assignors to Clarin Corp., Chicago, Ill.
Filed Aug. 15, 1968, Ser. No. 850,529
Int. Cl. A47c *4/20*
U.S. Cl. 297—332 **6 Claims**



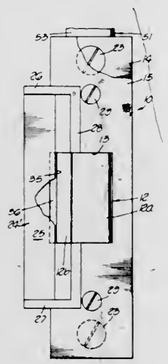
A spring device for lifting a chair seat into an upright position when not in use. The spring is an elongate flat strip of metal attached at one end to the chair frame. The opposite free end of the spring is in sliding pressure contact with the underside of the chair seat so as to cause the seat to move to an upright position in a smooth motion.

3,638,983
LOCKING MECHANISM AND ACTUATING MEANS THEREFOR
James W. Flournoy, and Gary F. Heyden, both of Atlanta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 2, 1969, Ser. No. 829,266
Int. Cl. E05c *19/00*; **E05b** *51/02*; **E05c** *15/00*
U.S. Cl. 292—302 **9 Claims**



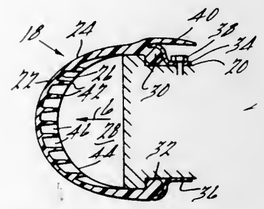
There is provided herein a receptacle base with self-aligning conical stud which is mutually retained by a pin containing an internal, concentrically mounted hydraulic actuator to permit maximum locking and unlocking force in minimal space. Double eccentric bushings in conjunction with double axial nuts provide three mutually perpendicular adjustments for the stud and receptacle. Conical male and female lock members provide repeatability of location one member to the other which in conjunction with the three mutually perpendicular adjustments minimize the required accuracy of location of the several elements which comprise the mechanism.

3,638,984
ELECTRIC RELEASE STRIKE
Robert E. Davidson, Santa Susana, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.
Filed Jan. 13, 1969, Ser. No. 790,611
Int. Cl. E05b *15/02*; **E05c** *3/06*
U.S. Cl. 292—341.16 **3 Claims**



An electric release strike in which a strike bolt is supported for swinging movement to a position projecting through a casing opening and to a retracted position, the bolt being spring urged to its projecting position. A latch in the casing is pivoted for swinging movement to latching and nonlatching positions, and in the latching position, to which it is spring urged, is pivoted overcenter to occupy a position in the path of movement of the strike bolt towards its retracted position. The latch is movable to a nonlatching position by a coupled actuator in the form of a solenoid plunger operatively associated with an energizable solenoid coil positioned exteriorly of the casing, the coil assembly being removably mountable from the exterior of the casing to permit ease of replacement or change to a coil having a different characteristic.

3,638,985
ENERGY ABSORBING BUMPER
David W. Barton, Birmingham, and George H. Muller, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed June 26, 1969, Ser. No. 836,895
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 **4 Claims**



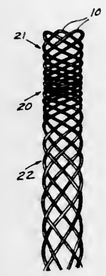
An energy adsorbing bumper particularly adapted to shield motor vehicle structural members from impact damage. The bumper includes a resiliently deformable, arcuate member secured to one of the structural members and defining therewith a chamber. Web means extend from the arcuate member and into the chamber. Initial collapse of the arcuate member as a whole due to an impart face is followed by a secondary collapse of the web means due to contact with the structural member, thereby providing for the adsorption of large amounts of impact energy. The connection between the arcuate and structural members is hidden from view by a flap integrally formed with and extending from the arcuate member.

3,638,986
COMBINATION PICK AND SHOVEL
Joseph R. Palagonia, 7229 67th St., Glendale, N.Y.
Filed July 20, 1970, Ser. No. 56,322
Int. Cl. A01b *1/00*; **A01d** *9/00*
U.S. Cl. 294—49 **4 Claims**



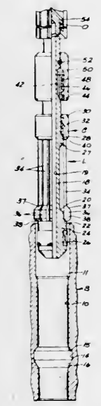
A pick, soil strainer, and shovel combination consisting of a pair of spaced-apart parallel channels which taper to a point at one end for penetration into the soil and which converge at their opposite end for securement to the handle of the tool. One of the channels includes a plurality of perforations which permits the soil to be sifted and strained. Connected to the lower end of the handle and extending between the channels is a soil pick which works in conjunction with the parallel channels.

3,638,987
OPEN-MESH WOVEN WIRE TUBE
Alfred W. Fidrych, Stonington, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed May 1, 1970, Ser. No. 33,822
Int. Cl. F16g *11/03*
U.S. Cl. 294—86 CG **9 Claims**



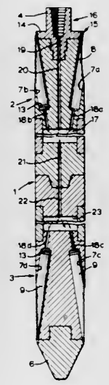
An open-mesh wire grip having the wire strands so woven that at an intermediate place adjacent to that end thereof opposite to the draft end of the grip there is provided a section of predetermined high-angle weave located between and joined to sections of larger mesh. Preferably in that section of the grip forming such opposite end thereof the weave is such that the strands form a gradually increasing mesh size from said section of high-angle weave.

3,638,988
LATCH ASSEMBLY FOR WELL TOOLS
Cicero C. Brown, c/o Brown Oil Tools Inc., P.O. Box 19236, Houston, Tex.
Filed Oct. 27, 1969, Ser. No. 869,563
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.18 **5 Claims**



A latch assembly which is designed to be inserted into the bore of a well tool having a preexisting landing shoulder and a latching groove spaced below the shoulder for engagement by cooperating seating and gripping elements of a collet member which is slidably supported on a mandrel. The mandrel carries a split latch ring for engagement with the collet member in response to relative movement of the mandrel in order to effect release of the latch assembly from the well tool when desired.

3,638,989
APPARATUS FOR RECOVERING A DRILL STEM
Alvin V. Sandquist, Calgary, Alberta, Canada, assignor to Becker Drills Limited, Calgary, Alberta, Canada
Filed Feb. 5, 1970, Ser. No. 8,866
Int. Cl. E21c *19/00*; **E21b** *31/00*
U.S. Cl. 294—86.24 **4 Claims**

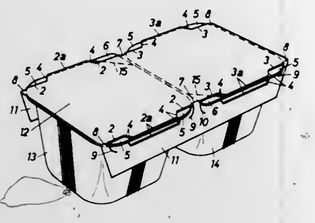


A tool is disclosed for recovering a drill pipe embedded in the ground and detached from a drill string extending from the pipe to a point above ground. The tool has an upper and a lower body portion in axial alignment and a fluid chamber in the tool between the body portions. Each body portion has longitudinal cavities spaced radially about the axis of the body portions and communicate with the fluid chamber. The cavities are at acute angles to the axis of the tool the vertex of each angle being on the side of the cavity nearest the fluid chamber and each cavity having an opening at the end remote from the chamber which defines a groove along the body portion. A wedging member is positioned in each cavity and is slidable therein so that the shank of the wedging member projects laterally and outwardly from the body portion when fluid is passed into the cavities. The shank of each wedging member has a flat toothed portion from gripping the inner wall of a drill pipe. The tool is connected to the end of a drill rod and lowered down the upper drill string until the upper body portion is positioned in the upper drill string and the lower body portion is positioned in the detached drill pipe. Fluid is passed down the drill rod and into the longitudinal cavities whereby the wedging member is projected and grips the inner wall of the upper drill string and drill pipe. The drill rod upper drill string and drill pipe can then be raised from the ground.

3,638,990
CARRIER FOR TUBS OR POTS
Jean Huault, Paris, France, assignor to Lever Brothers Company, New York, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,016
Claims priority, application France, Feb. 2, 1969, 6904400
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **7 Claims**

A carrier for use with two or more containers having generally square tops with outwardly projecting lips. The car-

rier blank comprises a central panel and two opposing side panels downwardly foldable along fold lines interrupted by cuts which receive the lips of the containers, erection cuts



being provided at the ends of the cuts coinciding with the corners of the tops of the containers to allow the side panels to be folded down without tearing the carrier.

3,638,991

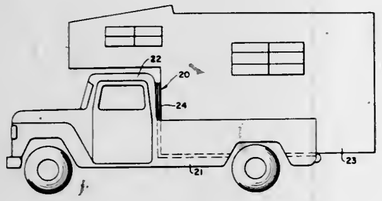
PICKUP TRUCK AND TRAILER PASSAGEWAY DEVICE

Milton R. Hathaway, Jr., 30 Parlee Road, Chelmsford, Mass.

Continuation-in-part of application Ser. No. 716,040, Mar. 26, 1968, now abandoned. This application July 10, 1970, Ser. No. 53,971

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 **3 Claims**



The invention comprises a pickup truck having a box at the rear with a camper mounted on said box. The pickup truck having a cab, with a doorway in the rear of said cab and camper has a doorway in its front and a sleeve connects the doorways together, the cab has a movable door for said cab doorway and the camper has an enclosure in the doorway of said camper.

3,638,992

AUTO AND AIRCRAFT SAFETY LINERS

Lloyd T. Forshee, 1219 Fischer Drive, Saginaw, Mich.

Filed Dec. 2, 1969, Ser. No. 870,321

Int. Cl. B62d *25/00*

U.S. Cl. 296—39 R **5 Claims**



A liner bonded to the inner side of a vehicle body so to aid in protecting passengers against hard impact therewith during a collision or violent movement of the vehicle, the liner comprising a foam sheet which may be variously designed so to include air pockets for additionally absorbing shock.

3,638,993

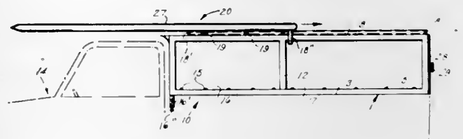
CANOPY FOR VEHICLES

John R. Sullivan, 4286 Bennion Road, Salt Lake City, Utah

Filed Dec. 12, 1969, Ser. No. 884,403

Int. Cl. B60j *7/00*

U.S. Cl. 296—95 R **3 Claims**



A device for installation on pickup trucks and the like, having a forwardly and rearwardly slidable top member, the top member serving to prevent snow and ice from adhering to the windshield. This device includes a pair of rails in which roller assemblies are carried to allow for the smooth positioning of the top member and the rails are secured to side frames that are bolted in a suitable manner to the truck body.

3,638,994

INSTALLATION FOR CLOSING OR OPENING APERTURES IN VEHICLES

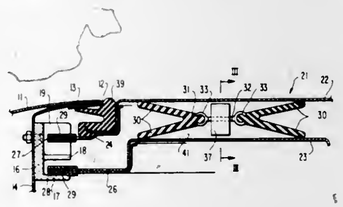
Gerhard Heim, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 17, 1970, Ser. No. 64,305

Claims priority, application Germany, Aug. 21, 1969, P 19 42 576.4

Int. Cl. B60j *7/10*

U.S. Cl. 296—137 E **12 Claims**



An installation for closing and opening apertures in vehicles, such as openings for sliding roofs, in which a chamber adjustable in its height and its volume and adapted to be connected with a vacuum source is formed between an outer covering and a support part; the sidewalls of the chamber are formed by sectional members of approximately X-shaped cross section with four leg portions which extend elastically along the adjacent top and bottom walls of the chamber.

3,638,995

RECLINING CHAIR

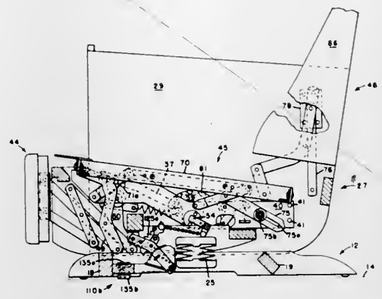
Joseph P. Flanagan, 23 Maple St., Broadalbin, N.Y., and Allan H. Crawford, 72 Evelyn Ave., Amsterdam, N.Y.

Filed Dec. 16, 1969, Ser. No. 885,446

Int. Cl. A47c *1/02*

U.S. Cl. 297—85 **4 Claims**

A reclining chair having a one-way locking means; the locking means being carried on the movable chair portion and not being dependent on cooperating means on the stationary chair frame.



3,638,996

PANCRATIC OCULAR FOR MICROPHOTOGRAPHY

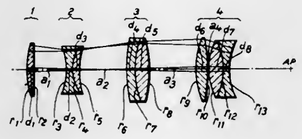
Walter Klein, Wissmar, Germany, assignor to Firma Ernst Leitz GmbH, Wetzlar, Germany

Filed Dec. 2, 1969, Ser. No. 881,402

Claims priority, application Germany, Dec. 12, 1968, P 18 14 132.7

Int. Cl. G02b *15/00*

U.S. Cl. 350—184 **2 Claims**



A pancratic Huygens-type ocular system, preferably for use with microphotography apparatuses, composed of a stationary front lens and a stationary eyelens between which two lens elements are displaceable in the direction of the optical axis. The first displaceable lens element is a negative lens movable from the real image plane towards the front lens, while the second displaceable lens element is a positive lens movable from the real image plane towards the eyelens.

3,638,997

TEMPORARY SEAT SUPPORTED BY SPACED-APART CHAIRS

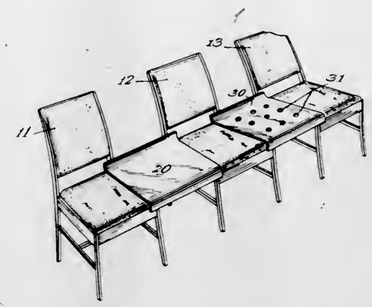
Scott N. Shapiro, 3530 N. Lake Shore Drive, Chicago, Ill., and William G. Wilkin, Oak Park, Ill., assignors to said Shapiro, by said Wilkin

Filed Mar. 4, 1970, Ser. No. 16,486

Int. Cl. A47c *15/00*

U.S. Cl. 297—232 **14 Claims**

A temporary, portable seat constructed to be readily supported at end portions thereof by spaced-apart chairs and readily removed from the chairs.



The combination of spaced-apart chairs supporting such a temporary seat.

3,638,998

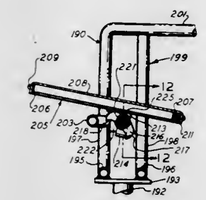
STADIUM CHAIR WITH FOLDING SEAT

Paul G. Anderson, 655 D S. Indian Hill Blvd., Claremont, Calif.

Filed Aug. 28, 1969, Ser. No. 853,695

Int. Cl. A47c *1/02, 1/06, 1/12*

U.S. Cl. 297—332 **2 Claims**



A stadium chair has spaced pairs of vertical side members with means at their bottoms for attachment to the riser face or the horizontal platform of the row. The vertical members support hinge plates at the level of the seat. Fiber glass, plastic or sheet metal seat surfaces secured to metal outside frames are pivotally mounted to the plates. The rear edge of each seat is weighted. The front of each vertical member has a seat stop against which the seat frame registers when the seat is occupied. A backrest similar to the seat is attached to spaced support members extending from the vertical members. The support members may be either rigidly or articulately attached to the front vertical members.

3,638,999

VEHICLE SEAT CONSTRUCTION

Henry J. Tischler, Bloomfield Hills, Mich., assignor to Young Spring & Wire Corporation, Detroit, Mich.

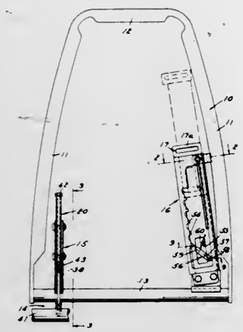
Filed Dec. 17, 1969, Ser. No. 885,760

Int. Cl. B60n *1/02*; **A62b** *35/00*

U.S. Cl. 297—379 **15 Claims**

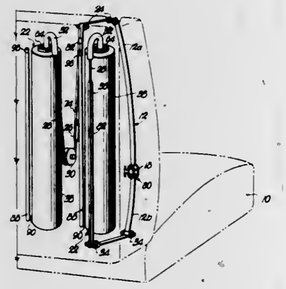
A vehicle seat construction comprising a seat back which is mounted for swinging movement between a generally upright position and a forward folded position with respect to a seat base. A seat lock assembly is provided that permits normal swinging movement of the seat back for ingress and egress to the area behind the seat back and is operable upon deceleration or impact on the vehicle to lock the seat back against forward swinging movement. A shoulder belt lock as-

sembly is provided on the seat back and is operable to permit normal movement of the person seated on the vehicle and is



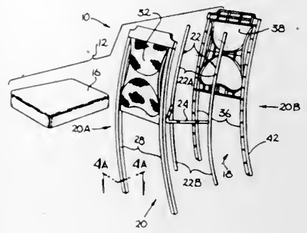
further operable upon relative rapid movement of a seated person to lock the shoulder belt against movement with respect to the seat back.

3,639,000
SHOULDER CROSS SEATBELTS WITH CONTROLLED PASSENGER DECELERATION
Raymond O. Keltner, 8900 Pawnee Lane, Leawood, Kans.
Filed Nov. 17, 1969, Ser. No. 877,290
Int. Cl. A62b *35/00*
U.S. Cl. 297—386 **15 Claims**



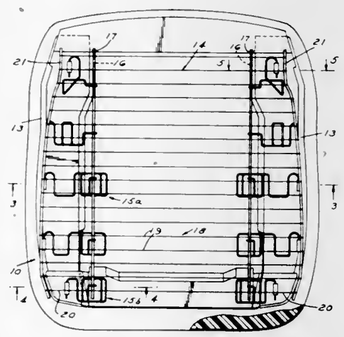
A protective harness worn by an occupant of a vehicle which controls the deceleration of the wearer in the event of a sudden stop or decrease in the speed of the vehicle, as would occur on impact with another vehicle or a stationary object. The belts of the harness are coupled with pistons within fluid-containing cylinders anchored to the vehicle. Each piston and cylinder device permits limited movement of the harness under the momentum of the wearer, but also produces a braking action to oppose such movement and arrest the harness, thereby subjecting the wearer to a reduced rate of deceleration rather than a sudden stop. The device may be conveniently released by the wearer to permit free movement when desired or necessary, and the harness construction assures that the belts will ride flatly against the body of the wearer.

3,639,001
METAL CORE PLASTIC CHAIR
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,043
Int. Cl. A47c *4/02, 7/00, 7/20;* **B44f** *9/02;* **E04c** *2/20*
U.S. Cl. 297—445 **16 Claims**



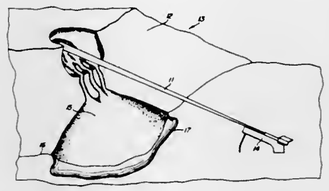
A composite furniture structure having an inner relatively rigid load-supporting core frame at least partially covered by outer decorative facing means, which are preferably molded from plastic. The invention permits low-cost mass production of furniture of various types and styles from the relatively simple modern styles to highly ornate provincial styles.

3,639,002
SEAT CONSTRUCTION
Henry J. Tischler, Bloomfield Hills, Mich., assignor to Gulf & Western Metals Forming Company, Southfield, Mich.
Filed Apr. 6, 1970, Ser. No. 25,832
Int. Cl. A47c *7/02, 23/00*
U.S. Cl. 297—452 **14 Claims**



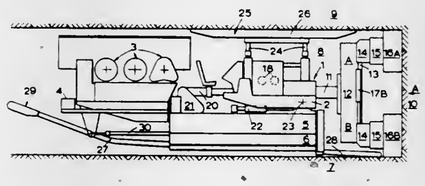
A seat construction comprising a frame including a base and a back. Each of the base and back have a frame with spaced siderails and a spring assembly mounted on the frame. Each spring assembly comprises a plurality of longitudinally extending wires, a plurality of transversely spaced wires having intermediate portions extending between the spaced wires and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion. Each spring assembly further comprises a longitudinal wire along each side edge connecting the free ends of said transversely spaced wires. Each spring assembly is resiliently supported on its respective frame.

3,639,003
PROCESS FOR LEACHING METAL VALUES FROM MINERAL-BEARING EARTH MATERIAL
Henry Rush Spedden, and Emil Edward Malouf, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,373
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **8 Claims**



A high-pressure stream of leach solution from, for example, a hydraulic monitor, is directed against a mine waste dump or other mass of mineral-bearing material to be leached, for the purpose of dislodging and breaking up the material, while, at the same time, leaching metallic values therefrom. It is preferred that material dislodged by the pressurized leach solution be formed into piles and that other high-pressure streams of leach solution be used to further agitate the piled material and to complete the leaching of metallic values therefrom.

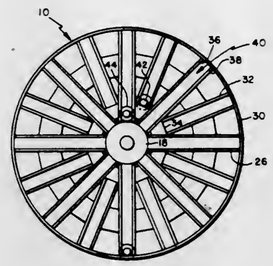
3,639,004
TUNNELING MACHINES
Peter Lockwood, and Gerald R. O. Pentith, both of Darlington, England, assignors to Greenside Machine Company Limited, Darlington, England
Filed Jan. 2, 1970, Ser. No. 308
Int. Cl. E21c *27/24;* **E01g** *3/04*
U.S. Cl. 299—10 **3 Claims**



A tunneling machine has a radially extending arm mounted at its center to a rotatably torque shaft. Each half of the arm mounts a respective rotary cutting head which is traversable over that half. In use, the cutting heads are equally spaced from the torque shaft axis, and the torque shaft is rotated through 180° to remove mineral from a face. The arm is then returned to its original position, equally spaced radial positions and a further cutting movement performed. Other cutting procedures may be employed.

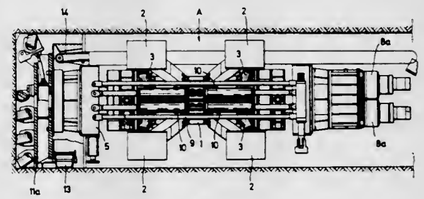
3,639,005
APPRATUS FOR BREAKING SHEET ICE
William J. Holm, 26 East Lane, Springfield, Vt.
Filed June 11, 1970, Ser. No. 45,414
Int. Cl. E01h *5/12*
U.S. Cl. 299—25 **7 Claims**

Apparatus is provided for breaking surface ice formed over a snow cover as sometimes develops on ski slopes or the like. A rotary unit, which may be dragged by a tractor, is formed with radial guides in spaced wheels with bars parallel to the axis of the wheels and mounted in the guides for free radial



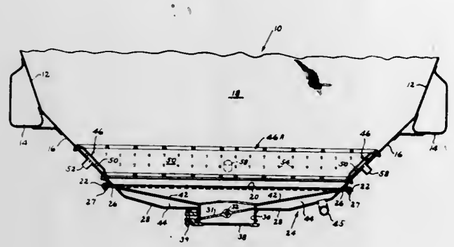
movement. The bars drop sequentially down against the ice surface and fall back again towards the center as the apparatus rotates.

3,639,006
MACHINERY FOR DRIVING TUNNELS, GALLERIES OR THE LIKE
Willi Steufmehl, Erkelenz, Germany, assignor to Maschinen-Und Bohrgerate-Fabrik Alfred Wirth & Co. K.G., Erkelenz, Germany
Filed Feb. 12, 1970, Ser. No. 10,714
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **11 Claims**



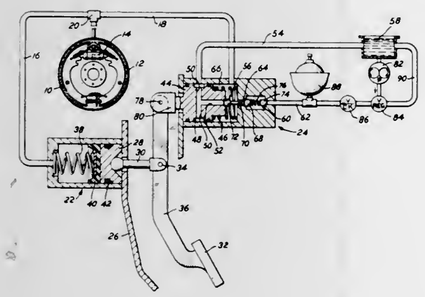
Circular section tunnels are bored out by a stepped series of concentric longitudinally displaced boring heads mounted on separate units, the leading head being circular and of the smallest diameter and succeeding heads being annular and of progressively greater external diameter, such that the total cross-sectional area of the series of heads is equal to the area of the tunnel working face. Each boring head is mounted on a separate frame and is readily interchangeable, the frame clamping and advancing means and the boring heads for each unit being independently hydraulically or electrically driven and controlled from a common power supply and control unit, allowing wide flexibility of operation of the unit. The frame of each successive unit is guided through the tunnel section bored out by the immediately preceding unit and the larger diameter boring head of such unit is located in the rear thereof. With the most usual arrangement of such tunnel boring machines consisting of a leading unit and one follower unit, the mounting of the boring head of the follower unit in the rear portion thereof affords the advantage of most convenient disposal of the spoil.

3,639,007
FLUIDIZING HOPPER SLOPE SHEET PAD ASSEMBLY
Roy R. Dare, St. Charles, and John L. Carney, Jr., St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,276
Int. Cl. B60p *1/62*; B61d *7/28*; B65q *3/14*
U.S. Cl. 302—52 7 Claims



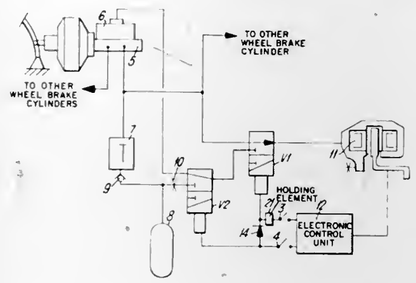
A fluidizing or aerating pad for a covered hopper railway car mounted on a hopper slope sheet immediately above a bottom outlet structure. The fluidizing pad extends across substantially the entire width of individual slope sheets and comprises a flat base sheet in face-to-face contact with the associated slope sheet and a fluid permeable outer member having a peripheral flange secured to the base sheet. The fluid permeable member is formed of a woven wire mesh and is additionally secured to the base sheet at predetermined positions inwardly from the peripheral flange.

3,639,008
POWER BRAKE SYSTEM
Stanley I. MacDuff, Daytona Beach, Fla., assignor to The Bendix Corporation
Original application Sept. 27, 1962, Ser. No. 226,614, now Patent No. 3,514,163, dated May 26, 1970. Divided and this application Feb. 9, 1970, Ser. No. 9,815
Int. Cl. B60t *13/14*
U.S. Cl. 303—10 2 Claims



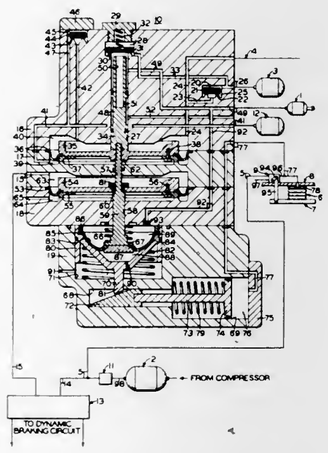
A braking system having a manually operated master cylinder for supplying the energizing force to activate the wheel brakes of a vehicle in the absence of power boost device being inoperative.

3,639,009
ANTISKID BRAKE SYSTEM FOR VEHICLES
Hans-Christoff Klein, Hattersheim, Germany, and James E. Byrne, New Canaan, Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,051
Claims priority, application Germany, Jan. 14, 1969, P 19 01 477.8
Int. Cl. B60t *8/00*, *8/12*
U.S. Cl. 303—21 F 17 Claims



An antiskid system for conventional master cylinder hydraulic brake systems for vehicles in which loss of brake pressure due to repeated discharge of fluid from the master cylinder as the system cycles is prevented by connecting the wheel cylinder to a pressurized reservoir after each reduction in pressure so that pressure can be restored without movement of the master cylinder piston. This is accomplished by means of a valve arrangement responsive to wheel acceleration and deceleration thresholds.

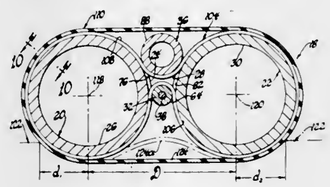
3,639,010
FLUID PRESSURE AND DYNAMIC BRAKE INTERLOCK VALVE WITH VARIABLE LOAD CONTROL
Gary T. Mayer, Deerfield, Ill., and Daniel G. Scott, Apollo, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Dec. 15, 1969, Ser. No. 885,237
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 A 15 Claims



This invention relates to a triple-diaphragm pressure-operated variable-load-type brake control valve for rapid transit vehicles wherein the body of the vehicle is supported

on air springs, the pressure in which is varied to maintain the body at a substantially constant height above the rails irrespective of the load on the body. Furthermore, air spring pressure varies the effective area of that one of the three diaphragms that is subject to brake cylinder pressure whereby the brake cylinder pressure required to effect movement of the brake control valve to a lap position subsequent to any reduction of brake pipe pressure effective on one side of a second one of the diaphragms relative to a substantially constant control reservoir pressure effective on the opposite side of this second diaphragm, varies directly as the load carried on the body of the vehicle. The third diaphragm is subject to a fluid pressure that corresponds to the degree of dynamic brake and acts thereon in the same direction as brake pipe pressure acts on the second diaphragm. Consequently, as the speed of the vehicle diminishes and the dynamic brake fades out, the brake control valve operates to control the blending therewith of the pneumatic brake in such a manner as to bring a rapid transit train, each car of which is provided with this brake control valve, to a proper stop at a predetermined rate of deceleration.

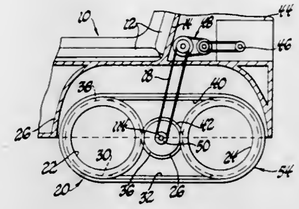
3,639,011
MULTIWHEELED LOCOMOTION DEVICE
Walton W. Cushman, Fraser, Mich., and Martin Tucker, trustee, New York, N.Y.
Filed Sept. 11, 1969, Ser. No. 857,106
Int. Cl. B62d *55/08*
U.S. Cl. 305—35 EB 19 Claims



A multiwheeled locomotion device has a pair of hubless wheels or rollers for effectively engaging a surface along which the wheels propel the device; a first rotatable wheel or roller placed intermediate of the hubless wheels is operatively connected to such wheels by means of a load belt which also encircles a substantial portion of the periphery of each of the hubless wheels; and second and third reaction-type rollers or wheels are situated generally above the first roller and between the hubless wheels; a plurality of constraining belts looped about the reaction and first rollers tend to draw them together and in so doing cause upper and lower runs of the load belt which pass between the reaction and first rollers to be urged toward each other thereby creating a tension in the load belt.

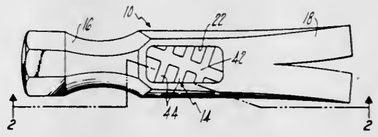
3,639,012
TREAD BELT AND ASSEMBLY
Walton W. Cushman, Fraser, Mich., and Martin Tucker, as trustee, New York, N.Y.
Filed Dec. 4, 1969, Ser. No. 881,975
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB 15 Claims

An endless tread belt adapted to pass about two or more surface locomotion wheels is formed of an elastomeric material and has a plurality of spaced cleat portions extending generally transversely of the tread belt body; a generally medially situated constraining belt is contained generally within the belt body and positioned so as to have the medial portion thereof coextensive with the pitch diameter of the belt body, the constraining belt or strap is effective for assuring tracking means formed on the tread belt to be closely received within cooperating guide means formed in the surface locomotion wheels; the sides of the tread belt are provided with integrally formed passage-type locking means for



receiving therein fingerlike locking members of side closure walls connectable to the tread belt at opposite sides thereof in order to form an enclosed chamber containing the locomotion wheels.

3,639,013
HAND TOOL WITH SELF-LOCKING WEDGE CONNECTION
George W. Merrow, Bloomfield, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Aug. 3, 1970, Ser. No. 60,355
Int. Cl. B25g *3/28*
U.S. Cl. 306—33 10 Claims

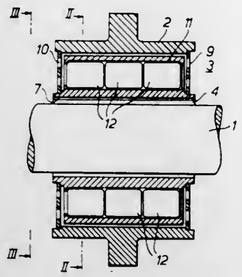


A hand tool having a tool head and a handle is provided with a self-locking wedge embedded within said handle to effect a secure interconnection between the wedge, the handle and the tool head. The self-locking wedge is a single multielement member of high shear strength having a tapered central body and a plurality of integral wedge-shaped side arms intersecting the central body and projecting outwardly from opposite sides thereof. At least one of the side arms extends from the central body for a greater distance on one side thereof than on the opposite side thereof. Locking shoulders projecting from the central body are disposed inwardly of the side arms and cooperate with the side arms to interlockably retain the resilient grained structure of the handle and restrict removal of the wedge therefrom.

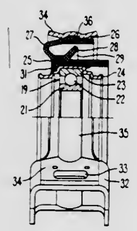
3,639,014
DAMPED BEARING
Herbert Sixsmith, Oxford, England, assignor to National Research Development Corporation, London, England
Filed Mar. 24, 1969, Ser. No. 809,774
Claims priority, application Great Britain, Mar. 26, 1968, 14,555/68
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 10 Claims

A bearing assembly, in which the bearing is located between the fixed and rotatable members in such a manner

that it can adjust to a certain extent to radial movement of the movable member, is damped against vibration or shock by housing a seismic mass in the bearing with limited freedom of radial movement.



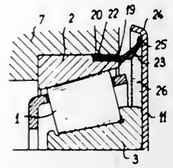
3,639,015
RESILIENT MOUNTING ARRANGEMENT
Otto Robert Maas, Russelsheim/Hessen, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed May 4, 1970, Ser. No. 34,438
Claims priority, application Germany, May 10, 1969, G 69 19 078.9
Int. Cl. F16c *35/06*
U.S. Cl. 308—26 **3 Claims**



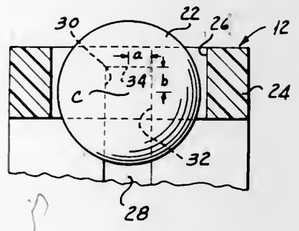
A propeller shaft bearing is carried in an inner ring connected to an outer ring by a resilient annular membrane. The outer ring is secured to a vehicle body portion. An annular member extends from one of the rings towards the other and upon relative displacement of the rings resiliently engages the other ring to provide an increased spring rate for the membrane to resist further relative displacement of the rings.

3,639,016
ROLLING CONTACT BEARING SEALS
Claude Raymond Bourgeois, Annecy (Haute Savoie), France, assignor to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France
Filed Mar. 12, 1970, Ser. No. 19,020
Claims priority, application France, Mar. 12, 1969, 6907020
Int. Cl. F16j *15/32*
U.S. Cl. 308—187.2 **5 Claims**

Seal for ball and roller bearings, of the type wherein the seal consisting of rubber or similar material is associated with one of the bearing races and comprises at least one lip coacting with an associated surface of the other race, such as a baffle plate, characterized in that the seal comprises an annular portion or bead force fitted to a surface associated with the race receiving same, thus providing between the lip or lips of said seal and the surface associated therewith a chamber adapted to be filled with a substance for improving the frictional contact while isolating said seal.



3,639,017
STABLE BALL CAGE
George J. Schoen, Danbury, and Lewis W. McKee, Arrowhead Point, both of Conn., assignors to The Barden Corporation, Danbury, Conn.
Filed Mar. 6, 1970, Ser. No. 17,525
Int. Cl. F16c *33/38*
U.S. Cl. 308—201 **13 Claims**

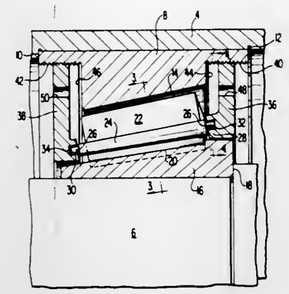


A bearing cage for a ball bearing in which the annular cage body has a plurality of radially extending ball pockets and a centrally located annular groove in its inner surface or in its outer surface, the depth of the groove relative to its width being sufficiently great that in operation of a ball bearing incorporating the cage the balls engage the cage only at the radially extending edges formed by the sides of the groove at the pockets and not at the edge formed by the base of the groove at the pockets so as to drive the cage by forces which are at an angle to the direction of cage rotation.

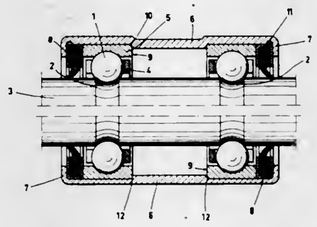
3,639,018
TAPERED ROLLER BEARING ASSEMBLY
Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.
Continuation-in-part of application Ser. No. 762,013, Sept. 24, 1968, now Patent No. 3,527,295, dated Mar. 2, 1971.
This application Oct. 7, 1970, Ser. No. 78,903
Int. Cl. F16c *19/14*
U.S. Cl. 308—214 **15 Claims**

A tapered roller bearing assembly in which load-bearing rollers are spaced apart from each other by idler rollers. The idler rollers are supported at their opposite ends in bearing races which are mounted on the outer bearing race for the

load rollers. A shoulder adjacent the inner bearing surface for the load rollers cooperates with a conical surface on the end face of the load rollers to urge the load rollers to remain in alignment as they progress around the bearing races.



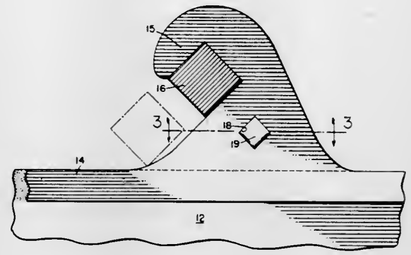
3,639,019
RADIAL BALL BEARINGS
Georg Schaeffler, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Germany
Filed June 15, 1970, Ser. No. 45,979
Claims priority, application Germany, July 1, 1969, G 69 25 932.1; Aug. 22, 1969, G 69 33 092.3
Int. Cl. F16c *19/08*
U.S. Cl. 308—193 **7 Claims**



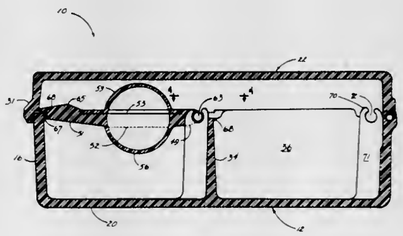
A novel radial ball bearing particularly adapted for mounting a water pump shaft provided with two rows of balls spaced from each other and which roll in grooves in the shaft to be mounted.

3,639,020
SUSPENSION FILE
Sydney M. Nesbitt, 4310 S.W. 104th Ave., Miami, Fla.
Filed Nov. 22, 1968, Ser. No. 778,050
Int. Cl. A47b *63/00*; **B42f** *15/00*
U.S. Cl. 312—184 **6 Claims**

In the suspension of a plurality of file folders, such as required in an office filing system an elongated horizontally disposed metal or wooden rod, which is square or rectangular in cross section, is provided, and is installed between the walls of a standard metal stationary cabinet or the walls of a room or closet and fixed in any desired position. This square rod is fixed with its diagonal dimension in substantially vertical position and will accommodate a companionately shaped hook hanger member in a close-fitting manner. This fit is loose enough to permit lateral sliding movement of the hook hanger member along the length of the horizontally disposed square rod, but is snug enough to prevent any substantial rotation or tilting movement of the hook hanger member. The hook of each such hanger member is fixed or formed in the center of the upper portion of the file folder. In the filing of exceptionally heavy and bulky material in the file folder to be carried by the hanger member, such as large bulky blue prints, hospital X-ray negatives, computer print outs or the like, my file is especially useful.



3,639,021
CLOSURE FOR FLY TACKLE FISHING BOX
Willard E. Fee, One W. Santa Inez Ave., San Mateo, Calif.
Filed June 8, 1970, Ser. No. 44,286
Int. Cl. A47b *81/00*; **B42f** *21/00*
U.S. Cl. 312—234.1 **4 Claims**

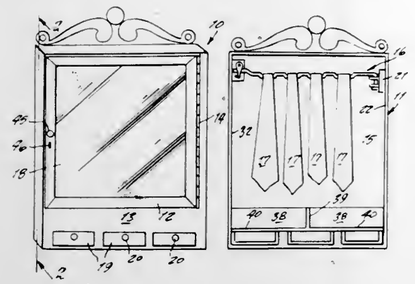


A fishing tackle box having a pan-shaped compartmented body open at the top, and separate openable covers for each compartment. Said covers have a shelf for receiving a name plate, and a well for receiving a fishing tackle fly. Seated thereover is a removable transparent window. Pins mounted on the covers engage bearings on the compartment walls. A depression on the front edge of the covers receives a horizontal protruding ridge, securing cover closure.

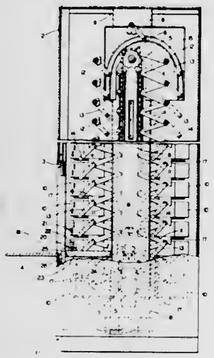
3,639,022
NECKTIE RACK AND ACCESSORY CHEST
Frank S. Elmo, 1505 Idaho St. #0, LA Habra, Calif.
Filed Apr. 28, 1970, Ser. No. 32,605
Int. Cl. A47f *5/08*; **A47b** *67/00*
U.S. Cl. 312—245 **2 Claims**

A case for storing a selection of neckties, the case having a pivotable front door having a mirror upon the outerside

thereof so that a gentleman can see himself while tying a necktie, and the case including drawers for containing bow neckties, cuff links, tie pins and associate jewelry.



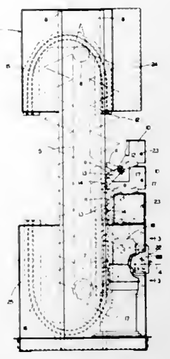
3,639,023
POWER FILE LEVELING DEVICE
Walter G. Anders, and Jon S. Skolmutch, both of Canton, Ohio, assignors to Diebold Incorporated, Canton, Ohio
Filed Nov. 5, 1970, Ser. No. 87,228
Int. Cl. A47b *49/00*
U.S. Cl. 312—268 **17 Claims**



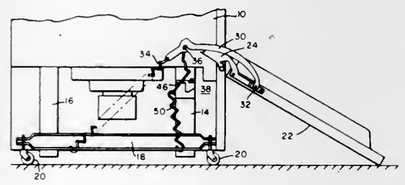
A leveling control mechanism for a power filing appliance wherein a number of pan assemblies travel on an endless conveyor in a continuous path. The leveling control mechanism stops the conveyor so that any selected pan will have a location within one thirty-second of an inch of a desired location regardless of the direction of movement of the conveyor or of unbalanced loading of the conveyor pans or system.

3,639,024
LEVELING DEVICE FOR POWER FILE
Walter G. Anders, Canton, Ohio, assignor to Biebold, Incorporated, Canton, Ohio
Filed Nov. 16, 1970, Ser. No. 89,833
Int. Cl. A47b *49/00*
U.S. Cl. 312—268 **11 Claims**

A leveling control mechanism for a power filing appliance wherein a number of pan assemblies travel on an endless conveyor in a continuous path. The leveling control mechanism has adjustable and movable components mounted on the file frame or support and a simple single actuator mounted on each pan for directly controlling the stopped location of such pan. The mechanism stops the conveyor so that any selected pan will have a location within one thirty-second of an inch of a desired location regardless of the direction of movement of the conveyor or of unbalanced loading of the conveyor pans or system.



3,639,025
FREESTANDING APPLIANCE WITH BREAK-OPEN DOOR
Edward H. Donselman, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 3, 1969, Ser. No. 795,906
Int. Cl. A47b *81/00*
U.S. Cl. 312—276 **3 Claims**

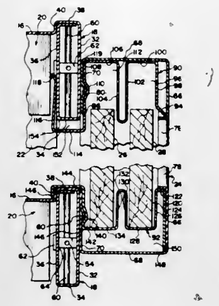


A freestanding appliance such as a portable dishwasher having a swing-down access door has means which resists opening of the door beyond its normally open horizontal position and which yields when a downward force is imposed upon the door which exceeds that downward force imposed upon the door in its normal use and which would tend to cause the appliance to tip but for the yielding, which permits the door to swing down until stopped by the floor.

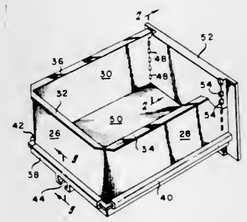
3,639,026
STEEL SHELVING CLOSURE
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed July 27, 1970, Ser. No. 58,356
Int. Cl. A47b *81/00*
U.S. Cl. 312—295 **8 Claims**

A frame assembly for sliding doors is disclosed which is adjustably secured to a desired level around the front openings of knockdown steel shelving having a plurality of vertically spaced shelves supported by corner posts. Each shelf has front and rear flanges extending above and below the shelf surface with cutout corners engaging the supporting posts and defining therebetween the front openings. The assembly includes a frame member having bottom and top box-type longitudinal flanges and a pair of elongated, channeled clip members to hold the frame member against and between the front flanges of any desired pair of shelves.

Detent means are provided between contiguous walls of the flanges of the frame member and the walls of the clip members. The upper clip member engages the upper shelf flange in a vertically slidable relationship so that the assembly, with or without the sliding doors within the channels, can be moved in a vertical plane to disengage the lower clip member from the shelf flange. In this position the upper clip member is readily disengaged from the upper shelf flange by lowering the assembly.

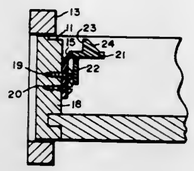


3,639,027
DRAWER FRAME
Joseph W. Higdon, Jr., P.O. Box 978, Quincy, Fla.
Filed Dec. 4, 1969, Ser. No. 882,212
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **13 Claims**



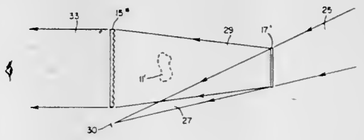
This invention relates to the construction of drawers for chests, desks, etc. A drawer frame is injection molded of plastic material in flattened blank form. The blank includes weakened zones dividing the blank into back and side sections, the lower part of the frame is provided with an outwardly projecting rib assembly including noncontinuous rib sections which are discontinued at the weakened zones to permit folding of the blank into a U-shaped frame. The rib assembly forms an interior longitudinal groove adapted to support the side and end edges of a drawer bottom. A drawer front dovetails with the side terminals and is secured thereto. A drawer guide is formed in the back of the drawer frame.

3,639,028
DRAWER STOP
Colon C. Black, Muskegon, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.
Filed June 22, 1970, Ser. No. 47,965
Int. Cl. A47b *95/00*
U.S. Cl. 312—348 **4 Claims**



In combination with a drawer having a rear wall recessed to provide a rear abutment, a flexible plastic stop member has a lower portion anchored to the rear wall below its top and has a stop portion extending above the rear wall for engagement with a frame member at the forward end of the drawer opening, the stop member having a rearwardly extending brace fitting within the recess and engaging the abutment at the rear of the recess.

3,639,029
ONE-STEP ORTHOSCOPIC IMAGE RECONSTRUCTING TECHNIQUE FOR A HOLOGRAM CONSTRUCTED THROUGH A DISPERSIVE MEDIUM
Kenneth A. Haines, Middletown, Del., assignor to Holotron Corporation, Del.
Continuation-in-part of application Ser. No. 875,768, Nov. 12, 1969, which is a continuation-in-part of application Ser. No. 809,171, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned. This application Apr. 1, 1970, Ser. No. 24,758
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**

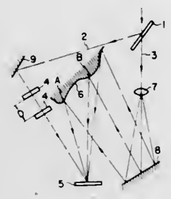


A technique for reconstructing an orthoscopic image of an object from a hologram that has been constructed of that object through a radiation dispersion medium. The technique includes reconstructing from the hologram a first order diffracted beam with a wave front conjugate to that of the dispersed object bearing wave front recorded on the hologram. The first order diffracted beam is reconstructed in a manner to form in real space an image of the dispersive medium used during the hologram construction. A phase conjugate of the dispersive medium used in the hologram construction is positioned in the reconstructed beam. An orthoscopic image of the object is thereby formed.

3,639,030
HOLOGRAPHIC METHOD OF FARMING CONTOUR LINES IN AN IMAGE UTILIZING LIGHT OF LIMITED COHERENCE LENGTH

Tadao Tsuruta, and Yoshinobu Ito, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 2, 1970, Ser. No. 42,841
Claims priority, application Japan, June 24, 1969, 44/49298
Int. Cl. G02b *27/00*; G01c *11/00*
U.S. Cl. 350—3.5 1 Claim



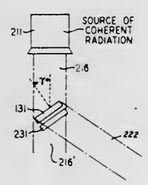
This invention provides a device for forming hologram. Fabry-Perot etalon is interposed in the parallel reference light rays. The distance D of Fabry-Perot etalon is made substantially equal to the coherent length L of the light to be used, so as to produce a number of reference light ray groups having a light path difference of 2D for increasing the depth of reproduction.

Further, by making the distance D satisfying 2D>L, contour lines in terms of 2D are formed for measuring the depth of an object.

3,639,031
HOLOGRAM COPYING FOR RECONSTRUCTION OF AN ABERRATION-FREE WAVEFRONT AT A WAVELENGTH DIFFERING FROM THE COPYING WAVELENGTH

Lawrence H. Lin, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1970, Ser. No. 75,202
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 5 Claims

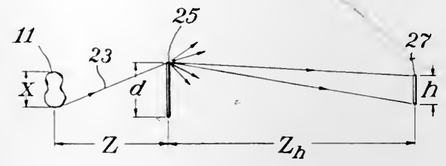


A first thick hologram of the wave front from an object is formed at a first wavelength to which a first hologram-recording medium is sensitive. A second hologram is recorded on a second recording medium sensitive to a second wavelength by placing the second recording medium adjacent the first and illuminating the first hologram with radiation at the second wavelength. This second hologram can then be illuminated with radiation of the first wavelength to reconstruct with minimum aberration the wave front associated with the object recorded on the first hologram.

3,639,032
TECHNIQUES FOR HOLOGRAM DATA REDUCTION

Kenneth A. Haines, Runnymede, Del., assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned.
This application Mar. 21, 1969, Ser. No. 809,171
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 30 Claims

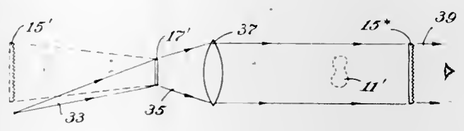


A technique for reducing the space-bandwidth product, recorded at the hologram plane in the method of holography in which the object wave front is dispersed before reaching the hologram plane such that the space-spatial frequency product of interference fringes recorded at the hologram plane is reduced without reducing the angle of viewing the image upon reconstruction.

3,639,033
HOLOGRAPHIC DATA REDUCTION WITH PERIODIC DISPERSIVE MEDIUMS AND METHOD OF ORTHOSCOPIC IMAGE RECONSTRUCTION

Kenneth A. Haines, Middletown, Del., assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of application Ser. No. 809,171, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 730,337, May 20, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 649,337, June 27, 1967, now abandoned. This application Nov. 12, 1969, Ser. No. 875,768
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 12 Claims

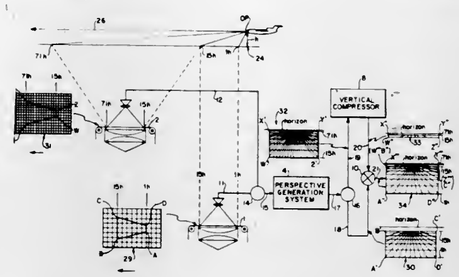


A method of holography in which the object wavefront is dispersed before reaching the hologram detector for recordation thereon and an image-carrying diffracted wavefront reconstructed from the hologram detector is dispersed in a manner related to the dispersion of the object wave front during the hologram's construction. Several specific techniques are disclosed for reconstructing an orthoscopic (actual) image of the object. A preferred technique for reconstructing an orthoscopic image includes making from such a hologram a second hologram without dispersion of the wave front recorded on the second hologram. Dispersion techniques for reducing the space-spatial frequency product of the information holographically recorded are also disclosed wherein a periodically phase-varying diffusion plate etched on one side thereof is utilized for wave front dispersion.

3,639,034
OPTICAL PERSPECTIVE GENERATION SYSTEM

Joseph A. La Russa, Yonkers, N.Y., assignor to Farrand Optical Co., Inc., New York, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,716
Int. Cl. G02b *13/08*
U.S. Cl. 350—31 19 Claims



An optical image generation system, for use in aircraft and other simulators, including two or more perspectiveless input objects each contributing a different component to a composite output image having perspective. The perspectiveless input objects, each to a different scale, are passed through a perspective generation system which is constructed in accordance with Scheimpflug principles. At least one of the component output images from the perspective generation system resulting from the input object is compressed, by an anamorphic lens system, before being combined to form the composite output image. The compression contributed by the anamorphic lens system in combination with the scale difference between the perspectiveless input objects and the power of the perspective generation system is such that the perspective generated in each component is the same. When those components are combined, therefore, into the composite output image, that composite output image has a single correct perspective.

3,639,035
SYNTHETIC RESIN STRUCTURES FOR LIGHT CONDUCTION AND PRODUCTION THEREOF

Masanori Irie, Amagasaki-shi, Japan, assignor to Nippon Selfoc Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 13, 1970, Ser. No. 2,669
Claims priority, application Japan, Jan. 23, 1969, 44/4957
Int. Cl. G02b *5/14*, *1/04*
U.S. Cl. 350—96 R 10 Claims

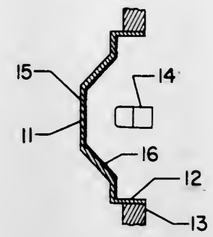
A polymer in the form of a transparent bar or fiber having bridges due to ionic bonding of carboxylic groups and metals and having a compositional distribution wherein the concentrations of at least two of the metals vary progressively from the central axis toward the outer surface of the bar or fiber, whereby the refractive index thereof varies progressively in directions transverse to the axis. A bar or fiber of this character can be produced by immersing a polymer bar or fiber having bridges due to ionic bonding of carboxylic groups and metals in a medium containing ions of at least one other metal different from any of the first-mentioned metals to cause ions of the metals originally in the resin body to be substituted by ions of the other metal.

3,639,036
LIGHT-REFLECTIVE WHEEL COVERS

Edward J. Rosebach, Jr., 48 Mill St., Abington, Mass.

Filed Apr. 13, 1970, Ser. No. 27,830
Int. Cl. G02b *5/12*
U.S. Cl. 350—97 6 Claims

A conventional vehicle hubcap is provided on its inside surface with a light reflective means so that when the hubcap is detached from its normal operative position on a vehicle it can act as a light-reflecting safety device. A preferred hubcap

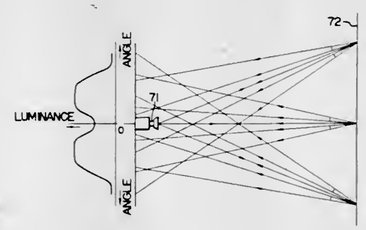


support means for supporting the hub cap when used as a safety device comprises a compact plastic stand.

3,639,037
DIRECTIONAL OR REFLEXIVE PROJECTION SCREEN

Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Feb. 25, 1970, Ser. No. 13,952
Claims priority, application Japan, Feb. 28, 1969, 44/15573
Int. Cl. G03b *21/60*
U.S. Cl. 350—126 2 Claims

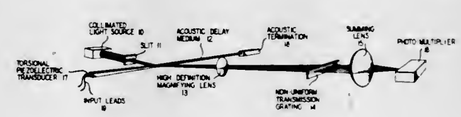


A directional or reflexive projection screen having a reflecting surface consisting of at least two or more kinds of glass beads having different refractive indexes. The optimum image viewing area may be arbitrarily adjusted.

3,639,038
OPTICAL-ELECTROMECHANICAL APPARATUS FOR GENERATING AND COLLAPSING CHIRP PULSES

Robert Stanwood Duncan, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

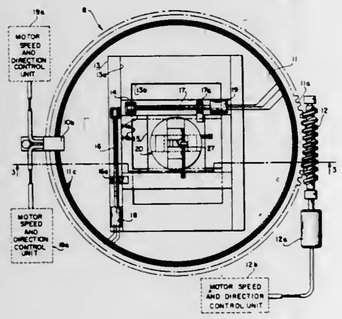
Filed Aug. 21, 1970, Ser. No. 66,021
Int. Cl. G02f *1/34*
U.S. Cl. 350—161 6 Claims



A beam of collimated light is reflected from a torsionally pulsed acoustic delay medium. Successive portions of the light reflected from the medium pass through a nonuniform transmission grating to a photomultiplier device. The device

output comprises either a chirp pulse or a collapsed chirp pulse depending on the torsional pulse applied to the medium and the orientation of the grating.

3,639,039
APPARATUS UTILIZING SPATIAL PLANE FILTERING FOR PERFORMING OPTICAL IMAGE ENHANCEMENT
Joseph E. Rhodes, Jr., Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 22, 1964, Ser. No. 405,802
Int. Cl. G02b *27/38*
U.S. Cl. 350—162 SF **3 Claims**



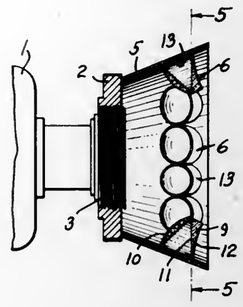
An optical image processor utilizing filtering in the spatial image plane to enhance selected details of an optical image such as a photographic transparency. Spatially coherent light is passed through an optical train including a transparency of a scene to be enhanced and the image of the light source is focused onto a plane containing a spatial filter which may consist of a slit of variable dimension and orientation. The geometric patterns of the scene on the transparency function as diffraction gratings for the coherent light and the desired diffraction patterns are selected by a spatial filter of the appropriate dimension and location. The filter may be rotated to provide a cyclically recurring enhanced image.

ERRATUM

For Class 350—184 see:
Patent No. 3,638,996

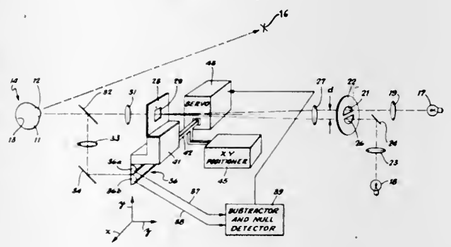
3,639,040
LENS SYSTEM FOR COLOR PHOTOGRAPHY
John Tylka, Sr., 1865 N. Curson Ave., Hollywood, Calif.
Filed July 27, 1970, Ser. No. 58,541
Int. Cl. G02b *5/02, 27/00*
U.S. Cl. 350—193 **7 Claims**

The color lens system includes a main objective lens and an annular series of independent color lenses positioned forwardly of the main objective lens; the inner diameter of the annular series of independent color lenses being equal to or slightly greater than the diameter of the main objective lens. Prismatic lenses are provided for each color lens, which lenses collect light rays from the object being photographed and direct the light rays to the color lenses, the rays from the color lenses being directed to the main objective lens. The color rays pass through the main objective lens and the focal length of the main objective controls the focal point of the



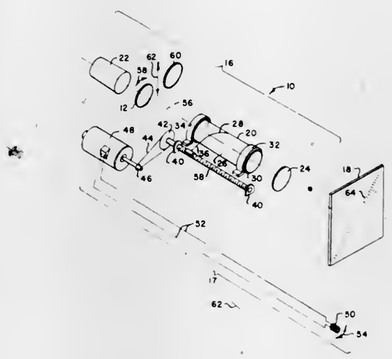
color rays. The color system uses all colors of the spectrum and results in an improved color balance with resultant flatness of field to the edge of the aperture.

3,639,041
SYSTEM AND METHOD FOR SCANNING THE DEPTH OF THE OPTIC FUNDUS
Tom N. Cornsweet, Atherton, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Sept. 21, 1970, Ser. No. 73,990
Int. Cl. A61b *3/10*; **G01b** *11/30, 9/00*
U.S. Cl. 351—14 **8 Claims**



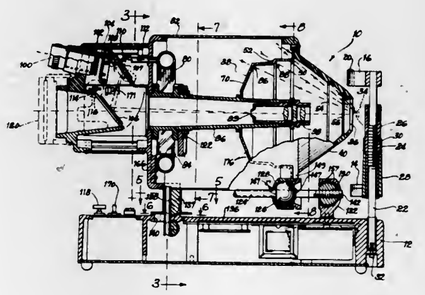
A system and method for obtaining a depth profile of the fundus of the eye in which first and second alternately excited light sources image an aperture on a portion of the optic disk. The refractive power of the eye is held approximately constant by having the eye look at a fixation point. A detector is provided for sensing the degree of overlap of the aperture images due to the first and second light sources. In one embodiment the aperture is displaced in a Z-direction with respect to the eye until the images of the aperture completely overlap. The aperture is then successively displaced horizontally in an X-direction and/or vertically in a Y-direction with respect to the eye and in each position the aperture is adjusted in the Z-direction until the first and second images of the aperture completely overlap. The positions of the aperture where the first and second images thereof overlap correspond to the depth of the respective portions of the optic fundus from any arbitrary point at the front of the eye.

3,639,042
APPARATUS FOR MEASURING THE ACUITY OF LOW-VISION PATIENTS
Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 10, 1970, Ser. No. 45,190
Int. Cl. A61b *3/02*
U.S. Cl. 351—30 **5 Claims**



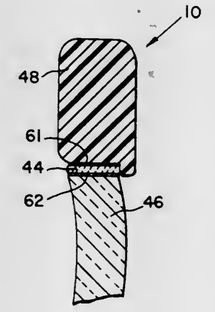
An optical system for measuring the acuity of a low-vision patient has a variably magnified image of a reference character displayed on a rear vision screen. The image is effectively rotatable in order to provide the operator with a verification of the response of the patient.

3,639,043
AN ADJUSTABLE HOUSING FOR APPARATUS FOR DETERMINING CORNEA CONTOUR
Malcolm G. Townsley, Park Ridge, Ill., assignor to The Plastic Contact Lens Company, Chicago, Ill.
Division of Ser. No. 778,965, Nov. 26, 1968
Filed Sept. 24, 1970, Ser. No. 75,131
Int. Cl. A61b *3/00*; **F16l** *11/12*
U.S. Cl. 351—38 **4 Claims**



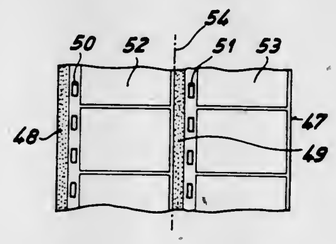
An apparatus for determining the contour of the human cornea comprising a substantially opaque target having a plurality of light-transmitting gaps through which light beams can be projected onto the eye of a patient. The pattern of light beams reflected in the eye can then be photographed with the particular configuration providing a basis for determining mathematically the contour of the eye. The target structure comprises a pair of hollow plastic shells provided with an opaque coating. The coating is removed in selected areas to provide the light transmitting gaps. The shells are mounted at one end of an adjustable housing, and a camera and through-the-lens focusing means are located at the opposite end of the housing. The adjusting means comprise double joint ball and socket means which permit the operator to make finite adjustments for accurate alignment while viewing the eye.

3,639,044
SEMIRIMLESS GLASSES
Farnham Blair, Alexandria, Va., assignor to Benton Blair, Sanibel Island, Fla., a part interest
Filed Aug. 5, 1970, Ser. No. 61,097
Int. Cl. G02c *1/04*
U.S. Cl. 351—103 **4 Claims**



A brow bar formed of zyl or other plastic material, or of metal, is provided with a pair of anchor members at the opposite sides of the center thereof and secured thereto, the bottom of each anchor member having a cushion member affixed thereto by a thermosetting adhesive. The upper edges of a pair of lenses are secured to the cushion members by a thermoplastic adhesive. In a modification of the invention, the cushion members are secured directly to the brow bar by the thermosetting adhesive.

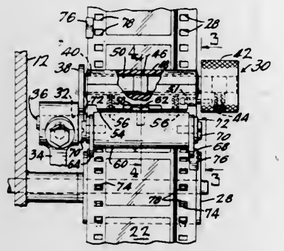
3,639,045
FILMSTRIP
Hildegard Haefeli, Fribourg, Switzerland, assignor to Calottan AG, Basel, Switzerland
Filed Nov. 1, 1967, Ser. No. 679,886
Claims priority, application Switzerland, Nov. 10, 1966, 16216/66
Int. Cl. G03b *31/02*
U.S. Cl. 352—37 **2 Claims**



The invention involves a filmstrip which includes at least one strip of picture film, at least one line of perforations and

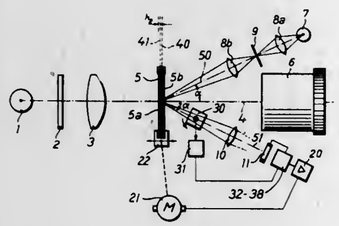
at least one soundtrack. The filmstrip is dimensioned and arranged so that for a filmstrip width of 35 mm. the picture strip width exceeds 20.9 mm., for a strip width of 17.5 mm. it exceeds 10 mm., and for a strip width of 16 mm. it exceeds 9.7 mm.

3,639,046
PICKOFF DEVICE
Angelo Boudouris, Sylvania, and Harold M. Plumadore, Toledo, both of Ohio, assignors to Eprad Incorporated, Toledo, Ohio
Filed Nov. 3, 1969, Ser. No. 873,394
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **11 Claims**



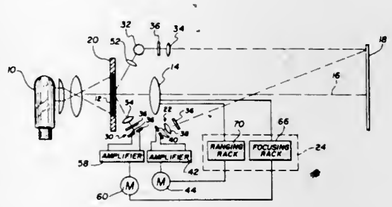
A pickoff device for a motion picture projector can be substituted directly for a backup roller associated with a sprocket of the projector. The pickoff device can be installed without modification in almost any commercially available projector produced in the United States. When a conducting tab or strip on the motion picture film completes a circuit between the pickoff device and the sprocket, an impulse is provided for external controls which can change over the film to a second projector, lower or raise the lights, background music, or curtain, etc.

3,639,047
AUTOMATIC FOCUSING DEVICE FOR SLIDE PROJECTORS
Werner Holle, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzler, Germany
Filed May 11, 1970, Ser. No. 36,024
Claims priority, application Germany, Sept. 17, 1969, P 17 97 347.6
Int. Cl. G03b *3/100*
U.S. Cl. 353—101 **5 Claims**



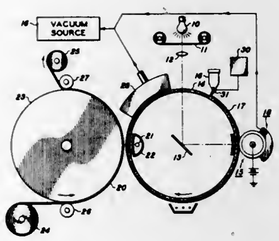
In a slide projector means are provided for projecting a light beam obliquely onto one face of the slide from which it is reflected to a photoelectric receiver. Scanning means in the path of the light beam guide the reflected beam in cycles to the receiver in such a manner that the reflections from the cover glass remote from the slide face whereon the light beam is projected are the first in each cycle to impinge on the photoelectric receiver. A bistable multivibrator is connected to the receiver which multivibrator is set in response to the pulses from the receiver exceeding a predetermined threshold value and is reset at the end of the cycle by a reference pulse. And means are provided which initiate the motion of a motor for displacing the slide along the optical axis in dependence on the time interval between successive setting and resetting pulses when this time interval differs from a predetermined value.

3,639,048
AUTOMATIC RANGING AND FOCUSING PROJECTOR
Paul R. Heaney, and Gad E. Strubel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 23, 1970, Ser. No. 57,662
Int. Cl. G03b *3/00, 21/14*
U.S. Cl. 353—101 **14 Claims**



A projector having an optical ranging system for automatically optically sensing the screen-to-lens distance and in response thereto establishing a predetermined film-to-lens distance for placing a projected film image in focus. The projector further has an optical focusing system operative in conjunction with the optical ranging system for sensing the established predetermined film-to-lens distance in the projector, and if any change occurs therein to automatically move the projection lens and/or film to refocus the projected film image.

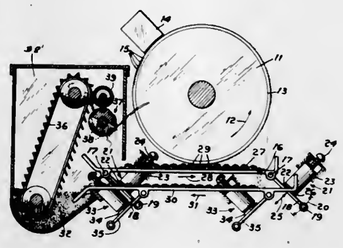
3,639,049
COPY SYSTEM
Warren L. Rhodes, Rochester, N.Y., and Vernon L. Marquart, Oklahoma City, Okla., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 28, 1970, Ser. No. 67,812
Int. Cl. G03g *15/00, 15/14*
U.S. Cl. 355—3 **5 Claims**



A rapid copy-making system for producing copies for example on photographically slow material such as a diazo, vesicular "Kalvar" or contact speed silver halide by producing an intermediate image from photoelectrophoretic material and more or less immediately using this intermediate

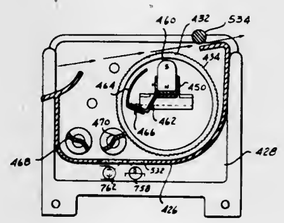
image to contact print the slow photographic material. A separate light source of high intensity exposes the recently created photoelectrophoretic intermediate image for imaging the photographically slow material.

3,639,050
PARTICLE-APPLICATING DEVICE
Karel Jan Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Jan. 22, 1969, Ser. No. 793,034
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **7 Claims**



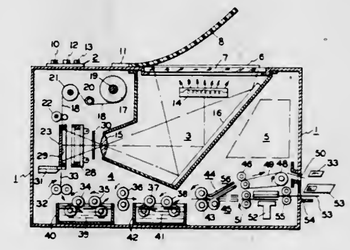
A particle-applicating device for printing apparatus having a printing surface on which is formed electrical or magnetic charge patterns for attracting the particles. A first flat vibrating plate is provided proximate to the printing surface and is pivotally coupled to a vibration generating arrangement. A particle dispenser is arranged to deposit, near one end of the vibrating plate, successive uniform quantities of particles to be applied to the charge pattern. The vibrating motion imparted to the plate enables a uniform movement of the particles along the plate's upper surface and a uniform projection of the particles onto the printing surface situated thereabove. A second vibrating plate and arrangement is provided below the first plate to collect the unattracted particles and return them by oppositely directed vibratory motion to the particle dispensing area.

3,639,051
ELECTROSTATIC COPIER
E. Paul Charlap, Scarsdale, N.Y.; Fritz Baumgarten, Giessen-Heuchelheim, and Lothar Fischer, Giessen Wiesck, both of Germany, assignors to Savin Business Machines Corporation, New York, N.Y.
Original application June 30, 1964, Ser. No. 379,232, now Patent No. 3,490,843. Divided and this application Mar. 3, 1969, Ser. No. 823,225
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **4 Claims**



A dry developer system for applying toner particles to copy material in which a sheet of copy material carrying a latent electrostatic image is conveyed face down past a serrated roller provided with magnetic means for holding particles of magnetic material carrying toner so oriented as to brush the surface of the copy material in a direction opposite to the direction of the advance of the material. The developer system further comprises a clapper for holding the copy material into contact with the particles on the roller.

3,639,052
APPARATUS FOR ELECTROPHOTOGRAPHICALLY PRODUCING AN IMAGE ON A SINGLE SHEET OF MICROFILM
Toshiharu Sasaki, Toyonaka-shi; Ryuzo Miyano, Osaka-fu, and Yasutaka Nakajima, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan
Filed July 8, 1969, Ser. No. 839,843
Claims priority, application Japan, July 9, 1968, 43/49293; 43/94344; 43/49294; 43/49295; 43/49296; July 23, 1968, 43/52646; Aug. 28, 1968, 43/62166
Int. Cl. G03b *15/04*
U.S. Cl. 355—3 **14 Claims**



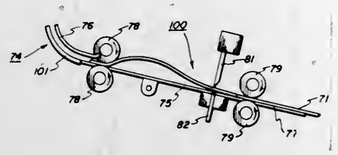
A photographic apparatus for producing a microvisible image of any original on an electrophotosensitive film by means of an electrophotographic method.

The apparatus includes means for positioning a successive film having a transparent organic photoconductive layer thereon in a predetermined path and charging means for applying a uniform electrostatic charge to a portion of the film. The charged portion is exposed to a microprojected image of the original through a light source and an optics system to form an electrostatic microlatent image on the portion. Driving means is provided for intermittently advancing said film by a length equivalent essentially to the longitudinal length of the portion. Means for cutting then cuts the portion from the successive film into a single sheet of film. Processing means then transports the single sheet of film having said latent image through processing agents including a liquid developer and a liquid fixer, thereby producing a visible image from said latent image. Takeout means then ejects the single sheet of film having said visible image from the processing means to an outlet.

3,639,053
WEB CUTTING AND FEEDING APPARATUS
Merton R. Spear, Jr., Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 2, 1969, Ser. No. 821,377
Int. Cl. G03g *15/00;* **B26d** *7/00*
U.S. Cl. 355—13 **2 Claims**

Apparatus for cutting and feeding cut sheets of material from a continuous web to a remote processing station. A first set of feed rollers are arranged to advance the web at a predetermined rate under a cutting means and then into a second set of feed rollers. The second set of feed rollers, in turn, are arranged to forward the web material delivered therein at a rate slower than that of the first set of feed rollers so that a buckle is formed in the web between the cutting

means and the second set of rollers. When a desired amount of material has been advanced past the cutting means, the first feed rollers are inactivated and, simultaneous therewith,



the cutter activated to sever a sheet of material from the leading edge of the web. The severed sheet is forwarded to a subsequent processing station by the continually driven second feed rolls.

3,639,054
PHOTO REPRODUCTION APPARATUS
Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Western Blue Print Co., Kansas City, Mo.
Filed June 25, 1969, Ser. No. 836,317
Int. Cl. G03b *27/32, 27/36*
U.S. Cl. 355—18 **25 Claims**

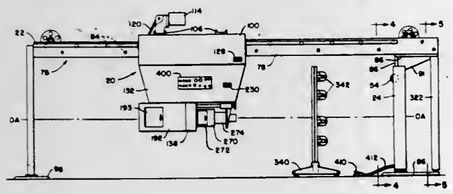
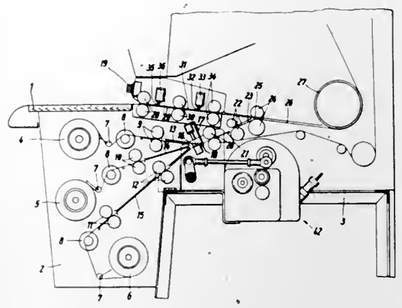


Photo reproduction apparatus having a motor-driven camera-projector optical head depended from spaced overhead rails on which it moves toward and away from a back- and front-lighted subject holder which supports one end of the rails. The optical head carries a light source on one board and an objective lens on a second board which depend from supporting parallel spaced rods along which they are movable toward and away from the condenser lenses fixed therebetween. One of the condenser lenses supports a film holder; and a rotatable shaft differentially moves both the light source and objective lens so as to permit optimum light convergence at the nodal point of the objective lens during projection and resolution and image definition at the different spatial settings of the film holder from the subject holder during both the negative exposure and the enlarging and printing operations.

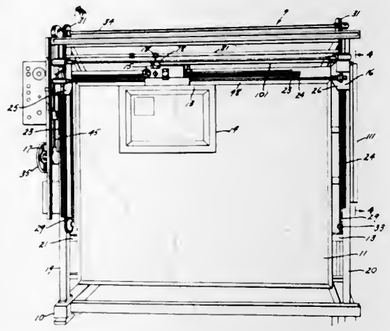
3,639,055
PAPER FEED MECHANISM FOR PHOTOCOPYING MACHINE
Karl Schleifenbaum, Haiger, Germany, assignor to Meteor-Siegen Apparatebau Paul Schmeck G.m.b.H., Haiger, Germany
Filed May 13, 1969, Ser. No. 824,056
Claims priority, application Germany, Oct. 24, 1968, P 18 02 744.6
Int. Cl. G03b *27/48*
U.S. Cl. 355—29 **21 Claims**

A photocopying machine has copy paper supplied from a continuous roll, and printing is effected while the paper is moving. In order that the paper might be severed while stationary, a variable speed drive is provided which accelerates



the paper to form a loop therein, and then stops the paper for severing.

3,639,056
PROGRAMMED PLATE-MAKING MACHINE
Albert Gerson, Baldwin Road, Yorktown Heights, N.Y.
Filed June 17, 1970, Ser. No. 47,051
Int. Cl. G03b *27/62*
U.S. Cl. 355—40 **6 Claims**

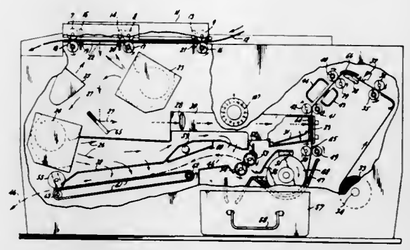


A photo-offset plate-making machine particularly adapted for the exposure of a series of prints by successively locating a negative carrier in predetermined horizontal and vertical positions relative to a plate-supporting frame for repeated exposure. Illuminated adjustable signal means is provided to indicate the arrival of the negative carrier to said predetermined locations, the signal means being powered by extendable power cords having means for retracting the same depending upon the location of the negative carrier.

3,639,057
COPYING MACHINE FOR MAKING REDUCED-SIZE COPIES
Herbert P. Thomas, Miami; Thomas E. Hartman, Opa Lock, and Torulf F. Aasen, Hollywood, all of Fla., assignors to Copystatics Manufacturing Corporation, Miami Lakes, Fla.
Filed Apr. 6, 1970, Ser. No. 25,794
Int. Cl. G03b *27/42*
U.S. Cl. 355—51 **16 Claims**

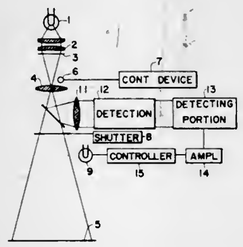
A copying machine for making reduced-size copies. An original document to be copied is moved by rollers past a

scanning station faster than a copy sheet is moved past an exposure station. An optical system reduces the size of the image of the original document at the exposure station. The machine is based on another machine originally designed to make full-size copies. In the latter machine, the original document and the copy sheet move at the same speed. To minimize changes in the conversion of the machine, the original transport speed is increased, but movement of the



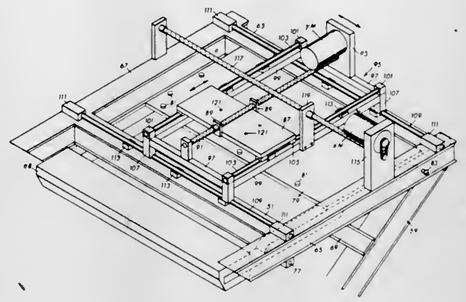
original is interrupted (while the copy sheet continues to move) at some point before the original reaches the scanning station. The machine is also capable of making multiple copies of an original; by slightly decreasing the speed of the original in the reverse direction (relative to the speed in the full-size copying machine), it is not necessary to interrupt movement of the original in the forward direction in all cycles after the first.

3,639,058
AUTOMATIC PHOTOGRAPHIC GRADATION-MEASURING SYSTEM FOR CONTROLLING AUXILIARY EXPOSURE MEANS
Tsutomu Kimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed Jan. 9, 1970, Ser. No. 1,669
Claims priority, application Japan, Jan. 25, 1969, 44/5581
Int. Cl. G03b *27/78*
U.S. Cl. 355—83 **1 Claim**



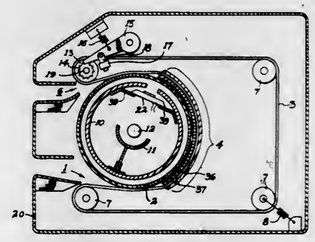
The focal plane on which the photographic negative image is focused is divided into a number of parts respectively connected to light-transmitting members. The ends of the light-transmitting members are arranged in a circle and scanned by another light-transmitting member which is connected to a light receptor. The output photocurrent from the light receptor is a measure of the photographic gradation of the negative image.

3,639,059
GRAPHIC-PROCESSING APPARATUS
Mathew A. Strumor, New Rochelle, N.Y.; Ervin J. Rachwal, Framingham; Douglas B. Campbell, Natrick, and Robert W. Marculewicz, Manchester, all of Mass., assignors to Matrographics, Inc., New York, N.Y.
Filed Feb. 10, 1969, Ser. No. 805,088
Int. Cl. G03b *27/04*
U.S. Cl. 355—86 **15 Claims**



A process and apparatus for making printing plates with composite images for lithography and the like in which an imaging head is adapted to carry a series of photographic images to be registered on a printing plate. The head is mounted on apparatus for setting it to a set of positions each in registry with a different location on the plate, and includes a flash lamp for exposing the plate to the several images, whereby the need for manual imposition is eliminated.

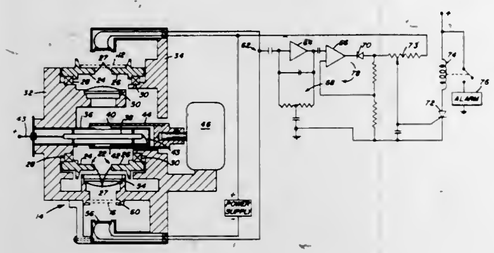
3,639,060
APPARATUS FOR PHOTOGRAPHICALLY DUPLICATING INFORMATION-BEARING MEDIA
Jorg Jaskowsky, Ruit, Wurttember, Germany, assignor to Eastman Kodak Company, Rochester, N.J.
Filed Sept. 12, 1969, Ser. No. 857,309
Claims priority, application Germany, Sept. 28, 1968, G 67 53 683
Int. Cl. G03b *27/22*
U.S. Cl. 355—104 **9 Claims**



Apparatus is disclosed for duplicating information-bearing media onto strips or pieces of photographically sensitized materials. The apparatus includes a first cylinder made of a suitably transparent material and a belt disposed to press an information-bearing medium and a photographically sensitized material against a portion of the transparent drum. A source of radiation is disposed within the transparent drum and a mechanism such as a cylinder with a slit therein is provided for directing a slit of light onto the information-bearing medium and the piece of photosensitized material after they

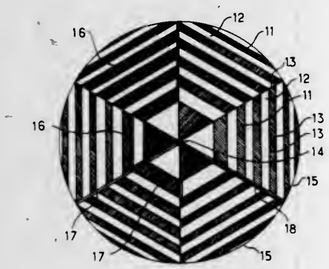
have been brought to a stop at an exposing station. The exposure is then made and the information-bearing medium and the exposed sensitized material are advanced from the exposure station to allow a second exposure to be made.

3,639,061
DEVICE FOR DETERMING THAT AN UNEXPOSED FILM IS DEVELOPED BY THE PROPER PROCESS
Robert J. O'Brien; Norman B. Woodall, and Donald H. Anderson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,736
Int. Cl. G01n *21/30*
U.S. Cl. 356—72 **6 Claims**



A device is disclosed which alarms against the inadvertent processing of one film-type by processing solutions compatible with another type of film. A common radiation source, to which the film to be processed is photographically insensitive, shines through both a reference filmstrip and film to be processed, thereby to produce respective signals for comparison purposes. The film to be processed passes over a circumferentially slotted pulley disposed at the entrance to the processing equipment, the radiation source being within the periphery of the pulley; and the off-axis location of the radiation source within the periphery of such pulley permits compactness for the device.

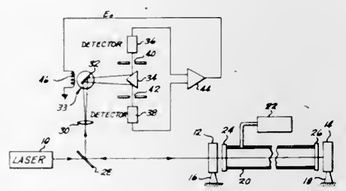
3,639,062
SPECTROMETRIC INSTRUMENT WITH TRANSPOSITION OF RAY PATHS
Andre J. Girard, Chatillon sur Bagneux, and Jean Botineau, Paris, both of France, assignors to Office Nationale d'Etudes et de Recherches Aerospatiales (parabreviation O.N.E.R.A.)
Filed Dec. 3, 1969, Ser. No. 881,819
Claims priority, application France, Dec. 11, 1968, 177,594
Int. Cl. G01j *3/42, 3/12*
U.S. Cl. 356—97 **10 Claims**



Spectrometer for the analysis of a polychromatic radiation flux which comprises, in a plane, a single radiation-conveying window having two multiplicities of alternating zones with different conveying characters for the radiation flux to be analyzed and such that the pattern of the zone boundaries has an axis of symmetry in that plane and a center of symmetry, the spectrometer also comprising an image-forming apparatus made up of a dispersive system having a spectrum-scanning movement and a collimating system, a receiver for the radiation flux, and means to modulate the radiation flux.

The pattern of the zone boundaries and the image-forming apparatus are such that this apparatus casts, in the plane of the single window, a plurality of monochromatic enantiomorphous images of the window provided respectively by the monochromatic radiations constituting the flux to be analyzed, the center of one of these images being, for each position of the dispersive system, coincident with the center of the window.

3,639,063
INTERFERENCE FRINGE MOVEMENT DETECTOR
Reuben S. Krogstad, and Victor Vali, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Mar. 6, 1970, Ser. No. 17,100
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **8 Claims**

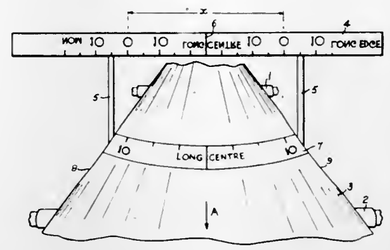


An improved fringe movement detector in which a radiation interference pattern is deflected by a galvanometer mirror to illuminate two photoelectric cells with selected portions of the interference pattern. As the interference pattern shifts, the change in output of the photoelectric detectors is differentially amplified and applied to the galvanometer coil to deflect the interference pattern back to the original or reference position on the photoelectric detectors. The magnitude of the electrical signal required to return the galvanometer mirror to the reference position is proportional to the amount of shift of the interference pattern. After a shift of a predetermined amount, reset means are used to return the galvanometer mirror to approximately its original position to illuminate the photoelectric detectors with selected portions of the next following fringe.

3,639,064
METHOD AND APPARATUS FOR MEASURING THE FLATNESS OF SHEET MATERIAL WHEREIN A SCALE IS SUPERIMPOSED UPON THE SHEET
Derrick J. Haines, Swansea, Wales, assignor to University College of Swansea
Filed Aug. 3, 1970, Ser. No. 60,414
Claims priority, application Great Britain, Aug. 5, 1969, 39,045/69
Int. Cl. G01b *11/24, 11/30*; G01n *21/18*
U.S. Cl. 356—120 **8 Claims**

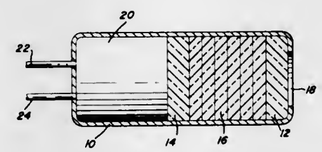
A method of measuring the flatness of rigid, moving sheet material, for example sheet metal as it is produced in a rolling mill, comprising supporting the sheet on two substantially horizontal supports spaced apart in the direction of movement of the sheet material, arranging above or below the moving sheet material a scale graduated to indicate the degree of flatness of the sheet material, preferably in terms of mon numbers and producing an image of the scale gradua-

tions by reflection in the upwardly facing or downwardly facing surface of the sheet material in a region between said



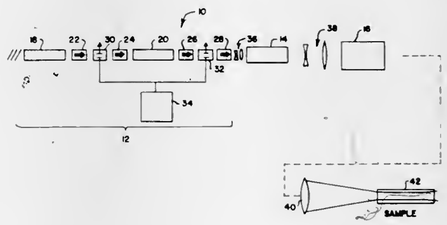
supports. Apparatus for performing the method is also described.

3,639,065
MONITOR FOR LASER OPTICAL PUMPING MEANS
Larry R. Rothrock, Poway, and Raymond E. Wilder, Escondido, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.
Filed June 27, 1969, Ser. No. 837,079
Int. Cl. G01j *1/42*
U.S. Cl. 356—225 **6 Claims**



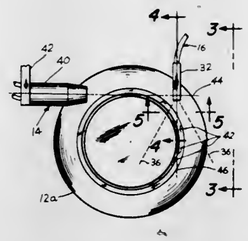
A device for monitoring the output of optical pumping means of laser devices in the light frequency regions useful in pumping the laser material which comprises a sample of laser material between two light filters. The first filter passes all frequencies except the laser material fluorescent frequency while the second filter passes only the laser fluorescent frequency. The intensity of fluorescent light passing through the second filter is detected and provides a measure of the useful output of the pumping means.

3,639,066
METHOD OF TESTING OPTICAL MATERIALS FOR MICROINHOMOGENEITIES
Joseph W. Kantorski, Southbridge, Mass., and Charles Gilbert Young, Storrs, Conn., assignors to American Optical Corporation, Southbridge, Mass.
Filed June 18, 1970, Ser. No. 47,197
Int. Cl. G01n *21/16, 21/32*
U.S. Cl. 356—237 **10 Claims**



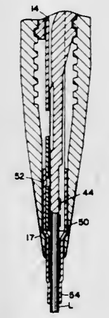
Solid optical materials such as glass which are to be used in laser systems may fail catastrophically due to the presence of microinhomogeneities. These microinhomogeneities are locatable by exposing the material to a laser pulse which preferably has a pulse duration of approximately 0.1 to 10 microseconds.

3,639,067
GLASSWARE INSPECTION APPARATUS EMPLOYING FIBER-OPTIC GUIDES
Edward J. Stephens, Manchester, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Continuation of application Ser. No. 827,106, May 15, 1969, now abandoned , Continuation of application Ser. No. 403,837, Oct. 14, 1964, now abandoned. This application June 29, 1970, Ser. No. 56,092
Int. Cl. G01n *21/32*
U.S. Cl. 356—240 **3 Claims**



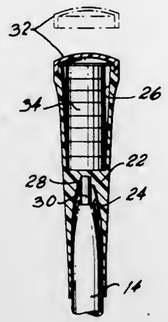
Optical glassware inspection apparatus with rotating upright ware at an inspection station and fiber-optic bundles employed for light source and/or reflected light pickup devices with light source and pickup centerlines tangential to the ware and perpendicular to each other, the pickup device having a vertically elongated scanning head.

3,639,068
MECHANICAL PENCIL HAVING MEANS TO PREVENT BREAKAGE OF SMALL DIAMETER LEADS
John C. Lockwood, Atlanta, Ga., assignor to Scripto Inc., Atlanta, Ga.
Filed July 16, 1970, Ser. No. 55,308
Int. Cl. B43k *21/02, 21/08*
U.S. Cl. 401—58 **4 Claims**



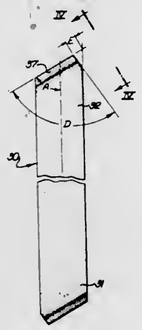
The present disclosure is directed to a mechanical pencil having an internally threaded barrel, a slotted tube for containing a writing lead, means to cause relative rotation between the tube and the barrel, a lead propelling means, a clutch member for normally maintaining the writing lead in engagement with the propelling means, and means to prevent breakage of small diameter leads.

3,639,069
COMBINED PEN OR PENCIL AND COMPARTMENT
Ralph S. Gordon, 24 W. 57th St., New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,885
Int. Cl. B43k *29/00*
U.S. Cl. 401—195 10 Claims



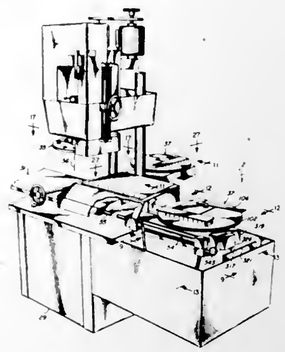
An attachment or container for use with a pen or pencil. The container comprises a housing disposed atop the pen and it actuates the pushbutton of said pen when the container is depressed. The container is also provided with a secret compartment for holding pills, coins, tokens, a perfume bottle, or the like.

3,639,070
MARKING-PEN-TYPE WRITING INSTRUMENT
Henry Davidson, Huntington Beach, Calif., assignor to The Gillette Company, Santa Monica, Calif.
Continuation-in-part of application Ser. No. 846,375, July 31, 1969, now abandoned. This application Jan. 13, 1971, Ser. No. 106,197
Int. Cl. B43k *8/00*
U.S. Cl. 401—199 4 Claims



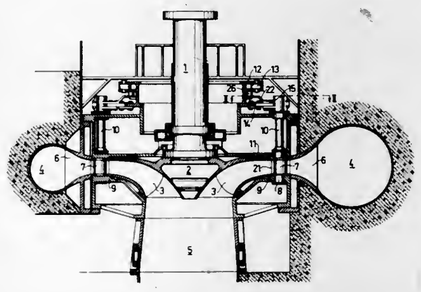
A writing and marking tip comprising a bundle of synthetic fibers disposed in generally longitudinally aligned relation, such fibers being bonded to each other at zones of contact by an adhesive, the tip being preformed to a predetermined cross section and being provided with longitudinally extending sidewalls and a planar end face lying in a plane inclined to the tip axis at an angle of from approximately 60° and comprising the marking face, such marking face having chamfered or beveled edge portions connecting the sidewalls and face for promoting the uniform ink laydown or trace during writing or marking.

3,639,071
MACHINE TOOL TABLE POSITION LOCATING
Walter J. Breitkopf, Scottsdale; Jack L. Bayer, and Leon F. Bayer, both of Phoenix, all of Ariz., assignors to Bayer Industries, Inc.
Filed Apr. 9, 1970, Ser. No. 26,811
Int. Cl. B23b *39/06*
U.S. Cl. 408—91 15 Claims



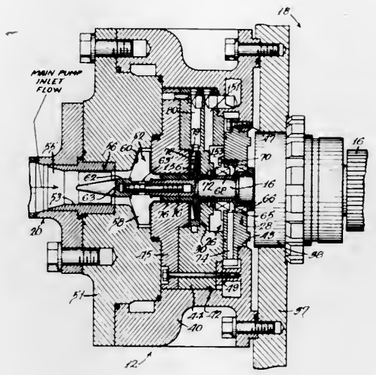
A machine tool table position locating means adapted to provide stop positions for work-holding table which is movable relative to a machine frame on which tool holding and driving means is adapted to machine work held on the work-holding table. The position locating means comprising a plurality of pin-holding plates having a plurality of stations each including a plurality of openings disposed to carry pins, the pins being placeable in a receiver on a movable position locating carriage so as accumulatively to dispose variously dimensioned pins in the receiver to be engaged between an engaging member coupled to the work-holding table and a stop means supported on the table carriage of the machine.

3,639,072
DEVICE FOR LIMITING THE MOVEMENTS OF THE WICKET GATES IN A WATER TURBINE
Nils Eric Munkstrand, Trollhattan, Sweden, assignor to Aktiebolaget Nohab, Trollhattan, Sweden
Filed Jan. 13, 1970, Ser. No. 2,204
Claims priority, application Sweden, Jan. 15, 1969, 497/69
Int. Cl. F01d *25/16*
U.S. Cl. 415—9 6 Claims



The turbine wicket gate regulator ring is connected to a crank secured to each wicket gate stem and comprising an inner portion securely connected with the crank hub and an outer portion which is connected with the inner portion by means of a shear pin. A crank extension extends from the inner crank arm portion with a length which is such that the adjacent crank hub and a portion of the regulator ring projects into the range of oscillation of the extension to act as a barrier against movement thereof and by contact to restrict the angle of oscillation.

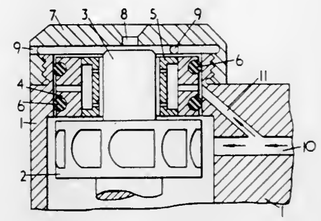
3,639,073
CENTRIFUGAL PUMP
Richard Beck, Jr.; Homer E. Gravelle, both of Denver, and James A. Ferguson, Arvada, all of Colo., assignors to Sundstrand Corporation
Filed Apr. 23, 1970, Ser. No. 31,197
Int. Cl. F04d *29/08*
U.S. Cl. 415—109 12 Claims



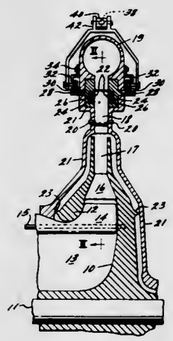
A two-stage centrifugal pump assembly adapted to produce high pressures from the second stage with a plurality of centrifugal sealing impellers associated with the second stage for the purpose of reducing the pressure drop across a mechanical seal associated with the second stage to minimize the second-stage sealing loss, there being provided a bypass from the low-pressure side of the first stage impeller to the sealing impellers of the second stage for delivering pumped fluid to the second-stage sealing impellers in a manner to prevent heating and boiling in the second-stage sealing impellers, there being also provided an alternate provision for supplying a noncorrosive compatible buffer fluid as the sealing fluid to the inlet of the sealing impellers in the second stage which also maintains the sealing impellers cool and at the same time isolates the impellers and the main impeller shaft from the corrosive fluid being pumped.

3,639,074
TURBINES
Herbert Percy Killick, Poulton-le-Fylde, England, assignor to C.M.W. Laboratories Limited, Blackpool, England
Filed May 18, 1970, Ser. No. 38,048
Claims priority, application Great Britain, May 23, 1969, 26,510/69
Int. Cl. F03b *13/04*; A61c *1/10*; F16c *7/04*
U.S. Cl. 415—110 3 Claims

This invention provides a small high speed gas driven turbine of the gas-bearing type having a vent in the top plate of the casing surrounding the bearing to vent the upper bearing of the turbine, wherein the upper bearing chamber is additionally vented by one or more auxiliary vents in the casing and extending generally at right angles to the longitudinal axis of the rotor, the auxiliary vents suitably being spaced equidistantly around the circumference of the casing and from 0.005 to 0.05 inches in diameter. The invention also provides a dental handpiece having such a turbine.



3,639,075
TURBOMACHINERY VANE ADJUSTMENT MECHANISM
John R. Erwin, Paradise Valley, Ariz., and Nicholas G. Vitale, Arlington, Mass., assignors to General Electric Company
Filed Dec. 12, 1969, Ser. No. 884,559
Int. Cl. F04d *27/00*, *15/00*
U.S. Cl. 415—163 4 Claims

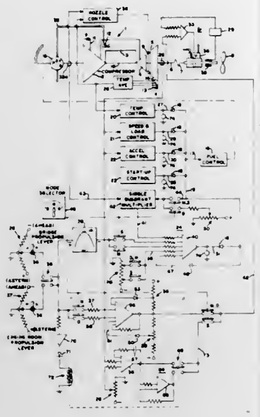


A radial flow compressor is shown with unique adjusting means for the diffuser vanes. The leading end portion of each blade is pivoted on the casing. Pintles project from the blades into eccentrics which are journaled in shafts mounted on the casing. The shafts are rotated, to get a highly accurate angular position of the vanes through the offset relation of the axes of the shafts, the eccentrics and the pintles.

3,639,076
CONSTANT POWER CONTROL SYSTEM FOR GAS TURBINE
William I. Rowen, Schenectady, N.Y., assignor to General Electric Company
Filed May 28, 1970, Ser. No. 41,512
Int. Cl. B63h *3/10*; F02c *9/08*
U.S. Cl. 416—30 10 Claims

A gas turbine control system has a plurality of closed loop controls each responsive to a different operating condition and an additional loop control which sets the fuel control signal in accordance with a desired power setting. A gating device allows only one of the fuel control signals generated by each loop control to control the fuel flow servo means, that signal being the one calling for the smallest fuel flow. A

cubic function generator is positioned in circuit with the propulsion lever and modifies the desired power signal to produce a ship speed which is linear with respect to the propulsion lever position. A feedback signal indicative of actual fuel flow is also in circuit with the propulsion lever. A first propeller pitch control is responsive to the propulsion

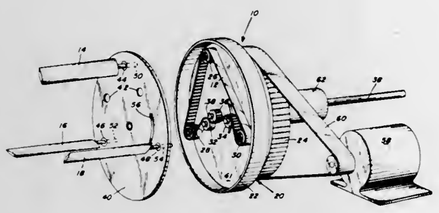


lever position and brings the pitch from zero to full as the power setting is concurrently increased.

A second propeller pitch control is responsive to an actual shaft speed signal and is operative to hold the shaft speed relatively constant by varying pitch.

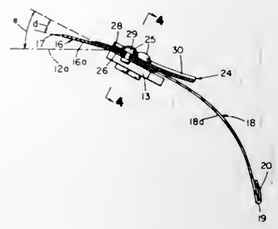
There are three modes of operation, each having a certain minimum power level and other modifications so as to improve vessel-maneuvering characteristics.

3,639,077
BELT-DRIVEN PI-PITCH CYCLOIDAL PROPELLER
Elmer F. Slates, Ridgecrast, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 23, 1970, Ser. No. 57,739
Int. Cl. B63h *1/10*
U.S. Cl. 416—111 **6 Claims**



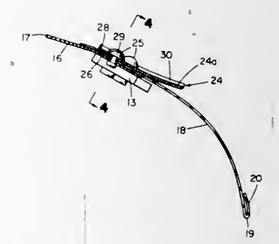
A cycloidal propelling device for use on submersibles which operates in a flooded sea water environment and thereby eliminates the need for a protective sealing housing containing oil. While the propeller blades of the device are being driven in an orbital path, if a change in blade pitch is desired, a control shaft is rotated. Rotation of the blade pitch control shaft rotates a central pinion gear which drives a timing belt. Movement of the timing belt simultaneously and in synchronization rotates propeller blade gears and changes the pitch of the propeller blades which are mounted thereon with water-lubricated plastic bearings. Plug-in, pullout type plastic breakway propeller blades are used for easy repair and replacement.

3,639,078
FLEXIBLE-BLADED FAN WITH EXTENDED BLADE STRUCTURE
Shrinivas V. Pratinidhi, Chatham, Ontario, Canada
Continuation-in-part of application Ser. No. 18,855, Mar. 12, 1970, now abandoned. This application Nov. 4, 1970, Ser. No. 86,750
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **12 Claims**



A fan having a hub, a plurality of arms each extending radially outwardly of the hub and at an acute angle to the rotational plane of the fan, and blade structures, one secured to each arm, each blade structure having a flexible, resilient trailing airfoil portion, comprising the major portion of the blade structure, which decambers as rotational speed increases, and a less flexible leading airfoil portion comprising a slat extending forward of the respective arm and disposed at an angle thereto lying within the above specified acute angle, with the trailing and leading portions mutually constructed to have the leading and trailing edges of the blade define therebetween a chord disposed at a predetermined chord angle to the rotational plane of the fan.

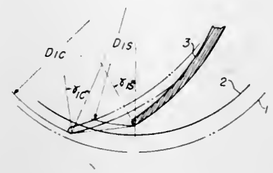
3,639,079
FLEXIBLE-BLADED FAN WITH IMPROVED REINFORCING CAP
Shrinivas V. Pratinidhi, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.
Filed Mar. 12, 1970, Ser. No. 18,856
Int. Cl. F04d *29/36*
U.S. Cl. 416—132 **6 Claims**



A fan having a hub, a plurality of arms extending radially outwardly of the hub, blade structures, one secured to each arm, each comprising resilient trailing portions which decamber as rotational speed increases, and a reinforcing cap secured to each arm and blade which has a decamber-limiting portion extending partially coextensively with the trailing

blade portion at an acute angle thereto, and two integrally formed upstanding lips, one disposed along each opposed radially spaced edge of the cap and of the decamber-limiting portion thereof which reduce metal fatigue in the cap.

3,639,080
FRANCIS-TYPE RUNNER
Masahiro Yamabe, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 26, 1970, Ser. No. 84,078
Int. Cl. F01d *5/04*
U.S. Cl. 416—186 **1 Claim**



The length of the entrance edge of each blade on the side of the crown ring is made longer than that on the side of the shroud ring; and the runner satisfies the following three conditions:

$$15° \leq \theta \leq 35°$$

$$\gamma_1 C \leq \gamma_1 S$$

$$D_1 C \geq D_1 S$$

where

θ = an angle between the centerline of the runner and a line connecting the points at which the entrance edge of the blade contacts with the crown and shroud rings respectively;

$\gamma_1 C$ = an angle between the line passing through the center of the runner and a point at which the entrance edge of the blade contacts with the crown ring and the normal to the tangent at said contact point to the curved surface of the blade;

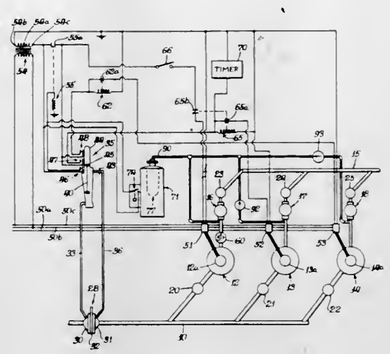
$\gamma_1 S$ = an angle between the line passing through the center of the runner and a point at which the entrance edge of the blade contacts with the shroud ring and the normal to the tangent at said contact point to the curved surface of the blade;

$D_1 C$ = an outer diameter of the blade at a point where the blade contacts with the crown ring; and

$D_1 S$ = an outer diameter of the blade at a point where the blade contacts with the shroud ring.

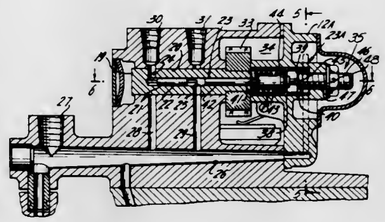
3,639,081
LIQUID PRESSURE BOOSTER SYSTEM WITH CUTOFF FOR MINIMUM FLOW LEVELS
John Gray, Oak Park, and Gene W. Anderson, Downers Grove, both of Ill., assignors to Liquitrol Systems, Inc., Brookfield, Ill.
Filed Jan. 2, 1969, Ser. No. 788,574
Int. Cl. F04b *41/06, 49/00*
U.S. Cl. 417—7 **5 Claims**

A water pressure booster system includes a plurality of constant-speed pumps which are sequenced according to system demands to maintain the pressure in a discharge conduit at a constant level for all flow rates. Pressure-regulating valves couple the output of each pump to the discharge conduit. To the output of one of the pumps is connected a reservoir of water stored in a collapsible container which is mounted in a tank pressurized with air. Control circuitry sensing both the flow rate in the input conduit and the air pressure in the pressurized tank deenergizes all pumps only when the flow is below a predetermined minimum level and the air pressure within the pressurized tank is above a



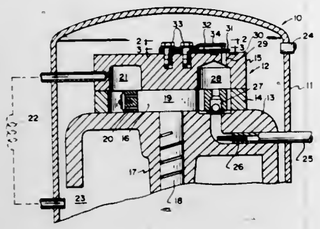
predetermined level sufficient to maintain the desired discharge or system pressure. This permits all pumps to be deenergized during periods of nonuse, while maintaining the system output pressure at design level. A pump is then turned on only when the tank pressure falls below its preset minimum value. An advantageous construction for the reservoir and tank is also disclosed.

3,639,082
LIQUID METERING DEVICE HAVING AN AUTOMATICALLY VARIABLE DISCHARGE
Howard Russell Corwin, North Caldwell, N.J., assignor to Curtiss-Wright Corporation
Filed Mar. 2, 1970, Ser. No. 15,393
Int. Cl. F04b *49/00*
U.S. Cl. 417—214 **4 Claims**



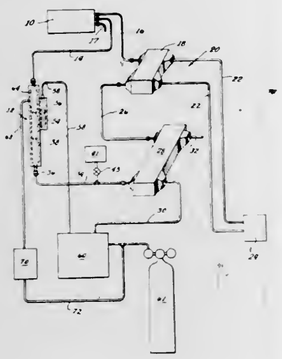
In a liquid metering device of the type having piston-cylinder assembly connected for receiving pressurized liquid and discharging slugs of the liquid alternately from opposite ends of the cylinder of the piston-cylinder assembly upon reciprocative movement of the piston therein, the improvement comprising a regulating means for automatically controlling the length of travel or stroke of the piston in response to the change in angular velocity of a rotating mechanism. The regulating means includes a valve actuatable by an inertia means which senses the r.p.m. of the rotating mechanism.

3,639,083
VALVE MEANS FOR COMPRESSORS AND THE LIKE
Bert W. Romerhaus, Haubstadt, Ind., assignor to Whirlpool Corporation
Filed Apr. 6, 1970, Ser. No. 25,799
Int. Cl. F04b *49/00*
U.S. Cl. 417—282 **6 Claims**



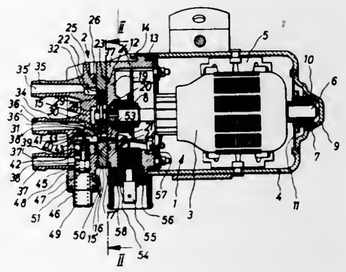
A valve having means for adjusting the movable member relative to the valve seat as a function of the temperature causing the movable member to be more closely spaced to the valve seat at low temperatures. The valve is adapted for use in a compressor for controlling a pressure equalizing passage permitting the mass flow of the compressible fluid to more easily close the passage at low-ambient temperatures whereat the density of the fluid is relatively low.

3,639,084
MECHANISM FOR CONTROL PULSATILE FLUID FLOW
Richard Paul Goldhaber, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Groove, Ill.
Filed Apr. 6, 1970, Ser. No. 25,782
Int. Cl. F04b *43/10, 45/00;* **A61b** *19/00;* **A61m**
U.S. Cl. 417—394 **6 Claims**



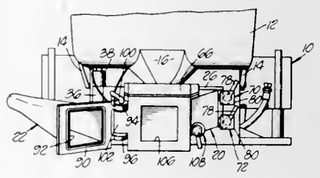
This application relates to an apparatus for imparting a pulsatile flow to fluid in a conduit, which has pumping means for providing the pulsatile flow of fluid therein. The apparatus includes an elastic tubular section defining a portion of the conduit and located downstream of the pulsatile flow providing means. The tubular section is surrounded by a sealed sleeve to define a pressurizable space about the tubular section. The space is pressurizable so that the pulsatile flow pattern of fluid passing through the tubular section is controlled in a manner responsive to the pressure within said space. If desired, a portion of the flow conduit upstream of the pumping means is of enlarged transverse dimension and sealed within a second sleeve to define a second pressurizable space to provide a means for increasing the flow of fluid into the pulsatile pumping means.

3,639,085
ELECTROMOTOR AND PUMP UNIT
Richard Bertsch, Asperg; Paul Fussner, Sindelfingen; Manfred Glaser, Neckarweihingen, and Hermann Nusser, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 21, 1970, Ser. No. 39,308
Claims priority, application Germany, May 28, 1969, P 19 27 073.6
Int. Cl. F04b *17/00, 35/04;* **F03c** *3/00*
U.S. Cl. 417—410 **9 Claims**



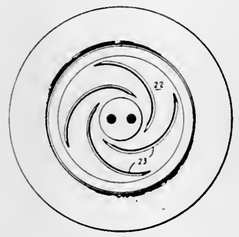
An electromotor and hydraulic pump unit with a sealed housing has a common drive shaft projecting with one end into a balancing pressure chamber in the pump stator. Pressure fluid flows along the shaft into a cavity of the housing in which the electromotor and the other shaft end are located so that the motor is cooled, the shaft bearings in the cavity lubricated by the pressure fluid, and the axial force acting on the bearings is reduced.

3,639,086
CONCRETE PUMP
Wayne Otto Robbins, Granada Hills, Calif., assignor to Tubular Structures Corporation, Los Angeles, Calif.
Filed Apr. 3, 1968, Ser. No. 727,119
Int. Cl. F04b *1/00*
U.S. Cl. 417—454 **6 Claims**



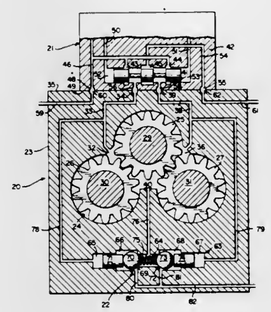
The invention is an improvement in joints between conduits and/or fittings. The invention is exemplified particularly as embodied in a concrete pump. The concrete pump has a pair of cylinders that discharge into a manifold, the manifold having a flapper valve in it, and a single discharge conduit. The manifold is hinged to the concrete pump so that it can be swung and locked in a position wherein its passageways are joined to the cylinders and the joint can be opened by swinging it about its hinge. Similarly, the discharge conduit is provided with a hinge hinging it to the manifold so that it can be swung into a position forming a joint with the manifold and a continuous passageway formed from the manifold through the discharge conduit and this joint may be opened by swinging the discharge conduit away from he manifold.

3,639,087
SOLUTION PUMP WITH SUPERCHARGED SUCTION FOR ABSORPTION AIR CONDITIONER
Edwin H. Frohbieter, Stevensville, Mich., assignor to Whirlpool Corporation
Filed Oct. 29, 1969, Ser. No. 872,129
Int. Cl. F04b *23/14*
U.S. Cl. 417—572 **1 Claim**



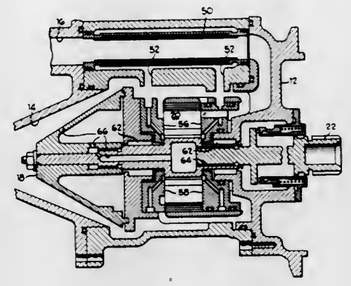
A pump for a liquid including a volatile material and particularly adaptable for an absorption refrigeration system with the pump having means for subjecting the liquid at the inlet side of the pump to a supercharged pressure tending to prevent vaporization of the volatile material of the liquid at the intake of the pump.

3,639,088
CASE PRESSURIZATION CONTROL FOR A POSITIVE DISPLACEMENT DEVICE DRIVEN HYDRAULICALLY BY A FOUR-WAY CONTROL VALVE
William C. Moog, Jr., Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Filed Oct. 6, 1969, Ser. No. 864,094
Int. Cl. F01c *1/18, 21/16*
U.S. Cl. 418—74 **9 Claims**



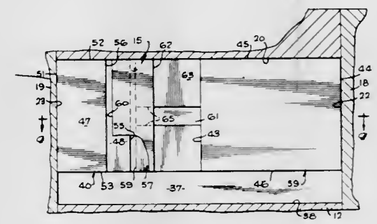
The case pressure in a chamber of a positive displacement hydraulically driven device having a pair of control ports operatively associated with a four-way control valve, is regulated always to be just below the lower pressure in the control ports by a constant amount so that backlash between the mechanically coupled movable members of the device is unidirectionally preloaded out at all times and breakout friction and internal leakage are reduced.

3,639,089
PUMP
Thomas Lock, Parma, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 26, 1970, Ser. No. 22,964
Int. Cl. F01c *21/06;* **F03c** *3/00*
U.S. Cl. 418—93 **4 Claims**



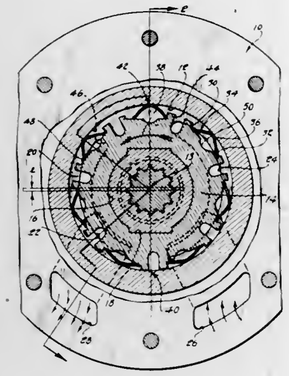
A dual-function pump assembly for pumping liquid with solid contaminants. The primary portion or section of the pump pumps liquid from an inlet to an outlet across a self-cleaning wash flow filter to a location of use. The secondary portion or section pumps clean liquid, which has passed through the filter, to lubricate and purge the running clearances and rubbing surfaces of the assembly.

3,639,090
ROTARY FLUID DEVICE WITH AXIALLY EXPANSIBLE VANE
Alma A. Hutchins, 49 North Lotus Ave., Pasadena, Calif.
Continuation of application Ser. No. 725,019, Apr. 29, 1968, now abandoned. This application Apr. 8, 1970, Ser. No. 26,764
Int. Cl. F04c *27/00*
U.S. Cl. 418—111 **16 Claims**



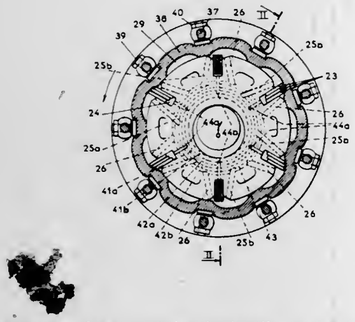
A rotary device including a rotor turning in a fluid chamber and containing slots slidably receiving vanes which project into engagement with the walls of the chamber. Each vane includes at least two sections which are relatively axially movable to assure that the assembly occupies the full axial extent of the chamber, with one section having a tongue projecting axially into and slidable within a groove formed in the other section, and with pressure fluid being conducted through a passage which extends through the interior of the latter section and into its groove to urge the sections axially apart.

3,639,091
POSITIVE DISPLACEMENT PUMP
Reginald T. Lewicki, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 27, 1970, Ser. No. 67,444
Int. Cl. F01c *5/00*; **F03c** *5/00*; **F04c** *1/00*
U.S. Cl. 418—156 **4 Claims**



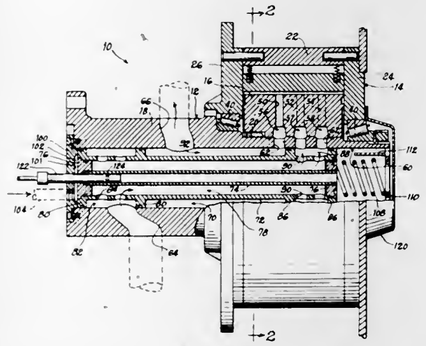
A positive displacement pump comprising a pump body having a pump bore, a rotor mounted for rotation in said bore and cooperating with that bore to define at least one pumping cavity, a plurality of slippers or pumping elements in the form of flat leaf springs carried by the periphery of the rotor, each slipper having its intermediate portion sealingly engaged with the surrounding bore wall, one end of each leaf spring being anchored on the rotor and the other being adapted for sliding movement on the rotor to compensate for changes in the working height of the spring as the spring is carried through a pumping arc.

3,639,092
APPARATUS FOR CONVERTING HYDRAULIC OR PNEUMATIC ENERGY INTO KINETIC ENERGY OR VICE VERSA, SUCH AS A ROTARY MULTICHAMBER VANE-TYPE MOTOR OR PUMPS
Gaston Sauvaget, 14 Allee de l'Oseraie, 94 Fresnes, France
Filed Dec. 30, 1969, Ser. No. 889,353
Claims priority, application France, Dec. 31, 1968, 182549
Int. Cl. F01c *1/00*
U.S. Cl. 418—175 **21 Claims**



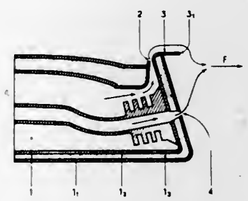
Apparatus for converting hydraulic or pneumatic energy into kinetic energy and vice versa. An inner element carrying sliding vanes is mounted in an outer element defining a plurality of recesses defining variable-volume chambers with the easier element and the vanes. The elements are relatively rotatable. Inlet and outlet conduits are provided in the inner element on each side of each vane. Means including a distributor valve put independent groups of said inlet and for outlet conduits in communication with a high-pressure fluid source or a low-pressure fluid source. Means connect the housings to a source of fluid under pressure.

3,639,093
CONTROL MECHANISM FOR FLUID TRANSLATING DEVICE
Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company
Filed Apr. 13, 1970, Ser. No. 27,823
Int. Cl. F01c *1/00*; **F03c** *3/00*; **F04c** *1/00*
U.S. Cl. 418—177 **4 Claims**



A fluid translating device having a fixed stator and a rotor cooperating to define at least one fluid chamber. The device incorporates fluid conducting means for supplying and exhausting fluid from an external source to the working chamber. The fluid conducting means is remotely controlled and is normally maintained in a first position by automatic means. The fluid conducting means is in the form of a movable valve member and the remotely controlled means includes additional fluid conducting means cooperating with the valve member to move the valve member from the first position and vary the output of the fluid translating device.

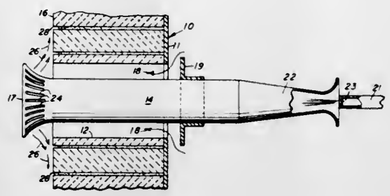
3,639,094
SPACE-HEATING BURNER
Gerard Pierre Marie-Joseph Dupont, Chemin des Postes, Sin le Noble (Nord), France
Filed Jan. 26, 1970, Ser. No. 5,716
Claims priority, application France, Jan. 30, 1969, 6901978
Int. Cl. F23m *9/00*
U.S. Cl. 431—115 **2 Claims**



The invention concerns a space-heating burner particularly for furnaces, which produces optimum mixing of the two combustion components, characterized by the fact that the

oxidant is stored under pressure in an enclosed space comprising a delivery tube lengthened on the outside by a drip-flap or lip set at a tangent to the outlet, then progressively turned back so that the jet is directed perpendicular to the outlet direction of the delivery tube, a standard type of fuel outlet nozzle being positioned close to this drip-flap in such a way that the oxidant thus injected draws up by suction the carburant forced out of the nozzle, to form a homogenous combustion mixture.

3,639,095
BURNER ASSEMBLY PRODUCING RADIANT HEAT
John Smith Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed July 31, 1969, Ser. No. 846,405
Int. Cl. F23c *5/10*
U.S. Cl. 431—177 **2 Claims**



A burner assembly producing radiant heat by discharging the burning fuel towards the surface of a refractory structure from which the heat radiates onto objects or articles to be heated. The face of the ceramic structure is provided with fissures into which the burning fuel enters and recycles to increase the temperature of the refractory structure from which heat radiates.

CHEMICAL

3,639,096
PROCESS OF TREATING DIRECT DYED CELLULOSIC TEXTILES WITH A MIXTURE OF AMINOPLAST CREASEPROOFING AGENTS AND PRODUCTS RESULTING THEREFROM
Ernest Linwood Wright, III, Danville, Va., assignor to Dan River Inc., Danville, Va.
Continuation-in-part of application Ser. No. 290,338, June 25, 1963, now abandoned. This application Oct. 19, 1964, Ser. No. 404,900
Int. Cl. D06p *5/00*; **D06m** *13/54*
U.S. Cl. 8—74 **12 Claims**

Cellulosic textiles dyed with a direct dye characterized by a wrinkle-resistant finish which is resistant to degradative effects of retained chlorine, the finish comprising a cured composition which in the uncured state contained N,N'-dimethylol-4,5-dihydroxyethyleneurea and a methylated melamineformaldehyde condensate, said composition being cured with an acid catalyst and heat. Processes of manufacturing such textiles are also disclosed.

3,639,097
IMINE-TERMINATED POLYMERS IMPROVE COTTON DURABLE PRESS PRODUCTS
Joseph S. Bruno, Chalmette; Robert J. Harper, Jr., Metairie, and John D. Reid, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed May 13, 1969, Ser. No. 824,252
Int. Cl. D06m *13/48*, *13/54*, *13/34*
U.S. Cl. 8—116.2 **3 Claims**

Imine-terminated polymers having polyalkylene ether moieties with a molecular weight between 500 and 10,000 have been used to improve the wet and conditioned wrinkle recovery and smooth-drying characteristics of cotton fabrics. Durable press performance can then be achieved by treatment with said polymers in combination with a less than usual amount of cross-linking agent. Such a system produces a fabric with higher conditioned and wet wrinkle recovery and better breaking strength, tearing strength, and abrasion resistance than conventional treatment. These polymers also have been used in combination with preferential cross-linking and wet fixation methods to produce fabric with improved wrinkle recovery and increased abrasion resistance.

3,639,098
STABILIZATION OF TEXTILE FIBRES
Jack Delmenico, Belmont, Victoria, and Hilbert John Katz, Highton, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia
Filed Dec. 4, 1969, Ser. No. 882,276
Claims priority, application Australia, Dec. 5, 1968, 47352/68
Int. Cl. D06m *3/02*, *3/06*, *3/10*
U.S. Cl. 8—127.5 **10 Claims**

A method of treating wool or cotton fibers to improve their resistance to, and recovery from, deformations encountered, for example, in the wrinkling of garments during wearing and in the deterioration of dimensions and shape of such articles during use or washing, which method comprises subjecting the fibers to a heat treatment while maintaining the regain within the range corresponding to the range of relative humidities encountered under normal use and for a period sufficient to allow the rearrangement of at least a proportion of the hydrogen bonds in the fibers in their minimum energy configuration.

The method may form part of a process for rendering the articles dimensionally stable to machine washing and drying, in accordance with which the fibers treated as above are reacted with a reagent capable of forming permanent cross-links between reactive groups in the fibers.

3,639,099
PREPARATION OF HIGH-SILICA FAUJASITE
Curtis Homer Elliott, Jr., Baltimore, and Carl Vance McDaniel, Laurel, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,657
Int. Cl. C01b *33/28*
U.S. Cl. 23—112 **6 Claims**

Faujasite having a silica to alumina molar ratio greater than 4 is prepared by forming a reaction mixture having specified proportions of Na_2O, Al_2O_3, SiO_2 and H_2O using as reactants solutions of sodium silicate, sodium aluminate, and an aluminum salt to provide a proportion of the alumina, and crystallizing the reaction mixture in the presence of nucleation centers (zeolitic seeds). Suitable aluminum salts are aluminum sulfate, chloride, and nitrate.

3,639,100

MOLTEN SALT PRE-TREATMENT OF REACTANTS FOR $TiCl_4$ OXIDATION

Christian E. Rick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 551,226, May 19, 1966. This application July 24, 1969, Ser. No. 844,604

Int. Cl. C01g *23/04*

U.S. Cl. 23—202 V **6 Claims**

The production of metal oxide powders by the reaction of vaporous halides of titanium, zirconium, iron, aluminum, silicon and the like with oxygen is improved by preheating and conditioning at least one of the reactants by contact with molten salt prior to the reaction. The method permits carrying out the reaction in the presence of salt vapor as well as condensed particles of these salts.

3,639,101

PROCESS FOR PRODUCING SILICON OXYNITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed June 29, 1970, Ser. No. 50,939

Int. Cl. C01b *21/06*

U.S. Cl. 23—203 R **5 Claims**

The production of silicon oxynitride bodies from solid reaction mixes of silicon and silica is facilitated, in terms of strength of product and dimensional stability by controlling the amount of gaseous nitrogen available during reaction. The maximum reaction rate, which can be controlled by control of the partial pressure of nitrogen, can vary from 26 percent per hour for furnace loads of 10 pounds, to 3 percent per hour for loads of 10,000 pounds. Argon has been found particularly useful to control the reaction.

3,639,102

METHOD OF PREPARING FLUORINE PERCHLORATE

Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Original application July 11, 1968, Ser. No. 744,621, now Patent No. 3,556,726, which is a continuation-in-part of application Ser. No. 204,663, June 19, 1962, now abandoned. Divided and this application Aug. 3, 1970, Ser. No. 60,756

Int. Cl. C01b *11/14, 11/24*

U.S. Cl. 23—203 R **5 Claims**

Process of preparing fluorine perchlorate by reacting elemental fluorine with an alkali metal perchlorate in a liquid moderator and recovering fluorine perchlorate as a product of the process.

3,639,103

FLUID BED REACTORS

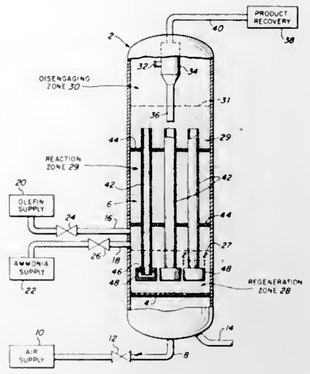
Harold R. Sheely, Newton, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Apr. 21, 1970, Ser. No. 30,456

Int. Cl. B01j *9/20, 11/04;* **C07c** *121/02*

U.S. Cl. 23—288 S **9 Claims**

Improved fluid bed reactors characterized by downcomers for increasing the rate of catalyst turnover from the reaction zone to a catalyst regeneration zone. The invention is applicable to the production of unsaturated nitriles by the vapor phase reaction of oxygen, ammonia, and an olefin, as well as to other catalytic vapor phase reactions.



3,639,104

PREPARATION OF MAGNESIUM ALUMINUM HYDRIDE

Eugene C. Ashby; Walter E. Foster, and Horace E. Redman, all of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Mar. 29, 1963, Ser. No. 269,849

Int. Cl. C01b *6/32, 6/24;* **B01d** *11/00*

U.S. Cl. 23—365 **10 Claims**

1. A method for the preparation of magnesium aluminum hydride which comprises reacting sodium aluminum hydride with an anhydrous magnesium halide in an ether as reaction solvent said ether being selected from the group consisting of unsubstituted alkyl ethers, diethylene glycol dialkyl ethers, and tetrahydrofuran mechanically separating the impure solid reaction products, separating magnesium aluminum hydride etherate from said reaction product by treatment with an ether as extractant for said etherate said ether being selected from the group consisting of unsubstituted alkyl ethers, diethylene glycol dialkyl ethers and tetrahydrofuran removing said extractant from the extract by evaporation thereof to dryness, removing the complexed ether by heating said etherate under reduced pressure to a temperature not in excess of 100° C. and recovering essentially ether-free magnesium aluminum hydride.

3,639,105

PREPARATION OF HYDROSILANES

William H. Atwell; Rudolf M. Salinger, and Richard P. Seibert, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 27, 1970, Ser. No. 23,443

Int. Cl. C07f *7/02;* **C01b** *33/04*

U.S. Cl. 23—366 **10 Claims**

Hydrosilanes are produced by contacting a disilane with hydrogen gas under pressure and thereafter heating the mixture in the presence of a transition metal catalyst such as palladium on charcoal. The recovered hydrosilanes are particularly useful as precursors in the production of other useful materials.

3,639,106

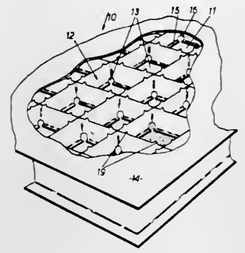
ACOUSTIC PANEL

Reginald W. Yate, Watford, England, assignor to Burnley Engineering Products Limited, Burnley, Lancashire, England

Filed Apr. 14, 1969, Ser. No. 815,661

Claims priority, application Great Britain, May 6, 1968, 21,441/68; May 16, 1968, 23,207/68; 23,208/68; July 17, 1968, 34,136/68

U.S. Cl. 29—191 **5 Claims**



A method of joining together in sandwich manner a unit comprising a first metallic sheet and a second metallic sheet with a cellular metallic core between them is effected by welding the first sheet to suitable prominences on the cell walls of the core and brazing the second sheet to the core in such a way that brazing material enters and so reinforces the corners of the cells but is not permitted to flow on to the first sheet. The unit constitutes an acoustic panel in which the first sheet is an acoustic sheet which is welded to the prominences on the cell walls of the core while the second sheet is brazed to the core with brazing material having been caused to flow into corners of the core cells to reinforce said corners and effectively secure the second sheet to the core, but without the braze material having been permitted to flow on to said acoustic sheet.

3,639,107

HOT-DIP-ALUMINIZING ALLOY

Charles B. Thompson, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed July 22, 1969, Ser. No. 843,826

Int. Cl. B23p *3/10*

U.S. Cl. 29—196.2 **2 Claims**

An aluminizing alloy consisting essentially of about 0.75 to 4.0 percent manganese and the balance aluminum and impurities. The alloy when applied to a ferrous article by immersion of the ferrous article in a molten bath of the alloy providing a surface coating of higher brightness and uniform smoothness. The impurities may include up to 0.20 percent silicon, up to 0.35 percent iron and up to 0.02 percent copper. A composite article having a ferrous core and a coating of the aluminum base manganese alloy. A method of producing a hot dip aluminized ferrous article having a bright finish comprising providing a molten bath of an aluminum base alloy at about 1,250° to 1,400° F. and immersing a ferrous article in the bath for about 1 to 6 minutes. The aluminum base alloy consisting essentially of 0.75 to 4.0 percent manganese and the balance aluminum and impurities.

3,639,108

GASOLINE THICKENED WITH LATEX COMPOSITION

Leo Finkelstein, Aberdeen, and John J. Blissel, Kingsville, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Feb. 9, 1956, Ser. No. 564,586

Int. Cl. C10l *7/02*

U.S. Cl. 44—7 E **1 Claim**

1. A flame thrower fuel consisting essentially of gasoline, natural rubber latex about .05 percent to 1.5 percent by weight of a nonionic surface active agent selected from the group consisting of polyoxyethylene sorbitan trioleate, polyoxyethylene sorbitan dioleate and polyoxyethylene sorbitan monooleate, and from 15 to 40 percent by weight of the said latex of a pour point depressant selected from the group consisting of ethylene glycol, glycerine and formamide said latex having not less than 60 percent by weight of rubber solids, in such quantity that the rubber solids content of the said fuel is 3 to 17 percent by weight.

ERRATUM

For Class 44—62 see:
Patent No. 3,638,349

3,639,109

SMOKE SUPPRESSANT COMPOSITIONS FOR PETROLEUM FUELS

Elmer J. Badin, Hightstown, N.J., assignor to Cities Service Oil Company, Bartlesville, Okla.

Filed Jan. 2, 1968, Ser. No. 694,819

Int. Cl. C10l *1/18, 1/30*

U.S. Cl. 44—66 **20 Claims**

The invention disclosed herein is a liquid fuel composition having reduced soot and smoking characterized comprising a major proportion of a liquid hydrocarbon fuel and a minor proportion of Group IIA and Group IIB metal salts of carboxylic acids. A preferred fuel composition is from 0.1 to 0.6 percent by weight of barium- and zinc 2-ethylhexanoates admixed in diesel fuel, wherein the weight ratio of barium to zinc is about 10 to 1. Further improvement in smoke and soot reduction is obtained in hydrocarbon fuels when an ether is additionally incorporated into the salt and fuel mixture. A mixture of from about 0.1 to 0.6 percent by weight of barium 2-ethylhexanoate and zinc 2-ethylhexanoate, from between 0.2 to 0.5 percent by weight of the monomethyl ether of ethylene glycol and the balance, a diesel fuel, has substantially reduced smoke and soot forming characteristics.

3,639,110

DETERGENT GASOLINE COMPOSITION

Arthur Lee Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 2, 1968, Ser. No. 780,573

Int. Cl. C10l *1/22*

U.S. Cl. 44—72 **8 Claims**

Improved detergent gasoline composition is obtained by incorporating within the gasoline stock from about 0.0001 to about 1.5 weight percent of the reaction product obtained by reacting an N-secondary-alkyl trimethylene diamine (e.g. can contain 10–20 carbon atoms in the alkyl group) and a phosphate ester obtained, e.g., by reacting equal molar amounts of polyphosphoric acid and a condensation product of an alcohol (can contain three to six carbon atoms) and 1–10 moles of ethylene oxide.

3,639,111

METHOD AND APPARATUS FOR PREVENTING FORMATION OF ATMOSPHERIC POLLUTANTS IN THE COMBUSTION OF ORGANIC MATERIAL

David L. Brink, and Jerome F. Thomas, both of Berkeley, Calif., assignors to The Regents of the University of California

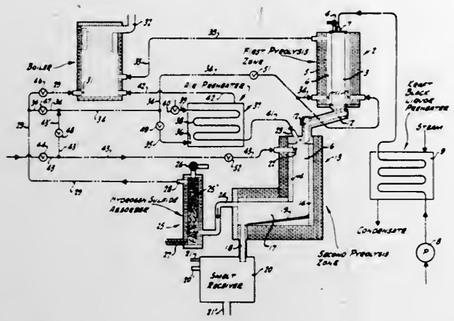
Filed Jan. 30, 1969, Ser. No. 795,288

Int. Cl. C10j *3/10, 3/14, 3/20*

U.S. Cl. 48—111 **12 Claims**

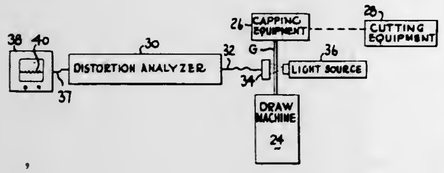
Organic material, such as kraft black liquor, organic fuels, garbage and organic wastes, is destructively distilled and pyrolyzed at an elevated temperature and for a time sufficient to break down the material to noncombustible solids and to a stable gaseous clean burning fuel. The temperature is maintained to preclude recombination of intermediate

products formed during the pyrolysis and which would otherwise pollute the atmosphere. A controlled amount of oxygen is continuously introduced during the cracking to provide



energy by exothermic oxidative reactions but the oxygen is insufficient to effect stoichiometric or in other words complete combustion.

3,639,112
METHOD AND APPARATUS FOR MAKING GLASS WINDSHIELDS
Jagadeesan V. Poola, Bridgeport, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jan. 16, 1970, Ser. No. 3,384
Int. Cl. C03b *33/02*; **G01b** *11/30*
U.S. Cl. 65—29 **4 Claims**

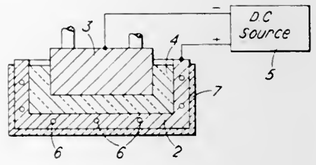


Windshields are made from vertically drawn glass in accordance with a method that involves scanning substantially the entire width of the glass with a distortion-analyzer apparatus that produces a trace or other record proportional to the second derivative with respect to distance traversed of the thickness of the glass, and then cutting from the glass so scanned at least one piece of windshield blank, with the windshield blank being taken from a portion of the piece wherein said derivative is at a minimal value.

3,639,113
METHOD OF MANUFACTURING TAPE POSSESSING SEMICONDUCTING PROPERTIES
Margarita Semenovna Aslanova, Karmanitsky per. 10, kv. 3, and Maria Alexandrovna Yakovleva, 3 Parkovaya ulitsa, 48, kv. 47, both of Moscow, U.S.S.R.
Continuation-in-part of application Ser. No. 475,252, July 27, 1965, now abandoned. This application Jan. 31, 1969, Ser. No. 795,689
Int. Cl. C03c *15/00*; **C03b** *29/00*; **C03c** *23/20*
U.S. Cl. 65—30 **5 Claims**

A method of producing a fiberglass tape with semi-conducting properties, according to which from a glass melt comprising 40 to 60 weight percent of SiO_2, 5 to 16 weight percent of Al_2O_3, 15 to 40 weight percent of CuO, 0 to 16 weight percent of CaO, 0 to 10 weight percent of MgO, 0 to 2 weight percent of NaO, and 0 to 10 weight percent of B_2O_3 glass fibers are obtained, from which a fiberglass tape is produced which is subjected to heat treatment in a reducing medium at 100 to 800°C.

3,639,114
METHOD OF RESHAPING AND ION-EXCHANGING GLASS
David G. Loukes, Prescot, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed May 7, 1969, Ser. No. 822,592
Claims priority, application Great Britain, May 14, 1968, 22,901/68
Int. Cl. C03b *23/00*; **C03c** *21/00*
U.S. Cl. 65—30 **4 Claims**



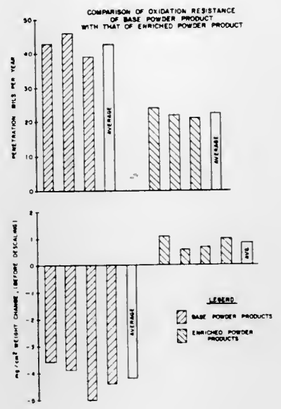
A molded glass article is produced by pressing a body of molten glass which is sufficiently hot to be electrically conductive between two complementary mold parts to produce an article of a required shape, and passing an electric current through the glass between solid electrically conductive electrodes in direct contact with the molded faces of the glass to impart a desired surface characteristic to at least one of the molded faces of the glass.

3,639,115
N-(CHLOROPHENOXYACETYL)ETHYLENE UREA HERBICIDES
Edwin D. Little, Convent Station, N.J., and Clarence A. Hirsch, Indianapolis, Ind., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,986
Int. Cl. A01n *9/22*; **C07d** *49/30*
U.S. Cl. 71—92 **4 Claims**

N-(Chlorophenoxyacetyl)ethylene ureas are prepared by reacting ethylene urea with a chlorophenoxyacetyl chloride. The products are useful herbicides.

3,639,116
LANTHANUM-CONTAINING POWDERS FOR MAKING OXIDATION-RESISTANT METALLICS, METHOD OF MAKING SAME, AND METALLIC PRODUCTS MADE THEREFROM
Robert Blanchard Herman Herchenroeder, Kokomo, Ind., assignor to Cabot Corporation, Boston, Mass.
Filed Jan. 6, 1970, Ser. No. 917
Int. Cl. B22f *1/00*
U.S. Cl. 75—0.5 BB **5 Claims**

A powder blend suitable for compaction and metallurgical bonding which contains at least 10 percent chromium and preferably at least 15 percent chromium, more than 30 percent and preferably more than 38 percent of either nickel, cobalt, or any combination thereof, and a lanthanum-silicon alloy containing at least 0.4 percent silicon, the lanthanum-silicon alloy being present in sufficient quantity such that the lanthanum content of the total powder mixture is about 0.2 to 0.2 percent and preferably 0.02 to 0.1 percent (by weight).



Products made from this blend as well as the method of making same are also disclosed.

3,639,117
METHOD FOR PRODUCING BEARING GRADE ALLOY STEELS
Albert L. Lehman, Center Valley, Pa., assignor to Bethlehem Steel Corporation
Filed May 14, 1970, Ser. No. 37,297
Int. Cl. C21b *7/10*, *7/06*
U.S. Cl. 75—49 **2 Claims**

This invention is an improvement in a method for producing alloy steel which may contain, for example about 1.00% carbon, about 0.45% manganese, about 0.25% silicon and 1.50% chromium. The steel has a lower incidence of non-metallic inclusions than steel produced in a conventional method, for example an air-melt electric furnace, open hearth. The steel is melted and tapped and then vacuum treated by any one of several well-known methods. The steel is deoxidized and a fluoride-containing acid slag is added to the steel. The steel and the slag are intimately mixed. The steel is then teemed into molds which can be relatively large.

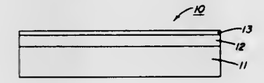
3,639,118
PROCESS FOR PURIFYING MERCURY
Austin O'Grady, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.
Filed May 22, 1970, Ser. No. 39,891
Int. Cl. C22b *43/00*
U.S. Cl. 75—121 **9 Claims**

Mercury is purified with regard to iron, calcium and similar metallic impurities by contacting the mercury with "nascent" chlorine and with an aqueous phase capable of generating nascent chlorine. The contact step may be carried out, for example, by electrolyzing a chloride brine which is in contact with the mercury; or by washing the mercury with a mineral acid and the metal salt of an oxychloride acid. Impurity metal values are solubilized into the aqueous phase which is separated from the mercury. The process generally involves only two steps (i.e., contacting and separating), is easy to perform, and can be carried out within a relatively few minutes.

3,639,119
COPPER BASE ALLOY
Charles D. McLain, Alton, Ill., assignor to Olin Corporation
Continuation-in-part of application Ser. No. 648,946, June 26, 1971, now abandoned. This application May 4, 1970, Ser. No. 34,605
Int. Cl. C22c *9/00*, *9/02*
U.S. Cl. 75—157 **10 Claims**

The present disclosure teaches an improved copper base alloy containing iron and tin and a material selected from the group consisting of phosphorous and zinc and mixtures thereof. The alloys of the present invention are characterized by improved physical properties, in particular high strength and high conductivity.

3,639,120
TWO-LAYERED PHOTOCONDUCTIVE ELEMENT CONTAINING A HALOGEN-DOPED STORAGE LAYER AND A SELENIUM ALLOY CONTROL LAYER
Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 16, 1966, Ser. No. 557,930
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **9 Claims**



A xerographic plate having a double layered photoconductive portion, the lower layer being designated as a storage layer and the upper layer a control layer. The storage layer consists of halogen doped selenium in a thickness from about 20 to 200 microns. The control layer consists of undoped selenium alloys in a thickness of about 0.1 to 5 microns. The plate utilizes the optimum photoconductive properties of each layer.

3,639,121
NOVEL CONDUCTING LACQUERS FOR ELECTROPHOTOGRAPHIC ELEMENTS
William C. York, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 3, 1969, Ser. No. 803,708
Int. Cl. G03g *5/00*; **C09d** *5/24*
U.S. Cl. 96—1.5 **14 Claims**



Novel electrically conducting lacquers are coated on the edge of electrophotographic elements to maintain conducting layers at ground potential during charging by providing an electrical path from the conducting layer to a grounding means. Typical conducting lacquers include mixtures of electrically conducting carbon black and graphite in a polymeric resin binder.

3,639,122
VINYL-AMINO RESIN INTERLAYER FOR ELECTROPHOTOGRAPHIC MEMBER USED IN OFFSET PRINTING

Sakae Shimizu; Fumiaki Arai, and Tuneo Kurotori, all of Tokyo, Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,375
Claims priority, application Japan, June 7, 1968, 43/39147
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.8 **1 Claim**

An electrophotograpic material for offset printing having an interlayer, which comprises a reaction product of vinyl resin and amino resin, between a support and a photoconductive layer, said vinyl resin being vinyl polymer having hydroxyl group in the terminal of the long side chain thereof and said amino resin being melamine resin, urea resin, aniline-aldehyde resin, polyacrylamide, polymethylolacrylamide or their derivatives such as methylated-ethylated- or butylated-methylolmelamine, polymethacrylamide or polymethylolmethacrylamide is disclosed.

3,639,123
DOUBLE-TRANSFER PROCESS FOR PHOTOHARDENABLE IMAGES

Russell Houston Gray, Rumson, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1969, Ser. No. 865,948
Int. Cl. G03c *11/12*
U.S. Cl. 96—28 **9 Claims**

An image-forming process comprises, in order, (1) imagewise exposing a photohardenable layer to actinic radiation to harden the layer throughout the exposed areas while leaving the underexposed areas unhardened, (2) transferring the underexposed material at a temperature between the softening point of the exposed and underexposed areas to a receptor surface, and (3) heating the exposed areas to a temperature above their softening point and transferring said areas to a second receptor surface. The invention provides both positive- and negative-working processes.

3,639,124
PRETRANSFERRED SILVER DEPOSIT RECEIVING ELEMENT

Carole L. Groncki, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 17, 1969, Ser. No. 885,978
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **6 Claims**

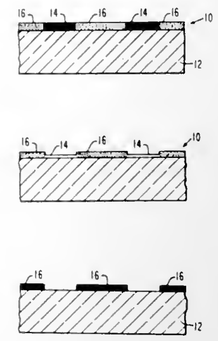
Photomechanical procedures for forming ink reproductions from an inking master obtained by silver diffusion transfer whereby continuous tone subject matter is reproduced to provide ink reproductions thereof of improved tonal quality.

3,639,125
PROCESS FOR PRODUCING PHOTOGRAPHIC RELIEF PATTERNS

Nirmal Chand, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,334
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **9 Claims**

A process for producing photographic patterns on a substrate, such as a glass photographic mask, in which a heating step is used to selectively remove areas of a gelatin coating on a substrate. After a developed silver image is formed in the gelatin coating, a silver-removing reagent is applied to the coating to remove the silver from the exposed (image) areas of the coating. The coating is then heated at a temperature of at least 250° C. to remove the silver-free areas of the



gelatin coating from the substrate and to harden the remainder of the coating. A reversal process is also disclosed.

3,639,126
PHOTOGRAPHIC TANNING DEVELOPMENT AGENT PRECURSOR IN LIGHT-SENSITIVE ELEMENT

Johan Lodewijk Verelst, Kontich; Jozef Frans Willems, Wilrijk, and Raymond Leopold Florens, Edegem, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed July 19, 1968, Ser. No. 745,979
Claims priority, application Great Britain, July 19, 1967, 33,260/67; 33,261/67
Int. Cl. G03c *1/06*
U.S. Cl. 96—95 **10 Claims**

Light-sensitive photographic materials are provided in the light-sensitive silver halide emulsion layer or in a separate colloid layer in water-permeable relationship with the emulsion layer, with a tanning development agent precursor constituted by an O-dihydroxybenzene derivative having at least one of its hydroxyl groups esterified to form a halogenated acyloxy group or etherified to form an α-tetrahydropyranyloxy group. Such precursor compounds are stable during storage and do not result in discoloration of the emulsion layer. On treatment with an alkaline activating liquid, a tanning photographic developing agent is released. The O-dihydroxybenzene derivatives per se are also disclosed.

3,639,127
SILVER HALIDE EMULSIONS CONTAINING A DYE DERIVED FROM 4,6-DIARYL SUBSTITUTED PICOLINIUM SALTS AS DESENSITIZER

Leslie G. S. Brooker; Daniel S. Daniel, and Robert C. Taber, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,831
Int. Cl. G03c *1/36, 1/08*
U.S. Cl. 96—101 **19 Claims**

Photographic silver halide emulsions containing cyanine, styryl and merocyanine dyes derived from 4,6-diaryl substituted picolinium salts, which either sensitize or desensitize silver halide emulsions and photographic elements containing said emulsions are described. 3'-Ethyl-1,4,6-triphenyl-2-pyridothiacyanine iodide, 2-(3-nitrostyryl)-1,4,6-triphenylpyridinium iodide and 3-ethyl-5-{[1,4,6-tri(4-methoxyphenyl)-2(1H)-pyridylidene]-ethylidene} rhodanine are illustrative of the dye compounds employed.

3,639,128
FERROUS COMPLEX OF N-CONTAINING HETEROCYCLIC COMPOUND AS SILVER LATENT IMAGE STABILIZER

Reinhard Matejec; Rudolf Meyer, both of Leverkusen, and Wolfgang Himmelmann, Opladen-Luetzenkirchen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 9, 1969, Ser. No. 840,533
Claims priority, application Germany, July 19, 1968, P 17 72 903.2
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **2 Claims**

Photographic material comprising at least one silver halide emulsion layer, which is improved with respect to the stability of the latent image and the final silver image by addition of a complex compound of iron with a nitrogen-containing heterocyclic compound having a five- or six-membered heterocyclic ring as ligand.

3,639,129
PRODUCTION OF VEGETABLE PROTEIN BEVERAGE BASE

Gus C. Mustakas; William J. Albrecht, and George N. Bookwalter, all of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Apr. 9, 1970, Ser. No. 27,184
Int. Cl. A23c *11/00*
U.S. Cl. 99—64 **5 Claims**

A rapid continuous process which utilizes vegetable protein flour to produce a highly nutritive protein beverage base powder that can be easily converted to a liquid product by merely adding water.

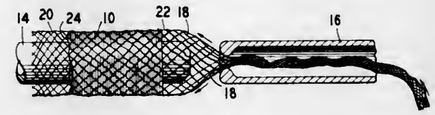
ERRATA

For Classes 99—23 and 99—107 see:
Patent Nos. 3,638,553 and 3,638,554

3,639,130
SHIRRED CASING STICK

Harry Paul Elchin, Western Springs, Ill., and Kenneth Moritz Jones, Bayamon, P.R., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,452
Int. Cl. B65b *61/00*
U.S. Cl. 99—175 **4 Claims**



A shirred casing stick having a bore is sheathed and lined within a binding adapted to maintain the integrity of the stick and the compaction of the shirred wall thereof throughout the handling and water soaking operations preceding stuffing. The binding comprises a tubular length of flexible, reticulated material extending under tension over the outside surface of the stick and through the bore, both extremities of the tubular length being secured to each other at one end of the stick.

3,639,131
PERFORMANCE AND STORAGE LIFE OF RAIN REPELLENTS

David W. Clarke, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 15, 1970, Ser. No. 46,458
Int. Cl. C09k *3/18*
U.S. Cl. 106—2 **4 Claims**

An alcohol and water solution of a silicone polymer consisting of an acid neutralized cationic polysiloxane copolymer containing amino functional groups is heated in an enclosed aluminum container to form a barrier coating inside the container and to enhance the performance characteristics of the polymer in imparting visibility through a transparent surface during water impingement.

3,639,132
TITANIUM DIOXIDE CERAMIC COMPOSITION AND HOT-PRESSING METHOD FOR PRODUCING SAME

Lawson Egerton, Sarasota, Fla., and John Thomson, Jr., Spring Lake, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1970, Ser. No. 27,893
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 R **7 Claims**

A polycrystalline ceramic body of rutile (TiO_2) has been produced which has a density of at least 4.23 grams per cubic centimeter (99.5 percent of theoretical density) and an electrical quality factor of at least 10,000 at frequencies in the gigaHertz range. The body is produced by hot pressing TiO_2 under reducing conditions, the TiO_2 containing minor amounts of certain trivalent cations such as Fe^{3+}, followed by heating in oxygen and slow cooling. Applications include use as a dielectric resonator in microwave filters.

3,639,133
PROCESS FOR MAKING SILICA-COATED LEAD CHROMATE PIGMENTS AND PRODUCT THEREOF

Howard R. Linton, Scotch Plains, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 681,323, Nov. 8, 1967, now abandoned. This application Oct. 23, 1970, Ser. No. 83,674
Int. Cl. C09c *1/20*
U.S. Cl. 106—298 **14 Claims**

Silica-coated lead chromate pigments having improved stability in use under abrasive conditions are prepared by processes in which the lead chromate pigment particles, in a liquid slurry, are subjected to intense shear to break up agglomerates, and are thereafter coated with dense silica, optionally in combination with alumina.

3,639,134
PROCESS FOR TREATING THE SURFACE OF A STRETCHED FILM

Gerhard Stegmeier, Mainz-Weisenau; Helga Lenhart, Wiesbaden; Horst Gebler, Wiesbaden-Bierbrich, and Horst Diener, Frankfurt-Hochst, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed June 4, 1969, Ser. No. 830,505
Claims priority, application Germany, June 6, 1968, P 17 69 534.0; July 29, 1968, P 17 69 872.5
Int. Cl. B44d *5/04;* **B32b** *27/32*
U.S. Cl. 117—7 **7 Claims**

This invention relates to a process for treating the surface of a stretched film of a polyester or polypropylene or copolymers or polymer mixtures of the latter containing at least 60 percent by weight, calculated on the total polymer weight, of propylene, in order to improve the adhesion of the film surface to a heat-sealable coating, which comprises subjecting the film surface to a corona discharge in an atmosphere consisting essentially of nitrogen or carbon dioxide containing not more than about 15 percent by volume of ox-

ygen, at a film temperature in the range of room temperature to about 25° to 50° C. below the softening point of the stretched film. The invention also relates to the films so treated.

3,639,135
METHOD OF ADHERENTLY BONDING NEOPRENE TO METAL

Alvin E. Hohman, Dallas, Tex., and William L. Kennedy, Kansas City, Mo., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed June 3, 1968, Ser. No. 733,803
Int. Cl. B32b *15/06, 15/08;* **B44d** *1/14*
U.S. Cl. 117—10 **6 Claims**

Disclosed is a method of adherently bonding a neoprene (polychloroprene) composition to a metal substrate comprising the use of a primer containing a chlorinated rubber and an epoxy resin. A liquid neoprene composition is applied to the dried primer, the composition and the primer are intermixed to redissolve the primer, and the resultant coating is dried and cured.

3,639,136
DURABLE PRESS FINISH FOR WOOL/CELLULOSIC FABRICS (MELAMINE/URON RESINS)

Philip B. Roth, Bridgewater Township, Somerset County, Somerville, N.J., assignor to Koratron Company, Incorporated, San Francisco, Calif.

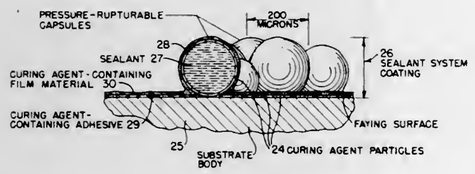
Filed July 29, 1968, Ser. No. 748,175
Int. Cl. B44d *1/44;* **D06m** *15/70*
U.S. Cl. 117—10 **13 Claims**

A method for imparting durable press properties to textile fabrics containing wool and cellulose, comprising impregnating the fabric with a methylated trimethylol melamine, bis(methoxymethyl)uron, a member selected from the group consisting of pentamethylol melamine and hexamethylol melamine, and a delayed action catalyst, and subsequently curing said melamines on said fabric, the composition for the method and the treated textile.

3,639,137
METAL FASTENING COATED WITH PRESSURE-ACTIVATABLE ENCAPSULATED SEALANT SYSTEM

Nicola Marinelli, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 9, 1969, Ser. No. 865,123
Int. Cl. B32b *15/08;* **F16b** *19/04;* **B44d** *1/16*
U.S. Cl. 117—26 **14 Claims**



A pressure-activatable, curable sealant coating system is disclosed. The sealant coating comprises a multitude of minute capsules containing polymerizable polymeric material wherein each of the minute capsules is held to a workpiece—preferably to a fastening or to a substrate to be fastened—by means of adhesive or coating material having dispersed therein finely divided particles of curing agent material for the polymerizable polymeric material.

3,639,138
PHOSPHOR SCREEN FABRICATION

Samuel R. Shortes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 27, 1968, Ser. No. 732,328
Int. Cl. H01j *31/10*
U.S. Cl. 117—33.5 CS **8 Claims**

This specification discloses a method of applying first and second phosphor particles to a display screen wherein first phosphor particles are smaller in diameter than the second phosphor particles characterized by the steps of:

a. immersing a transparent screen in water,

b. suspending the first and second phosphor particles in the water,

c. adding a silicate to the water, and effecting a pH in the range of 7–8 to form gelatinous silicic acid and envelope the larger phosphor particles with the gelatinous silicic acid,

d. allowing time for the second phosphor particles and their gelatinous silicic acid envelope to settle onto said screen,

e. adding an acid to the water to effect a pH of 1–5 and form nongelatinous, semicrystalline, precipitating form of silicic acid which entraps the small first phosphor particles, settling the first phosphor particles onto the second phosphor particles,

f. allowing time for the precipitating silicic acid and the small phosphor particles to settle onto said second particles on the screen,

g. removing the supernatant liquid, and

h. heating said screen and said phosphor particles to drive off the water and bond the phosphor particles and the screen to effect a unitary color display screen.

3,639,139
ALUMINUM PLATING PROCESS

Roger G. Schneggenburger, Freeland, and Reinhold Hellmann, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1968, Ser. No. 765,621
Int. Cl. C23c *3/04*
U.S. Cl. 117—37 R **10 Claims**

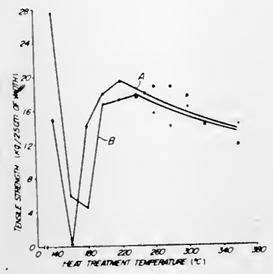
A process for depositing a metallic aluminum film on a substrate material which comprises: depositing a transition metal catalyst on said substrate; depositing an aluminum hydride compound on said substrate in contact with said catalyst; contacting said treated substrate in a heated bath consisting of an inert liquid, thereby decomposing said aluminum hydride material and providing a metallic aluminum coating on said substrate; removing said aluminum coated substrate from said bath and removing said inert liquid to provide said metallic aluminum coating on the substrate.

3,639,140
PROCESS FOR CARBONIZED CELLULOSE FIBER OR THE PRODUCTS THEREOF

Kazuo Miyamichi, Koriyama-shi, Japan, assignor to Nitto Boseki Co., Ltd., Fukushima-shi, Japan

Filed Oct. 3, 1969, Ser. No. 863,518
Claims priority, application Japan, Oct. 12, 1968, 43/74455; Sept. 5, 1969, 44/70437; 44/70438; 44/70439
Int. Cl. C01b *31/07*
U.S. Cl. 117—46 CB **6 Claims**

Cellulose fiber or the product thereof is treated with a strength increasing agent selected from the group consisting of (A) ammonium sulfate, ammonium bisulfate, ammonium sulfite, ammonium bisulfite, ammonium thiosulfate, ammonium sulfamate, ammonium imidosulfonate, and mixtures thereof; (B) a mixture of at least one compound selected from the group consisting of ammonium sulfate, ammonium bisulfate, ammonium sulfite, ammonium bisulfite, ammonium thiosulfate, ammonium sulfamate, ammonium imidosulfonate with at least one organic nitrogen base; and (C) a mixture of an organic nitrogen base and an acid selected from the group consisting of sulfuric acid, sulfurous acid and sulfamic acid, and heat treating the product in an inert atmosphere at a temperature of at least about 400° C. for a period of time sufficient to bring about carbonization.



3,639,141
HEPARINIZATION OF PLASTIC

Manfred F. Dyck, North Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

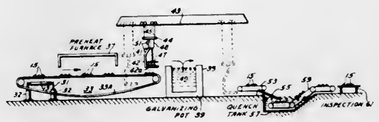
Filed Sept. 16, 1968, Ser. No. 762,376
Int. Cl. B44d *1/16*
U.S. Cl. 117—47 A **2 Claims**

Plastics are rendered nonthrombogenic by heparinizing them following a treatment with an amino alkyl tri alkoxy silane in an inert solvent. The solvent is preferably one capable of swelling the plastic. In the treatment of fluorocarbon plastics, a preliminary treatment with sodium is employed. The amino groups which become attached to the plastic are thus caused to bond heparin to the surface effectively to impart anticoagulating properties.

3,639,142
METHOD OF GALVANIZING

Herris M. Maxwell; John E. Sowers, both of Bethlehem, and John Neil Laidman, Coopersburg, all of Pa., assignors to Bethlehem Steel Corporation

Filed June 10, 1968, Ser. No. 735,740
Int. Cl. B44d *1/092;* **C23c** *1/02*
U.S. Cl. 117—51 **5 Claims**

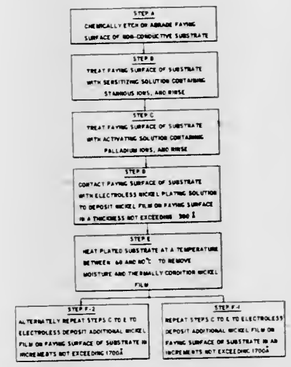


Elongated structural steel members are conveyed in a continuous operation longitudinally through a spray washer, a shot blast cabinet, an acid spray, an acid blowoff, a chloride flux spray and finally a flux blowoff to remove excess flux. The members are then passed through a preheat furnace to dry the flux and preheat the members and are then dipped into a molten zinc bath and removed therefrom supported upon C-hooks which are designed to be vibrated to remove excess molten zinc from the coated material. The structural materials are then passed to a reflow and quench device which rotates the structural members by dropping them off the end of a conveyor onto inclined skid means upon which the angles remain for a predetermined time as they slide down the skid means prior to immersion in a quench tank of water held at 160° F. to set the coating without shattering.

3,639,143
ELECTROLESS NICKEL PLATING ON NONCONDUCTIVE SUBSTRATES

Robert O. Lussow, Wappingers Falls, and Louis H. Wirtz, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,597
Int. Cl. B44d *1/092;* **C23c** *3/02*
U.S. Cl. 117—54 **8 Claims**



A process for electroless deposition of uniform and consistent dense nickel films on nonconductive substrates utilizing conventional techniques. The process requires at least two repetitive cycles of activation, electroless plating of nickel and heating.

3,639,144
ORGANO-PHOSPHORUS COMPOUNDS CONTAINING PERFLUOROALKYL RADICALS AND THEIR APPLICATION TO CELLULOSIC TEXTILES

Leon H. Chance, and Jerry P. Moreau, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed July 18, 1969, Ser. No. 843,200
Int. Cl. B44d *1/092*
U.S. Cl. 117—56 **6 Claims**

Cotton is treated with an aqueous solution of zinc fluoroborate catalyst, and thereafter with a solution of a perfluoroalkyl aziridinyl phosphine oxide to impart oil and water repellency thereto.

3,639,145
ARTIFICIAL LEATHER AND METHOD OF PRODUCING THE SAME

Kanji Fujita, Ibaragi-shi, and Yoshiaki Sakata, Nishi-Yodogawa-ku, both of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Nishi-ku, Osaka, Japan

Filed July 18, 1968, Ser. No. 745,669
Claims priority, application Japan, July 18, 1967, 42/46482
Int. Cl. B29d *27/00;* **D29h** *7/20;* **R44d** *1/44*
U.S. Cl. 117—62 **8 Claims**

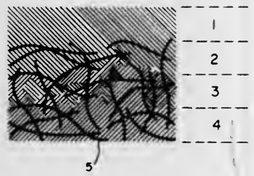
A method of producing artificial leathers which comprises coating a fibrous base material with a polymeric solution containing, as the principal ingredient, a polyurethane-urea elastomer and then treating the coated fibrous base material with a nonsolvent for the polymer to coagulate the polymer.

Certain critical methods for producing the polyurethane-urea elastomer, broadly described as either a "prepolymer" process or a "one-shot" process are described in the specification.

3,639,146
PROCESS FOR THE PRODUCTION OF A MULTILAYER SHEET MATERIAL

Klaus Andra, Eschenhahn; Herbert Porrmann, Konigshofen, and Elfriede Hutschenreuter, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 29, 1970, Ser. No. 59,212
Claims priority, application Germany, July 31, 1969, P 19 38 990.3
Int. Cl. B44d *1/10*; **D06n** *3/00*
U.S. Cl. 117—68 **6 Claims**



This invention relates to a process for the production of a gas-permeable multilayer sheet material, and to the material so produced; the process comprising applying a liquid layer of a solution of a polymer in a water-miscible solvent to the surface of a moving web of fiber fleece which is free from chemical binders and allowing part of the solution to penetrate into the fleece; incorporating an aqueous dispersion of synthetic material in the fleece from the uncoated surface thereof, the dispersing phase of the dispersion acting as a coagulating agent upon part of the polymer solution contained in the fleece; causing a coagulating agent to act upon the liquid layer of polymer solution on the surface of the fleece, upon the still uncoagulated portion of the polymer solution in the fleece, and upon the dispersion of synthetic material contained in the fleece; removing any excess of coagulating agent and solvent, and drying the multilayer sheet material.

3,639,147
ARTICLE HAVING MULTILAYER COATING AND PROCESS FOR PRODUCING SAME

James William Benefiel, Livonia, and Anthony William Opipari, Sterling Heights, both of Mich., assignors to Celanese Coatings Company, New York, N.Y.

Continuation-in-part of Ser. No. 763,972, Sept. 30, 1968, abandoned.
Filed Feb. 3, 1970, Ser. No. 8,389
Int. Cl. B44d *1/14*; **B32b** *15/08*
U.S. Cl. 117—73 **15 Claims**

Product and process for producing a multilayer coating composition by depositing a nonaqueous, pigmented, cellulose ester containing polymeric base film on a substrate and before baking, depositing (wet-on-wet) a transparent polymeric topcoat composition on the base film and baking the resulting multilayer system.

3,639,148
POLYMER FILM SUBSTRATE WITH VINYLIDENE CHLORIDE BASE COATING AND WAX ANTISTICKING TOP COATING

Carl Moore; Dale S. Gibbs, and John W. Vanderhoff, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1970, Ser. No. 25,261
Int. Cl. B32b *27/08, 27/30*
U.S. Cl. 117—76 F **4 Claims**

A composite article and method for preparing the same wherein such article is composed of a macromolecular organic substrate having at least one surface wherein the contact angle of water to such surface is less than about 80°, a base coating for such surface of a copolymer consisting principally of a normally crystalline vinylidene chloride polymer coating and a top coating containing an antisticking agent.

3,639,149
COMPOSITE LAMINATE OF WATER-EXTENDED UNSATURATED POLYESTER

Richard Elliot Thornton Spalding, South Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

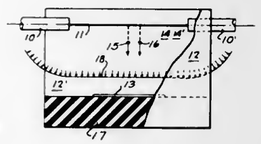
Filed Oct. 28, 1970, Ser. No. 84,918
Int. Cl. B32b *27/06*; **B44d** *1/14*
U.S. Cl. 117—76 F **10 Claims**

A process for producing a laminated article that is either flat or thermoformed comprising prime coating a thermoformable or thermoformed flexible thermoplastic sheet with a neat unsaturated polyester resin composition and depositing on said prime coating at least one layer of fiberglass reinforced water-extended polyester resin composition and permitting the two polyester resins to convert to the thermoset state.

3,639,150
ELECTRIC EXPLOSION METAL SPRAYING FOR SUBSTRATE

Toshiro Suhara, 9-12 Komuin Jutaku, Miyuki-machi, Kashii, and Shigehisa Fukuda, 1479-3 Hakozaki, Hakata, both of Japan

Filed July 25, 1968, Ser. No. 747,675
Int. Cl. B44d *1/02*
U.S. Cl. 117—93 **2 Claims**



This invention relates to an improved process for coating a metal substrate with metallic particles by exploding a consumable metal wire in atmosphere or an inert gas of normal pressure by a heavy current.

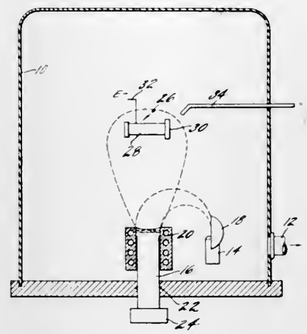
3,639,151
VAPOR RANDOMIZATION IN VACUUM DEPOSITION OF COATINGS

Richard C. Krutenat, Middletown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 807,636
Int. Cl. C23c *11/02*
U.S. Cl. 117—93.4 **4 Claims**

In the processes for forming protective coatings on metal substrates, particularly the nickel-base and cobalt-base superalloys, by deposition in a vacuum, an electrically biased

substrate, in conjunction with a sustained plasma discharge between the source and the substrate, is utilized to ran-

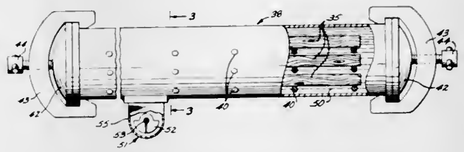


domize the coating vapor cloud and allow non-line-of-sight deposition.

3,639,152
METHOD AND APPARATUS FOR FLUID IMPREGNATION UTILIZING SONIC MECHANICAL VIBRATION

Albert G. Bodine, Jr., 7877 Woodley Ave., Van Nuys, Calif.

Continuation-in-part of application Ser. No. 454,335, May 10, 1965, now abandoned. This application Mar. 28, 1966, Ser. No. 538,062
Int. Cl. B44d *1/06*
U.S. Cl. 117—113 **14 Claims**



A solid material to be impregnated with a liquid material is held in intimate contact with such liquid material. High-level sonic energy is applied to the materials to cause thorough impregnation of the solid by the liquid. This sonic energy is provided from a resonant vibration system which is vibrationally excited at a resonant frequency by means of an orbiting mass oscillator which is coupled thereto, such oscillator automatically adjusting its frequency to maintain resonant vibration of the system.

3,639,153
PROCESS OF MODIFYING A HYDROHALOGEN POLYMER SURFACE

Terry Bill Waggoner, Royal Oak, and Edgar John Seyb, Jr., Oak Park, both of Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Filed Aug. 25, 1966, Ser. No. 574,954
Int. Cl. C23c *3/02*
U.S. Cl. 117—118 **2 Claims**

This invention relates to methods of modifying a hydrohalogen polymer surface which comprises contacting a hydrohalogen polymer surface with an alkali metal alkoxide MOR wherein M is an alkali metal and R is an alkyl group thereby forming an alkoxide-activated surface and contacting said alkoxide-activated surface with an oxidizing agent thereby forming an oxygen-activated alkoxide-activated surface which is capable of accepting an electroless metal deposit.

3,639,154
PROCESS FOR MANUFACTURING FIBROUS STRUCTURE HAVING EXCELLENT RECOVERY FROM EXTENSION BY TREATMENT WITH POLYORGANOSILOXANE AND A POLYETHYLENE GLYCOL OR DERIVATIVE THEREOF

Yoshio Sawa, Kobe; Takashi Itoh, Toyonaka; Minoru Kojima, Osaka, and Mikio Sotomura, Settsu, all of Japan, assignors to Kanegafucki Boseki Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,499
Claims priority, application Japan, July 20, 1968, 43/51267; 43/51268; 43/51269
Int. Cl. D06m *15/66*
U.S. Cl. 117—138.8 A **17 Claims**

This invention is directed to fibrous structures such as crimped yarns and fabrics made therefrom having excellent extensibleness, recovery from extension and no water repellency. The process of the invention comprises applying to said structures an aqueous emulsion of polyorganosiloxane comprising essentially methyl hydrogen polysiloxane having specified viscosity and subsidiarily dimethyl polysiloxane if required, polyethylene glycol or a derivative thereof and a catalyst for polymerization of polysiloxane and curing preferably in a dry condition. Important fibrous structures are composed of composite fibers or of conventional mechanically crimped fibers. Crimp developing for the former or heat setting of the latter can be advantageously effected simultaneously with the aforementioned curing.

3,639,155
DIRT-RESISTANT SILICONE RUBBER

Robert C. Hartlein, and Harold L. Vincent, both of c/o Dow Corning Corp, Midland, Mich.

Filed Dec. 1, 1969, Ser. No. 881,320
Int. Cl. B32b *25/20*
U.S. Cl. 117—138.8 A **7 Claims**

A silicone rubber having a cured coating on a surface which is exposed to the atmosphere where said coating is a room-temperature vulcanizable organosiloxane block copolymer curable through an acetoxy, ketoxime or alkoxy functionality is resistant to dirt pickup. A room-temperature vulcanizable organosiloxane block copolymer curable through an acetoxy, ketoxime or alkoxy functionality is applied to a silicone rubber surface and allowed to cure to provide a dirt-resistant coating.

3,639,156
SILOXANE POLYMERS FOR SOIL-REPELLENT AND SOIL-RELEASE TEXTILE FINISHES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 19, 1970, Ser. No. 38,899
Int. Cl. D06m *15/66*
U.S. Cl. 117—139.5 A **34 Claims**

Fluorocarbon silanes are copolymerized with silanes which contain two or more alkyleneoxy groups. The copolymers are useful for application to fibrous materials to provide both soil repellency and soil releasability.

3,639,157
PROCESS FOR FINISHING TEXTILE MATERIALS WITH A POLYMER OF A VINYL COMPOUND AND THE REACTION PRODUCT OF A POLYOL AND AN ORGANIC POLYISOCYANATE

Walter Wunder, Cologne-Flittard; Wolfgang Klebert, Leverkusen; Heinz Herlinger, Cologne-Flittard, and Karl Schafer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 438,102, Mar. 8, 1965, now abandoned. This application July 18, 1968, Ser. No. 750,999
Int. Cl. C08j *1/44*; **C10m**
U.S. Cl. 117—139.5 A **10 Claims**

Textile materials which have been treated with an aqueous liquor containing a polymer of a vinyl compound and the

reaction product of excess organic polyisocyanate with a polyol. The textile materials have improved crease resistance.

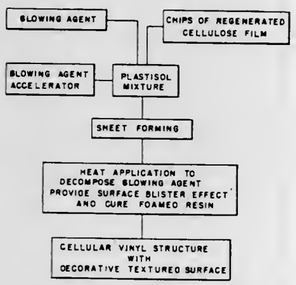
3,639,158
MAGNESIUM-HYDROXIDE-CONTAINING PAPER
John Maskal; Ivan M. Thompson, and Henrik R. Heikel, all of Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 4, 1968, Ser. No. 773,350
Int. Cl. D21h *1/22*
U.S. Cl. 117—152 **1 Claim**

Paper possessing outstanding opacity, whiteness and gloss characteristics containing a magnesium hydroxide pigment having about one to five weight percent calcium ion concentration in solid solution therewith and methods of manufacturing such paper are provided. The pigment is contained either as a paper filler or as a component of a coating pigment composition.

3,639,159
STRUCTURAL CARBONACEOUS MATERIALS HAVING IMPROVED SURFACE EROSION CHARACTERISTICS
Emery T. Rose, and Larry V. Pezzanite, both of Lawrenceburg, Tenn., assignors to Union Carbide Corporation
Filed Oct. 31, 1967, Ser. No. 679,567
Int. Cl. F02k *1/24, 11/02;* **B44d** *1/09*
U.S. Cl. 117—161 **8 Claims**

Structural carbonaceous materials, such as graphite, having improved resistance to oxidation and corrosion at elevated temperatures are obtained by impregnating a solid carbonaceous material with a high boiling point hydrocarbon resin which leaves little or no residue on volatilization, such as a polyphenyl resin.

3,639,160
METHOD OF MAKING A CELLULAR STRUCTURE HAVING A DECORATIVE TEXTURED SURFACE
Dorsey C. Nelson, Springfield, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Apr. 17, 1968, Ser. No. 722,098
Int. Cl. B44d *1/09*
U.S. Cl. 117—161 C **7 Claims**



A method of making a cellular structure having a decorative textured or grained and leatherlike surface formed by foaming a vinyl resin plastisol containing a blowing agent and chips of regenerated cellulose film having absorbed moisture followed by curing of the foamed structure.

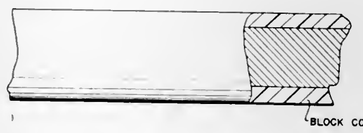
3,639,161
MELT-RESISTANT WELDING ELECTRODES
Hermann Trattner, Munich, and Rudolf Klar, Augsburg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 19, 1969, Ser. No. 800,767
Claims priority, application Switzerland, Feb. 23, 1968, 2687/68
Int. Cl. B23k *35/34*
U.S. Cl. 117—202 **7 Claims**

A melt-resistant, reliably performing electrode for low-power electric arcs composed of a high-melting metallic substance, such as tungsten or thoriated-tungsten, having at least the welding tip thereof coated with a layer of high-melting metal-nonmetal compound, such as metal oxides, carbides or nitrides, i.e., thorium dioxide, hafnium carbide, tantalum nitride, etc. The process for producing such an electrode is also disclosed.

3,639,162
ELECTROCONDUCTIVE COATING
Harris J. Bixler, Lexington, Mass., assignor to Amicon Corporation, Cambridge, Mass.
Filed Oct. 20, 1966, Ser. No. 588,005
Int. Cl. B44d *1/18;* **G03g** *5/00*
U.S. Cl. 117—215 **10 Claims**

Paper having a surface coating of exfoliated three-layer clay exhibiting a surface conductivity of 10^8–10^{10} ohms/sq. at relative humidities from 12–15 percent may be used for making a copy sheet for electrophotography by providing an overcoating of zinc oxide. An aqueous dispersion of exfoliated three-layer clay together with water soluble electroconductive inorganic compound is described.

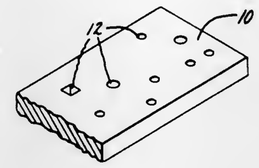
3,639,163
BLOCK POLYMER INSULATION FOR ELECTRIC CONDUCTORS
Eugene T. Bishop, Moraga; Walter R. Haefele, Placerville, and Willis R. Hendricks, Palos Verdes Peninsula, all of Calif., assignors to Shell Oil Company, New York, N.Y.
Continuation-in-part of application Ser. No. 506,526, Nov. 5, 1965, now abandoned. This application Nov. 26, 1969, Ser. No. 880,405
Int. Cl. B44d *1/42*
U.S. Cl. 117—217 **3 Claims**



An insulated electric conductor comprising an electric conductor and as insulation therefor, a hydrogenated block polymer such as polystyrene-polyisoprene-polystyrene. The electric conductor may comprise said block copolymer having dispersed therethrough a particulate conductive metal such as copper.

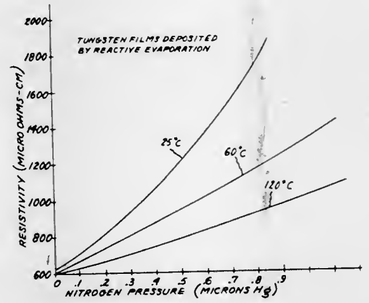
3,639,164
ENAMELED METAL SUBSTRATES AND METHOD OF FORMING
Roland T. Girard, Scotia, N.Y., assignor to General Electric Company
Filed Dec. 15, 1969, Ser. No. 885,206
Int. Cl. C23d *5/02*
U.S. Cl. 117—222 **8 Claims**

Pinhole-free enamel coatings have a dielectric breakdown above 2,500 volts are formed atop a multiperforated metallic substrate by the addition of an inert refractory additive, e.g., silicon dioxide, magnesium oxide, calcium fluoride, etc., to the enamel slurry utilized to coat the substrate. The inert additives comprise between 10 and 35 percent by weight of the



enamel frit in the slurry and remain physically unaltered during subsequent firing of the substrate to increase the viscosity of the fired enamel thereby assuring an edge coverage of at least 5 mils for enamel coatings less than 10 mils thick.

3,639,165
RESISTOR THIN FILMS FORMED BY LOW-PRESSURE DEPOSITION OF MOLYBDENUM AND TUNGSTEN
John R. Rairden, III, Niskayuna, N.Y., assignor to General Electric Company
Filed June 20, 1968, Ser. No. 738,563
Int. Cl. H01c *7/00*
U.S. Cl. 117—227 **12 Claims**

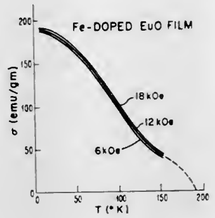


High resistivity, low temperature coefficient of resistance films are formed by evaporating a molybdenum or tungsten source in a low-pressure atmosphere, e.g. 5×10^{-4} torr, of a nitrogen bearing gas, a carbon bearing gas or an inert gas and depositing a resistor film atop a preferably unheated dielectric substrate.

3,639,166
COATED TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS
Charles T. Fellows, Kettering, and Stanley R. Hermann, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed May 6, 1970, Ser. No. 35,230
Int. Cl. B41m *5/10;* **C04b** *35/00*
U.S. Cl. 117—234 **26 Claims**

A transfer medium comprising a base having a transferable coating composition thereon. The coating composition comprises about 3 to 40 percent by weight of an olefinic polymer; about 3 to 40 percent by weight of a wax; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material.

3,639,167
TRANSITION METAL DOPED EUO FILMS
Kie Y. Ahn, Bedford, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,404
Int. Cl. H01f *10/02*
U.S. Cl. 117—240 **12 Claims**



There is disclosed a ferromagnetic article of manufacture comprising a crystalline EuO film disposed on a substrate such as glass and quartz. The film is doped with a metal selected from Fe, Co, Ni and Cr. The doped film has an increased Curie temperature of about 180° K., its optical absorption peak occurs at about 5,800 A. and has a sharply increased absorption coefficient of about 2.4×10^5/cm. The article also has a high-magneto-optic Faraday rotation at higher temperatures.

Fabrication of the article is by the simultaneous vacuum evaporation of Eu, Eu_2O_3 and an inner transition metal.

3,639,168
DIRECT COMPRESSION VEHICLES
Anthony Monti, Irvington; John P. Troy, Hicksville, both of N.Y., and Charles B. Broeg, Short Hills, N.J., assignors to SuCrest Corporation, NY, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,283
Int. Cl. C13f *3/00*
U.S. Cl. 127—29 **10 Claims**

Direct compression vehicle useful for preparation of tablets by the direct compression technique is obtained by dispersing a diluent such as sugar, in a fully hydrated hydratable polymer, such as starch, drying the resulting dispersion, and reducing the dried product to particles of the desired size. The vehicle can be admixed with the active material and, if desired, a lubricant, and the resulting mixture compressed without prior granulation or slugging to form a tablet.

3,639,169
DIRECT COMPRESSION VEHICLES AND METHOD THEREFOR
Charles B. Broeg, Short Hills, N.J.; Anthony Monti, Irvington, and John P. Troy, Hicksville, both of N.Y., assignors to SuCrest Corporation, New York, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,287
Int. Cl. C13f *3/00*
U.S. Cl. 127—29 **11 Claims**

A granular, multicomponent direct compression vehicle is made by uniformly blending at least one compactible material with other materials, compacting the blend to a sheet, breaking the sheet up into particles of a desired size and, if necessary, screening. The resulting product when blended with an active material and, to the extent necessary, a lubricant, can be directly formed into a tablet.

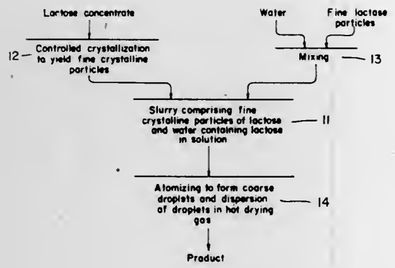
3,639,170
LACTOSE PRODUCT AND METHOD

Jerry T. Hutton, Glen Ellen, and Gaylord M. Palmer, Castro Valley, both of Calif., assignors to Foremost-McKesson, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 393,877, Sept. 2, 1964, now abandoned. This application May 1, 1970, Ser. No. 33,704

Int. Cl. C13k *5/00*

U.S. Cl. 127—31 5 Claims



A dry lactose product in the form of spherical granules each consisting of lactose crystals bonded together by lactose in glass form. It has excellent free-flowing properties with relatively high solution rate and good physical stability. Also a method of making the product in which an aqueous slurry of fine lactose crystals is spray dried.

3,639,171
METHOD OF ISOLATING D-XYLOSE FROM HARDWOOD SULPHITE LIQUOR

George J. Paabo, and Ants-Michael Uesson, both of Malmo, Sweden, assignors to Sydkemi Aktiebolag, Malmo, Sweden

Filed May 2, 1969, Ser. No. 821,480

Claims priority, application Sweden, Dec. 5, 1968, 16624/68

Int. Cl. C13k *9/00, 1/02;* D21c *3/20*

U.S. Cl. 127—37 2 Claims

d-Xylose is isolated from hardwood sulphite liquor by means of azeotropic isopropyl alcohol.

3,639,172
CLEANING OIL-LADEN METAL WASTE TO RECOVER THE METAL AND RECLAIM THE OIL

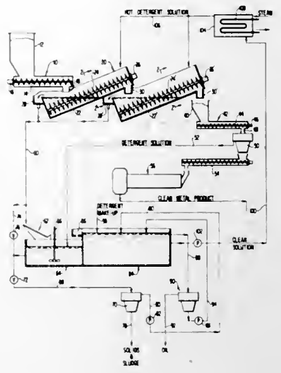
James R. Keogh, Jr., Philadelphia, Pa., assignor to FMC Corporation

Continuation-in-part of application Ser. No. 693,298, Dec. 26, 1967, now Patent No. 3,544,369, dated Dec. 1, 1970. This application July 8, 1970, Ser. No. 53,261

Int. Cl. B08b *7/04*

U.S. Cl. 134—25 5 Claims

Oil-laden metal waste such as turnings, chips and the like are cleaned to remove oil and other impurities from the metal waste enabling recovery of the metal and reclaiming of the oil. The cleaning is achieved through counterflow of a detergent solution in a wash bath, removing the cleaned metal waste from the bath and separating a substantial quantity of the remaining moisture therefrom, and removing the detergent solution from the wash bath and running it through a rehabilitation circuit where it is subjected to centrifugal force to separate sludge and oil from the solution. Then concentrated makeup detergent solution is added, the makeup and



restored detergent solution heated and returned from the rehabilitation circuit to the wash bath.

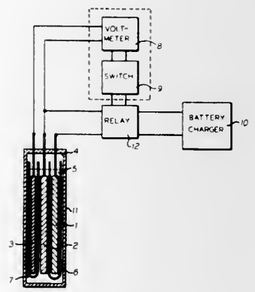
3,639,173
METHOD OF CONTROLLING ZINC DENDRITE GROWTH

Zbigniew Stachurski, Brooklyn, N.Y., assignor to Yardney International Corp., New York, N.Y.

Continuation of application Ser. No. 675,617, Oct. 16, 1967, now abandoned. This application Dec. 5, 1969, Ser. No. 878,971

Int. Cl. H01m *43/00, 45/04*

U.S. Cl. 136—3 9 Claims



The growth of zinc dendrites during charge of a silver-zinc cell is a particularly undesirable feature of the zinc electrode as it eventually leads to shorting of the cell through growth of metallic trails of zinc through the separator. A method is disclosed of preventing the growth of zinc dendrites and more particularly of preventing zinc dendrite penetration of the separator. The method involves controlling the overpotential in the cell, i.e., limiting the overpotential to a value below the critical magnitude at which the zinc deposits as dendrites instead of as a moss. When zinc deposits as a moss, penetration of the separator does not occur. The new method involves so limiting the charge overpotential and using a charge rate that the cell is fully charged by the time the critical overpotential is reached. The overpotential is measured between the working zinc electrode and a built-in zinc reference electrode. When the critical overpotential is reached, charging is terminated.

The subject matter of the invention also includes an improved electrochemical apparatus whose efficiency and useful life derive from the prevention of zinc penetration of the separator.

3,639,174
VOLTAIC CELLS WITH LITHIUM-ALUMINUM ALLOY ANODE AND NONAQUEOUS SOLVENT ELECTROLYTE SYSTEM

Matthew R. Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 744,916, July 15, 1968, now abandoned. This application Apr. 22, 1970, Ser. No. 28,292

Int. Cl. H01m *35/02*

U.S. Cl. 136—20 15 Claims

Half cells comprised of a lithium aluminum alloy anode and a lithium hexafluorophosphate-inert nonaqueous solvent electrolyte; and voltaic cells utilizing such half cells with compatible cathodes, particularly elemental sulfur and reversibly reducible iron, nickel and copper compounds having a solubility in the electrolyte solvent at 25° C. of less than 200 p.p.m. by weight, such voltaic cells being useful as primary and/or secondary batteries.

3,639,175
ADDITIVES FOR DRY CHARGED BATTERIES

Frederick L. Marsh, Minneapolis, Minn., assignor to Gould-National Batteries, Inc., Saint Paul, Minn.

Filed July 2, 1969, Ser. No. 838,693

Int. Cl. H01m *9/00;* H01m *39/04*

U.S. Cl. 136—154 4 Claims

A container having a zirconium affording substance that dissolves upon activation by water to precipitate the phosphates out to the electrolyte formed from the activation of a water activatable. boron phosphate sulphuric acid gel used in a dry charged battery.

3,639,176
ZINC ELECTRODE CONTAINING AN ADDITIVE TO REDUCE GASSING AT THE ZINC ELECTRODE IN A HEAT STERILIZED SILVER-ZINC ALKALINE BATTERY

George F. Nordblom, Yardley, and Herbert I. James, Levittown, both of Pa., assignors to ESB Incorporated

Filed Sept. 4, 1968, Ser. No. 758,652

Int. Cl. H01m *39/00*

U.S. Cl. 136—30 7 Claims

A zinc electrode containing a mercuric sulfide additive to reduce gassing at the zinc electrode which is used as the negative electrode in a heat sterilized silver-zinc alkaline battery. The mercuric sulfide effectively reduces gassing at the zinc electrode without adversely affecting the capacity of the heat sterilized battery, whereas the conventional mercuric oxide additive reduces the capacity of the heat sterilized battery. The mercuric sulfide additive may be used in combination with a lead sulfide additive.

3,639,177
FERROUS METAL SUBSTRATE WITH DENSE, BLACK GLOSSY OXIDE COATING AND PROCESS FOR COATING PREPARATION

Craig S. Tedmon, Jr., Scotia, and Henry S. Spacil, Schenectady, both of N.Y.

Filed Mar. 27, 1969, Ser. No. 811,213

Int. Cl. C23c *17/00*

U.S. Cl. 148—6.3 3 Claims

A composite structure is described in which a substrate is covered with an adherent protective/ornamental layer consisting of single phase cobalt oxide containing iron in solid solution therein. By way of example, a ferrous metal substrate to which a layer (at least about 0.5 mil thick) of cobalt has been applied is treated to provide a black, dense, coherent scale possessing a deep luster and high reflectivity. This enamellike coating is produced by (a) heat treatment of the plated substrate in an atmosphere not oxidizing to either cobalt or iron in order to interdiffuse the cobalt and iron and produce a cobalt-iron surface composition in which the iron content may range from about 2 to about 20 percent by weight and (b) oxidation of the plated substrate after it has been heated to temperatures in the range of 900° to 1,200° C.

3,639,178
THERMOCHEMICAL CUTTING OR SCARFING PROCESS

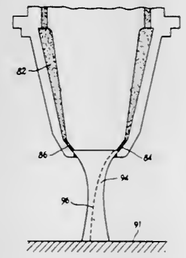
Jacques Birr, Paris; Georges Colson, Noisy-le-grand; Bernard Abel, Eptinal, and Patrice Charbonnier, Pointe Noire, (Congo), all of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude

Filed July 25, 1969, Ser. No. 844,897

Claims priority, application France, Aug. 2, 1968, 161765

Int. Cl. B23k *7/06*

U.S. Cl. 148—9 C 2 Claims



Scarfing or cutting with a scarfing or cutting torch comprising a central duct of oxygen, a coaxial plurality for flame-producing ducts and, around this plurality of ducts, powder jets producing ducts. The powder jets approximately converge on the central duct axis, between the torch and the part being scarfed, at the hottest part of the flames.

3,639,179
METHOD OF MAKING LARGE GRAIN-SIZED SUPERALLOYS

Steven H. Reichman, and John W. Smythe, both of Ann Arbor, Mich., assignors to Federal-Mogul Corporation

Filed Feb. 2, 1970, Ser. No. 7,895

Int. Cl. C21d

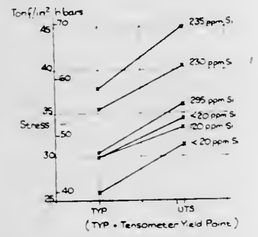
U.S. Cl. 148—11.5 F 7 Claims



A process for making nickel-base superalloys possessing superior high-temperature properties which employs powder

metallurgical techniques and includes the steps of densifying the powdered alloy into a blank approaching 100 percent theoretical density, cold working the blank at a controlled temperature, recrystallizing the cold-worked blank for a period of time sufficient to nucleate new grains and thereafter heat treating the recrystallized blank at a controlled temperature for a period of time sufficient to attain the desired magnitude of grain growth.

3,639,180
NIOBIUM-BASE ALLOYS
Robert William Kelcher, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England
Filed Dec. 9, 1969, Ser. No. 883,424
Claims priority, application Great Britain, Dec. 14, 1968, 60,428/68
Int. Cl. C21d *7/14*; **C22c** *27/00*
U.S. Cl. 148—12.7 **7 Claims**



Niobium-base alloys containing tungsten, hafnium and carbon are improved in respect of their strength in the range 300°–1,000° C. by the addition of silicon and by restriction of the atomic ratio of hafnium to carbon to certain critical limits. At least 100 parts per million of silicon is necessary to produce an upward trend in the ultimate strength of the alloy.

3,639,181
SINTERED COBALT-RARE EARTH BODIES AND METHOD OF PRODUCTION
Robert E. Cech, Scotia, N.Y., assignor to General Electric Company
Filed May 27, 1970, Ser. No. 41,090
Int. Cl. H01f *1/08*
U.S. Cl. 148—100 **13 Claims**

By infiltrating liquid calcium metal into a green compact of single-phase Co_5R powder of high-coercive force during the early stages of a sintering operation, the coercive force of the powder particles of the compact are preserved or increased and a new sintered product having high-coercive force and high-magnetic saturation is obtained.

3,639,182
METHOD FOR IMPROVING THE EFFECTIVENESS OF A MAGNETIC FIELD FOR MAGNETIZING PERMANENT MAGNETS
Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company
Filed Mar. 27, 1969, Ser. No. 818,465
Int. Cl. H01f *13/00, 1/10, 1/04*
U.S. Cl. 148—103 **10 Claims**

A method for increasing the coercive force of a permanent magnet produced by a given magnetizing field. The magnet is subjected to the magnetizing field with the initial position of the magnet being no greater than an angle θ of $\pm 45°$ formed between a predetermined direction of magnetization of the magnet and the direction of the applied magnetizing field. The magnet and/or magnetizing field are moved in at least a single plane through the angle θ which can range up to $\pm 45°$. Such movement is terminated with the magnet in a position in which its predetermined direction of magnetization is substantially parallel to the direction of the magnetizing field.

ERRATUM

For Class 149—2 see:
Patent No. 3,638,698

3,639,183
GAS GENERATOR COMPOSITIONS
Frank G. Crescenzo, and Robert L. Dow, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 16, 1965, Ser. No. 450,249
Int. Cl. C06d *5/06*
U.S. Cl. 149—18 **8 Claims**

1. A gas generator composition consisting essentially of a fuel selected from cellulose acetate, nitrocellulose and mixtures thereof;
an energetic plasticizer selected from the group consisting of trimethylolethane trinitrate, pentaerythritol trinitrate, diethylene glycol dinitrate and mixtures thereof;
a nonenergetic plasticizer selected from the group consisting of hydroxypropylglycerol, diethyl phthalate and dibutyl phthalate;
a stabilizer selected from the group consisting of N-methyl-p-nitroaniline, ethyl centralite and resorcinol; and
a ballistic modifier selected from the group consisting of dibutyl tin maleate, lead salicylate, manganese dioxide, stannic oxide, zinc carbonate, monobasic cupric salicylate, monobasic lead beta resorcylate, monobasic lead salicylate and mixtures thereof.

3,639,184
METHOD FOR PREPARING GELLED SLURRY EXPLOSIVE COMPOSITION CONTAINING DISTINCT LIUQID AND SOLID PHASES
Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 705,523, Feb. 14, 1968, now Patent No. 3,475,238. This application Aug. 19, 1969, Ser. No. 851,491
Int. Cl. C06b *19/04, 1/100*
U.S. Cl. 149—44 **7 Claims**

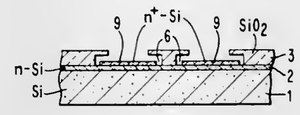
A method is provided for preparing gelled slurry explosive compositions characterized as containing separate liquid and particulate phases intimately mixed together. The liquid phase containing a gelling agent is prepared and the gelling agent is cross-linked. This provides a component having extended periods of stability. Prior to the intended use of the explosive the cross-linked gum is broken down, the solid particulate constituents are dispersed in the liquid phase and the gelling agent is recross-linked.

3,639,185
NOVEL ETCHANT AND PROCESS FOR ETCHING THIN METAL FILMS
Lucas A. Colom, Bloomingburg, and Harold A. Levine, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,571
Int. Cl. C23g *1/20*; **C23f** *1/02*
U.S. Cl. 156—13 **10 Claims**

A composition for etching thin films of metal, such as chromium or molybdenum, comprising alkaline metal salts of weak inorganic acids which yield solutions having a pH in the range of 12 to 13.5, e.g. sodium or potassium-meta or orthosilicates or sodium orthophosphate, and oxidizing agents active in alkaline solutions, such as potassium permanganate or sodium ferricyanide. Also, the method of selectively etching away portions of such metal films by masking said films with positive alkali-developed photoresists and treating with the etching compositions described above.



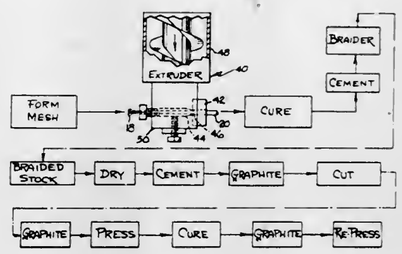
3,639,186
PROCESS FOR THE PRODUCTION OF FINELY ETCHED PATTERNS
Theodor Forster, Thalwil, Zurich, and Theodor O. Mohr, Gattikon, Zurich, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 24, 1969, Ser. No. 801,519
Int. Cl. H01l *7/50, 7/44*
U.S. Cl. 156—17 **6 Claims**



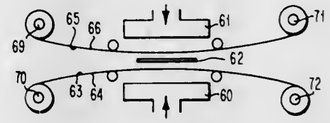
A method for fabricating finely etched patterns is disclosed. The steps include the etching of closely spaced windows in an oxide layer (SiO_2) which covers the surface of a semiconductor substrate. The substrate with the exposed semiconductor is then subjected to vapor etching which undercuts the oxide at the interface between the oxide and the semiconductor. The original exposed semiconductor area is enlarged as a result and the spacing between windows narrowed to dimensions not attainable using ordinary photolithographic techniques. By subsequently masking the exposed semiconductor surface with a material which does not dissolve in an etchant for the oxide and etching the oxide, the oxide can be removed forming an exposed region on the semiconductor surface which is extremely narrow. A method for fabricating a Schottky barrier field effect transistor is also disclosed.

3,639,187
METHOD OF FORMING A RESILIENT AND HEAT-RESISTANT PACKING
Emil Jacob Poltorak, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Original application Dec. 23, 1965, Ser. No. 515,891, now Patent No. 3,481,824. Divided and this application May 9, 1969, Ser. No. 843,254
Int. Cl. D04c *1/00*
U.S. Cl. 156—149 **6 Claims**

A method of forming a resilient and heat-resistant packing which comprises forming a metal mesh as a core member and extruding an elastomer composition onto core member thereby forming a jacket, vulcanizing the jacket and core member, braiding a sheath of inorganic fibrous material onto the vulcanized jacket to form a packing stock strip, coating said strip with a lubricant material and press-shaping said strip into a desired cross-sectional configuration.



3,639,188
METHOD OF MANUFACTURE OF A MAGNETIC DISK AND RECORDING SURFACE
Marcel J. Vogel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 21, 1970, Ser. No. 39,204
Int. Cl. B44c *3/02*; **B29d** *14/00*; **B44d** *5/04*
U.S. Cl. 156—231 **10 Claims**



A continuous method of manufacturing a magnetic disk comprising the steps of (1) coating a smooth surface of a temporary substrate, such as Mylar, with a magnetic coating; (2) overcoating the magnetic coating with an adhesive coating, the combination of the magnetic coating and the adhesive overcoating comprising a transfer coating; (3) placing at least the first surface of a disk-shaped substrate, such as an aluminum substrate, into contact with the transfer coating; (4) applying sufficient pressure between the first surface and the transfer coating to cause the transfer coating to adhere to the first surface, the adherence of the transfer coating to the first surface being greater than to the temporary substrate, and (5) removing the temporary substrate. Both sides of the disk-shaped substrate can be coated at the same time in a preferred embodiment utilizing as the adhesive either a thermoplastic or thermosetting material.

3,639,189
ADHESIVE COMPOSITIONS COMPRISING POLYETHYLENE AND OXIDIZED POLYETHYLENE
Paul F. Hartman, Wayne, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 9, 1969, Ser. No. 856,494
Int. Cl. C08f *29/12*
U.S. Cl. 156—244 **13 Claims**

Compositions of a polyethylene melt blended with from 1 to 15 percent of an oxidized linear polyethylene having a melt index of 10 to 3,500, molecular weight of from 6,500 to 20,000 and a crystalline melting point of from 125°–130°C. These blends have excellent adhesion to various substrates, particularly to metals and can be applied directly as an adhesive protective coating from the melt. The blends may additionally contain an elastomer.

3,639,190
MANUFACTURE OF SHEET MATERIAL
Thomas Andrew Brooke, Prescott, and Peter Michael Robinson, Widnes, both of England, assignors to Dunlop Rubber Company Limited, London, England
Original application Nov. 30, 1965, Ser. No. 510,695, now Patent No. 3,471,352. Divided and this application Aug. 6, 1969, Ser. No. 870,730
Int. Cl. B29d *29/00*; B29c *27/12*
U.S. Cl. 156—272 3 Claims

A method for use in the manufacture of mechanical belting, of molding a plastics material in which the temperature of the plastics material is first raised to a temperature below molding temperature by subjecting the plastics material to microwave energy at a frequency of at least 1,000 megacycles per second, and the temperature of the composition is then raised to molding temperature while compressing the belting between heated surfaces in a molding press.

3,639,191
PROCESS OF MAKING LAMINATED SHEET PRODUCTS
Erich Bader, Hanau/Main, and Hubert Koert, Grossauheim, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany
Filed July 24, 1969, Ser. No. 844,670
Claims priority, application Germany, July 25, 1968, P 17 03 887.8
Int. Cl. B32b *31/12*
U.S. Cl. 156—284 23 Claims

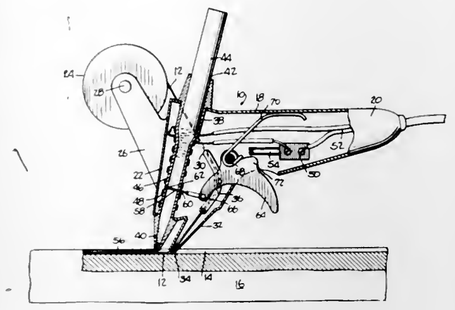
A laminated sheet product which includes at least one sheet of an absorptive material is made by moistening the absorptive sheet with a liquid polymerizable organic compound and then applying a finely divided thermoplastic polymeric substance in a substantially uniform manner to the faces or one face of the absorptive sheet, the said polymer being at least swellable in said liquid polymerizable composition, then superposing the several sheets and finally subjecting the composite laminate to pressure and elevated temperatures sufficient to cause curing of the polymerizable organic composition and forming of a substantially coherent polymer coating on the sheet.

Wood types can thus be used for the laminates which could not be impregnated with polymerizable lacquers. Also, laminates can be made from or including pressed materials and a lamination is possible without the use of the conventional adhesives. Also, decorative outer sheets can be included in the lamination and profiles can easily be formed in a pressing operation. The process is also useful for improving the appearance of one single sheet of products.

3,639,192
BONDING WITH THERMOPLASTIC POLYACETAL ADHESIVES
Karlheinz Burg, Hofheim, Taunus; Harald Cherdron, Wiesbaden; Heinz Lehmann, Kriftel, Taunus, and Eleonore Lutz, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany
Filed Feb. 25, 1969, Ser. No. 802,200
Claims priority, application Germany, Mar. 5, 1968, P 17 19 125.2
Int. Cl. C09j *3/14*
U.S. Cl. 156—327 7 Claims

Polyacetals, consisting of homo- or copolymers of formaldehyde or trioxane and having a good flowability as well as a resistance to alkali and solvents, are used as thermoplastic adhesives for textiles, paper and wood.

3,639,193
APPARATUS FOR FORMING A WIRING SYSTEM
Paul Maddison Hawkins, Stillwater, Minn., assignor to General Alarm Corporation, New York, N.Y.
Filed June 3, 1968, Ser. No. 733,854
Int. Cl. B65h *65/00*
U.S. Cl. 156—433 14 Claims



Method and apparatus for installing electrical wire or the like along a predetermined path on the surface of a base member by providing a groove in the surface of the base member along the predetermined path, simultaneously positioning in the groove guide means for laying said electrical wire and nozzle means for applying a material for maintaining the electrical wire within the groove, and then feeding electrical wire and said material to said guide means and nozzle means while moving the guide means and said nozzle means along said groove.

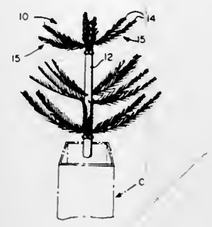
3,639,194
APPARATUS FOR MAKING DOUBLEFACED CORRUGATED BOARD WITH FINE PRINTING THEREON
Robert L. Plunkett, Harrington Park, and John A. Bradshaw, Hillsdale, both of N.J., assignors to Carlin Container Corporation, Inc., Hackensack, N.J.
Filed Feb. 12, 1969, Ser. No. 798,619
Int. Cl. B31f *1/28*; B32b *31/04*
U.S. Cl. 156—470 8 Claims

The upper face of the corrugated board has a preprinted face of fine printing thereon. The machine supplies individual pieces of preprinted sheet material to a travelling web of a flat-face material and adhered corrugated material. The individual pieces are supplied in a timed sequence through a photoelectric system so that the individual pieces are accurately oriented on the travelling web for subsequent severing of the completed stream into a plurality of double-faced corrugated board blanks.

3,639,195
BONDED FIBROUS MATERIALS AND METHOD FOR MAKING THEM
Arthur Joseph Sanders, Cwmbran, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 18, 1967, Ser. No. 668,642
Claims priority, application Great Britain, Sept. 20, 1966, 41,859/66
Int. Cl. B29j *1/02*
U.S. Cl. 156—62.2 6 Claims

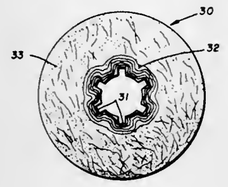
A bonded fibrous material is made by heating a fibrous structure in which some of the fibers are special composite fibers containing a potentially adhesive component. The composite fibers comprise at least two components, at least one of which is fiber-forming and at least one of which is dispersed in the remainder of the components.

3,639,196
COLLAPSIBLE ARTIFICIAL TREE
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 800,218, Feb. 18, 1969, now Patent No. 3,574,102. This application Nov. 6, 1970, Ser. No. 87,402
Int. Cl. A47g *33/06*
U.S. Cl. 161—14 14 Claims



A collapsible artificial tree construction particularly adapted for Christmas decoration in which simulated branches are freely foldable substantially parallel to the simulated tree trunk in one direction and freely pivot to an unfolded laterally extending direction when the artificial tree is to be erected and used, and in which the branches freely gravitate to an unfolded condition whereby insertion of the tree trunk into a tubular container automatically folds the branches upwardly and along the trunk, and removal of the tree from a tubular container results in the branches being automatically unfolded. Also, the branches may be folded against the trunk by gravity by turning the tree upside down.

3,639,197
CARBON COMPOSITE STRUCTURE INCLUDING A BAND OF HELICALLY WOUND CARBON FIBERS
Raymond G. Spain, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Oct. 8, 1969, Ser. No. 866,116
Int. Cl. D04h *3/02*
U.S. Cl. 161—35 4 Claims

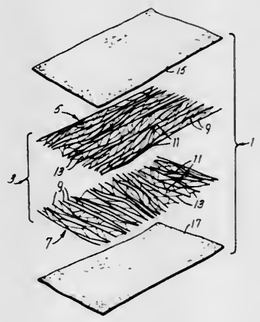


A substantially all-carbon planar structure is provided which comprises essentially continues carbon fibers in a carbonaceous matrix. The fibers in the region adjacent to the periphery of the structure are ordered in a direction which substantially follows the contour of the periphery thereby providing increased strength against stresses in the region adjacent to the periphery. The fibers in the remainder of the structure may or may not be ordered.

3,639,198
GLASS ARTICLES HAVING IMPROVED BREAKAGE CHARACTERISTICS
Emile Plumat, Gilly; Francois Toussaint, Lodelinsart, and Jean Schottey, Montignies-Sur-Sambre, all of Belgium, assignors to Glaverbel S. A., Watermael-Boitsfort, Belgium
Filed Sept. 12, 1969, Ser. No. 857,568
Claims priority, application Great Britain, Aug. 15, 1969, 40,891/69
Int. Cl. B32b *17/06*
U.S. Cl. 161—43 10 Claims

An article containing at least one glass sheet which has been chemically tempered to create tensile stresses in an internal zone thereof and compressive stresses in external layers thereof, the chemical tempering being carried out in such a manner that, for at least a portion of the sheets, the arithmetic product of the thickness of such internal zone and of the maximum tensile stress in such zone is within a given range of values for which the sheet will fracture into large fragments under the impact of a small projectile and will fracture into small noncutting fragments under an impact of a large body approximating a human being.

3,639,199
REINFORCED LAMINATE PRODUCT
Theodorus Gerardus Brandts; Joseph Alois Lichtenberger, both of Grand'Mere, Quebec, Canada, and Joseph Maria Bentvelzen, Raleigh, N.C., assignors to Consolidated Paper (Bahamas) Limited, Montreal, Quebec, Canada
Continuation-in-part of application Ser. No. 817,927, Apr. 21, 1969, now abandoned. This application Dec. 15, 1969, Ser. No. 885,201
Int. Cl. B32b *5/12*, *27/10*; D04h *1/04*
U.S. Cl. 161—57 7 Claims

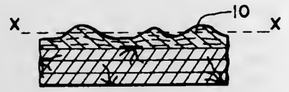


A laminated, nonwoven fabric product and method of making same comprising a central reinforcing web of fibrillated sheet plastic material having a plurality of substantially parallel fibers integrally interconnected at spaced points along their length and outer layers formed of cellulosic material.

3,639,200
TEXTURED WOOD PANEL
Armin Elmendorf; Thomas W. Vaughan, and Roland Etzold, all of 860 Charleston Road, Palo Alto, Calif.
Continuation of application Ser. No. 403,448, Oct. 9, 1964, now abandoned. This application Dec. 19, 1969, Ser. No. 889,842
Int. Cl. B27l *11/00*; B32b *5/16*, *21/02*, *21/12*, *21/14*
U.S. Cl. 161—116 7 Claims

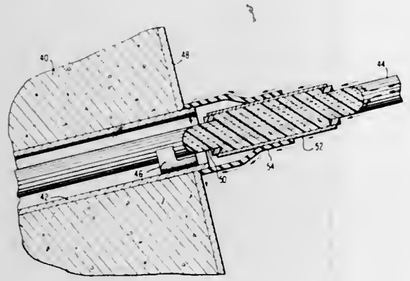
The invention relates to a ligno-cellulosic building board having a nonrepetitive textured surface on at least one side.

This side consists of a layer of ligno-cellulosic particles with elevations and depressions, the specific gravity of the particles of the elevations being substantially the same as the specific gravity of the particles in the depressions. The density of the fibers at the surface has therefore been equalized over the entire area of the board. In one form of the invention a layer of coarse particles is used, the sharpness of the edges of the coarse particles being concealed with fine particles.



The product is produced by pressing a layer of binder coated ligno-cellulosic particles on a substrate in a hot plate press with a cushion, preferably of silicone rubber, between the hot platen of the press and the layer of particles.

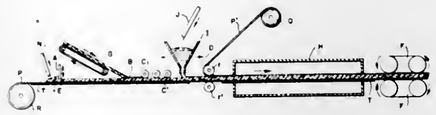
3,639,201
SEAL FOR MULTIWIRE STRAND
Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation
Filed Nov. 27, 1968, Ser. No. 779,536
Int. Cl. H02g *15/00*
U.S. Cl. 161—143 **1 Claim**



A short length of a multiwire strand is surrounded with a mold to provide an annular space about said length. Said space is filled with a thermosetting plastic sealant and pressure is applied to force said sealant into and along the interstices of said strand. During said application of pressure, the strand is circumferentially heated at the ends of said mold to provide a radial temperature gradient across said ends. Pressure is applied to said sealant until the ends of the seal are substantially convex.

3,639,202
COMPLEX PRODUCTS OF RESIN AND MINERAL FIBER AND PROCESS FOR MAKING SAID PRODUCTS
Albert Simon, Mont-Saint-Aignan, France, assignor to Compagnie de Saint-Gobain, Neuilly sur Seine, Seine, France
Filed June 20, 1966, Ser. No. 558,981
Claims priority, application France, July 2, 1965, 23260
Int. Cl. B32b *5/14, 17/04*
U.S. Cl. 161—158 **17 Claims**

Rigid panels are made by pressing a layer of mineral fibers into a loaded stratum of hardenable resin, pressing another loaded stratum of hardenable resin into the mineral fiber stratum of the first pressing, the constitution or quantity of the third stratum differing from that of the first to provide equal mechanical properties at both faces of the sheet. The stratified sheet is then hardened and has density of load (particulate filler) increasing from the center toward the surfaces of the sheet. The sheet is preferably produced between outer



pellicles of organic plastic, e.g. cellulosic, which can be removed before use. Such sheets serve as roofing and wall paneling and may be corrugated or otherwise shaped during manufacture.

3,639,203
HIGHLY CRIMPABLE POLYAMIDE COMPOSITE FILAMENTS
Yoshio Tamura, and Satoshi Ando, both of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicacioni Viscosa S.p.A., Milan, Italy
Continuation-in-part of application Ser. No. 671,217, Sept. 28, 1967, now Patent No. 3,551,227. This application July 23, 1970, Ser. No. 57,770
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **13 Claims**

Production of polyamide composite filament having high crimpability, one component of which is polycapramide and the other component of which is a copolyamide consisting of 0.01 to 5 percent by weight of nylon salt composed of a dicarboxylic acid and a polyfunctional diamine having the general formula

$$H_2N-(CH_2)_n-R(CH_2)_n-NH_2$$, wherein R is > CHCl or > CHBr and n is 3 to 11, 3 to 20% by weight of another nylon salt and 75 to 95% by weight of polycapramide forming components.

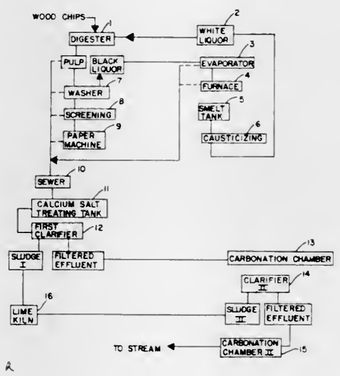
3,639,204
COMPOSITE POLYACRYLONITRILE FIBER
Makoto Ohki; Hisashi Irie, and Kazuo Okamoto, all of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1969, Ser. No. 887,056
Claims priority, application Japan, Dec. 24, 1968, 43/94767
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **13 Claims**

A drawn composite filament consisting of two acrylic components differing in heat shrinkability eccentrically disposed along the filament axis, which is capable of developing, upon heating in relaxed condition, a uniform crimp having a high frequency, high degree of elasticity and large retention of the degree of elasticity. The higher shrinking component consists of a copolymer or terpolymer comprising 65–95 percent by weight of combined acrylonitrile and 35–5 percent by weight of a combined higher alkyl acrylate having five to 14 carbon atoms in its alkyl group, the lower shrinking component comprises acrylonitrile homopolymer, or copolymer or terpolymer containing up to 25 percent by weight of at least one combined monoethylenically unsaturated addition type monomer, and the product of the difference in shrinkability between the two components and the residual shrinking stress is at least 50.

3,639,205
PROCESS FOR TREATING CELLULOSIC MATERIALS FROM WHICH METAL IONS HAVE BEEN REMOVED WITH ALKALI AND OXYGEN IN THE PRESENCE OF COMPLEX MAGNESIUM SALTS
Sture Erik Olof Noreus, Sundasen, and Hans Olof Samuelson, Goteborg, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Continuation-in-part of application Ser. No. 869,875, Oct. 27, 1969. This application May 12, 1970, Ser. No. 36,670
Int. Cl. D21c *3/00*
U.S. Cl. 162—23 **33 Claims**

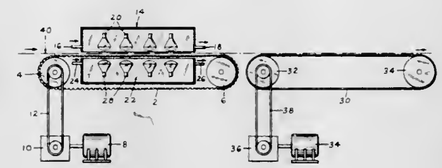
Cellulosic materials from which metal ions have been removed by acids or complexing agents is delignified with alkali in the presence of oxygen, and particularly air, and in the presence of magnesium compounds such as, for instance, chelates of magnesium and aliphatic alpha- and beta-hydroxycarboxylic acids. The invention is of particular application to the reduction of lignin content in cellulose pulps without causing deleterious degradation of the cellulose, the magnesium compounds reducing or entirely preventing attack of oxygen on the hemicellulose and cellulose carbohydrates, without appreciably diminishing the oxidation of the lignin and its dissolution in the course of the process. The process is also useful to obtain a controlled dissolution of the hemicellulose.

3,639,206
TREATMENT OF WASTE WATER FROM ALKALINE PULPING PROCESSES
Edgar L. Spruill, Jonesboro, La., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 29, 1969, Ser. No. 845,809
Int. Cl. D21f *1/66*
U.S. Cl. 162—29 **6 Claims**



Waste water effluent derived from the alkaline pulping processes and discharged from pulp and paper mills containing suspended wood fibrous solids and discolored with dissolved wood degradation products is treated first with calcium salts, such as CaO or $Ca(OH)_2$ to cause a substantial reduction in the fiber solid and color content of the effluent. The partially clarified effluent is then contacted with CO_2 gas to precipitate any dissolved calcium salts and the remainder of the wood degradation products and color bodies.

3,639,207
METHOD FOR DRYING NONWOVEN FABRIC
Heinz Genz, Willich; Dieter Berger; Dieter Pfleiderer, and Horst Seeliger, all of Lahnstein, all of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf, Oberkassel, Germany
Filed July 11, 1969, Ser. No. 841,076
Claims priority, application Germany, July 15, 1968, P 17 61 850.7
Int. Cl. D21f *5/00;* **D21h** *5/12*
U.S. Cl. 162—146 **3 Claims**



A nonwoven web, formed on a continuous screen papermaking machine and including heat shrinkable fibers, is delivered onto an endless coarse wire screen and exposed to infrared radiation to heat the fibers and dry the web. Water vapors evolved in the drying process are swept from both surfaces of the web by forced streams of dry air.

3,639,208
POLYAMPHOTERIC POLYMERIC RETENTION AIDS
Fannie S. Varveri, Johnstown; Robert J. Jula, Ambridge, and Merwin Frederick Hoover, Bethel Park, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Filed Mar. 4, 1968, Ser. No. 709,959
Int. Cl. D21h *3/58*
U.S. Cl. 162—168 **5 Claims**

The preparation and composition of certain amphoteric polymers, useful as retention aids in the paper industry, is disclosed. The polymers are formed from acrylamide and diallyl quaternary ammonium monomers, in which some of the amide groups are subsequently hydrolyzed to adjust the ratio of quaternary and carboxylic acid groups in the polymer molecule and wherein the diallyl compound undergoes an intramolecular cyclic polymerization. The polymer function as retention aids over wide ranges of alum loading and pH ranges.

3,639,209
A PROCESS OF MAKING PAPER USING CATIONIC STARCH COMPLEXES
Stanley J. Buckman; Richard W. Lutey, and George M. Jennings, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.
Filed Apr. 7, 1970, Ser. No. 26,434
Int. Cl. D21h *3/28*
U.S. Cl. 162—175 **12 Claims**

Cationic starch complexes prepared by reacting an aqueous starch slurry with a water-soluble cationic polymeric polyelectrolyte are useful in treating cellulosic materials and as flocculating agents in aqueous systems.

3,639,210
FERMENTATION PROCESSES UTILIZING GASEOUS HYDROCARBONS
Katsunobu Tanaka, Machida-shi; Kazuo Ohshima, Tokyo; Kazuo Kimura, and Masaki Yamamoto, both of Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed May 2, 1968, Ser. No. 726,228
Claims priority, application Japan, May 15, 1967, 42/30402
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **7 Claims**

A process for producing organic compounds, such as for example, amino acids, various organic acids, vitamins,

saccharides, nucleic acid-related substances, cells of microorganisms, and the like, which comprises culturing a microorganism capable of producing said organic compounds in an aqueous nutrient medium under aerobic conditions and in the presence of gaseous hydrocarbons as the main carbon source. Hydrocarbon-assimilating strains of the genus *Brevibacterium*, preferably *Brevibacterium ketoglutamicum*, are employed.

3,639,211
PROCESS FOR THE PREPARATION OF CREATINE PHOSPHATE

Klaus Beaucamp, Tutzinglobb, Germany, assignor to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Nov. 19, 1968, Ser. No. 792,182
Claims priority, application Germany, Nov. 29, 1967, P 16 43 701.7
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **11 Claims**

Process for preparing creatine phosphate comprising incubating in an alkaline medium creatine and 3-phosphoglyceric acid with an aqueous muscle extract in the presence of a catalytic amount of adenosine triphosphate, heating the resulting mixture for a short period of time to a temperature of 70° to 100° C. and recovering the creatine phosphate which is thereby formed.

3,639,212
PROCESS FOR THE PREPARATION OF ESTRANE COMPOUND BY FERMENTATION

Makoto Shirasaka; Katsumi Tanabe; Atsushi Naito, and Masako Ieki, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 12, 1968, Ser. No. 751,735
Int. Cl. C07c *167/14*
U.S. Cl. 195—51 F **3 Claims**

Estrane compounds that are known to be useful as sex hormones or as intermediates thereof are prepared by subjecting 19-hydroxyandrostane starting compounds to the action of *Corynebacterium equi* or to the action of the enzyme produced by said micro-organism under aerobic conditions in the presence of a surface active agent of the fatty acid ester series such as Tween 80, said starting compound being incorporated into a culture medium at a concentration of 2 to 3 w/v percent.

3,639,213
STREPTOKINASE CHEMICALLY BONDED TO A CARBOHYDRATE MATRIX

Leonard George Ginger, Glenview, and Adaline Nicoles Mather, Evanston, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 2, 1969, Ser. No. 881,632
Int. Cl. C07g *7/02*; **A61k** *19/00*
U.S. Cl. 195—63 **16 Claims**

One part by weight of streptokinase is chemically bonded to 1 to 500 parts by weight of a carbohydrate, to form a material which has improved stability compared with free streptokinase.

3,639,214
PRODUCTION OF 6-DEMETHYLTETRACYCLINE

Clive Kenneth Mercer, and George Desmond Wilkin, both of Nottingham, England, assignors to The Upjohn Company, Kalamazoo, Mich.

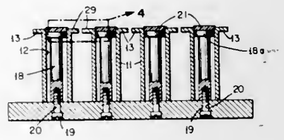
Filed June 4, 1964, Ser. No. 372,696
Int. Cl. C12d *9/18*
U.S. Cl. 195—80 **1 Claim**

This invention relates in an improved method for manufacturing antibiotics of the tetracycline group by growing a micro-organism of the class consisting of Streptomyces aureofaciens NC1B 9501, Streptromyces aureofaciens NC1B9502, and mutants and variants thereof aerobically in an aqueous fermentation medium containing a source of carbon and nitrogen and mineral salts, and recovering the antibiotic from the medium.

3,639,215
METHOD OF JOINING PARTS BY PLATING

Herbert D. Van Sciver, II, Merion, and Michael Mattia, Upper Darby, both of Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed Dec. 7, 1970, Ser. No. 95,549
Int. Cl. C23b *7/00, 5/56*
U.S. Cl. 204—16 **3 Claims**



A method of joining a number of parts by electrodeposition is provided. The component parts are accurately positioned on a fixture in spaced-apart relationship. The spaces between adjacent parts are filled in first with a resinous material and then with a conductive coating after which a metal is then deposited on the adjacent parts bridging the spaces therebetween.

3,639,216
IMPROVING ADHESION OF ELECTROPLATED METAL ON GRAFT COPOLYMERS

Toramitsu Sakuma, Osaka-fu, Japan, assignor to Sumitomo Naugatuck Company, Ltd., Osaka, Japan

Filed Aug. 14, 1968, Ser. No. 752,470
Claims priority, application Japan, Nov. 11, 1967, 42/72464
Int. Cl. C23b *5/60*; **C08f** *15/00*
U.S. Cl. 204—30 **5 Claims**

A synthetic thermoplastic composition having excellent plate adhesion (of electroplated metal deposited on an electroless metal coating) is obtained by adding 0.5 to 5.0 parts by weight of a synthetic diene rubber to 100 parts thermoplastic graft copolymer produced by graft copolymerization of vinylic monomers onto a synthetic diene rubber. Typically a latex of the graft copolymer is blended with a latex of the synthetic diene rubber, the blend is coagulated, and the coagulum is dried. The uniform, intimate mixture of the latex blended polymers is formed in any suitable way into a molded body. When this molded plastic body is electroplated by conventional techniques involving forming an electroless coating of copper or nickel followed by electroplating, significantly enhanced plate adhesion is achieved.

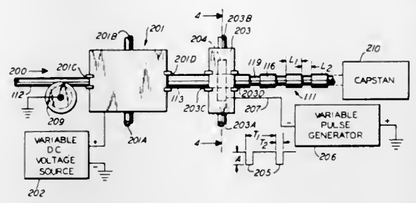
3,639,217
METHOD OF PRODUCING IN SERIATIM SEPARATE COATINGS ON A CONDUCTOR

Harold Barry Shukovsky, Lawrenceville, and Theodore Elwyn Torok, Raritan Township, Hunterdon County, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,142
Int. Cl. C23G *5/50*; **B01R** *3/00*; **G11g** *5/00*
U.S. Cl. 204—35 R **3 Claims**

Selected, spaced regions of a conductor having a continuous, electrically sensitive film coated thereon are subjected

to electrolytic deplating to completely remove the film from



the selected regions and expose the underlying conductor.

3,639,218
SHELF LIFE IMPROVEMENT OF ELECTROPLATED SOLDER

Leo Missel, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,863
Int. Cl. C23b *5/50*
U.S. Cl. 204—40 **1 Claim**

The coating of electroplated solder, applied in preparation for a solder reflow operation, has a short shelf life. The shelf life can be greatly extended, without raising the melting point or detracting from the bond strength, by electroplating a layer of bright tin over the coating of electroplated solder.

3,639,219
IRIDIUM PLATING

Robert M. Skomoroski, Paterson, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 888,039
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **4 Claims**

An iridium electroplating bath is prepared by digesting an aqueous solution of iridium trichloride and sulfamic acid in a molar ratio of sulfamic acid to iridium of at least 7 at 100° C. for an extended period of time then adjusting the iridium content of the bath to about 3 to 20 grams per liter, adding about 3 to 20 grams per liter of ammonium sulfamate and electrodepositing iridium from the bath upon a conductive substrate with a bath pH of about 1 to 7 (adjusted by ammonia additions) and at a temperature of about 50° to 75° C. with insoluble anodes and a cathode current density of about 0.1 to 8 amperes per square decimeter to produce adherent crack-free iridium deposits.

3,639,220
ELECTRODEPOSITION OF NICKEL

Charles F. Fuchs, Evanston, Ill., and Henry Brown, Huntington Woods, Mich., assignors to Udylite Corporation, Warren, Mich.

Filed July 27, 1970, Ser. No. 58,700
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **16 Claims**

It has been found that certain unsaturated aliphatic sulfonic acids characterized by having four aliphatic carbon atoms and two separate aliphatic unsaturated linkages, such as the allene sulfonic acid CH_2 C C—CH_2SO_3H are excellent when used in acidic nickel plating baths in making it possible to obtain lustrous ductile nickel plate over a very wide plating range. These sulfonic acids do not have critical upper concentration limits.

3,639,221
PROCESS FOR INTEGRAL COLOR ANODIZING

Geoffrey Austin Dorsey, Jr., Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

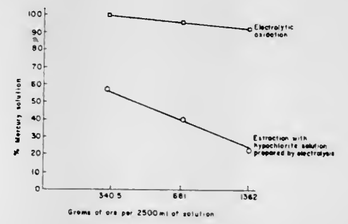
Filed Dec. 22, 1969, Ser. No. 887,145
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **4 Claims**

A process for integral color anodizing of aluminum and aluminum alloys wherein the aluminum piece is subjected as an anode to electrolysis in an aqueous solution containing sulfuric acid, and at least one compound selected from the group consisting of molybdates, tungstates, vanadates and manganates, a portion of which exists in a polyacid species.

3,639,222
EXTRACTION OF MERCURY FROM MERCURY-BEARING MATERIALS

Bernard J. Scheiner, Sparks; Roald E. Lindstrom, and Thomas A. Henrie, both of Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior

Filed Oct. 30, 1970, Ser. No. 85,573
Int. Cl. C01g *13/04*; **C22d** *1/10*
U.S. Cl. 204—94 **3 Claims**

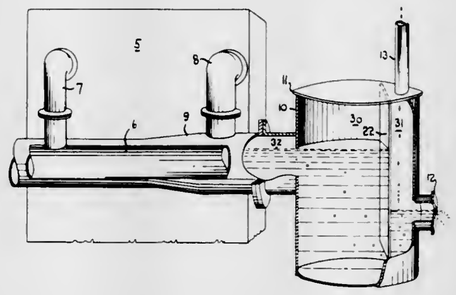


Mercury is leached from mercury-bearing materials by electrolytic oxidation of the material in a NaCl electrolyte solution.

3,639,223
CHLORATE CELL

Richard J. Blanchfield, Chateauguay, Quebec, and John F. Smith, Montreal, Quebec, both of Canada, assignors to Standard Chemical Limited, Montreal, Quebec, Canada

Filed Sept. 18, 1970, Ser. No. 73,308
Int. Cl. C01b *11/26*; **B01k** *1/00*
U.S. Cl. 204—95 **3 Claims**



An improvement in the operation of chlorate cells is described in which the product liquor flow from one or a plu-

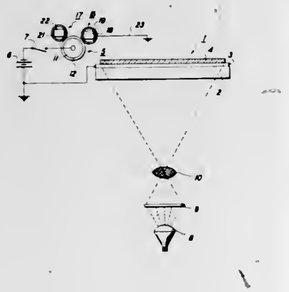
rality of electrolytic alkali metal chlorate cells is fed to a collection zone provided with a baffling arrangement such that hydrogen gas disengaging from the cell liquor does so under a liquid seal that separates it from the gases in the cell liquor outlet. The liquid seal for disengaging hydrogen from the liquor insures that there is no direct communication between the gases being disengaged and the gases in the interior of the cells and in the cell liquor outlet lines. The described improvement prevents any explosion or fires which may occur in hydrogen vents and/or collection equipment from reaching the interior of the alkali metal chlorate cells. Thus, fires which may occur in hydrogen gas lines as the result of sparks, lightning and other similar phenomena are prevented from reaching the interior of the cells.

3,639,224

PHOTOELECTROPHORETIC IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,624
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 **10 Claims**



A photoelectrophoretic imaging system is disclosed wherein a thermoconductive material such as polyethylene is used as the blocking electrode of the system. The thermoconductor is heated to discharge static electricity accumulated on its surface and cooled to restore its high insulating property. The heating and cooling is accomplished by using heated rollers, gas streams and infrared radiation.

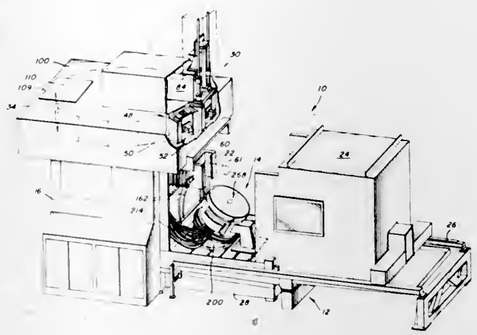
3,639,225

TOOL-CHANGING DEVICE

Leonard R. Malkowski, La Grange, and Sigmund H. Bielak, Downers Grove, both of Ill., assignors to Anocut Engineering Company

Filed Jan. 20, 1970, Ser. No. 4,209
Int. Cl. C23b *5/68*; **B23p** *1/12*; **C23b** *5/70*
U.S. Cl. 204—212 **25 Claims**

Mechanism for replacing electrode tools supported in a holder of an electromechanical machining device and in which the holder clamps the tool and automatically provides an electrolyte flow path as well as an electrical current flow path to the tool. The tool changer is capable of releasably supporting a plurality of electrode tools, with each tool capable of being selectively aligned with the tool holder. The tool-changing device further includes mechanism for automatically removing the electrode tool from a tool support and placing the electrode tool in the holder. The entire operation is designed to be automatically performed without the necessity of an operator making any connections or disconnections.



3,639,226

SYNERGISTIC DEWAXING AND COMPOSITION

Richard O. Henselman, North Plainfield, and Herbert G. Burkard, Convent Station, both of N.J., assignors to Esso Research and Engineering Company

Continuation of application Ser. No. 795,357, Jan. 30, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 539,326, Apr. 1, 1966, now abandoned. This application June 15, 1970, Ser. No. 46,557
Int. Cl. C10g *43/06, 43/08*
U.S. Cl. 208—37 **9 Claims**

A wax modifying composition comprising the combination of (1) a Friedel-Crafts condensation product of a halogenated paraffin with an aromatic hydrocarbon and (2) an oil soluble copolymer of ethylene and a C_3–C_{30} alpha olefin, or a terpolymer of ethylene with a C_3–C_{30} alpha olefin and a minor amount of a nonconjugated diolefin. The copolymer and terpolymer may be improved by oxidation to form hydroperoxy materials followed by reduction to form reduced oxygenated compounds.

3,639,227

CHLORIDE ADDITION DURING HYDROGENATION

Robert L. Jacobson, Pinole, and Burwell Spurlock, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 17, 1969, Ser. No. 877,429
Int. Cl. C10g *23/04*
U.S. Cl. 208—143 **7 Claims**

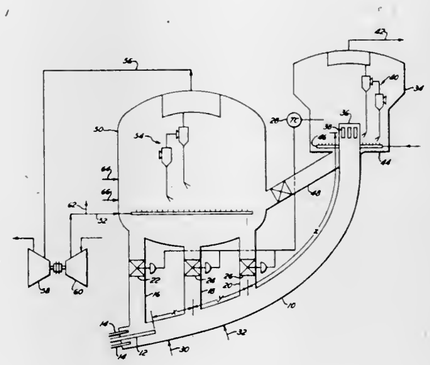
A process for hydrogenation of an unsaturated hydrocarbon feedstock at an elevated temperature and pressure in a hydrogenation zone by (a) contacting the feedstock, in the presence of hydrogen, with a hydrogenating catalyst containing at least one noble metal on an alumina support and containing no essentially irreversibly sulfided metal (such as nickel, cobalt, or molybdenum), and (b) adding a chloride to the hydrogenation zone and reacting the chloride with the catalyst in an amount sufficient to increase hydrogenation activity of the catalyst.

3,639,228

FCC PROCESS UTILIZING DIVIDED CATALYST INJECTION

Norman L. Carr, Allison Park; John A. Paraskos, Pittsburgh, and Daniel Y. Ko, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 28, 1969, Ser. No. 870,046
Int. Cl. C01b *33/28*; **C10g** *11/18, 11/20*
U.S. Cl. 208—153 **6 Claims**



A fluid catalytic cracking system in which hydrocarbon feed and a zeolite catalyst or a catalyst of comparable activity and/or selectivity to gasoline is charged to a reactor having a short residence time is improved by charging only a portion of the fresh or freshly regenerated catalyst which is used to the inlet of the reactor together with the hydrocarbon feed and charging the remainder of the freshly regenerated catalyst substantially without hydrocarbon feed downstream in the reactor. This arrangement results in a higher gasoline yield and a higher selectivity to gasoline in the reactor.

3,639,229

REFINING OF USED LUBRICATING OILS

Darrell W. Brownawell, Scotch Plains, and Remi H. Renard, North Brunswick, both of N.J., assignors to Esso Research and Engineering Company

Filed June 29, 1970, Ser. No. 50,976
Int. Cl. C10g *27/100*
U.S. Cl. 208—181 **10 Claims**

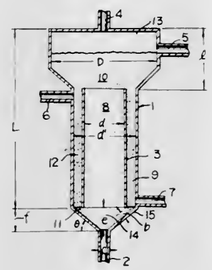
Used lubricating oils, particularly those containing additives such as V. I. improvers, dispersants and the like, are reclaimed by a preliminary treat with a C_4 to C_5 aliphatic alcohol, which causes the separation of a layer of sludge which contains polar additives and oxidation products. The desludged oil is then subjected to conventional lubricating oil refining steps such as treatment with fuming sulfuric acid followed by neutralizing, washing, and clay treating steps. Alternatively, the desludged oil is subjected to a hydrogenation treatment rather than the sulfuric acid treatment. Extraction with phenol, furfural, etc. can also be included, as well as redistillation or fractionation. Advantages over prior art oil reclaiming processes include higher yields of finished reclaimed oil, the formation of appreciably less byproduct sludge, and the obtaining of a more oxidation-resistant reclaimed oil.

3,639,230

HYDRODESULFURIZATION OF HEAVY PETROLEUM HYDROCARBON OIL IN A FLUIDIZED REACTION ZONE

Yutaka Oguchi, and Junichi Kubo, both of Tokyo, Japan, assignors to Yoshio Tomonaga President of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 25, 1969, Ser. No. 810,108
Claims priority, application Japan, Mar. 30, 1968, 43/20415. The portion of the term of the patent subsequent to June 8, 1987, has been disclaimed.
Int. Cl. C10g *23/06*
U.S. Cl. 208—213 **6 Claims**



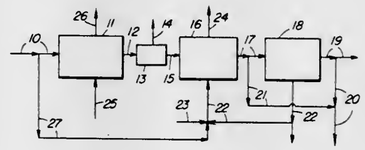
A process for hydrodesulfurizing heavy petroleum hydrocarbon oil wherein the heavy oil and hydrogen-containing gas are heated to reaction temperature and introduced into a reactor containing a hydrodesulfurization catalyst and wherein the reaction mixture is introduced into a fluidization initiating zone. Fluidized mixture passes upward in a fluidized reaction zone where hydrodesulfurization of the oil is carried out; the mixture is separated in a separating zone from which liquid hydrodesulfurized product is withdrawn free of substantially all of said catalyst, and catalyst is allowed to settle in a catalyst settling zone. The reactor is designed so that (1) the sectional area of said separating zone is at least 1.1 times the sum of the sectional areas of said fluidized reaction zone and said catalyst settling zone and (2) the volume of said catalyst settling zone is smaller than the volume of said fluidized reaction zone.

3,639,231

DESALINATION PROCESS

Sidney A. Bresler, New York, N.Y., assignor to Bresler and Associates Inc., New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,429
Int. Cl. B01d *13/00, 15/04*
U.S. Cl. 210—23 **12 Claims**



Brackish water is desalinated by contacting it with one or more ion exchange resins followed by reverse osmosis. Brine rejected in reverse osmosis treatment can be used to regenerate a used ion exchange resin.

3,639,232
FIRE-RETARDANT FINISH FOR NYLON

Claus Wyman Busch, Jr., Greensboro, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 24, 1968, Ser. No. 723,951
Int. Cl. C09d *5/18*; C09k *3/28*; B32b *27/08*
U.S. Cl. 252—8.1 3 Claims

A composition for imparting fire retardancy to nylon textiles, comprising highly methylolated urea, thiourea and ammonium chloride; the method of imparting fire retardancy to nylon textiles; and a nylon textile having fire-retardant properties.

3,639,233
WELL DRILLING

Roger L. Schultz; James C. Baggett, and Raymond E. McGlothlin, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 18, 1969, Ser. No. 808,344
Int. Cl. C10m *1/08*
U.S. Cl. 252—8.5 M 8 Claims

Method for preventing the settling out of a weighting agent from a drilling fluid when the drilling fluid is substantially water free by using certain hydroxy compounds such as 1,2-ethanediol, and the drilling fluid formed by the method. Also, a method for preventing plugging of wells containing substantial amounts of sulfur.

3,639,234
VICINAL GLYCOL BORATES AS TEXTILE SOFTENERS

Harold Eugene Wixon, New Brunswick, and George Vane Scott, Scotch Plains, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,383
Int. Cl. D06n *13/20*
U.S. Cl. 252—8.6 7 Claims

A textile softening composition containing effective amounts of vicinal glycol borates.

3,639,235
ANTISTATIC CARDING LUBRICANT

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Company, Inc., New York, N.Y.

Filed Mar. 6, 1968, Ser. No. 710,759
Int. Cl. D06m *13/00*
U.S. Cl. 252—8.75 16 Claims

A water-emulsifiable antistatic carding lubricant for textile processing comprising a mixture of a mineral oil, a phosphoric acid ester of an ethyoxylated linear aliphatic alcohol, an alkanolamine, a long chain fatty acid, sulfonated sperm oil, an ethoxylated linear aliphatic alcohol and oleic diethanolamide.

3,639,236
COLLOIDAL ASBESTOS-COMPLEX ALUMINUM SALT-ALKALI-ALKALINE EARTH METAL MIXED SALT/SOAP LUBRICANT

Arnold J. Morway, Clark, and Albert J. Bodner, Watchung, both of N.J., assignors to Esso Research and Engineering Company

Filed Mar. 25, 1968, Ser. No. 715,529
Int. Cl. C10m *1/24*, *1/10*
U.S. Cl. 252—13 8 Claims

A lubricating grease containing lubricating oil, a complex fatty acid salt thickener, a complex aluminum salt and colloidal asbestos demonstrates excellent structural stability, extreme pressure properties and resistance to hardening under static conditions at high temperatures. The colloidal asbestos is distinguished over art-known asbestos by its randomly oriented, mattelike flakes and agglomerates of visible asbestos filaments.

3,639,237
EXTREME PRESSURE GREASES

George G. Curtis, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed May 14, 1969, Ser. No. 824,675
Int. Cl. C10m *1/30*, *1/10*
U.S. Cl. 252—13 10 Claims

A lubricating grease having extreme pressure (e.p.) properties comprising a major amount of lubricating oil and minor amounts of colloidal asbestos, finely divided polymeric fluorocarbon powder having a melting point (m.p.) above 450° F. and a powdered inorganic grease thickener. The colloidal asbestos is characterized by its chrysolite configuration and by its separate distinct fibers. The polymeric fluorocarbon is selected from the group consisting of polytetrafluoroethylene and fluorinated ethylene propylene copolymer. The inorganic thickeners are selected from the group consisting of talc, graphite and Group I, II and IV metal oxides and carbonates.

3,639,238
LUBRICANTS CONTAINING HALOGEN-SUBSTITUTED ORGANOSILICON COMPOUNDS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company

Original application Nov. 3, 1969, Ser. No. 873,511, now Patent No. 3,557,175, dated Jan. 19, 1971, which is a continuation-inpart of application Ser. No. 666,948, Sept. 11, 1967, now abandoned. Divided and this application June 10, 1970, Ser. No. 45,231
Int. Cl. C10m *1/50*
U.S. Cl. 252—49.6 9 Claims

Lubricating compositions useful for lubricating high-temperature alloys are prepared by adding organosilicon compounds containing silicon-bonded ethyl groups substituted with iodine, with bromine or chlorine, and with alkoxy, acyloxy or hydroxy groups to oils of lubricating viscosity. The organosilicon compounds are prepared by adding I_2 and Br_2, I_2 and Cl_2, IBr, or ICl to vinyl-substituted silanes and siloxanes in the presence of alcohols or carboxylic acids or with subsequent water treatment.

3,639,239
BIS(TRIORGANOSILYL)PHOSPHATE COMPOSITIONS

Eugene D. Groenhof, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sept. 17, 1969, Ser. No. 858,886
Int. Cl. C10m *1/50*, *1/46*
U.S. Cl. 252—49.9 2 Claims

Disiloxy derivatives of fluoroalkyl acid phosphates of the general formula

$$X(CF_2)_m(CH_2)_nOP(OSiCH_2CH_2R_f)_2$$
$$\quad\quad\quad

3,639,246
LIQUID DEVELOPERS FOR ELECTROSTATIC PHOTOGRAPHY

Tetsuro Otsuka, Takatsuki-shi; Isao Ota, Osaka-shi, and Shinichi Ogo, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 526,713, Feb. 11, 1966, now abandoned. This application July 19, 1968, Ser. No. 747,020

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **4 Claims**

An improved liquid developer composition for converting a latent electrostatic image into a visible image and for fixing the visible image into a permanent visual record, consists essentially of carrier liquid comprising e.g. trichlorotrifluoroethane or carbon tetrachloride and having a high electrical resistance, 0.005 to 0.1 percent by weight of finely divided pigment powder (Fe_3O_4, TiO_2, graphite) dispersed or suspended in said liquid, 0.001 to 0.3 percent by weight of metal naphthenate (cobalt naphthenate, nickel naphthenate, manganese naphthenate) which dissolves in said liquid and which comprises 4 to 10 percent by weight of metal ions, and 0 to 1 percent by weight of insulating oil.

3,639,247
CALCIUM-VANADIUM SERIES FERRIMAGNETIC GARNETS

Hideo Takamizawa; Keiichi Yotsuyanagi, and Takashi Okada, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Feb. 4, 1970, Ser. No. 8,491

Claims priority, application Japan, Feb. 7,1969, 44/9410, June 27, 1969, 44/51190

U.S. Cl. 252—62.57 **3 Claims**

Calcium-vanadium ferrimagnetic garnets having the compositions expressed by the formula:

$\{Ca_{3-y}y_y\}[Fe_2](Fe_{1.5-0.5x+0.5y}Ge_xV_{1.5-0.5x-0.5y})O_{12}$, wherein values of x and y lie within the polygonal area A-B-C-D-E shown in Fig. 7 of the drawing which is bounded by the lines connecting the coordinates:

	x	y
A	0.05	0.05
B	0.8	0.05
C	1.8	1.1
D	0.5	2.4
E	0.05	2.4

and wherein the range expressed by the relation $0.95 \leqq y - z \leqq 1.05$ is excluded from said area.

3,639,248
BLEACHING COMPOSITION

John R. Moyer, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 12, 1968, Ser. No. 712,363

Int. Cl. C07c *73/10*; **D06l** *3/02*

U.S. Cl. 252—186 **14 Claims**

In a method for preparing dry stable bleaching and oxidizing compositions containing at least one peroxygen compound and at least one organic acid anhydride, the improvement which comprises: absorbing the organic acid anhydride on a particulate inert absorbent material, providing said absorbed material in a predetermined granulated size range, and mixing said granulated product with at least one peroxygen compound to prepare a novel solid bleaching and oxidizing composition which is stable over prolonged periods of time.

3,639,249
BIS-OXALIC ACID ESTER AMIDES FOR USE AS ULTRAVIOLET STABILIZERS

Christian Luethi, Muenchenstein; Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed May 13, 1968, Ser. No. 728,836

Claims priority, application Switzerland, May 16, 1967, 6902/67

Int. Cl. F21v *9/06*

U.S. Cl. 252—300 **6 Claims**

The present invention provides a process for protecting organic materials that can be damaged by ultraviolet light from the effects of ultraviolet rays, characterized in that a bis-oxalic acid amide ester is incorporated with, or applied to the surface of the materials to be protected, or a filter layer containing the bis-oxalic acid amide esters is placed in front of said materials, the said bis-oxalic acid amide ester corresponding to the formula $A_1-O-CO-CO-NH-W_1-NH-CO-CO-O-B_1$ in which A_1 and B_1 are identical or different and each represents an organic residue and should not displace the absorption maximum of these compounds to values above 370mμ; W_1 represents an organic residue and X_1 represents an alkylene group containing one to four carbon atoms or a bridge member $-O-$, $-S-$, $-N-$ or $-SO_2-$.

Furthermore the invention discloses a certain class of novel symmetric bis-oxalic acid amide esters as defined by formula (6) of the specification and a process for the manufacture of the symmetric bis-oxalic acid amide esters defined above.

3,639,250
PHOTOTROPIC COMPOSITION OF MATTER

John B. Schutt, Silver Spring; Joe A. Colony, Lanham, and Donald R. Lepp, District Heights, all of Md., assignors to The United States of America as represented by the National Aeronautics and Space Administration

Filed Aug. 1, 1968, Ser. No. 749,320

Int. Cl. F21v *9/06*

U.S. Cl. 252—300 **8 Claims**

The invention provides a phototropic composition of matter suitable for use in producing directly a positive photographic image comprising at least one member of the group consisting of lithium and lithium-containing substances with at least one member of the group consisting of titanium dioxide, and alkaline earth titanates, and with at least one member of the group consisting of elements from groups 1A, 2A, 3B, 4B, 5B, 6B, 7B, 8, 1B, 2B, 3A, 4A, 5A, and the rare earth or outer transition series including cerium through lutecium in the periodic table, and compounds thereof, the mixture being heated until it is sensitive to ultraviolet light upon cooling.

3,639,251
LIQUID DYE FILTERS WITH NARROW PASSBANDS

Karl Wurm, Oberaudorf/Inn, Germany, assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 22, 1968, Ser. No. 745,467

Int. Cl. G02b *5/24*

U.S. Cl. 252—300 **3 Claims**

Liquid dye filters for passing narrow spectral bands in astrophysical observations where combinations of various compounds in solution in methanol and acetone are used as dyes in thin layers between Pyrex glass plates to produce a homogeneous filter which selectively absorbs the major portion of the spectrum in and near visible light allowing only a narrow band in the λ3,000 to λ4,500 A. range to pass.

3,639,252
ORANGE-RED EMITTING EUROPIUM-ACTIVATED YTTRIUM STANNATE PHOSPHOR FOR WARM-WHITE BLENDS

Ernest Paul Riedel, Murrysville, and Thelma J. Isaacs, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1970, Ser. No. 5,901

Int. Cl. C09k *1/56*

U.S. Cl. 252—301.4 F **3 Claims**

The luminescent composition $Y_2Sn_2O_7:Eu^{+3}$, exhibits a spectral energy distribution which principally comprises two lines at about 588.6 nanometers and 596.7 nanometers. This composition can be used as a specialty phosphor for this orange emission, or as a blend constituent in efficiently providing well-balanced white light.

3,639,253
PREPARATION OF HALOPHOSPHATE PHOSPHORS USING ANTIMONY-DOPED CALCIUM PYROPHOSPHATE

George R. Gillooly, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Jan. 28, 1970, Ser. No. 6,584

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **9 Claims**

Antimony-doped calcium pyrophosphate is used as the antimony-supplying ingredient in the manufacture of calcium halophosphate phosphors activated with antimony or antimony plus manganese. The extreme fineness and high reactivity of the antimony-supplying materials and their low volatility at lower temperatures are significant advantages in the manufacture of the phosphors.

3,639,254
ALKALINE EARTH THIOGALLATE PHOSPHORS

Thomas E. Peters, Levittown, N.Y., assignor to GTE Laboratories Incorporated

Filed July 1, 1969, Ser. No. 838,065

Int. Cl. C09k *1/12*

U.S. Cl. 252—301.4 S **19 Claims**

A phosphor system consisting of alkaline earth and alkali metal thiogallates activated by europium, lead, or cerium. These phosphors are photoluminescent and cathodoluminescent and are suitable for use in fluorescent lamps or cathode-ray tube screens.

3,639,255
PROCESS OF DISPERSING OIL SLICKS

Guy Boardman, and Fred Dawson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 24, 1968, Ser. No. 723,881

Claims priority, application Great Britain, May 3, 1967, 20,589/67

Int. Cl. B01j *13/00*

U.S. Cl. 252—312 **6 Claims**

A process of dispersing oil slicks on natural water areas using a water-insoluble condensate of 1 mole of monohydric aliphatic alcohol having 11 to 20 carbon atoms (or mixtures) with from 1.5 to 6.0 moles of ethylene oxide as an emulsifier is disclosed.

3,639,256
ENCAPSULATION PROCESS BY COMPLEX COACERVATION USING INORGANIC POLYMERS

Georg Horger, Steppach, Germany, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 27, 1970, Ser. No. 41,110

Int. Cl. A61k *9/04*; **B01j** *13/02*; **B44d** *1/02*

U.S. Cl. 252—316 **5 Claims**

A process is disclosed for manufacturing capsules, en masse, by use of a liquid-liquid phase separation which includes certain inorganic material as complexing, phase-separation-inducing, polymer. The disclosed process is conducted in an aqueous capsule manufacturing vehicle and the material which emerges as a liquid phase is an aqueous solution of organic hydrophilic polymeric material and inorganic polymeric material complexed together. The liquid-liquid phase separation of this invention is the type generally named "complex" coacervation wherein the separated, emergent, liquid phase includes a major portion of both, the organic hydrophilic polymeric material and the phase-separation-inducing material; in this invention, inorganic polyacid polymeric material. The organic polymeric material and the inorganic polymeric material are complexed together by virtue of opposite electrical charges, the complex is at least partially immiscible with the manufacturing vehicle, and the manufacturing vehicle contains only a minor amount of either polymeric material. Preferred materials for use in practicing the present invention include gelatin as the organic hydrophilic polymeric material and polymolybdates and polytungstates as the inorganic polymeric phase-separation-inducing material.

3,639,257
MICROCAPSULES AS CARRIERS FOR COLOR REACTION COMPONENTS IN COLOR REACTION PAPER AND PROCESS OF MAKING SAID MICROCAPSULES

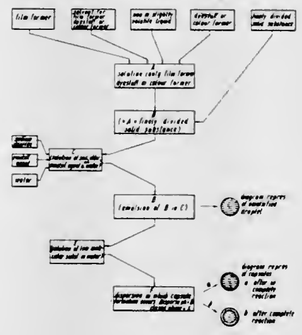
Ludwig Harbort, Hannover, Germany, assignor to Gunther Wagner Pelikan-Werke, Hannover, Germany

Filed June 24, 1968, Ser. No. 739,363

Claims priority, application Germany, June 23, 1967, W 44228; June 24, 1967, W 44240

Int. Cl. B01j *13/02*; **B44d** *1/02*

U.S. Cl. 252—316 **2 Claims**



Process of making microcapsules as carriers for encapsulated solid or liquid color components in color reaction papers, wherein particles of finely divided solid substances are incorporated in the capsule walls during the formation of the capsules by chemical reaction from a film forming component dissolved in the dispersed phase of a liquid dispersion system, which contains dissolved in its continuous phase a low-molecular weight reactant for the film-forming component; also contained in the dispersion system are said solid particles to be incorporated into the walls of the microcapsules. Very high percentages of solid particles, i.e., considerably higher than 100 percent calculated on the weight of the capsule wall, can thus be incorporated into the latter thereby increasing the resistance of the walls to mechanical stress far above the limit of known microcapsules.

3,639,258

GELLED FLOATING ROOF FOR STORAGE TANKS AND PITS AND PROCESS FOR FORMING SAME

Edward R. Corino, Belleville, and Gerard P. Canevari, Cranford, both of N.J., assignors to Esso Research and Engineering Company

Filed July 30, 1968, Ser. No. 748,587
Int. Cl. B01j *1/18, 13/00;* C10l *7/00*
U.S. Cl. 252—316 13 Claims

A novel and inexpensive floating roof for tank and pit storage of crude oil and other petroleum products is formed in place by gelling a thin surface layer of oil using gelling agents in low concentration. The gelling agent employed is the reaction product of a diisocyanate and either an amine or an alcohol, which reaction product is a urea-type molecule which ultimately forms the gel with the oil. The layer of gelled oil floats on the surface of the material being stored and follows changes in its level. In sloping-wall pits the gelled layer readily adjusts to the changing wall contours while at the same time substantially reducing volatile and wind entrainment losses, fire hazards and water entrapment.

3,639,259

ENZYMATIC TREATMENT OF GELLED PROTEINACEOUS FILM MATERIAL

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Apr. 9, 1969, Ser. No. 814,824
Int. Cl. B01j *13/02;* B44d *1/44*
U.S. Cl. 252—316 10 Claims

A method is disclosed for treating proteinaceous films or preformed capsule walls with proteolytic enzymes to afford cold-water solubility. According to the process of this invention, preformed films or capsule walls are partially degraded enzymatically, in an aqueous vehicle, to such a degree that the degraded proteinaceous material is rendered soluble in cold water at some desired or required temperature of use. Such treatment of already made films or capsule walls is contrasted with enzymatic treatment of proteins before manufacture of the films or capsule walls themselves.

3,639,260

METHOD OF PREPARING ANTIFOAMING AGENT

Raymond J. Michalski, Riverdale, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Apr. 16, 1969, Ser. No. 816,796
Int. Cl. B01d *19/04;* B01j *13/00*
U.S. Cl. 252—358 2 Claims

The activity of hydrophobic silica antifoamers in an oil dispersion is greatly enhanced by the presence of a polyfluorosilicate.

3,639,261

PROCESS FOR THE GENERATION OF SYNTHESIS GAS FROM OIL

William L. Slater, La Habra, Calif., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 27, 1968, Ser. No. 716,448
Int. Cl. C01b *2/14*
U.S. Cl. 252—373 3 Claims

Process for the production of synthesis gas from hydrocarbon liquids by direct partial oxidation with oxygen-containing gas and steam wherein oil containing carbon recovered from the process is supplied to a flow-type synthesis gas generator maintained at an autogenous temperature within the range of 1,800–3,000°, effluent gas from the reaction zone is cooled by indirect heat exchange to a temperature above the dew point of the product gas stream, and the product gas stream scrubbed with liquid hydrocarbon at a temperature above the dew point of water vapor contained in said product gas and below the boiling point the hydrocarbon liquid and resulting hydrocarbon liquid containing recovered carbon is supplied to the gas generation zone as part of the feedstock for the production of synthesis gas.

3,639,262

EMULSIFYING AGENTS

John G. Milligan, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation of application Ser. No. 420,179, Dec. 21, 1964, now abandoned. This application June 5, 1968, Ser. No. 734,558
Int. Cl. A01n *17/10;* B01f *17/12;* B01j *13/00*
U.S. Cl. 252—355 8 Claims

An emulsifying agent for use in the preparation of water dispersible toxicant solutions which is storage stable on standing and which consists essentially of a mixture of an anionic surface active agent component and a nonionic surface active agent component, viz., an ethylene oxide adduct of an alkylphenol; the anionic component consisting essentially of amine salt of alkyl aromatic sulfonic acid; the amine being a diamine or triamine wherein the amine groups are separated by carbon atoms, oxygen atoms and/or very weakly basic nitrogen atoms, at least five in number.

3,639,263

CORROSION INHIBITION WITH A TANNIN, CYANOHYDRINATED LIGNOSULFONATE, AND AN INORGANIC METAL SALT COMPOSITION

Edwin S. Troscinski, Oak Lawn, and Reed S. Robertson, Glen Ellyn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed July 31, 1968, Ser. No. 748,916
Int. Cl. C23f *11/14*
U.S. Cl. 252—389 9 Claims

A corrosion-inhibiting composition and process consisting of (a) a water-dispersible tannin, (b) a cyanohydrinated lignosulfonate or naphthalene sulfonate, and (c) a polyvalent metal ion masking agent for the chelating system, e.g., zinc nitrate.

3,639,264

LIQUID LEAD STABILIZERS FOR VINYL CHLORIDE POLYMERS AND COPOLYMERS

Michel Roussos, Lyon, and Yves Bourgeois, Paris, both of France, assignors to Melle-Bezons, Melle (Deux-Sevres), France

Filed Apr. 25, 1968, Ser. No. 724,274
Claims priority, application France, Apr. 27, 1967, 104340
Int. Cl. C08f *45/62*
U.S. Cl. 252—400 12 Claims

Stabilization of vinyl chloride polymers and copolymers against heat or light decomposition and composition for use in the practice of same wherein the composition is formed of a solution of a basic lead salt having the general formula $(R\text{-}COO)_2Pb.nPbO$, in which R is a branched-chain alkyl radical having from seven to 12 carbon atoms and n is a number of from 0.5 to 2 and in which solution is in a hydrocarbon solvent having a boiling point within the range of 100° to 180° C. or in a plasticizer ester.

3,639,265

METHANE FOR REGENERATING ACTIVATED CARBON

Homer R. Johnson, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,501
Int. Cl. B01d *15/06;* B01j *11/02*
U.S. Cl. 252—411 R 2 Claims

In a process where sulfur oxides have been removed from gas streams by adsorption onto activated carbon in the form of sulfuric acid, regeneration of the sulfuric acid laden activated carbon is accomplished in two stages by first contact the carbon at a temperature below 570° F. with hydrogen sulfide to form sulfur dioxide, which is recovered, and elemental sulfur which remains adsorbed on the carbon. The carbon with elemental sulfur adsorbed thereon is then contacted in the second stage with methane or natural gas at temperatures between from 800° to 1,300° F. to form hydrogen sulfide for the first stage and carbon disulfide. The addition of water, as steam, to the second stage converts the carbon disulfide to additional amounts of hydrogen sulfide for use in the first stage.

3,639,266

CARBONIZATION OF COMPRESSED CELLULOSE CRYSTALLITE AGGREGATES

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 435,744, Feb. 26, 1965, now abandoned. This application Apr. 8, 1968, Ser. No. 719,717
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 5 Claims

Shaped, pure carbon structures are formed by compacting a binderless mass of cellulose crystallite aggregates to solidify the mass and heating the solidified mass to a carbonizing temperature in an oxygen-free atmosphere. The structure may be activated by heating in steam or carbon dioxide.

3,639,267

ORGANOZINC CATALYST COMPOSITION

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 18,862, Mar. 31, 1960, now Patent No. 3,536,634, dated Oct. 27, 1970. This application Dec. 19, 1969, Ser. No. 886,774
Int. Cl. C07f *3/06*
U.S. Cl. 252—431 7 Claims

New catalysts are provided for the polymerization of epoxides and episulfides by reacting a dihydrocarbon zinc, such as a dialkylzinc, with water, a polyol or a polyhydric phenol in a molar ratio of said compound to the dihydrocarbon zinc within the range of from about 0.2 to about 1.2 and preferably within the range of 0.4 to 1.0. The exact nature of the zinc compound produced by the reaction is not known but it is essential that it retain some of the zinc-to-carbon bonds present in the dihydrocarbon zinc being so reacted.

3,639,268

CATALYST COMPRISING A FLUORINE-CONTAINING LAYERED CRYSTALLINE ALUMINOSILICATE, AND PREPARATION AND USE THEREOF

Joseph Jaffe, Berkeley, and James R. Kittreill, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 21, 1968, Ser. No. 754,491
Int. Cl. B01j *11/82, 11/40*
U.S. Cl. 252—437 10 Claims

A hydrotreating catalyst comprising fluorine-containing layered crystalline aluminosilicate particles in a matrix comprising at least one solid oxide and at least one hydrogenating component, said hydrogenating component being selected from Group VI metals and compounds thereof and Group VIII metals and compounds thereof, and processes for making and using said catalyst.

3,639,269

CATALYST FOR THE OXIDATION OF ALKENES

Edgar Koberstein, Alzenau; Theodor Lussling, Gross-Auheim; Ewald Noll, Gross-Krotzenburg; Helmut Suchsland, Gross-Auheim, and Wolfgang Weigert, Offenbach, Main, all of Germany, assignors to Deutsche Gold und Silber Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Aug. 25, 1969, Ser. No. 852,932
Claims priority, application Germany, Aug. 31, 1968, P 17 92 424.2
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 6 Claims

A catalyst for the oxidation of alkenes to unsaturated aldehydes and carboxylic acids containing Ni, Co, Fe, Bi, P, Mo and O is improved by adding tantallum oxide or samarium oxide. The catalyst can be employed on a carrier.

3,639,270

CATALYST COMPOSITION FOR OXYCHLORINATING HYDROCARBONS AND PROCESS FOR PREPARING THE CATALYST COMPOSITION

Shunichi Koyanagi; Kinya Ogawa, and Fumio Akiya, all of Niigata-ken, Japan, assignors to Shin Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 21, 1968, Ser. No. 730,926
Claims priority, application Japan, May 23, 1967, 42/32744
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 3 Claims

Catalyst composition suitable for the oxychlorination of hydrocarbons. The catalyst composition has superior thermal stability, a long-lasting catalytic activity and essentially consists of cupric chloride and a tantalum fluoride salt which are deposited on a porous carrier.

3,639,271

METHOD FOR MAKING MULTI-COMPONENT CATALYSTS

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 3, 1969, Ser. No. 881,883
Int. Cl. B01j *11/78, 11/40*
U.S. Cl. 252—441 3 Claims

Method for producing a coprecipitated solid comprising a crystalline zeolitic molecular sieve, at least one metal oxide having isomerization activity, at least one hydrogenating component and a component comprising titanium, comprising coprecipitating at a pH of 8.2 to 10.2 a mixture comprising said crystalline zeolitic molecular sieve, a precursor compound of said metal oxide, a precursor compound of said hydrogenating component, and a compound of titanium, at least of one of said compounds being a metal chloride, reducing the chloride content of the resulting coprecipitate below about 0.25 weight percent of the whole weight thereof, and drying the resulting coprecipitate to produce said coprecipitated solid.

3,639,272

PREPARATION OF HYDROGENATION CATALYSTS

George E. Elliott, Jr.; Jean Salomon, both of Oakmont, and Roger F. Vogel, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 1, 1969, Ser. No. 838,334
Int. Cl. B01j *11/78, 11/40*
U.S. Cl. 252—442 10 Claims

A method of preparing supported nickel-tungsten and nickel-tungsten-fluorine catalysts of superior hydrogenating activity, by separately impregnating and calcining a porous support material with a water-soluble tungsten salt and a solution of a nickel salt in which the support is washed following impregnation with the nickel salt prior to calcination to fix the nickel.

3,639,273

CATALYST COMPOSITION COMPRISING A MIXTURE

Robert J. Houston, San Rafael, and Sigmund M. Csicsery, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 11, 1969, Ser. No. 840,916
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R 9 Claims

A composition of matter useful particularly for reforming comprising a physical particle form mixture of (1) a layered crystalline clay type aluminosilicate and (2) a platinum group component in association with an alumina carrier or a silica carrier.

3,639,274
ELECTRICAL RESISTANCE COMPOSITION
Ivan L. Brandt, Fox Point, and Orville R. Penrod, Milwaukee, both of Wis., assignors to Allen Bradley Company, Milwaukee, Wis.
Continuation-in-part of application Ser. No. 573,856, Aug. 22, 1966, now abandoned. This application Sept. 6, 1967, Ser. No. 667,321
Int. Cl. H01b 1/02
U.S. Cl. 252—514 11 Claims
An electrical resistance composition comprising finely divided metals such as the noble metals dispersed in a glass matrix and further including an additive taken from the group consisting of gallium, indium, thallium, arsenic, antimony, bismuth and combinations thereof so as to improve the electrical properties of the composition—particularly the TCR.

3,639,275
STABLE DIELECTRIC FLUID FOR ELECTRICAL DISCHARGE MACHINING COMPRISING A MINERAL OIL, A METAL SULFONATE AND A PHENOLIC ANTIOXIDANT
Robert A. Stayner, Palos Verdes Estates, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed June 10, 1968, Ser. No. 735,578
Int. Cl. H01b 3/22
U.S. Cl. 252—63.5 5 Claims
Dielectric fluids are provided for electrical discharge machines comprising a primarily aliphatic light oil of low viscosity having in minor amounts an oil soluble metal sulfonate detergent and a phenolic antioxidant.

3,639,276
CORROSION-INHIBITING THERMAL INSULATION FOR STAINLESS STEEL
Arthur P. Mueller, Cincinnati, Ohio, assignor to Panacon Corporation, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 846,591, July 31, 1969, now abandoned. This application Nov. 4, 1970, Ser. No. 86,970
Int. Cl. C04b 43/04, 35/16, 43/02
U.S. Cl. 252—62 13 Claims
Molded thermal insulation material for use in contact with austenitic stainless steel chemical-processing equipment, to inhibit stress corrosion cracking thereof, consists of at least 60 percent by weight of cellular expanded perlite, bonded by a dried, inorganic, water soluble binder. The binder consists of a major proportion of a mixture of sodium silicate and potassium silicate and a minor proportion of sodium hexametaphosphate, and the molecular ratio of the silica to the alkaline oxide is at least 3.6 to 1.0. The potassium silicate consists of at least about 40 percent, by dry weight, of the total silicate in the dried binder, and the total binder constitutes at least about 20 percent, by weight, of the total insulation composition. In the manufacture of the molded insulation, the mixture of perlite and the binder, in slightly damp condition, is placed in the mold cavity and subjected to light molding pressure, sufficient to compact the material into the exact configuration of the mold cavity without expelling water from the mixture. The molded insulation is removed from the mold and oven dried at a temperature of about 250° F.

3,639,277
HIGH WATER CONTENT MICELLAR DISPERSIONS USEFUL AS HYDRAULIC FLUIDS
Fred Poettmann, and Stanley C. Jones, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Apr. 30, 1968, Ser. No. 725,488
Int. Cl. C09k 3/02
U.S. Cl. 252—78 12 Claims
An oil-external micellar dispersion exhibiting good fire-resistant properties and viscosity properties is obtained by the composition: (a) from about 71.5 to about 90 percent aqueous medium; (b) up to about 30 percent hydrocarbon; (c) at least about 4 percent of surfactant sufficient to impart micellar characteristics to "a" and "b" and, (d) from about 0.001 to about 20 percent cosurfactant. Extreme pressure agents, antifoam agents, corrosion and oxidation inhibitors, bactericides, scale inhibitors, added alkalinity, etc. can be incorporated within the composition.

3,639,278
COMPOSITION AND METHOD FOR INHIBITING AND REMOVING SCALE USING GLYCOLIC ACID AND LIGNOSULFONIC ACID
Chih M. Hwa, Arlington Heights, Ill., assignor to W. R. Grace & Co., New York, N.Y.
Filed Dec. 27, 1967, Ser. No. 693,770
Int. Cl. C02b 1/20, 5/06
U.S. Cl. 252—82 8 Claims
Alkaline earth salt scale formation from aqueous solutions of the respective salts is inhibited by maintaining glycolic acid alone or together with lignosulfonic acids in the aqueous solutions. Existing alkaline earth salt scales can be removed from surfaces by contacting the scaled surfaces with aqueous solutions of higher concentrations of the glycolic acid and the lignosulfonic acid. Both lignosulfonic acid and its water-soluble salts can be used in the composition.

3,639,279
SCALE REMOVAL COMPOSITION AND METHOD USING SALT OF DIGLYCOLIC ACID AND BASE AT PH ABOVE 5
Tommy R. Gardner; Reginald M. Lasater, and John A. Knox, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Apr. 1, 1969, Ser. No. 812,436
Int. Cl. C02b 5/06; C23f 13/00; C23g 1/18
U.S. Cl. 252—86 40 Claims
Methods and compositions for removing scale from surfaces, particularly from subsurface and surface equipment associated with oil and gas wells, and industrial equipment such as heat exchangers, condensers, boilers and the like. The scale to be removed is dissolved in aqueous basic solutions of diglycolic acid salts, mixtures of diglycolic acid salts and hydroxy acid salts, and mixtures of diglycolic acid salts and substituted acid salts of diamines or tertiary amines.

3,639,280
AIR FILTER COATING COMPOSITIONS CONTAINING MIXTURE OF SILICA AND MAGNESIUM SILICATE GELLING AGENTS
Charles Andrew Lynch, Jr., Severna, and James P. Hamilton, Pasadena, both of Md., assignors to FMC Corporation, New York, N.Y.
Filed Sept. 28, 1967, Ser. No. 671,222
Int. Cl. C01b 33/14, 33/22; C09k 3/22
U.S. Cl. 252—88 3 Claims
This application discloses triorganic phosphate coating compositions for viscous-impingement air filters in which the triorganic phosphate is thickened by a combination of about 0.1 to 1.0 parts of a magnesium silicate, with at least 10 percent of its particles which are less than 1 micron in any dimension and whose silica to magnesia ratio is about 1.05 to about 1.30 to 1, and 0.1 to 3 parts of pyrogenic silica having a particle size no greater than 0.025 microns. These gel compositions have good high-temperature viscosity stability and exhibit low syneresis losses. Satisfactory gels can be prepared using as little as one percent pyrogenic silica with 0.5 percent of the magnesium silicate.

3,639,281
BUILT DETERGENT COMPOSITIONS CONTAINING TRIS(METHYL PHOSPHONIC ACID) PHOSPHINE OXIDE AND ITS SALTS
Ludwig Maier, Tiergartenstrasse 17, Kilchberg, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.
Original application Dec. 14, 1967, Ser. No. 690,418. Divided and this application Jan. 12, 1970, Ser. No. 7,431
Int. Cl. C02b 5/06; C11d 3/36
U.S. Cl. 252—89 1 Claim
Phosphorus compounds containing the skeleton P—(-C—P)$_2$ or P—(C—P)$_3$ of the formula $P(O)_a(R^1)_b[_{CH_2}P(O)(R^2R^3b\text{-}3_{-b}$ and method for making by reacting a compoun of the formula $P(O)_a(R^1)_b(CH_2Cl)_{3-b}$ with a compound of the formula $P(R)^5)(R^6)OR^4$ to split off R^4Cl. Also uses of the products as threshold agents, sequestering agents, detergent composition additives, peroxy solution stabilizers and chlorine releasing agent stabilization is claimed.

3,639,282
HYPOCHLORITE BLEACHING OF MONOELEFINIC HYDROCARBON SULFONATES
Samuel H. Sharman, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed July 1, 1968, Ser. No. 741,656
Int. Cl. C11d 1/12
U.S. Cl. 252—95 6 Claims
In the reduction of color in an aliphatic sulfonate detergent by heating an aqueous solution containing the sulfonate and hypochlorite bleach, improved decolorization is obtained by concurrently aerating the mixture.

3,639,283
FOAM-CLEANING ADDITIVES, COMPOSITION AND METHODS
Homer Edward Crotty, Cincinnati, Ohio, assignor to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 540,212, Apr. 5, 1966, now abandoned. This application Oct. 10, 1969, Ser. No. 865,527
Int. Cl. C11d 7/06, 7/08, 7/56
U.S. Cl. 252—98 5 Claims
The invention disclosed is for a new improved foamable industrial cleaning composition having either a highly acid or highly basic character and containing an effective foam generating and stabilizing assistant.

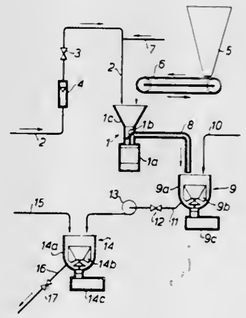
3,639,284
BLEACHING COMPOSITION
Alfred Long, New Haven, and Duane L. Sawhill, Orange, both of Conn., assignors to Olin Corporation
Filed Aug. 14, 1969, Ser. No. 850,225
Int. Cl. C11d 7/56
U.S. Cl. 252—99 8 Claims
Bleaching compositions, substantially free from "pinholing" textiles are prepared by mixing calcium hypochlorite, sodium tripolyphosphate and diluent salts in particulate form and in specified ratios, compacting to form aggregates, disintegrating the aggregates to form homogeneous granules and sizing the granules.

3,639,285
NOVEL BLEACHING COMPOSITIONS AND USE THEREOF
Donald R. Nielsen, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of application Ser. No. 584,969, Oct. 7, 1966, now abandoned, Continuation-in-part of application Ser. No. 308,323, Sept. 12, 1963, now abandoned. This application July 23, 1969, Ser. No. 859,521
Int. Cl. C11d 7/54
U.S. Cl. 252—100 7 Claims
Stability of perphthalic acids is improved by alkali metal or alkaline earth metal salts of an acid with an ionization constant at 25° C. for the first hydrogen of at least 1×10^{-3}. The mixtures can be protectively coated with water removable coatings. Magnesium salts enhance the bleaching effect of diperisophthalic acid.

3,639,286
SYNTHETIC DETERGENT IN BAR OR CAKE FORM AND THE METHOD TO MANUFACTURE SAME
Mario Ballestra, Corso Buenos Aires 92, and Domenico Triberti, Via Burlamacchi 11, both of Milan, Italy
Continuation-in-part of application Ser. No. 487,328, Sept. 14, 1965, now abandoned. This application May 28, 1968, Ser. No. 732,537
Int. Cl. C11d 9/10
U.S. Cl. 252—109 2 Claims
The invention concerns a solid detergent product in bar or cake form prepared by mixing an organic detergent material with an alkali salt of trimetaphosphate, water and an alkali metal hydrate.

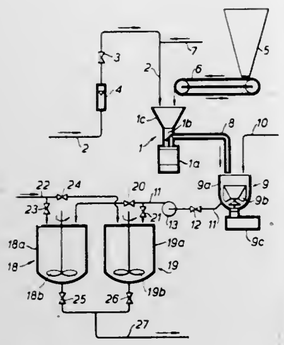
3,639,287
MANUFACTURE OF SPRAY-DRIED DETERGENTS CONTAINING SODIUM TRIPOLYPHOSPHATE
Hellmut Gabler, Morlenbach; Heinz Harnisch, Weiden-Lovenich; Gero Heymer, Knapsack near Cologne; Karl Merkenich, Hurth near Cologne, and Wolf-Dieter Pirig, Euskirchen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany
Filed Aug. 16, 1967, Ser. No. 660,928
Claims priority, application Germany, Sept. 1, 1966, K 60149
Int. Cl. C11d 3/06, 11/00, 11/02
U.S. Cl. 252—135 3 Claims
Sodium tripolyphosphate-containing detergents are produced by the spray-drying of a spray slurry containing the detergent components, the slurry being prepared with the use of sodium tripolyphosphate formed at least partially of material with a crystal water content between a maximum of less than 22.7 percent by weight and a minimum of 17.0 percent by weight.

3,639,288
DETERGENT SLURRY PROCESS
Frederik Johan Kerkhoven, and Seyer Troost, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Mar. 20, 1968, Ser. No. 714,523
Claims priority, application Netherlands, Mar. 21, 1967, 6704145
Int. Cl. C11d 3/06, 11/02
U.S. Cl. 252—135 3 Claims



Detergent compositions are produced by heat-drying a slurry containing small crystals of sodium tripolyphosphate

hexahydrate. The small crystals are formed by dispersing anhydrous sodium tripolyphosphate in water prior to its hydration with the water and subsequently other constituents of the composition are admixed with the slurry. An apparatus for forming detergent slurries is described.



3,639,289

PROCESS FOR THE MANUFACTURE OF NONCAKING BLENDS COMPRISING SODIUM TRIPOLYPHOSPHATE HEXAHYDRATE AND SODIUM NITRILO TRIACETATE MONOHYDRATE OR DIHYDRATE, AND THEIR USE AS DETERGENTS, CLEANSING OR RINSING AGENTS

Gero Heymer, Knapsack near Cologne; Herbert Landgraber, Lechenich, and Karl Merkenich, Effern near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed June 16, 1969, Ser. No. 833,666
Claims priority, application Germany, June 18, 1968, P 17 67 780.4
Int. Cl. C11d *7/16, 7/32, 11/00*
U.S. Cl. 252—137 7 Claims

Production of noncaking blends comprised of sodium tripolyphosphate hexahydrate and sodium nitrilotriacetate monohydrate or dihydrate. The sodium tripolyphosphate is used in the form of its high- and/or low-temperature modification(s) and a fine mist of an aqueous sodium nitrilotriacetate solution having a temperature between about 0° and 80° C. is sprayed thereonto. When an excess of water is used, a gas and/or air stream is simultaneously passed over the sprayed material to evaporate the water in excess.

3,639,290

COMBINED CLEANING AND ANTISOILING COMPOSITIONS

Charles Fearnley, Romiley, and Thomas Ivor Jones, Poynton, both of England, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 10, 1967, Ser. No. 629,431
Claims priority, application Great Britain, Apr. 14, 1966, 16,308/66
Int. Cl. C11d *3/18*
U.S. Cl. 252—526 27 Claims

Combined cleaning and antisoiling compositions containing a stabilizing aqueous nonfilm-forming dispersion of homo- or copolymer of styrene and a detergent-mixture comprising sulphate-type detergent and foam stabilizing agent, which compositions are useful for cleaning fiber and fiber assemblies and at the same time leaving on the treated material an antisoil finish; a method of treating the said materials to improve appearance or inhibit deterioration thereof; and fibers and fiber assemblies treated by such method.

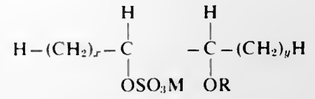
3,639,291

SURFACTANT COMPOSITION AND LIQUID DETERGENT FORMULATIONS CONTAINING SAME

Edward A. Casey, St. Louis, and James M. Huggins, St. Ann, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 25, 1969, Ser. No. 852,871
Int. Cl. C11d *1/38, 1/12*
U.S. Cl. 252—548 9 Claims

Surfactant compositions comprising from 25 to 75 percent by weight of alkyl vicinal alkyl ether sulfates having the formula:



where x and y are integers from 0 to 15, the sum of $x+y$ being from 13 to 15, R is an alkyl group containing from one to eight carbon atoms, and M is an alkali metal or ammonium and, correspondingly from 75 to 25 percent by weight of a linear alkylbenzene sulfonate when utilized in liquid detergent formulations provide improved performance as composed to either ingredient of the surfactant composition when used alone in a comparable formulation.

3,639,292

INHIBITING THE PRECIPITATION AND/OR DEPOSITION OF FERRIC HYDROXIDE IN AQUEOUS SYSTEMS

Patricia G. Gilby, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 22, 1969, Ser. No. 887,381
Int. Cl. C02b *5/06*
U.S. Cl. 252—179 11 Claims

Disclosed is a process for inhibiting the precipitation and/or the deposition of ferric hydroxide on the internal surfaces of the equipment (e.g. heat exchangers and pipes) in aqueous systems, particularly aqueous cooling systems. The process comprises adding certain resin polymers, namely those of U.S. Pat. No. 3,215,654, to the aqueous systems.

3,639,293

SLIME CONTROL METHOD AND COMPOSITION OF BETABROMO-BETANITROSTYRENE AND BIS-(TRICHLOROMETHYL)-SULFONE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 2, 1970, Ser. No. 435
Int. Cl. C02b *1/18*
U.S. Cl. 252—180 12 Claims

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water employed for industrial purposes, particularly water employed in the manufacture of pulp paper, water employed in cooling water systems, as well as other industrial waters. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against micro-organisms, including bacteria, fungi and algae, which produce slime in aqueous systems and bodies which are objectionable from an operational or aesthetic point of view. Specifically, the invention is directed to compositions comprising a mixture of bis-(trichloromethyl)-sulfone and bromonitrostyrene and their use.

3,639,294

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns; Joseph Feltzin, and Erich Kuehn, all of Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 9, 1968, Ser. No. 782,409
Int. Cl. C09d *5/18*
U.S. Cl. 252—182 8 Claims

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame retardancy and resiliency. The coating compositions comprise a solvent and a polyurethane reaction product of halogen-containing polyol, phosphorus-containing product, and organic polyisocyanate.

3,639,295

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns; Joseph Feltzin, both of Wilmington, Del., and Frank T. Sanderson, Huntington Valley, Pa., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 9, 1968, Ser. No. 782,484
Int. Cl. C09d *5/18*
U.S. Cl. 252—182 9 Claims

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame retardancy and resiliency. The coating compositions comprise a solvent and a polyurethane reaction product of halogen containing polyol, phosphorus containing polyol, and organic polyisocyanate.

ERRATUM

For Class 252—390 see:
Patent No. 3,639,431

3,639,296

ANTISTATIC COMPOSITIONS AND METHOD OF RENDERING TEXTILES ANTISTATIC

Herbert Frotscher, Langenfeld, Rhineland, and Manfred Petzold, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Dec. 26, 1967, Ser. No. 693,077
Claims priority, application Germany, Jan. 13, 1967, H 61,551
The portion of the term of the patent subsequent to Oct. 16, 1984, has been disclaimed
Int. Cl. C08g *23/00*
U.S. Cl. 260—2 R 9 Claims

A novel method of providing fabrics made partially or entirely of synthetic fibers with wash resistant and dry cleaning resistant antistatic finish and the fabrics produced thereby and novel compositions used in said process. Said compositions are condensation products of (A) an amine with (B) a di- and/or polyhalohydrin ether of a di- or polyalcohol, at least one of (A) and (B) being at least partially substituted with a lipophilic radical of 8 to 22 carbon atoms.

3,639,297

FOAMED PLASTICS FROM VINYL POLYMER DISPERSIONS AND PROCESS FOR THEIR MANUFACTURE

Robert Steffen, Arno Crombach, and Hermann Lossen, Burgkirchen (Alz), and Johann Bieringer, Bruck (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,177
Claims priority, application Germany, Feb. 10, 1967, F 51,482
Int. Cl. C08f *29/18, 47/08*
U.S. Cl. 260—2.5 L 17 Claims

The present invention provides a process for the manufacture of foamed plastics from vinyl polymer dispersions, particularly vinyl chloride homo- or copolymer dispersions. According to the invention it is essential to add to the polymer dispersions a substance containing a plurality of hydroxyl groups such as glycerol, a substance to produce a stable foam and a heat stabilizer common for vinyl polymers. The foamed polymer may be covered with sheets or films of polyvinyl chloride or other material.

3,639,298

FLAME RESISTANT LATEX COMPOSITIONS, ARTICLES MADE THEREFROM AND PROCESSES FOR PRODUCING SAME

Fred Lister and Ludwig A. Wax, Dover, Del., assignors to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Filed Feb. 29, 1968, Ser. No. 709,208
Int. Cl. C08j *1/18*
U.S. Cl. 260—2.5 FP 28 Claims

A flame retardant composition suitable for preparation of films, foams, adhesives, coatings and the like comprising a rubbery latex of a copolymer prepared from a monomeric mixture of an aliphatic conjugated diene, a halogen-containing aliphatic ethylenically unsaturated monomer and a copolymerizable monomer containing carboxyl groups admixed or compounded with certain weight proportions of a flame retardant additive of a hydrated alumina. Preferably, one or more curing agents are also compounded with the latex.

3,639,299

NOVEL FLAME RETARDANT COMPOSITIONS AND METHOD OF APPLYING

Kenneth R. MacDowall, Manhattan Beach, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed Mar. 5, 1968, Ser. No. 710,649
Int. Cl. B01j *13/02;* C08j *1/14*
U.S. Cl. 260—2.5 FP 8 Claims

A flame retardant composition wherein said composition comprises an essentially flame resistant binder having intimately and homogeneously proportioned therein at least two inorganic flame retardants; at least one organic flame retardant; at least one non-resinous carbonific agent; at least one organic, nitrogenous intumescent adjutant; at least one spumific agent and a neutralizing and halogen absorbing reagent and wherein said ingredients are interdependent and coacting to produce the desired flame resistant composition of matter.

3,639,300

SPONGE RUBBER SOLE FOR PREVENTING SLIPPAGE

Akira Takahashi, Ibaragi-ken, and Gentaro Nemoto, Otaku, Japan, assignors to Showa Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,308
Claims priority, application Japan, Aug. 22, 1967, 42/53,907
Int. Cl. A43b *13/22;* C08c *17/08;* C08d *13/08*
U.S. Cl. 260—2.5 R 1 Claim

The present invention relates to a sponge rubber sole containing a slippage preventive additive. The rubber sole contains, for each 100 parts of rubber, 30 parts or less (5 to 30 parts, preferably 10 to 30 parts) of silicon carbide of 95 to 98% SiC content. Silicon carbide is of 100–300 mesh which is of about the same grain size as the reinforcing filler usually used in rubber and can thus be uniformly mixed with the reinforcing filler.

3,639,301
HEAT-AGED NEOPRENE LATEX

Mortimer A. Youker, Clearwater, Fla., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 571,992, Aug. 12, 1966, which is a continuation-in-part of application Ser. No. 468,554, June 30, 1965. This application Apr. 30, 1968, Ser. No. 725,520
The portion of the term of the patent subsequent to June 17, 1986, has been disclaimed
Int. Cl. C08d *5/00, 13/08, 3/14*
U.S. Cl. 260—2.5 L 6 Claims

An improved polychloroprene latex, useful for making polyisocyanate-modified foams, comprises the product produced by heating a freshly prepared polychloroprene latex, having a pH higher than 11, at a temperature in the range of 60 to 90° C. until the pH is lowered to the range of 9.5 to 10. In a preferred embodiment the heating is carried out on a latex containing about 50% solids and the latex is subsequently creamed to about 60% solids.

3,639,302
FLAME-RETARDANT RESIN COMPOSITIONS

Joseph Patrick Brown, Geufron, Llangollen, and William Rees Foster, Croesyceiliog, Cwmbran, England, assignors to Monsanto Chemicals Limited, London, England

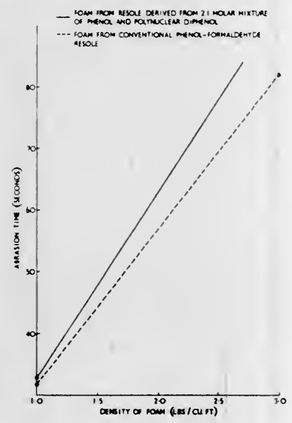
No Drawing. Filed May 16, 1968, Ser. No. 729,523
Int. Cl. C08j *1/18*
U.S. Cl. 260—2.5 FP 5 Claims

Bis(ar-halo-ar-alkenyloxyphenyl) compounds wherein the aromatic rings are linked by a covalent bond, a sulfur or oxygen atom, a secondary or tertiary amino group, or a divalent aliphatic group; processes for preparing such compounds by reacting an alkenyl halide with an appropriate bis(ar-halo-ar-hydroxyphenyl) compound or with a salt thereof; and the use of such compounds as flame-retardant agents for normally flammable synthetic resins, especially foamed synthetic resins.

3,639,303
PHENOLIC FOAMS

John Penfold, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 10, 1968, Ser. No. 735,777
Claims priority, application Great Britain, June 15, 1967, 27,734/67; May 27, 1968, 25,158/68
Int. Cl. C08f *47/08;* C08j *1/14*
U.S. Cl. 260—2.5 F 15 Claims

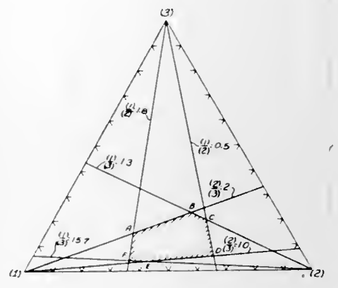


The invention relates to the reaction product of formaldehyde and a mononuclear phenol with a polynuclear diphenol to produce a foam.

3,639,304
SELF-EXTINGUISHING POLYETHYLENE FOAMS COMPRISING AN ANTIMONY COMPOUND, A HALOGEN-CONTAINING ALIPHATIC OR CYCLO-ALIPHATIC COMPOUND AND A BROMINE-CONTAINING AROMATIC OR ACYCLIC COMPOUND

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 606,577, Jan. 3, 1967. This application June 27, 1968, Ser. No. 740,622
Int. Cl. C09k *3/28;* C08f *3/04;* B29d *27/00*
U.S. Cl. 260—2.5 FP 10 Claims



A flame retardant or self-extinguishing foamed polyethylene useful as insulation is described. This new composition contains a ternary mixture of flame-retardant agents containing certain amounts of (1) an antimony compound, (2) a halogen-containing aliphatic or cyclo-aliphatic compound having certain specificities, and (3) a bromine-containing aromatic or acyclic compound of a particular class.

3,639,305
FLAME-RETARDANT RESIN COMPOSITIONS AND METHOD OF MAKING SAME

William Rees Foster, Croesyceiliog, Cwmbran, England, and Joseph Patrick Brown, Geufron, Llangollen, Wales, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Filed July 18, 1968, Ser. No. 745,681
Claims priority, application Great Britain, Aug. 8, 1967, 36,413/67
Int. Cl. C08j *1/18, 1/26*
U.S. Cl. 260—2.5 FP 10 Claims

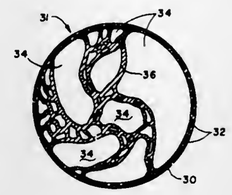
ar-Halo ar-alkenyloxy aromatic acids and derivatives thereof, such as the ester, salt, halide, and anhydride derivatives; processes for preparing such compounds by reacting an alkenyl halide with an appropriate ar-halo-ar-hydroxy aromatic acid or derivative thereof; and the use of such compounds as flame-retardant agents for normally flammable synthetic resins, especially foamed synthetic resins.

3,639,306
ENCAPSULATING PARTICLES AND PROCESS FOR MAKING SAME

Shmuel Sternberg, Hyde Park, and Harris J. Bixler and Alan S. Michaels, Lexington, Mass., assignors to Amicon Corporation, Lexington, Mass.

Filed Aug. 8, 1968, Ser. No. 751,251
Int. Cl. B01j *13/02;* C08j *1/28*
U.S. Cl. 260—2.5 B 20 Claims

Anisotropic polymer particles comprising a thin skin which forms either a microporous or diffusive barrier layer and a substantially hollow interior which interior, however, comprises sufficient macroporous polymer support structure to substantially enhance the physical strength, particularly the resistance to compression, of the particles. These particles have excellent utility for encapsulating various materials for controlled release



therefrom, for immobilizing some chemical reactants while allowing free access and egress of other reactants or reaction products from the particle, and for effecting separations based on diffusion of different-size molecules therethrough. The versatile process by which these particles are formed is also a subject of the instant invention.

3,639,307
URETHANE FOAMS WITH REDUCED SMOKE LEVELS

Herman P. Doerge, Verona, and Marco Wismer, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,638
Int. Cl. C08g *22/44, 51/58*
U.S. Cl. 260—2.5 AJ 20 Claims

This invention relates to fire retardant polyurethane foams having reduced smoke levels. The invention comprises incorporating fumaric acid into a fire-retardant foam formulation.

3,639,308
TUBELESS TIRE INNER LINER COMPOSITION COMPRISING NATURAL RUBBER, BUTYL RUBBER AND MEDIUM THERMAL BLACK

Barry Topcik, Somerville, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,888
Int. Cl. C08c *9/10, 9/04*
U.S. Cl. 260—5 12 Claims

Compositions for use as an inner liner in pneumatic vehicle tires to reduce the rate at which air escapes from a tire by permeating through the body thereof, comprising from about 50 to about 90 parts by weight of natural rubber, from about 10 to about 50 parts by weight of butyl rubber and from about 40 to about 120 parts by weight of carbon black. At least about 40 parts by weight of the carbon black has a surface area below about 20 m.²/gm. and a dibutylphthalate absorption below about 50.

3,639,309
SPRAY STARCH CONTAINING WATER-SOLUBLE POLYURETHANE

Jesse H. Starkman, Deerfield, and William J. Brown, Chicago, Ill., assignors to Starkman Associates, Inc., Deerfield, Ill.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,686
Int. Cl. C08g *41/04*
U.S. Cl. 260—9 5 Claims

An improved spray starch formulation is prepared by incorporating at least about 30% of a film-forming, water-soluble polyurethane, based on the weight of the dry starch. At this level, the polyurethane addition produces increased ironing ease, improved scorch resistance, and improved soil release properties.

3,639,310
WAX-RESIN-HYDROXYPROPYL CELLULOSE THERMOFLUID VEHICLES

Ray Andrews, Washington, Pa., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,845
Int. Cl. C03c *1/00*
U.S. Cl. 260—17 R 2 Claims

Thermofluid vehicles of the wax-resin type for vitreous enamel color compositions are described. The vehicles contain a fatty alcohol or fatty amide wax, a resin binder and a small amount of hydroxypropyl cellulose and give, with enamel colors, compositions which do not run or sag during firing and which produce enamel coatings free of stencil markings.

3,639,311
METHYL METHACRYLATE-NITROCELLULOSE ADHESIVE COMPOSITION

Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 11, 1968, Ser. No. 697,019
Int. Cl. C08f *29/46;* C09j *3/16*
U.S. Cl. 260—17 2 Claims

Many of the physical problems encountered in the production of an optically perfect lamination between polymethyl methacrylate and cellulose acetate butyrate may be obviated by utilizing an adhesive comprising approximately 95% methyl methacrylate monomer, approximately 4% nitrocellulose having a viscosity within the range of 600 to 1000 seconds^{-1} and about 1% of an initiator for the monomer.

3,639,312
OLEFIN POLYMERS CONTAINING SUGARS

Robert B. Turner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,233
Int. Cl. C08f *45/67, 29/10;* C08b *29/30*
U.S. Cl. 260—17.4 SG 9 Claims

Fabricated articles of olefin polymers having improved optical properties are prepared by incorporating a small amount of a sugar such as sucrose into an olefin polymer such as polyethylene prior to fabricating an article from the polymer.

3,639,313
MODIFIED POLYAMIDE RESINS

Arnold H. Gruben, Cedar Grove, and Daniel J. Carlick, Berkeley Heights, N.J., assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,435
Int. Cl. C08g *20/20*
U.S. Cl. 260—18 N 9 Claims

A modified polyamide resin particularly suitable for use in printing inks and laminating inks comprises a polyamide resin which is the reaction product of at least one polymeric fatty acid and at least one diamine or polyamine and up to about 40 weight percent of a cyclic lactam, such as e-caprolactam.

3,639,314
PROCESS FOR THE PREPARATION OF HIGH-VISCOSITY ALKYD RESINS

Martin Cherubim, Rheinkamp-Eick-West, and Friedrich Henn, Homberg (Lower Rhine), Germany, assignors to Rheinpreussen Aktiengesellschaft fuer Bergbau und Chemie, Homberg (Lower Rhine), Germany

No Drawing. Continuation of application Ser. No. 750,746, Aug. 7, 1968. This application Apr. 28, 1970, Ser. No. 31,819
Claims priority, application Germany, Aug. 9, 1967, R 46,680
Int. Cl. C09d *3/64*
U.S. Cl. 260—22 EP 15 Claims

Process for the preparation of alkyd resins of high viscosity, characterized in that 100 weight parts of alkyd

resin are mixed with 0.1 to 10 weight parts of a nitrogen-containing glycidyl compound which contains at least two glycidyl groups bonded to amine nitrogen, and the mixture is condensed at temperatures between 20° C. and 200° C. to the desired viscosity.

3,639,315
PROCESS FOR MODIFYING HYDROXYL-CONTAINING ALKYDS AND POLYESTERS IN WATER DISPERSION
Jaime Rodriguez, Minneapolis, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.
No Drawing. Filed Feb. 13, 1968, Ser. No. 705,019
Int. Cl. C08g *22/06;* **C09d** *3/72*
U.S. Cl. 260—22 TN **3 Claims**

Process and products formed by reacting hydroxyl-containing, water-dispersible resins such as alkyds and polyesters with organic isocyanate in water dispersions by the addition with agitation of 0.1 to 20.0% of an organic isocyanate to the dispersed resin over a period of about 5 to 180 minutes at a temperature of 60° to 200° F. The products are water-dispersible coating resins capable of air drying in a short time.

3,639,316
COMPOSITION FOR REDUCING FRICTION ON COATED ABRASIVE CLOTH
Thomas J. Argiro, 1454 Fairview Place, Alliance, Ohio 44601
Original application Mar. 16, 1966, Ser. No. 534,783, now Patent No. 3,413,106, dated Nov. 26, 1968. Divided and this application June 13, 1968. Ser. No. 750,667
Int. Cl. C08g *17/16;* **C08j** *3/16, 3/26*
U.S. Cl. 260—22 R **5 Claims**



A composition adapted for application to the back of coated abrasive cloth to provide a friction reducing back coat thereon comprises an organic solvent solution of a wax lubricant and a curable soluble alkyd resin binder, in a weight ratio of binder to lubricant in the range of about 2:1 to 10:1. The lubricant preferably includes a major proportion of a paraffin base wax and a minor proportion of carnauba wax. The composition is applied to the cloth, solvent is evaporated, and the resin is cured to provide the back coat.

3,639,317
SURFACE TREATMENT COMPOSITION AND METHOD
Duane W. Gagle and Richard J. Bennett, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Mar. 28, 1968, Ser. No. 717,042
Int. Cl. C08f *29/02;* **E01c** *11/24*
U.S. Cl. 260—23 H **11 Claims**

A concrete or other porous surface anti-spalling, water repellent, surface treatment composition, e.g., amorphous polypropylene, as can be obtained in the production of crystalline polypropylene, linseed oil and Stoddard solvent which can be brush-applied to the surface will impart to the surface anti-slip or ice-rejecting properties relative to untreated surface areas, with inhibit frost penetration, and is stable against oils, salts and high and low pH solutions.

3,639,318
PLASTICIZED POLYVINYL CHLORIDE FILM
Donatas Tijunelis and Edward A. Shiner, Chicago, Ill., assignors to Union Carbide Corporation
Filed May 29, 1968, Ser. No. 733,086
Int. Cl. C08f *45/28;* **B65b** *25/22*
U.S. Cl. 260—23 XA **15 Claims**

A highly plasticized polyvinyl chloride film is biaxially oriented to obtain a film which, after shrinking, exhibits residual elasticity and improved stress characteristics thereby providing an improved wrapping or packaging film for food items, particularly food items that are subject to frequent customer handling. The biaxially oriented plastic film obtained is utilized as a packaging film for storing food items at refrigerator or freezing temperatures, or for cooking the packaged food items at elevated temperatures, followed by storage at refrigerator or freezer temperatures.

3,639,319
PELLUCID HALOGEN-CONTAINING RESIN COMPOSITIONS
Kenneth C. Bergman, Cleveland Heights, and Thomas C. Jennings, Willowick, Ohio, assignors to Synthetic Products Company, Cleveland, Ohio
No Drawing. Filed July 14, 1969, Ser. No. 841,542
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 **7 Claims**

Pellucid halogen-containing resin compositions containing a vinyl halide resin such as polyvinyl chloride and, as pellucid metallic stabilizers, a combination of stannous and zinc salts of organic acids dispersed in the resin. These plastic compositions can be processed or molded under the action of heat into films, sheets and solid objects such as bottles without deterioration of the vinyl halide resin to provide colorless, transparent plastic articles.

3,639,320
WAX COMPOSITIONS
Alphonse Faure, Claude Gigou, and Robert Mingat, Rhone, and Michel Ruaud, Isere, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Mar. 18, 1968, Ser. No. 713,583
Claims priority, application France, Mar. 30, 1967, 100,863
Int. Cl. C08c *11/70;* **C08f** *45/52*
U.S. Cl. 260—28.5 **6 Claims**

The invention provides novel wax compositions suitable as hot melt adhesives comprising a minor proportion of a terpolymer of ethylene, vinyl acetate, and a vinyl ester of a higher carboxylic acid and a major proportion of microcrystalline or paraffin wax.

3,639,321
POLYESTER MOULDING AND COATING MATERIALS WHICH CAN BE HARDENED BY UV-IRRADIATION
Karl Fuhr, Krefeld, Hans Rudolph, Krefeld-Bockum, and Hermann Schnell and Manfred Patheiger, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 23, 1968, Ser. No. 723,621
Claims priority, application Germany, May 6, 1967, F 52,340; Mar. 9, 1968, F 55,020
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 **8 Claims**

Compositions which can be hardened by ultraviolet irradiation and have improved dark storability comprising an unsaturated polyester of an α,β-unsaturated dicarboxylicacid and a polyol, a copolymerizable monomeric compound and, as photosensitizer, a benzoin ether of a secondary alcohol.

3,639,322
METHOD OF TREATING ASPHALTENES PRIOR TO HIGH TEMPERATURE PROCESSING WITH VARIOUS HIGH POLYMERS
Robert J. Bathgate, Media, Pa., and Jackson S. Boyer, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed June 13, 1968, Ser. No. 736,578
Int. Cl. C08f *45/52;* **C08g** *51/52*
U.S. Cl. 260—28.5 A **5 Claims**

A process for forming improved asphaltene-high molecular weight thermoplastic polymer products wherein the asphaltene prior to incorporation into the polymer is subjected to a heating treatment, and further the products formed by the improved process.

3,639,323
PREBLENDING OF ETHYLENE-PROPYLENE RUBBER AND WAX FOR INCORPORATION IN HIGHLY UNSATURATED RUBBER
Gerrard Morrisey, Watertown, Conn., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed July 17, 1969, Ser. No. 842,686
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 B **6 Claims**

The incorporation of ethylene-propylene rubber (EPM or EPDM) and wax into highly unsaturated rubber (e.g., NR, SBR) is accomplished more readily if the ethylene-propylene rubber and wax are first preblended before mixing into the highly unsaturated rubber. Use of the ethylene-propylene rubber and wax in the form of a preblend also results in improved distribution of these additives in the highly unsaturated rubber, and improved ozone resistance in the total blend.

3,639,324
COATING COMPOSITION OF COPOLYMERIC VINYLIDENE CHLORIDE, PROCESS OF PREPARATION THEREOF, AND ARTICLES COATED THEREWITH
Daniel Kenyon Owens, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 13, 1969, Ser. No. 865,982
Int. Cl. C08f *45/24, 45/52*
U.S. Cl. 260—28.5 D **11 Claims**

A coating composition is provided comprising behenic acid and a copolymer of vinylidene chloride wherein the copolymer is of between about 60 parts and about 95 parts by weight of vinylidene chloride and includes a non-ionic surfactant said composition being especially adapted for coating film structures of organic thermoplastic polymeric material. A process for preparing said compositions characterized by continuous addition of monomeric materials into an aqueous dispersion containing a reduction-oxidation initiator, a non-ionic surfactant and behenic acid also is provided.

3,639,325
POLYVINYL ACETATE LATEX WHITE PAINT BASE COMPOSITIONS CONTAINING A DISPERSANT FOR PAINT TINT COLORANTS
Donald L. Marion, Homewood, Dennis G. Anderson, Chicago, and Robert C. Strand, Homewood, Ill., assignors to Atlantic Richfield Company
No Drawing. Filed Mar. 15, 1968, Ser. No. 713,291
Int. Cl. C08f *3/70, 29/48;* **C09d** *3/76*
U.S. Cl. 260—29.6 **4 Claims**

Improved color development and a wide range of paint tint colorant compatibility is achieved in polyvinyl acetate latex white paint base compositions containing a white pigment and a dispersing agent, by the addition thereto of a small amount effective as a colorant dispersant, of an ammonium salt of a partial ester of a styrene-maleic anhydride polymer esterified to about 75 to 100% half ester with an alkylphenyl ether alcohol of the formula

$$R—C_6H_4—(OCH_2CH_2)_x—OH$$

where R is alkyl of 8 to 9 carbon atoms and x is 1 to 30, such as p-tertiary octylphenyl polyethoxy alcohol of 9 to 10 ethoxy groups, the styrene-maleic anhydride polymer prior to esterification containing a molar ratio of polymerized styrene to polymerized maleic anhydride of about 1:1 to 4:1, and preferably of about 1:1, and having an average molecular weight of about 600 to 5000, preferably about 1500 to 2000. Optimum color development is obtained when the dispersing agent comprises a small effective amount of an ammonium salt of a partial ester of the aforesaid styrene-maleic anhydride polymer esterified to about 75 to 100% half ester with an alkyl ether of ethylene glycol or of diethylene glycol, such as the monobutyl ether of ethylene glycol. This dispersing agent and the colorant dispersant can be mixed together to form an effective colorant tint paint dispersant composition for addition to polyvinyl acetate latex white paint base compositions. The paint tint colorant is subsequently added to the polyvinyl acetate latex white paint base composition containing the colorant dispersant resulting in excellent compatibility and color development.

3,639,326
VINYL TERPOLYMER COMPOSITIONS
Raymond J. Kray, Berkeley Heights, Marvin T. Tetenbaum, Convent Station, Wilbert M. Wenner, Rockaway, and Oliver A. Barton, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed May 20, 1968, Ser. No. 730,644
Int. Cl. C08f *45/00*
U.S. Cl. 260—29.6 **5 Claims**

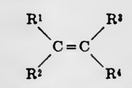
Latices prepared by the emulsion copolymerization of vinyl chloride, ethylene and a third ethylenically unsaturated carboxylic ester monomer afford films having a combination of desirable properties. Additionally, such latices can be formulated into paints which are fire and mildew resistant.

3,639,327
ADHESIVE COMPOSITION
Arthur H. Drelich, Plainfield, and Patricia M. Condon, East Brunswick, N.J., assignors to Johnson & Johnson
Filed May 27, 1968, Ser. No. 732,454
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR **7 Claims**

An adhesive system having improved adhesive strength and derived from a colloidal dispersion of a latex adhesive and a cationic material.

3,639,328
POLYMERS OF TETRAFLUOROETHYLENE
John Michael Downer, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 1, 1968, Ser. No. 741,240
Claims priority, application Great Britain, July 5, 1967, 30,990/67
Int. Cl. C08f *3/24, 45/22*
U.S. Cl. 260—29.6 **3 Claims**

Tetrafluoroethylene is polymerized in aqueous medium in the presence of an internally unsaturated perfluoroalkene having the formula



in which R^1 and R^3 are perfluoroalkyl and R^2 and R^4 are fluorine or perfluoroalkyl in the presence of a water

soluble organic peroxide as initiator and in the presence of a highly fluorinated aliphatic carboxylic or sulfonic acid salt as emulsifier.

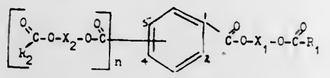
3,639,329

BENZENE POLYCARBOXYLIC ACID ESTERS

Morice William Thompson, Maidenhead, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 27, 1968, Ser. No. 732,028
Claims priority, application Great Britain, May 30, 1967, 24,926/67
Int. Cl. C08f 45/42
U.S. Cl. 260—31.4 7 Claims

New esters of structure



prepared by esterification of benzene polycarboxylic acids are mixed in coating compositions as plasticizers having particularly low volatility and resistance to water spotting.

3,639,330

METAL COATING COMPOSITIONS AND METAL COATED THEREWITH

Andrew F. Fitzhugh and Rodney M. Huck, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 3, 1969, Ser. No. 864,304
Int. Cl. C08c 1/36; C08f 45/42; C08g 51/42
U.S. Cl. 260—31.4 9 Claims

Enamels suitable for use in coating metal or enamelled surfaces to impart not only electrical insulation thereto, but also the capacity to thermally bond to other surfaces. Coatings so bonded display unusually high rupture strength at elevated temperatures. The enamels use a mixture of (1) a condensate of amine-modified novolac resin and (2) a polyvinyl acetal.

3,639,331

GLASS FIBER REINFORCED RESINS CONTAINING DISPERSION AID

Kiyoshi Hattori and Elby Leon Richardson, Evansville, Ind., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,574
Int. Cl. C08f 45/10
U.S. Cl. 260—31.8 20 Claims

Novel glass fiber reinforced thermoplastics having better dispersion of the glass fibers therein and process consisting of incorporation of an additive such as a lubricant, plasticizer or low molecular weight resin to reduce the melt viscosity of the resin surrounding the glass fiber relative to the viscosity of the unreinforced resin at the melt temperature.

3,639,332

CRYSTALLINE POLYSTYRENE COMPOSITIONS

Harry W. Coover, Jr., and Donald J. Shields, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 595,564, Nov. 16, 1966, which is a continuation of application Ser. No. 41,723, July 11, 1960. This application Aug. 5, 1968, Ser. No. 751,693
Int. Cl. C08f 7/04
U.S. Cl. 260—33.8 3 Claims

Oriented crystalline polystyrene having heat distortion temperatures of at least 200° C. which will not disorient at high temperatures, for example, 100–200° C. The oriented crystalline polystyrene of the invention is eminently suitable for use as a photographic support. The crystalline polystyrene of the invention can be obtained by polymerizing styrene at a temperature within the range of about 20 to about 130° C. and a pressure within the range of about 0 to 1000 p.s.i. in the presence of an ionic catalyst comprising (1) a halide of a transition metal from Groups IV–B and VI–B of the Periodic Table and (2) and aluminum alkyl. As an embodiment of the invention it has been found that one of the particular catalyst combinations provides a methylene chloride-soluble crystalline isotactic styrene polymer which permits the preparation of valuable polystyrene fibers from the ordinary dry-spinning equipment commonly used by fiber manufacturers.

3,639,333

ALIPHATIC AMIDES AS LIGHT STABILIZERS FOR PIGMENTED POLYMERS

William Frederick Baitinger, Jr., Belle Mead, N.J., assignor to American Cyanamid Company, Stamford, Conn.

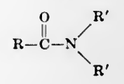
No Drawing. Filed Aug. 17, 1965, Ser. No. 480,468
Int. Cl. C08f 45/04, 45/60
U.S. Cl. 260—41 B 8 Claims

A polymeric composition comprising:

(1) a polymer selected from the class consisting of poly(vinyl chloride), polystyrene and polyolefins having 2–4 carbon atoms and

(2) at least 0.5% of titanium dioxide based on the weight of the polymer and

(3) an amide of the formula:



wherein R is alkyl (C_1–C_{18}, alkenyl (C_2–C_{18}), carboxyalkyl (C_1–C_{18}), carb(lower alkoxy)alkyl (C_1–C_{18}),

$$(R')_2N—(CH_2)_n,\ (R')_2NCO(CH_2)_n$$

or $R'CON(R')CH_2—(CH_2)_n$; R′ is hydrogen, alkyl (C_1–C_{18}), hydroxy(lower alkyl), lower alkoxy(lower alkyl) or cyano(lower alkyl); and *n* is zero to eighteen inclusive, said amide being present in a concentration of 0.1–10.0% of the weight of the polymer. These compositions have improved light stability and can be formed into shaped articles as for example by molding, extrusion, or spinning.

3,639,334

STABILIZATION OF POLYPHENYLENE ETHERS

Klaus E. Holoch, Psald, Germany, assignor to General Electric Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 425,330, Jan. 13, 1965. This application May 14, 1968, Ser. No. 728,914
Int. Cl. C08g 51/58, 51/60
U.S. Cl. 260—45.9 15 Claims

A polyphenylene ether composition stable to oxygen containing atmosphere at elevated temperatures comprising a polyphenylene ether and a stabilizing quantity of a material selected from the group consisting of phosphites, hydrazines, and mixtures thereof.

3,639,335

THERMALLY-STABLE POLYAMIDE COMPOSITIONS

Shigeru Fujii and Iso Saito, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed June 12, 1970, Ser. No. 45,897
Int. Cl. C08g 51/58, 51/62
U.S. Cl. 260—45.75 C 19 Claims

Nylon compositions which are formed from polyamides such as polycaprolactam have improved heat and light stability by incorporating a copper salt derived from the reaction of a coper halide and xylenediamine. The resulting polyamides which are color-free may optionally contain a hindered phenol antioxidant.

3,639,336

HEXAHYDRO-1,3,5-TRIS-(4-HYDROXYARYL)-s-TRIAZINES

Warren L. Beears, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application Oct. 31, 1968, Ser. No. 772,363, now Patent No. 3,567,724, dated Mar. 2, 1971. Divided and this application Mar. 18, 1970, Ser. No. 14,860
Int. Cl. C08f 45/60; C08g 51/60; C10m 1/36
U.S. Cl. 260—45.8 N 13 Claims

Novel hexahydro-1,3,5-tris-(4-hydroxyaryl)-s-triazines have been prepared. These compounds are effective stabilizers for organic materials, such as α-olefin polymers and copolymers, acetal polymers, polyamides, polyesters and polyurethanes, against the deleterious effects of oxygen, heat and light.

3,639,337

COPOLYMERS OF POLY(2,6-DIPHENYL-1,4-PHENYLENE OXIDE)

Johann F. Klebe, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,811
Int. Cl. C08g 23/20
U.S. Cl. 260—47 ET 10 Claims

Poly(2,6-diphenyl-1,4-phenylene oxide) is converted to a copolymer by metalating the meta position of some of the phenylene rings which, through a series of reactions, leads to introduction of a quinoid substituent in the meta position or to ring closure with conversion of the phenylene unit to a fluorene or fluorenone unit. Because of the completely aromatic nature of the copolymer it is very oxidation resistant. The introduction of these new repeating units along the chain of the initial polymer introduces an irregularity so that the polycrystalline nature of the initial polymer is destroyed resulting in a copolymer which is readily moldable without necessity for rapid cooling to prevent embrittlement.

3,639,338

REACTIVE POLYUREAS, PROCESS OF PREPARING SAME, AND USE THEREOF IN CURING EPOXY RESINS

Robert C. Kuder, Excelsior, Minn., assignor to General Mills, Inc.

No Drawing. Filed May 6, 1968, Ser. No. 727,031
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EN 21 Claims

Reactive polyureas prepared from diprimary diamines containing at least one secondary amine group and diisocyanates derived from C_{36} to C_{44} dimerized fat acids. Process of preparing said polyureas using chlorofrm or trichloroethylene as reaction solvent. Use of the polyureas to cure epoxy resins.

3,639,339

REACTIVE POLYMERS AND PROCESS FOR THE PRODUCTION THEREOF

John Beaton and Douglas C. Edwards, Sarnia, Ontario, and Richard Helmut Wunder, Corunna, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed May 20, 1968, Ser. No. 730,662
Claims priority, application Canada, June 28, 1967, 944,149
Int. Cl. C08d 5/02; C08f 27/02, 27/08
U.S. Cl. 260—47 1 Claim

A starting polymer of an olefinically-unsaturated compound and containing more than one halogen per polymeric molecule, particularly as an allylic halogen group, is treated with a multifunctional agent to form a polymer which is then curable with isocyanate. The multifunctional agent has as a first functional group a tertiary amine or a hydrocarbyl oxide of an alkali metal or mercaptide of an alkali metal; the agent has at least one other functional group which is less active than the first group and has a labile hydrogen atom capable of reacting with isocyanate.

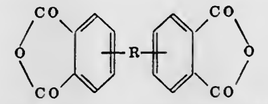
3,639,340

THERMOSTABLE POLYMERS OBTAINED FROM PHENOLS AND AROMATIC TETRACARBOXYLIC ACID ANHYDRIDES

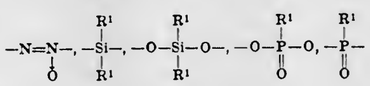
Maurice Balme and Maurice Ducloux, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed July 8, 1968, Ser. No. 743,009
Claims priority, application France, July 13, 1967, 114,382
Int. Cl. C08b 33/10
U.S. Cl. 260—47 CP 9 Claims

Novel thermostable polymers are made by polycondensing a phenol or polyphenol with a dianhydride of formula:



or a corresponding tetracid, in which R represents a simple valence bond or one of the following divalent radicals: —O—, —S—, —SO_2—, —NH—, —NR′—, —N=N—,



—CHOH—, —CO—, —$C(CH_3)_2$—,

—CO—C_6H_4—CO—

and —CHOH—C_6H_4—CHOH—, R^1 representing a lower alkyl, cycloalkyl or aryl radical.

3,639,341

LINEAR POLYURETHANE RESIN

Heinrich Krimm, Krefeld-Bochum, Hermann Schnell, Krefeld-Uerdingen, and Günther Lenz, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 30, 1968, Ser. No. 748,634
Claims priority, application Germany, Aug. 3, 1967, F 53,136
Int. Cl. C08g 22/26
U.S. Cl. 260—47 CZ 5 Claims

Linear high molecular weight polyurethanes are prepared by polycondensation of binuclear N-alkylsubstituted hydroxy amines in which the hydroxyl group and the amino groups are aromatically bound in form of their monocarbonic acid derivatives or with bifunctional carbonic acid derivatives if desired in the presence of a catalyst.

3,639,342

METHOD FOR PREPARING HETEROCYCLIC POLYMER FROM DIAMINO-DIAMIDO COMPOUNDS AND POLYCARBOXYLIC ACID DERIVATIVES

Yasuo Miyadera, Tatuo Masuko, Tadashi Muroi, Shinichi Okada, and Hiroshi Noguchi, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Hitachi Chemical Company, Ltd., and Hitachi Cable, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,581

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 CP 22 Claims

A solid heterocyclic polymer capable of forming cast film and fiber, especially useful for heat-stable insulating wire, having a novel aromatic nucleus-fused bis(4-thia-1,3-diazine oxide), bis(1,3-diazine oxide) ring or combination thereof in its repeated unit. The polymer is produced by reacting aromatic O-diamino-diamido compounds with aromatic or aliphatic polybasic acid anhydrides or halides to form a new polyamide, and cyclizing under dehydration the polyamide.

3,639,343

POLYIMIDES AND COPOLYIMIDES FROM AROMATIC DIAMINES AND ALICYCLIC DIANHYDRIDES

George Chung-Chi Su, Devon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,436

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 7 Claims

Polyimides and copolyimides in which the radicals to which the four carbonyl groups are attached are alicyclic and contain either 6 or 10 carbon atoms and in which the radicals that are singly bonded to two separate nitrogen atoms are aromatic.

3,639,344

COATING COMPOSITIONS COMPRISING AN EPOXY RESIN AND ALIPHATIC AMINE REACTION PRODUCTS

William P. Kinneman, Jr., Suffern, N.Y., and John R. Uram, Jr., Fairfield, N.J., assignors to Sika Chemical Corporation

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,109

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN 9 Claims

This invention relates to a coating composition suitable for coating or painting wet or damp substrates which is capable of curing to a hard film under water comprising an epoxy resin and a substantially water-insensitive curing agent for said resin comprising a reaction product of a polyamine and a monofunctional epoxide-containing material.

3,639,345

SHELF-STABLE EPOXY RESIN COMPOSITION OF EPOXY RESIN AND ADDUCT OF TRIMELLITIC ANHYDRIDE AND POLYALKYLENE GLYCOL

Charles A. Whittemore, Denver, Colo., and Robert E. Spangler, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,910

Int. Cl. C08g *30/121*

U.S. Cl. 260—47 EA 4 Claims

Shelf-stable epoxy resin composition that can be pulverized to a dry powder for fluidized bed or dry spray coating of heated objects to provide tough flexible protective coatings. The composition comprises a high-melting diglycidyl ether of a dihydric phenol and an adduct of one mol of trimellitic anhydride per hydroxyl equivalent of a polyalkylene glycol, especially polyethylene glycol.

3,639,346

VINYL KETONE POLYMERIZATION

Henry L. Hsieh and William R. Busler, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 11, 1968, Ser. No. 743,960

Int. Cl. C08g *15/00*

U.S. Cl. 260—63 R 9 Claims

Vinyl ketones are polymerized in the presence of a catalyst formed by an organoaluminum compound and a metal salt of an organic acid or a beta-diketone. Water can be added to the polymerization system. In addition, the vinyl ketones can be copolymerized with alkene oxides.

3,639,347

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYOXY-METHYLENE

Shotaro Sugiura and Takami Ishii, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed July 22, 1968, Ser. No. 746,264

Claims priority, application Japan, July 28, 1967, 42/48,181

Int. Cl. C08g *1/20*

U.S. Cl. 260—64 12 Claims

Process for the preparation of high molecular weight polyoxymethylene, which comprises polymerizing formaldehyde or a mixture of formaldehyde with a comonomer copolymerizable therewith, in the presence of a catalytic quantity of a mono- or dithio-β-diketone complex.

3,639,348

COPOLYMERS OF PROPARGYL METHACRYLATE AND ACRYLATE

Gaetano F. D'Alelio, South Bend, Ind., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 28, 1968, Ser. No. 740,972

Int. Cl. C08f *15/18*

U.S. Cl. 260—67 9 Claims

The copolymers disclosed herein are of propargyl acrylate and methacrylate. Polymerization of propargyl acrylate and methacrylate in free radical systems generally results in crosslinked or gelled products since the free radicals will activate polymerization through the acetylenic as well as through the acrylic unsaturation. Therefore the copolymers are advantageously prepared by anionic polymerization. The comonomers are those which are copolymerizable with acrylates and methacrylates in anionic polymerizations. The comonomers are styrene, its homologs and derivatives, and monounsaturated acrylates and methacrylates. The copolymers are particularly valuable for post-treatment and post-reactions, such as bromination, decaboronation, thermal and radical crosslinking, Mannich reaction with an aldehyde and ammonia or a mono- or di-substituted amine, or reactions with nitrile oxides, aldehydes, ketones, epoxides, sodamide, etc. The copolymers can be tailored to give ultimate properties according to the type and the proportion of comonomers and the proportion of acetylenic groups as well as the type of postreactant or post-treatment.

3,639,349

TRIOXANE COPOLYMERS

Karlheinz Burg, Hofheim, Taunus, and Klemens Gutweiler and Hans Dieter Hermann, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 25, 1968, Ser. No. 739,666

Claims priority, application Germany, June 27, 1967, F 52,805

Int. Cl. C08g *1/14, 1/16*

U.S. Cl. 260—67 10 Claims

Copolymers of trioxane are prepared by copolymerizing trioxane with cyclic ethers or cyclic or linear acetals and, if desired, a tercomponent, and polyethylene oxide having an average molecular weight in the range of from 300 to 25,000 in the presence of a cationically active initiator.

3,639,350

ESTERIFICATION OF TEREPHTHALIC ACID WITH AN ALKYLENE GLYCOL IN THE PRESENCE OF GUANIDINE OR AN ALKYL GUANIDINE

Stanley D. Lazarus, Petersburg, and Ian C. Twilley, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 755,451, Aug. 26, 1968. This application Apr. 15, 1970, Ser. No. 28,938

Int. Cl. C07c *67/00;* C08g *17/013*

U.S. Cl. 260—75 R 16 Claims

A process for the direct esterification of terephthalic acid with an alkylene glycol which comprises esterifying terephthalic acid with an alkylene glycol containing 2 to about 10 carbon atoms per molecule under direct esterification conditions in the presence of an amount of guanidine or an alkyl guanidine sufficient to suppress the formation of aliphatic ether groups.

3,639,351

ADAMANTANE POLYESTERS

Irl N. Duling, West Chester, Abraham Schneider, Overbrook Hills, and Gary L. Driscoll, Boothwyn, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 586,825, Oct. 14, 1967, now Patent No. 3,467,627. This application Mar. 18, 1969, Ser. No. 808,340

The portion of the term of the patent subsequent to Sept. 16, 1986, has been disclaimed

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R 6 Claims

Linear polyesters having good temperature, hydrolytic and U.V. stability are prepared from hydrocarbon adamantane diols and cycloalkyl organic diacids. The hydroxyl groups are bridgehead positions in the adamantane moiety and preferably the adamantane moiety contains substituents at the remaining bridgehead positions thus removing all tertiary hydrogen-atoms therefrom. The polyesters are useful for preparing coatings, films and fibers.

3,639,352

POLYESTERS OF IMPROVED DYEABILITY AND LIGHT FASTNESS

Kanji Katsuura and Keishiro Igi, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Okayama, Japan

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,945

Claims priority, application Japan, Nov. 26, 1968, 43/86,560; Mar. 24, 1969, 44/22,626, 44/22,627

Int. Cl. C08g *17/14*

U.S. Cl. 260—75 P 5 Claims

Modified film- or fiber-forming polyesters having a high affinity for basic dyes and improved light fastness comprising a linear polyester modified with radicals containing at least one group selected from sulfonate, sulfinate, phosphonate, phosphinate and carboxylate groups in the form of a metal salt thereof and a minor amount of at least one aliphatic compound having a carbon to oxygen double bond or a carbon to carbon double bond conjugated with another carbon to carbon double bond.

3,639,353

POLYMERS CROSSLINKED WITH POLYCARBODIIMIDES

Harold P. Brown, Kirkwood, Mo., assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 368,395, May 18, 1964. This application Mar. 20, 1970, Ser. No. 21,488

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R 9 Claims

Aromatic polycarbodiimides are reacted with polymers containing functional groups solely derived from organic acids. The gelled, crosslinked products are insoluble in alkaline solutions.

3,639,354

ELASTOMERIC POLYURETHANES FROM POLYCARBONATES

Erwin Müller, Leverkusen, and Wilhelm Thoma, Cologne-Flittard, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 23, 1968, Ser. No. 707,479

Claims priority, application Germany, Feb. 28, 1967, F 51,656

Int. Cl. C08g *22/08*

U.S. Cl. 260—77.5 AP 2 Claims

Polyurethanes prepared by reacting diisocyanates, low molecular weight compounds containing at least two hydrogen atoms which are reactive with isocyanates and higher molecular weight, linear hydroxyl-containing polycarbonates based on 1,6-hexanediol and an alkoxylated 1,6-hexanediol of the formula

$$HO-(CH_2)_6-O-\underset{\displaystyle R}{\underset{|}{CH}}-CH_2-OH$$

wherein R is hydrogen or CH_3.

3,639,355

POLYURETHANE COATING COMPOSITIONS HAVING IMPROVED VISCOSITY CHARACTERISTICS

George S. Wooster, Hamburg, and Frank M. Delgado, Tonawanda, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 729,378, May 15, 1968. This application Oct. 8, 1968, Ser. No. 765,970

The portion of the term of the patent subsequent to Dec. 7, 1988, has been disclaimed

Int. Cl. C08g *22/06*

U.S. Cl. 260—77.5 AP 5 Claims

Novel polyurethane coating compositions characterized by excellent curing properties and low viscosities are prepared from 4,4'-methylene bis (cyclohexyl isocyanate) and mixtures of polyether triols.

3,639,356

TRICYCLO-DECENE TETRACARBOXYLIC ACID DIIMIDE POLYMERS

Jerald S. Bradshaw, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Oct. 12, 1965, Ser. No. 495,345, now Patent No. 3,413,316, dated Nov. 26, 1968. Divided and this application Dec. 21, 1967, Ser. No. 705,585

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF 3 Claims

Process for the production of polyimide polymers having a molecular weight less than 10^6 units obtained by the

pyropolymerization of tricyclo[4.2.2.0^{2,5}]-9-R-dec-9-ene-3,4,7,8 tetracarboxylic acid dianhydride in which R is an alkyl group having from 7 to 20 carbon atoms and a C_7–C_{12} polymethylene diamine.

3,639,357
PROCESS FOR PREPARING SUBSTITUTED MALEIMIDE POLYMERS
Hyman L. Cohen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Mar. 1, 1968, Ser. No. 709,793
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 UA **5 Claims**

Process for reacting a polymer containing units of a maleimide with a compound having a primary amine group. In one aspect polymers are produced thereby which are good dye mordants.

3,639,358
METHOD OF PREPARING AROMATIC POLYAMIDES
Gus Nichols, Baltimore, Md.
(622 Pierce Ave., Apt. 6, Fort Wayne, Ind. 46807)
No Drawing. Filed June 28, 1968, Ser. No. 741,209
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **18 Claims**

Preparation of fiber forming polyarylene amides by reacting

(1) N-aliphatic acyl amino carboxylic-aliphatic anhydride or by reacting
(2) an arylene dicarboxylic acid-dialiphatic acid anhydride with
(3) an arylene diamine N,N'-aliphatic diacylate.

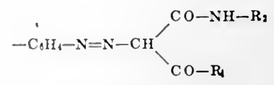
3,639,359
ANIONIC POLYMERIZATION OF LACTAMS
Johan W. Garritsen and Sebastiaan E. M. Kooijman, Geleen, Johannes H. C. M. A. Gregoire, Beek(L), and Henny Cerbrugge, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed Mar. 21, 1969, Ser. No. 809,401
Claims priority, application Netherlands, Mar. 21, 1968, 6804056; Dec. 4, 1968, 6817424
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L **8 Claims**

A process for the anionic polymerization of lactams is disclosed, wherein the lactams are polymerized in the presence of a catalyst and a promoter, with the promoter being di - ϵ - caprolactim - ether - dihydrochloride or di - ϵ - caprolactim - ether - monohydrochloride, which latter compound may contain up to 90 mole percent of di - ϵ - caprolactim - ether. The promoters of the present invention allow the polymerization time to be reduced. The polymerization of lactams produces useful polyamides.

3,639,360
METHOD OF PREPARING COLORED POLYAMIDES
Zbynek Bukac and Jan Sebenda, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia
No Drawing. Continuation-in-part of application Ser. No. 804,320, Mar. 4, 1969. This application Sept. 3, 1969, Ser. No. 855,040
Claims priority, application Czechoslovakia, Mar. 4, 1968, 1,702/68
Int. Cl. C08g *20/12, 51/66*
U.S. Cl. 260—78 L **3 Claims**

Colored polyamides are formed rapidly by polymerization of lactams having rings with 7 to 9 members in the presence of alkali and of an azo dye of the formula R—R' wherein

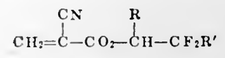
R is



R' is R, hydrogen, lower alkyl, phenyl, di-lower-alkyl-amine, lower alkoxy, or lower acylamine;
R_1 is alkyl C_{1-17} or phenyl; and
R_2 is aryl, alkyl C_{1-18}, or alkoxy-phenyl.

3,639,361
FLUOROCYANOACRYLATES
Jerry E. Robertson, North Oaks, Joseph Kenneth Harrington, Edina, and Elden H. Banitt, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Dec. 1, 1967, Ser. No. 687,111
Int. Cl. C08f *3/42*
U.S. Cl. 260—78.4 **12 Claims**

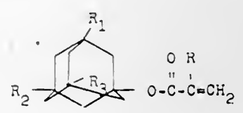
Fluorinated cyanoacrylates having the formula



wherein R is hydrogen, methyl or ethyl, R' is fluorine, $-CF_3$ or $-(CF_2)_nH$, and n is an integer from 1 to 3 have been found to be useful adhesives which when applied as monomers to adherends rapidly polymerize in the presence of even small amounts of e.g. moisture to form strong bonds. The monomers also polymerize to films and can be used biologically as hemostatics and tissue adhesives.

3,639,362
ADAMANTANE ACRYLATE AND METHACRYLATE ESTERS AND POLYMERS THEREOF
Irl N. Duling, West Chester, and Abraham Schneider, Overbrook Hills, Pa., and Robert E. Moore, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 625,581, Mar. 24, 1967, now Patent No. 3,518,241. This application Mar. 13, 1969, Ser. No. 807,068
The portion of the term of the patent subsequent to June 20, 1987, has been disclaimed
Int. Cl. C08f *15/16*
U.S. Cl. 260—78.5 **11 Claims**

Novel copolymers having low mold shrinkage properties are prepared from adamantane acrylate and methacrylates of the structure



where R is hydrogen or methyl and R_1, R_2 and R_3 are preferably alkyl or cycloalkyl radicals having 1–20 carbon atoms and a second polymerizable unsaturated monomer such as methyl methacrylate, styrene, acrylonitrile, and vinyl chloride.

3,639,363
REMOVAL OF 5-ETHYL-2-METHYLPYRIDINE FROM PYRIDINE POLYMERS
Richard A. Marshall, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed Mar. 13, 1968, Ser. No. 712,791
Int. Cl. C08f *7/12, 13/02*
U.S. Cl. 260—80.3 **8 Claims**

The process of removing 5-ethyl - 2 - methylpyridine from an aqueous reaction mixture containing polymers produced at least from 2 - methyl - 5 - vinylpyridine monomer wherein a portion of the mixture is vaporized after polymerization effective to remove the 5-ethyl-2-methylpyridine, such as by passing steam through it, and the vapor containing the 5-ethyl - 2 - methylpyridine is withdrawn from the reaction mixture. The polymer, substantially free of 5-ethyl - 2 - methylpyridine, is then separated from the remaining reaction solution and dried to a free-flowing product.

3,639,364
PREPARATION OF N-ALLYL IMINODIACETIMIDE DIOXIME AND POLYMERS THEREOF
Donald Edward Jefferson, Sykesville, Md., assignor to W. R. Grace & Co., Clarksville, Md.
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,597
Int. Cl. C08f *7/12, 15/14*
U.S. Cl. 260—80.3 **12 Claims**

N - allyl iminodiacetamide dioxime and N,N - diallyl aminoacetamidoxime are synthesized by the reaction of N-allyl iminodiacetonitrile and N,N-diallyl aminoacetonitrile with hydroxylamine. These oximes and dioximes are then further polymerized to yield hard resins.

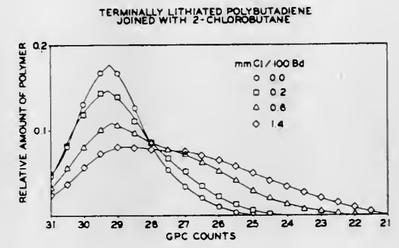
3,639,365
ETHYLENE-VINYL ACETATE-ALLYL GLYCIDYL ETHER TERPOLYMER AND PLASTICIZED COMPOSITIONS CONTAINING SAME
Robert Leonard Adelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 441,354, Mar. 19, 1965. This application July 22, 1969, Ser. No. 843,858
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.72 **4 Claims**

Specific copolymers of ethylene, a vinyl ester, and allyl glycidyl ether are disclosed as being particularly suitable plasticizers for polymers such as polyvinyl chloride. The copolymers have a molecular weight of about 400–3000 and comprise 15–40 weight percent ethylene, 35–70 weight percent vinyl ester, and 15–35 weight percent allyl glycidyl ether.

3,639,366
PETROLEUM RESINS
Jacques Broca, Waterloo, and Jean-Paul Loree, Brussels, Belgium, and Ralph Howard Schatz, Westfield, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed June 11, 1968, Ser. No. 735,970
Claims priority, application France, June 12, 1967, 110,033; Great Britain, July 28, 1967, 34,855/67
Int. Cl. C08f *1/70*
U.S. Cl. 260—82 **8 Claims**

Petroleum resins having low color and excellent color stability are prepared by polymerizing a light steam cracked naphtha having a final boiling point below 70° C. in a homogeneous medium in the presence of a liquid ternary catalyst comprising substantially equimolar quantities of an aluminum halide, a hydrogen halide, and an aromatic hydrocarbon and catalytically hydrogenating the resin resulting therefrom at elevated temperature and pressure.

3,639,367
JOINING LIVE POLYMERS BY MEANS OF MONOHALOGEN COMPOUNDS
Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation-in-part of application Ser. No. 575,967, Aug. 30, 1966. This application Oct. 8, 1969, Ser. No. 864,584
Int. Cl. C08d *5/04, 3/08, 3/12*
U.S. Cl. 260—85.1 **6 Claims**



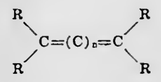
Rubber molecules are joined by an organic compound which comprises a single halogen atom.

3,639,368
CATALYSTS FOR POLYMERIZING OLEFINS
Jean Teitgen, Arthez-de-Bearn, and Philippe Mornet, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Tour d'Aquitaine, Courbevoie, France
No Drawing. Filed June 20, 1968, Ser. No. 738,408
Claims priority, application France, June 20, 1967, 111,091
Int. Cl. C08f *1/56, 15/04*
U.S. Cl. 260—88.2 **13 Claims**

An activator for catalytic systems which comprise an organo-metalic compound of a metal belonging to any of Groups I to III of the Periodic System and a compound of a transition metal and which are used for the polymerisation of olefins, consists of a halogenated derivative of 5,8-dioxo-Δ 1,4-methylene-hexahydronaphthalene, containing at least 4 halogen atoms in the molecule.

3,639,369
ALLENE POLYMERIZATION AND DERIVATIVES
Charles J. Norton, Berkeley, Calif., and Byron C. Diehl, Indian Hills, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Sept. 30, 1968, Ser. No. 763,638
Int. Cl. C08f *15/40*
U.S. Cl. 260—88.2 **9 Claims**

Polymers having molecular weights above 250 are produced by contacting an organic cumulene compound having the following structure:



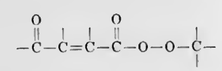
with a Lewis acid at about −50° to 500° C. R can be aryl, alkyl, aralkyl, cycloalkyl, alkenyl, alkynes, halides, and hydrogen. and the R's may be the same or different, and n is from about 1 to about 20. The polymer contains from about 1.0 to about 1.33 moles of hydrogen per mole of carbon, is resinous and useful, inter alia, in formulations of paints, varnishes, plasticizers, binding agents, and as intermediates in the formation of ion exchange resins.

3,639,370
PROCESS FOR POLYMERIZATION OF OLEFINIC COMPOUNDS

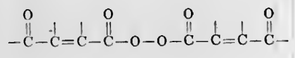
Wolfgang Edl, 3 Marienstrasse, 8021 Grosshesselohe, Germany; Heinz W. Meyer, 1 Arnimstrasse, 8 Munich, Germany; and Dieter Schmid, 11 Habenschadenstrasse, 8023 Pullach, Germany

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,591
Claims priority, application Netherlands, Dec. 28, 1967, 6717760
Int. Cl. C08f *3/62, 3/76, 7/04*
U.S. Cl. 260—88.7 **10 Claims**

A process which comprises polymerizing olefinic compounds in presence of a polymerization initiator comprising, in combination, a peroxy compound selected from an organic perester containing the structure



and a diacyl peroxide containing the structure



and an activating compound selected from the classes

(I) polyfunctional sulfhydryl compounds
(II) compounds with sulfhydryl radicals bonded to heteropolybonds selected from
- (a) salts of thiocyanic acid
- (b) thiocarboxylic acids and thiocarbonamide
- (c) dithiocarbamates and mercaptothiazoles
- (d) thioureas, substituted thioureas, thiobarbituric acids, thiosemicarbazides and mercaptoimidazoles
- (e) O,O-diesters of dithiophosphoric acid and dithiophosphinic acid

(III) alkyl and aryl sulphonyl hydrazides
(IV) 4-hydroxy pyridines and their tautomeric 4-pyridones, and
(V) compounds having the formula $(R)_3P$ and $(RO)_3P$ wherein R is selected from an alkyl group having from 1 to 6 carbon atoms and an aryl group. When the activating compound of classes (I) to (V) contains an acidic hydrogen atom, a base reacting substance, e.g., an amine, therefor included in the initiator.

3,639,371
POLYMERISATION OF CYCLOOLEFINS USING MOLYBDENUM OR TUNGSTEN HALIDE OR OXYHALIDE AND ALUMINUM HALIDE CATALYSTS

Philip Ronald Marshall and Brian John Ridgewell, Hythe, Southampton, England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,255
Claims priority, application Great Britain, Feb. 23, 1968, 8,961/68
Int. Cl. C08f *7/02*
U.S. Cl. 260—93.1 **23 Claims**

A process for the polymerisation of at least one cyclic olefin containing 4, 5 or 7 or more ring carbon atoms in the substantial absence of polar compounds and under non-oxidising conditions comprises contacting the said olefin(s) with a catalyst comprising

(a) a halide or oxyhalide of molybdenum or tungsten, wherein the oxidation state of the metal is 4, 5 or 6 and
(b) an aluminium trihalide

In one embodiment, polymers having 50% or more of the chain carbon atoms contained in isobutylene units are obtained by the polymerisation of cyclic olefins.

3,639,372
METHOD FOR THE POLYMERIZATION OF ALKENYL AROMATIC MONOMERS

Winfield Scott Haynes, Jr., Freeland, and Carroll T. Miller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 24, 1968, Ser. No. 739,416
Int. Cl. C08f *1/06, 1/98, 7/04*
U.S. Cl. 260—93.5 S **6 Claims**

Styrene-type monomers are polymerized in a plurality of heat exchange vessels connected in series. In a polymerization system for styrene-type monomers where the monomer is polymerized in a polymerization train consisting of at least three polymerization vessels connected in series, increased polymerization capacity is obtained by recirculating the contents of a second heat exchange vessel.

3,639,373
DYEABLE POLYOLEFIN COMPOSITIONS

Orwin G. Maxson and Mack W. Hunt, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 746,763, July 23, 1968. This application June 1, 1970, Ser. No. 42,547
Int. Cl. C08f *29/02*
U.S. Cl. 260—93.7 **13 Claims**

Polyolefin compositions containing 0.5 to 20 weight percent of a metal sulfonate composition, which, preferably, is a 50:50 mixture of water-soluble metal sulfonate and oil-soluble metal alkaryl sulfonate. Also, improved method of dyeing polyolefins wherein the improvement comprises use of the metal sulfonate composition described in the foregoing. The polyolefin compositions described herein provide good color development on dyeing and retain their color when subjected to extraction with chlorinated dry cleaning solvents.

3,639,374
PROCESS FOR FLASHING PROPYLENE DILUENT FROM POLYPROPYLENE IN CYCLONE SEPARATOR

Abner B. Stryker, Jr., Severna Park, Md., assignor to Rexall Drug and Chemical Company, Los Angeles, Calif.

Filed Apr. 11, 1963, Ser. No. 272,449
Int. Cl. C08f *3/08, 3/10*
U.S. Cl. 260—93.7 **2 Claims**

This invention is directed to an improved process for producing polypropylene. In particular, this invention relates to a process for producing polyproplene of low volatile content in a diluent free process.

3,639,375
PRODUCTION OF α-OLEFIN POLYMERS

Gerhard Staiger, Ludwigshafen (Rhine), and Joachim Stedefeder, Lampertheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,078
Claims priority, application Germany, Feb. 11, 1967, P 17 20 262.9
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 **2 Claims**

Polymerization of α-olefins having two to eight carbon atoms in the presence of a catalyst consisting of a complex

compound of a titanium (III) halide and an aluminum halide and an organoaluminum compound and, optionally, an organozinc compound, plus a secondary or tertiary amine and also an organic phosphorus compound of the formula below, said catalyst being produced by grinding at least said complex compound with one or both of said amine and said phosphorus compound.

3,639,376
POLYOLEFIN CRYSTALLIZATION ADDITIVES

William G. De Pierri, Jr., and Hulen L. Wilder, Baytown, Tex., assignors to Esso Research and Engineering Company

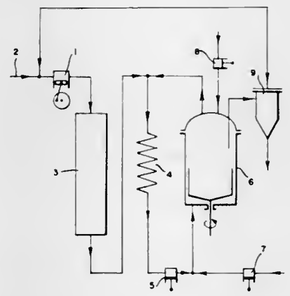
No Drawing. Filed July 24, 1968, Ser. No. 747,108
Int. Cl. C08d *3/04;* **C08f** *3/08, 3/02*
U.S. Cl. 260—93.7 **7 Claims**

The rate and temperature of crystallization of crystallizable polyolefins is increased by including therein nucleating amounts of esters, polyesters having molecular weights of up to the order of 2000, or mixtures thereof, all structurally derived from certain mono-, di-, and tri-hydric alcohols and polycarboxylic acids having two carboxyl groups separated by a chain of less than 6 carbon atoms.

3,639,377
PRODUCTION OF PROPYLENE POLYMERS

Hans-Georg Trieschmann, Hambach, Karl Wisseroth, Ludwigshafen (Rhine), Richard Scholl, Gruenstadt, and Rudolf Herbeck, Frankenthal, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 7, 1968, Ser. No. 750,941
Claims priority, application Germany, Aug. 10, 1967, P 17 20 292.5
Int. Cl. C08f *3/10, 3/06*
U.S. Cl. 260—93.7 **5 Claims**



Process for the polymerization of propylene in the gas phase in which propylene in liquid form is introduced into a reaction zone, vaporized therein and polymerized with a catalyst having high activity.

3,639,378
POLYMERIZATION OF PROPYLENE WITH A CHROMIUM OXIDE CATALYST ACTIVATED WITH A TRIHYDROCARBON ALUMINUM MODIFIED WITH WATER

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,354
Int. Cl. C08f *3/08, 1/34*
U.S. Cl. 260—93.7 **12 Claims**

Propylene is polymerized to isotactic polypropylene in high yields and at a high rate using as the catalyst a chromium oxide extended on a silica and activated with a trihydrocarbon aluminum that has been reacted with 0.05 to 1.5 moles of water and optionally also with 0.05 to 1.5 moles of an alcohol or a phenol, the total amount of water and alcohol or phenol being such that some aluminum-to-carbon bonds remain. Preferably, the chromium oxide-on-silica catalyst is chromic oxide that has been partially reduced to form about 55% to about 90%.

3,639,379
POLYMERIZATION OF PROPYLENE WITH A CHROMIUM OXIDE CATALYST ACTIVATED WITH GROUP IV-A METAL HYDROCARBON

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,353
Int. Cl. C08f *1/42, 3/10*
U.S. Cl. 260—93.7 **9 Claims**

Propylene is polymerized to isotatic polypropylene in high yields and at a high rate with a chromium oxide extended on a silica catalyst and activated by the addition of a tetrahydrocarbon lead, tin or germanium. Preferably the catalyst is chromic oxide extended on silica and partially reduced to from about 55 to about 90%.

3,639,380
PREPARATION OF MICROCRYSTALLINE WAXES

Constantinos G. Screttas, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.

No Drawing. FHed Jan. 24, 1968, Ser. No. 699,994
Int. Cl. C08f *1/74, 3/06*
U.S. Cl. 260—94.9 R **3 Claims**

Method of preparing microcrystalline waxes by the telomerization of ethylene in the presence of an aromatic or alkyl-aromatic hydrocarbon telogen such as benzene or toluene and of an organolithium-active ether complex such as a butyllithium-tetrahydrofuran complex.

3,639,381
POLYETHYLENE PROCESS AND CATALYST

William J. Craven, Passaic, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 10, 1968, Ser. No. 728,336
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—94.9 D **1 Claim**

This invention relates to an improved method of preparing polyethylene as a slurry in an inert hydrocarbon diluent. In accordance with the present invention, linear polyethylene having a relatively high melt index is obtained by employing a novel catalyst system which is a mixture of chromium oxide on a silica base and an organoaluminum compound prepared by partially oxidizing a trialkyl aluminum compound with an oxygen-containing gas. Polymerization is carried out in the presence of hydrogen. The polyethylene of this invention is readily processed and can be used in the preparation of films, molded articles and other known uses for polyethylene.

3,639,382
O-ETHYL THREONINE DERIVATIVES

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 22, 1967, Ser. No. 692,699
Int. Cl. C07c *103/52, 101/30*
U.S. Cl. 260—112.5 **2 Claims**

This disclosure relates to new compounds represented by O-ethyl threonine, as well as N-substituted and carboxy-substituted derivatives thereof. Several of the compounds, and especially the L-isomers, are useful in the treatment of livestock to control infection by pleuropneumonia-like organisms.

3,639,383
COMPLEXES OF A.C.T.H. PEPTIDES AND POLYPHOSPHORIC ACIDS
Leo Geller, Basel, Switzerland, assignor to Ciba Corporation, New York, N.Y.
No Drawing. Filed Jan. 23, 1968, Ser. No. 699,777
Claims priority, application Switzerland, Feb. 9, 1967, 1,954/67; May 3, 1967, 6,439/67; Dec. 12, 1967, 17,435/67
Int. Cl. A61k *17/16;* C07c *103/52*
U.S. Cl. 260—112.5 15 Claims

Complexes having a prolonged adrenocorticotropic activity, consisting of adrenocorticotropically active peptides and polyphosphoric acids containing on an average at least 7 phosphorus atoms, or their salts.

3,639,384
MONOAZO COMPOUNDS CONTAINING A 3-ACYLAMIDOANILINE COUPLING COMPONENT
Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 12, 1968, Ser. No. 744,335
Int. Cl. C09b *29/06;* D06p *1/02*
U.S. Cl. 260—152 12 Claims

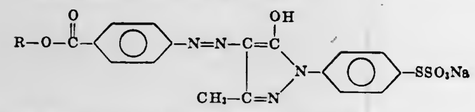
Monoazo compounds having a heterocyclic diazo component and a 3-acylamidoaniline coupling component in which the aniline nitrogen atom is substituted with an aralkyl group are useful as dyes for polyester textile materials.

3,639,385
HETEROCYCLIC MONOAZO COMPOUNDS FROM N,N-DIARALKYL ANILINES AND POLYESTER TEXTILE MATERIALS DYED THEREWITH
Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 26, 1968, Ser. No. 747,813
Int. Cl. C09b *29/08, 29/26;* D06p *3/52*
U.S. Cl. 260—158 9 Claims

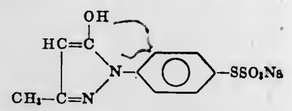
Monoazo compounds having a heterocyclic diazo component and a 3-acylamido-N,N-diaralkylaniline coupling component are useful as dyes for polyester textile materials on which the compounds exhibit improved build-up and fastness properties, such as fastness to light and resistance to sublimation.

3,639,386
MONO AZO PARAZOLONE DYES HAVING THIOSULFATE GROUP
Hubbard Taylor Busby, Jr., Charlotte, N.C., assignor to Martin Marietta Corporation, New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,927
Int. Cl. C09b *29/38;* D06p *1/02*
U.S. Cl. 260—163 8 Claims

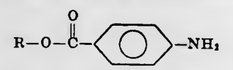
Water-soluble azo dyes of formula



are prepared by coupling equimolar amounts of



and a diazotized aminobenzoate of the formula



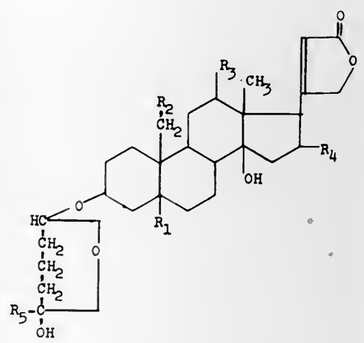
wherein R is methyl, ethyl, n-propyl, isopropyl, isobutyl, n-butyl or β-chloroethyl. Bright golden yellow dyeings result on cotton textiles when aqueous compositions of the dyes are applied thereto and subsequently fixed with the aid of Na_2S_4.

3,639,387
DISPERSE MONOAZO DYES OF THE 5-AMINOPYRAZOLE SERIES
Hans Juergen Sturm, Gruenstadt, Kurt Mayer, Ludwigshafen, Gerhard Kilpper, Mannheim, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,899
Claims priority, application Germany, Dec. 20, 1968, P 18 16 043.5
Int. Cl. C09b *29/38;* D06p *1/02*
U.S. Cl. 260—163 3 Claims

Disperse dyes having a 1-benzyl-5-amino-pyrazole or a 1-substitued-benzyl-5-aminopyrazole as coupling component. They are useful for dyeing polyamide material and particularly polyester material.

3,639,388
TRIDESOXYPYRANOSIDES AND PROCESS FOR THEIR MANUFACTURE
Werner Haede and Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,905
Claims priority, application Germany, Apr. 6, 1968, P 17 68 164.0
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 8 Claims

2',3',4'-tridesoxypyranosides of the formula



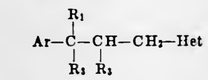
wherein R_1, R_2, R_3, and R_4 are each hydrogen or hydroxy and R_5 is lower alkyl. The method of making the same by reaction of $LiAlH_4$ with a corresponding 2'-alkyl-2'-carboalkoxytetrahydropyranyl ether having a methyl, hydroxymethylene, or formyl group in the 10-position.

3,639,389
LOW D.E. STARCH HYDROLYSATE DERIVATIVES
Glenn Arden Hull, Oak Park, Ill., assignor to CPC International Inc.
No Drawing. Filed May 15, 1968, Ser. No. 729,399
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R 4 Claims

Covers derivatives of low D.E. starch hydrolysates, including those of the cationic, anionic and non-ionic types. Also, covers prevention of haze formation in highly concentrated low D.E. starch hydrolysate syrups by having present therein the above derivatives.

3,639,390
AZABICYCLOALKANE DERIVATIVES
Vishwa Prakash Arya, Bombay, India, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Dec. 19, 1967, Ser. No. 691,705
Claims priority, application Switzerland, Dec. 30, 1966, 18,844/66; Nov. 15, 1967, 15,961/67
Int. Cl. C07d *41/00*
U.S. Cl. 260—239 BA 7 Claims

Compounds of the formula



Ar: aromatic carbocyclic radical or monoazacyclic aromatic radical, particularly aryl-lower alkoxy-substituted phenyl;
R_1: H, aliphatic or aromatic radical;
R_2: H, free or functionally converted carboxyl; or
R_1+R_2: oxo group;
R_3: aliphatic radical, particularly lower alkyl;
Het: N - azabicycloalkyl, particularly 3 - aza - 3 - bicyclo[3,2,2]nonyl radical;

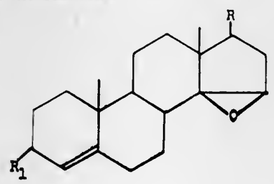
or salts thereof, have antitussive effects.

3,639,391
PROCESS FOR REARRANGEMENT OF CYCLOALKANONE OXIME TO LACTAM
William F. Yates, Chesterfield, Ronald O. Downs, Creve Coeur, and James C. Burleson, Clayton, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,502
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 6 Claims

Boron trioxide supported on thoria having a surface area of at least about 100 square meters per gram provides a catalyst particularly useful in the vapor phase, catalytic rearrangement of cyclic ketoximes to the corresponding lactams; for example, in the vapor phase process for the rearrangement of cyclohexanone oxime to caprolactam.

3,639,392
CARDIOACTIVE OXIDO-BUFATRIENOLIDES
Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,583
Claims priority, application Germany, Dec. 5, 1968, P 18 12 946.9
Int. Cl. C07c *173/04*
U.S. Cl. 260—239.57 2 Claims

Cardioactive oxido-cardadienolides and oxido-bufatrienolides of the formula



wherein R is a cardenolide or bufadienolide ring and R_1 is —OH in the β-position or keto. Methods of making such compounds. As specific oxido-bufatrienolides: 3-oxo-14,15β - oxido - bufa - 4,20(21),22(23) - trienolide; 3β-hydroxy-14,15β-oxido-bufa-4,20(21),22(23)-trienolide.

3,639,393
3β,14β-DIHYDROXY-CARDA-4,20(22)-DIENOLIDES AND PROCESS FOR PREPARING THEM
Werner Fritsch, Neuenhain, Taunus, and Ulrich Stache and Werner Haede, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,389
Claims priority, application Germany, Apr. 24, 1968, P 17 68 275.6
Int. Cl. C07c *173/02*
U.S. Cl. 260—239.57 2 Claims

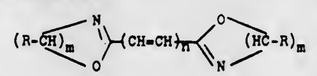
A process for preparing 3β,14β-dihydroxy-carda-4,20-(22)-dienolides which comprises reducing 3-oxo-carda-4,14,20(22)-trienolides by means of complex metal hydrides to the corresponding 3β-hydroxy-carda-4,14,20-(22)-trienolides; treating these compounds with acylating agents; reacting the resulting 3β-acyloxy-carda-4,14,20(22)-trienolides with N-bromo-acyl amides; and catalytically hydrogenating the 4β-acyloxy-3β,14β-dihydroxy-5α,15α-dibromo-card-20(22)-enolides so obtained in the presence of a precious metal catalyst at a pH in the range from 4.5 to 7.5. The products of the invention are valuable therapeutics for oral administration in diseases of the heart and circulation.

3,639,394
PROCESS FOR THE MANUFACTURE OF 14β-HYDROXY-3-OXO-5α-CARD-20(22)-ENOLIDES
Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed June 25, 1969, Ser. No. 836,656
Claims priority, application Germany, July 2, 1968, P 17 68 800.5
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.57 1 Claim

A 14β-hydroxy-3-oxo-5α-card-20(22)-enolide is prepared by ketalizing a 3-oxo-5α-carda-14,20(22)-dienolide, converting the 3-ketal so obtained with an N-halogenoamide under weakly acid conditions into a 3-ketal of a 3 - oxo - 14β - hydroxy - 15α - bromo - 5α - card - 20(22)-enolide, catalytically hydrogenating this ketal to form the corresponding 3 - oxo - 14β - hydroxy - 5α - card - 20 (22)-enolide, the pH value being between 4.5 and 7, and splitting off the 3-ketal group under weakly acid conditions.

The products of the invention have valuable pharmacological properties.

3,639,395
2,2'-ALKYLENEBIS-2-OXAZOLINES AND OXAZINES
Donald A. Tomalia, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 16, 1969, Ser. No. 833,765
Int. Cl. C07d *85/36, 87/20*
U.S. Cl. 260—240 E 4 Claims



(I)

m=2 or 3
n=1–3
R=H or alkyl C_{1-4}

useful as latent curing agents in polyepoxides to produce epoxy resins; to homopolymerize, or to copolymerize with dithiols; to homopolymerize or copolymerize ethylenically, or any combination of these.

3,639,396

DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen, Rolf Bosshardt, Arlesheim, Bruno Fechtig, Binningen, Enrico Menard, Basel, Johannes Mueller, Arlesheim, and Heinrich Peter, Riehen, Switzerland, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Filed June 25, 1968, Ser. No. 739,628

Claims priority, application Switzerland, July 5, 1967, 9,497/67; Oct. 27, 1967, 15,074/67

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 **3 Claims**

Process for the manufacture of 7-acylamino-3-acyloxymethyl-3-cephem-4-carboxylic acids which contain in 3-position an acyloxymethyl group other than acetoxymethyl wherein an amino-protected O-desacetyl-cephalosporin C-dibenzhydrylester is acylated with an acid other than acetic acid, then the side chain in 7-position is eliminated, the benzhydrylester group split off and the 7-amino group acylated.

3,639,397

2-AMINO-3-AMIDINO-QUINOXALINE-DI-N-OXIDES AND THEIR PRODUCTION

Florin Seng, Cologne-Buchheim, Kurt Ley, Odenthal-Globusch, Karl-Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

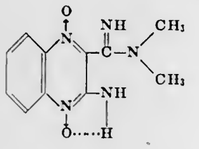
No Drawing. Filed July 29, 1968, Ser. No. 748,153

Claims priority, application Germany, Aug. 17, 1967, F 53,259

Int. Cl. C07d *51/78*

U.S. Cl. 260—247.5 R **8 Claims**

New compounds are provided having antibacterial activity and which are 2-amino-3-amidino-quinoxaline-di-N-oxides prepared from 2-amino-3-cyano-quinoxaline-di-N-oxides as by means of reaction with piperidine. A typical compound is:



or a compound in which the benzene ring is substituted by lower alkyl, lower alkoxy or halogen. The dimethylamino group can be replaced by various heterocyclic radicals, by hydroxyalkyl, etc. The compounds are active against *E. coli, Klebsiella, S. aureus, Diplococcus pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa,* etc. at a dosage of 25 to 500 mg./kg. and may be combined with usual carriers or vehicles.

3,639,398

QUATERNIZED REACTIVE ANTHRAQUINONE DYESTUFFS CONTAINING TRIAZINE AND NICOTINIC ACID GROUPS

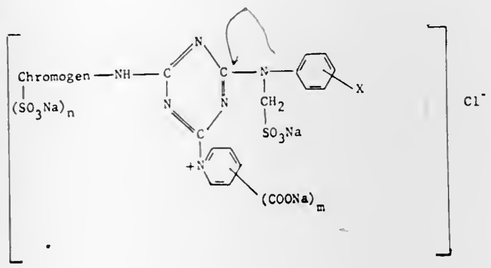
Sandro Ponzini, Castelli Saronno, Monza Paolo, and Jean Stanislao Lawendel, Milan, Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

No Drawing. Application June 5, 1968, Ser. No. 749,899, now Patent No. 3,522,232, dated July 28, 1970, which is a division of application Ser. No. 472,668, July 16, 1965, now Patent No. 3,416,875, dated Dec. 17, 1968. Divided and this application Mar. 19, 1970, Ser. No. 21,222

Int. Cl. C07d *55/22*

U.S. Cl. 260—249 **2 Claims**

Reactive triazine dyestuffs having the formula:



wherein the chromogen is an anthraquinone dyestuff residue, said chromogen being attached to the —NH— bridging group through a carbon atom of an aromatic nucleus selected from the group consisting of the nuclei of the phenyl series, wherein X is selected from the group consisting of H, CH_3, OCH_3 and OC_2H_5, n is an integer from 1 to 4, and m is 1 or 2, are effective for dyeing cellulose fibers. The dyestuffs may be absorbed and fixed onto the cellulose fibers by known hot or cold dyeing techniques. Intense dyeings having very good fastness to washing are obtained.

3,639,399

PREPARATION OF AMINO-s-TRIAZINES

Hiram Gerald Daugherty, McIntosh, and William J. Evers, Mobile, Ala., and Philip G. McCracken, Baton Rouge, La., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed July 10, 1969, Ser. No. 840,746

Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **6 Claims**

A new and improved multi-stage process is provided for preparing amino-s-triazines and particularly, 2,4-dichloro-6-amino-s-triazines which are useful as intermediates. The process involves reacting cyanuric chloride, a selected primary or secondary amine and an alkali metal hydroxide, in two or more stages, wherein about 80 to about 97% of the cyanuric chloride is converted to the 2,4-dichloro intermediate product in the first stage and additional minor proportions of the alkali metal hydroxide are added to the second, and any succeeding stages of the process to complete the desired conversion. By employing such a reaction system, it is possible to prepare intermediate reaction mixtures with insignificant hydrolysis losses and such intermediate reaction mixtures can then be readily converted to the final products, i.e., 2-chloro-4,6-diamino-s-triazines which are useful in inhibiting the growth of plants and are consequently widely employed as herbicides. The present procedure represents a marked improvement in the process for preparing the 2,4-dichloro-6-amino-s-triazine intermediate products since not only are higher yields and purities of the desired intermediate products obtained but in addition, the process is suitably adapted for large scale production.

3,639,400

3-CARBOXYLIC ACID-AMIDO-QUINOXALINE-DI-N-OXIDES-(1,4) AND THEIR PRODUCTION

Roland Nast, Cologne-Buchheim, Kurt Ley, Odenthal-Globusch, Ulrich Eholzer, Cologne-Stammheim, Karl-Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Cologne-Lindenthal, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

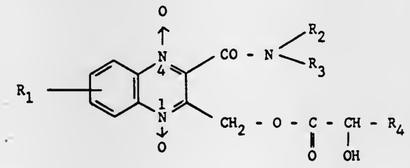
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,917

Claims priority, application Germany, Aug. 30, 1968, P 17 95 264.6

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 **8 Claims**

3-carboxylic acid-amido-quinoxaline-di-N-oxides-(1,4) of the formula:



wherein:

R_1 is hydrogen, lower alkyl, lower alkoxy, hydroxy or an acyloxy moiety of a lower aliphatic carboxylic acid and wherein R_1 is from 1 to 5 such moieties,

R_2 is hydrogen, an aliphatic moiety or an aliphatic moiety substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino,

R_3 is hydrogen, an aliphatic moiety or an aliphatic moiety substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino, or R_2 and R_3 are each lower alkyl linked together with the amide nitrogen to form a 5-, 6- or 7-membered heterocyclic ring or R_2 and R_3 are each lower alkyl linked together with an amide nitrogen to form a 5-, 6- or 7-membered heterocyclic ring having N or O as a second heteroatom, and

R_4 is hydrogen, lower alkyl or substituted or unsubstituted phenyl,

are useful for their antibacterial activity.

3,639,401

6-ARYL-2,7-BIS[(TRIALKYLSILYL)AMINO]PYRIDO [2,3-d]PYRIMIDINE COMPOUNDS

Robert F. Meyer, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed July 28, 1969, Ser. No. 845,530

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 **3 Claims**

6-phenyl- and 6-(p-methoxyphenyl)-2,7-bis[(trialkylsilyl)amino]pyrido[2,3-d]pyrimidines. These compounds are diuretic agents and produce increased urinary excretion of water and sodium. A particular feature, advantageous for some applications, is that they are highly soluble in non-polar organic solvents. The compounds can be produced by reacting 2,7-diamino-6-phenyl- or 6-(p-methoxyphenyl)pyrido[2,3-d]pyrimidine with a silylating agent, preferably a hexaalkyldisilazane.

3,639,402

PROCESS FOR MAKING PIPERAZINES FROM AZIRIDINES

Clarence R. Dick, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 12, 1967, Ser. No. 689,782

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 **10 Claims**

A process for the preparation of 1,4-disubstituted piperazines which comprises reacting an N-substituted aziridine in the presence of a hydrohalide acid and the corresponding soluble metal halide salt, or in an excess of a soluble metal halide salt and a strong non-hydrohalide acid.

3,639,403

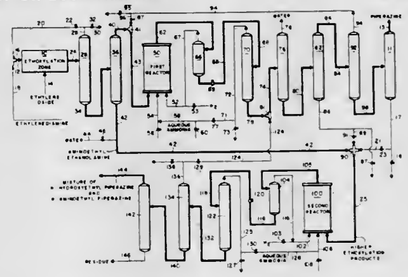
METHOD FOR THE PREPARATION OF PIPERAZINE AND SUBSTITUTED PIPERAZINES

Herbert George Muhlbauer, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Mar. 26, 1969, Ser. No. 810,737

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 SY **4 Claims**



An improved method for preparing piperazine and N-substituted piperazines from an ethylene oxide-ethylenediamine reaction product characterized by a more efficient use of by-products of the ethylene oxide-ethylenediamine reaction.

3,639,404

ALKYLTHIOCARBONYLDECAHYDROQUINOLINES

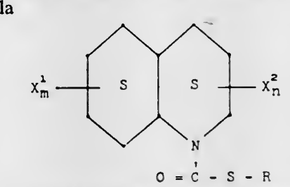
Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,713

Int. Cl. C07d *33/62*

U.S. Cl. 260—283 S **3 Claims**

This invention discloses new chemical compounds of the formula



wherein X^1 and X^2 are alkyl; m and n are integers from 0 to 3, provided that $m+n$ is from 0 to 3; and R is alkyl. The compounds of the above description are useful as herbicides.

3,639,405

PROCESS FOR PREPARING 3'-HYDROXYQUINOPHTHALONE-5-CARBOXYLIC ACIDS

Richard L. Walker, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 17, 1968, Ser. No. 737,298

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **3 Claims**

An improved condensation of trimellitic anhydrides and 3-hydroxy-2-methylquinoline-4-carboxylic acids to yield

3'-hydroxyquinophthalone-5-carboxylic acids useful as dye-stuff intermediates, said improvement comprising carrying out the condensation of reactants, in approximately equimolar portions, in a slurrying quantity of a fatty and/or rosin acid, at a temperature of 160° C. to the boiling point of the fatty and/or rosin acid.

3,639,406

3-AMINO-s-TRIAZOLO[3,4-a]ISOQUINOLINES

Hans K. Reimlinger, Brussels, and Jan Joseph Maurice Vandewalle, Mortsel, Belgium, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 634,077, Apr. 27, 1967. This application July 10, 1968, Ser. No. 743,619

Int. Cl. C07d *35/36*

U.S. Cl. 260—288 **1 Claim**

3-amino-s-triazolo[3,4-a]isoquinolines are prepared by several methods. First, they are prepared by reacting a 1-hydrazino-s-triazolo[3,4-a]isoquinoline with a dichloromethylene acylamine to produce an intermediate compound which is then hydrolyzed with aqueous base or acid. Second, they are produced by reacting a 1-hydrazinoisoquinoline with an alkylthiouronium salt. Third, they are produced by reacting a 1-chloroisoquinoline with 5-aminotetrazole. And fourth, they are produced by reacting a 1-hydrazino-isoquinoline with cyanogen bromide. The 3-amino-s-triazolo[3,4-a]isoquinolines can be hydrogenated to 5,6-dihydro-3-amino-s-triazolo[3,4-a]isoquinolines. The compounds of the invention are useful as corrosion inhibitors, as acid acceptors, and as reaction intermediates in preparing surfactants, plastics and other useful compositions.

3,639,407

NOVEL 1,2,3,4,5,6-HEXAHYDRO-6-PHENYL-2,6-METHANO-3-BENZAZOCINES

Frank H. Clarke, Jr., Armonk, Fred B. Block, Hartsdale, and William G. Kofron, Dobbs Ferry, N.Y., assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed May 5, 1965, Ser. No. 453,491

Int. Cl. C07d *29/10, 29/16, 29/20*

U.S. Cl. 260—293.54 **8 Claims**

This invention relates to novel organic compounds and to novel intermediates employed in their preparation. In particular, the present invention is directed to 1,2,3,4,5,6-hexahydro-6-phenyl-2,6-methano-3-benzazocines, a new class of compounds possessing unexpected and useful pharmacological properties.

3,639,408

PROCESS FOR THE PREPARATION OF ISOQUINUCLIDINE DERIVATIVES

Wataru Nagata, Nishinomiya-shi, and Shoichi Hirai, Ibaraki-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed May 28, 1968, Ser. No. 732,520

Claims priority, application Japan, June 3, 1967, 42/35,647; Feb. 7, 1968, 43/7,620

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.53 **20 Claims**

An improved method for totally synthesizing isoquinuclidine alkaloids useful as medicaments, starting from a 1-azatricyclo[3.2.1.$0^{2,7}$] octane and an indoleacetic acid anhydride, briefly and stereospecifically.

3,639,409

1,3,8-TRIAZA-2-OXO- OR THIOXO-3-SUBSTITUTED-4-OXO OR IMINO-7,7,9,9-TETRAALKYL SPIRO [4,5]DECANES

Keisuke Murayama, Syoji Morimura, and Toshimasa Toda, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed June 19, 1968, Ser. No. 738,104

Claims priority, application Japan, June 22, 1967, 43/19,265, 43/19,266; May 31, 1968, 44/37,145, 44/37,146

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.66 **19 Claims**

New piperidine-spiro-heterocycles; namely, piperidine-spiro-imidazolidines, piperidine-spiro-hydantoins and piperidine-spiro-oxazolidines are valuable light stabilizers for the prevention of the photo-deterioration of various synthetic polymers such as polyolefin, polyurethane, polyamide and the like. These piperidine-spiro-heterocycles are prepared by reacting 4-cyano-4-hydroxy (or -amino)-2,2,6,6-tetrasubstituted piperidine derivative with isocyanate derivative followed by heat treatment in the presence or absence of a strong mineral acid.

3,639,410

1,2,3,4,5,6 - HEXAHYDRO - 8 - SUBSTITUTED-6-ALKYL-11-(H OR ALKYL) - 2,6-METHANO-3-BENZAZOCINES

Noel F. Albertson and David Rosi, East Greenbush, N.Y., and Armando J. Merola, Township of Liberty, Delaware County, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed July 26, 1968, Ser. No. 747,848

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **17 Claims**

1,2,3,4,5,6 - hexahydro - 3 - (Y^1) - 8 - (Y^2) - 6 - (R^1)-11-(R^2)-2,6-methano-3-benzazocines wherein Y^1 is (1,3-dioxacycloalkyl)alkyl, gem-dialkoxyalkyl, alkanoylalkyl, or (carboxy-, esterified carboxy, or hydroxy)-(alkyl or alkenyl), which are useful as antagonists of strong analgesics, are obtained by alkylation and various other reactions from the corresponding 3-(H) compounds.

3,639,411

1-SUBSTITUTED-2-(PHENYL OR BENZYL)-2- OR 3,3 - PIPERIDINE(MONO OR DICARBOXYLIC) ACIDS AND ESTERS THEREOF, AND OCTAHYDROBENZO[g] - QUINOLINES AND HEXAHYDRO - 5H - INDENO[1,2-b]PYRIDINES PRODUCED THEREFROM

Noel F. Albertson, East Greenbush, and William F. Michne, Colonie, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed May 9, 1968, Ser. No. 728,044

Int. Cl. C07d *29/04*

U.S. Cl. 260—293.54 **3 Claims**

1,2,3,4,4a,5,10,10a - octahydro - 5-(Y^3)-5-(Y^4)-benzo[g]quinolines and 1,2,3,4,4a-9b - hexahydro - 5 - (Y^3)-5-(Y^4) - 5H - indeno[1,2-b]pyridines wherein Y^3 and Y^4 are lower alkyl or phenyl, which are useful as antagonists of strong analgesics, are obtained by cyclizing derivatives of

2 - (phenyl or benzyl) - α - (Y^3) - α - Y^4)-3-piperidine-methanols. The latter are obtained from corresponding 3-piperidinecarboxylic acids.

3,639,412

CERTAIN N-SUBSTITUTED BIS-ARALKYL DERIVATIVES OF THIOISONICOTINAMIDE

Manfred Schorr, Frankfurt am Main, Germany, Hubert Mieth, Vienna, Austria, and Wolfgang Raether, Dreieichenhain, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

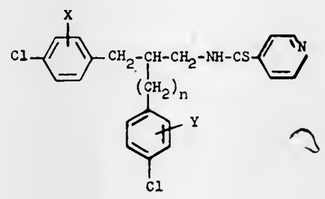
No Drawing. Filed May 26, 1969, Ser. No. 827,961

Claims priority, application Germany, May 28, 1968, P 17 70 513.4

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E **3 Claims**

Thioisonicotinic acid amides of the formula:



in which X and Y are hydrogen or chlorine and *n* stands for zero or one, have been found to have chemotherapeutic activity against infections caused by protozoa.

3,639,413

(THIO-, SULFINYL- AND SULFONYL) CONTAINING PYRIDINE COMPOUNDS

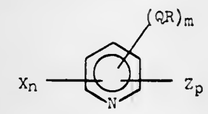
Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,506

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F **6 Claims**

The present disclosure is directed to (thio-, sulfonyl- and sulfonyl) containing pyridine compounds corresponding to the formula



wherein R represents hydrogen, alkyl, monohalolower-alkyl, alkenyl, monohaloalkenyl, cycloalkyl, monohalocycloalkyl, phenyl, aralkyl, alkaryl or monohalophenyl; Q represents sulfide (—S—), sulfinyl

or sulfonyl

each X independently represents chlorine, bromine, or fluorine; Z represents one of cyano (—CN), carbamoyl ($—CONH_2$) or carboxy (—COOH) or the non-phytotoxic metal salts thereof; *n* represents an integer of 0 to 3, inclusive; *m* represents an integer of 1 to 3, inclusive; *p* represents an integer of 1 or 2 and the sum of $n+m+p$ equals an integer of 2 to 5, inclusive, with the proviso that when Q is other than sulfide (—S—), R is other than hydrogen and when R is H, *m* is not greater than 2. The preparation of these compounds and their utility as pesticides is also taught.

3,639,414

1-[2 - (2-SUBSTITUTED - 3 - INDOLYL)ETHYL]-4-SUBSTITUTED-PIPERIDINES AND 4 - SUBSTITUTED-1,2,5,6-TETRAHYDROPYRIDINES

Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 732,250, May 31, 1968, which is a continuation-in-part of application Ser. No. 634,899, May 1, 1967, both now abandoned. This application Sept. 16, 1969, Ser. No. 858,500

Int. Cl. C07d *31/42*

U.S. Cl. 260—295 B **3 Claims**

Novel 1-[2-(2-substituted - 3 - indolyl)ethyl]-4-substituted piperidines and 4-substituted-1,2,5,6-tetrahydropyridines having psychomotor depressant activity.

3,639,415

PHOSPHORIC ACID SALT OF 4-METHYL-5-β-CHLORO-ETHYL-THIAZOLE

Lajos Guczoghy, Mária Puklics, György Kelemen, and György Leszkovsky, Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

No Drawing. Filed May 4, 1966, Ser. No. 547,402

Int. Cl. C07d *91/32*

U.S. Cl. 260—302 E **1 Claim**

New phosphoric acid salt of 4 - methyl - 5 - β - chloroethyl-thiazole and pharmaceutical compositions containing said salt, which are useful as sedatives, antiepleptic, hypnotics, and anticonvulsants.

3,639,416

PROCESS FOR THE PREPARATION OF BIS-ISOXAZOLINE

Daniel Batigne, Villeurbanne, and Jacques Boichard, Michel Gay, and Raymond Janin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 4, 1968, Ser. No. 710,401

Claims priority, application France, Mar. 16, 1967, 99,101; Mar. 1, 1968, 142,055

Int. Cl. C07d *85/16*

U.S. Cl. 260—307 **3 Claims**

Bis-3,3'-isoxazoline is made by oxidizing ethylene in an aqueous medium with nitric acid or a nitrogen oxide.

3,639,417

2-TETRAZOLYLTHIOHYDROQUINONES

Ralph Frederick Porter, Judith A. Schwan, and John W. Gates, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Feb. 28, 1963, Ser. No. 261,835, now Patent No. 3,379,529, dated Apr. 23, 1968. Divided and this application Oct. 26, 1967, Ser. No. 705,869

Int. Cl. C07d *55/62, 57/00, 99/10*

U.S. Cl. 260—308 D **5 Claims**

Certain 2-tetrazolylthiohydroquinones and their use as photographic inhibitor releasing developers.

3,639,418

BISHYDANTOINS

Rudolf Merten, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,621

Claims priority, application Germany, Mar. 1, 1967, F 51,675

Int. Cl. C07d *19/32*

U.S. Cl. 260—309.5 **4 Claims**

Carboxylic acid esters containing hydantion or thiohydantoin groups which can be prepared by reacting an

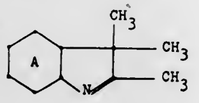
ethylene-1,2-carboxylic acid diester with a primary polyamine to yield an amino succinic acid group containing intermediate, further reacting the intermediate with a monoiso(thio)cyanate and cyclising the resulting reacted intermediate immediately or subsequently.

3,639,419
ARYLPYRAZOLINE SULPHONIC ACID ESTERS
Siegfried Rosenberger, Domat Ems, Graubunden, Eduard Troxler, Basel, and Heinrich Hausermann, Riehen, Switzerland, assignors to Ciba-Geigy Corporation
No Drawing. Filed Dec. 18, 1967, Ser. No. 691,209
Claims priority, application Switzerland, Dec. 23, 1966, 18,479/66
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 D **7 Claims**

Di- and tri-arylpyrazoline sulphonic acid esters are described which have unexpectedly a very good affinity to cellulose ester fibers and optically brighten these fibers in pure white, free from undesirable greenish or greenish-blue hues even when applied in higher concentrations; compositions containing such novel esters as well as other substances, especially detergents, are also described; and a process for optically brightening cellulose ester and particularly cellulose acetate fibers is also disclosed.

3,639,420
PROCESS FOR THE PREPARATION OF 2,3,3-TRIMETHYL INDOLENINES
Hugo Illy and Lance Harmon Funderburk, Toms River, N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.
Filed Feb. 21, 1968, Ser. No. 707,073
Int. Cl. C07d *27/56*
U.S. Cl. 260—319.1 **4 Claims**

A process is provided for the preparation of 2,3,3-trimethyl indolenines of the formula



wherein ring A can contain substituents such as halogen, illustratively chlorine or bromine, lower alkyl, such as methyl, ethyl, propyl or butyl, lower alkoxy, such as methoxy, ethoxy, propoxy or butoxy, comprising reacting a methyl-isopropyl-ketone-phenylhydrazone containing at least one hydrogen in ortho position to the hydrazino group with an acid having a pK value of less than 1.3 in a mol ratio of 1 to 10 mole equivalents of acid per mole of the methyl-isopropyl-ketone-phenylhydrazone at a temperature of 65° to 100° C.

3,639,421
DIAZOTYPE MATERIALS
Rafiqul Islam, Sidney George Garnish, Murray Figov, and Henry Mustacchi, London, England, assignors to GAF (Great Britain) Limited
No Drawing. Filed May 10, 1966, Ser. No. 548,840
Claims priority, application Great Britain, May 14, 1965, 20,490/65
Int. Cl. C07c *113/00;* **C07d** *27/00;* **G03c** *1/52*
U.S. Cl. 260—326.3 **4 Claims**

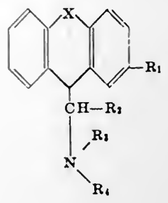
4-(N-pyrrolidino) - 3 - substituted anilines wherein the 3-substituent is a benzyloxy, carboxy, acetoxy, benzoyloxy or trifluoromethyl.

3,639,422
4-PHENYLINDOLE-1 (AND 7)-ACETIC ACIDS
Clifton John Blankley, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed July 28, 1969, Ser. No. 845,529
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 R **5 Claims**

4-phenylindole - 1 - acetic acid, 4-phenylindole-7-acetic acid, α-methyl derivatives, and carboxylate salts. The compounds are anti-inflammatory agents useful in relieving or preventing inflammation. They can be produced from the corresponding lower alkyl esters by hydrolysis, or from the corresponding α-cyano lower alkyl esters by hydrolysis and accompanying decarboxylation of one of the two resulting carboxyl or carboxylate groups.

3,639,423
TRICYCLIC AMINOMETHYL DERIVATIVES
Werner Winter and Max Thiel, Mannheim, Kurt Stach and Wolfgang Schaumann, Mannheim-Waldhof, and Annemarie Ribbentrop, Mannheim, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung
No Drawing. Filed Dec. 11, 1967, Ser. No. 689,319
Claims priority, application Germany, Dec. 23, 1966, B 90,455
Int. Cl. A61k *27/00;* **C07d** *9/00, 65/16*
U.S. Cl. 260—328 **4 Claims**

Novel compounds possessing valuable pharmacological properties and useful as muscle relaxants, tranquilizing agents, anti-convulsives, etc. are disclosed. The compounds are defined by the following formula:



wherein X is sulfur, oxymethylene, thiamethylene, thiaethylene, iminomethylene, propylene - 1,3 or alkylated iminomethylene; R_1 is hydrogen, lower alkyl, halogen, alkoxy trifluoromethyl, or alkyl mercapto and R_2, R_3 and R_4 are each hydrogen or lower alkyl; or a physiologically acceptable acid addition salt thereof.

There are also disclosed compositions containing the above compounds as active ingredient and methods of using the same.

3,639,424
EXTRUDABLE AND MOLDABLE PLASTIC COMPOSITIONS REINFORCED WITH HEAT SET POLYESTER FIBERS
Theodore F. Gray, Jr., James C. Weaver, and Robert L. Combs, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 19, 1970, Ser. No. 12,854
Int. Cl. C08g *37/18, 37/34, 39/10, 45/14*
U.S. Cl. 260—873 **10 Claims**

A molding composition including a polymer such as a polyolefin, and uniformly dispersed therein at least about 10% by weight of the composition staple length fiber having a denier of from about 1.5 to about 25, the fiber being of man-made polymers, such as poly(ethylene terephthalate) or poly(1,4-cyclohexylenedimethylene terephthalate). Uniform dispersion is achieved by heat setting fiber in the above denier range, preferably at constant length,

and cutting it to staple length. The composition is produced by the steps of (a) heatsetting the fiber, (b) cutting the fiber to staple length, (c) fluffing the staple fibers to separate them, and (d) blending the fibers with a polymer.

3,639,425
PEROXYGEN COMPOUND
Robert C. P. Cubbon and John E. Braid, Luton, and Colin Hewlett, Harpenden, England, assignors to Laporte Chemicals Limited
No Drawing. Filed Apr. 3, 1968, Ser. No. 718,354
Claims priority, application Great Britain, Apr. 5, 1967, 15,543/67
Int. Cl. C07c *73/06;* **C07d** *15/00*
U.S. Cl. 260—340.2 **1 Claim**

The invention provides hydroperoxides of β- or γ-keto-esters or β- or γ-keto-acids, advantageously, of the formula

$$R.CO.(CH_2)_x.COOR^1$$

R and R^1 being radicals that maintain their identity in the presence of hydrogen peroxide and hydrogen ions.

3,639,426
4-OXO-9-HYDROXY-7-(3-METHYL-2-OCTYL)-1,2,3,4-TETRAHYDROCYCLOPENTA[c][1]BENZOPYRAN
Raj K. Razdan, Belmont, Felix E. Granchelli, Arlington, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Continuation-in-part of application Ser. No. 642,192, May 29, 1967. This application Jan. 8, 1970, Ser. No. 1,535
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R **1 Claim**

4-oxo-9-hydroxy-7-(3-methyl - 2 - octyl)-1,2,3,4-tetrahydrocyclopenta[c][1]benzopyran, used as an intermediate in the preparation of 1,2,3,4-tetrahydrocyclopenta[c][1]benzopyrans and 1,2,3,4,12,13-hexahydrocyclopenta[c][1]benzopyrans which have C.N.S. activity.

3,639,427
NOVEL 1,2,3,4-TETRAHYDRO - (AND 1,2,3,4,12,13-HEXAHYDRO) CYCLOPENTA[c][1]BENZOPYRANS
Raj K. Razdan, Belmont, Felix E. Granchelli, Arlington, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
No Drawing. Continuation-in-part of application Ser. No. 642,192, May 29, 1967. This application Jan. 8, 1970, Ser. No. 1,536
Int. Cl. C07d *7/18*
U.S. Cl. 260—345.3 **3 Claims**

New 1,2,3,4 - tetrahydrocyclopenta[c][1]benzopyrans and 1,2,3,4,12,13 - hexahydrocyclopenta[c][1]benzopyrans having C.N.S. activity.

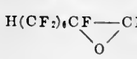
3,639,428
4-(TETRAHYDROPYRAN-2'-YLOXY)-PENTYL-PHOSPHONATES
John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Filed Dec. 4, 1967, Ser. No. 687,502
Int. Cl. C07f *9/40*
U.S. Cl. 260—345.9 **2 Claims**

Preparation of α,β-unsaturated carbocyclic ketones by reacting an enol lactone with a carbanion generated by treatment of a methylphosphonate or a mono-substituted methylphosphonate with base.

3,639,429
PROCESS FOR OXIDIZING POLYFLUORINATED OLEFINES
Viktor Weinmayr, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 9, 1963, Ser. No. 293,899
Int. Cl. C07c *53/36, 51/38;* **C07d** *1/06*
U.S. Cl. 260—348.5 R **8 Claims**

1. A process for preparing predominantly COF_2 which process comprises contacting in a reaction zone and at a temperature range from 170° C. to 190° C. the compound $CF_2{=}CF_2$ with a mixture consisting essentially of molecular oxygen and oxygen difluoride, said mixture having a ratio of approximately 24 volumes of oxygen difluoride per 1000 volumes of molecular oxygen, wherein part of the product COF_2 is recycled and mixed with said $CF_2{=}CF_2$ prior to the entry of said $CF_2{=}CF_2$ into said reaction zone; and recovering the product COF_2 from the reaction mixture.

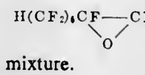
2. A process for preparing predominantly the compound



which process comprises contacting at a temperature range from 50° C. to 120° C. the compound

$$H(CF_2)_6CF_2{=}CH_2$$

with a mixture consisting essentially of molecular oxygen and oxygen difluoride, said mixture having an oxygen difluoride concentration of from 1.6 to 670 volumes of oxygen difluoride per 1000 volumes of molecular oxygen; and recovering the product



from the reaction mixture.

3,639,430
VAT DYESTUFFS
Hans Altermatt, Reinach, Basel-Land, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 337,516, Jan. 14, 1964, which is a continuation-in-part of applications Ser. No. 147,139, Oct. 24, 1961, and Ser. No. 216,749, Aug. 14, 1962. This application Jan. 16, 1968, Ser. No. 698,141
Claims priority, application Switzerland, Oct. 28, 1960, 12,112/60
Int. Cl. C09b *1/54, 1/56*
U.S. Cl. 260—368 **2 Claims**

New water-soluble vat dyestuffs containing aryloxy- or arylmercapto groups and two anthraquinone radicals or a vattable chromophor containing at least 4 fused rings.

3,639,431
PRODUCTION OF BENZOTRIAZOLES
Lucian W. McTeer, South Charleston, and Robert G. Kelso, St. Albans, W. Va., assignors to Union Carbide Corporation
No Drawing. Filed May 24, 1968, Ser. No. 731,718
Int. Cl. C07d *55/04;* **C23f** *11/14*
U.S. Cl. 252—390 **3 Claims**

In a process for recovering benzotriazole that is produced by reacting an ortho-phenylenediamine with nitrous acid in aqueous media, the improvement which comprises adding a polyhydroxy compound to crude benzotriazole separated from the aqueous phase of the product mixture and codistilling the benzotriazole and the polyhydroxy compound, thereby increasing the yield and lessening the danger of explosive decomposition of the benzotriazole during distillation. In a preferred embodiment of

the improvement a substantially water-insoluble alkanol is initially added to the aqueous product mixture containing the benzotriazole in order to facilitate the separation of the benzotriazole from the aqueous layer of the product mixture.

3,639,432
2-HYDROXY-1,4-NAPHTHOQUINONE AMINOBENZOATES

Giancarlo Berti, Pisa, Italy, assignor to Finanz und Kompensations Anstalt, Vaduz, Leichtenstein, Germany

No Drawing. Continuation-in-part of application Ser. No. 493,245, Oct. 5, 1965. This application June 12, 1968, Ser. No. 736,285
Claims priority, application Austria, Oct. 5, 1964, 8,472/64
Int. Cl. C07c *79/46, 101/62*
U.S. Cl. 260—396 R **14 Claims**

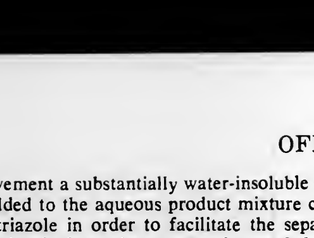
2 - hydroxy - 1,4 - naphthohydroquinone aminobenzoates, prepared by catalytically hydrogenating the condensation product of a 2-hydroxy-1,4-naphthoquinone and a nitrobenzoyl halide, are useful as antihaemorrhagic and capillary protective agents.

3,639,433
22-GUANIDYL STEROIDS AND METHOD OF MAKING AND USING THE SAME

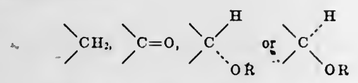
Rainer Philippson, Bergkamen, Heinz Giblan, Berlin, Mahmud Muftic, Genf, and Emanuel Kaspar, Kamen, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed June 13, 1968, Ser. No. 742,473
Int. Cl. C07c *169/14*
U.S. Cl. 260—397 **8 Claims**

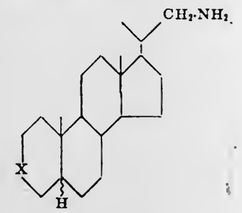
A compound of the formula



wherein X denotes



R is hydrogen or acyl, and rings A and B may be in trans or cis position relative to each other, is produced by reacting a compound of the formula



wherein X has the same meaning as in the formula above with a substance selected from the group consisting of cyanamide and salts of S-alkyl- and S-aralkylisothiourea; and esterifying a 3-hydroxl group or saponifying a 3-acyloxy group of the thus obtained reaction product. Such compound is effective in the treatment of certain infectious conditions including fungus infections.

3,639,434
17-ACYLOXYSTEROIDS AND THEIR MANUFACTURE

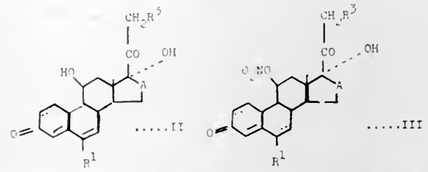
Peter Oxley and John Rosindale Housley, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Filed Feb. 2, 1967, Ser. No. 613,454
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 **2 Claims**

The invention concerns novel steroids having valuable properties as anti-inflammatory agents in veterinary and human medicine.

The new steroids are 17α - acyloxy-β-hydroxy progesterones and their Δ^1, Δ^6, $\Delta^{1,6}$, 21-halo-Δ^1 and 21-halo-$\Delta^{1,6}$ derivatives.

Processes for their preparation include the conversion of a compound of the general Formula II into the corresponding 11β-nitrate ester III,



where R^3 is chlorine, bromide, alkanoyloxy, an alkanesulphonyloxy- or arenesulphonyloxy-group and R^1, A and the symbol ═ are as hereinbefore defined, and thereafter

(a) replacing the group R^3 by hydrogen, then converting the 17α-hydroxyl group into the group $O.COR^2$ and finally reducing the 11β-nitrate group to an 11β-hydroxyl group; or (b) converting the 17α-hydroxyl group into the group $O.COR^2$, then reducing the 11β-nitrate group to an 11β-hydroxyl group and finally replacing the group R^3 by hydrogen; or (c) converting the 17α-hydroxyl group into the group $O.COR^2$, then replacing the group R^3 by hydrogen and finally reducing the 11β-nitrate group to an 11β-hydroxyl group.

3,639,435
3-OXYGENATED 21β-HYDROCARBONSULFONYL-5α-PREGNA-17(20),20-DIENES AND 1,3,5(10)-TRISDEHYDRO 19 - NOR DERIVATIVES CORRESPONDING

Walter R. Benn, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 773,273, Nov. 4, 1968. This application Dec. 22, 1969, Ser. No. 887,426
Int. Cl. C07c *169/08, 169/20*
U.S. Cl. 260—397.5 **11 Claims**

3-oxygenated 21β - hydrocarbonsulfonyl-5α-pregna-17 (20),20-dienes and 1,3,5(10)-trisdehydro 19-nor derivatives corresponding possessing anti-microbial, e.g. antiprotozoal, properties are prepared by contacting the corresponding 17α-ethynyl-17β-hydroxy starting material with the appropriate hydrocarbonsulfinyl halide and subjecting the resulting 17-hydrocarbonsulfinate ester to heating at elevated temperature.

3,639,436
OMEGA,OMEGA-DINITROALKANOIC ACIDS, ESTERS, AND ESTER-SALTS

Hans D. Holtz, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 11, 1967, Ser. No. 689,302
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 **2 Claims**

Novel compounds, omega,omega-dinitroalkanoic acids are prepared by initially reacting certain oxygen-containing cycloalkane derivatives with aqueous nitric acid in the presence of a catalyst composition, such as ammonium vanadate (V), having one or more metallic elements selected from Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Y, La, Ce, Pr, Nd, and Sm, preferably V and Cu, and recovering the desired novel acids from the reaction product. Novel esters and alkali metal salts of these esters can be prepared from the novel acids by suitable reactions. The novel acids and derivatives thereof are useful intermediates for the production of omega-amino acids which are useful in the synthesis of polyamide polymers, such as nylon 12.

3,639,437
PRODUCTION OF CARBOXYLIC ESTERS OF β-FORMYLCROTYL ALCOHOL

Roman Fischer and Horst Pommer, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 31, 1968, Ser. No. 748,911
Claims priority, application Germany, Aug. 8, 1967, P 12 97 597.2–42
Int. Cl. C07c *67/00;* **C11c** *3/14*
U.S. Cl. 260—405.6 **6 Claims**

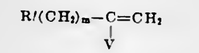
A process for the production of carboxylic esters of β-formylcrotyl alcohol in which a carboxylic ester of 2-formyl-2-hydroxybutene-(3) or an acetal or acylate of the same is rearranged in the presence of metallic copper or a copper (I) or copper (II) compound or a mixture of the same with or without hydrolysis of the products obtained.

3,639,438
α-POLYFLUOROALKYL ACRYLIC ACIDS AND DERIVATIVES

Kenneth C. Smeltz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 20, 1968, Ser. No. 706,803
Int. Cl. C11c *3/00*
U.S. Cl. 260—408 **3 Claims**

α-Polyfluoroalkyl acrylic compounds of the formula



where R_f is perfluoroalkyl, *m* is 2 to 12, and V is —COOH, —COOR, —$CONR_2$, —COX or —CN.

Homopolymers of the above compounds formed by polymerization through the double bond of the acrylic moiety.

Copolymers of the above compounds with other vinylidene monomers.

The polymers are useful in treating substrates to impart oil and water repellency thereto.

3,639,439
RHODIUM (I) HALIDE COMPLEXES

Kenneth C. Dewhirst, San Pablo, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Original application Dec. 10, 1964, Ser. No. 417,482, now Patent No. 3,489,786, dated Jan. 13, 1970. Divided and this application Nov. 30, 1967, Ser. No. 705,582
Int. Cl. C07c *11/26;* **C07d** *103/00*
U.S. Cl. 260—429 R **8 Claims**

An improved homogeneous hydrogenation catalyst composition comprises rhodium halide complexes incorporating stabilizing phosphine or arsine ligands, and excess ligand.

3,639,440
PROCESS FOR THE MANUFACTURE OF SILICON CONTAINING NEUTRAL POLYPHOSPHORIC ACID ESTER DERIVATIVES

Klaus-Dieter Kampe and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Oct. 23, 1965, Ser. No. 504,187. Divided and this application Apr. 14, 1969, Ser. No. 841,644
Claims priority, application Germany, Oct. 28, 1964, F 44,326
Int. Cl. C07f *7/04, 7/18, 7/08*
U.S. Cl. 260—448.2 E **4 Claims**

Neutral polyphosphoric acid ester derivatives are prepared by reacting organosilicon compounds with phosphorus pentoxide at a temperature within the range of —78° C. to +140° C. in the absence of moisture the mole ratio of organisilicon compound to phosphorus pentoxide being from 0.01 to 9 moles organosilicon compound to 1 mole phosphorus pentoxide. The neutral polyphosphoric acid ester derivatives are useful as catalysts for the production of polyacetals.

3,639,441
PENTAERYTHRITOL-DI- AND TETRA-PIVALOYL-DIORTHOSILICIC ACID-HEXA-ALKYL ESTERS

Hans Feichtinger, Dinslaken, and Herbert Gothel, Oberhausen-Holten, Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,315
Claims priority, application Germany, Oct. 3, 1968, P 18 00 875.8
Int. Cl. C07f *7/09*
U.S. Cl. 260—448.8 R **5 Claims**

Diorthosilicic acid esters of the formula:

$$A(OSi)_2(OR')_6$$

wherein A is a monopentaerythritol-dicarboxylic acid ester or a dipentaerythritol-tetra-carboxylic acid ester which acid has a quaternary carbon atom therein and R′ is an alkyl group of more than 3, preferably at least 8, carbon atoms; and lubricants containing such.

3,639,442
PREPARATION OF ORGANIC ISOCYANATES FROM ISOCYANIDE DIHALIDES

Dieter Arlt, Cologne-Buchheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,172
Claims priority, application Germany, July 6, 1967, P 16 43 975.1
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **4 Claims**

Organic isocyanates are produced by reacting organic isocyanide dihalides with anhydrous strong acids containing dissociable hydrogen attached to oxygen. The isocyanates produced are useful in the preparation of insecticides, coatings, adhesives, films, fibers, foams, elastomers and the like.

3,639,443
4-PHENYLBICYCLO[2.2.2]OCT-2-EN-1-YL URETHANS

Walter A. Gregory and James C. Kauer, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 467,753, June 28, 1965, now Patent No. 3,413,348. This application Jan. 26, 1968, Ser. No. 700,695
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **2 Claims**

4-phenylbicyclo[2.2.2]oct-2-en-1-yl urethans as intermediates in the preparation of phenylbicyclo[2.2.2]oct-2-ene-1-amines.

Preparation of the 4-phenylbicyclo[2.2.2]oct-2-en-1-yl urethans by a modified Curtius reaction.

3,639,444
NITRO ALKYL-N-PHENYL CARBAMATES
Richard Wessendorf, Hilden, Rhineland, Heinz Günter Nösler, Monheim, Rhineland, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Original application July 25, 1968, Ser. No. 747,453. Divided and this application Feb. 3, 1970, Ser. No. 12,513
Claims priority, application Germany, July 25, 1967, H 63,380
Int. Cl. C07c *125/06*
U.S. Cl. 260—472 **10 Claims**

Compositions and method for killing bacteria and fungi having as the active ingredient a nitro alkyl-N-phenyl carbamate and to novel bromo-nitroalkyl - N - phenyl-carbamates.

3,639,445
PROCESS FOR MAKING SUBSTITUTED CROTONATES
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 8, 1968, Ser. No. 696,158
Int. Cl. C07c *69/66*
U.S. Cl. 260—473 A **3 Claims**

Esters of crotonic acid having an ether substituent in the 3-position are prepared by reacting an acetoacetic ester with an acetal under acid esterification conditions whereby low boiling reaction byproducts are distilled from the reaction mixture substantially as they are formed.

3,639,446
4,4'-DIBROMO- AND 4-CHLORO-4'-BROMO-BENZILIC ACID ESTERS
Kurt Gubler, Riehen, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 589,530, Oct. 26, 1966. This application Jan. 26, 1968, Ser. No. 700,750
Claims priority, application Switzerland, Dec. 13, 1965, 17,135/65; Feb. 2, 1967, 1,566/67; May 17, 1967, 6,921/67
Int. Cl. A01n *9/02;* **C07c** *69/76*
U.S. Cl. 260—473 A **9 Claims**

Certain esters of 4,4'-dibromo- and 4-chloro-4'-bromo-benzilic acids are disclosed as having useful acaricidal, and in the case of certain esters, also insecticidal activities superior to those of the corresponding esters of 4,4'-dichloro-benzilic acid. The preparation of the new esters, and compositions containing them as active ingredients as well as a method of controlling, in particular, Acarinae with the aid of the new esters, and a method of controlling certain insects, in particular the Colorado beetle on potato plants, with the aid of isopropyl 4,4'-dibromo-benzilate are also described.

3,639,447
ALKYL DIESTERS OF 3,5-DIALKYL-4-HYDROXY-PHENYLALKANOIC ACID
George Wright Taylor and Derek Harold Wood, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Original application Mar. 28, 1966, Ser. No. 537,690, now Patent No. 3,422,059, dated Jan. 14, 1969. Divided and this application Mar. 7, 1968, Ser. No. 736,865
Claims priority, application Great Britain, May 3, 1965, 18,516/65
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R **4 Claims**

Phenolic esters having antioxidant properties are disclosed. The esters are diol dialkanoates. Typical examples are decamethylene diol di-[bis-(3,5-di-tert-butyl-4-hydroxyphenyl) acetate], and hexamethylene diol di-[bis-(3,5-di-tert-butyl-4-hydroxyphenyl) acetate].

3,639,448
PROCESS FOR PRODUCING BIS(β-HYDROXYETHYL)-TEREPHTHALATE AND/OR PREPOLYMER THEREOF
Katsuto Matsuzawa and Kazuo Matsui, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan
Filed Dec. 21, 1967, Ser. No. 692,524
Claims priority, application Japan, Dec. 30, 1966, 42/85,798
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P **5 Claims**

An improvement of process for producing bis(β-hydroxyethyl)-terephthalate from terephthalic acid and ethylene glycol in which terephthalic acid dissolved or dispersed in a liquid, which is an alkyl terephthalate and/or bis(β-hydroxyethyl)-terephthalate is reacted with ethylene glycol at a temperature above the dew point of ethylene glycol.

3,639,449
PROCESS FOR MANUFACTURE OF ESTERS OF CARBOXYLIC ACIDS
Taiseki Kunugi, Tokyo, Japan, assignor to Mitsui Petrochemical Industries, Ltd., and Taiseki Kunugi, both of Tokyo, Japan, fractional part interest to each
No Drawing. Filed Mar. 14, 1968, Ser. No. 712,925
Claims priority, application Japan, Mar. 18, 1967, 42/16,718; Mar. 27, 1967, 42/18,626
Int. Cl. C07c *69/54, 69/80*
U.S. Cl. 260—475 N **15 Claims**

A new process for the manufacture of esters of carboxylic acid to commercial and technical advantage by catalytically reacting a wide range of alcohols, their mixtures, or mixtures consisting of these alcohols or their mixtures and aldehydes in the copresence of molecular oxygen in the presence of a catalyst selected from the group consisting of metals of Group 8 of the periodic table having an atomic number from 44 to 78, oxides of these metals, pretreated products of these metals and pretreated products of these metal oxides, with the proviso that when alcohols alone are reacted with molecular oxygen, at least one primary alcohol should be present in said alcohols.

3,639,450
PURIFICATION OF BIS-HYDROXYALKYL ESTERS OF BENZENE DICARBOXYLIC ACIDS USING HYPOPHOSPHOROUS OR ORTHOPHOSPHOROUS ACID AND A GROUP VIII CATALYST
Lita L. Koh and Enrique R. Witt, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed May 29, 1968, Ser. No. 732,818
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR **12 Claims**

A process for treating impure bis-hydroxyalkyl esters of benzene dicarboxylic acids by treating a hypophosphorous or orthophosphorous acid-containing aqueous solution of the diester with a catalyst of a Group VIII metal. This treatment reduces the amount of impurities comprised of hydroxyalkyl esters of carboxybenzaldehyde.

3,639,451
PROCESS FOR ESTERIFYING AROMATIC CARBOXYLIC ACIDS
David A. Ebert, Cheektowaga, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,550
Int. Cl. C07c *69/78, 69/82*
U.S. Cl. 260—475 R **10 Claims**

This specification discloses a novel process for esterifying aromatic carboxylic acids whereby the carboxylic

acid is heated with a mixture containing at least a stoichiometric amount of a saturated orthoester of an aliphatic alcohol having from 1 to 8 carbon atoms and a stoichiometric excess of a lower saturated alcohol in the presence of a strong acid catalyst. This process improves the rate of esterification and eliminates colored by-products. The process is particularly suitable for the esterification of partially esterified alkyl terephthalates to dialkyl terephthalates of high purity, as evidenced by a lack of colored by-products.

3,639,452
PHENOL PROCESS
Edwin J. Strojny, Midland, Mich., and William D. Gurowitz, Ithaca, N.Y., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 26, 1968, Ser. No. 715,967
Int. Cl. C07c *69/78, 39/04*
U.S. Cl. 260—476 R **4 Claims**

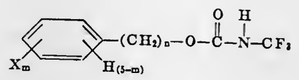
Less tar is produced in the copper catalyzed oxidation of benzoic acid to phenyl benzoate when at least ten percent by weight each of benzoic acid and benzoic anhydride is present in the reaction mixture. Preferably, a magnesium compound is also present as a reaction promoter.

3,639,453
2-HYDROXY AND 2 - CARBAMYLOXY DERIVATIVES OF 1,1,1-TRICHLORO-3-CARBAMYLOXY-ALKANES
Laszlo L. Darko, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation
No Drawing. Continuation-in-part of application Ser. No. 786,750, Dec. 24, 1968. This application Apr. 2, 1970, Ser. No. 25,282
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 B **13 Claims**

1,1,1-trichloro-2-hydroxy - 3 - carbamyloxyalkanes and their 2-carbamyloxy derivatives such as 1,1,1-trichloro-2-hydroxy-3-carbamyloxypropane, 1,1,1-trichloro - 2 - hydroxy-3-carbamyloxybutane and 1,1,1-trichloro-2,3-dicarbamyloxybutane are depressants of the central nervous system and useful as muscle relaxants.

3,639,454
BENZYL ESTERS OF N-PERFLUORO METHYL CARBAMATE
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed July 17, 1968, Ser. No. 745,404
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C **6 Claims**

This invention discloses new chemical compounds of the formula



wherein X is selected from the group consisting of alkyl, alkoxy, halogen and dialkylamino; *m* is an integer from 0 to 5; and *n* is an integer from 1 to 3. This invention further discloses new pesticidal compositions which comprise an inert carrier and a pesticidal amount of a compound of the above description.

3,639,455
PRODUCTION OF HYDROXYETHYLENE-CARBAMATE ETHERS
Harro Petersen and Klaus-Christian Renner, Frankenthal, Pfalz, and Hans Diem, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed July 31, 1968, Ser. No. 748,912
Claims priority, application Germany, Aug. 5, 1967, P 16 43 635.4
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 C **8 Claims**

Production of hydroxyethylenecarbamate ethers by the reaction of ethylene glycol monoethers with urea in the presence of nickel salts. The products are valuable starting materials for the production of textile finishes.

3,639,456
PREPARATION OF ETHER ESTERS OF CARBOXYLIC ACIDS
Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Feb. 5, 1968, Ser. No. 702,799
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R **12 Claims**

Ether esters of carboxylic acids are prepared by treating a lactone with a borate ester in the presence of an acidic catalyst to prepare the desired ether ester of the carboxylic acid.

3,639,457
N-SUBSTITUTED-β-OXYBUTYRAMIDE SEMISUCCINATE AND ITS SALT HAVING EFFECTS OF INCREASING PARADOXICAL SLEEP AND TRANQUILLIZING
Akira Sakuma, 5–7 Zaimokuza, 6-chome, Kamakura-shi, Japan; Shizuo Torii, 16–18 Omori Nishi, 4-chome, Ota-ku, Tokyo, Japan; and Isamu Yanagisawa, 731 Otagaya, Tsurugashima-machi, Irima-gun, Japan
Filed Apr. 19, 1968, Ser. No. 722,749
Claims priority, application Japan, May 15, 1967, 42/30,710
Int. Cl. C07c *103/34*
U.S. Cl. 260—485 J **5 Claims**

N-substituted - β - oxybutyramide semisuccinate and its salt having effects of increasing paradoxical sleep and tranquillizing, and their utilizations.

3,639,458
CATALYTIC OXIDATIVE DEHYDROGENATION OF ESTERS
Robert W. Etherington, Pennington, and Koei-Liang Liauw, Clark, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Mar. 22, 1968, Ser. No. 715,188
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 D **6 Claims**

Esters having at least one pair of hydrogen atoms on the alpha and beta carbon atoms of the acid portion are oxidatively dehydrogenated to the corresponding ethylenically unsaturated ester by contacting the ester and molecular oxygen-containing gas with a catalyst containing gold metal in the vapor phase (400–750° C.). The gold may be on a support. The unsaturated ester products can be polymerized and copolymerized to thermoplastic polymers useful for making extruded or molded shapes.

3,639,459

METHOD OF PREPARING POLYMERIZABLE MONOMERIC ESTERS

Joseph S. Nissan, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,890
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 10 Claims

Monomeric diesters of glycols and α,β-unsaturated carboxylic acids are prepared by reacting the glycol and an excess of acid in a solvent-free system in the presence of an acid catalyst and polymerization inhibitor at a temperature not exceeding about half the boiling point of the acid. The crude reaction product obtained is neutralized and purified by treatment with a relatively concentrated aqueous solution of an alkali metal hydroxide.

3,639,460

ESTERIFICATION OF METHACRYLIC ACID

Franz Wenzel, Darmstadt, and Karl Heinz Riemann, Darmstadt-Eberstadt, Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,149
Claims priority, application Germany, July 11, 1967, R 46,448
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 1 Claim

Improved method for continuously esterifying methacrylic acid by introducing equivalent amounts of the acid and esterifying alcohol into a sump phase in a column at, at most, a rate equal to the rate of formation of ester, and removing the ester in azeotropic admixture with water. The sump phase initially comprises methacrylic acid and a sulfuric and/or sulfonic acid catalyst.

3,639,461

PROCESS FOR THE PREPARATION OF α,β-UNSATURATED MONOCARBOXYLIC ACID ESTERS

Hiroo Ito and Kaoru Kimura, Nagoya, Japan, assignors to Toa Gosei Chemical Industry Co. Ltd., Tokyo, Japan

No Drawing. Filed July 31, 1968, Ser. No. 748,909
Claims priority, application Japan, Aug. 17, 1967, 42/52,433; Oct. 17, 1967, 42/62,313
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 6 Claims

The alkyl ester of an α,β-unsaturated monocarboxylic acid, is prepared by the vapor-phase esterification of the corresponding monocarboxylic acid and an aliphatic monohydric alcohol having from 1 to 8 carbon atoms in the presence of a catalyst, such as a titanium oxide catalyst, a titanium-antimony-oxygen catalyst, a titanium-silicon-oxygen catalyst, and a titanium-antimony-silicon-oxygen catalyst.

3,639,462

13,14-SECO-1,2,3,4-TETRAHYDRO-PHENANTHRENES

William McCrae, Los Altos, John H. Fried, Palo Alto, and John A. Edwards, Los Altos, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,007
Int. Cl. C07c *61/28, 61/32*
U.S. Cl. 260—488 B 12 Claims

New 13,14-seco-13,14-oxido-, 13,14-seco-13,14-methylene-, 13,14-seco-13,14-dichloromethylene- and 13,14-seco-13,14-difluoromethylene - 1,2,3,4-tetrahydrophenanthrene-2-carboxylic acids and derivatives thereof having estrogenic activity.

3,639,463

15(R)-PGE$_1$ AND RELATED COMPOUNDS

John E. Pike and William P. Schneider, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 22, 1968, Ser. No. 731,314
Int. Cl. C07c *61/36, 69/08*
U.S. Cl. 260—488 R 5 Claims

The invention relates to three new prostanoic acid derivatives, 15(R)-PGE$_1$, 15(R)-PGE$_1$ 15-formate, and 15(S)-PGE$_1$ 15-formate, and to methods for producing those. 15(R)-PGE$_1$ is useful as a smooth muscle stimulator. 15(S)-PGE$_1$ 15-formate is useful to inhibit blood platelet aggregation. 15(R)-PGE$_1$ 15-formate is used to make 15(R)-PGE$_1$.

3,639,464

ALPHA-(p-HYDROXYPHENYL) CUMIC ACIDS AND ESTERS

Bryce C. Oxenrider, Florham Park, and Morton H. Litt and Ferdinand M. Slavik, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Aug. 17, 1964, Ser. No. 389,849, now Patent No. 3,398,121, dated Aug. 20, 1968. Divided and this application Mar. 19, 1968, Ser. No. 735,942
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 2 Claims

This invention relates to a novel class of hydroxy substituted aromatic acids which includes alpha-(hydroxyphenyl) cumic acid and substituted derivatives thereof. These hydroxy substituted aromatic acids can be employed as starting materials in the preparation of useful polyesters.

3,639,465

PURIFICATION OF AROMATIC POLYCARBOXYLIC ACIDS BY CATALYTIC REDUCTION USING PREHUMIDIFIED HYDROGEN

George P. Olsen, Highland, Ind., and Philip H. Towle, Chicago, and Richard H. Baldwin, Oak Lawn, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 456,218, May 17, 1965. This application June 18, 1968, Ser. No. 737,875
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 6 Claims

Use of prehumidified hydrogen-containing gas for purification of aromatic polycarboxylic acids contaminated with reducible impurities including aldehydic aromatic acids in processes including the step of contacting aqueous solution substantially saturated with impure aromatic polycarboxylic acid and hydrogen with noble metal-containing catalyst by percolation of the solution through a bed of the catalyst.

3,639,466

PRODUCTION OF ACRYLIC ACID FROM RESIDUES OBTAINED IN WORKING UP ACRYLIC ACID

Otto Leichtle, Ludwigshafen (Rhine), Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,295
Claims priority, application Germany, Apr. 3, 1967, P 16 18 129.6
Int. Cl. C07c *57/04*
U.S. Cl. 260—526 W 8 Claims

An improved process for the production of acrylic acid by heating residues containing acryloylhydracrylic acid, β-acetoxypropionic acid, hydracrylic acid, dihydracrylic acid and polymerized hydracrylic acids, such as are obtained in working up acrylic acid, at temperature of from 130° to 250° C. in the presence of catalysts, the improvement consisting in using a catalyst a compound containing a secondary or tertiary amino group, or a tertiary phosphine. Acrylic acid, as such and in the form of its esters, is used for the production of polymers.

3,639,467

METHOD OF RECOVERING GLUTAMIC ACID FROM A FERMENTATION BROTH

Toshiaki Nagai and Isao Yamaura, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 675,802, Oct. 17, 1967. This application Apr. 2, 1968, Ser. No. 718,192
Claims priority, application Japan, Nov. 1, 1966, 41/72,179
Int. Cl. C07c *99/12*
U.S. Cl. 260—527 N 3 Claims

The mother liquor obtained after crystallization of glutamic acid from a fermentation broth at pH 3.2 is passed over a column of a strongly acidic cation exchange ion, preferably in the H-form, which adsorbs the residual glutamic acid from the mother liquor. The glutamic acid is eluted from the resin by another batch of the fermentation broth having a pH of 5 or higher, and the broth, thus enriched with glutamic acid, is adjusted to a pH near 3.2 to induce crystallization of glutamic acid. The mother liquor obtained after separation from the crystals is passed over the ion exchange column. Glutamic acid is thus recovered almost completely from the broth.

3,639,468

PROCESS FOR PREPARING AMPHOTERIC SURFACE ACTIVE AGENTS

Noburo Hayashi, Mamoru Katsumi, Yuzuru Ogata, Sumio Arai, Yoshiaki Kurita, and Yoshihiro Inamori, Wakayama-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed July 30, 1968, Ser. No. 748,633
Claims priority, application Japan, Nov. 1, 1967, 42/49,391
Int. Cl. C07c *101/20, 101/30*
U.S. Cl. 260—534 E 6 Claims

A process for preparing N-alkyl N-hydroxyethyl-β-aminoethoxyacetic acid or N-alkyl N,N-bis (ethoxyacetic acid) in which a diethanolalkylamine is reacted with monochloracetic acid or its alkali metal salts, either

(1) In a substantially anhydrous condition after substituting the active hydrogen of the diethanolalkylamine with an alkali metal, or

(2) In the presence of a caustic alkali in an amount sufficient to neutralize the generated HCl in a substantially anhydrous condition.

3,639,469

PROCESS FOR THE PRODUCTION OF 4,4'-BIPHENYL DISULFONYL CHLORIDE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,951
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R 11 Claims

At elevated temperature carbon tetrachloride in the liquid phase reacts with 4,4'-biphenyl disulfonic acid to yield disulfonyl chloride. Sulfuric, phosphoric and polyphosphoric acids catalyze the reaction at a temperature in the range 130 to 225° C.

3,639,470

PROCESS FOR THE PRODUCTION OF MIXED CARBOXYLIC-SULFONIC ACID CHLORIDE DERIVATIVES OF BENZENE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,950
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 R 5 Claims

Mixed acid chlorides of the formula

$$XC_6H_3(SO_2Cl)(COCl)$$

are prepared by the reaction of the corresponding diacid with carbon tetrachloride. Relative to each other, the acid groups must be of the meta orientation. The use of a strong mineral acid catalyst, an elevated reaction temperature and a pressure sufficient to maintain carbon tetrachloride in the liquid phase are necessary conditions.

3,639,471

PROCESS FOR THE PREPARATION OF SULFENYLATED CARBAMIC ACID FLUORIDES

Erich Klauke, Odenthal-Hahnenberg, and Engelbert Kuhle, Bergedorf, Gladbach, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 3, 1968, Ser. No. 742,176
Claims priority, application Germany, July 5, 1967, F 52,861
Int. Cl. C07c *51/58, 101/10, 125/00*
U.S. Cl. 260—544 C 20 Claims

Reacting N-mono-(substituted- and unsubstituted-aliphatic, e.g. lower alkyl; -cycloaliphatic, e.g. C_{5-6} cycloalkyl; and -aromatic, e.g. phenyl and halo-, nitro-, lower alkyl-, lower alkoxy-, lower alkylmercapto- and/or trifluoromethyl-phenyl)-substituted carbamic acid fluoride with (substituted- and unsubstituted-alkyl, e.g. haloalkyl; and -aryl, e.g. halo-, alkyl- and/or nitro-aryl, especially -phenyl)-sulfenic acid chloride or sulfur dichloride or disulfur dichloride, in the presence of a tertiary amine as acid binding agent, e.g. at a temperature of about 0–100° C., optionally in the presence of an inert organic solvent, using about one mol of the carbamic acid fluoride per mol of said sulfenic acid chloride or at least two mols per mol of the sulfur dichloride or disulfur dichloride, to form the corresponding aforesaid N-(substituted- and unsubstituted-aliphatic, -cycloaliphatic and -aromatic)-N-[(substituted- and unsubstituted-alkyl and -aryl)-sulfenyl]-carbamic acid fluoride and bis[(N-substituted- and unsubstituted-aliphatic, -cycloaliphatic or -aromatic]-N-fluorocarbonyl)-amino]-sulfide and -disulfide, which are particularly new compounds which possess arthropodicidal, e.g. insecticidal and acaricidal, as well as fungicidal properties, and which may be used as intermediates in organic synthesis.

3,639,472

PROCESS FOR THE HYDROLYTIC SPLITTING OF CARBOXYLIC ACID VINYL ESTERS INTO ACETALDEHYDE AND CARBOXYLIC ACID

Kurt Sennewald, Knapsack, near Cologne, Alexander Ohorodnik, Liblar, and Hans-Joachim Hardel, Bruhl-Vochem, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Mar. 11, 1969, Ser. No. 806,116
Claims priority, application Germany, Mar. 30, 1968, P 17 68 095.4
Int. Cl. C07c *45/00, 51/00*
U.S. Cl. 260—541 5 Claims

Carboxylic acid vinyl esters are hydrolytically split into acetaldehyde and carboxylic acid in liquid phase, at 50–120° C., and in contact with an organic sulfonic or phosphonic acid and a mercury salt thereof as the catalyst.

3,639,473
ACETIC DIPHENYLPHOSPHINIC ANHYDRIDE AND METHOD OF PREPARING SAME

David L. Venezky, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,299
Int. Cl. C07f *9/30*
U.S. Cl. 260—545 P **7 Claims**

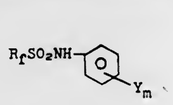
Acetic diphenylphosphinic anhydride is prepared by dissolving diphenylphosphinic acid in a large excess of acetic anhydride under heating to form a solution at a temperature of about 50 to 60° C. The mixed anhydride is isolated by flash evaporation of the excess acetic anhydride and the acetic acid from the reaction solution. Higher yields of the mixed anhydride are obtained when a mixture of the diphenylphosphinic acid and a large excess of acetic anhydride are heated to a reflux temperature of about 140° C. in the presence of an added small amount of acetic acid which is sufficient to repress disproportionation of the mixed anhydride at temperatures of about 100° C. and higher up to the reflux temperature.

3,639,474
N-SUBSTITUTED PERFLUOROALKANE-SULFONAMIDES

Joseph Kenneth Harrington, Edina, Donald C. Kvam, North Oaks, Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 588,338, Oct. 21, 1966. This application June 12, 1969, Ser. No. 832,829
Int. Cl. C07c *143/74, 121/52, 133/02*
U.S. Cl. 260—556 F **10 Claims**

N-substituted perfluoroalkanesulfonamides of the formula:



wherein R_f is a perfluoroalkyl group containing one to four carbon atoms, each Y is a non-cyclic group which can contain only carbon, hydrogen, oxygen, sulfur, nitrogen and halogen and *m* is 1–5, provided that all of the Y groups together contain not more than about twenty carbon atoms and that at least one of the Y groups contains a heteroatom selected from oxygen, sulfur, nitrogen and halogen. Also included are salts of these compounds, compositions containing the compounds of the present invention and processes for their preparation and use. The compounds are active as herbicides and plant growth modifiers.

3,639,475
SUBSTITUTED 5-HALO-3-PHENYLSALICYL-ANILIDES

Jack D. Early, Bethesda, and John P. Chupp, Kirkwood, Md., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Application Aug. 8, 1967, Ser. No. 659,040, now Patent No. 3,525,766, which is a division of application Ser. No. 495,678, Oct. 13, 1965, now Patent No. 3,382,145. Divided and this application Nov. 10, 1969, Ser. No. 871,311
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 S **3 Claims**

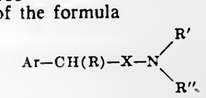
Compounds characterized by a 5-halo-3-phenylsalicyl-anilido nucleus, the anilido group of which having substituents of the group nitro, cyano and trifluoromethyl. These compounds are useful as gastropodicides.

3,639,476
SUBSTITUTED 1-DIMETHYLAMINO PENTANES AND HEPTANES

Jeannie Eberle, Chatou, Micheline Sergan, Clamart, Claude Fauran, Paris, and Gerard M. Huguet, Malesherbes, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed Nov. 29, 1967, Ser. No. 686,722
Claims priority, application Great Britain, Dec. 13, 1966, 55,671/66
Int. Cl. C07c *87/28*
U.S. Cl. 260—563 **4 Claims**

Compounds of the formula



in which

Ar is H or an aromatic which may be mono- or polysubstituted or a heterocyclic,
R is an aliphatic having 1–5 carbon atoms,
X is —CO or —CH_2,
R′ and R″ are each H an aliphatic having 1–3 carbon atoms or



is a heterocyclic.

The compounds possess cardiovascular, diuretic and spasmolytic properties.

3,639,477
NOVEL PROPOXYGUANIDINE COMPOUNDS AND MEANS OF PRODUCING THE SAME

Yvon J. L'Italien, Plymouth, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 420,439, Dec. 22, 1964. This application June 17, 1968, Ser. No. 737,286
Int. Cl. C07c *129/00*
U.S. Cl. 260—564 A **3 Claims**

The novel free base 3-(p-fluorophenoxy)propoxyguanidine and its acid salts are prepared by reacting 3-(p-fluorophenoxy)propoxyamine with an acid addition salt of a reactive guanidine compound Z—$C(NH_2)$=NH, where Z is an alkoxy or alkyl thio group or a triazolyl group or similar heterocyclic displaceable group. The products are pharmacological agents having anoretic and depressant properties.

3,639,478
N,N-ALKYLENEBIS[2-LOWER ALKOXY) - 2-SUBSTITUTED-ALKANAMIDINES] AND THEIR PREPARATION

Denis M. Bailey, Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,193
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **6 Claims**

A 2-(lower-alkoxy)-2-phenylalkanamidine, having hypoglycemic activity, or an N,N″-alkylenebis[2-(lower-alkoxy)-2-phenylalkanamidine], having antibacterial activity, are respectively prepared by reacting a lower-alkyl 2-(lower-alkoxy)-2-phenylalkanimidate with a monoamine or diamine or by reacting a 2-(lower-alkoxy)-2-phenylalkanenitrile with two molar equivalent quantities of a monoamine. The intermediate lower-alkyl 2-(lower-alkoxy)-2-phenylalkanimidate as the hydrohalide is prepared by reacting the corresponding 2-(lower-alkoxy)-2-phenylalkanenitrile with a lower-alkanol in the presence of ethereal hydrogen halide. The intermediate 2-(lower-alkoxy)-2-phenylalkanenitrile is prepared preferably by first reacting a benzaldehyde with a tri-(lower-alkyl) orthoformate to form the aldehyde di-(lower-alkyl)

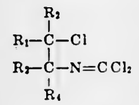
acetal, reacting the latter with an acyl halide to form the corresponding α-halobenzyl lower-alkyl ether and reacting said ether with an alkali cyanide to yield said intermediate nitrile.

3,639,479
PROCESS FOR THE PREPARATION OF 2-CHLOROALKYL ISOCYANIDE DICHLORIDES IN ADDITION TO DICHLOROALKANES

Dieter Arlt, Cologne-Buccheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 7, 1968, Ser. No. 711,219
Claims priority, application Germany, Apr. 7, 1967, F 52.056
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 D **5 Claims**

Production of 2-chloroalkyl-isocyanide dichlorides having the formula



in which R_1 to R_4 each individually is a radical selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkenyl, aryl, with the proviso that two of such radicals when taken together with the



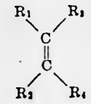
group form a member selected from the group consisting of an alicyclic ring moiety containing said



group and such alicyclic ring moiety containing both said



group and an —SO_2— group, and such R_1 to R_4 members which are substituted with substituents selected from the group consisting of NO_2, halo —N=CCl_2 and alkoxy, in addition to dichloroalkanes, which comprises reacting an olefin having the formula



in which R_1 to R_4 each individually is a radical selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkenyl, aryl, with the proviso that two of such radicals when taken together with the >C=C< group form a member selected from the group consisting of an alicyclic ring moiety containing said >C=C< group and such alicyclic ring moiety containing both said >C=C< group and an —SO_2— group, and such R_1 to R_4 members which are substituted with substituents selected from the group consisting of NO_2, halo —N=CCl_2 and alkoxy, with at most that quantity of a chlorinating agent selected from the group consisting of chlorine and sulfuryl chloride which is required for satisfying one olefinic double bond and with at least the stoichiometrically necessary quantity of cyanogen chloride at a temperature substantially between about −30 to +50° C., whereby to form the corresponding 2-chloroalkyl-isocyanide dichloride;

the reaction optionally being carried out at elevated pressure and/or in the presence of an inert organic solvent;

such compounds being novel when at least one of the radicals R_1 to R_4 does not represent hydrogen; and

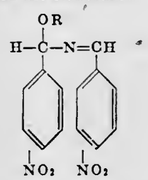
all of said compounds being usable as intermediates for preparing plastics auxiliaries, or directly for preparing isocyanates and in turn by conversion of such isocyanates with amines for preparing ureas in known manner, or as plant protection agents per se.

3,639,480
NOVEL ALKOXY-SUBSTITUTED SCHIFF BASES

Anne-Marie W. Kubanek, Basking Ridge, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,703
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F **5 Claims**

Novel compounds of the structure:



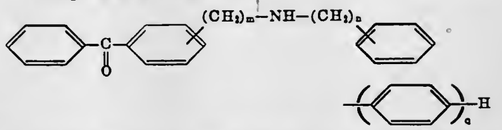
wherein R is a C_1 to C_5 alkyl radical, are obtained by reacting para-nitrobenzaldehyde with alcohol and ammonium acetate. These compounds have insecticidal and nematocidal properties.

3,639,481
ARYL- AND ARALKYL-AMINOBENZOPHENONES

John Edwin Innes, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 16, 1968, Ser. No. 729,520
Int. Cl. C07c *87/48*
U.S. Cl. 260—570 **10 Claims**

Compounds of the formula:



in which *m* and *n* are each separately 0 to 4, inclusive and the sum of *m* and *n* is at least 1, *q* is from 1 to 4 inclusive, and the bonds to each of the benzophenone moiety and the polyphenylene moiety is in the 3 or 4 position are a new class of compounds which are useful in solid solution in a plastic matrix as photochromic materials, in which the color changes when subject to an activating radiation. Instead of benzophenones, xanthones and triphenylenes are also disclosed.

3,639,482
PREPARATION OF FLUOROANILINES

John W. Churchill, Mount Carmel, Ehrenfried H. Kober, Hamden, and Peter H. Scott, Guilford, Conn., assignors to Olin Mathieson Chemical Corporation

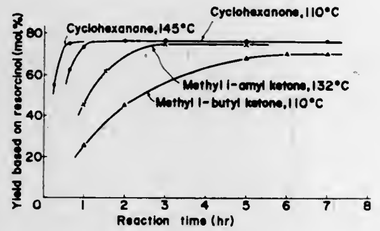
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,692
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 **5 Claims**

Fluoroanilines are prepared by the deoxygenation and hydrofluorination of the corresponding nitrobenzenes which are reacted in anhydrous hydrogen fluoride at 0° to 230° C. under pressures of from 15 to 1500 p.s.i.a. in the presence of carbon monoxide and a noble metal catalyst.

3,639,483
METHOD OF PRODUCING 2,4-DIHYDROXYBENZOPHENONE AND THE DERIVATIVES THEREFROM

Hirohisa Shioda, Isamu Namiki, and Hisako Hori, Yokohama, and Yoshihisa Katsuyama, Zushi, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed July 8, 1968, Ser. No. 743,169
Claims priority, application Japan, July 11, 1967, 42/44,598; May 17, 1968, 43/33,217
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 4 Claims



2,4-dihydroxybenzophenone is prepared by reacting resorcinol with benzotrichloride in a mixed solvent of water and a water-miscible organic solvent such as a lower aliphatic alcohol at 10° to 90° C. 2-hydroxy-4-alkoxybenzophenone is prepared by reacting 2,4-dihydroxybenzophenone, produced by the above process, with an alkyl halide in saturated ketone having six or more carbon atoms and containing an alkali carbonate or with an alkyl ester of benzenesulfonic acids in an aqueous alkaline solution.

3,639,484
PREPARATION OF 1-THIOALDITOLS, 1-THIOALDITOL DISULFIDES AND RELATED HYDROXY THIOLS

Alan R. Procter, North Vancouver, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

No Drawing. Filed July 15, 1968, Ser. No. 744,648
Int. Cl. C07c *149/06, 149/12*
U.S. Cl. 260—608 6 Claims

The invention is concerned with the preparation of 1-thioalditols, 1-thioalditol disulfides and related hydroxy thiols by treating solutions of sugar aldoses or ketoses with hydrogen sulfide in the presence or absence of various bases or basic salts.

3,639,485
ANTI-OZONANT

Roland Nast, Cologne-Buchheim, Kurt Ley, Leverkusen, Wolfgang Redetzky, Opladen, and Theo Kempermann, Cologne-Lindenthal, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 16, 1968, Ser. No. 745,091
Claims priority, application Germany, Feb. 5, 1968, F 54,738
Int. Cl. C07c *149/00, 43/18*
U.S. Cl. 260—609 R 19 Claims

[Cyclohexen-(3)-ylidene-methyl]-hydrocarbon ethers and thioethers and their corresponding 2,5-endomethylene derviatives, preparation thereof and their use as anti-ozonants.

3,639,486
TREATMENT OF CUMENE HYDROPEROXIDE FOR USE IN EPOXIDATION REACTIONS

Rudolph Rosenthal, Broomall, Pa., Ming Nan Sheng, Cherry Hill, N.J., and John G. Zajacek, Strafford, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,787
Int. Cl. C07c *73/08*
U.S. Cl. 260—610 A 5 Claims

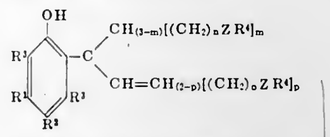
Method for the treatment of cumene hydroperoxide for use in epoxidation reactions by diluting the cumene hydroperoxide with a hydrocarbon which forms an azeotrope with water, washing the diluted cumene hydroperoxide and removing the hydrocarbon-water-azeotrope.

3,639,487
SUBSTITUTED ALLYL PHENOLS

Edward D. Weil, Lewiston, and Hans L. Schlichting, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Feb. 20, 1963, Ser. No. 260,076, now Patent No. 3,385,899, dated May 28, 1968. Divided and this application May 3, 1968, Ser. No. 736,894
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R 17 Claims

Compounds of the general formula



which are useful as oxidation inhibitors, fungicides, antimicrobial agents and chemical intermediates and processes for preparing said compounds.

3,639,488
PREPARATION OF NITRO-HEXAFLUOROCUMINOLS

Stephen Joseph Kuhn, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 8, 1968, Ser. No. 727,736
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 D 7 Claims

New nitro-hexafluorocuminols are produced in the exclusive meta-nitration of the α,α-bis(trifluoro methyl) benzyl alcohols by a mixture of fuming nitric and concentrated sulfuric acids at temperatures of 0–50° C. The nitrated compounds are useful as strong acids and bactericides.

3,639,489
METHOD FOR PREPARING HEXACHLOROPHENE

Edwin B. Michaels, Gregory Court, East Norwalk, Conn. 06855

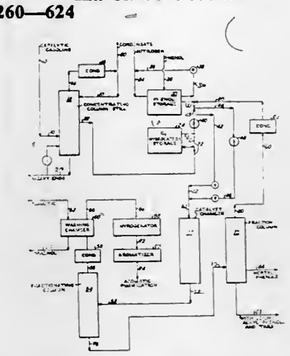
No Drawing. Continuation-in-part of application Ser. No. 644,476, June 7, 1967. This application Feb. 6, 1968, Ser. No. 703,257
Int. Cl. C07c *39/16, 37/00*
U.S. Cl. 260—619 A 10 Claims

A novel process is provided for preparing hexachlorophene by admixing a lower alkyl monocarboxylic acid or the anhydride thereof with 2,4,5-trichlorophenol either in its pure or technical form and, thereafter, condensing the same with both a formaldehyde-yielding substance and an acid-condensing agent, said reactants and adjuvants being present in critically recited proportions.

3,639,490
HEPTYL PHENOL ALKYLATION

Rene P. Brown, Birt Allison, Jr., and Paul D. Meek, Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Feb. 25, 1966, Ser. No. 529,979
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 4 Claims



A C_7 heart cut of catalytic gasoline containing large quantities of olefines and cycloolefines is converted to a substantially saturated dehydroaromatization feedstock composed predominantly of C_7 paraffins and cycloalkanes while simultaneously producing highly economically a mixture of alkyl phenols by using up the olefine and cycloolefine content of the unsaturated C_7 heart cut in an alkylation reaction upon phenols.

3,639,491
OXYCHLORINATION OF 1,1,2-TRICHLOROETHANE TO TRICHLOROETHYLENE

Larry F. Wright, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 19, 1968, Ser. No. 745,973
Int. Cl. C07c *21/10, 17/10*
U.S. Cl. 260—654 D 4 Claims

The present invention relates to the production of trichloroethylene from 1,1,2-trichloroethane (β-trichloroethane) by passing the latter in the vapor phase over an oxychlorination catalyst in the presence of oxygen at an elevated temperature and under super-atmospheric pressure. The method of the present invention allows increased productivity per catalyst volume than heretofore disclosed by the art processes as well as greater selectivity of the β-trichloroethane to trichloroethylene per pass.

3,639,492
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS

John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 28, 1968, Ser. No. 708,801
Int. Cl. C07c *21/02, 21/20*
U.S. Cl. 260—655 8 Claims

Halogen-containing organic compounds are treated with aqueous inorganic alkaline materials in the presence of a catalytic amount of a sulfonium compound to split off hydrogen halide.

3,639,493
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS

John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 28, 1968, Ser. No. 712,896
Int. Cl. C07c *21/04, 21/20*
U.S. Cl. 260—655 5 Claims

Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of a quaternary phosphonium compound to split off hydrogen halide.

3,639,494
HYDROCARBON CHLORINATION AND ALKYLATION PROCESS

Richard E. Crocker, Anaheim, Calif., assignor to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Feb. 17, 1966, Ser. No. 528,108
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 B 9 Claims

A method for reducing the production of polychlorohydrocarbons in a hydrocarbon chlorination comprising forming a solution of the hydrocarbon with a non-olefinic aprotic solvent such as benzene, halobenzenes, benzenes and naphthalenes having electron donating substituents and carbon disulfide, and passing chlorine into contact with the solution in the presence of an initiator is disclosed. The resulting monochlorohydrocarbons are particularly useful for alkylating aromatic hydrocarbons to prepare detergent alkylates.

3,639,495
CATALYTIC HYDROCRACKING PROCESS

Charles C. Brewer and Charles R. Killian, Baton Rouge, La., assignors to Foster Grant Co., Inc., Leominster, Mass.

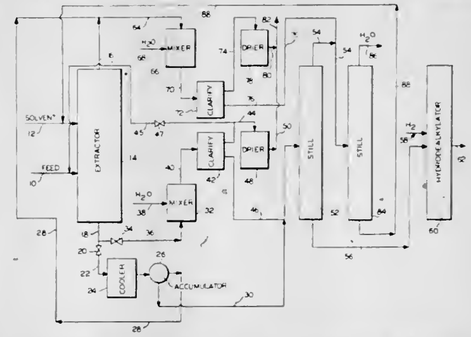
No Drawing. Continuation-in-part of application Ser. No. 706,806, Feb. 20, 1968. This application Mar. 9, 1970, Ser. No. 17,901
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 16 Claims

A feed stock of aromatic alkylation residues is subjected to hydrocracking by the use of a catalyst which may be a mixture of oxide or molybdenum and cobalt, molybdenum and nickel, or molybdenum, cobalt and nickel, and a carrier, such as alumina.

3,639,496
PROCESS FOR THE PRODUCTION OF NAPHTHALENE

George J. Rozman, Ashland, Ky., assignor to Ashland Oil, Inc., Houston, Tex.

Filed July 17, 1968, Ser. No. 745,517
Int. Cl. C07c *3/58, 7/10*
U.S. Cl. 260—674 N 19 Claims



Naphthalene is produced from hydrocarbon fractions containing substantial volumes of polycyclic aromatics, such as light cycle oils from a catalytic cracking unit, by contacting the hydrocarbon feed with an organic sulfoxide, such as dimethylsulfoxide; separating an extract phase and a first raffinate phase from one another; mixing the extract phase with water; passing the extract, solvent and water mixture to a clarifier to separate a second raffinate phase therefrom; passing this second raffinate phase to a dryer to remove water; passing clarified extract, solvent, and water to a first vacuum distillation unit to separate a solvent and water overhead from an extract bottoms; passing the bottoms from the vacuum distillation unit to a hydrodealkylation unit to produce naphthalene; mixing the first raffinate from the extractor with water; passing the mixture of first raffinate and water to a clarifier to separate the raffinate therefrom;

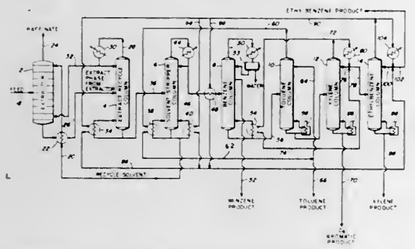
passing the first raffinate to a dryer to remove residual water therefrom; combining clarified water and solvent from the clarifier with the water and solvent from the first vacuum distillation unit; passing the combined solvent and water streams to a second vacuum distillation unit to separate the water and the solvent; and recycling the solvent to the solvent extractor.

3,639,497

EXTRACTION AND MULTI-STAGE FRACTIONAL DISTILLATION WITH INDIRECT HEAT EXCHANGE OF LIQUID AND VAPOR PROCESS AND SYSTEM FOR RECOVERING AROMATIC PRODUCTS

Eugene H. Martel, Bromley, Kent, and Gerald T. Schuch, Surrey, England, assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Aug. 22, 1968, Ser. No. 754,625
Int. Cl. B01d *3/00*
U.S. Cl. 260—674 SE 6 Claims



A system for recovering high purity aromatic products from mixed hydrocarbon feedstocks comprising an aromatic extraction unit and an aromatics fractionation unit integrated by heat exchange whereby substantial savings in operating costs are realized. The aromatics are extracted from the feedstocks by means of a selected solvent and the resulting extract is stripped to produce an aromatic-rich stream which, in turn, is fractionated into specification aromatic products. The basis of the integrated system is utilization of the overhead vapors from the aromatic fractionation towers as a source of reboil heat in the extraction unit.

3,639,498

PREPARATION OF CROSSLINKED ORGANOPOLYSILOXANES IN A SUSPENSION MEDIUM

Theodore Vlismas, Barry, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, England

No Drawing. Filed June 17, 1968, Ser. No. 737,341
Claims priority, application Great Britain, June 22, 1967, 28,941/67; Feb. 22, 1968, 8,721/68
Int. Cl. C08g *47/02, 53/08*
U.S. Cl. 260—825 4 Claims

Particulate crosslinked organosilicon materials are prepared by reacting in suspension in an inert liquid of an organopolysiloxane containing silicon-bonded olefinically unsaturated groups with a hydrogen substituted organopolysiloxane. Such materials having a microporous structure are suitable as a packing material in the columns of gas chromatographs.

3,639,499

POLYPHENYLENE OXIDE RESINS BLENDED WITH COUMARONE-INDENE RESINS

Hugh E. Snodgrass, Mishawaka, and Robert L. Lauchlan, Granger, Ind., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed July 22, 1970, Ser. No. 57,297
Int. Cl. C08f *31/04*
U.S. Cl. 260—829 4 Claims

Blends of poly(phenylene ether) resins with high melting hydrocarbon resins provide thermoplastic compositions characterized by increased moduli or stiffness, and also increased tensile strength and hardness.

3,639,500

CURABLE PRESSURE SENSITIVE ADHESIVE CONTAINING A POLYEPOXIDE, A CARBOXYLATED DIENE POLYMER AND AN ACRYLIC ESTER TACKIFIER

Richard P. Muny, Painesville, and David W. Wilson, Mentor, Ohio, assignors to Avery Products Corporation

Filed May 9, 1968, Ser. No. 727,780
Int. Cl. C08g *45/04*
U.S. Cl. 260—837 25 Claims

There is provided an adhesive composition which is initially pressure-sensitive and which is characterized by the presence therein of an elastomer containing highly polar groups, for example those known to open or associate with the reactive portion of resins capable of forming a structural bond, e.g. a "carboxylated rubber"; an epoxy resin; a reactive tackifier; and a latent curing agent which is substantially nonreactive at temperatures below about 75° C., but becomes effective to promote interaction of components of the adhesive composition at temperatures above about 140° C. to provide a strong structural adhesive.

3,639,501

ART OF PRODUCING SHAPED, MODIFIED, CONDENSATION POLYMERS

Saunders E. Jamison, 27 Constantine Place, Summit, N.J. 07901, and Michael Dunay, 363 Midway Ave., Fanwood, N.J. 07076

No Drawing. Application Oct. 23, 1968, Ser. No. 770,898, now Patent No. 3,532,778, which is a continuation of application Ser. No. 489,401, Sept. 22, 1965. Divided and this application June 18, 1970, Ser. No. 47,609
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 3 Claims

Extrudable liquid compositions and wet formed, e.g. filamentary material of enhanced dyeability based upon the combination with a wet formable difficultly meltable condensation polymer such as poly (polymethylene) terephthalamide of from 0.5 to 30 percent of a basic nitrogen polymer such as a vinylpyridine polymer produced with a solution thereof in a solvent therefor.

3,639,502

ANTISTATIC SHAPED ARTICLES CONTAINING POLYETHERPOLYAMIDE BLOCK COPOLYMER AND A POLYAMIDE, POLYESTER OR POLYOLEFIN

Kaoru Okazaki, Yoichi Shimokawa, and Taneo Maeda, Nagoya, Keisuke Igawa, Aichi-ken, Chikatsu Okagawa, Nagoya, and Koichi Kato, Ohtsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 19, 1968, Ser. No. 746,124
Claims priority, application Japan, July 27, 1967, 42/47,905
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 R 6 Claims

A synthetic resin polymer such as polyamide, polyester and polyolefin and polyether-polyamide block copolymer are shaped in a blended condition to obtain a shaped article. In the shaped article, the block copolymer is dispersed in the form of slender particles as an independent phase wherein the longitudinal axes of the particles are arranged in parallel relationship with the direction of the molecular orientation of the shaped article. At least 80% by weight of the dispersed particles of the block copolymer have a diameter at cross section of not more than 1.0 micron and a length in the direction of longitudinal axes at least 20 times the diameter at cross section. Polymer blend shaped articles having such an internal structure have very excellent properties as a synthetic resin and also excellent antistatic properties.

3,639,503

BLOCK COPOLYCARBONATES CONTAINING POLYLACTONE BLOCKS AND CYCLOBUTYLENE POLYCARBONATE BLOCKS

Markus Matzner, Edison, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,152
Int. Cl. C08f *45/32;* C08g *17/13, 39/10*
U.S. Cl. 260—860 10 Claims

This invention relates to improved block copolycarbonates containing an amorphous, soft, rubbery segment or block composed of lactone units and another crystalline, hard, thermoplastic segment of block composed of cyclobutylene polycarbonate.

3,639,504

PROCESS FOR PREPARING HARDENED POLYESTER RESINS USING MIXTURES OF ORGANIC METAL DERIVATIVES OF VANADIUM AND ZIRCONIUM AS ACCELERATORS

Teo Paleologo and Silvio Vargiu, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed July 10, 1968, Ser. No. 743,606
Claims priority, application Italy, July 17, 1967, 18,472/67
Int. Cl. C08f *21/02*
U.S. Cl. 260—863 5 Claims

Unsaturated polyester resins are hardened in the presence of peroxide catalysts and mixtures of organic metal derivatives of vanadium and zirconium as accelerators.

3,639,505

POLYOLEFIN FIBERS OF IMPROVED DYE RECEPTIVITY CONTAINING TOLUENESULFONAMIDES

James K. Hughes and Tsung-Yuan Su, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 11, 1970, Ser. No. 36,393
Int. Cl. C08f *29/10*
U.S. Cl. 260—873 16 Claims

The dyeability of polyolefin fibers and films is improved by forming a polymer alloy comprising an intimate blend of polyolefin, a minor amount of polyethylene terephthalate and from 0.2 to 5 parts per hundred parts of polymer of toluenesulfonamide compound. Shaped objects prepared from such blends have improved receptivity to disperse dyes.

3,639,506

FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, STYRENE RESIN, AROMATIC PHOSPHATE AND AROMATIC HALOGEN COMPOUND

William R. Haaf, Voorhesville, N.Y., assignor to General Electric Company

Filed May 21, 1969, Ser. No. 826,579
Int. Cl. C08g *43/02*
U.S. Cl. 260—874 19 Claims

This invention is for a blend of a polyphenylene ether and a styrene resin characterized by the addition of a flame retardant combination comprising an aromatic phosphate and an aromatic halogen compound. The polyphenylene ethers are known to have excellent flame retardant properties while the styrene resins are known to have poor flame retardant properties. The admixture of a polyphenylene ether with a styrene resin destroys the flame retardancy of the polyphenylene ethers. In accordance with the present invention, it has been found that the addition of a combination of an aromatic phosphate and an aromatic halogen compound in small amounts to a blend of a polyphenylene ether and a styrene resin improves the flame retardant properties of the blend to a point where it satisfies the requirements set forth by the Underwriters' Laboratory.

3,639,507

PLASTIC PATTERN MATERIAL FOR INVESTMENT CASTING

Stuart Z. Uram, Canton, Ohio, assignor to TRW Inc., Cleveland, Ohio

No Drawing. Original application Sept. 7, 1966, Ser. No. 577,786, now Patent No. 3,465,808, dated Sept. 9, 1969. Divided and this application Jan. 21, 1969, Ser. No. 828,020
Int. Cl. C08f *29/12;* C08g *43/02*
U.S. Cl. 260—874 2 Claims

A pattern for a precision investment process, the pattern being relatively stiff and being cleanly removable from the investment mold formed therearound by steam autoclaving, the pattern consisting of a mixture of polystyrene and a water soluble ethylene oxide polymer having a molecular weight of from 100,000 to 2,000,000, the polymer constituting from 10 to 50% by weight of the mixture.

3,639,508

THERMOPLASTIC BLENDS OF POLYARYLENE OXIDE AND BLOCK POLYMER, AND METHOD FOR MAKING THEM

Roger P. Kambour, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 3, 1969, Ser. No. 788,769
Int. Cl. C08f *29/12;* C08g *43/02*
U.S. Cl. 260—876 B 29 Claims

Liquid phase blending of a polyarylene oxide and a monovinyl aromatic block polymer provides for the production of a variety of thermoplastic materials having improved heat distortion.

3,639,509

SHAPED ARTICLES ON THE BASIS OF POLYVINYL CHLORIDE

Hans-Joachim Andrascheck and Erich Zentner, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 5, 1969, Ser. No. 821,994
Claims priority, application Germany, May 17, 1968, P 17 69 390.2
Int. Cl. C08f *41/12, 29/22*
U.S. Cl. 260—876 R 12 Claims

The invention relates to shaped articles on the basis of polyvinyl chloride having a high transparency, high thermal stability under load, good deep drawing properties and a high impact strength. The shaped articles consist mainly of a copolymer of predominant proportions of vinyl chloride and certain N-substituted maleic acid imides, smaller proportions of known elastomers on the basis of butadiene and styrene, and optionally, certain proportions of a graft copolymer of vinyl chloride on a butadiene elastomer.

3,639,510

REACTION OF FLUORINE WITH POLYPERFLUOROPOLYENES

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Madeline S. Toy, Fountain Valley, Calif.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,815
Int. Cl. C08f *3/20, 27/03, 29/22*
U.S. Cl. 260—877 7 Claims

Polyperfluoropolyenes such as polyperfluorobutadiene are reacted with fluorine to either provide a saturated polymer chain and/or create reactive sites on the polymer chain which is then followed by exposure to a monomeric species which undergoes free radical polymerization to graft the monomer onto the polyperfluoropolyene.

3,639,511

PROCESS FOR THE PRODUCTION OF IMPACT-RESISTANT STYRENE MIXED POLYMERS

Kurt Kreibich, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Kreis Recklinghausen, Germany

No Drawing. Filed May 21, 1965, Ser. No. 457,833

Claims priority, application Germany, June 10, 1964, P 12 47 021.2-44

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 2 Claims

An improvement in the process for making impact-resistant styrene mixed polymers and the product obtained thereby wherein a terpolymer of ethylene, propylene and non-conjugated diolefins with at least 5 carbon atoms is prepared in the presence of Ziegler copolymerization catalysts and the terpolymer has 1 to 3 double bonds per 1000 carbon atoms, mixing 2 to 20 percent of the terpolymer with 98 to 80 percent of styrene in an aqueous suspension and without preliminary ozonization polymerizing the mixture.

3,639,512

PROCESS FOR PREPARING AN IMPACT RESISTANT VINYL CHLORIDE RESIN COMPOSITION

Katsumi Sugimoto and Sachio Fukui, Yokohama, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Apr. 10, 1967, Ser. No. 629,360

Claims priority, application Japan, Apr. 15, 1966, 41/23,504

Int. Cl. C08f *15/00, 29/24, 37/00*

U.S. Cl. 260—878 R 5 Claims

A process for preparing a vinyl chloride resin composition, characterized by polymerizing a monomer mixture of vinyl chloride and at least one monomer selected from the group consisting of alkylvinyl ether, ethylene, propylene and butene, in the presence of a copolymer of ethylene and vinyl ester or acrylic acid ester. Such vinyl chloride resin compositions per se exhibiting excellent impact strength, weatherability, heat stability and processability are also provided.

3,639,513

POLYPROPYLENE FIBERS OF IMPROVED DYEABILITY CONTAINING A TERPOLYMER OF A VINYLPYRIDINE AND ALKYL ACRYLATES OR METHACRYLATES

Kazuo Sadakata, Mitaka-shi, Minoru Sasaki, Ohtake-shi, Masahiro Hirose, Yamaguchi-ken, and Yasuo Nakamura, Yukio Mikida, Kazuo Ito, and Kuninobu Kimura, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Filed June 1, 1967, Ser. No. 642,701

Claims priority, application Japan, June 16, 1966, 41/39,107; June 17, 1966, 41/39,306; July 6, 1966, 41/44,018

Int. Cl. C08f *29/12, 33/08*

U.S. Cl. 260—878 R 5 Claims

A dyeable polypropylene fiber comprising polypropylene in admixture with a copolymer composed mainly of vinylpyridines and alkyl acrylates or alkyl methacrylates having an alkyl group containing 16 to 20 carbon atoms, and a process for dyeing said fiber characterized in that the fiber is treated with phosphite esters or alkylphenols to make the fiber excellent in fastness to light.

3,639,514

HYDROPHILIC GRAFT POLYMERS OF ETHYLENE/VINYLPYRROLIDONE COPOLYMER WITH ACRYLONITRILE GRAFTED THEREON BY POLYMERIZATION

Karl-Erwin Schnalke, Cologne-Flittard, Carlhans Suling and Heino Logemann, Leverkusen, and Raoul Resz, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 13, 1967, Ser. No. 667,354

Claims priority, application Germany, Sept. 19, 1966, F 50,232

Int. Cl. C08f *15/22*

U.S. Cl. 260—878 1 Claim

The invention relates to new acrylonitrile graft polymers and to a process for this production, using as a graft basis a copolymer of ethylene and vinylpyrrolidone and grafting acrylonitrile thereon.

The acrylonitrile graft polymers have an improved affinity for water and, at the same time, a high softening point.

3,639,515

PREPARATION OF α-OLEFIN BLOCK COPOLYMERS

Hugh J. Hagemeyer, Jr., and Marvin B. Edwards, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 28,826, May 13, 1960, which is a continuation-in-part of applications Ser. No. 615,775, Oct. 15, 1956, now Patent No. 3,067,183, and Ser. No. 668,840, July 1, 1957. This application Feb. 6, 1969, Ser. No. 797,246

The portion of the term of the patent subsequent to Oct. 12, 1988, has been disclaimed and dedicated to the Public

Int. Cl. C08f *1/30, 15/00*

U.S. Cl. 260—878 B 4 Claims

This invention relates to the solution polymerization of α-olefins to form block copolymers. The polymerization is conducted in the presence of a catalyst comprising titanium trichloride and a lithium component.

3,639,516

GRAFT COPOLYMERS

Gordon A. Sarfaty, Doncaster, Victoria, and Geoffrey W. Tregear, Heidelberg, Victoria, Australia, assignors to Cancer Institute Board, Melbourne, Victoria, Australia

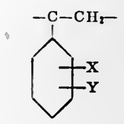
No Drawing. Filed June 23, 1969, Ser. No. 835,781

Claims priority, application Australia, July 19, 1968, 40.848/68

Int. Cl. C08f *15/00*

U.S. Cl. 260—818 R 8 Claims

A graft copolymer comprising a polymeric nucleus and surface grafted on to it copolymeric side chains comprising a multiplicity of mer units of the formula



wherein X is at least one group which is reactive with carbonylic steroids and Y is one or more optional substituents which is non-reactive with carbonylic steroids characterised in that substantially the bulk of said polymeric side chains surrounds said nucleus in a thin continuous and homogeneous layer.

3,639,517

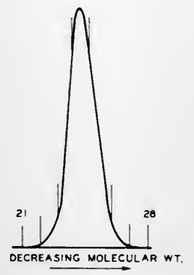
RESINOUS BRANCHED BLOCK COPOLYMERS

Alonzo G. Kitchen and Frank J. Szalla, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 22, 1969, Ser. No. 859,861

Int. Cl. C08f *19/08*

U.S. Cl. 260—879 12 Claims



Monovinyl-substituted aromatic hydrocarbons and conjugated dienes are sequentially polymerized with multiple additions of initiator and monovinyl-substituted aromatic monomer and subsequently treated with a polyfunctional treating agent to form resinous branched block copolymers which are polymodal in regard to molecular weight distribution.

3,639,518

ANTI-STATIC POLYMER COMPOSITIONS WITH DISCOLORATION SUPPRESSORS

Thomas Ellis Davies, Barry, Glamorgan, and Hubert Brian Hopkins, Swansea, Glamorgan, Wales, assignors to Dow Chemical Company Limited, London, England

No Drawing. Filed Sept. 29, 1967, Ser. No. 671,618

Claims priority, application Great Britain, Oct. 19, 1966, 46,728/66

Int. Cl. C08f *45/56;* C09k *3/16*

U.S. Cl. 260—880 R 8 Claims

An antistatic composition for use with polystyrene, polyolefins and other hydrocarbon polymers comprising an alkanolamide of organic acid and, as discolouration suppressor, an oxide, hydroxide, carbonate, bicarbonate or carboxylate of ammonium or metals such as sodium, potassium, magnesium or calcium.

3,639,519

PROCESS FOR PREPARING BLOCK COPOLYMERS BY REACTING LACTONE WITH A POLYMER

Henry L. Hsieh, Bartlesville, Okla., and Francis X. Mueller, Jr., Louisville, Ky., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 679,991, Nov. 2, 1967. This application May 2, 1968, Ser. No. 726,241

Int. Cl. C08f *15/04, 17/02, 19/02*

U.S. Cl. 260—880 6 Claims

A copolymer is formed by providing a polymer having at least one



group wherein M is an alkali metal such as lithium, reacting the polymer with one of an alkene oxide such as ethylene oxide, an aldehyde such as propanal, an epoxyaldehyde such as 2,3-epoxypropanal, a polyaldehyde such as 1,3,5-trioxane, a ketone such as 2-butanone, and an epoxy ketone such as 2,3-epoxy-5-hexanone, and contacting at least the reaction product thereof with at least one lactone such as epsilon-caprolactone to polymerize the lactone and form a lactone polymer block on the first provided polymer.

3,639,520

PRODUCTION OF BUTADIENE-STYRENE GRAFT COPOLYMERS WITH A NICKEL CARBOXYLIC ACID SALT OR NICKEL ORGANIC COMPLEX COMPOUND-TITANIUM TETRACHLORIDE-TRIALKYLALUMINUM CATALYST

Akira Onishi, Shiro Anzai, and Motoki Ishii, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 474,483, July 23, 1965. This application July 2, 1968, Ser. No. 741,908

Int. Cl. C08d *1/30;* C08f *11/08*

U.S. Cl. 260—880 6 Claims

A process for manufacturing rubbery or plastic butadiene graft copolymers having a cis-1,4 content of at least 85% and substantially no gel, which comprises polymerizing butadiene, and copolymerizing styrene at a temperature of from 80° C. to 180° C., with a catalyst system consisting of (A) an organic carboxylic acid salt or an organic metal complex compound of nickel, (B) titanium tetrachloride and (C) a trialkyl aluminum.

3,639,521

POLAR COMPOUND ADJUVANTS FOR IMPROVED BLOCK POLYMERS PREPARED WITH PRIMARY HYDROCARBYLLITHIUM INITIATORS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,804

Int. Cl. C08f *15/04*

U.S. Cl. 260—880 4 Claims

High raw tensile strength radial and linear block polymers are prepared by the incremental addition of monomers employing a particular sequence of addition using primary hydrocarbyllithium initiators with small amounts of polar compound adjuvants.

3,639,522

SELF-EXTINGUISHING HIGH IMPACT STYRENE POLYMERS

Munisamappa Narayana and Henno Keskkula, Midland, and Jerry E. Mason, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 4, 1969, Ser. No. 830,514

Int. Cl. C08f *29/22*

U.S. Cl. 260—880 R 3 Claims

The disclosure concerns self-extinguishing high impact styrene polymers containing dibromocarbene modified butadiene polymers.

3,639,523

BLOCK COPOLYMERS HAVING IMPROVED PHYSICAL PROPERTIES

Roy G. Hayter, Berkeley, and Eugene T. Bishop, Moraga, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 29, 1969, Ser. No. 872,385

Int. Cl. C08f *15/04, 15/40*

U.S. Cl. 260—880 8 Claims

The green strength, building tack, and high temperature properties of block copolymers are substantially improved by the presence of certain relatively low molecular weight polymer blocks of polymerizable monomers.

3,639,524
HYDROPHILIC GEL POLYMER INSOLUBLE IN WATER FROM POLYVINYLPYRROLIDONE WITH N-VINYL-2-PYRROLIDONE AND METHACRYLIC MODIFIER
Maurice Seiderman, 3306 Deronda Drive, Los Angeles, Calif. 90028
No Drawing. Filed July 28, 1969, Ser. No. 845,499
Int. Cl. C08f *15/40*
U.S. Cl. 260—885 8 Claims

A plastic or resin product obtained by mixing comminuted polyvinylpyrrolidone, vinylpyrrolidone, a modifier such as an organic methacrylate, optionally a crosslinking agent, and optionally a catalyst; and causing polymerization to take place by elevating the temperature. The inventive product is insoluble in water but is hydratable with water, and may take up as much as 90% by weight of water. The hydrated product is optically transparent and especially suitable for contact lenses.

3,639,525
RAW MIXTURE OF RUBBERY ISOBUTYLENE POLYMER WITH CRYSTALLINE TRANS-1,4-CONJUGATED DIOLEFIN POLYMER
Eric G. Kent, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited
No Drawing. Filed Nov. 27, 1967, Ser. No. 685,954
Claims priority, application Canada, Dec. 14, 1966, 977,956
Int. Cl. C08d *9/08*
U.S. Cl. 260—888 4 Claims

A protective covering composition, suitable for use as an electrical tape, which comprises (A) a solid raw polymer mixture of 60–90 parts by weight of a rubbery polymer of isobutylene and (B) 40–10 parts by weight of a high molecular weight polymer of a C_4–C_8 conjugated diolefin, said diolefin polymer having at least 85% of the diolefin units in the trans-1,4 configuration, said parts being parts per 100 parts total polymer.

3,639,526
CHLORINATED VINYL CHLORIDE RESIN COMPOSITIONS
Michihiro Kameishi, Osaka, Japan, assignor to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan
Continuation of application Ser. No. 622,026, Mar. 8, 1967. This application Feb. 17, 1970, Ser. No. 12,897
Claims priority, application Japan, Feb. 22, 1966, 41/10,956; Mar. 4, 1966, 41/13,472
Int. Cl. C08f *29/24;* C08d *9/08*
U.S. Cl. 260—891 1 Claim

Chlorinated vinyl chloride resin compositions comprising chlorinated vinyl chloride resins of at least 61% chlorine content mixed with vinyl chloride resins combined with or in alternation with chlorinated vinyl chloride resins, of less than 61% chlorine; and to which mixture, for other embodiments, rubbery butadiene polymers-vinyl compound interpolymers may be mixed; and methods of preparing the same.

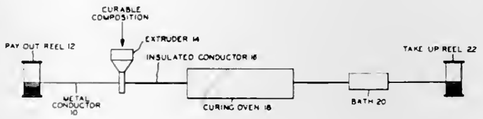
3,639,527
POLYESTER-IONIC COPOLYMER THERMOPLASTIC MOULDING COMPOSITIONS
Ludwig Brinkmann and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,030
Claims priority, application Germany, Sept. 5, 1967, P 16 94 190.5
Int. Cl. C08f *29/36;* C08g *39/10*
U.S. Cl. 260—873 13 Claims

The invention provides thermoplastic moulding compositions comprising linear saturated polyesters and ionic copolymers from which dimensionally stable shaped articles having a high impact strength can be produced.

3,639,528
DYEABLE POLYOLEFINS CONTAINING ACID SALTS OF POLYVINYLPYRIDINES
Tad L. Patton, Baytown, Tex., and Raymond R. Haynes, Laurel, Md., assignors to Esso Research and Engineering Company
No Drawing. Filed July 5, 1968, Ser. No. 742,504
Int. Cl. C08f *33/08;* D06p *3/00*
U.S. Cl. 260—895 13 Claims

Uniform deep acid dyeing of shaped polyolefin articles, such as polypropylene fibers, is achieved by blending into the polyolefin, before shaping, vinyl pyridine polymers that have been reacted with either sulfuric acid, a sulfonic acid, a phosphoric acid, or certain derivatives thereof.

3,639,529
METHOD FOR MANUFACTURING CROSS-LINKED CHLORINATED POLYMERIC SYSTEMS
Burton T. MacKenzie, Jr., Monroe, and Joseph E. Betts, Westport, Conn., assignors to General Electric Company
Filed July 29, 1970, Ser. No. 59,095
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 C 8 Claims



A chlorinated polymer is compounded with a lead salt stabilizer and a cross-linking agent, and then cured under steam pressure to effect cross-linking of the polymer. The resulting cross-linked product, bearing white surface areas or spots, is passed through a polar organic solvent, whereby the spots appearing on the surface of the cross-linked product are removed therefrom by the action of the solvent.

3,639,530
HIGH TENACITY RESINOUS PACKAGING STRAP
Daniel J. Ryan, Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Original application May 27, 1965, Ser. No. 459,165. Divided and this application May 22, 1969, Ser. No. 852,957
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B 4 Claims

A high tenacity packaging strap of a monoaxially oriented mixture of isotactic polypropylene and a small amount of a metal ionized alpha-olefin/unsaturated carboxylic acid copolymer.

3,639.531
REACTIONS WITH ELEMENTAL PHOSPHORUS TO PRODUCE PHOSPHORUS ACID ESTER PRODUCTS AND THE REACTION PRODUCTS SO PRODUCED
Chisung Wu, New Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,674
Int. Cl. C07f *9/08, 9/40*
U.S. Cl. 260—920 4 Claims

Organophosphorus compositions produced by reacting (a) elemental phosphorus (b) an epoxide or an eipsulfide, and (c) an alcohol or a mercaptan, in the presence

of a catalytic quantity of a base, and thereafter reacting the product of (a), (b) and (c) with oxygen or other oxidizing agent in proportions, at a temperature and for a period of time sufficient to convert substantially all trivalent phosphorus to pentavalent phosphorus. The compositions are useful as intermediates for the production of useful surfactants and also as epoxy resin hardeners.

3,639,532
ESTERS AND/OR AMIDES OF ACIDS OF PHOSPHORUS CONTAINING A GROUP HAVING THE FORMULA $ROCH_2NHCO$—
Gunter Oertel, Cologne-Flittard, Hans Holtschmidt, Leverkusen-Steinbuechel, and Wolfgang Carl, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 23, 1968, Ser. No. 723,584
Claims priority, application Germany, Apr. 25, 1967, F 52,234
Int. Cl. C07f *9/24;* C07d *105/02;* C08f *45/85*
U.S. Cl. 260—923 4 Claims

Sulfur free esters and/or amides of acids of phosphorus which contain at least one group having the formula $ROCH_2NHCO$—, wherein R is alkyl, useful as additives for resins to impart flame-resistance.

3,639,533
TRIORTHOPHOSPHATE ESTERS OF TRIMETHYLOL PROPANE AND SALTS THEREOF
William G. De Pierri, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company
No Drawing. Filed Apr. 4, 1968, Ser. No. 718,901
Int. Cl. C07f *9/02;* C02b *5/06*
U.S. Cl. 260—928 7 Claims

Triorthophosphate ester of trimethylol propane and the alkali metal and ammonium salts thereof.

3,639,534
HYDROXY TERMINATED PHOSPHORUS-CONTAINING HALF ESTERS OF BENZOPHENONE TETRACARBOXYLIC ACID
Harold E. Reymore, Jr., Wallingford, and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 556,559, June 10, 1966. This application Nov. 5, 1968, Ser. No. 773,650
Int. Cl. C07f *9/08*
U.S. Cl. 260—930 1 Claim

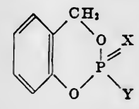
Polyols are described which are the half esters derived by reacting 3,3',4,4'-benzophenone tetracarboxylic acid dianhydride with 2 moles, per mole of dianhydride, of the adduct of 1 mole of 105 percent phosphoric acid and 5.8 moles of propylene oxide. The polyols so obtained have 1 free carboxy group for each anhydride moiety in the starting material. The polyols are intermediates in the preparation of high temperature resistant polyurethane foams.

3,639,535
TETRAPHOSPHONATES OF DIALLYL CHLORENDATE
Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed May 3, 1968, Ser. No. 726,538
Int. Cl. C07f *9/40;* C08g *22/44*
U.S. Cl. 260—932 3 Claims

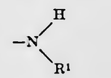
Phosphorus-containing compounds of diallyl chlorendate. The compounds have the properties of imparting flame-retardancy and intumescence to polymeric materials.

3,639,536
STABILIZED SALIGENIN CYCLIC PHOSPHORUS ESTERS
Noboru Muramoto, Ikeda-shi, and Johan Saiga and Yoshitsugu Suzuki, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,395
Claims priority, application Japan, Apr. 6, 1968, 43/14,828; Nov. 7, 1968, 43/81,427
Int. Cl. C07d *105/04;* A01n *9/36*
U.S. Cl. 260—937 3 Claims

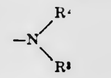
A stabilized composition consisting essentially of a saligenin cyclic phosphorus ester represented by the formula,



wherein X represents oxygen or sulfur and Y represents methoxy, a lower alkylthio having 1 to 4 carbon atoms, a lower alkenylthio having 1 to 4 carbon atoms, a phenylthio,



wherein R^1 is a lower alkyl having 2 to 4 carbon atoms, or



wherein R^2 and R^3 are a lower alkyl having 1 to 4 carbon atoms; and a stabilizer compound of a secondary arylamine including a compound having a pyrrole nucleus in the structural formula, the amount of the stabilizer compound being 0.1 to 20% by weight based on the weight of said esters, which is advantageously employed for the manufacture of insecticides.

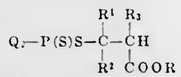
3,639,537
ORGANO GLYOXYLONITRILE OXIMINO PHOSPHATES
Harold A. Kaufman, Piscataway, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Oct. 11, 1966, Ser. No. 585,742
Int. Cl. C07f *9/02;* A01n *9/36*
U.S. Cl. 260—940 5 Claims

Pesticidal compounds classed as phenyl- and substituted-phenylglyoxylonitrile oximino phosphates and phosphonates. Typical of the compounds provided are the O,O-dialkyl O-(4 - halophenylglyoxylonitrile oximino) phosphates and the S-alkyl O-(4 - halophenylglyoxylonitrile) alkylphosphonates. The invention further provides methods using said compounds as pesticides, as well as pesticidal compositions containing the new compounds and pesticidal carriers therefor.

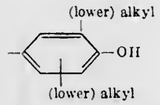
3,639,538
HINDERED PHENOLIC DERIVATIVES OF CERTAIN PHOSPHINODITHIOIC ACIDS OR AN O,O-DIESTER OF PHOSPHOROTHIOLOTHIONIC ACID
Eduard K. Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,696
Int. Cl. C07f *9/16, 9/32, 9/40*
U.S. Cl. 260—941 10 Claims

Hindered phenolic derivatives of certain phosphinodithioic acids and O,O-diesters of phosphorothiolothionic acids are prepared by the addition of (a) an alpha, beta-unsaturated ester of a hindered hydroquinone and (b) a

phosphinodithioic acid or an O,O-diester of phosphorothiolothionic acid. Compounds are obtained which have the formula



wherein —Q is —R^4 or OR^4
—R is



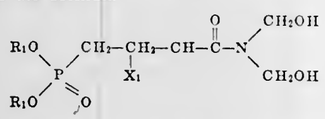
where said (lower)alkyl has from 1 to 6 carbon atoms;
—R^1, R^2, —R^3 are each hydrogen, lower alkyl from 1 to 6 carbon atoms, phenyl, benzyl or

$$-C_mH_{2m}COOR$$

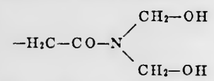
where m is 0 to 6;
—R^4 is alkyl from 1 to 24 carbon atoms, cycloalkyl from 1 to 6 carbon atoms, phenyl and benzyl and when Q is —OR^4 the two —R^4 groups can be —$(CH_2)_n$—, where n is 2 or 3, forming a cyclic O,O-diester of phosphorothiolothionic acid.
The compounds are useful as stabilizers for organic materials which are subject to oxidative and thermal deterioration.

3,639,539
PHOSPHORUS-CONTAINING N,N-DIMETHYLOLCARBOXYLIC ACID AMIDES
Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Mar. 26, 1968, Ser. No. 715,980
Claims priority, application Switzerland, Apr. 11, 1967, 5,131/67
Int. Cl. C07f *9/40*
U.S. Cl. 260—942 **6 Claims**

Phosphorus-containing N,N-dimethylolcarboxylic acid amides of the formula



wherein R_1 is an alkyl or halogen alkyl residue and X_1 is hydrogen or a group of the formula



These amides are suitable for rendering cellulose-containing fibrous materials flameproof. The flameproof finish is resistant to washing and dry-cleaning and improves the dry crease angle of the finished material.

3,639,540
SULFINYL PHENYL ESTERS OF THIONOPHOSPHORIC OR THIONOPHOSPHONIC ACIDS
Richard Sehring, Ingelheim am Rhein, Germany, assignor to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany
No Drawing. Filed Dec. 3, 1968, Ser. No. 780,870
Claims priority, application Germany, Dec. 4, 1967, P 16 43 706.2; Feb. 27, 1968, P 16 43 764.2
Int. Cl. C07f *9/18;* **A01n** *9/36*
U.S. Cl. 260—949 **2 Claims**

Sulfinylphenyl esters of thionophosphoric acid or thionophosphonic acid and are useful as insecticides and acaricides.

3,639,541
ESTER-CONTAINING POLYOLS HAVING HALOGEN AND PHOSPHORUS ATOMS
Arthur L. Austin, Southgate, Louis C. Pizzini, Trenton, and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed May 13, 1968, Ser. No. 728,813
Int. Cl. C07f *9/08;* **C08g** *22/44*
U.S. Cl. 260—952 **8 Claims**

Ester-containing polyols are prepared by the reaction of (a) polyhydroxyl-containing compounds with (b) acids or oxides of phosphorus, (c) halogen-containing organic acid anhydrides, and (d) alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant polyurethane foams.

3,639,542
ESTER-CONTAINING POLYOLS HAVING HALOGEN AND PHOSPHORUS ATOMS THEREIN
Louis C. Pizzini, Trenton, and William W. Levis, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed May 13, 1968, Ser. No. 728,840
Int. Cl. C07f *9/08, 9/50;* **C08g** *22/44*
U.S. Cl. 260—952 **6 Claims**

Ester-containing polyols are prepared by the reaction of polyhydroxyl-containing phosphorus compounds with halogen-containing organic acid anhydrides and alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant rigid polyurethane foams.

3,639,543
PROCESS FOR MAKING PHOSPHORUS-CONTAINING POLYETHER POLYOLS AND PRODUCT OF THE PROCESS
Robert A. Newton and Donnell A. Ballard, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 19, 1968, Ser. No. 706,623
Int. Cl. C07f *9/08;* **C08g** *22/44*
U.S. Cl. 260—953 **9 Claims**

Phosphorus-containing polyether polyols are made by a process comprising reacting an alkylene oxide with a mixture of a polyether polyol and a phosphoric acid. The phosphorus-containing polyether polyols produced by this process are useful in making fire resistant polyurethane foams.

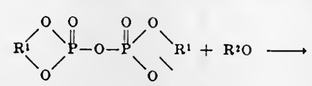
3,639,544
PROCESS FOR MANUFACTURING HIGH MOLECULAR WEIGHT TRIARYL PHOSPHATES AND REACTION PRODUCTS THEREOF
Albert L. Smith, Middleport, Ohio, assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Nov. 22, 1967, Ser. No. 684,969
Int. Cl. C07f *9/12, 9/08*
U.S. Cl. 260—966 **4 Claims**

A composition of matter and its phosphate derivatives consisting essentially of a high boiling point aromatic material containing from 9 to 18 carbon atoms and 3,4 xylenol and from 10 to 50% by weight of a lower boiling point aromatic material consisting essentially of 2,6 xylenol and a process of manufacturing the same.

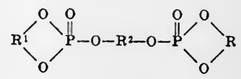
3,639,545
PROCESS FOR MAKING CYCLIC ALKYLENE PHOSPHATE, ALKYLENE ESTERS
Robert D. Wilcox, Palo Alto, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 26, 1968, Ser. No. 715,993
Int. Cl. C07f *9/08*
U.S. Cl. 260—971 **6 Claims**

Cyclic alkylene phosphate, alkylene esters are prepared by reacting a bis-alkylene pyrophosphate with an

equimolar proportion of a vicinal alkylene oxide, R^2O. This reaction can be represented as follows:



(I)



(II)

where R^1 and R^2 are vicinal alkylene groups. The compound of Formula II can be reacted with various active hydrogen compounds such, for example, as alcohols, glycols, water or the like, to open its rings and form alkylene phosphate esters useful as fire retardants in polyurethanes.

3,639,546
PROCESS FOR THE PRODUCTION OF PHOSPHATE ESTERS
William W. West, El Cerrito, Robert O. Bolt, San Rafael, and Chester D. Gordon, El Sobrante, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed July 29, 1968, Ser. No. 748,206
Int. Cl. C07f *9/12;* **C09k** *3/00*
U.S. Cl. 260—974 **7 Claims**

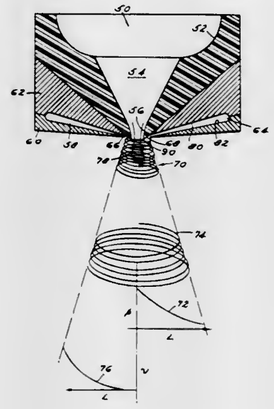
A process for the production of a mixed alkyl aryl phosphate ester, useful as a hydraulic fluid or other functional fluid, which comprises reacting $POCl_3$ and an alkanol at low temperature while purging with nitrogen, thereafter stripping product HCl from the reaction mixture with nitrogen at a temperature of 115°–125° F. under pressure of not more than 100 mm. Hg, the HCl free mixture is designated PCM, followed by reaction of the PCM with an alkali metal arylate to produce the ester.

3,639,547
METHOD FOR PREPARING O-METHYL-S-METHYL PHOSPHOROAMIDOTHIOATE
Philip S. Magee, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 468,986, July 1, 1965. This application Jan. 21, 1969, Ser. No. 792,785
Int. Cl. C07f *9/24;* **A01n** *9/36*
U.S. Cl. 260—989 **14 Claims**

Stable O-methyl-S-methylphosphoroamidothioate, useful as an insecticide, is prepared by ammoniating O,O-dimethylhalophosphorothioate with aqueous ammonia to form O,O-dimethylphosphoroamidothionate and reacting the O,O-dimethylphosphoroamidothionate with dimethyl sulfate or a methyl sulfonate at about 20 to 100° C.

3,639,548
METHOD OF PRODUCING METAL POWDERS
Terry S. Ullman, Royal Oak, and Chester J. Lecznar, Warren, Mich., assignors to Alloy Metals, Incorporated, Troy, Mich.
Original application Jan. 16, 1967, Ser. No. 609,562, now Patent No. 3,501,802. Divided and this application Oct. 31, 1969, Ser. No. 871,378
Int. Cl. B01j *2/04*
U.S. Cl. 264—12 **4 Claims**

This disclosure relates to a method of producing metal powders in a swirling gas stream. Molten metal is introduced into a downwardly directed swirling gas stream having a greater pressure at the vortex or axis of the gas stream than at the perimeter or slip stream. The gas stream simultaneously atomizes the molten metal and suspends the atomized particles in the swirling slip stream, preventing the particles from falling directly to the bottom of the atomizing chamber. The particles may then be collected in the dry state, rather than in a fluid as shown by the prior art. The gas stream in the disclosed embodiment



enters the atomizing nozzle tangentially to its axis, and the velocity of the swirling gas is increased by the nozzle configuration to produce a self-sustaining tornado-effect, rolling and shearing the atomized metal particles and forming a relatively dense metal powder.

ERRATUM

For Class 264—41 see:
Patent No. 3,639,567

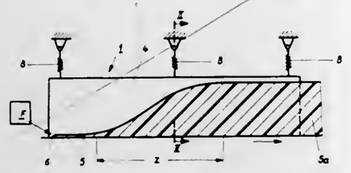
3,639,549
SHATTERED RESINS
Lewen B. O. Tugwell, Farnham, England, assignor to Shattaline Limited, Evanton, Ross and Cromarty, Scotland
No Drawing. Continuation-in-part of application Ser. No. 794,351, Jan. 27, 1969, which is a continnation-in-part of application Ser. No. 498,093, Oct. 19, 1965. This application May 14, 1970, Ser. No. 37,289
Int. Cl. B29c *25/00;* **C08g** *51/26;* **C08j** *1/14*
U.S. Cl. 264—51 **3 Claims**

A method of producing a decorative body of an unsaturated polyester resin includes shaping a settable liquid mixture containing the resin and water, and allowing the mixture to set, the setting of resin generating sufficient heat to evaporate the water and thereby causing internal cracks in the set shape to give a decorative effect.

3,639,550
METHOD OF FORMING RECTANGULAR CROSS-SECTION FOAM POLYURETHANE BY VIBRATING THE SIDES OF THE FORMING CONVEYOR
Heinz Darmochwal, Memmingen, Germany, assignor to Metzeler AG, Munich, Germany
Filed Aug. 19, 1968, Ser. No. 753,503
Claims priority, application Germany, Aug. 21, 1967, P 17 04 845.2
Int. Cl. B29d *27/04*
U.S. Cl. 264—51 **5 Claims**

A continuous slab of foam material is produced by pouring free-rising polyurethane foam into a confining path defined by a liner of release paper which travels with a substantially horizontal bottom wall between two up-

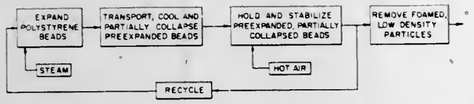
standing side walls to convey the loaf through a foaming zone where the loaf rises to form a slab. The side walls are vibrated to prevent adherence of rising loaf to the liner in regions adjacent to the side walls and to thus insure the formation of a slab having a substantially rectangular cross-sectional outline. The means for vibrating the side walls may include cams and followers, crank drives, eccentrics or analogous vibrating devices which impart to side walls vertical vibratory movements at right angles to the direction of advance of the loaf.



3,639,551
CYCLIC METHOD FOR PRODUCING LOW-DENSITY POLYSTYRENE FOAM BEADS

Irby H. Leach, 2094 Emerson, Napa, Calif. 94558

Filed July 24, 1969, Ser. No. 844,344
Int. Cl. B29d *27/00*
U.S. Cl. 264—55 **5 Claims**



Polystyrene beads are subjected to heated water vapor to partially expand the beads and they are thereafter transported to a holding chamber. During transportation, a partial collapse of the pre-expanded beads takes place. In the chamber the beads are subjected to heated air to stabilize their volume. From the holding chamber the pre-expanded beads are recycled a plurality of times until the beads have a density of about 0.5 pounds per cubic foot or less. The temperature of the water vapor is raised during each successive cycle.

3,639,552
METHOD OF PRODUCING FERRO-CEMENT PIPES

Michal Sandowicz, Ul. Dabrowicka 12, Warsaw 33, Poland

Filed Oct. 17, 1968, Ser. No. 769,476
Int. Cl. B28b *1/08*
U.S. Cl. 264—71 **3 Claims**



A method of molding a ferro-cement pipe with a multi-layer mesh reinforcement therein comprising moving an annular piston element downwardly within and in engagement with the interior surface of an external mold, an internal core surrounded by the multi-layer mesh reinforcement moving with the piston element, wet cement being introduced into the upper end of the mold cavity between the external mold and the internal web while vibrating the concrete, and then removing the internal core. A funnel is temporarily provided at the upper end of the external mold for receiving concrete.

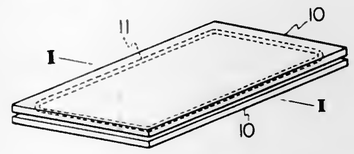
ERRATUM

For Class 264—75 see:
Patent No. 3,639,573

3,639,553
METHOD OF MANUFACTURING SHEETS OF POLYMERIZED RESINOUS MATERIAL

Hideo Sueda, Takeshi Yamawaki, and Keiichi Kida, Tokyo-to, Masahiro Hayashi, Yokohama-shi, Kazuo Endo, Tokyo-to, and Mamoru Kaneko, Yokohama-shi, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha (also trading as Mitsubishi Chemical Industries Limited), Tokyo-to, Japan

Filed July 10, 1969, Ser. No. 840,644
Claims priority, application Japan, July 17, 1968, 43/50,372, 43/50,373, 43/50,374; May 7, 1969, 44/35,050
Int. Cl. B29c *5/00*
U.S. Cl. 264—90 **21 Claims**



A method of polymerizing polymerizable resinous material in a cell including a pair of templates and a packing member sandwiched between them. The packing member is made of a compressible thermoplastic material, and by compressing the packing member, subatmospheric pressure is created in the cell, thus firmly holding the templates without using any mechanical clamping means.

3,639,554
METHOD OF MAKING SYNTHETIC-RESIN FOILS WITH PAPER-LIKE CHARACTERISTICS

Thomas Gough Hutt, 936 Pretorius St., Pretoria, Transvaal, Republic of South Africa

No Drawing. Filed July 28, 1969, Ser. No. 845,500
Claims priority, application Republic of South Africa, July 29, 1968, 68/4,893
Int. Cl. B29c *17/07*
U.S. Cl. 264—95 **5 Claims**

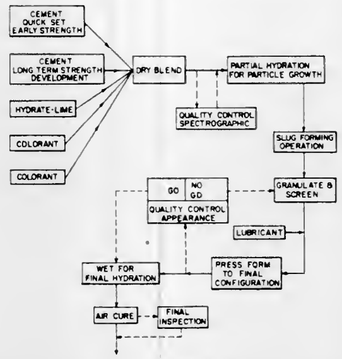
A method of making synthetic-resin foils, especially foils consisting in substantial part of a thermoplastic wherein 5 to 20% by weight of the mixture adapted to be formed into the foil is made up of a masterbatch or color concentrate consisting of 50 to 75% by weight of a pigment (organic or inorganic), preferably titanium dioxide, and 50 to 25% by weight of a wax, the latter making up the remainder of the color concentrate or masterbatch. The wax is a saturated hydrocarbon having more than 33 carbon atoms per molecule (with a carbon number of at least 33) and an average molecular weight of about 750.

3,639,555
METHOD OF MAKING A CONCRETE PLUG

William J. Steffan, Fremont, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Filed Nov. 21, 1969, Ser. No. 878,786
Int. Cl. B28b *3/00*
U.S. Cl. 264—140 **9 Claims**

A method of making a concrete plug comprising the steps of providing an anhydrous cement mix, moisturizing this mix slightly to partially hydrate the mix and provide for particle growth, pressing the partially hydrated mix into a slug and then grinding the slug to create a mix having a predetermined particle size larger than that of the starting mix, pressing the mix into plugs of final form,

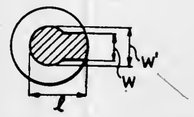


wetting the plugs to start complete hydration, and completely hydrating the plug under ambient conditions.

3,639,556
METHOD FOR SPINNING COMPOSITE FILAMENTS

Masao Matsui, Takatsuki, Susumu Tokura, Osaka, and Masahiro Yamabe, Neyagawa, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Original application Dec. 13, 1968, Ser. No. 783,585. Divided and this application Jan. 12, 1970, Ser. No. 7,434
Claims priority, application Japan, Dec. 21, 1967, 42/82,256, 42/82,257; Oct. 9, 1968, 43/73,752
Int. Cl. B29f *3/10*
U.S. Cl. 264—171 **3 Claims**



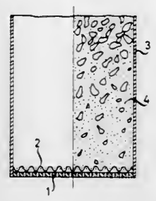
A composite filament suitable for manufacturing ladies' stocking having a crimpability comprising at least two fiber-forming components differing in shrinkability, which has such a particular cross-section that one component is interposed into the other component, for example, in a wedge-shape and occupies only 5 to 30% of the peripheral surface of the filament, is manufactured by flowing two independent same or different spinning materials in opposite directions to each other in two ducts each connecting to a common conduit and combining them and interposing a thin layer-like flow of another spinning material different from the above-described spinning materials between the two spinning material flows at the combined portion in the above-described particular cross-sectional shape and then extruding the thus combined spinning materials through the conduit from a common orifice.

3,639,557
PROCESS AND DEVICE FOR FILTERING MELTS OF FIBER-FORMING HIGH MOLECULAR WEIGHT POLYMERS

Otto Pfannenschmid, Bobingen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 1, 1970, Ser. No. 24,729
Claims priority, application Germany, Apr. 12, 1969, P 19 18 686.8
Int. Cl. B28b *3/20;* **D01d** *1/10*
U.S. Cl. 264—176 **8 Claims**

To remove impurities and inhomogeneities from spinning masses of fiber- and film-forming high molecular weight polymers the masses are filtered through a filter pack containing a finely divided material which is inert



towards the spinning mass and the mean fineness of grain of which increases in the direction to the spinneret according to an exponential function.

3,639,558
IMMUNOLOGICAL REAGENT PARTICLES HAVING PROTEINACEOUS MATERIALS COVALENTLY BONDED THERETO

Louis Csizmas, 1737 Inwood Court, and Virendra Patel, 1424 Locust St., both of Elkhart, Ind. 46514

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,688
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 424—12 **7 Claims**

Reactive particles of controlled reactivity and size which are capable of direct chemical attachment to biological substances can be made by coating solid carrier particles with at least one coat of a proteinaceous material by the use of a first coupling agent and then attaching to said proteinaceous coat through covalent bonding a second coupling agent capable of attachment to biological substances through covalent bonding. Insolubilized biological reagents may be produced from such reactive particles merely by mixing these particles with biological substances which will be bound thereto through the second coupling agent. With the use of different coupling agents varying reactivity can be attained, and the desired final particle size will depend upon the number of coats of the proteinaceous material employed.

3,639,559
METHOD OF ISOLATING ANTIGENS AND/OR ANTIBODIES FROM PROTEIN MIXTURES

Barbara Tax, Goethestrasse 7, Graz, Austria

No Drawing. Filed July 9, 1968, Ser. No. 743,302
Claims priority, application Austria, Aug. 22, 1967, A 7,706/67
Int. Cl. A61r *27/00*
U.S. Cl. 424—12 **2 Claims**

Insoluble antigen and antibody derivatives are produced by adding formaldehyde to solutions or sera containing antigen or anti-body protein. These insoluble derivatives are stable specific immuno-adsorbents which are suitable for isolating homologous antibodies or antigens from mixtures with other proteins, and which can be repeatedly used. For eluting antibodies and antigens bound to immuno-adsorbents aqueous propionic acid has proved to be a generally applicable agent.

3,639,560
VETERINARY TREATMENT

David Martin Moran, Felpham, Bognor Regis, and Jack Vivian Croucher, Crawley, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Filed July 7, 1970, Ser. No. 52,925
Claims priority, application Great Britain, July 8, 1969, 34,256/69
Int. Cl. A61j *3/02;* **A61m** *3/00;* **A61k** *27/12*
U.S. Cl. 424—22 **9 Claims**

Method and composition of sustained release form for treating mammary disorders such as bovine mastitis. Bead

lets of 1 to 500 microns in diameter and containing a therapeutic agent are administered during the animal's dry period via the streak canal so that substantially all the therapeutic agent is released in the mammary gland before commencement of the lactation period.

3,639,561
VAGINAL SUPPOSITORIES AND IMPREGNATED TAMPONS

Maxwell Gordon, Philadelphia, Pa., and Carleton C. Stewart, Turnersville, N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,051
Int. Cl. A61j *13/08;* **A61k** *9/02, 17/00*
U.S. Cl. 424—28 **13 Claims**

Contraceptive compositions comprising prostaglandin F2α or E2, oxytocin, adenosine triphosphate and ethylene diamine tetraacetic acid in the form of vaginal suppositories and/or impregnated tampons and methods of preventing conception or implantation by inserting in an animal organism said compositions after exposure to conception.

3,639,562
VAGINAL SUPPOSITORIES AND IMPREGNATED TAMPONS

Maxwell Gordon, Philadelphia, Pa., and Carleton C. Stewart, Turnersville, N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,052
Int. Cl. A61j *3/08;* **A61k** *9/02, 17/00*
U.S. Cl. 424—28 **11 Claims**

Contraceptive compositions comprising oxytocin, adenosine triphosphate and ethylene diamine tetraacetic acid in the form of vaginal suppositories and/or impregnated tampons and methods of preventing conception or implantation by inserting in an animal organism said compositions after exposure to conception.

3,639,563
MOUTHWASH CONTAINING POLYMERIC POLYOXYETHYLENE NONIONIC SURFACE ACTIVE AGENT AND CHLOROFORM

Joseph Paul Januszewski, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 734,544, June 5, 1968. This application July 23, 1970, Ser. No. 57,767
Int. Cl. A61k *7/16*
U.S. Cl. 424—49 **16 Claims**

The present invention provides an alcoholic aqueous mouthwash having superior taste characteristics. The mouthwash contains between about 0.5% and 3% of a polymeric polyoxyethylene containing nonionic surface active agent wherein the polyoxyethylene component of the polymer comprises at least about 40% of the polymer. The mouthwash also contains a small effective amount of chloroform to effect a stimulation of the taste characteristics thereof.

3,639,564
METHOD OF SUGAR COATING TABLETS

Ryuichi Kawata and Hiroitsu Kawada, Tokyo, Tadayoshi Ohmura, Niiza, and Sumio Uematsu, Urawa, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,105
Int. Cl. A01n *17/00;* **A61k** *9/00*
U.S. Cl. 424—35 **6 Claims**

Tablet cores containing medicaments, particularly, hygroscopic medicaments are coated by applying directly thereto sugar syrup containing a sucrose higher fatty acid ester without applying water proof coating or other subcoating treatment.

3,639,565
GASTRIC-RESISTANT TABLETS COATED WITH ERYTHROSINE AND HYDROXYPROPYLETHYLCELLULOSE

Elliott Prillig, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,915
Int. Cl. C08d *27/76, 27/02;* **C09d** *11/14*
U.S. Cl. 424—35 **1 Claim**

A composition consisting essentially of hydroxypropylmethylcellulose and erythrosine has been found to be substantially insoluble in gastric juices but readily soluble in intestinal juices. It therefore provides an excellent coating composition for tablets, granules and powders intended for dissolution in the intestines and for tablets, granules and powders containing a drug sensitive to the acidic environment of the stomach.

3,639,566
VAGINAL SUPPOSITORY CONTAINING *LACTOBACILLI ACIDOPHILUS* DOEDERLEINI

Ryoichi Naito, Ibaragi, Yoshigoro Oguro, Osaka, and Takuji Doi, Kyoto, Japan, assignors to The Green Cross Corporation, Osaka, Japan

No Drawing. Filed July 29, 1970, Ser. No. 59,354
Claims priority, application Japan, Jan. 12, 1970, 45/3,666
Int. Cl. A61j *3/08;* **A61k** *9/02;* **C12k** *1/08*
U.S. Cl. 424—37 **8 Claims**

Strains of *Lactobacillus acidophilus* Doederleini isolated from healthy young women's vagina had been continuously and successively cultured in culture media containing various kinds of antibiotics to make the strains antibiotics-resistant; the bacilli are cultivated in an adequate liquid culture media under a semi-anaerobic condition; culture media with grown bacilli are mixed with sterilized starch, which is separated from said media; starch with absorbed bacilli is added with dried sterilized starch and sealed in gelatin capsules after addition of estriol.

3,639,567
METHOD FOR CABLE-BLOCKING WITH POLYURETHANE FOAM

Harold C. Hervig, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,628
Int. Cl. B29d *27/04;* **H02g** *15/20*
U.S. Cl. 264—45 **5 Claims**

An improvement in the method for in situ formation of gas-tight cable blocks in pressurized multi-conductor cables, the improvement comprising forming the cable block from a self-curing mixture of polyurethane precusor ingredients that exhibits a controlled foaming as it cures and thus a controlled expansion that forces the mixture between the conductors in the cable. The polyurethane composition reaches a viscosity of at least about 50,000 centipoises before a major amount of foaming and during foaming expands to between 5 and 25 percent of its original size.

3,639,568
GAS-RELEASABLE AND FOAMABLE COMPOSITIONS

William H. Schmitt, Elmhurst, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,876
Int. Cl. A61r *7/00, 7/06, 9/02*
U.S. Cl. 424—43 **22 Claims**

Gas releasable and foamable compositions, adapted to be packaged in conventional non-pressurized containers as, for example, metal or plastic collapsible or squeezable tubes, comprising substantially anhydrous compositions containing a compressible water-insoluble gas, particularly in the form of an aliphatic hydrocarbon or halogenated

hydrocarbon, dissolved in an organic solvent, such as a polyethylene glycol, which organic solvent is also water-soluble, and supplemental agents to complete the compositions for their intended uses, such as solid detergent tablets, suppositories, shaving creams, mouthwashes, enemas, drain cleaners, etc. When said compositions are wetted or admixed with water, said dissolved compressible gas is displaced from said organic solvent and is released in the form of a gas or, in certain cases, a gas to form a foam.

3,639,569
ORAL COMPOSITIONS FOR CALCULUS RETARDATION

Ralph F. Medcalf, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,685
Int. Cl. A61k *7/16, 27/00*
U.S. Cl. 424—48 **8 Claims**

Oral compositions, such as toothpaste, mouthwash, and the like, containing certain tris(phosphonoalkyl)amines and their salts which retard dental calculus formation without damaging tooth structure.

3,639,570
ORAL HYGIENE WITH AMINOPOLYUREYLENE RESIN

Paul Sheldon Grand, South Bound Brook, and Joseph Gerald Becker, Martinsville, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,134
Int. Cl. A61k *7/16*
U.S. Cl. 424—54 **10 Claims**

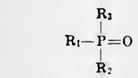
A method of improving oral hygiene by inhibiting growth of streptococci and inhibiting formation of calculus and caries comprising intermittently contacting the oral cavity with a composition comprising an effective amount of an aminopolyureylene resin having a molecular weight in the range of about 300 to 100,000 in a compatible, nontoxic carrier and compositions for use in the method.

3,639,571
COMPOSITION AND METHOD FOR RETARDING PLAQUE AND DENTAL CALCULUS

Samuel Turesky, 84 Wallis Road, Chestnut Hill, Mass. 02167, and Irving Glickman, 24 Manor House Road, Newton, Mass. 02159

No Drawing. Continuation-in-part of application Ser. No. 530,781, Mar. 1, 1966, which is a continuation-in-part of application Ser. No. 679,994, Nov. 2, 1967, which in turn is a continuation-in-part of application Ser. No. 763,491, Sept. 23, 1968. This application Jan. 29, 1970, Ser. No. 6,933
Int. Cl. A61k *7/16*
U.S. Cl. 424—54 **13 Claims**

Formation of bacteria, e.g. of the type resulting in formation of bacteria, e.g. of the type resulting in the formation of dental plaque and dental calculus, is retarded by exposing surfaces to be protected to a composition containing compounds of the formula:



Where one of R_1, R_2 and R_3 is an amine group or substituted amine group and R_2 and R_3 are physiologically-tolerable organic radicals.

3,639,572
EYELINER COMPOSITION

Herbert W. Heinrich, Ridgewood, N.J., and Ingeborg M. Schmitt, Flushing, N.Y. (both % Chas. Pfizer & Co., 235 E. 42nd St., New York, N.Y. 10017)

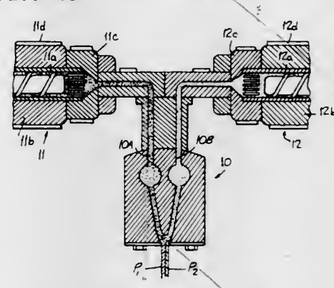
No Drawing. Continuation-in-part of application Ser. No. 419,575, Dec. 18, 1964. This application Feb. 27, 1967, Ser. No. 619,018
Int. Cl. A61k *7/02*
U.S. Cl. 424—63 **1 Claim**

Water-resistant liquid makeup for the skin of the eyelids may be formulated on the basis of an aqueous dispersion of water-insoluble addition polymer in combination with polyhydric alcohol, pigment, water-insoluble inorganic silicate and optional ingredients as detailed in the disclosure.

3,639,573
METHOD FOR MAKING A MULTICOLORED SPLIT POLYOLEFIN YARN

Morton I. Port, West End, N.J., assignor to Avisun Corporation, Philadelphia, Pa.

Filed Sept. 12, 1967, Ser. No. 667,140
Int. Cl. B29c *17/14;* **B29f** *3/12*
U.S. Cl. 264—75 **8 Claims**



A multicolored split yarn usable in decorative fabrics is produced by concurrently extruding at least two layers of polymeric material which are adapted to be differently colored, the layers being joined into a composite film-like web which is then slit into parallel tapes and stretch-oriented to produce mono-filament yarns of high strength, the yarns being fibrillated whereby each yarn is composed of a cluster of fine multicolored filaments whose edges are exposed as well as on the faces thereof.

3,639,574
STABLE HYDROGEN PEROXIDE GELS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 580,204, Sept. 19, 1966. This application Oct. 25, 1967, Ser. No. 677,884
Int. Cl. A61k *27/00, 7/12*
U.S. Cl. 424—78 **7 Claims**

Aqueous hydrogen peroxide gels possessing enhanced stability, useful in treating surface cuts and bleaching hair, are prepared employing certain polyoxyethylene polyoxypropylene block copolymers as gelling agents.

3,639,575
SILVER ION GEL COMPOSITIONS AND METHOD OF USING THE SAME

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 580,204, Sept. 19, 1966. This application June 19, 1968, Ser. No. 738,110
Int. Cl. A61k *27/00*
U.S. Cl. 424—78 **7 Claims**

Compositions, particularly effective in the treatment of burns, are prepared from water-soluble silver salts and,

as a matrix therefor, aqueous gels of certain polyoxyethylene polyoxypropylene block copolymers.

3,639,576
RESTERILIZING CONTACT LENS SOLUTION
Hans H. Kaspar and Paul F. Kirk, Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals
No Drawing. Filed June 19, 1968, Ser. No. 738,131
Int. Cl. A61k *27/00*
U.S. Cl. 424—78 **9 Claims**

A rapidly resterilizing contact lens solution having a high degree of comfort for the user, and good retention of these properties on extended storage, is provided, utilizing a combination of partially hydrolyzed polyvinyl alcohol, an anti-microbial organic quaternary ammonium compound, and a small amount of EDTA.

3,639,577
INJECTABLE ADJUVANT, METHOD OF PREPARING SAME AND COMPOSITIONS INCLUDING SUCH ADJUVANT
John T. Urton, Prairie Village, and Max E. Glass, Kansas City, Kans., and Stephen F. Donahue, Kansas City, and Arthur Carlson, Jr., Overland Park, Mo., assignors to Haver-Lockhart Laboratories Incorporated, St. Shawnee, Kans.
Filed Feb. 23, 1968. Ser. No. 707,671
Int. Cl. A61k *23/00, 27/12*
U.S. Cl. 424—88 **2 Claims**

An injectable medicinal composition comprising a liquid substance containing a pharmaceutical agent combined with a novel adjuvant therefor capable of enhancing the effect of the agent. The pharmaceutical agent is of the type having nitrogen atoms and the adjuvant in its preferred form includes a macromolecular synthetic resin complexing material such as an acrylic acid polymer across-linked with a polysaccharide, an ingredient having amine groups, e.g. reconstituted collagen, and an emulsifier including polyoxyethylene sorbitan monooleate, sorbitan monolaurate, and cottonseed oil in water. The adjuvant is useful with various medicinal agents including antigens, hormones, allergens and serums of the type which will complex with the synthetic resin material.

3,639,578
VIRUS INSECTICIDE
Othmer F. Batzer, Libertyville, Ill., assignor to International Minerals & Chemicals Corporation
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,446
Int. Cl. A61k *17/00;* **C12k** *1/06, 7/00*
U.S. Cl. 424—93 **20 Claims**

Disease insect larvae containing inclusion bodies with occluded virions are contacted with polar organic solvents to provide a dehydrated, substantially lipid-free powder that is readily dispersible.

3,639,579
PHARMACEUTICAL PREPARATION
Matthew C. Urbin, 4524 La Barca Drive, Tarzana, Calif. 91356
No Drawing. Continuation of abandoned application Ser. No. 864,526, Oct. 7, 1969. This application Dec. 10, 1970, Ser. No. 96,998
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 **5 Claims**

A pharmaceutical preparation is provided for the treatment of hemorrhoids, and which contains oxidase enzymes, such asmonoamine oxidase, or diamine oxidase, or both. The object of the invention is to destroy the amines formed in the colon by bacteria. The amines are destroyed by the oxidizing action of the oxidases on the tissue and by the production of oxygen. The oxygen is produced, in some instances, by the action of the tissue itself, or a catalase enzyme may be added to the preparation which will decompose the hydrogen peroxide which is present into water and oxygen.

3,639,580
ANTIBIOTIC TUBERACTINOMYCIN AND PROCESS FOR PREPARING SAME
Akio Nagata, 421–1 Ohito, Ohito-cho, Tagata-gun; Takuji Ando, 744 Yoshida, Ohito-cho, Tagata-gun; Rokuro Izumi, 632–1 Mifuku, Ohito-cho, Tagata-gun; and Hideo Sakakibara, 6–3 Taisha-cho, Mishima-shi, all of Shizuoka-ken, Japan
Continuation of application Ser. No. 766,820, Oct. 11, 1968. This application Jan. 8, 1970, Ser. No. 3,584
Int. Cl. A61k *21/00*
U.S. Cl. 424—116 **5 Claims**

A new antibiotic of basic peptide Tuberactinomycin and the manufacturing process thereof which comprises the steps of: cultivating *Streptomyces griesoverticillatus* var. *tuberacticus* NRRL 3482 or equivalents thereof in a nutrient culture medium; cultivating the said culture medium aerobically until substantial antibiotic activity is imparted to said medium; isolating the said antibiotic from the culture medium; obtaining the said antibiotic in its essentially crystalline powder having an antituberculosis activity.

3,639,581
MELINACIDIN ANTIBIOTIC COMPLEX AND PROCESS FOR PREPARING THE SAME
Alexander D. Argoudelis, Portage, John H. Coats, Kalamazoo, and Fritz Reusser, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 25, 1967, Ser. No. 678,046
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 **8 Claims**

Melinacidin antibiotic complex (U–26,362) producible by culturing *Acrostalagmus cinnabarinus* var. *melinacidinus* in a nutrient medium. Melinacidin antibiotic complex is antibacterially active and can be used to inhibit the growth of various microorganisms, for example, *Bacillus substilis, Staphylococcus aureus, Salmonella pullorum, Streptococcus hemolyticus, Streptococcus faecalis,* and *Proteus vulgaris.*

3,639,582
ANTIBIOTIC LASPARTOMYCIN
Hamao Umezawa, Masa Hamada, Hiroshi Naganawa, Tomio Takeuchi, Kenji Maeda, and Yoshiro Okami, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Filed Apr. 4, 1968, Ser. No. 718,671
Claims priority, application Japan, Apr. 14, 1967, 42/23,397
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 **4 Claims**

This invention relates to a process for the production of laspartomycin by fermentation method which comprises cultivating a strain of *Streptomyces viridochromogenes* var. *komabensis* in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic condition until substantial antibacterial activity is imparted to said solution and then recovering said laspartomycin from said solution.

3,639,583
BIOCIDAL ELASTOMERIC COMPOSITIONS
Nathan F. Cardarelli, Copley, and Harry F. Neff, Medina, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 515,154, Dec. 20, 1965. This application June 28, 1968, Ser. No. 741,223
Int. Cl. A01m *9/38;* **A61k** *27/12*
U.S. Cl. 424—125 **15 Claims**

A vulcanized elastomeric composition comprising an organic elastomer, an organic toxicant dissolved therein, and selected proportions of compounding ingredients including carbon black, wax, fillers, etc., and vulcanized to an intermediate degree are biocidal materials having a low, controlled and tailor-made rate of toxicant release for long-extended biocidal activity. Organic elastomers employed are natural rubber, neoprene, nitrile rubbers, butyl, SBR, polybutadiene, etc. Organic toxicants appreciably soluble in such elastomeric composition for such use include the organo-tin compounds, nitrosalicylanilide compounds, chlorinated hydrocarbons, organo-phosphorous compounds, etc. Such compositions are useful in sheet-like coverings thicker than about 0.05 inch for antifouling protection of submerged marine structures; as larvacides in the form of pellets, chunks, sheets, strips, tapes, etc., which on immersion in infested water or air liberate toxicant killing the adult, larvae and egg forms of mosquitos, midges, black flies, schistosome cercariae and their snail hosts, other gastropods, and other disease-causing and/or disease transmitting organisms and insect pests; as bacteriocidal, fungicidal and algicidal surfaces and coverings; and an animal- and insect-repellants. Certain ingredients of elastomer and vulcanizable rubber compositions, notably fatty acid materials, very materially enhance biocidal efficiency of compositions containing the organo-tin compounds.

3,639,584
METHOD FOR PROMOTING WEIGHT GAIN IN BRONZE TURKEYS
Eldon W. Klenholz, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.
No Drawing. Filed July 1, 1968, Ser. No. 741,263
Int. Cl. A61k *27/00*
U.S. Cl. 424—127 **2 Claims**

This invention relates to a novel method for improving the weight gain in bronze turkeys, both male and female, which comprises dissolving in their drinking water a substantial concentration of sodium nitrate for their continued consumption from the hatching date or shortly thereafter up through not less than approximately two nor more than approximately six weeks of age.

3,639,585
METHOD OF PREVENTING CORTICOSTEROID-INDUCED ADVERSE EFFECTS ON BONE AND COMPOSITIONS USEFUL IN SAID METHOD
Robert H. Hesse, Winchester, Mass., assignor to Research Institute for Medicine and Chemistry, Cambridge, Mass.
No Drawing. Filed Mar. 29, 1968, Ser. No. 717,408
Int. Cl. A61k *17/00, 17/16*
U.S. Cl. 424—128 **10 Claims**

A method of preventing the adverse effect on bone metabolism usually encountered with corticosteroid therapy comprises administering to an animal being treated with a corticosteroid, substantially simultaneously with said corticosteroid, a non-toxic, assimilable, phosphorus-containing substance, preferably neutral phosphate.

Described are pharmaceutical formulations useful in the prevention of corticosteroid-induced adverse effects on bone.

3,639,586
PROCESS FOR THE MANUFACTURE OF MIXED ANHYDRIDES CONTAINING ALKALI CHLORIDE, OF SORBIC ACID WITH PALMITIC OR STEARIC ACID AND THEIR USE AS PRESERVATIVES FOR BREAD AND PASTRY
Hans Fernholz, Fischbach, Taunus, and Hermann Neu, Neu-Isenberg, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,313
Claims priority, application Germany, Mar. 16, 1968, F 55,088
Int. Cl. A01n *11/02, 13/00*
U.S. Cl. 424—153 **5 Claims**

Mixed anhydrides of sorbic acid with palmitic acid or stearic acid are manufactured by reacting the acid chloride in a nonpolar organic solvent with sodium sorbate or potassium sorbate, the resulting anhydride containing 10 to 20% by weight of the alkali chloride. The mixture is used for preserving bread and pastry.

3,639,587
MEDICINAL COMPOSITIONS FOR ADMINISTRATION TO ANIMALS, AND PROCESS FOR ADMINISTERING SAME
Stanley R. Ames, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 625,467, Mar. 23, 1967. This application Nov. 7, 1969, Ser. No. 871,590
Int. Cl. A61k *15/02, 15/10*
U.S. Cl. 424—173 **28 Claims**

An essentially non-aqueous medicinal preparation for injection into animals, comprising a medicinal and either a polyoxyethylene sorbitan fatty acid ester, or a polyoxyethylated ricinoleate (e.g. polyoxyethylated castor oil). The preparation can also include an organic ester as a viscosity reducing agent. Among the medicinals are vitamins A and E; and others such as hormones, steroids, detoxifiers, and anthelmintics.

3,639,588
PHARMACEUTICAL COMPOSITIONS CONTAINING FERRIC HYDROXIDE COMPLEXED WITH DEXTRAN OR DEXTRIN HEPTONIC ACIDS
Ranulph Michael Alsop, Alderley Edge, England, and Ian Bremner, Cults, Scotland, assignors to Fisons Pharmaceuticals, Limited, Loughborough, England
No Drawing. Original application Oct. 16, 1967, Ser. No. 675,343, now Patent No. 3,536,696, dated Oct. 27, 1970. Divided and this application Mar. 27, 1970, Ser. No. 23,476
Claims priority, application Great Britain, Oct. 22, 1966, 47,466/66; Dec. 21, 1966, 57,323/66; Aug. 16, 1967, 37,691/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 **16 Claims**

An aqueous solution of a complex of ferric hydroxide with dextran heptonic acid or dextrin heptonic acid for parenteral administration to man and animals for treating iron-deficiency anemia.

3,639,589
PHARMACOLOGICALLY EFFECTIVE SUBSTANCE AND PROCESS FOR ISOLATING IT FROM *HAZUNTA GRACILIFLORA*
Alfred Groebel, Bad Soden, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Feb. 13, 1968, Ser. No. 705,117
Claims priority, application Germany, Feb. 16, 1967, F 51,541
Int. Cl. A61k *27/00*
U.S. Cl. 424—195 **2 Claims**

A pharmacologically active substance having spasmolytic and vasodilatatory effect isolated from *Hazunta gracili-*

flora and a process for isolating said substance from the plant material by alcohol extraction.

3,639,590

ANTIBACTERIAL COMPOSITION CONTAINING (—) (CIS-1,2-EPOXYPROPYL) PHOSPHORIC ACID

David Hendlin Springfield, and Edward O. Stapley, Spotswood, N.J., and Sagrario Mochales del Val and Justo Martinez Mata, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 655,757, July 25, 1967, and Ser. No. 679,165, Oct. 30, 1967. This application May 9, 1968, Ser. No. 728,059

Int. Cl. A61k *21/00*

U.S. Cl. 424—203 9 Claims

(—)(Cis - 1,2 - epoxypropyl)-phosphoric acid, a water soluble acidic substance, and its salts are active against both gram-positive and gram-negative bacteria. The antibiotic is produced by growing newly-found and hitherto undescribed strains of Streptomyces on suitable fermentation mediums.

3,639,591

METHOD FOR DESTROYING SOIL NEMATODES

David L. Gerwitz and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,178

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 6 Claims

Nematocidal usage of O-methyl S-(4-chlorophenylthiomethyl)methylphosphonodithioate.

3,639,592

METHODS FOR DESTROYING NEMATODES WITH O,O - DIETHYL S - [(CHLORO-SUBSTITUTED ALLYL) THIOMETHYL] PHOSPHOROTHIOATES

John P. Chupp, Kirkwood, and Robert L. Balske, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,563

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 3 Claims

Nematocidal usage of O,O-diethyl S-[(chloro substituted allyl) thiomethyl] phosphorothioates.

3,639,593

SOIL INSECTICIDE OF PARATHION AND PARAFORMALDEHYDE

David Eugene Garrison, P.O. Box 173, Greeley, Colo. 80631

No Drawing. Filed May 1, 1969, Ser. No. 821,079

Int. Cl. A01n *9/36, 9/24*

U.S. Cl. 424—218 5 Claims

The invention is a soil pesticide which combines parathion and paraformaldehyde into a carrier, preferably a granular clay. In a preferred blend, approximately equal parts of parathion and paraformaldehyde are used and these active ingredients constitute approximately 10% of the blend.

3,639,594

PHARMACEUTICAL COMPOSITIONS CONTAINING 6-PHOSPHOGLUCONIC ACID AND SALTS THEREOF

Aurelio Filippo Notarianni and Giuseppe Ghielmetti, Milan, Italy, assignors to SPA—Societa Prodotti Antibiotici S.p.A., Milan, Italy

No Drawing. Filed June 5, 1967, Ser. No. 643,374

Claims priority, application Great Britain, June 6, 1966, 25,026/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—224 2 Claims

There are described new salts of 6-phosphogluconic acid with metals and simple organic bases and new pharmaceutical compositions containing 6-phosphogluconic acid and/or the new salts thereof, these new pharmaceutical compositions possessing valuable therapeutic properties, especially for the regeneration of the liver.

3,639,595

ANIMAL FEED COMPOSITIONS AND METHODS FOR USING THE SAME

James Joseph Drain, Lawrenceville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Sept. 11, 1968, Ser. No. 759,214, now Patent No. 3,472,934, dated Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 457,798, May 21, 1965. Divided and this application Oct. 13, 1969, Ser. No. 865,955

The portion of the term of the patent subsequent to Oct. 14, 1986, has been disclaimed

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 4 Claims

Composition of matter and method for promoting growth, controlling disease, and relieving the deleterious effects of stress in ruminant animals, such as calves. The composition comprising a medicated feed supplement for the fortification and improvement of standard, nutritionally-balanced feeds and designed to provide ruminant animals with an optimum dosage of a combination of a tetracycline antibiotic and sulfamethazine. The feed supplement also containing crude protein and other edible animal feedstuffs.

3,639,596

METHOD OF TREATING LEG WEAKNESS IN FOWL WITH 25-HYDROXYCHOLECALCIFEROL

Hector F. De Luca and Milton L. Sunde, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed July 14, 1969, Ser. No. 841,592

Int. Cl. A61k *15/02*

U.S. Cl. 424—236 2 Claims

A method of treatment and prophylaxsis for leg weakness in fowl which comprises internally administering 25-hydroxycholecalciferol to the fowl.

3,639,597

PHARMACEUTICAL COMPOSITIONS CONTAINING CHOLANIC ACID CONJUGATES

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.,

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 12 Claims

Pharmaceutical compositions comprising a 5β-glycocholanic acid or 5β-taurocholanic acid as the active ingredient. The compositions reduce plasma cholesterol and triglyceride levels in blood serum and, therefore, are useful in the treatment of conditions associated with atherosclerosis.

3,639,598

ANTI-INFLAMMATORY COMPOSITIONS AND METHOD

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,643

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 8 Claims

Compositions containing 17β-[N-(aminoalkyl)amino] androstan-3-ols, 5-dehydro and acyl derivatives thereof are useful for the treatment of inflammatory states.

3,639,599

UTEROTROPIC COMPOSITION

Werner Mehrhof, Klaus Irmscher, Giorgio Hecht-Lucari, Hans-Gunther Kraft, and Hartmut Kieser, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Continuation-in-part of application Ser. No. 766,316, Oct. 9, 1968. This application Apr. 20, 1970, Ser. No. 30,222

Claims priority, application Germany, Oct. 19, 1967, P 16 17 654.8

Int. Cl. A61k *17/06*

U.S. Cl. 424—239 16 Claims

A combination of salts of:

(a) estrone sulfate. and
(b) estradiol-3-sulfate

yields a synergistic uterotropic effect much higher than that of estrone and is indicated for climacteric discomforts and the like.

3,639,600

PROCESS OF ESTABLISHING CYCLICITY IN A HUMAN FEMALE

John W. Hendrix, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 519,412, Jan. 10, 1966, which is a continuation-in-part of application Ser. No. 351,857, Mar. 13, 1964. This application Aug. 28, 1969, Ser. No. 853,983

Int. Cl. A61k *27/00*

U.S. Cl. 424—242 1 Claim

Improved methods of systemically administering estrogens to human females wherein the estrogen is administered sequentially in gradually increasing amounts over a predetermined span of time. The estrogen administration is advantageously supplemented with concomitant systemic administration of a progestrogen. Beneficial results are achieved in contraceptive regimens and in menopausal and perimenopausal regimens.

3,639,601

BACTERIOSTAT AND FUNGISTAT COMPOSITIONS CONTAINING CYCLIC O,N-ACETALS

Rudolph Junghahnel, Witten-Bommern, and Gustav Renckhoff and Klaus Thewalt, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed July 16, 1968, Ser. No. 745,110

Claims priority, application Germany, July 20, 1967, D 53,634

Int. Cl. A01n *9/22*; A61l *1/00*

U.S. Cl. 424—244 7 Claims

The use of N-acylated cyclic O,N-acetals as bacteriostats and fungistats. Used alone or with a carrier, they are effective in inhibiting the growth of bacteria and fungi. The acetals are especially effective against gram-positive bacteria.

3,639,602

2,4-DI-(4-ARYLPIPERAZINO)-3-PENTANONES FOR TREATING SCHISTOSOMIASIS

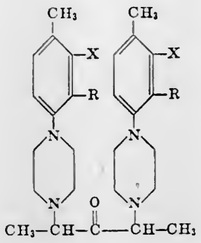
Herschel D. Porter, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,631

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 2 Claims

2,4-di-(4-arylpiperazino) - 3 - pentanones represented by the formula



wherein X is halo, and R is hydrogen or methyl. The compounds of this invention are useful for the treatment of schistosomiasis.

3,639,603

METHOD AND COMPOSITION EMPLOYING MIXED ETHER COMPOUNDS FOR ALLEVIATING CARDIAC ARRHYTHMIAS

Franklin N. Marshall, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,984

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 8 Claims

A method useful for alleviating cardiac arrhythmias such as tachycardias in animals by administering to arrhythmic mammals an antiarrhythmic amount of a mixed ether compound such as 2-[(4-amino-2,6-dibromophenoxy)methyl]-2-imidazoline or a pharmaceutically-acceptable salt thereof.

3,639,604

COMPOSITIONS CONTAINING AN ORGANIC THIOCYANATE AND 2-HYDROXY ALKYL ESTERS OF ORGANIC THIOSULFONIC ACIDS AND PROCESSES OF UTILIZING THE SAME

Stanley J. Buckman, John D. Buckman, John D. Pera, and Fred W. Raths, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,507

Int. Cl. A01n *9/12, 9/22*

U.S. Cl. 424—270 6 Claims

A 2-hydroxy alkyl ester of an organic thiosulfonic acid is added to a microbicidal composition containing an organic thiocyanate to combine with the hydrogen cyanide formed by the decomposition of the thiocyanate.

3,639,605

WAX-COATED AND MICRONIZED ACETOXYMETHYL BENZYLPENICILLINATE

Arthur W. T. Rule, Westbourne, West Sussex, Roy E. Shimmin, Bellmont Park, Maidenhead, and Timothy Laundy, Wargrave, Reading, England, assignors to John Wyeth & Brother Limited, Taplow, England

Filed July 23, 1968, Ser. No. 746,849

Claims priority, application Great Britain, Aug. 8, 1967, 36,336/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—271 8 Claims

Acetoxymethyl benzylpenicillinate of improved properties in respect to ease of handling and blood levels attainable is prepared by micronizing the known (bulk) prod-

uct; preferably the micronized product is also admixed or coated with a compatible and pharmaceutically acceptable wax. The novel product may be administered as an aqueous suspension or as a solid in capsules or tablets. Desirably higher blood levels of penicillin result from its administration than are achieved by use of the prior art unmicronized acetoxymethyl benzylpenicillinate.

3,639,606

METHOD FOR THE PREVENTION OR CURE OF OXALIC LITHIASIS, AND PHARMACEUTICAL COMPOSITIONS THEREFOR

Jean-Marie Melon, Paris, and Jean Thomas, Saint Mande, France, assignors of a fractional part interest to Laboratoires Sauba, Montreuil-sous-Bois, France

No Drawing. Filed June 15, 1970, Ser. No. 46,553
Claims priority, application France, June 24, 1969, 6921210
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **2 Claims**

The invention relates to a method of preventing and treating oxalic lithiasis and a pharmaceutical composition therefor.

3,639,607

METHOD FOR TREATING THE TOBACCO SMOKING HABIT

Jack E. Phillips, 3470 Atlantic, NE., Warren, Ohio 44483

No Drawing. Continuation-in-part of application Ser. No. 825,422, May 16, 1969. This application Nov. 2, 1970, Ser. No. 86,275
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **9 Claims**

Treatment with an anticonvulsant drug, preferably one effective to prevent or retard grand mal and/or petit mal seizures in epileptic patents, allows a tobacco smoker to materially reduce, and in many instances totally eliminate, his smoking habit. During withdrawal, the normally accompanying anxiety is reduced or eliminated by the use of such a drug.

3,639,608

METHOD OF KILLING FUNGUS ON PLANTS

Bobby F. Adams, Pasadena, Tex., and William J. Pyne and James M. Gullo, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Original application June 1, 1967, Ser. No. 642,708. Divided and this application Jan. 19, 1970, Ser. No. 8,151
Int. Cl. A01n *9/22*
U.S. Cl. 424—274 **1 Claim**

Pyrrolidinyl carboxanilides and pyrrolidinyl thiocarboxanilides are disclosed along with their preparation, e.g., from unsubstituted or ring substituted phenylisocyanates and phenylisothiocyanates reacted with unsubstituted or alkyl substituted pyrrolidines. The compounds have biological activity and especially herbicidal activity.

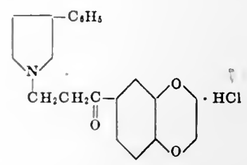
3,639,609

DRUG OF ADRENO-BLOCKING ACTION

Sergei Sergeevich Krylov, Ul. Zamshinu 54, kv. 8; Nadezhda Timofeevna Starykh, Ul. Bolshaya Porokhovskaya 54, korpus 2, kv. 80; Alexandr Grigorievich Chigarev, Ul. Blagodatnaya 53, kv. 21; and Andrei Vasilievich Eltsov, Pos. Pesochnoe 2, ul. Leningradskaya 70/I, kv. 51, all of Leningrad, U.S.S.R.

No Drawing. Filed July 31, 1969, Ser. No. 846,597
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **4 Claims**

A drug of adreno-blocking action is proposed, containing as active principle ω-(3[1]-phenylpyrrolidyl-1[1])-6-propionylbenzo-1,4-dioxan hydrochloride of the formula



A process for the production of the active principle ω-(3[1]-phenylpyrrolidyl-1[1])-6-propionylbenzo-1,4-dioxan hydrochloride comprises reacting 3-phenylpyrrolidene with 6-acetylbenzo-1,4-dioxan and paraform in the molar ratio of 1:1:2.6 in the presence of hydrogen chloride in alcoholic solution at a temperature of 60–120° C., removing the unreacted 6-acetylbenzo-1,4-dioxan, alkalizing the reaction mixture, extracting with ether the (3[1]-phenylpyrrolidyl - 1[1]) - 6-propionylbenzo-1,4-dioxan base formed, isolating the base and recrystallizing from ethyl ether, then dissolving in acetone and reacting with hydrogen chloride and isolating and purifying the final product by recrystallizing from ethanol acidified with hydrogen chloride.

3,639,610

CONTROLLING NEMATODES WITH N-CARBAMYL-2-IMINO-1,3-OXATHIOLANES

Bernard Pflugfelder, Artix, France, assignor to Societe Nationale des Petroles d'Aquitaine, Tour Aquitaine, France

No Drawing. Application Dec. 10, 1968, Ser. No. 782,775, which is a continuation-in-part of application Ser. No. 478,763, Aug. 10, 1965. Divided and this application Nov. 26, 1969, Ser. No. 877,576
Int. Cl. A01n *9/12*
U.S. Cl. 424—276 **2 Claims**

A method is provided for controlling nematodes with N-carbamyl-2-imino-1,3-oxathiolanes.

3,639,611

INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING CARBAMOYLOXIMES

Ian Trevor Kay, Brancknell, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 7, 1968, Ser. No. 774,198
Claims priority, application Great Britain, Nov. 21, 1967, 52,950/67
Int. Cl. A01n *9/00, 9/12*
U.S. Cl. 424—275 **12 Claims**

There are provided pesticidally active carbamoyloximes which are applicable to a broad range of pests and may be applied from compositions to the soil, locus of plants and locus of seeds which are to be protected from the pests. An example of the present oxime is isopropyl-5-methylthio-2-thienylketone O-(dimethylcarbamoyl) oxime.

3,639,612

CHALCOGEN CONTAINING HETEROCYCLICS AS AN IN VITRO ANTI-VIRAL AGENT

Donald C. De Long and Charles J. Paget, Jr., Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed May 16, 1969, Ser. No. 825,402
Int. Cl. A01n *9/00*
U.S. Cl. 424—276 **4 Claims**

Derivatives of tricyclic chalcogen containing heterocycles useful as anti-viral agents and in differentiating Polio III from other polio viruses.

3,639,613

COMPOSITION AND METHODS FOR CONTROLLING COCCIDIOSIS IN POULTRY EMPLOYING NITROTHIOPHENE DERIVATIVES

George L. Dunn, Wayne, and John R. E. Hoover, Glenside, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,781
Int. Cl. A61k *27/00*
U.S. Cl. 424—275 **10 Claims**

Anti-coccidio and growth promoting compositions comprising optionally substituted nitrothiophene sulfonamides, nitrothiophene carboxamides, and nitrothiophene dicarboxamides.

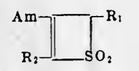
3,639,614

ARYLTHIETE-1,1-DIOXIDES AS ANTI-INFLAMMATORY AGENTS

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Springfield, N.J., assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,525
Int. Cl. A61k *27/00*
U.S. Cl. 424—275 **1 Claim**

2-aryl-3-amino-thiete-1,1-dioxides, e.g. those of the formula



R_1=halogenated phenyl or heterocyclic aryl
Am=tert. amino
R_2=H, alkyl, aralkyl or aryl

exhibit anti-inflammatory effects.

3,639,615

PROCESS FOR THE TREATMENT OF BENIGN PROSTATIC HYPERTROPHY

Edward Y. Domina, 61 Highland Ave., Arlington, Mass. 02174

No Drawing. Continuation of application Ser. No. 277,096, May 1, 1963, which is a continuation-in-part of application Ser. No. 684,857, Sept. 19, 1957. This application Apr. 10, 1969, Ser. No. 815,216
Int. Cl. A61k *27/00*
U.S. Cl. 424—280 **2 Claims**

Disclosed is a preparation for the treatment of benign prostatic hypertrophy in adult male humans consisting of glutamic acid, 45% to 65% by weight; alanine, 15% to 30% by weight; glycine, 7% to 15% by weight; and ascorbic acid, 5% to 15% by weight.

3,639,616

PESTICIDAL FORMULATIONS

Irwin A. Lichtman, Oradell, Milton R. Johnson, Somerville, and Leo F. Sekula, Somerset, N.J., and Robert W. Dorn, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 502,550, Oct. 22, 1965. This application Apr. 20, 1970, Ser. No. 30,250
Int. Cl. A01n *9/22, 17/08*
U.S. Cl. 424—300 **22 Claims**

Carbamate pesticides generally insoluble in common agricultural solvents are increased in solubility by the addition of a phenolic compound.

3,639,617

PROCESS FOR PREPARATION OF A PESTICIDE EMPLOYING SULFONATED LIGNINS

Ellis Gray King, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Filed Feb. 21, 1968, Ser. No. 707,286
Int. Cl. A01n *9/12, 9/20, 9/34*
U.S. Cl. 424—300 **9 Claims**

A process for the preparation of a pesticide in dry form by dispersing the pesticide in a sulfonated lignin solution and ball milling the dispersion until the particle size of at least 90 percent of the pesticide is reduced to less than 5 microns and then spray drying the mixture. The product obtained has a relatively high bulk density and is readily dispersible in water.

3,639,618

FUNGICIDAL METHOD AND COMPOSITION CONTAINING SUBSTITUTED BENZYLTHIOCYANATES

John J. Barch, Crestwood, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Sept. 28, 1966, Ser. No. 582,489, now Patent No. 3,476,790. Divided and this application Oct. 27, 1969, Ser. No. 871,114
Int. Cl. A01n *9/18*
U.S. Cl. 424—302 **6 Claims**

This invention relates to a composition and method of protecting living plants from attack by fungi with substituted benzylthiocyanates.

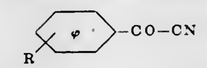
3,639,619

NEMATICIDAL AND FUNGICIDAL CYANIC DERIVATIVES

Daniel Demozay, Villeurbanne, Rodolphe Caffiero, Francheville-le-Bas, and Daniel Pillon, Lyon, France, assignors to Pechiney-Progil, Lyon, France

No Drawing. Filed Dec. 6, 1968, Ser. No. 781,969
Claims priority, application France, Dec. 8, 1967, 49,419
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 **1 Claim**

A cyanic derivative having the formula



and utilization thereof in parasiticidal compositions.

3,639,620

INSECTICIDAL COMPOSITION AND A METHOD OF USE COMPRISING CYANOALKYLTHIO OXIME CARBAMATES

Cyril Donninger, Sittingbourne, John H. Davies, Faversham, and Royston H. Davis, Rainham, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Application July 23, 1968, Ser. No. 746,750, now Patent No. 3,522,287, dated Dec. 29, 1969, which is a continuation-in-part of application Ser. No. 591,986, Nov. 4, 1966. Divided and this application Feb. 13, 1970, Ser. No. 14,894.
Claims priority, application Great Britain, Nov. 10, 1965, 47,675/65
Int. Cl. A01n *9/12*
U.S. Cl. 424—304 **2 Claims**

Cyanoalkylthio oxime carbamates, such as 1-cyanomethylthioacetaldoxime N-methyl carbamate, having insecticidal activity, are described.

3,639,621

METHOD OF IMPROVING FEED UTILIZATION IN RUMINANTS

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed July 29, 1969, Ser. No. 845,919
Int. Cl. A23k *1/00*
U.S. Cl. 424—304 **4 Claims**

Haloalkanoic acids, amides, or nitriles are administered, preferably with animal feeds, to ruminants to improve feed utilization. They inhibit methanogenesis without adversely affecting total fermentation.

3,639,622

VASOCONSTRICTING AND BRONCHODILATING COMPOSITIONS AND METHODS UTILIZING GALLIC ACID AND ALKYL GALLATES

Paul Greengard, Hamden, Conn., and Barbara Petrack, Briarcliff Manor, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 509,611, Nov. 24, 1965. This application Nov. 22, 1968, Ser. No. 778,320

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 16 Claims

Pharmaceutical compositions containing alkyl gallates or gallic acid and adapted for administration to the respiratory system can be employed for treating nasal decongestion and bronchospasms.

3,639,623

TOPICAL PHARMACEUTICAL COMPOSITION COMPRISING CERTAIN QUATERNARY AMMONIUM COMPOUNDS

Wolfgang A. Ritschel, Saeckingen, Germany, and Johanna Fischer, Ulrich Jahn, and Theodor Wagner-Jauregg, Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,668

Claims priority, application Sweden, Apr. 6, 1967, 4,899/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 7 Claims

An antimicrobial pharmaceutical composition in particular for dermatological purposes and a method of treating with such pharmaceutical compositions infections of the skin and mucous membranes of animals and particularly human beings, the said pharmaceutical compositions containing as an essential ingredient a quaternary ammonium compound of dicyclopentylacetic acid diethylaminoethyl ester with an alkyl halide having from 5 to 12 and particularly 6 to 10 and most preferably 8 carbon atoms.

3,639,624

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

Tsung-Ying Shen, Westfield, William V. Ruyle, Scotch Plains, and Bruce E. Witzel and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 836,620, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,289

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 13 Claims

This invention relates to new pharmaceutical compositions having as an active ingredient substitute tricyclic carboxylic acids and their derivatives.

These pharmaceutical compositions are useful as anti-inflammatory compounds. Also included are methods of treating inflammation by administering these particular compositions to patients.

3,639,625

COMPOSITIONS CONTAINING LITHIUM SUCCINATE

Lewis Sherwin, 4580 Kensington Ave., Montreal, Quebec, Canada

No Drawing. Filed July 13, 1967, Ser. No. 653,029

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 3 Claims

Therapeutic compositions containing lithium succinate for treating dermatitis and for producing an antipruritic effect.

3,639,626

SUPPRESSING THE ACTIVITY OF PLASMIN IN HUMANS AND ANIMALS WITH TRANS-4-(AMINOMETHYL)-CYCLOHEXANE - 1 - CARBOXYLIC ACID

Fujio Nagasawa, Shosuke Okamoto, Eiichi Takagi, Mikio Yokoi, and Mitsuo Mangyo, Tokyo, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Continuation of application Ser. No. 388,016, Aug. 6, 1964, which is a continuation-in-part of application Ser. No. 108,245, May 8, 1961, now Patent No. 3,268,405, dated Aug. 23, 1966. This application Aug. 25, 1967, Ser. No. 663,447

The portion of the term of the patent subsequent to Aug. 23, 1983, has been disclaimed

Int. Cl. A01n *9/20;* A61k *15/12*

U.S. Cl. 424—319 6 Claims

A method of suppressing the activity of plasmin in vivo comprising introducing an effective amount of trans-4-(aminomethyl)-cyclohexane-1-carboxylic acid into the living body of humans and animals; said trans-acid having the melting point of 380–390° C. (decomposed), the characteristic infra-red absorptions at 1637, 1535 and 1383 cm.$^{-1}$ and the following conformation:



and the melting point of the hydrochloric acid salt thereof [$C_8H_{15}NO_2.HCl$], the gold salt thereof

$$[C_8H_{15}NO_2.HCl.AuCl_3]$$

and the platinum salt thereof [$(C_8H_{15}NO_2.HCl)_2PtCl_4$] being 238–240° C. (decomposed), 204–206° C. (decomposed) and 254–255° C.

3,639,627

METHOD OF COMBATTING CHEWING INSECT LARVAE SPECIES OF THE ORDER LEPIDOPTERA USING N,N'-DICYCLOPROPYL DITHIOOXAMIDE

Gerhard H. Alt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,918

Int. Cl. A01n *9/20*

U.S. Cl. 424—320 4 Claims

N,N'-dicyclopropyl dithiooxamide which is useful in combatting chewing insect larvae species of the order Lepidoptera, particularly species of the family Noctuidae.

3,639,628

METHOD OF LOWERING ABNORMALLY HIGH LEVEL OF BLOOD UREA

William J. H. Butterfield, Richmond, Surrey, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed July 22, 1969, Ser. No. 843,845

Int. Cl. A61k *27/00*

U.S. Cl. 424—320 2 Claims

A method of lowering an abnormally high level of blood urea in a human patient suffering from diabetes mellitus with associated hyperuraemia wherein the compound 4-guanidino-butyramide and/or its physiologically compatible acid addition salts are administered in non-toxic but effective amounts.

3,639,629

METHOD OF INHIBITING THE GROWTH OF FUNGI BY APPLYING A COMPLEX OF ORGANIC AMINE WITH A COMPLETELY HALOGENATED ACETONE

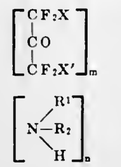
Karoly Szabo, Syracuse, N.Y., and Ashley H. Freiberg, Santa Clara, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Division of application Ser. No. 802,740, Feb. 17, 1969, which is a continuation of application Ser. No. 308,362, Sept. 13, 1963, which in turn is a continuation-in-part of application Ser. No. 221,456, Sept. 5, 1962. This application June 18, 1970, Ser. No. 47,570

Int. Cl. A01n *9/00*

U.S. Cl. 424—325 2 Claims

The use of a chemical complex of the following formula:



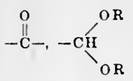
wherein R_1 and R_2 are hydrogen: an alkyl radical of from 1 to 18 carbon atoms; an alkyl radical of from 1 to 18 carbon atoms; an alkynyl radical of from 1 to 9 carbon atoms; a non-aromatic carbocyclic radical of from 5 to 6 carbon atoms; an aralkyl radical wherein the alkyl portion is lower alkyl and the aryl portion is a phenyl or naphthyl radical; phenyl radical; naphthyl radical; an amino radical; cyano or a heterocyclic radical; and when taken together R_1 and R_2 may form a heterocyclic ring system; it being provided that the aforesaid radicals may have attached thereto the functional moiety; halogen, —CN, —SCN, —COOR, $-SO_2NR_2$, —SOR, $-SO_3R$,

$$-CONR_2, -CONHR$$

$$-OH, -SH, -NR_2, -NHR, -NH_2, -OR, -SR,$$

$$-OC(O)R$$

CHO,



$-NO_2$ and —N=N, wherein R can be an organic radical of the type above defined for R_1 and R_2; X and X' are fluorine or chlorine, and *n* and *m* are integers of from 1 to 3 with the proviso that *n* and *m* are identical when equal to unity as a gungicide.

3,639,630

NONAQUEOUS LIQUID PESTICIDAL COMPOSITIONS

Bruno Sander and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,364

Claims priority, application Germany, Feb. 3, 1968, P 17 17 103.8

Int. Cl. A01n *9/28*

U.S. Cl. 424—325 4 Claims

Nonaqueous liquid formulations for pest control which contain cyclic diethers or triethers and polyhydric alcohols as solvents for the pesticide.

3,639,631

METHOD OF CONTROLLING FUNGI AND BACTERIA

George Gerald Badcock, New Brighton, and Wilfred James Cecil Dyke, Upton-by-Chester, England, assignors to Evans Medical Limited, Liverpool, Lancashire, England

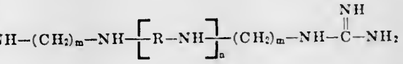
No Drawing. Continuation-in-part of application Ser. No. 481,122, Aug. 9, 1965. This application Jan. 15, 1970, Ser. No. 3,206

Claims priority, application Great Britain, Aug. 24, 1964, 34,538/64

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 9 Claims

Compositions for horticultural or agricultural use containing as an active ingredient, a compound of the general formula:



or acid addition salts thereof, wherein R is alkylene of 3 to 6 carbon atoms, *m* is 3 to 12, and *n* is 0 to 2, in an amount effective to control or prevent attack by plant pathogens, and a non-phytotoxic carrier, extender or diluent.

3,639,632

ANTIMICROBIAL COMPOSITIONS CONTAINING 1,1'-HEXAMETHYLENEBIS [5-(2 - ETHYLHEXYL) BIGUANIDE] DIHYDROCHLORIDE AND 4-CHLORO-2-HYDROXYPHENYL 2,4 - DICHLOROPHENYL ETHER

Thomas F. McNamara, North Caldwell, and Meyer Malakoff, Dover, N.J., assignors to Warner-Lambert Company

No Drawing. Filed June 22, 1970, Ser. No. 48,552

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 2 Claims

A synergistic antimicrobial composition containing 1,1'-hexamethylenebis [5 - (2-ethylhexyl)biguanide] dihydrochloride and 4-chloro-2-hydroxyphenyl, 2,4-dichlorophenyl ether. Such compositions are useful against bacteria, such as *Staphylococcus aureus.*

3,639,633

SUBSTITUTED O-CARBAMYLHYROXAMATE PESTICIDES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 670,494, Aug. 31, 1967, which is a continuation-in-part of applications Ser. No. 361,277, Apr. 20, 1964, and Ser. No. 602,134, Dec. 16, 1966. This application Apr. 27, 1970, Ser. No. 32,410

Int. Cl. A01n *9/20*

U.S. Cl. 424—327 23 Claims

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate are useful in controlling a variety of pests.

3,639,634

CARDIAC ANTIARRHYTHMIC METHOD AND COMPOSITION EMPLOYING ALKYLAMINO-ALKOXYHALOPHENOL COMPOUNDS

Franklin N. Marshall, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,983

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 10 Claims

A method useful for alleviating cardiac arrhythmias such as tachycardias in animals by administering to arrhythmic animals an antiarrhythmic amount of an alkylaminoalkoxyhalophenol compound such as 3,5-dibromo-4-(2-dimethylaminoethoxy)phenol or a pharmaceutically-acceptable salt thereof.

3,639,635

PROCESS FOR THE LIQUEFACTION OF MUCUS

James W. Bolger, Canoga Park, Calif., assignor to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,463
Int. Cl. A61k *25/00*
U.S. Cl. 424—335 2 Claims

A process for the liquefaction of mucus which comprises the contacting of said mucus with 1,4-dimercapto-2,3-O-isopropylidene-2,3-butanediol in an amount sufficient to induce in said mucus a state of liquefaction.

3,639,636

METHOD OF LOWERING SERUM CHOLESTEROL

James W. Barnhart, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 1, 1967, Ser. No. 642,682
Int. Cl. A61k *27/00*
U.S. Cl. 424—346 7 Claims

Methods useful for lowering serum cholesterol in animals comprising administration to the animal of an effective amount of a tetraalkylbiphenol compound, preferably 2,2',6,6'-tetra-tert-butyl-p,p'-biphenol, and compositions to be employed in practicing the method.

3,639,637

WATER DISPERSIBLE DIETHYLSTILBESTROL COMPOSITIONS

James A. Campbell, Ashland, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,599
Int. Cl. A61k *27/00, 17/06*
U.S. Cl. 424—346 3 Claims

Water-dispersible diethylstilbestrol compositions comprising finely-divided diethylstilbestrol and 70 to 95 percent of a water-dispersible, gel-forming microcrystalline cellulose hydrocolloid and preferably also containing small amounts of a dispersing agent such as sodium carboxymethylcellulose and other similar hydrocolloids. The dry mixture is simply mixed with water for from 5 to 30 minutes to obtain a stable aqueous suspension of the diethylstilbestrol.

3,639,638

CORONARY VESSEL DILATION

John C. Krantz, Jr., Gibson Island, and Raymond M. Burgison, Catonsville, Md., assignors to The Chattanooga Medicine Company, Chattanooga, Tenn.

No Drawing. Continuation of application Ser. No. 791,159, Jan. 14, 1969, which is a continuation-in-part of application Ser. No. 428,556, Jan. 27, 1965, which in turn is a continuation-in-part of application Ser. No. 33,380, June 2, 1960. This application July 30, 1969, Ser. No. 848,408
Int. Cl. A16k *27/00*
U.S. Cl. 424—349 8 Claims

This invention relates to the dilation of coronary vessels and more particularly coronary arteries, and more particularly to the achieving of coronary vessel dilation by sublingual or subcutaneous administration of a haloglyceryl dinitrate, most particularly chloroglyceryl dinitrate.

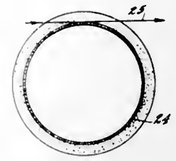
3,639,639

CERMET HAVING LUBRICATING PROPERTIES AND PROCESS

Henry W. McCard, 208 Rodman Ave., Jenkintown, Pa. 19046

Filed Mar. 11, 1969, Ser. No. 806,154
Int. Cl. B44d *1/08;* D06f *47/00*
U.S. Cl. 117—71 R 13 Claims

An antifriction object having a porous cermet surface and a lubricating plastic such as Teflon impregnated in the pores. In applying the process to make the object, the lubricating plastic may be burnished to penetrate the pores. The cermet impregnated with the lubricating plastic is



heated just below the off-gassing temperature for the plastic.

ERRATA

For Classes 117—71 thru 260—397 see:
Patent Nos. 3,639,640 thru 3,639,670

3,639,640

ELECTROSTATOGRAPHIC RECORDING ELEMENT

Morgan E. Gager, South Hadley, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,103
Int. Cl. G03g *5/00*
U.S. Cl. 117—224 10 Claims

An electrostatographic recording element containing a lithopone pigment in the dielectric, insulating layer of said element. The electrostatographic recording elements of this invention are useful in both direct and transfer electrostatic recording processes.

3,639,641

METHOD FOR RAPID MANUFACTURE OF NITRIDED THICK LAYER OF SUPER HIGH HARDNESS ON FERROUS METAL ARTICLES

Shinzoh Satoh, 548 Kichishoji, Musashino-shi, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 573,499, Aug. 19, 1966. This application Mar. 20, 1969, Ser. No. 810,441
Claims priority, application Japan, Aug. 31, 1965, 40/52,738
Int. Cl. C23c *9/14*
U.S. Cl. 148—15.5 6 Claims

A method for the rapid manufacture of a thick nitrided layer of super high hardness on ferrous metal articles which comprises the steps of providing a ripened fused salt bath in a vessel, said salt bath being produced by adding a chloride to a cyanide compound or mixture of cyanide compounds and repeating the cycle of successively heating said bath to the boiling point thereof and cooling it to room temperature several times, and treating said ferrous metal article with said ripened fused bath. In a prefrred embodiment, the fused bath contains a catalyst comprising a compound of titanium or zirconium.

3,639,642

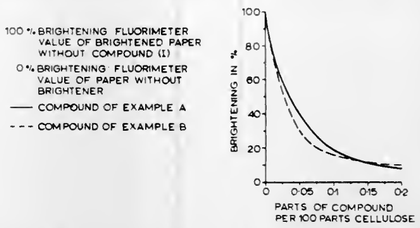
PROCESS FOR COUNTERACTING THE BRIGHTENING EFFECT DUE TO AN OPTICAL BRIGHTENER

Max Matter, Basel, Othmar Weidele, Aesch, Basel-Land, and Giuseppe Raspanti, Neuallschwil, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

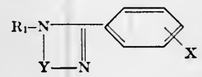
Filed Mar. 14, 1969, Ser. No. 807,320
Claims priority, application Switzerland, Mar. 30, 1968, 3,916/68; Aug. 30, 1968, 13,049/68
Int. Cl. D21d *3/00*
U.S. Cl. 162—158 10 Claims

The brightening effect produced by optical brighteners on organic substrates, particularly macromolecules of natural origin containing hydroxyl groups (such as natural or regenerated cellulose, especially in the form of

paper, or textile fibres), is nullified by the incorporation in said substrates of an acid addition salt or quaternization product of a cyclic amidine or of a polycondensation



product of such a cyclic amidine; the cyclic amidine itself has the Formula I



(I)

wherein:

Y is an alkylene chain with 2 to 4 carbon atoms between the two nitrogen atoms,

R_1 is hydrogen, alkyl, aryl or aralkyl with up to 7 carbon atoms and

X is hydrogen or a radical of the formula



and the polycondensation product contains a plurality of units corresponding to the amidine of Formula I, though in that case the radical R_1 is an alkylene chain with up to 8 carbon atoms and the radical X is —CO—NH— and/or the divalent hereterocycle shown in Formula I.

3,639,643

METHOD FOR ELIMINATION OF THE 32° C. PHASE TRANSITION IN GRANULES AND PRILLS CONTAINING FREE AMMONIUM NITRATE AND PRODUCTS PRODUCED THEREBY

Bengt O. P. Mollerstedt and Eduard Sulcs, Ljungaverk, Sweden, assignors to Fosfalbolaget, Sweden

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,210
Claims priority, application Sweden, Feb. 26, 1968, 2,455/68
Int. Cl. C01c *1/18;* C05c *1/02;* C06b *1/04*
U.S. Cl. 252—1 14 Claims

This invention relates to a method for elimination of the 32° C. phase transition in granules containing free ammonium nitrates by incorporating into the liquid nitrate solution, prior to conversion of the nitrate into solid form, a colloidal hydrate or hydroxide of silicon or iron or aluminum.

3,639,644

COLLOIDAL ASBESTOS POLYETHYLENE GREASE

Arnold J. Morway, Clark, and Albert J. Bodner, Watchung, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 717,939, Apr. 1, 1968. This application Mar. 19, 1969, Ser. No. 808,670
Int. Cl. C10m *1/18, 1/10*
U.S. Cl. 252—13 5 Claims

A lubricating grease comprising a major amount of lubricating oil, about 3.0 to 20.0 wt. percent of a polyethylene of a number average molecular weight of 10,000 to 50,000 and about 1 to 25.0 wt. percent of colloidal asbestos exhibits a markedly long lubrication life and excellent structural stability. A particularly suitable polyethylene is one having a number average molecular weight of between 14,000 and 18,000. The colloidal asbestos is distinguished over art-known asbestos by naturally occurring extremely small tubular fibers.

3,639,645

SCALE INHIBITING COMPOSITION AND METHOD USING PHOSPHONIC ACID AND DI- OR HYDROXY-CARBOXYLIC ACID

Glyn Miller, Oldbury, Warley, and Graham Michael Smart, Haley Green, Halesowen, England, assignors to Albright & Wilson Limited, Oldbury, Warwickshire, England

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,457
Claims priority, application Great Britain, Feb. 28, 1968, 9,655/68
Int. Cl. C02b *5/06;* C07c *55/02*
U.S. Cl. 252—180 23 Claims

Synergistic threshold composition comprising an alkylene polyamino methylene phosphonic acid such as EDTMP and a di- or hydroxy-carboxylic acid.

3,639,646

ANTI-TARNISH PROCESS USING DICYANDIAMIDE FORMALDEHYDE CONDENSATION PRODUCT

Peter Jochen Borchert, Elkhart, Ind., James Edward Slager, Edwardsburg, Mich., and Ronald George Sommer, Mishawaka, and Mitchell Frank Zienty, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,602
Int. Cl. C02b *5/06;* C08g *9/14*
U.S. Cl. 252—180 6 Claims

The clean surface of metals, such as copper and copper-containing alloy articles, can be protected from tarnishing by contacting such surface with a condensation product of dicyandiamide and formaldehyde. The preferred composition for use in this process contains the condensation product and a nonionic or anionic surfactant. This composition is generally mixed with water and the clean surface is dipped in or otherwise contacted with the aqueous solution.

3,639,647

HIGH SURFACE AREA ALLOYS OF NICKEL WITH MOLYBDENUM AND TUNGSTEN

William L. Kehl, Indiana Township, Allegheny County, Frank E. Lutinski, West Deer Township, Allegheny County, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 3, 1968, Ser. No. 742,163
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 18 Claims

Highly dispersed alloy materials of nickel and molybdenum and/or tungsten having a very high surface area are made by the controlled reduction of a mixture of compounds of the metals in a reducing atmosphere. These alloys and their sulfides are useful in catalysis such as hydrocracking, hydrogenation-dehydrogenation and hydroisomerization.

3,639,648

IMPROVEMENTS IN CATALYSTS

Thomas Nicklin, Middleton, Manchester, Frederick Farrington, Sale, and James Houghton, Bramhall, England, assignors to The Gas Council, London, England

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,930
Claims priority, application Great Britain, Apr. 4, 1968, 16,350/68
Int. Cl. B01j *11/32, 11/06*
U.S. Cl. 252—465 9 Claims

A catalyst composition particularly suitable for the reforming or treatment of hydrocarbons comprises nickel

oxide, triuranium actoxide U_3O_8 and includes a compound of an alkali metal, which compound is in the form of an alkali metal uranate. In one method of manufacturing the catalyst shaped carriers are impregnated with a solution of salts of nickel uranium and alkali metal compound in a weak acid at a temperature below the decomposition temperature of the compound and the carriers are subsequently calcined at a temperature sufficient to form a uranate of said compound.

3,639,649

MANUFACTURE OF POLYAMIDE FOAMS USING AN OXYACID OF PHOSPHORUS

Harry McGrath, Raymond Frederick Moore, and Eric Smith, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,973

Claims priority, application Great Britain, Mar. 29, 1968, 15,393/68

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 N **19 Claims**

Production of nylon foam by heating a nylon above its working temperature with an oxyacid of phosphorus, e.g. orthophosphoric acid and a metal carbonate or bicarbonate, especially lithium carbonate.

3,639,650

MANUFACTURE OF MALEYL-FATTY ACID ADDUCT

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,609

Int. Cl. C09f *7/00*

U.S. Cl. 260—18 R **10 Claims**

An adduct of an unsaturated unconjugated fatty acid or an ester thereof, such as a glyceride oil, and a maleyl compound is produced by reacting these components at a temperature between 300° F. and 350° F. in the presence of sulfur dioxide. This adduct is lower in viscosity, lighter in color and of higher acidity than prior-art adducts of such components, and therefore gives better results in coatings.

3,639,651

COVULCANIZABLE RUBBER COMPOSITION

Keiji Komuro, Tokyo, Masaaki Inagami, Kohoku-ku, Yokohama, and Yoshiomi Saito, Kanagawa-ken, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,274

Claims priority, application Japan, Mar. 9, 1968, 43/14,956

Int. Cl. C08d *9/08*

U.S. Cl. 260—23.7 M **3 Claims**

A covulcanizable composition which comprises a mixture of 5–95% by weight of butadiene-acrylonitrile copolymer rubber and 95–5% by weight of epichlorohydrin polymer rubber, and a vulcanization agent consisting of, per 100 parts by weight of the first mixture, (I) 0.5–5.0 parts by weight of a member selected from the group consisting of aromatic polyamines, their salts, aliphatic polyamines, their salts, cycloaliphatic polyamines, 2-mercaptoimidazoline, 2 - mercaptopyrimidin, thiourea and substituted thiourea, (II) 1.0–10.0 parts by weight of an oxide, aromatic carboxylate, aliphatic carboxylate or phosphate of a metal selected from the group consisting of magnesium, calcium, zinc, cadmium, lead and tin, and (III) 0.3–3.0 parts by weight of an organic peroxide.

3,639,652

CONTINUOUS PROCESS FOR POLYMERIZING URETHANE PREPOLYMERS

Henri Albert Mommaerts, 17 Rue Paul Emile Janson, Brussels, Belgium, and Wilfred Jean Melaerts, Kruiskensveld 2, Halle Essen Beek, Belgium

Filed Mar. 13, 1969, Ser. No. 807,050

Claims priority, application Great Britain, Mar. 18, 1968, 12,934/68

Int. Cl. C08g *22/04*

U.S. Cl. 260—30.8 DS **15 Claims**

This invention is a continuous process for the production of solutions of substantially linear polyurethanes useful to produce filaments and other articles. In the process there is passed into a first reaction zone an organic solvent, a substantially linear isocyanate-terminated prepolymer and at least one chain extension agent having at least two hydrogen atoms to produce a solution of a semi-polymer. The prepolymer is present in the first reaction zone in an amount less than the stoichiometrical amount, so that there is obtained in the first reaction zone a degree of reaction in excess of about 80%, but less than 100%. The semi-polymer is then passed continuously into a second reaction zone where there is added an amount of prepolymer sufficient to complete the polymerization of the semi-polymer.

The process also involves the recycle to the first reaction zone of a portion of the semi-polymer solution produced therein.

3,639,653

PROTECTIVE COATING FOR METAL AND WOOD SURFACES

Trevor P. Clark, North Vancouver, British Columbia, and Paul C. Trussell, Vancouver, British Columbia, Canada, assignors to British Columbia Research Council, University of British Columbia, Vancouver, British Columbia, Canada

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,649

Int. Cl. C08f *29/50, 45/04, 45/30*

U.S. Cl. 260—33.8 R **12 Claims**

There is described a coating composition that can be applied to wood and metal surfaces in the air or under water. This coating includes liquid chlorinated paraffin and/or low molecular weight polystyrene, polyester resin, and a suitable hydraulic cement or gypsum.

3,639,654

GASEOUS HALO-SULFONIC ACID ANHYDRIDE CATALYSTS FOR CURING FURFURYL ALCOHOLS AND FURAN RESINS

Janis Robins, St. Paul, Minn., assignor to Ashland Oil, Inc.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,817

Int. Cl. B22c *1/22;* **C08g** *13/00, 51/04*

U.S. Cl. 260—37 R **9 Claims**

Halogenated sulfonic acid anhydrides (e.g. trifluoromethyl sulfonic acid anhydride) are used to cure furfuryl alcohol or furan resins, optionally containing a silane. The method finds particular utility where the resins are used as foundry core binders, since the catalyst can be introduced in gaseous form, at room temperature.

3,639,655

PREPARATION OF HYDROXY-SUBSTITUTED POLYESTERS

Faber B. Jones, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,395

Int. Cl. C08g *17/007, 33/10*

U.S. Cl. 260—47 C **9 Claims**

Theromplastic hydroxy-substituted polyesters are prepared by reacting a diepoxide with a dicarboxylic acid in the presence of a polar organic solvent and a basic catalyst.

3,639,656

FORMATION OF POLYPHENYLENE ETHERS

James G. Bennett, Menands, and Glenn D. Cooper, Delmar, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,126

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 ET **8 Claims**

A process for the formation of high molecular weight polyphenylene ethers by the oxidative coupling of a phenolic precursor in the presence of a catalyst comprising an anhydrous non-basic cupric salt and a primary or secondary amine. The process is characterized by the choice of catalyst which provides high molecular weight polymer in a given reaction time or substantially decreased reaction time.

3,639,657

PRODUCTS OF ACID ANHYDRIDES AND POLYAMINES USED AS LATENT HARDENERS FOR EPOXY RESINS

Raymond Michael Moran, Jr., Bricktown, and Henry Thomas Belekicki, Convent Station, N.J., assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 547,442, May 4, 1966. This application Mar. 19, 1969, Ser. No. 808,698

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **6 Claims**

The reaction products of approximately equimolecular proportions of an acid anhydride, such as phthalic anhydride, and a polyamine, such as diethylenetriamine, are latent hardeners for epoxy resins having more than one 1,2-epoxy groups per molecule and, when combined with an epoxy resin, provide systems which are stable for long periods when stored at ambient or moderately elevated temperatures while providing on curing for relatively short periods at elevated temperatures, on the order of 100–150° C., hardened products of good properties.

3,639,658

PHENOLIC RESIN COMPOSITIONS MODIFIED WITH AN EPSILON CAPROLACTONE

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,343

Int. Cl. C08g *5/18*

U.S. Cl. 260—59 **9 Claims**

This invention relates to phenolic resin compositions, containing an epsilon caprolactone, which are characterized by an excellent balance of properties, that is, by excellent flow characteristics and by excellent cure speed and are particularly suited for use in molding applications to form thermoset products having excellent chemical and physical properties and are also particularly suited for use as binders in the production of fiber reinforced laminates and composite structures.

3,639,659

CONTINUOUS EXTRACTION OF GRANULAR POLYAMIDES

Werner Nieswandt, Weinheim, Hermann Linge, Carlsberg, Hans Pirzer, Frankenthal, and Werner Hoerauf and Herbert Hetz, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,650

Claims priority, application Germany, Mar. 30, 1968, P 17 70 097.9

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 L **4 Claims**

Process for the continuous extraction of low molecular weight constituents from granular polyamides in an extraction zone in whose upper part the extractant is recycled.

3,639,660

PROCESS FOR THE POLYMERISATION OF CYCLOMONOOLEFINS

Karl Nutzel, Opladen, Karl Dinges, Odenthal, and Friedrich Haas, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,241

Claims priority, application Germany, Mar. 7, 1968, P 17 20 797.5

Int. Cl. C08d *3/06;* **C08f** *3/02*

U.S. Cl. 260—82.1 **7 Claims**

Cycloolefins are polymerised with a catalyst comprising an organic compound of a metal of Groups IV to VI of the Periodic Table, a Friedel-Crafts catalyst and optionally an oxygen compound.

3,639,661

POLYMERIZATION OF ISOBUTYLENE

Miroslav Marek and Jan Pecka, Prague, Czechoslovakia, Miroslav Chmelíř, Mainz, Germany, and Milena Roosova, Vienna, Austria, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Jan. 21, 1969, Ser. No. 803,519

Int. Cl. C08d *3/04*

U.S. Cl. 260—94.8 **9 Claims**

The polymerization of isobutylene is readily controlled to produce a polymer of high molecular weight in the presence of a catalyst which is either a reaction product of titanium tetrafluoride with a chlorine bearing Friedel-Crafts catalyst soluble in isobutylene or a reaction product of titanium tetrachloride or boron trichloride with a fluorine bearing compound whose fluorine atoms are capable of partly replacing chlorine atoms in the titanium tetrachloride or boron trichloride.

3,639,662

AZO DYES OF THE TRIAZINE SERIES

Geoffrey Griffiths and Cecil Vivian Stead, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

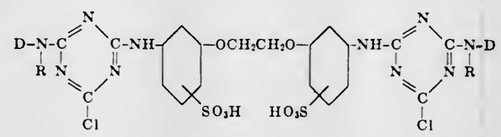
No Drawing. Filed Mar. 3, 1969, Ser. No. 804,020

Claims priority, application Great Britain, Mar. 7, 1968, 1,184/68

Int. Cl. C09b *62/08;* **D06p** *1/02*

U.S. Cl. 260—146 T **6 Claims**

Reactive dyestuffs represented by the general formula:



wherein R represents a hydrogen atom or an alkyl group, and



represents the radical of a water-soluble coloured compound containing a —NHR group. These dyes are distinguished by the high degree of fixation achieved during dyeing processes.

3,639,663
THIOALKYLTHIOBENZOTHIAZOLES

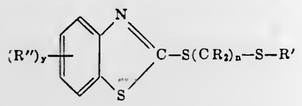
Kamal Naguib Ayad, Wrexham, Wales, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Original application July 1, 1965, Ser. No. 468,950, now Patent No. 3,455,676, dated July 15, 1969. Divided and this application Aug. 28, 1968, Ser. No. 801,876

Int. Cl. C07d *91/44*

U.S. Cl. 260—306 **4 Claims**

1. A benzothiazole derivative having the formula



where each R independently is selected from a group consisting of hydrogen and lower alkyl; *n* is an integer at least 1 but not more than 2; R′ is lower alkyl; R″ is selected from the group consisting of R′, R′O, chlorine, bromine, amino, and nitro; and *y* is an integer from zero to 2, inclusive.

3,639,664
MONOGLYCOL ETHER DERIVATIVES OF ALUMINUM HALIDES

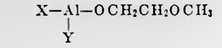
Horst W. Schmank, Ringgold, Ga., and Benjamin H. Gross, Chattanooga, Tenn., assignors to Chattem Chemicals, Division of Chattem Drug & Chemical Company, Chattanooga, Tenn.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,271

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 AD **6 Claims**

Monoglycol ether derivatives of aluminum having the formula:



where X is a chloride, bromide or iodide ion, and Y is either a glycol ether group (OCH_2CH_2OR where R has from 1–4 carbon atoms) or an alkoxy radical containing from 1 to 18 carbon atoms are disclosed which are useful as intermediates for the synthesis of alkoxyaluminum hydrides and as antiperspirants.

3,639,665
PROCESS OF PREPARING A GELLABLE COLLODIAL CELLULOSE SULFATE

Richard G. Schweiger, Muscatine, Iowa, assignor to Kelco Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 467,738, June 28, 1965, which is a continuation-in-part of abandoned application Ser. No. 347,351, Feb. 26, 1964. This application Apr. 10, 1969, Ser. No. 815,187

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. C08b *5/14*

U.S. Cl. 260—215 **13 Claims**

Process for preparing cellulose sulfate having a degree of substitution ranging from 1 to 3, preferably 2 to 3 and a viscosity in a 1% aqueous solution in excess of 20 cps., the process comprising presoaking the cellulose in a lower N-dialkyl amide for at least about 10 minutes at a temperature of about 0 to 25° C. and then reacting the presoaked cellulose with a lower N-dialkyl amide-sulfur trioxide complex for about 20 to 60 minutes at temperatures of about 0 to 35° C. Presoaking of the cellulose is carried out under agitation and the cellulose may contain up to about 10% by weight of water.

3,639,666
SPIROADAMANTANETHIAZEPINONES AND DERIVATIVES THEREOF

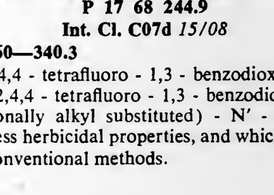
Venkatachala Lakshmi Narayanan, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,448

Int. Cl. C07d *93/40*

U.S. Cl. 260—239.3 B **9 Claims**

New antidepressants have been found which have the general formula



3,639,667
1,2-DIHYDRO-1-HYDROXY-4-PHENOXY-PYRIMIDINES

Joseph J. Ursprung, Portage, and William C. Anthony, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Feb. 21, 1966, Ser. No. 528,790, now Patent No. 3,464,987, dated Sept. 2, 1969. Divided and this application Mar. 10, 1969, Ser. No. 805,811

Int. Cl. C07d *51/34*

U.S. Cl. 260—256.4 C **6 Claims**

1,2 - dihydro - 1 - hydroxy-4-phenoxypyrimidines, the corresponding acid addition salts, and the carboxylates are disclosed. These compounds are useful in the treatment of hypertension and shock.

3,639,668
N-(2,2,4,4-TETRAFLUORO-1,3-BENZODIOXANYL)-UREAS

Hans-Ulrich Alles, Leichlingen, Erich Klauke, Odenthal-Hahnenberg, Engelbert Kühle, Bergisch-Gladbach, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,815

Claims priority, application Germany, Apr. 19, 1968, P 17 68 244.9

Int. Cl. C07d *15/08*

U.S. Cl. 260—340.3 **7 Claims**

N - (2,2,4,4 - tetrafluoro - 1,3 - benzodioxanyl) - ureas, i.e. N - (2,2,4,4 - tetrafluoro - 1,3 - benzodioxan - 6 - yl)-N′ - (optionally alkyl substituted) - N′ - alkyl - ureas which possess herbicidal properties, and which may be produced by conventional methods.

3,639,669
DEHYDROHALOGENATION OF HALOTETRAHYDROPYRANS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,935

Int. Cl. C07d *7/08, 7/10*

U.S. Cl. 260—345.1 **12 Claims**

Dihydropyrans are formed by catalytic dehydrohalogenation of halotetrahydropyrans in the presence of an alkali metal halide.

3,639,670
4-PHENYLAMINO-3-NITRO BENZENE N-(3-ACETYLPHENYL) SULFONAMIDES

Andrew Fono, Montclair, and Robert E. Eagle, Metuchen, N.J., assignors to Otto B. May, Inc., Newark, N.J.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,862

Int. Cl. C07c *143/80*

U.S. Cl. 260—397.7 R **6 Claims**

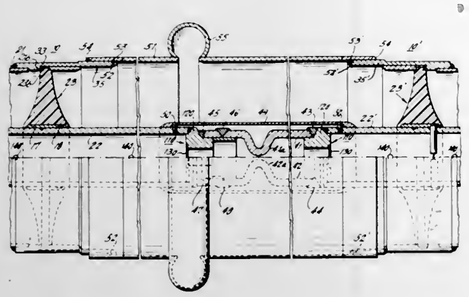
This disclosure relates to certain new dye compounds which are 4 - arylamino - 3 - nitrobenzene-N-(3-acetylphenyl)-sulfonamides. This disclosure also relates to polyester-containing shaped articles, e.g., fibers, dyed with these compounds.

ELECTRICAL

3,639,671
FILTER ARRANGEMENT IN COMPRESSED-GAS-INSULATED ELECTRICAL CONDUCTORS

Robert M. Clark, Ligonier, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 31, 1970, Ser. No. 68,152
Int. Cl. H02g *5/06*; H01b *9/06*
U.S. Cl. 174—14 R 4 Claims

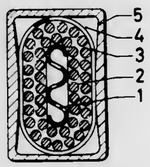


A microporous filter is located within the hollow inner conductor of a high-voltage gas-insulated transmission system including two concentric conductors. The filter prevents metallic dust particles, which may be present in the conductors, from migrating through the system to prevent any reduction in the dielectric breakdown voltage level of the system.

3,639,672
ELECTRICAL CONDUCTOR

Wilhelm Kafka, Tennenlohe, Germany, assignor to Institut fur Plasmaphysik G.m.b.H., Garching, Germany

Filed Feb. 20, 1970, Ser. No. 13,123
Claims priority, application Germany, Feb. 21, 1969, P 19 08 885.8
Int. Cl. H01b *7/34*, *5/00*
U.S. Cl. 174—15 C 24 Claims

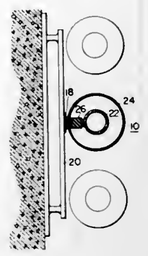


A cryogenic electric conductor formed from a plurality of superconducting wires arranged in a twisted configuration. The conductor is enclosed in a vacuumtight sheath and the gaps between conductor and the sheath and between the individual wires are filled with a low-temperature cooling medium, preferably helium. Each of the wires has one or more superconducting cores surrounded by a metal e.g. copper, in efficient heat-conducting contact therewith. The sheaths may be formed of a low-conducting metal or from a plastic.

3,639,673
VERTICALLY DISPOSED ISOLATED PHASE BUS

Yoshio Fujisaki; Akira Suzuoki, both of Hitachi, and Eiichi Ishibashi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,316
Claims priority, application Japan, Aug. 15, 1969, 44/64183
Int. Cl. H02g *5/06*
U.S. Cl. 174—16 B 8 Claims

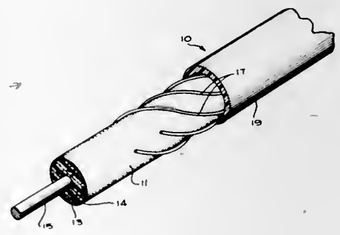


Vertically disposed isolated phase bus whose length reaches to hundreds of yards including a conductor bar, a sheath concentrically enclosing the bar so as to define an annular space therebetween substantially uninterrupted over the whole length of the bar and supporting insulators supporting the bar on the sheath, wherein substantially uninterrupted successive small turbulent free-convection flows are formed along the longitudinal direction of the annular space, when the bar conducts electric current.

3,639,674
SHIELDED CABLE

Ronald L. Stier, Aurora, Ill., assignor to Belden Corporation, Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,823
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 13 Claims



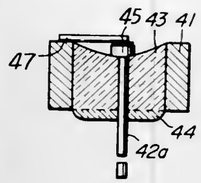
A low-noise coaxial cable is formed with an elongated inner electrical conductor about which is an elongated, dielectric insulating layer of polymeric material which may be either a solid or foamed polymeric material. A thin electroless deposited shield of metal is intimately bonded to the outer peripheral surface of the insulating layer even if the same has surface irregularities therein. The insulating layer may be made with a constant uniform cross-sectional thickness, usually being annular in cross section, and bent and flexed without experiencing discontinuities in the shield which would destroy its effectiveness. The cable may be

produced with ordinary commercially feasible techniques to obtain consistently good low-noise characteristics which are maintained even with substantial use and flexing over prolonged periods of time.

3,639,675
LAMINATED GLASS STEM AND METHOD OF MAKING SAME

Yoku Kaino, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,513
Claims priority, application Japan, Jan. 27, 1969, 44/5254; Oct. 2, 1968, 43/71107
Int. Cl. H01j *5/00*
U.S. Cl. 174—50.61 10 Claims

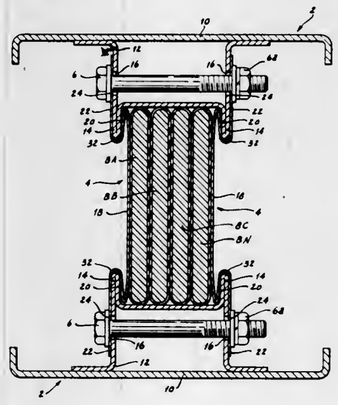


A stem having a metal cylinder, at least one metal lead extending through the cylinder, a glass body interposed between the cylinder and the lead for supporting the lead, electrically insulated from the cylinder, and a glass layer having a surface of greater resistivity than that of the glass body and covering at least a portion of the surface of the glass body so as to prevent a reduction of insulation resistance between the lead and the cylinder.

3,639,676
FEEDER BUS DUCT WITH IMPROVED HOUSING STRUCTURE

George A. Dempsey, Jr.; Martin F. Koenig, both of Milwaukee, Wis.; Manuel Issa, deceased, late of Milwaukee, Wis., and Patrick T. Sheedy, administrator, Fox Point, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis., by said Dempsey and said Koenig

Filed Nov. 27, 1970, Ser. No. 93,146
Int. Cl. H02g *5/06*
U.S. Cl. 174—68 B 9 Claims

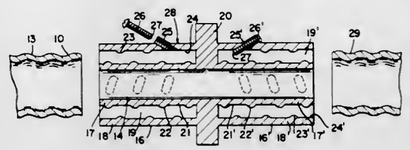


A plurality of wide flat insulated bus bars are compressed in flatwise adjacent relationship between inwardly bowed aluminum side members and formed sheet metal edge caps. The side members have reflex portions formed along opposite edges which extend angularly outward and are cammed inward by rail portions on the caps to compress the sides substantially flat on the bus bars and bias the bus bars firmly together. The resiliently bowed sides and reflex portions compensate in assembly for an accumulation of tolerances in the bus bars and their insulation. Bolts are used to secure the sides and caps together, and exaggerated clearance openings are provided for the bolts to permit the caps to be forced firmly against the bus bars with the bolts loosely in place before being finally secured.

3,639,677
ELECTRICAL CONDUIT COUPLING MEANS

Andrew Bain, 2440 Greenwich, San Francisco, Calif.

Filed Sept. 24, 1970, Ser. No. 75,107
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 S 12 Claims

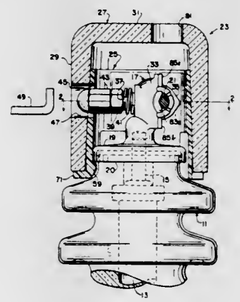


Coupling means for coupling a spirally wound flexible conduit to an electrical conduit or conduit box including a double-walled housing having projections thereon adapted to mate with the spirally wound surfaces of the flexible conduit and locking means for both further securing the flexible conduit within the walls of the housing and forming an electrical ground between the double-walled housing and the flexible conduit via the locking means.

3,639,678
BUSHING PROTECTIVE GUARD

Peter W. Muschong, St. Louis, Mo., assignor to Central Transformer, Inc., Pine Bluff, Ark.

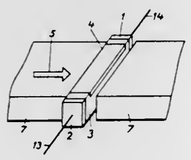
Filed July 17, 1970, Ser. No. 55,902
Int. Cl. H01b *17/00*
U.S. Cl. 174—145 11 Claims



A protective guard for attachment to a bushing of high-voltage electrical apparatus, for enclosing and guarding a connector assembly attached to the bushing. A sleeve of resilient electrically insulating material surrounds the connector assembly and has lips which engage the connector assembly and secure the sleeve thereto. A first knockout pro-

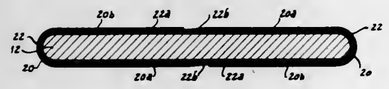
vides an aperture toward which a projecting portion of the connector assembly may extend to act as a gap electrode and a second knockout provides an aperture for accommodating a conductor to be laterally connected to the connector assembly. A cap of electrically insulating material has a top and a sidewall which fit respectively over and around the sleeve in engagement therewith. An aperture in the top accommodates a conductor to be vertically connected to the connector assembly and at least one aperture in the sidewall of the cap provides access to one of the knockouts.

3,639,679
SEMICONDUCTOR MICROPHONE
Sune Lambert Overby, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Jan. 13, 1970, Ser. No. 2,551
Claims priority, application Sweden, Jan. 21, 1969, 752/69
Int. Cl. H04r *23/00*
U.S. Cl. 179—110 B **5 Claims**



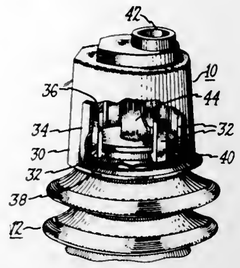
A microphone includes a permanent magnet having an air-gap in which a semiconductor diode sensitive to a varying external magnetic field is suspended. The diode is connected to a sound-responsive element so that when the sound-responsive element is vibrated by acoustic waves, the diode will oscillate in the airgap of the permanent magnet so that the current through the diode will vary according to the vibrations.

3,639,680
INSULATED BUS BAR ASSEMBLY
George A. Dempsey, Jr.; Martin F. Koenig, and Clyde F. Robbins, all of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Dec. 7, 1970, Ser. No. 95,617
Int. Cl. H01b *7/02, 7/08;* **H02g** *5/06*
U.S. Cl. 174—117 FF **6 Claims**



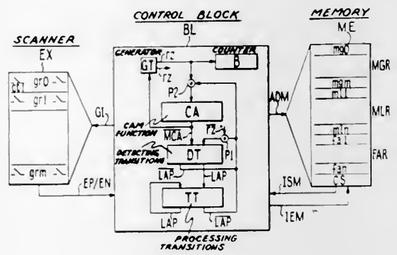
Individual bus bars are insulated between their offset ends by two pairs of preformed U-shaped insulator strips having unequal length legs, the insulators of the respective pairs being slipped over the bar from opposite edges with the longer leg of each adjacent, and preferably tucked under, the shorter leg of the other and the second pair being disposed oppositely of the first pair. The offset ends are insulated either by a spiral wrap of insulating tape or a dip coating of insulation, each applied to overlap the ends of the preformed insulators. Three or four individually insulated bus bars are assembled with offset ends flared apart and have a preformed elongated rectangular insulator, slit along one side, disposed around the assembly between the innermost bends of the offset ends. The complete assembly between the offset portions is then tightly encased within a metallic housing.

3,639,681
BUSHING TERMINAL GUARD
Louis F. Ettlinger, Conover, N.C., assignor to General Electric Company
Filed Sept. 2, 1970, Ser. No. 68,888
Int. Cl. H01b *17/00*
U.S. Cl. 174—138 F **2 Claims**



A bushing terminal guard for a high-voltage bushing to prevent contact with the line terminal. The guard is made of a rigid plastic material and is provided with internal fingers having notches which snap in place over the bushing terminal cap. An opening is provided to receive the high-voltage line which is to be connected to the high-voltage terminal of the bushing.

3,639,682
TELEGRAPH LINE SCANNING SYSTEM
Henri Benmussa, Meudon; Ngoc-Sanh Bui, L'Hay-les-Roses, and Gerard Troubac, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,432
Int. Cl. H04l *17/16*
U.S. Cl. 178—3 **8 Claims**

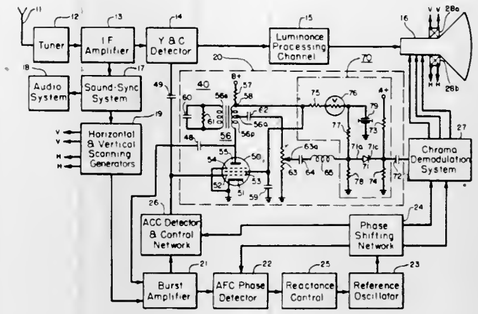


A system for detecting transitions and reconstituting characters for slow telegraph lines. Normally, a character is reconstituted at the receiving of the "start" of next character. Therefore a "cam function" has been provided, which reviews one by one the line memories at intervals longer than the duration of a character, so that any character which has been completely received is processed regardless of the lack of a next character.

3,639,683
COLOR KILLER CIRCUIT
John B. Sutherland, Villa Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,812
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 CK **4 Claims**

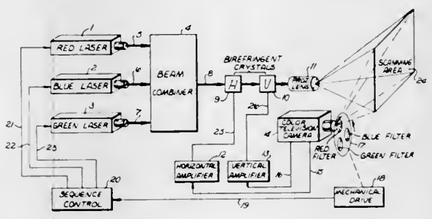
Improved color killer circuitry for disabling the chrominance processing channel during monochrome or very weak color signal reception. The circuit includes a high-

speed semiconductor switching device interposed in the signal path of the chrominance channel and poled to conduct color information therethrough when the signal level is at a predetermined magnitude. At signal levels below threshold, the semiconductor switch is effectively reverse-biased. The disclosed circuitry further includes actuating means responsive to a source of potential wherein variations in signal level



are indicative of instantaneous amplitude of the reference burst signal and which further represent received signal strength. When the chrominance information extracted from the received composite signal reaches a predetermined level, i.e., threshold, the semiconductor switching device becomes forward-biased thereby opening the signal path to pass appropriate chrominance information to subsequent stages in the chrominance channel.

3,639,684
FIELD SEQUENTIAL LASER SCAN FOR NIGHT COLOR TELEVISION
Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 20, 1970, Ser. No. 65,614
Int. Cl. H04n *9/04, 9/06, 9/34*
U.S. Cl. 178—5.4 R **10 Claims**



A system for closed circuit or other television in low ambient light condition, said system being arranged for operation in either of two modes.

A color television camera is equipped with red, blue and green filters which are applied field sequentially in a first mode of system operation and are unused in a second mode.

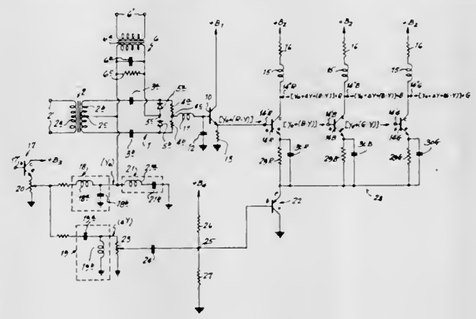
Laser beam generating means are included and are adapted to generate three laser beams of colors corresponding to the filter colors. The laser generator is adapted to produce the three beam colors simultaneously during each frame in the first mode and field sequentially in the second mode.

The laser beams are all directed into a common beam path which is passed through horizontal and vertical laser beam deflection devices to scan the laser beams synchronously with the camera scan.

The deflection devices illustrated are preferably birefringent crystal devices which receive suitably amplified camera sweep signals and correspondingly vary their coefficients of refraction to produce laser beam scanning congruent with the camera scan.

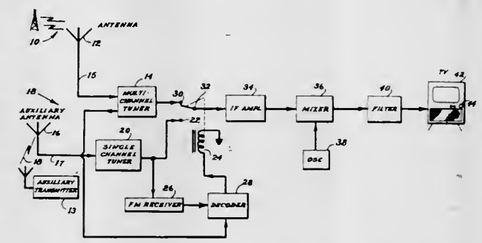
Economical illumination in a single-camera system is thereby effected, and the system is adapted to future developments in multicolor lasers.

3,639,685
SIGNAL SUPPLYING CIRCUIT FOR A COLOR PICTURE TUBE
Minoru Morio, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 1, 1969, Ser. No. 862,889
Claims priority, application Japan, Oct. 7, 1968, 43/72980
Int. Cl. H04n *9/50*
U.S. Cl. 178—5.4 MA **9 Claims**



In a signal supplying circuit for a color picture tube, the luminance signal component of a color signal is divided into a high-frequency component and a low-frequency component, the low-frequency component is supplied to a demodulator for the chrominance signal component of the color signal so that the output of the demodulator which is supplied to the output amplifier contains the demodulated chrominance signal component mixed with the low-frequency luminance signal component, and the high-frequency luminance signal component is separately applied to an input of the amplifier for mixing in the output of the latter with the chrominance signal component and the low-frequency luminance signal component so as to constitute therewith a complete color video signal for application to a color picture tube.

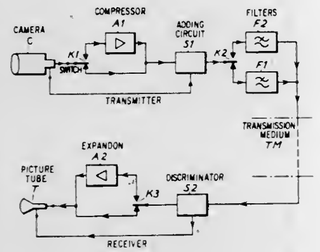
3,639,686
TELEVISION RECEIVER CUT-IN DEVICE
Harold R. Walker, Metuchen, N.J., and Ira Kamen, New York, N.Y., assignors to Homarket Inc., Bridgeport, Conn.
Filed Apr. 25, 1969, Ser. No. 819,232
Int. Cl. H04b *1/06*
U.S. Cl. 178—5.8 R **18 Claims**



A market-testing television system which may be utilized with present day television systems and is capable of select-

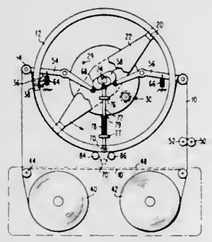
ing specific sections of a general audience listening to a conventional channel and providing an auxiliary program for the selected sections.

3,639,687
ARRANGEMENT FOR VIDEO SIGNAL TRANSMISSION AT A PICTURE TELEPHONE CONNECTION
Curt Danell, Johanneshov, and Nils Olof Johannesson, Bandhagen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Sept. 4, 1969, Ser. No. 855,166
Claims priority, application Sweden, Oct. 9, 1968, 13597/68
Int. Cl. H04h *7/12*
U.S. Cl. 178—6 **1 Claim**



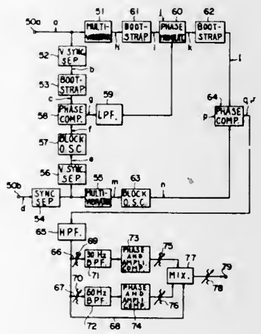
An arrangement in a picture telephone connection for obtaining optimal quality of the picture both when the connection is used for transmitting a picture of an object which only requires a sharp contrast for example a page of text and when the connection is used for transmitting a picture of an object which requires a wider range of different light intensities for example a face. In the first case the video signal is compressed in a compressing amplifier in the transmitter and supplied to the transmission medium leading to the receiver via a low-pass filter having a steep transition from passband to suppressed band and an expanding corresponding to the compression is carried out in the receiver. In the second case the video signal is supplied to the transmission medium uncompressed via a low-pass filter having a flat transition from passband to suppressed band.

3,639,688
SERVOMECHANISM FOR INCREMENTING STRIP RECORD TRANSPORTING SYSTEMS
Robert Gordon Nelson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,202
Int. Cl. G11b *15/52*; **H04n** *5/78*; **G11b** *3/40*
U.S. Cl. 178—6.6 P **15 Claims**



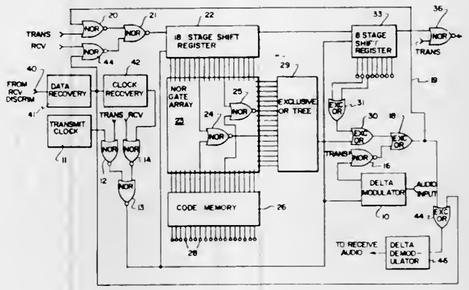
An audio-video signal storage device of the type in which a magnetic tape is advanced in increments of one or more intertrack spacing intervals is enhanced for continuous incrementing by a servosystem comprising a pair of electromagnetic transducers spaced apart along one portion of the tape at an interval of one-half (or an odd multiple) of the increment and a generator establishing a reference pulse at a time of predetermined, preferably maximum velocity of the tape as it is being incremented. That reference pulse is applied to one of the transducers for recording on one portion of the tape. As that portion of the tape is incremented the other of the transducers reproduces that pulse and it is compared in time with a subsequent reference pulse from the generator for producing an error signal. The error signal indicates concurrent, leading, or lagging conditions for operating conventional speed controlling servosystems. Address information for direct access of information stored on the tape is recorded and reproduced with the same two servomechanism sensing transducers and conventional access mechanism control circuitry.

3,639,689
JITTER CORRECTION SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS
Toshio Doi, Hamamatsu, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed Nov. 20, 1969, Ser. No. 878,278
Claims priority, application Japan, Nov. 21, 1968, 43/84825; Feb. 14, 1969, 44/10507
Int. Cl. H04n *5/04*, *5/14*, *5/78*
U.S. Cl. 178—6.6 TC **9 Claims**



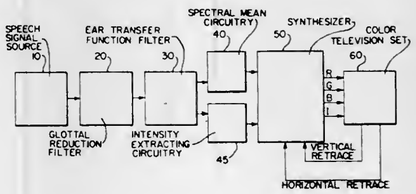
A jitter correction system effectively corrects jitter in a television picture recorded and reproduced by a magnetic recording and reproducing apparatus. The system comprises a first phase comparator means for comparing the phase of a synchronizing signal of a reproduced video signal with the phase of an outside synchronizing signal for the vertical synchronizing interval. A phase modulation of either the outside synchronizing signal or the reproduced video signal responsive to the output of the first phase comparator means represents a detected phase difference. A second phase comparator means compares the phase of the rest of the outside synchronizing signal and the reproduced video signal with the phase of the output signal of the phase modulator means, for the horizontal synchronizing interval. The output of the second phase comparator means represents a detected jitter component corresponding to the distortion of the reproduced television picture. This output is utilized for effecting a correction of the jitter of the reproduced television picture.

3,639,690
DIGITAL PRIVACY SYSTEM
William V. Braun, and Albert J. Leitich, both of Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 10, 1969, Ser. No. 856,714
Int. Cl. H04l *9/04*
U.S. Cl. 178—22 **15 Claims**



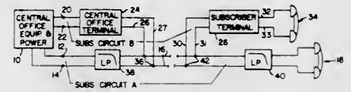
A digital voice-privacy system uses a delta modulator to convert voice information to digital data which then is encoded by combining the output of the delta modulator with a digital signal derived from selected stages or a shift register and a programmable code memory with the resultant data train being fed back as the input signal train for the shift register. The output of the last stage of the shift register is the encoded data. The data is decoded by a similar system, with the received signals being supplied to the input of a shift register and programmable code memory circuit comparable to the one used in the encoder to form a decoding signal which is combined with the encoded digital data to provide an output to a delta demodulator, the output of which then is the desired decoded voice information.

3,639,691
CHARACTERIZING AUDIO SIGNALS
William J. Beninghof, Jr., Roslindale, Mass., assignor to Perception Technology Corporation, Winchester, Mass.
Filed May 9, 1969, Ser. No. 823,372
Int. Cl. G10l *1/12*
U.S. Cl. 179—1 VS **13 Claims**



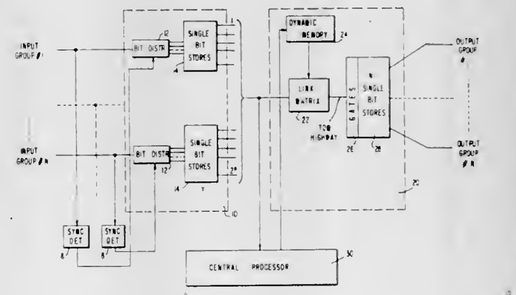
The loudness, spectral mean and spectral spread of speech signals are represented in the visual domain similar to brightness, hue and saturation of a color, respectively. The above parameters of a speech signal are extracted, and, by various operations, adapted for use in, and/or with other systems. As in color, the values of these parameters are defined relative to reference frames such that the parameters so extracted are to a large degree insensitive to extraneous ambient noises, speaker differences and overall (wideband) filterings.

3,639,692
SUBSCRIBER TERMINAL UNIT FOR TELEPHONE CARRIER SYSTEM
Lester Q. Krasin, Dallas, and Clifford E. Greene, Fort Worth, both of Tex., assignors to Superior Continental Corporation
Original application Aug. 2, 1967, Ser. No. 660,165, now Patent No. 3,510,584, Continuation-in-part of application Ser. No. 549,399, May 11, 1966, now abandoned. Divided and this application Dec. 22, 1969, Ser. No. 887,271
Int. Cl. H04j *1/00*
U.S. Cl. 179—2.5 R **8 Claims**



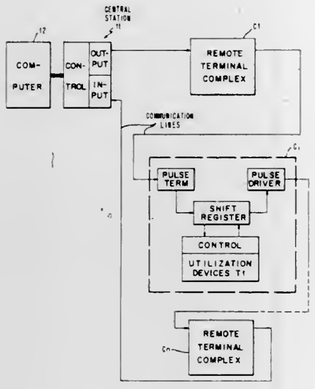
The disclosure relates to a subscriber terminal for a telephone communication system which is adapted for connection to a cable transmission pair from a central office to supply an additional facility without affecting the original system. The subscriber terminal utilizes a rechargeable battery which furnishes power to its receiver and transmitter sections which operate at frequencies different from those of the physical communication system. The battery is controlled by a charging circuit so as to be charged by the central office power supply during nonoperation of the physical system.

3,639,693
TIME DIVISION MULTIPLEX DATA SWITCH
William F. Bartlett, Rochester, and William A. Oswald, Brighton, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Nov. 22, 1968, Ser. No. 784,991
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AT **12 Claims**



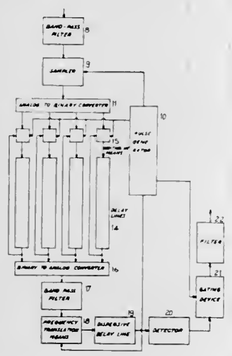
A time division multiplex data switch wherein any one of a plurality of input channels forming a plurality of input groups may be switched to any one of a plurality of output channels forming a plurality of output groups, which includes individually synchronized bit distributors associated with each input group, for distributing the bits to a plurality of single-bit stores, each associated with a channel, and a single-time division highway controlled by a dynamic memory.

3,639,694
TIME DIVISION MULTIPLEX COMMUNICATIONS SYSTEM
Herman Deutsch; Edgar H. Steward, and Walter D. Van Gieson, Jr., all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,334
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AL **9 Claims**



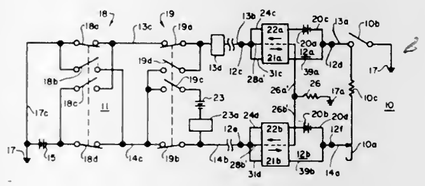
A closed loop two-wire serial communications system for providing two-way communications between a plurality of serially connected terminal complexes and a central control station. The communications system including a plurality of time multiplexed channels each having switching or multiplexing information, control information and data to effect bidirectional data flow between the terminal complexes and the central.

3,639,695
SYSTEMS FOR PROCESSING FREQUENCY MODULATED SIGNALS
Jean Bertheas, Paris, France, assignor to Thomson-CSF
Filed Feb. 4, 1969, Ser. No. 796,503
Claims priority, application France, Feb. 5, 1968, 138699
Int. Cl. H04b *1/66*
U.S. Cl. 179—15.55 R **15 Claims**



The invention relates to devices for either compressing or extending the duration of frequency modulated pulses. The signal-processing system of the invention comprises a converting device for modifying the duration of a signal without affecting its waveform and another transmission device having dispersive characteristics for further modifying the duration of the envelope of said signal. Since the above-mentioned converting device is capable of supplying more than one signal for each processed pulse, gating means are coupled to the converting means for gating out unwanted signals.

3,639,696
MULTISTATE VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation
Filed Apr. 1, 1969, Ser. No. 811,992
Int. Cl. H04b *3/00*
U.S. Cl. 179—16 F **14 Claims**

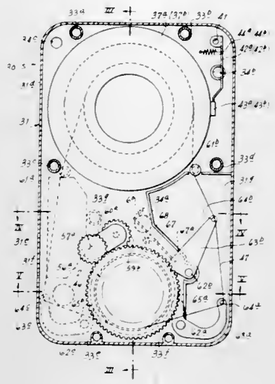


A circuit for increasing the flow of telephone line current in telephone systems which utilize reverse battery supervision and the grounding of the telephone line at the subscriber station for supervisory or control purposes. Power booster networks connected in series with respective sides of a telephone line each include a semiconductor switch for controlling the flow of current toward the subscriber station and a semiconductor switch for controlling the flow of current away from the subscriber station. A DC auxiliary source is connected in series with one switch in each power booster network. The conduction of the different switches is controlled in accordance with the voltages present in the telephone system to direct telephone line current flow through that one of the DC auxiliary sources which is in power aiding relationship to said current flow despite changes in the direction of current flow in one or both sides of the telephone line.

3,639,697
MAGNETIC TAPE CARTRIDGE CONTAINING ENGAGING MEANS FOR ROTARY HEAD
Kazumasa Koguma, Tokyo; Hiroshi Takeuchi, Kanagawa-ken, and Yuichi Kanamaru, Saitama-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 16, 1970, Ser. No. 11,750
Claims priority, application Japan, Feb. 28, 1969, 44/15781; Apr. 23, 1969, 44/31402
Int. Cl. G11b *23/04*
U.S. Cl. 179—100.2 Z **22 Claims**

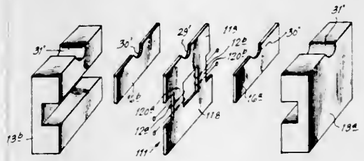
A magnetic tape recording and reproducing device having a tape guide drum and a rotary magnetic head for recording and reproducing signals on a tape wrapped about the drum is provided with a magnetic tape cartridge adapted to be removably mounted on the device and having a housing containing the tape and an assembly by which, when the cartridge is removed from the device, a loop of the tape is

securely supported and, when the cartridge is mounted on the device, such tape loop is released to engage in wrapped



relation about the guide drum for recording or reproducing operations.

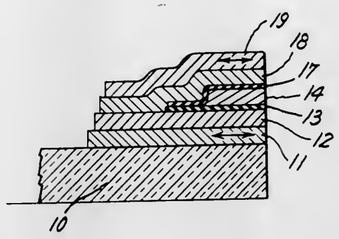
3,639,698
DUAL-GAP MAGNETIC FLUX RESPONSIVE HEADS
Saburo Uemura, Kanagawa-ken; Toyohiko Fuse, and Yoshitaka Hashimoto, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,924
Claims priority, application Japan, Dec. 28, 1968, 44/1592
Int. Cl. G11b *5/30*
U.S. Cl. 179—100.2CF **15 Claims**



In a dual-gap magnetic flux responsive head comprised of a saturable magnetic core with coils thereon and a pair of magnetic yokes forming a loop path for magnetic flux in connection with the core disposed therebetween and having dual gaps defined between one end of the core and the adjacent ends of the yokes; the core includes a first member having a lateral portion or crosspiece at one end from which a plurality of parallel, spaced-apart legs integrally extend to receive the coils wound apart from the core, and a second member in the form of a crosspiece joined to the free end portions of the legs after the coils have been mounted on the latter.

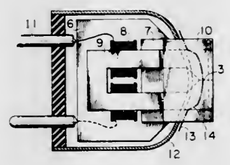
3,639,699
MAGNETIC TRANSDUCER HAVING A COMPOSITE MAGNETIC CORE STRUCTURE
Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company
Filed Feb. 27, 1970, Ser. No. 14,945
Int. Cl. G11b *5/22*
U.S. Cl. 179—100.2 C **7 Claims**

A magnetic transducer for read-write applications is disclosed in which a composite core having two closely spaced legs is provided with each leg having one layer of magnetic material of higher permeability and lower saturation flux density than the second layer of that leg. The read-write conductor means is positioned between the two legs and is thereby inductively coupled to the core. The higher permeability layer is narrow in a direction perpendicular to both the length of the leg and the thickness of the layer, is adjacent



the conductor means and is saturated at flux densities encountered in writing so that the wider lower permeability outer layers of the two legs are effective during writing and the higher permeability narrower layers are effective or dominant during reading. In a modification, a composite shim is employed in the gap of a more conventional stacked lamination head to obtain some of the advantages of the present invention.

3,639,700
MULTIELEMENT MAGNETIC HEAD OF ALL OXIDE OR SINTERED QUALITIES
Takashi Shiraki, Neyagawa; Sadao Masuoka, Hirakata, and Minoru Morita, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 16, 1970, Ser. No. 19,946
Claims priority, application Japan, Mar. 22, 1969, 44/22487
Int. Cl. G11b *5/14*
U.S. Cl. 179—100.2 C **4 Claims**

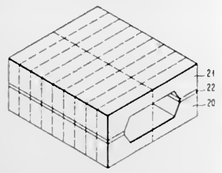


A multielement magnetic head for magnetic recording and/or reproducing operations. The tape-engaging face of the head includes magnetic cores each having a gap, preformed sectioned spacers of nonmagnetic material surrounding the magnetic cores, and a shield plate of magnetic material disposed between the adjacent cores. The materials of all the members composing the tape-engaging face are sintered oxides.

3,639,701
MAGNETIC RECORDING HEAD HAVING A NONMAGNETIC FERRITE GAP
Duane R. Secrist, and Harold L. Turk, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 2, 1970, Ser. No. 51,928
Int. Cl. G11b *5/14, 5/42*
U.S. Cl. 179—100.2 C **12 Claims**

A magnetic head assembly is claimed. The magnetic head assembly comprises a pair of magnetic ferrites having mating

surfaces and a transducing gap comprising a nonmagnetic crystalline ceramic, which may particularly be a nonmagnetic



ferrite, formed as a bond between the mating surfaces. More particularly, the bond is formed by solid-state diffusion.

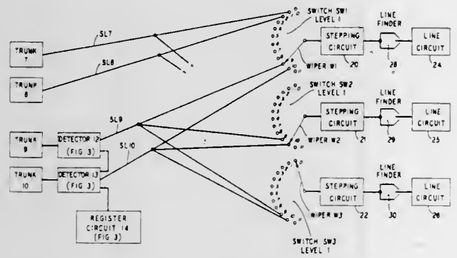
ERRATUM

For Class 179—110 see:
Patent No. 3,639,679

3,639,702
COMMUNICATION SYSTEM TRAFFIC SURVEY ARRANGEMENT

Harold K. Thompson, San Anselmo, Calif., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,164
Int. Cl. H04m *3/22, 3/36*
U.S. Cl. 179—175.2 C **20 Claims**



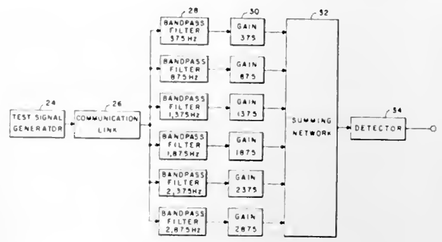
In order to obtain a count of the number of ineffectual attempts which are made to seize a trunk in a direct progression communication system trunk subgroup in which all the trunks are busy, current detectors are inserted into the path between the hunting switch stepping relay of each selector level to be studied and the sleeve leads of the ninth (next to last) and tenth (last) trunks. The current detectors are arranged such that in normal operation when the associated trunk is activated the detector remains off. However, when the selector switch steps past a busy trunk the current from the stepping relay enables the detector. Circuitry is provided to insure that a count will be recorded only during the hunting interval of the selector switch and not during the release interval.

3,639,703
METHOD AND MEANS FOR MEASURING WEIGHTED NOISE IN A COMMUNICATION LINK

Gerald T. Bergemann, and Ernest N. Dulaney, both of Marion, Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Apr. 16, 1969, Ser. No. 816,728
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **7 Claims**

Disclosed is a means for measuring weighted noise in a link having a test signal spectrum concurrently present including filter means, attenuation means and summing means. Oscillator means and modulator means may be included to increase

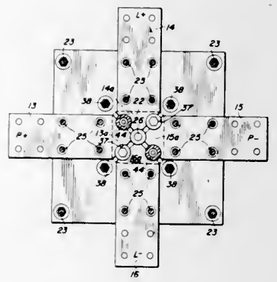


the frequency level of the communication band at the output of the link prior to measuring the weighted noise.

3,639,704
AUTOMATIC CURRENT-REVERSING SWITCH

Gilbert L. Alinder, Minneapolis, Minn., assignor to Clinton Supply Co., Chicago, Ill.

Filed May 26, 1970, Ser. No. 40,660
Int. Cl. H01h *67/20*
U.S. Cl. 200—1 V **12 Claims**



A current-reversing switch having four angularly disposed bus bars separated at the inner ends thereof. A power-actuated switch subassembly including a reciprocable shaft carrying switching contacts disposed on opposite sides of the bus bars. The switching contacts are disposed out of phase so that in one position of the reciprocable shaft the contacts on one side of the bus bars are operative to effect a current flow in one direction and in a second position on the opposite side the contacts are operative to reverse the current flow through the bus bars.

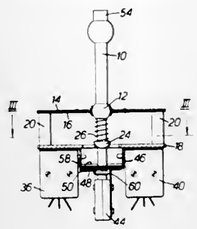
3,639,705
JOYSTICK CONTROL SWITCH

Wilfred H. G. Rayner, London, England, assignor to Clarke and Smith Manufacturing Company Limited

Filed Apr. 13, 1970, Ser. No. 27,745
Claims priority, application Great Britain, Apr. 17, 1969, 19,617/69
Int. Cl. H01h *25/04*
U.S. Cl. 200—6 A **9 Claims**

In a joystick control switch having an operating lever rotatable about a point intermediate the length of the lever, the lever is positively indexable in each of a plurality of positions of rotation by means of a collar slidably mounted on the lever and resiliently biased into engagement with a gate member defining the plurality of positions of rotation, and in

each of the plurality of positions of rotation the lever operates a depressible-plunger-type switch by contact of the lever with the plunger either directly or through the intermediary of a single lever member. A button located in one

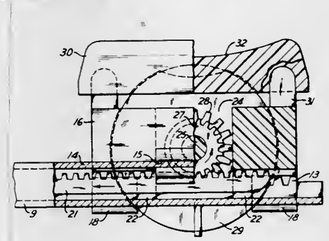


end of the lever is depressible to slide a shaft extending longitudinally of the lever to depress the plunger of an additional switch at the other end of the lever, in one position of rotation of the lever.

3,639,706
RECIPROCATING SWITCH MECHANISM WITH IMPROVED THUMBWHEEL ACTUATOR INCLUDING RACK AND PINION STRUCTURE

Harold L. Purdy, Hummelstown, Pa., assignor to Stackpole Carbon Company, St. Mary's, Pa.

Filed Mar. 15, 1971, Ser. No. 124,377
Int. Cl. H01h *3/08, 15/16*
U.S. Cl. 200—17 R **8 Claims**



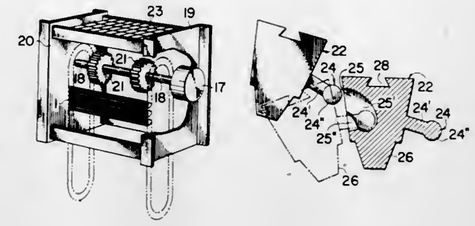
A slide is movable lengthwise of a housing to move contact means therein along conducting means. Secured to the housing is a stationary rack bar that is longer than the housing and supports a carrier movable along the bar. A rack bar, which is movable lengthwise along the stationary bar and carrier, is connected with the slide for moving it. Rotatably mounted on the carrier is a pair of rigidly connected coaxial gears, one of which is smaller than the other. The large gear meshes with the stationary rack bar and the smaller gear meshes with the movable rack bar. When the gears are rotated, the one engaging the stationary bar will move the carrier along the bar, and the other gear will move the movable bar along the stationary bar a shorter distance than the carrier moves so that the slide will be moved only the shorter distance.

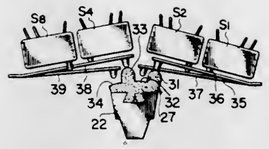
3,639,707
TIMER SWITCH APPARATUS WITH IMPROVED FLEXIBLE CHAIN WITH CODED MOVABLE PINS

Hirotugu Takano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1970, Ser. No. 25,820
Claims priority, application Japan, Apr. 21, 1969, 44/30938
Int. Cl. H01h *7/00;* **D04b** *15/66;* **D03c** *15/02*
U.S. Cl. 200—33 C **4 Claims**

A numerical control apparatus for use in an automation such as an automatic positioning apparatus which automatically positions the locations for boring, parts mounting or cutting. In this numerical control apparatus, a command



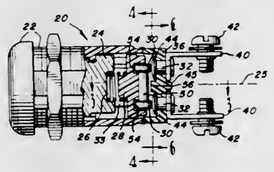


signal for controlling the automation is generated by actuation of a multiplicity of microswitches by code pins which are sequentially moved to their microswitch actuating positions.

3,639,708
ROTARY SWITCH LOCK

Stanley C. Wolniak; Herbert J. Kincaid, and Marshall A. Johnson, all of The Illinois Lock Co. 301 West Hintz Road, Wheeling, Ill.

Filed Aug. 13, 1970, Ser. No. 63,559
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **16 Claims**

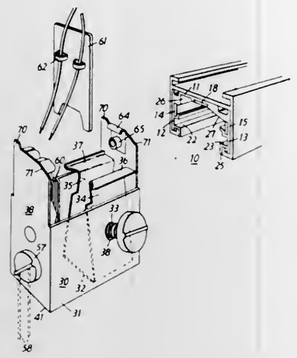


A key-operated rotary switch lock having movable roller contacts which roll along the surface of terminal contacts upon making contact therewith. The terminal contacts are mounted to, and project outwardly from, an insulator surface. The roller contacts comprise annular discs rotatably mounted on an elongated shaft which in turn is mounted for rotation about an axis normal to both the shaft axis and the insulator surface for translating the roller contacts to and away from the terminal contacts. A spacer member projects outwardly from the insulator surface along the axis of switch rotation to maintain a clearance between the roller contacts and the insulator surface.

3,639,709
OUTPUT ADAPTOR FOR ELECTRIC DISTRIBUTION TRACKS

Derek James Hart, and Robert Davis, both of London, England, assignors to British Lighting Industries Limited, London, England

Filed May 26, 1969, Ser. No. 827,822
Int. Cl. H01r *33/30*
U.S. Cl. 200—51 **2 Claims**

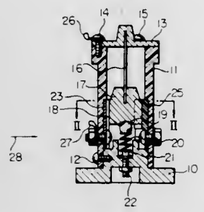


An output adapter intended for use with electricity distribution tracks provided with exposed track conductors has an on-off switch and a resilient clamp which can be moved outwardly from the adapter to engage a track and lock the adapter thereto in a position in which the contacts of said switch can be moved to the "on" position in abutment with the track conductors.

3,639,710
TRIGGER SWITCH FOR MOTOR VEHICLE SAFETY DEVICES

Takashi Haruna, Yokosuka, and Akira Shimano, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1971, Ser. No. 116,962
Claims priority, application Japan, Mar. 18, 1970, 45/26023
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.48 **9 Claims**

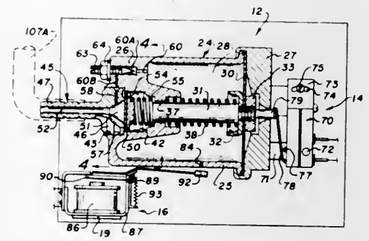


A trigger switch mechanism for motor vehicle safety devices which senses deceleration of a given magnitude resulting from a collision of the motor vehicle in order to actuate the safety devices. The mechanism comprises an upright cylinder within which an electrically conductive rockable weight is normally kept aligned with respect to the surrounding cylinder in a depending manner by a rodlike spring and a coiled spring. An arcuate contact is provided on the inner wall of the upright cylinder in front of the rockable weight at a suitable space therefrom. An arcuate damper is also provided on the inner wall of the upright cylinder opposite to the arcuate contact in such a manner as to partially surround the rockable weight thereby serving to absorb the usual shocks and vibrations of the vehicle. In operation, if the trigger switch mechanism is subjected to deceleration of a given magnitude resulting from a collision, then the rockable weight swings and strikes against the arcuate contact, thereby establishing an electrical connection therebetween.

3,639,711
VACUUM-OPERATED TIMING DEVICE WITH SOLENOID-CLOSABLE VENT IN VALVE CHAMBER

Leslie H. Jordan, 2021 East Broadway, Vancouver, British Columbia, and John Arden, 6049 Portland Ave., Burnaby, British Columbia, both of Canada

Filed Nov. 9, 1970, Ser. No. 88,060
Int. Cl. H01h *35/34, 43/28, 7/02*
U.S. Cl. 200—83 H **2 Claims**

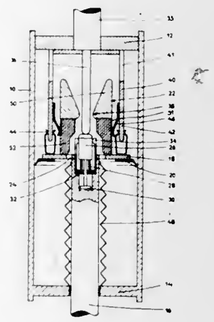


A timing device having a vacuum chamber enclosing a diaphragm which is mechanically connected to a switch in an electric circuit. The vacuum chamber is connected to a source of vacuum through a port controlled by a check valve and also through an adjustable restricted passage which bypasses the port. When vacuum at the source drops below a predetermined level, air is evacuated from the chamber after a delay determined by the selected size of the restricted passage. A vent in the valve chamber wall normally is open to atmosphere and the circuit includes a control device which closes the vent when the circuit is energized.

3,639,712
GAS BLAST CIRCUIT INTERRUPTER HAVING CONDUCTING ORIFICE MEANS

Georges Balmat, Grenoble, and Jean Jaillet, Saint-Egreve, both of France, assignors to Merlin Gerin, Grenoble, France

Filed July 13, 1970, Ser. No. 54,229
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **20 Claims**

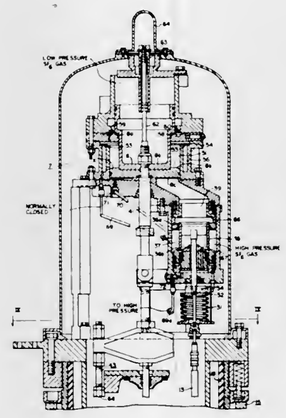


A puffer-type circuit interrupter having a composite orifice member with a restricted inner opening defining a takeover arcing contact. In order to prevent the production of a great quantity of ionized gas the arc length is limited and arc drawn between a pair of separable contact rods within the orifice member is transferred to the takeover arcing contact to cause the extinction of the arc by cross blasting the constant length arcing gap.

3,639,713
OPERATING MECHANISM FOR A CIRCUIT INTERRUPTER

William H. Fischer, Pittsburgh, and Wayne S. Aspey, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1968, Ser. No. 782,631
Int. Cl. H01h *35/38*
U.S. Cl. 200—148 R **13 Claims**



A dual-acting piston operable within an operating cylinder is mechanically connected to the moving contact structure of a circuit breaker. The piston has a portion constantly acted upon in the closing direction by a high-pressure operating fluid. A large portion of the piston structure is at low pressure, and the opposite face of the piston structure is alternately pressurized or exhausted to effect, respectively, an opening or a closing operation of the circuit breaker.

A portion of the piston structure fits into a recess thereby affording a shock-absorbing function during the closing operation. Another portion of the piston structure traps high-pressure operating fluid so as to constitute a shock absorber during the opening operation of the interrupter.

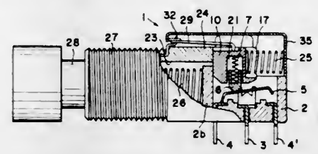
In the case that a gas is used, which tends to liquefy, provision is made for the removal of the liquefied gas during the operation of the mechanism.

3,639,714
PUSHBUTTON ALTERNATE ACTION SWITCH WITH PUSHBUTTON SHAFT UNCONNECTED TO ALTERNATE ACTION ACTUATOR BLOCK

Hiroji Fujimoto, and Kenji Nakakura, both of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kanagawa-ken, Japan

Filed May 15, 1970, Ser. No. 37,805
Int. Cl. H01h *13/56, 13/38*
U.S. Cl. 200—153 J **8 Claims**

A pushbutton switch of snap-action type completes a circuit on the first push and holds the circuit in locked condition while allowing the pushbutton shaft to return to its original position. On a second push, the switch breaks the

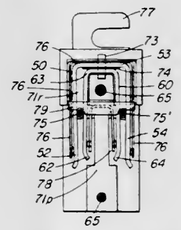


circuit and completes another circuit and again allows the pushbutton shaft to return to its original position.

3,639,715
FIXED AND MOVABLE CONTACT STRUCTURE FOR DISCONNECT SWITCHES

Paul M. Christensen, West Orange, N.J., and Robert J. Petitjean, West Simsbury, Conn., assignors to Arrow-Hart, Incorporated

Filed May 15, 1970, Ser. No. 31,363
Int. Cl. H01h *1/54*
U.S. Cl. 200—166 E **9 Claims**



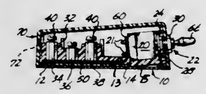
An insulation carrier of one or more pairs of similar U-shaped contact members is movable toward and from one or more pairs of spaced parallel flat fixed contact blades so that a pair of said blades are engageable and disengageable by a pair of said movable contact members, with the ends of the one of the U-shaped members engaging the outside surfaces of said fixed contact blades while the ends of the other of the U-shaped members engage the inside surface of said blades, causing electromagnetic forces incident to heavy current flow to be concentrated around the movable contacts and to create a pinching effect against the fixed contact blades in fully engaged position.

The outer of the pair of movable contacts is longer so that its ends engage the fixed contact blades first, creating (prior to the pinching effect) a weakening of their pressure against the fixed contact blades during initial engagement to facilitate movement into full engagement in case of heavy current flow.

3,639,716
TRANSFER SWITCH PACKAGE ASSEMBLY

Harry R. Rasmussen, 422 Fife Heights Drive N.E., Tacoma, Wash.

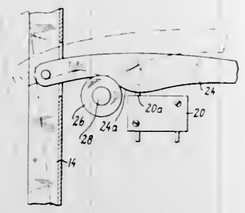
Filed Mar. 29, 1971, Ser. No. 128,758
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 B **4 Claims**



A transfer switch package assembly employs a printed circuit panel support buried in the assembly base and support-

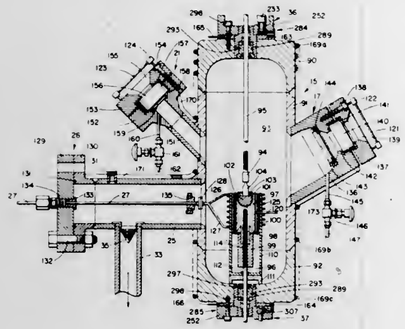
ing on one end a plurality of binding posts and at the other metal-surrounded holes for quick and accurate connection of conductive paths from said posts to connector taps or pins on a transfer switch body.

3,639,717
SWITCH ACTUATOR FOR AN ELECTRONIC COOKING DEVICE
Masayuki Mochizuki, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,294
Int. Cl. H01h *3/02*
U.S. Cl. 200—172 A **2 Claims**



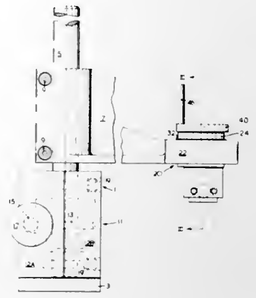
A spring biased door arm pivoted at one end to a door for an enclosure includes a protrusion on its lower side normally engaging a door switch to put it in the closed position. The protrusion responds to the opening of the door to ride on a roller normally contacted by the door arm, for causing the protrusion to disengage from the switch to deactuate a device such as a magnetron used for electronic cooking.

3,639,718
PRESSURE- AND TEMPERATURE-CONTROLLED CRYSTAL GROWING APPARATUS
Roger A. Castonguay, Salem; Bernard C. Hanley, Chestnut Hill; Francis J. Mallahan, Woburn, and Joseph F. Wenckus, Needham, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
Filed June 15, 1970, Ser. No. 46,096
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.67 **20 Claims**



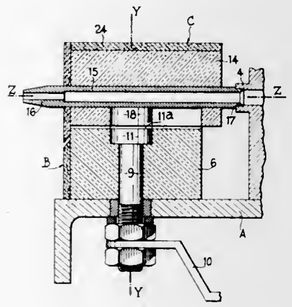
Furnace assembly providing a working volume the pressure in which may range from 10^{-5} torr to 100 atmospheres. Controlled temperatures up to 4,000° C. are attainable. Two load-bearing rods extending into the furnace are rotated and moved along their vertical axes over a wide speed range. Means are provided continuously to indicate the precise position of each rod, to monitor the operation within the furnace by TV, and to control the operations within the furnace from a remote location.

3,639,719
ELECTRODE GUIDE
Italo Caroli, Westmount, Quebec, Canada, assignor to DBM Industries Limited
Filed Dec. 9, 1969, Ser. No. 883,384
Claims priority, application Canada, Mar. 25, 1969, 046,694
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 E **8 Claims**



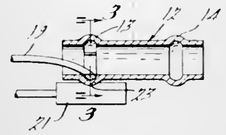
Apparatus for use in guiding and supporting the free end of an electrode carried by an electrode discharge machine, and having a main body portion preferably connected to a supporting stand. A support sleeve is rotatably and adjustably mounted in a central aperture in the body portion. A yoke is supported in the support sleeve and has means for positioning the same. Preferably, guide rollers are provided on the yoke to guidingly engage and effect fine adjustment of the electrode. An adapter head can also be provided on the yoke to accommodate electrodes of quite small dimensions.

3,639,720
METALLIZING GUN
Roger Malivoir, Pont-a-Mousson, France, assignor to Centre de Recherches de Pont-a-Mousson, Pont-a-Mousson, France
Filed Aug. 24, 1970, Ser. No. 66,508
Claims priority, application France, Sept. 30, 1969, 6933299
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **6 Claims**



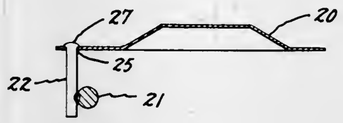
Metallizing gun employing an electric arc and having two wire guides and a compressed air nozzle fixed to a head. The head is detachably fixed to a support by a single screw. The wire guides are adapted to align with a wire-feeding device which feeds two wires through the wire guides. The wire guides are adapted to be connected to an electric power supply when the head is fixed to the support. The wire guides and nozzle can be easily replaced by substituting a replacement head having wire guides and a nozzle for the old head.

3,639,721
METHOD OF INSTALLING BRAZING RINGS
Edward F. Hubbel, Howell, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Nov. 13, 1970, Ser. No. 89,382
Int. Cl. B23k *11/10*
U.S. Cl. 219—91 **1 Claim**



A method of installing segmented brazing rings in the recessed beads of pipe fittings. The fitting is cleaned to eliminate surface contamination, a preformed brazing ring segment is inserted in the bead, and the segment is spot-welded in position using a capacitor discharge impulse welder. The remaining brazing ring segments are then similarly spotwelded in position.

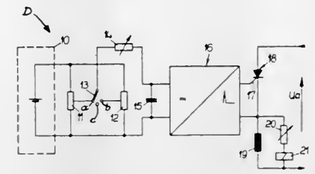
3,639,722
PROCESS FOR JOINING WIRES TO SHEETS OF REFRACTORY MATERIALS
Gasper Pagnotta, and Allan J. Kiesler, both of Schenectady, N.Y., assignors to General Electric Company
Filed June 17, 1970, Ser. No. 46,972
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **3 Claims**



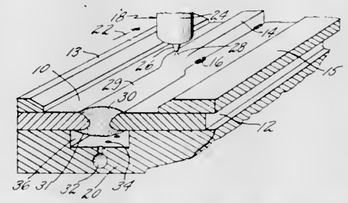
A tungsten reflector for a regenerative lamp is secured to a tungsten support rod by cross wire welding a molybdenum wire to the support rod and inserting the free end of the wire into an opening in the sheet and finally arc spot welding the free end of the wire to the side of the sheet facing away from the support rod.

3,639,723
WELDING CONTROL
Horst Keller, Kottingen/Wissen (Sieg); Gunter Hahn, Hausen, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany
Continuation-in-part of application Ser. No. 720,984, Apr. 12, 1968. This application June 4, 1970, Ser. No. 43,503
Int. Cl. B23k *9/06;* **G05f**
U.S. Cl. 219—131 R **8 Claims**

A welding control prevents crater formation at the beginning or end of a welding operation by obtaining a constant increase and decrease in the welding current at the beginning and end of the welding operation.

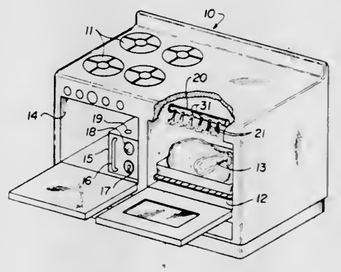


3,639,724
WELDING THORIA DISPERSED NICKEL
Francis C. Gerath, Canton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 2, 1970, Ser. No. 42,638
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **12 Claims**



Sheets of thoria dispersed nickel are joined by a filler material consisting of a solid solution hardened alloy using inert gas arc welding techniques. The filler material is sized to provide the desired weld bead configuration and to maintain a sufficient separation between the sheet edges during joining to allow continuous welds of indefinite length; additionally the filler material is compatible with subsequent thermal processing of the sheets during the application of a chromium outer coating. The final coated assemblies have strong welds, free of porosity, and agglomeration of thoria is also avoided.

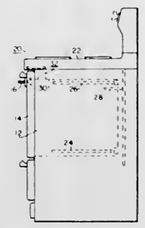
3,639,725
STEAM-GENERATING APPARATUS
Thomas J. Maniscalco, 7 Orian Pl., Glen Cove, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,449
Int. Cl. A21b *1/02*
U.S. Cl. 219—401 **5 Claims**



Apparatus particularly useful for preparation of foods wherein a portable steam-generating unit is adapted for cooperation with a proximate dry heat oven chamber to pro-

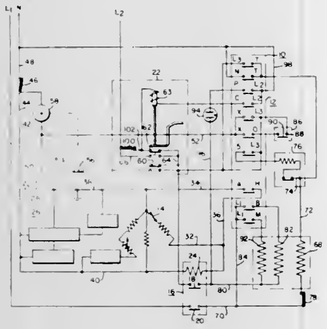
vide steam for controlled periods of time, and at controlled pressures.

3,639,726
SELF-CLEANING OVEN OVERHEAT SAFETY CONTROL
Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 26, 1970, Ser. No. 40,485
Int. Cl. F27d *11/02*
U.S. Cl. 219—413 **8 Claims**



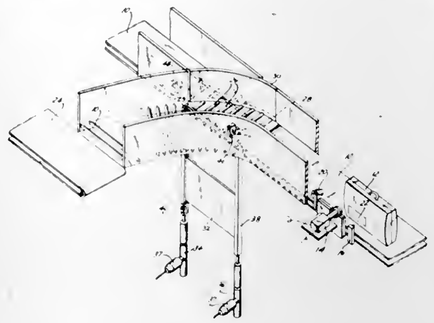
An arrangement in which a switch responsive to oven temperatures is operable to cut off the heating in the oven when in a cooking operation the oven temperatures exceed the normal cooking temperatures from a failure such as a thermostat malfunction or failure, the safety switch being effectively recalibrated to an overheat limit for a self-cleaning temperature by operation of latching means for the oven door.

3,639,727
POSITIVE TEMPERATURE CONTROL DOOR LOCK SYSTEM
James A. Leach, Shelby, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 28, 1970, Ser. No. 58,793
Int. Cl. H01h *37/00*
U.S. Cl. 219—491 **8 Claims**



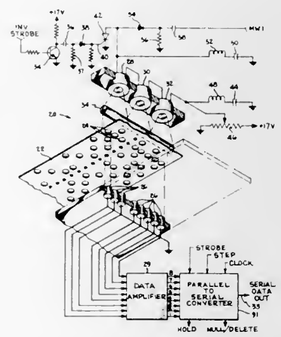
An oven upper temperature safety control is provided in the instant invention by utilization of the door lock thermostat during the cooking modes of the oven to prevent the temperature of the oven reaching an unsafe level if failure of the temperature sensor control system occurs. The operation of the door lock thermostat as a temperature safety control is positively interrupted by actuation of the door locking system for the oven.

3,639,728
MATERIAL CONTAINER SORTING APPARATUS AND METHOD
Fredric E. Helfand, and Marvin B. Baer, both of Cocoa Beach, Fla., assignors to Scan Systems, Inc.
Filed July 17, 1970, Ser. No. 55,884
Int. Cl. G06k *7/10;* **B07c** *5/34*
U.S. Cl. 235—61.11 E **15 Claims**



A method and apparatus for sorting, routing and otherwise categorizing material containers, such as luggage, freight, cargo and the like, comprising conveyor means upon which to place the material containers, labels adapted to be secured to the material containers and having alphanumeric code information thereon, electro-optical conversion means positioned adjacent the conveyor means, photoelectric means positioned adjacent the conveyor means and the electro-optical conversion means for conditioning a programmed logic system for operation. The electro-optical conversion means is adapted to read the alphanumeric code to produce an output signal to be fed to the programmed logic system which is in turn connected to and adapted to activate electromechanical equipment means to sort, route, weigh, tabulate, or otherwise categorize the individual material containers placed on the conveyor means.

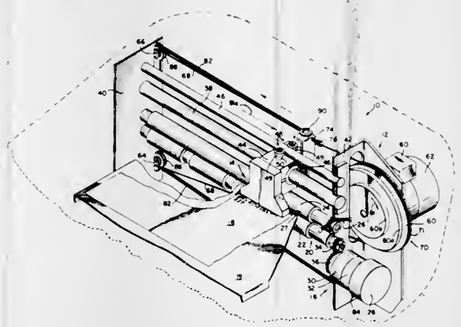
3,639,729
DATA READING APPARATUS
Ray A. Marshall, Park Ridge, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 17, 1969, Ser. No. 799,733
Int. Cl. H04l *15/18;* **H01j** *1/52;* **G01n** *21/30;* **G06k** *7/14;* **G11b** *19/00*
U.S. Cl. 235—61.11 E **15 Claims**



Data groups are read from a perforated medium by an array of light emitting diodes. Light from the diodes passes through a cylindrical lens, through the perforated medium,

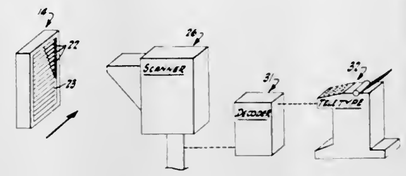
and onto an array of photodetectors which detect the perforations. Illumination power for the light emitting diodes comes from a capacitor which is connected to the diodes by a controlled rectifier. The data reading process and the motion of the medium are synchronized either by controlling tape motion with a switch-tail ring counter controlled stepping motor, or by inductively sensing magnetic elements which move synchronously with the perforated medium. Data bits retrieved from the medium are placed into a shift register, and are then shifted out of the register in the form of a teleprinter code. A new data group is automatically read as soon as this shift register becomes empty. The shift register may be easily reprogrammed so as to generate any desired teleprinter code. A NULL and DELETE data group detection circuit erases these groups from the shift register and thereby greatly speeds up the teleprinter code generation process.

3,639,730
OPTICAL READER SYSTEM
Roy F. Higginbotham, Plantation; Fred D. Blonder, Ft. Lauderdale, and David E. Snyder, Hollywood, all of Fla., assignors to Datatype Corporation, Miami, Fla.
Filed Sept. 11, 1970, Ser. No. 71,505
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **19 Claims**



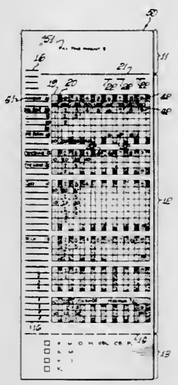
A system for optically reading data printed in transversely extending lines on a document comprising a scanning head, means for supporting the scanning head for transverse movement relative to such a document, first drive means for reciprocating the scanning head on the supporting means, second drive means for moving such a document longitudinally relative to the scanning head, the second drive means including friction drive roller means for engaging and moving such a document, a motor, electrically operated clutch means for drivingly connecting the roller means to the motor, and electrically operated brake means for stopping the roller means, and control means for the first and second drive means. The control means includes means for optically detecting a line of data on such a document and operating the clutch means and brake means to stop such longitudinal movement of such a document and to start movement of the scanning head away from its initial starting position. The first drive means includes a drive pulley, at least one idler pulley, flexible means trained about the pulleys, a continuously running drive motor, and clutch means for drivingly connecting the drive pulley to the drive motor. The flexible means is fastened to one point on the periphery of the drive pulley and the scanning head is fastened to a point on the flexible means. A coiled tension spring is provided for returning the scanning head to its initial starting position when the drive pulley is disengaged from the drive motor.

3,639,731
ANALYSIS SYSTEM FOR MOBILE EQUIPMENT
Jon J. McNeill, Redwood City, Calif., assignor to Textron Inc., Belmont, Calif.
Filed Dec. 4, 1969, Ser. No. 882,206
Int. Cl. B61l *1/00*
U.S. Cl. 235—61.11 E **3 Claims**



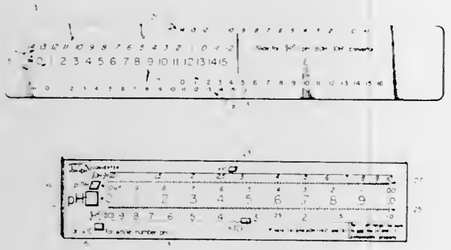
An analysis and indicating equipment for mobile equipment such as locomotives or the like providing visual indications of equipment conditions and including exterior indication for scanning and remote readout at distant locations.

3,639,732
DATA CONTROL DEVICE
Norman Robert Crain, Huntington Beach, and Donald E. Rea, Santa Ana, both of Calif., assignors to Documentor Sciences Corporation, Santa Ana, Calif.
Filed Feb. 2, 1970, Ser. No. 7,576
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 **11 Claims**



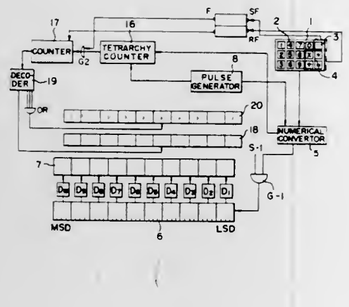
A data control device adapted for controlling data in connection with an optical or magnetic detection device is disclosed. The main body of a paper structure of predetermined dimensions has a plurality of horizontal rows extending across a plurality of vertical columns formed by pairs of separated contrast stripes. One vertical column provides timing or reference signals for the data contained in the horizontal rows. Data is entered by connecting at least two vertical stripes in a horizontal row with a connecting indicia. The space between the stripes may have numbered indicia means for indicating the value entered. In one embodiment, portions of the control device are provided with detection means for absorbing energy of an incident light source, thus, providing means for optical detection. The control device is particularly adaptable for use in restaurants and hotels and similar business where bill totalization is required.

3,639,733
NEGATIVE LOGARITHM-DECIMAL CONVERSION
Gustav Olof Larson, Big Rapids, Mich.
Filed Aug. 18, 1970, Ser. No. 64,752
Int. Cl. G06c *27/00*
U.S. Cl. 235—69 **16 Claims**



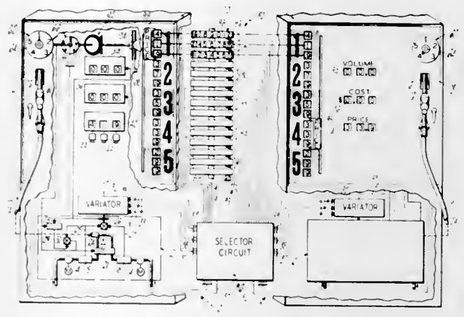
Devices preferably having two scales which relate whole number negative logarithms to a negative power of 10 which is one more than the whole number, and two scales which relate logarithms less than 1 to a decimal expression of 10 times the reciprocal of the antilogarithm. The devices are useful as inexpensive and convenient tools to convert values of pH and other figures similarly expressed.

3,639,734
POSITIONAL INDICATING DEVICE FOR NUMERICAL VALUE
Takehiko Kimura, Tokyo, and Yoshiaki Niizawa, Kawasaki-shi, both of Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1965, Ser. No. 517,251
Claims priority, application Japan, Dec. 30, 1964, 39/74770
Int. Cl. G06k *15/18*
U.S. Cl. 235—92 EA **4 Claims**



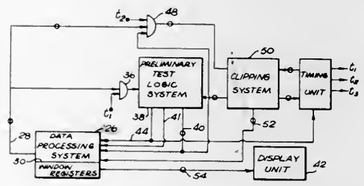
A numerical value indicator comprising an indicating device for grouping the digits of a numerical value into groups of "n" digits with respect to the variable position of the decimal point. A decimal point indicator is operated to indicate the position of the decimal point within a numerical value, means being provided for selecting from a plurality of digit grouping indicators the one indicator which includes the digit grouping indicator positioned at the same location as the operated decimal point indicator.

3,639,735
MULTIPLE PRODUCT FLUID DISPENSING SYSTEM
John H. Bickford, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Aug. 17, 1970, Ser. No. 64,302
Int. Cl. B67d *5/22, 5/06*
U.S. Cl. 235—94 **16 Claims**



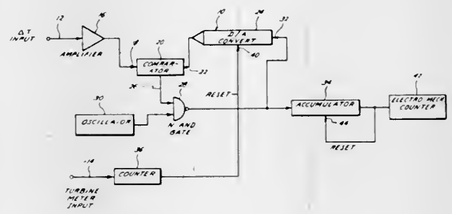
A multiple product gasoline dispensing pump with two multiple product gasoline delivery subsystems independently operable from opposite sides of the pump for selectively dispensing a plurality of different grades of gasoline and for computing the cost of the gasoline dispensed in accordance with the established unit volume price for the selected grade. A single-price programming unit comprising three rotary price decades for each grade is provided for both delivery subsystems for establishing and posting the unit volume prices. The price decades are coaxially mounted for rotation about a vertical axis and each comprises a number wheel with two numeral sequences of 0–9 providing for posting the unit volume prices on the opposite sides of the pump. The price decades have binary switches providing encoded signals of the established unit volume prices and are connected via a selector circuit for setting each delivery subsystem to compute the cost of gasoline dispensed in accordance with the established unit volume price for the selected grade.

3,639,736
DISPLAY WINDOWING BY CLIPPING
Ivan E. Sutherland, 69 University St., Salt Lake City, Utah
Filed Nov. 19, 1969, Ser. No. 878,018
Int. Cl. G06f *7/38*
U.S. Cl. 235—152 **11 Claims**



A computation system is disclosed, as for interpolating lines with specific application to the selection of a portion of a line which is to be presented in a fragmentary display. The system as disclosed eliminates those portions of lines that are contained within a drawing (as defined in computer storage) which lie outside a rectangular "window" (defining a portion of the drawing) by computing vector coordinates for the terminal ends (start and end) of the visible portions of each such lines. The described embodiment utilizes a binary system of shifting coordinate differential data to clip and divide the lines which are defined by their end points. Repetitive operations attain the desired definition.

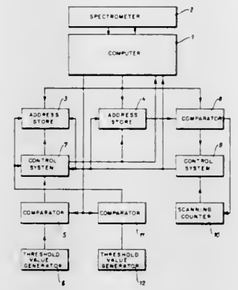
3,639,737
APPARATUS FOR MEASURING THE CHANGE IN THE THERMAL ENERGY OF A FLOWING FLUID
Fount E. McKee, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.
Filed Oct. 16, 1970, Ser. No. 81,386
Int. Cl. G01k *17/08*
U.S. Cl. 235—151.3 **5 Claims**



An apparatus for measuring the change in the thermal energy of a flowing fluid in which the flow rate and differential temperature are measured by providing an accurate measurement with an analog converter receiving the differential temperature signals and providing pulses from an oscillator based upon the change in thermal energy each time a predetermined volume of fluid is measured. An analog comparator receiving a differential temperature signal from a temperature measuring means and also receiving a signal from a digital to analog converter which is reset each time a predetermined volume of fluid is measured by the flow rate measuring means with an oscillator providing output pulses, the output from the oscillator being controlled by the comparator and being connected to a counting means when the differential temperature signal is greater than the signal from the converter whereby the counting means gives a measurement in the change of thermal energy of the flowing fluid.

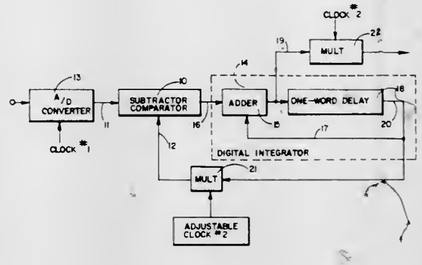
3,639,738
METHOD AND DEVICE FOR RECORDING SPECTRA
Gunther R. Laukien, Am Silberstreifen, Karlsruhe-Forchheim, Germany
Filed Oct. 30, 1969, Ser. No. 872,712
Claims priority, application Germany, Nov. 2, 1968, P 18 06 615.5
Int. Cl. G01d *1/14*
U.S. Cl. 235—151.35 **19 Claims**

An arrangement for controlling the scan of a spectrometer employs a computer and associated equipment for initiating one complete scan of the spectrometer. During this scan where partial ranges of signal values are detected, said ranges being of particular interest, repeated scans of these ranges occurs until a sufficient number to provide useful information is obtained and, thereupon, the continuous scan of the spectrometer is continued. The equipment employed includes address registers and comparison circuitry for indicating and storing the addresses of those signal values which the computer has selected after a determination has been made that a partial range exists. Where signal values far exceed the



threshold value which defines a partial range, no repeated scanning is employed or is necessary.

3,639,739
DIGITAL LOW-PASS FILTER
Roger M. Golden, Santa Monica, and Stanley A. White, Yorba Linda, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Filed Feb. 5, 1969, Ser. No. 796,679
Int. Cl. G06f *15/34*
U.S. Cl. 235—152 **9 Claims**

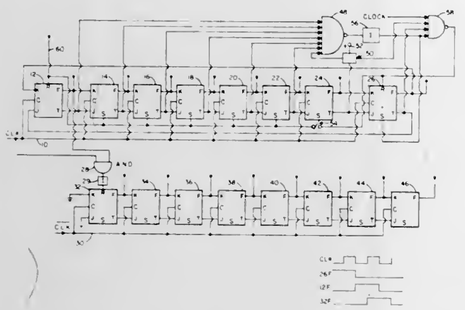


Means for low-pass filtering sampled digital data comprising a recirculating accumulator operated at a preselected sampling rate and having an output; and comparator means having a first sampling input coupled to an output of said accumulator and further having a second sampling input adapted to be connected to a digital signal to be filtered, an output of said comparator means being fed to an input of said accumulator, and the sampling rate of said first input of said comparator being substantially slower than that of said second input. The low relative sampling rate of the feedback arrangement serves to reduce the band-pass of the low-pass filter, while selective variation of such sampling rate correspondingly varies such band-pass.

3,639,740
RING COUNTER APPARATUS

Raymond P. Escoffier, Wylie, and Milton R. Watson, Richardson, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed July 15, 1970, Ser. No. 54,959
Int. Cl. G11c 29/00; G06f 11/00
U.S. Cl. 235—153 6 Claims

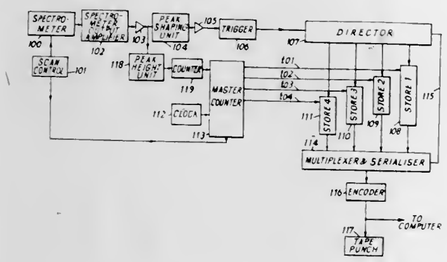


A plurality of low-speed flip-flops connected to provide high-speed ring-counter-type operation through the use of parallel operating ring counter and shift register stages. The circuit also comprises means for assuring one and only one logic 1 in the device.

3,639,741
AUTOMATIC HIGH-RESOLUTION MASS MEASUREMENT

Alan Carrick, Teddington, England, assignor to National Research Development Corporation

Filed July 25, 1969, Ser. No. 844,983
Claims priority, application Great Britain, July 26, 1968, 35,894/68
Int. Cl. H03k 13/02
U.S. Cl. 235—154 9 Claims

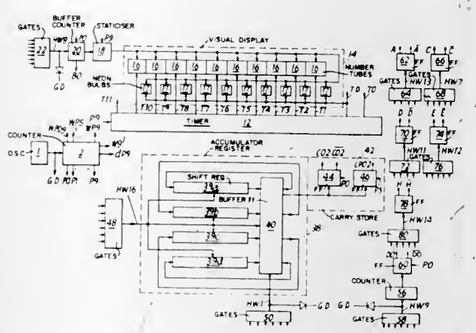


A hybrid analogue-digital analyzer for the online digitization of electrically recorded mass spectra. The device, which does not incorporate a digital computer, accurately selects peak maxima to provide triggering pulses for timing circuitry, and uses directly controlled buffer storage to reduce the effective rate of data acquisition to that of the average speed of the associated output channel. The analyzer is primarily intended to provide records of complete high resolution mass spectra suitable for off-line computer processing. For real time production of reduced and annotated spectra the analyzer may be used as an active interface directly coupled to a computer.

3,639,742
NUMBER POSITIONING DISPLAY FOR ELECTRONIC CALCULATING MACHINES

James John Drage, and Norbert Kitz, both of Uxbridge, Middlesex, England, assignors to Bell Punch Company Limited, Uxbridge, Middlesex, England

Filed Feb. 28, 1969, Ser. No. 803,144
Claims priority, application Great Britain, Mar. 1, 1968, 10,002/68
Int. Cl. G06f 7/46
U.S. Cl. 235—160 7 Claims

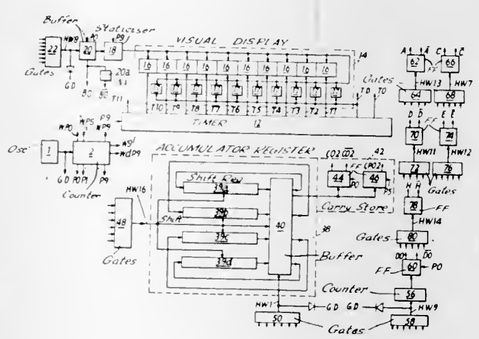


A calculating system employing a numerical display is described with a plurality of number display tubes each having a corresponding register for storing the number to be displayed. Numbers may be transferred from one register stage to another and the value of each of the digits is determined to present the highest significant digit at a predetermined stage by way of transfer in the stages.

3,639,743
CALCULATING MACHINE WITH KEY-CONTROLLED GATES SETTING FUNCTION COUNTER STATES

Norbert Kitz, Uxbridge, Middlesex, England, assignor to Bell Punch Company Limited, London, England

Filed July 29, 1969, Ser. No. 845,831
Int. Cl. G06f 7/48
U.S. Cl. 235—160 12 Claims

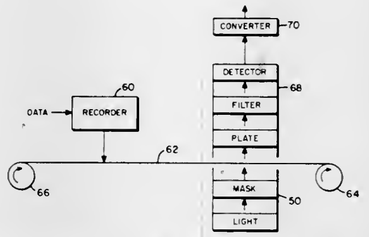


Key-controlled electronic calculating apparatus has a function state counter controlling various arithmetic calculations. The states are established by function keys gating signals to set the counter into predetermined states. Each function key produces a signal of predetermined duration that may comprise a sequence of pulses. The counter states may be controlled by feedback gating signals from a previous counter state.

3,639,744
MAGNETOOPTIC PHASE CORRELATOR

Fred G. Hewitt, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,782
Int. Cl. G06g 7/19, 9/00
U.S. Cl. 235—181 28 Claims

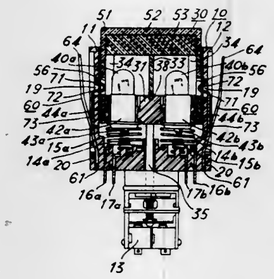


A data plane and a method of analyzing the data stored therein for use in a data signal recording and correlating system whereby received data signals are written into the data plane in a two-dimensional spatial relationship (along X, Y axes). The data plane includes a magnetizable recording medium which provides, upon readout, a Faraday rotation of orthogonally incident light beams that spatially conform to the received data signals. The degree of Faraday rotation is a function of the degree or level of the partial switching of the recording medium's magnetization through the thickness thereof and is, along the orthogonally oriented X, Y axes of the data plane, a linear function only if the received data signals are of a prescribed waveform. With such a linear Faraday rotation, the parallel light beams are passed through a quarter wave plate, an analyzer filter, and suitable optics to be focused upon a detector array. The detector array presents, as an output, signals that are indicative of the X, Y axes parameters.

3,639,745
MOUNTING ARRANGEMENT FOR ELECTRICAL DEVICE

Mitsuyuki Shiki, Kyoto-fu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed June 12, 1970, Ser. No. 45,646
Claims priority, application Japan, June 13, 1969, 44/56132
Int. Cl. F21v 33/00
U.S. Cl. 240—2 SP 15 Claims

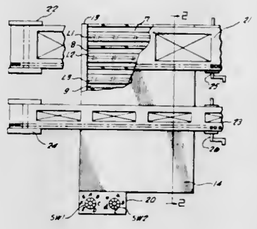


A mounting arrangement for an electrical device in which a housing therein accommodating a pushbutton-type actuator unit is detachably arranged at a predetermined position in the mounting opening on a panel through resilient legs integrally formed at one end of resitient plate units of which resilient mounting members at its other end are detachably inserted in the corresponding slits formed in the sidewalls of said housing.

3,639,746
SEGMENTED LIGHT TABLE

Thomas F. Adams, Encino; Lyle T. Mattes, Torrance, and Poul B. Roulund, Redondo Beach, all of Calif., assignors to FMA, Inc., Los Angeles, Calif.

Filed May 5, 1969, Ser. No. 821,914
Int. Cl. F21v 33/00
U.S. Cl. 240—2 R 10 Claims

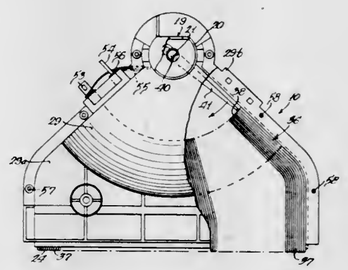


An array of selectively energizable, elongated lamps that are arranged in parallel relationship. The lamps are disposed in individual compartments formed in a housing. Each compartment has a light reflective wall that opens toward a light diffusing plate covering one side of the housing. When a lamp is energized, it illuminates a segment of the plate that coincides in area with the opening of the corresponding compartment. One switch controls the energization of successive numbers of lamps from one edge of the array. Another switch controls the deenergization of any single lamp between the edges of the array.

3,639,747
DIAL DISPLAY DEVICE

Hans Schmidt, Riverwoods, Ill., assignor to Warwick Electronics Inc.

Filed June 11, 1969, Ser. No. 832,342
Int. Cl. G01d 11/28; H03j 1/04
U.S. Cl. 240—2.1 16 Claims



A dial display for providing an indication corresponding to an input signal such as corresponding to the tuning of a radio device. The dial display utilizes a series of light transmitting elements for piping light from a light transfer member to a front display position. The light transmitting elements are

grouped to have a front portion thereof effectively define a visually observable dial indicator. The light transfer member is selectively positionable by means of a suitable indicating mechanism such as a meter movement. The transfer member receives light from a light source to produce a localized high level of light emission from the dial display corresponding to the position of the indicating mechanism. The light source is further utilized to provide a background low level illumination emission from the dial display which may be of a color differing from that of the localized high level emission. The transfer member may comprise a piped light member, an apertured member, a filter member, etc., to provide the localized indication in the dial display. The transfer member may also take the form of an opaque element and in effect cast a shadow on the light transmitting elements as an indication of its position. The light transmitting elements may be formed in groups for facilitated assembly.

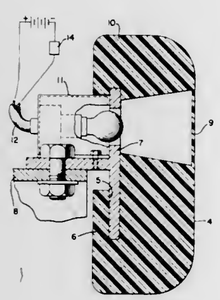
3,639,748
BUMPER STRUCTURE HAVING A LIGHT FIXTURE ASSOCIATED THEREWITH

Charles J. Pearson, Akron; Keith D. Robinson, Mogadore, and William O. Sassaman, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 763,207, Sept. 27, 1968, now abandoned. This application Nov. 27, 1970, Ser. No. 93,422

Int. Cl. G60g *1/00*

U.S. Cl. 240—7.1 G **2 Claims**



This invention relates to a bumper structure having a light fixture associated therewith where the bumper body has one face of resilient, translucent material in the areas where the light would shine through, means for attaching the bumper structure to the vehicle, means for attaching the lights to a signal activator and a power supply.

3,639,749
IMITATION CANDLE

Bengt Erling Beckman, Alstensgatan 90, Bromma, Sweden

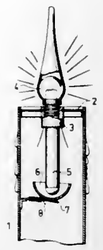
Filed Jan. 8, 1969, Ser. No. 789,816

Claims priority, application Sweden, Jan. 10, 1968, 309/68

Int. Cl. F21p *1/02*

U.S. Cl. 240—10 B **8 Claims**

An imitation candle having a substantially cylindrical body with an electric incandescent lamp mounted therein such that the bulb protrudes from one end of the body. The lamp is suspended within the body by an elastic material, a plurality of arms, or a spring, and is capable of substantially free arcuate movement about a point in the proximity of one end of the body. The degree of arcuate movement is limited by stops engaging the lamp, and the lamp is locked against movement by a latch that operates in response to the cessation of electric power to the lamp to seize the lamp. A motor



can be provided for motivating the arcuate movement of the lamp.

3,639,750
COMBINATION OF A REFLECTOR AND A HALOGEN LAMP

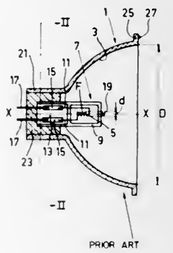
Edwin Maximiliaan Constantijn Anthonijsz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,885

Claims priority, application Netherlands, Nov. 9, 1968, 6816006

Int. Cl. F21l *15/02*; **G02b** *5/10*

U.S. Cl. 240—11.4 R **2 Claims**



A condenser mirror formed as a glass socket defining an ellipsoidal reflector, with a slot present in the socket in which the pinch part of a halogen filament lamp is secured. This socket includes a number of axially extending external reinforcement ribs or otherwise thickened portions.

3,639,751
THERMALLY DISSIPATIVE ENCLOSURE FOR PORTABLE HIGH INTENSITY ILLUMINATING DEVICE

Marlowe A. Pichel, Altadena, Calif., assignor to Pichel Industries, Inc., Pasadena, Calif.

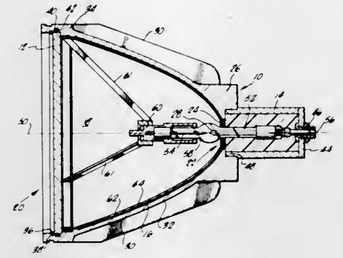
Filed Apr. 10, 1970, Ser. No. 27,213

Int. Cl. F21v *29/00*

U.S. Cl. 240—47 **9 Claims**

A sealed, thermally dissipative enclosure for a portable high-intensity illuminating device is disclosed. The enclosure includes a housing shell having an exterior surface equipped with a plurality of outwardly extending fins and which is configured to form a cavity. A reflector having a specular mirrorlike surface is situated in the cavity of the housing shell. An aperture, extending through the housing shell and the reflector and generally aligned along the longitudinal axis of the enclosure, is provided to accommodate a light source. A

cup-shaped receptacle is included to provide a lamp socket, or other power connection, and to seal the aperture by having a portion thereof secured to the shell housing. The cavity is sealed by a faceplate which is securely retained in the



mouth of the cavity. The dissipation of thermal energy is facilitated by positioning the reflector, in the cavity of the housing shell, to obtain optimal transfer of thermal energy from within the enclosure through the housing shell to the surrounding atmosphere.

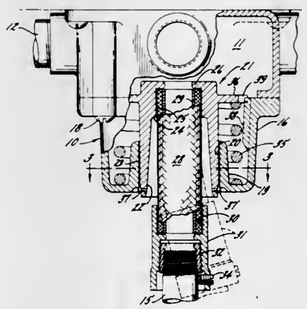
3,639,752
EXPLOSIONPROOF FLEXIBLE FIXTURE HANGER

Arthur I. Appleton, 1701 Wellington Ave., Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,112

Int. Cl. F21s *1/02*

U.S. Cl. 240—78 R **10 Claims**



An explosionproof fixture hanger is disclosed which is adapted to support a depending explosionproof fixture in a manner providing resilient cushioning and lateral flexibility. An annular housing, formed for mounting on a junction box, is fitted with a laterally resilient stem. The stem protrudes through a housing hub and is telescopically carried on a resilient member within the housing for limited axial movement. The inner surface of the housing hub and the outer surface of the stem define a pressure-dissipating explosionproof joint. A lighting fixture is mounted at an opposite end of the resilient stem.

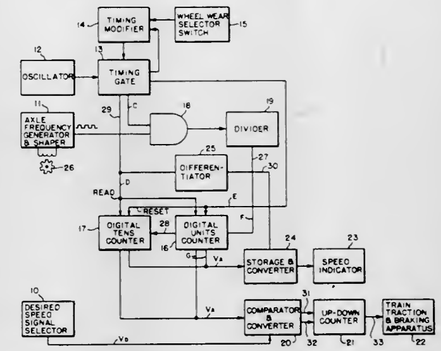
3,639,753
SYSTEM FOR GOVERNING THE SPEED OF RAILWAY VEHICLES

Simon Reich, New York, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,974

Int. Cl. B61l *3/00*; **G01p** *3/12*

U.S. Cl. 246—182 C **5 Claims**



Traction and braking of a train is governed by comparing a desired speed signal with digital speed signals that are periodically generated indicative of actual speed of the train. The digital speed signals are attained by counting frequency pulses of an axle driven frequency generator during successive time gate periods. Means is provided for modifying the time duration of the time gate in accordance with changes in diameter of a wheel of the vehicle. The digital output is in miles per hour and is also used to control a speed indicator.

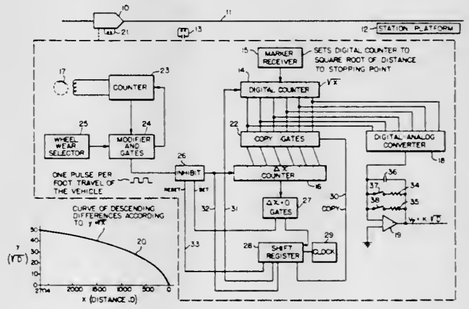
3,639,754
SYSTEM FOR COMPUTING A STOPPING PATTERN SIGNAL FOR A VEHICLE

Vincent P. Kovalcik, and Robert F. Anderson, both of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,851

Int. Cl. B01l *3/08*

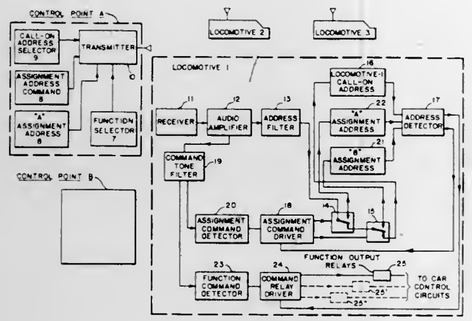
U.S. Cl. 246—182 B **6 Claims**



A system is provided for computing a stopping pattern signal for a vehicle initiated upon the vehicle passing a wayside marker in approach of a stopping point. A digital storage is provided for storing a number corresponding to the square root of the distance from the marker to the stopping point. A delta counter is provided for periodically updating the digital storage as the vehicle progresses from the wayside marker toward the stopping point, and a digital-to-analog converter is provided for converting the digital storage into

an analog signal which is combined with a constant to generate a pattern signal.

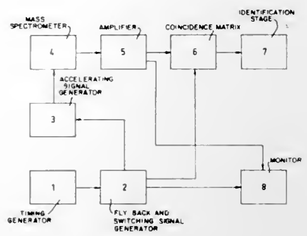
3,639,755
REMOTE CONTROL OF A LOCOMOTIVE
Warren R. Wrege, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Jan. 2, 1970, Ser. No. 341
Int. Cl. H04b *1/00*
U.S. Cl. 246—187 B **5 Claims**



A communication apparatus has been provided for transmitting multicomponent input signals over a common carrier from a plurality of control stations to one or more remotely controlled locomotives each having a unique call-on address means. The call-on address means is responsive only to input signals having the same call-on address component and each control station includes transmitting means for selectively transmitting control signal components for governing the operation of the locomotive and the call-on addresses. The improvement includes means at each control point coupled to the transmitting means for providing a unique assignment address component to the input signal indicative of the associated control point. Address receiving means on the locomotive having multiple channels is selectively responsive to the associated assignment address and provides a manifestation of the identity of the source of the input signals. Switching means is further included for governing the inputs to the address receiving means and the call-on address means and is responsive to unique address command components of the input signals provided by an assignment address command means located at the control point, for coupling the appropriate address receiving means channel associated with the control station and subsequently decoupling the call-on address means so that only input signals from the first control station to transmit valid input signals are accepted by the address receiving means and thereby all input signals from the other control points are locked out thus assuring exclusive control of the locomotive by the engaged control point at any one time.

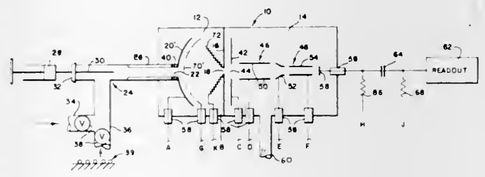
3,639,756
MASS SPECTROMETER EQUIPMENT FOR AUTOMATIC GAS ANALYSIS
Hansrichard Schulz, Villingen am Black Forest, Germany, assignor to **Saba Schwarzwalder Apparate-Bau-Anstalt** August Schwer Sohne GmbH, Villingen am Black Forest, Germany
Filed Jan. 17, 1969, Ser. No. 792,042
Claims priority, application Germany, Jan. 20, 1968, P 16 73 060.2
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 G **12 Claims**

Mass density signals furnished by a mass spectrometer, each signal corresponding to the mass density of particles with a particular mass number, are distributed to a number of circuit locations and stored. Upon occurrence of signals of a sufficient magnitude at selected ones of these locations a



signal is generated by an AND circuit, which may start an alarm. The circuit locations are selected to correspond to mass density signals resulting from the presence of particles found in poison gas.

3,639,757
APPARATUS AND METHODS EMPLOYING ION-MOLECULE REACTIONS IN BATCH ANALYSIS OF VOLATILE MATERIALS
David I. Caroll, Lantana; Roger F. Wernlund, Lake Worth, and Martin J. Cohen, West Palm Beach, all of Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.
Filed Aug. 4, 1969, Ser. No. 847,115
Int. Cl. H01j *39/34*; **B01d** *59/44*
U.S. Cl. 250—41.9 TF **43 Claims**

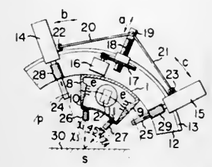


Discrete (nanogram) samples of organic materials are volatilized, and trace molecules of the samples are converted to ions by ion-molecule reactions, the ions being subject to a drift field and analyzed by a mass analyzer. The ions passed to the mass analyzer may be subjected to preliminary separating, filtering and focusing. The mass analyzer output device may include an electron multiplier and a multichannel analyzer. Mass analyzer is performed under high-vacuum conditions, while ion formation and drift take place under relatively high-pressure conditions.

3,639,758
X-RAY STRESS MEASURING APPARATUS
Yoshihiro Shimura, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan
Filed Feb. 3, 1970, Ser. No. 8,300
Claims priority, application Japan, Mar. 7, 1969, 44/16875
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **6 Claims**

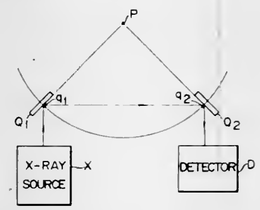
The present invention provides an X-ray stress measuring apparatus wherein two X-ray detectors are simultaneously

movable on a circular arc about the incident point of X-rays



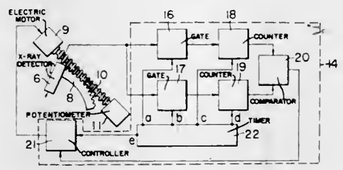
from an X-ray tube in a plane including said incident point and two targets.

3,639,759
DOUBLE CRYSTAL X-RAY SPECTROMETER
Yoichi Goshi, and Yoshiro Fukao, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed July 29, 1969, Ser. No. 845,842
Claims priority, application Japan, Aug. 2, 1968, 43/54845
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **4 Claims**



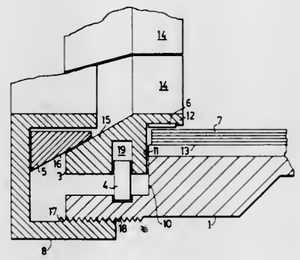
In an X-ray spectrometer comprising a first crystal, a source of X-rays to project X-rays upon the first crystal, a second crystal disposed to receive X-rays reflected by the first crystal and a detector disposed to receive X-rays reflected by the second crystal, the second crystal is revolved about a definite point equally spaced from the first and second crystals at an angular speed of θ, and the detector is revolved about the second crystal at the angular speed of θ, about the definite point at the angular speed of θ and about the first crystal at the angular speed of θ.

3,639,760
X-RAY DIFFRACTION APPARATUS FOR MEASURING STRESS IN A SPECIMEN
Mamoru Mizunuma, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan
Filed Nov. 13, 1969, Ser. No. 876,258
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **2 Claims**



The present invention provides a stress continuously recording apparatus comprising an X-ray tube, two diffracted X-ray detectors and two automatic tracing mechanisms and continuously recording the internal stress of a specimen at its various points by moving it.

3,639,761
FILM CASE FOR X-RAY CAMERA
Michele Morichetto, Spanga, Sweden, assignor to Incentive Research & Development AB, Bromma, Sweden
Filed Aug. 11, 1970, Ser. No. 62,941
Claims priority, application Sweden, Aug. 12, 1969, 11222/69
Int. Cl. G01n *23/20*
U.S. Cl. 250—68 **6 Claims**



The present invention relates to a film casing for an X-ray camera, the casing being of the type generally constituting a cylindric tube into which a film carrier of an X-ray picture is to be introduced for exposure in close contact with the internal surface of the tube. On both sides of the space for a film introduced into the tube for exposure, as seen in the axial direction of the tube, the casing comprises an annular clamping means to hold edges of the film in position inside the tube, said clamping means comprising a flange protruding axially into the tube from the end thereof and being provided with slots allowing for radial widening and compressing of the clamping means for fastening and loosening, respectively, a film introduced between the flange and the internal surface of the tube. The annular clamping means further comprise an abutment surface arranged to cooperate with an abutment surface of the tube to restrict the movement of the annular clamping means in the axial direction of the tube, the clamping means further being cooperative with an axially adjustable member by abutment means, of which at least one constitutes an acute angle with the axis of the tube as seen in a radial plane through said axis in the longitudinal direction thereof.

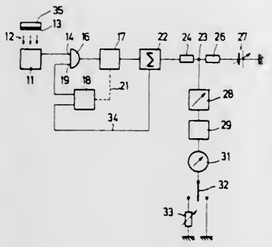
3,639,762
MARKING CONSUMER ITEMS BY RENDERING COLORLESS MARKINGS PERMANENTLY COLORED WITH RADIATION EXPOSURE
Burton B. Hughes, 47 Little Fox Lane, Wilton, Conn.
Continuation-in-part of application Ser. No. 563,340, July 1, 1966, now abandoned. This application Feb. 14, 1969, Ser. No. 801,244
Int. Cl. B44d *1/50*
U.S. Cl. 250—71 **9 Claims**

Consumer items are marked with two or more colorless markings each of which can be rendered colored by exposure to different levels of radiation. Exposure to one level of radiation selectively changes one marking to a substantially permanently colored, visible state without affecting the colorless state of the other markings.

3,639,763
DEVICE FOR MEASURING THE THICKNESS OF METALLIC LAYERS UTILIZING BETA RAY BACKSCATTERING

Ludwig Streng, 7036 Schonaich, Fulkenstr. 9, Germany

Filed Jan. 22, 1970, Ser. No. 4,903
Claims priority, application Germany, Nov. 25, 1969, P 19 59 008.0
Int. Cl. G01t *1/17*; G01n *23/06*
U.S. Cl. 250—83.3 D 7 Claims

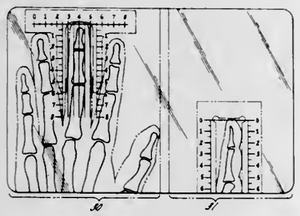


A device for measuring thickness of layers when a radioactive nuclide bombards the layer to produce an irradiation having an energy level corresponding to the thickness of the layer. A detector absorbs radiation backscattered from the layer and possibly from a carrier material if present, and produces output pulses at a rate between that corresponding to a layer of zero thickness and that corresponding to a quasi-endlessly thick layer. An integration stage coupled to the output of the detector produces a voltage proportional to the rate of pulses from the detector. A voltage compensation stage connected to the integration stage output produces a voltage equal to and opposite in sign with respect to the output voltage of the integration stage, which corresponds to the pulse rate of the backscattering pertaining to the zero thickness of the layer. The output voltages of the integration and voltage compensation stages are conducted at a common point which, in turn, is connected with a network controllable in its transmission gain and loss. The network is connected with an equalizer for linearizing a mathematical function which represents a family of calibration curves correlating thickness with measured backscattering. A recording device connected to the equalizer amplifier permits readings of layer thickness to be obtained.

3,639,764
BONE-DENSITY MEASURING INSTRUMENT

Robert E. Olson, Glen Ellyn, and Joseph R. Toman, Naperville, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Apr. 2, 1969, Ser. No. 812,657
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D 10 Claims

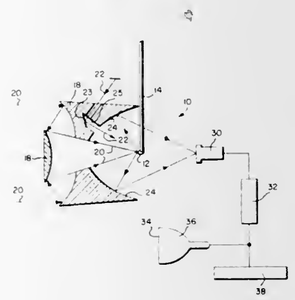


A bone density measuring instrument including a scanning assembly having means for transmitting a radiation beam through a selected bone section. The attenuated radiation beam transmitted through the bone section produces an electrical output signal representing the intensity of the detected beam. The scanning assembly is moved along a predetermined path relative to the bone to scan a selected section of the bone, with the electrical signal varying in accordance with variations in the density of the scanned bone section. The scanning movement is automatically stopped at a preselected stop position, which is adjustable, and the scanning assembly is then automatically returned to a start position, which is also adjustable. Thus the scanning movement of the scanning assembly can be limited to the selected bone section. Means are provided for returning the scanning assembly from the stop position to the start position at a rate substantially faster than the scanning rate. The electrical pulses representing the detected beam intensity are fed into a scaler which counts the pulses, and the counting operation is periodically interrupted for a brief interval to permit the accumulated count to be transferred into a buffer storage. The counting is then resumed, while the data is read out of the buffer storage means at the relatively slow rate required by the output mechanism, such as a printer, tape punch, or the like. A radiograph template is also disposed which permits two different X-rays to be made of the same bone, from two different positions, on a single radiograph film. One radiograph is used to locate the selected bone section on a screen on the front of the instrument, where an illuminated dot indicates the position of the scanning beam, and the other radiograph permits measurement of the thickness of the particular bone section that is canned to permit calculation of the bone density. Various adapters are provided for receiving different body extremities in the instrument, so that a number of different bones can be scanned in the same instrument.

3,639,765
INFRARED IMAGE CONVERTER

Marcos Kleinerman, Point Breeze, Webster, Mass.

Filed July 1, 1969, Ser. No. 838,088
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H 19 Claims

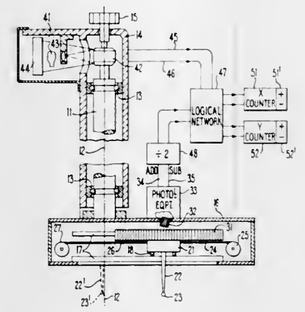


Device for converting light in the infrared portion of the spectrum into visible light based on the phenomenon of thermal quenching of visible fluorescence comprising a conversion screen which contains an ultraviolet irradiated temperature-sensitive phosphor.

3,639,766
ELECTRICAL-OPTICAL COORDINATE INSPECTION MACHINES

Harry Ogden; Neil Rutherford Laidlaw, both of Edinburgh, Scotland, and William Clarke Bradford, Islington, Ontario, Canada, assignors to Ferranti Limited, Hollinwood, England

Filed Nov. 25, 1968, Ser. No. 778,570
Int. Cl. G01d *5/38*; G05b *1/06*; H01i *3/14*
U.S. Cl. 250—202 7 Claims

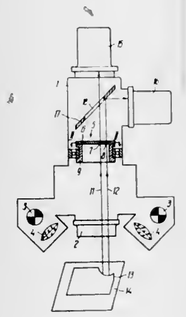


A probe structure for an inspection machine to check the location of workpiece holes includes a probe shaft having a radial arm traversed by a carriage from which the probe proper extends parallel to the shaft axis at distances measured by a pulse count. The carriage is spring urged outwardly to maintain the probe in engagement with the hole surface throughout a manual rotation of the shaft. An optical-electric transducer defines X- and Y-coordinates with the shaft axis as origin and switches the pulses to X- and Y-counters so as to cause their readings to define the coordinates of the hole center at the end of such rotation.

3,639,767
PHOTOELECTRIC TRACER COMPRISING TWO LENSES OR APERTURES LOCATED ALONG A COMMON RADIUS FROM AN AXIS OF ROTATION

Valentin Mikhailovich Sitnichenko, ulitsa, Odesskaya, 58/16, kv. 14, and Alexandr Mikhailovich Zamuruev, ulitsa, Tereshkovoi, 12, kv. 24, both of Odessa, U.S.S.R.

Filed Sept. 16, 1969, Ser. No. 858,388
Int. Cl. G01n *21/30*; G06k *11/02*
U.S. Cl. 250—202 2 Claims

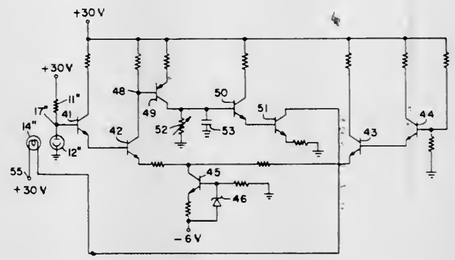


A photoelectric tracer unit is disclosed for tracing an outline or pattern, and adapted to be incorporated in the photoelectric control apparatus of a work-performing machine, such as a gas-cutting machine and the like, wherein the axes of a pair of modulating means of a modulator member lie in a plane passing through the axis of rotation of this modulator member, to one side of this axis of rotation, whereby this tracer unit is capable of supplying information representing an immediately coming change of the position of the outline being traced in respect of a pair of coordinate axes.

3,639,768
FEEDBACK CONTROLLED PHOTOSENSITIVE OBJECT DETECTING SYSTEM

Ronald A. Mancini, Riviera Beach, Fla., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 9, 1968, Ser. No. 766,142
Int. Cl. G01j *1/32*, *1/36*; H05b *37/02*
U.S. Cl. 250—205 1 Claim

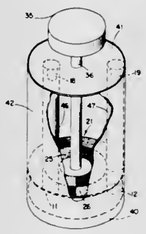


A system for detecting the presence of an object passing between a photosensitive resistance and a light source. A DC feedback amplifier connected to the photosensitive resistance controls the intensity of the light source so that the system functions properly under wide variations in ambient conditions without requiring operator adjustments.

3,639,769
PHOTOCONDUCTIVE POTENTIOMETER USING VARIABLE TRANSMITTANCE CONTROL STRIPS

William D. Clark, 5560 Centinela Ave., Los Angeles, Calif.

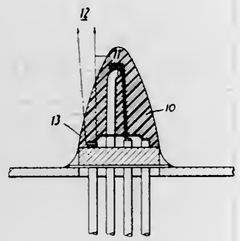
Filed Apr. 10, 1969, Ser. No. 815,019
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 6 Claims



A light control member in the nature of a photographic wedge having varying light transmittance characteristics along its length, is interposed between a light source and a photoconductive cell. The light transmittance characteristics are made to vary along the length of the control member in accordance with a predetermined function of resistance. Means are provided to position the control member so that

various portions thereof are placed in the light path between the light source and the cell, thereby varying the light incident on the cell in accordance with the predetermined function. In this manner, the effective resistance of the cell can be controlled in accordance with the light transmittance variation along the length of the control member, this variable resistance being usable for a desired control function.

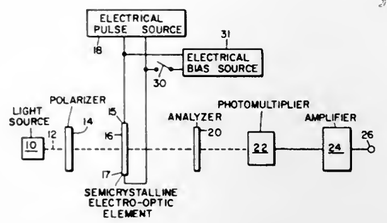
3,639,770
OPTOELECTRONIC SEMICONDUCTOR DEVICE
Walter Zizelmann, Alpirsbach, Germany, assignor to Telefunken Patenverwertungsgesellschaft mbH, Ulm (Danube), Germany
Filed Sept. 23, 1968, Ser. No. 761,685
Claims priority, application Germany, Sept. 27, 1967, T 34891
Int. Cl. G01n *21/26, 21/46;* **G02b** *21/00;* **H01j** *39/02*
U.S. Cl. 250—218 **7 Claims**



An optoelectronic or photosensitive semiconductor device in which a light-emitting element and a light-responsive element are arranged in a common casing, the degree of photocoupling between the two elements being dependent entirely on conditions exterior of the casing. In one embodiment, the two elements are embedded in a light-permeable mass, the boundary surface of which, together with a medium surrounding the mass, forms a surface whose reflection characteristic is dependent on the indices of refraction of the mass and of the medium, the elements themselves being so arranged that when the index of refraction of the medium is such that the boundary reflects the light coming from the light-emitting element, the reflected light is picked up by the light-responsive element, with the amount of light being picked up being dependent on, and thus an indication of, the medium surrounding the mass. In another embodiment, light emitted by the light-emitting element is free to exit the mass and, if reflected by an object outside the mass, is picked up by the light-responsive element.

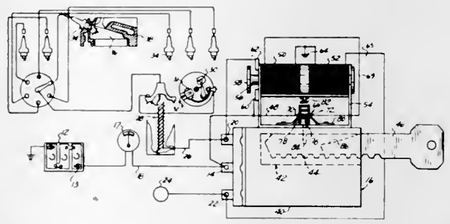
3,639,771
BISTABLE OPTICAL ELEMENTS USING TRANSPARENT FERROELECTRIC GLASS CERAMICS
Nicholas F. Borrelli, 935 West Water St., Elmira, N.Y., and Margaret M. Layton, 2970 Olcott Road, Big Flats, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,141
Int. Cl. G02f *1/18*
U.S. Cl. 250—225 **12 Claims**

A bistable light switch including a transparent ferroelectric glass-ceramic body which exhibits ferroelectric hysteresis. The body can be prepolarized so that the application of electric fields of equal amplitude but opposite polarity switches the device between two stable states which exhibit different birefringence characteristics. When such a body is disposed between a source of polarized light and a polarization



analyzer, the light output from the analyzer is determined by the polarity of the field that was last applied to the body.

3,639,772
IGNITION SWITCHING DEVICE
Zade Wilson, 11105 Belsay, Flint, Mich.
Filed Apr. 13, 1970, Ser. No. 27,648
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 **20 Claims**

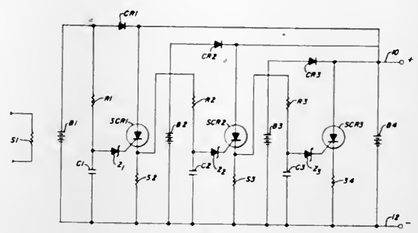


An ignition switch for vehicles and the like having a housing with a rotatable lock cylinder disposed therein and movable in response to a key adapted to be inserted therein to open and close a first electrical circuit adapted to connect an ignition coil to a power source. A pair of electrical solenoids mounted on the housing are respectively operable to open and close a second electrical circuit adapted to separately connect the ignition coil to the power source, one of the solenoids being responsive to the movement of the rotatable lock cylinder, the other solenoid having means responsive to the removal of the key from the rotatable lock cylinder to energize the same.

3,639,773
THERMAL BATTERY INITIATION SEQUENCER
Frank J. Ayd, III, and Stephen E. Long, both of Baltimore, Md., assignors to Catalyst Research Corporation, Baltimore, Md.
Filed Mar. 20, 1970, Ser. No. 21,344
Int. Cl. H02j *7/34, 9/00*
U.S. Cl. 307—48 **7 Claims**

Electrical circuitry for initiating or firing a series of thermal batteries in sequence at predetermined time intervals, thereby enabling a series of small thermal batteries to deliver a fixed voltage output over a period of time equal to a multiple of the operating time of each individual battery. Small

batteries capable of delivering a high-current density may thus be used in place of a more expensive larger battery



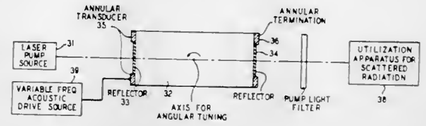
which cannot produce the current density of a smaller battery.

3,639,774
TECHNIQUE FOR STIMULATING THE EMISSION OF FAR-INFRARED RADIATION
Peter Adalbert Wolff, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 24, 1970, Ser. No. 58,004
Int. Cl. H03f *7/00*
U.S. Cl. 307—88.3 **8 Claims**

There is disclosed a method and an apparatus for stimulating the emission of far-infrared optical radiation by backscattering microwaves from a relativistic electron beam having energy in the 1 to 10 Megaelectron-volt range and having direction along a magnetic field of magnitude chosen to make the electron cyclotron frequency approximately equal to the microwave frequency and by resonating the scattered radiation. A van de Graaf generator generates the electron beam.

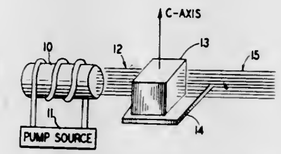
3,639,775
ACOUSTICALLY CONTROLLED OPTICAL DEVICES
Chandra Kumar Naranbhai Patel, Summit, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Aug. 3, 1970, Ser. No. 60,583
Int. Cl. H03f *7/00*
U.S. Cl. 307—88.3 **4 Claims**

The acoustically controlled optical devices disclosed employ an optically transparent piezoelectric medium, such as a β-quartz. The devices disclosed include an optical beam deflector in which the deflected beam is the second harmonic of two like-frequency input beams, which are phase-matched for generation of the second-harmonic beam propagating in the desired direction by an acoustic wave generated by an array of acoustic transducers. A second device is an optical frequency shifter employing light scattering from the mixed



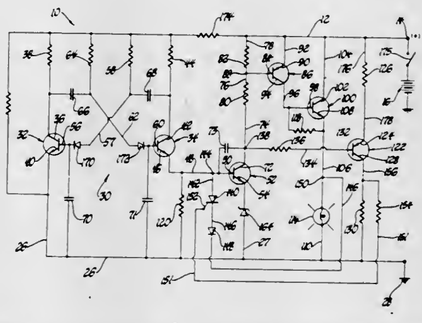
excitations called polaritons. The acoustic wave controls the frequency of the polaritons that do the light scattering.

3,639,776
LITHIUM NIOBATE HARMONIC GENERATOR AND METHOD
Homer Fay; Wilbur J. Alford, and Howard M. Dess, all of San Diego, Calif., assignors to Union Carbide Corporation
Original application June 8, 1967, Ser. No. 644,537, now Patent No. 3,528,765. Divided and this application Aug. 7, 1968, Ser. No. 750,805
Int. Cl. H02m *3/00*
U.S. Cl. 307—88.3 **3 Claims**



This disclosure relates to an improved harmonic generator system utilizing a lithium niobate crystal having an elevated phase matching temperature. The system is especially suited for harmonic generation of visible coherent radiation from fundamental radiation of 1.06μ wavelength. By reason of its higher phase matching temperature, the crystal can be used in the harmonic generator system at temperatures where a radiation caused optical damage does not affect the operation. A method for operating the lithium niobate harmonic generator system at the higher phase matching temperature of the crystal is also provided.

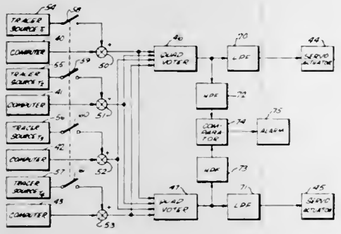
3,639,777
FLASHER CIRCUIT
John F. Bolinger, Michigan City, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.
Filed June 22, 1970, Ser. No. 48,375
Int. Cl. H02h *7/20;* **H03k** *3/282*
U.S. Cl. 307—202 **2 Claims**



A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timed pulse

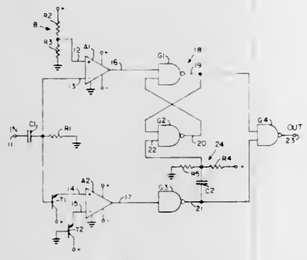
signal applied to the power transistor for turning the power transistor "on"; and additional voltage-sensing silicon-controlled rectifier means coupled to the load and sensitive to a reduction in the voltage therethrough, due to a short, is operatively connected to the power transistor for preventing the power transistor to be turned "on" in the presence of such a short.

3,639,778
TESTING A SIGNAL VOTER
Bruce R. Cereghino, Thousand Oaks, and Paul M. Rostek, Fountain Valley, both of Calif., assignors to Lear Siegler, Inc.
Filed Mar. 26, 1970, Ser. No. 22,923
Int. Cl. H03k *19/00*; **G06f** *11/08*
U.S. Cl. 307—204 **19 Claims**



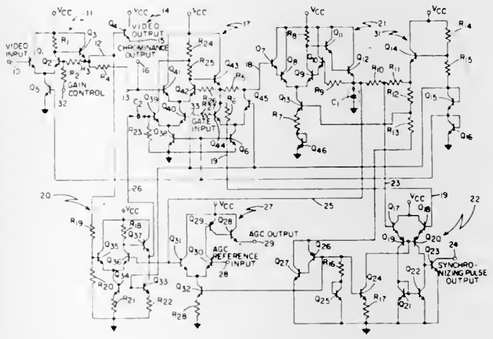
A signal voter having a plurality of inputs and a single output is tested by applying to its inputs alternating current tracer signals that vary differently as a function of time. The resultant waveform formed at the output of the signal voter responsive to the tracer signals determines whether the voter is operating normally. In one embodiment, the resultant waveforms produced at the output of two voters responsive to the same tracer signals are compared with each other to determine whether the voter is operating normally. In another embodiment, a group of logic gates responsive to a square wave signal produces binary tracer signals that reproduce the square wave signal at the output of the voter in normal operation.

3,639,779
LIMITER CIRCUIT WITH ENABLE FUNCTION
Kenneth A. Garrigus, Foxboro, Mass., assignor to G.T.E. Sylvania Incorporated
Filed Mar. 15, 1971, Ser. No. 124,241
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **7 Claims**



A limiter circuit employing two high-gain differential voltage comparators. A positive reference voltage is established at the noninverting input of one comparator and a reference voltage of ground is established at the inverting input of the other. Input signals are applied at the inverting input of the one comparator and at the noninverting input of the other. The output of the one comparator is connected to an input of a flip-flop composed of two cross-connected NAND gates. The output of the other comparator is connected through an inverter circuit and a triggering circuit to another input of the flip-flop. The output of the flip-flop and the output of the inverter circuit are connected to an output NAND gate. The flip-flop is set by the action of the one comparator when a positive-going input signal exceeds the threshold of the positive reference voltage, thus enabling the output NAND gate. Subsequent passing of the negative-going input signal through the zero voltage threshold causes the output NAND gate to switch producing a square-wave output. This negative-going signal also causes the triggering circuit to reset the flip-flop.

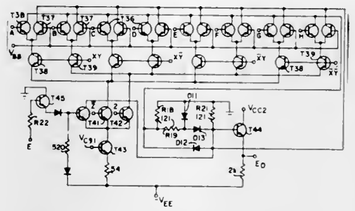
3,639,780
VIDEO SIGNALLING PROCESSING APPARATUS
Ralph E. Lovelace, North Reading, Mass., assignor to GTE Sylvania Incorporated
Original application June 24, 1968, Ser. No. 739,323. Divided and this application June 1, 1970, Ser. No. 54,068
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **3 Claims**



Video signal processing apparatus which amplifies the composite video signal from the video detector of a television receiver and charges a capacitance to the peak voltage of the synchronizing pulses. The composite video signal is compared with the voltage stored in the capacitance by a comparator and an output pulse is produced when the voltage of the composite video signal is high enough to indicate the presence of a synchronizing pulse. The composite video signal is also compared with the stored voltage by a second comparator, and a noise-cancelling signal which prevents noise from affecting the voltage stored on the capacitance of the first comparator is generated when the voltage of the composite video signal is high enough to indicate the presence of noise.

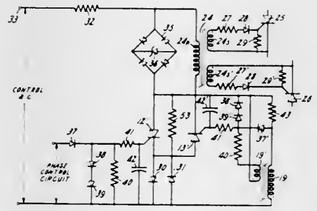
3,639,781
SERIES GATED MULTIPLEXER CIRCUIT
Robert R. Marley, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Oct. 26, 1970, Ser. No. 83,999
Int. Cl. H03k *19/00*; **H04j** *3/00*
U.S. Cl. 307—243 **4 Claims**

A multiplexer of the series-gated-type wherein the minterms of two variables are generated in positive logic, each of these minterms being used to control one pair of four current path pairs in one level of the multiplexer, is described. Each of the paths in said four pairs of paths controls a separate one of eight inputs in another level of the series gated structure.



The gate of another level selects one current path of said selected pair in said one level and thereby selects one of said inputs. A single current source supplies the current for the one-out-of-eight selected current path.

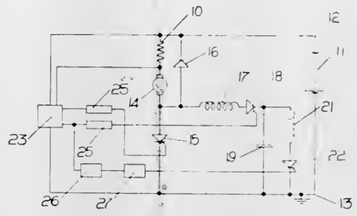
3,639,782
MAGNETIC SLAVE GATING CIRCUIT FOR FULL WAVE PHASE-CONTROLLED THYRISTOR CIRCUITS
Harold W. Lord, Mill Valley, Calif., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 42,391
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 T **3 Claims**



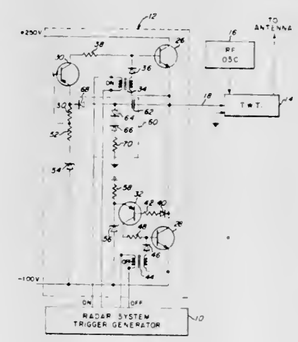
A relatively simple magnetic gating circuit for phase-controlled inverse-parallel thyristors has a small error between control and slaved gating pulses. A nonlinear inductor is reset in the phase delay angle before the master SCR conducts and saturates at the same angle in the opposite half cycle to supply gating current to the slave SCR. For a reactive load, this basic circuit provides clipped alternating current gating signals to a saturable gate transformer which selectively supplies gate current to a pair of inverse-parallel high-power thyristors connected for example to a power transformer. A magnetic phase control circuit is shown for the low-power master thyristor. An application is a single phase or polyphase heater control.

3,639,783
THYRISTOR CIRCUITS
Michael Ainley Thompson, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 10, 1969, Ser. No. 884,010
Claims priority, application Great Britain, Dec. 23, 1968, 60,990/68
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 M **1 Claim**

A known thyristor circuit has a first thyristor connected in series with a load between a pair of DC terminals. Connected across the first thyristor is a second thyristor and a capacitor in series, and there is a further circuit connected across the capacitor including a third thyristor. The capacitor charges when the second thyristor conducts, the capacitor voltage is reversed when the third thyristor conducts and the first thyristor is turned off by the capacitor when the second thyristor conducts again. In such a circuit, the invention consists in providing a timing circuit for firing the third thyristor at a predetermined fixed time after the second thyristor is fired, this period being chosen to be sufficient to allow the second thyristor to charge the capacitor.



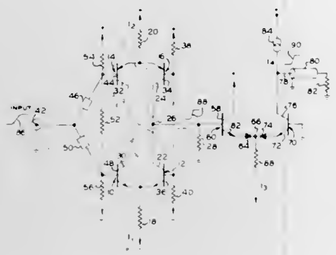
3,639,784
PULSE GENERATOR WITH STORAGE MEANS TO MAINTAIN OUTPUT TRANSISTOR IN SATURATION AFTER REMOVAL OF TRIGGER PULSE
John J. Kelleher, Jr., Tewksbury, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jan. 4, 1971, Ser. No. 103,400
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **4 Claims**



A high-voltage pulse generator responsive to pairs of "on"-"off" trigger signals wherein a first or second voltage supply is selectively coupled to an output terminal during the time interval between such pairs of trigger signals. The "off" trigger signal drives a first output transistor into saturation to thereby couple the first voltage supply to the output terminal. Such output transistor is maintained in saturation after removal of the "off" trigger signal by a low-voltage base drive transistor. During the time the first voltage supply is coupled to the output terminal a capacitor coupled to such terminal becomes charged with low-voltage potential energy, such voltage being limited by a zener diode. When the "on" trigger signal drives a second output transistor into saturation the first voltage supply is decoupled from the output terminal and the second voltage supply becomes coupled thereto. The second output transistor is maintained saturation after removal of the "on" trigger signal by a second low-voltage base drive transistor, such base drive transistor being sup-

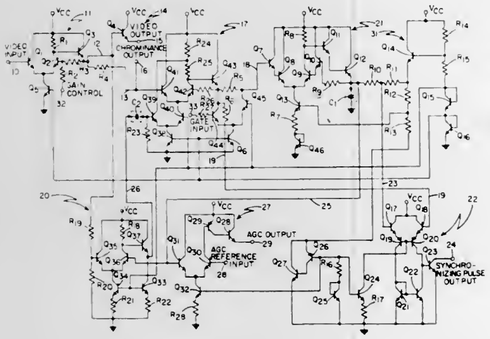
plied voltage by the voltage previously stored in the capacitor. When an "off" trigger signal is applied to the first output transistor, the voltage developed between the emitter-collector electrodes of the second low-voltage base drive transistor is limited to a low voltage by the zener diode.

3,639,785
PULSE GENERATOR
Hiro Moriyasu, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Jan. 21, 1969, Ser. No. 792,502
Int. Cl. H03k *17/60*
U.S. Cl. 307—288 **11 Claims**



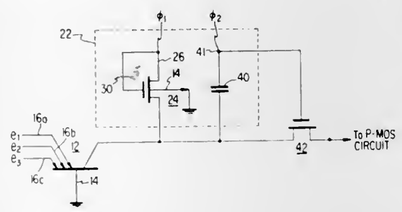
A pulse generator includes first and second pairs of transistors forming current switches wherein each pair receives current at a common emitter connection. A load is connected to the collector terminals of the second transistor of each pair, while the collector of the first transistor of each pair drives the base of the second transistor in the opposite pair.

3,639,786
VIDEO SIGNALLING PROCESSING APPARATUS
Ralph E. Lovelace, North Reading, Mass., assignor to GTE Sylvania Incorporated
Original application June 24, 1968, Ser. No. 739,323. Divided and this application June 1, 1970, Ser. No. 54,067
Int. Cl. H03k *5/20*
U.S. Cl. 307—303 **2 Claims**



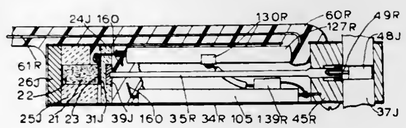
Video signal processing apparatus which amplifies the composite video signal from the video detector of a television receiver and charges a capacitance to the peak voltage of the synchronizing pulses. The composite video signal is compared with the voltage stored in the capacitance by a comparator and an output pulse is produced when the voltage of the composite video signal is high enough to indicate the presence of a synchronizing pulse. The composite video signal is also compared with the stored voltage by a second comparator, and a noise-cancelling signal which prevents noise from affecting the voltage stored on the capacitance or the first comparator is generated when the voltage of the composite video signal is high enough to indicate the presence of noise.

3,639,787
INTEGRATED BUFFER CIRCUITS FOR COUPLING LOW-OUTPUT IMPEDANCE DRIVER TO HIGH-INPUT IMPEDANCE LOAD
Harry Charles Lee, West Lafayette, Ind., assignor to RCA Corporation
Filed Sept. 15, 1969, Ser. No. 858,073
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 **8 Claims**



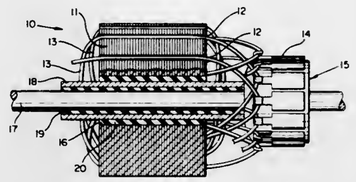
The combination in a common substrate, of a lateral bipolar transistor operated in the common base mode and a field-effect transistor whose source (or drain) electrode is the collector electrode of said bipolar transistor. A signal applied to the emitter of the bipolar transistor causes a current to flow through the conduction channel of the field-effect transistor. The voltage thereby developed at the electrode common to both transistors, even in response to a small signal current, is of sufficient amplitude to drive a high-input impedance load such as other field-effect transistors embedded in the same substrate.

3,639,788
HIGH-IMPEDANCE POWER FOR ENGINE IGNITION AND EXHAUST-SYSTEM PARTICULATE REMOVAL
John J. Horan, Willow Grove, Pa.
Filed Mar. 11, 1970, Ser. No. 18,419
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **64 Claims**



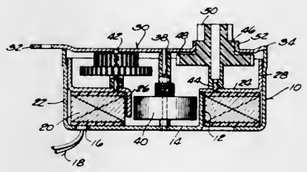
This invention discloses unitary assemblies employing novel means for generation, via ferroelectrics, of timed engine-ignition impulses and of high-impedance impulses for removing particulate pollutants entrained in exhaust gases.

3,639,789
INSULATED ARMATURE CONSTRUCTION AND METHOD
Thaddeus E. Bednarski, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Nov. 21, 1969, Ser. No. 878,825
Int. Cl. H02k *1/04*
U.S. Cl. 310—43 **8 Claims**



An armature including a sleeve of insulating material bonded in place between the armature shaft and the armature laminations. The insulating sleeve may extend under the commutator if desired. A method of providing this armature is also described which comprises holding the laminations, the sleeve and the shaft in their relative positions and injecting a bonding material between the sleeve and the shaft and between the sleeve and the laminations.

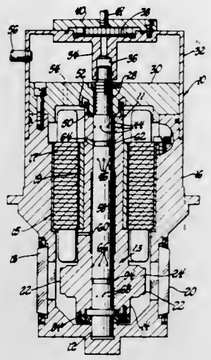
3,639,790
MOTOR CASE
Kenji Yatsushiro, Chicago, and George F. Kuchuris, Westchester, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.
Filed June 22, 1970, Ser. No. 48,414
Int. Cl. H02k *5/00*
U.S. Cl. 310—89 **1 Claim**



The motor case has a cylindrical sidewall which receives and centers the dividerlike gearcase pressed into the motor case. The cover is centered by and seats on the motor case which is staked to retain the cover without transfer of staking pressures to the gearcase. Since the motor case centers the gear case and the cover, concentricity is readily attained and shafts journaled in the parts are assured alignment.

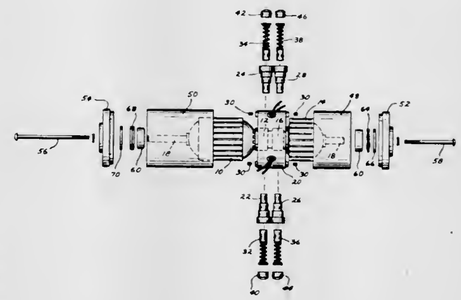
3,639,791
HYDROSTATIC AIR BEARING
Keith R. Jenkin, Warren, Mich., assignor to Speedring Corporation, Warren, Mich.
Filed Feb. 13, 1970, Ser. No. 11,106
Int. Cl. H02k *5/16;* **F16c** *17/04*
U.S. Cl. 310—90 **14 Claims**

A laser scanner employing a reflective polyhedron which is rotatably supported relative to a stator shaft by means of a hydrostatic air bearing. The bearing is constructed to provide at least two axially spaced sets of high-pressure ports and exhaust passages on opposite sides of the ports and including an exhaust passage centrally between the sets of ports so as to effectively decouple the high-pressure regions in the vicinity



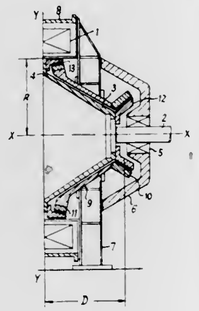
of the ports and effectively divide the bearing into two portions each of which attains optimum compliance by having an effective length-to-diameter ratio of one.

3,639,792
MOTOR-GENERATOR
Robert F. Anderson, St. Louis Park, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.
Filed Dec. 28, 1970, Ser. No. 101,759
Int. Cl. H02k *47/20*
U.S. Cl. 310—113 **8 Claims**



The armatures and commutators of a DC motor and a DC generator are mounted coaxially on a common shaft with the two commutators being positioned adjacent to each other between the two armatures. The commutators are enclosed by a nonmagnetic housing containing brushes for making electrical contact therewith. Each of the armatures are enclosed by a corresponding housing containing field magnets therefor. The brushes are mounted in a fixed position on the nonmagnetic housing, and the housings containing field magnets are rotatably attached to opposite ends of the housing containing the brushes so that the field magnets can be aligned relative to their respective brushes for commutation along a neutral axis and for minimizing electromagnetic interaction between the motor and the generator.

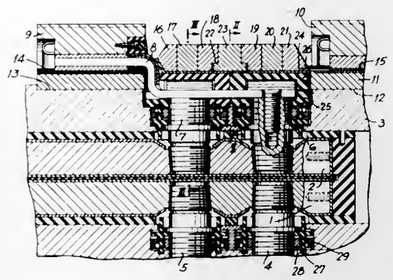
3,639,793
SUPERCONDUCTING HOMOPOLAR DYNAMOELECTRIC MACHINES
Anthony Derek Appleton; Michael Burke Wood, and Brian Edward Mulhall, all of Fossway, Newcastle upon Tyne 6, England
Filed June 1, 1970, Ser. No. 42,040
Claims priority, application Great Britain, June 2, 1969, 27,863/69
Int. Cl. H02k *31/00*
U.S. Cl. 310—178 **12 Claims**



A homopolar machine having a superconducting annular field coil within which is mounted a rotor having a conductor assembly consisting of a single frustoconical conductor or a group of conductors in a frustoconical array, the outer end of the conductor assembly being located in the region of high field strength immediately within the field coil and the inner end of the conductor assembly being thus displaced axially away from the center of the coil into a region of low field strength whereby the provision of current transfer surfaces of small diameter and large axial extent with the risk of large circulating currents can be avoided.

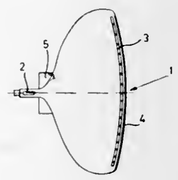
3,639,794
STRUCTURE FOR FIXING THE CURRENT SUPPLY ASSEMBLY IN THE ROTOR OF ELECTRIC MACHINES
David Bentsionovich Karpman, ulitsa Frantisheka Krala, 49, kv. 54; Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55; Boris Leonidovich Konovalov, ulitsa 12 Aprelya, 10/46, kv. 16; Jury Vladimirovich Bednarchuk, ulitsa 2 Pyatiletki, 42, kv. 61; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Leonid Vasilievich Ugrjumov, Faninsky Pereulok, 3, kv. 39; Evgeny Khaimovich Glider, prospekt Ordzhonikidze, 18, kv. 55, and Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 1, all of Kharkov, U.S.S.R.
Continuation of application Ser. No. 751,567, Aug. 9, 1968, now abandoned. This application Apr. 27, 1970, Ser. No. 29,755
Int. Cl. H02k *13/00*
U.S. Cl. 310—231 **9 Claims**

A structure for fixing the current-supply assembly in the rotor of an electric machine, such as a turbogenerator and for insuring high reliability of the current supply assembly. The device insures high mechanical strength of the supply assembly as well as satisfactory electric contact. The current-supply assembly comprises a rotor shaft whose central hole accommodates current-conducting bars; a bushing fitted on the rotor shaft and sliprings fitted on the bushing and electrically insulated therefrom; current-conducting screws making electrical connection between buses coupled to the sliprings and the current-conducting bars, said current-conducting screws and buses being also insulated from the rotor shaft and the bushing to which they are fixed with the help of keys



disposed in the axial and transverse slots provided in the bushing.

3,639,795
COLOR CATHODE-RAY TUBE WITH PLURAL CATHODES AND THREE COMMON GRIDS EACH HAVING SAME PLURALITY OF BEAM-DEFINING APERTURES
Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 743,765, July 10, 1968, Continuation-in-part of application Ser. No. 745,551, July 17, 1968. This application Aug. 24, 1970, Ser. No. 66,375
Int. Cl. H01j *29/50, 29/00*
U.S. Cl. 313—70 C **6 Claims**

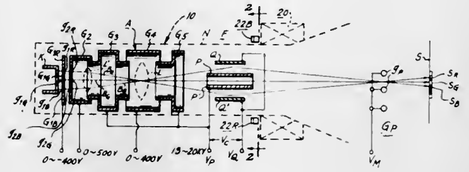


A single gun cathode-ray tube for the display of color television images including a separate cathode for each electron beam and common first, second, third and fourth grids, each having apertures for each beam. The distance between successive centers of the apertures in the third grid is less than 7 mms. and the dimension of the third grid at the apertures in the direction of the axis of the gun is not more than 4 mms.

3,639,796
COLOR CONVERGENCE SYSTEM HAVING ELONGATED MAGNETS PERPENDICULAR TO PLANE OF PLURAL BEAMS
Yuzo Fuse, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 7, 1969, Ser. No. 805,340
Claims priority, application Japan, Mar. 11, 1968, 44/15348; 44/15349
Int. Cl. H01j *29/72, 31/20*
U.S. Cl. 313—77 **3 Claims**

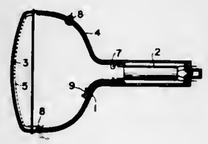
In a color picture tube, particularly of the single-gun, plural-beam-type, in which a central beam and two side beams lying in a common plane are focused on the color phosphor

screen, the side beams are angled with respect to the central beam to converge with the latter at a common point on the beam-selecting grid or mask, and the beams are simultaneously deflected to scan the screen; misconvergence of the beams is corrected by permanent or electromagnets arranged at opposite sides of the central beam and producing respec-



tive magnetic fields having lines of magnetic flux extending generally perpendicular to the common plane of the beams and in opposed directions, and the effects of such magnetic fields on the adjacent side beams and on the central beam are varied either by independent displacement of the magnets toward and away from the central beam or by controlling the strengths of the fields.

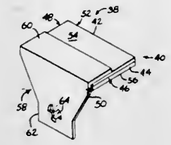
3,639,797
CATHODE-RAY TUBE HAVING A PLATED INNER METAL LAYER OF HIGH-TENSILE STRENGTH
Masakazu Fukushima, Hachioji-shi, and Katuhiro Kimura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan
Filed Sept. 30, 1968, Ser. No. 763,796
Claims priority, application Japan, Oct. 23, 1967, 42/67854
Int. Cl. H01j *19/40, 29/02*
U.S. Cl. 313—82 **6 Claims**



A cathode-ray tube in which the conductive thin film on the inner surface of the glass tube is formed of a high-tensile strength metallic-plating layer.

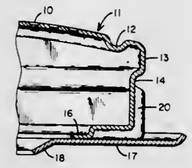
3,639,798
SHADOW MASK SUPPORT COMPRISING FLAT, BIMETALLIC ELEMENT ATTACHED TO INWARDLY PROJECTING FRAME FLANGE
Larry R. Miller, Waynesboro, Pa., assignor to Sylvania Electric Products Inc.
Filed Aug. 5, 1970, Ser. No. 61,163
Int. Cl. H01j *29/06, 31/20, 19/52*
U.S. Cl. 313—85 S **5 Claims**

Parallax barrier supporting means comprising substantially flat, rectangular bimetallic elements are disclosed. The elements are attached to the upper portion of the barrier frame and have depending springs attached thereto. The springs



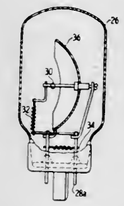
have apertures formed therein to mate with studs formed on the tube envelope inner wall.

3,639,799
SHADOW MASK WITH REINFORCING RING FOR COLORED TELEVISION PICTURE TUBE
Myron C. Kirchner, Itasca, Ill., assignor to Tubal Industries, Inc., Elk Grove Village, Ill.
Filed Apr. 2, 1969, Ser. No. 822,792
Int. Cl. H01j *29/46*
U.S. Cl. 313—85 **10 Claims**



A shadow mask for color TV picture tubes contains the conventional foraminous or translucent area formed by a multiple of miniature apertures in a curved portion of a thin metal sheet through which the electron beams pass in traveling from the electron guns at the rear of the tube to the viewing face at the front of the tube. Around the translucent area is an imperforate section formed into a wall and a flange and containing strengthening ribs. A reinforcing ring rigidly attached to the flange provides additional stability.

3,639,800
LAMP TO ELIMINATE SINGLE FRAME CURTAIN
Nicholas J. Rainone, Clifton, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 15, 1970, Ser. No. 3,078
Int. Cl. H01k *1/30*
U.S. Cl. 313—113 **3 Claims**



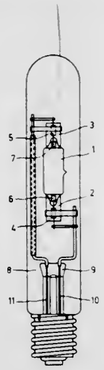
A projection lamp for use in a motion picture projection system. The lamp comprises a primary incandescible filament one end of which is electrically connected to a lamp lead-in, a first ballast filament one end of which is electrically con-

nected to a lamp lead-in, with the other ends of these filaments being electrically connected. The improvement comprises disposing within the lamp a second ballast filament one end of which is serially electrically connected to the primary incandescible filament and the first ballast filament, and the other end is connected to an individual lead-in. The second ballast filament is thus adapted to be connected as part of the series load with the operating potential applied thereacross to cause the primary filament to incandesce with a low level of intensity to permit an individual film frame to be viewed.

3,639,801
HIGH-PRESSURE MERCURY VAPOR IODIDE DISCHARGE LAMP

Cornelis Adrianus Joannes Jacobs, Louis Benjamin Beijer, and Antonuis Jozephus Gerardus Cornelis Driessen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,279
Claims priority, application Netherlands, June 27, 1969, 6909891
Int. Cl. H01j *17/20, 61/12*
U.S. Cl. 313—223 **4 Claims**



A high-pressure mercury vapor iodide discharge lamp comprising an envelope forming a discharge space having a wall loading between 10 and 100 watts per sq. cm during operation of the lamp. The discharge space contains a gaseous filling comprising a rage gas, a quantity of mercury between 0.5 to 40 mg. per cubic cm. of the content of the discharge space, a quantity of iodine, a quantity of sodium and lithium to form sodium iodide lithium iodide, such that unevaporated lithium iodide and sodium iodide are present during operation of the lamp, a quantity of thallium between 0 to 15 percent by weight of the quantity of mercury, and a quantity of titanium between 0.01 and 5 percent by weight of the quantity of mercury. The quantity of iodine is limited to not more than twice the minimum amount required to bind the lithium, sodium, thallium and titanium to their respective iodides.

3,639,802
MICROWAVE SIGNAL DELAY APPARATUS

Erwin F. Belohoubek, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy

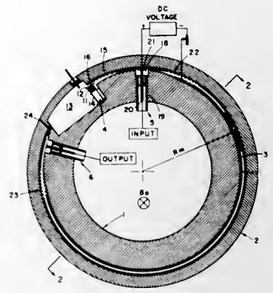
Filed Aug. 12, 1966, Ser. No. 572,153
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **6 Claims**

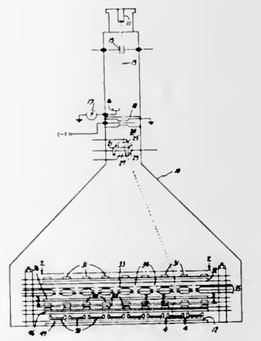
There is disclosed a microwave signal delay device employing an M-type traveling wave tube. The drift space of this tube is of circular shape with a mean radius of R_m, and the drift electrodes are similarly curved with a radius of curvature equal to $R_m/2$. With this relationship, all of the electrons of the beam have substantially the same angular velocity and travel around the drift space in equal times. This minimizes any velocity slip in the beam.

3,639,803
CASCADED ELECTRON OPTICAL SYSTEM

Sterling P. Newberry, Schenectady, N.Y., assignor to General Electric Company

Original application Jan. 3, 1969, Ser. No. 788,770, now Patent No. 3,534,219, dated Oct. 13, 1970. Divided and this application Feb. 16, 1970, Ser. No. 14,850
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **8 Claims**



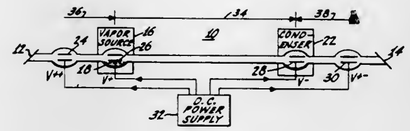


Precise control of an electron beam impinging on a large area receiving surface is achieved by employing, between the electron source and the receiving surface, a first matrix of electron deflection apparatus and by employing, intermediate the receiving surface and the first matrix, but close to the receiving surface, a second matrix of electron deflection apparatus of sufficient size to cover substantially all of the receiving surface. A predetermined one of the first matrix of lenses serves to direct the electron beam onto a predetermined one of the second matrix of lenses which provides fine control of the beam as it is swept over the underlying portion of the receiving surface.

3,639,804
ION DISCHARGE TUBE EMPLOYING CATAPHORETIC TECHNIQUES

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation

Filed Apr. 4, 1969, Ser. No. 813,485
Int. Cl. H01j *17/22*
U.S. Cl. 315—108 **12 Claims**

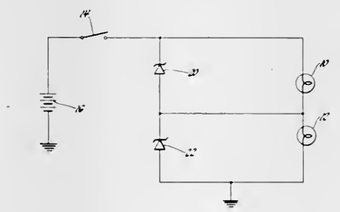


Disclosed are several embodiments of a metal vapor laser having a window at each end in which cataphoretic means are employed for both propagating the metal vapor between a vapor source and a condenser and for preventing condensation of the metal vapor on one or both of the windows. The cataphoretic means may include two or more spaced electrodes which are strategically placed along the length of the laser and which have applied thereto respective DC potentials of the proper polarity and value. Alternatively, the condenser may be omitted and a combination of both rectified and unrectified RF voltage of the proper values may be applied to the respective spaced electrodes of the metal vapor laser.

3,639,805
SERIES LAMP SAFEGUARD CIRCUIT

Nils L. Muench, Bloomfield Hills, and Charles B. Murphy, Fraser, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 25, 1970, Ser. No. 40,184
Int. Cl. H05b *37/00*
U.S. Cl. 315—122 **4 Claims**

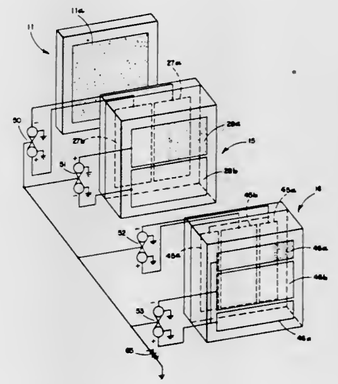


A vehicle-headlamp-energizing circuit for headlamps connected in series. Each headlamp has a breakdown diode connected in parallel, and each breakdown diode has a breakdown voltage slightly larger than the normal potential drop across its parallel connected lamp so as to conduct current around the lamp when it fails and maintain conduction through the remaining lamps.

3,639,806
DIGITALLY ADDRESSED ELECTROLUMINESCENT SOLID STATE DISPLAY DEVICE COMPRISING MODULATING PLATE FOR INTENSITY MODULATING A SCANNING LIGHT BEAM

Stanley C. Requa, Northridge, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Nov. 28, 1969, Ser. No. 880,855
Int. Cl. H01j *31/50;* **H05j** *37/00;* **G02b** *5/16*
U.S. Cl. 315—169 **10 Claims**

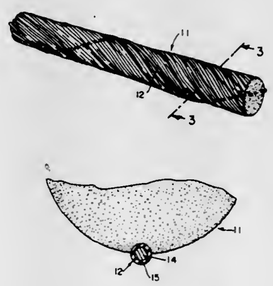


A uniform screen of light is provided by a planar member. Sandwiched between this member and a display surface are a plurality of control plates for forming a scanning light beam in response to digital control signals. Each control plate has a layer of photoconductive material and a layer of electroluminescent material deposited thereon. Also deposited on each of the control plates are electrodes arranged in predetermined finger patterns. The electrodes are biased in response to digital control signals to cause the beam to pass through the control plates to a single portion of the display surface at a time.

3,639,807
LOW-STATIC CARPET

Thomas B. McCune, Mahopac, N.Y., assignor to Hudson Wire Company, Ossining, N.Y.

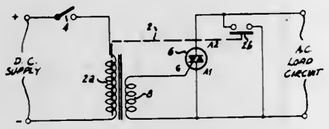
Filed June 10, 1970, Ser. No. 44,911
Int. Cl. A01d *43/00;* **H05f** *3/00*
U.S. Cl. 317—2 C **12 Claims**



A very fine strand of thinly insulated electrically conductive wire is introduced into a strand of nonconductive yarn

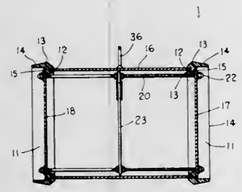
composed of natural and/or synthetic fibers to form a conductive composite strand. Such conductive strands of yarn are then woven or tufted with conventional nonconductive strands into a carpet, thereby substantially reducing static electricity effects and, at the same time, protecting persons on the carpet from the danger of severe shock due to a household voltage source being exposed to the carpet.

3,639,808
RELAY CONTACT PROTECTING CIRCUITS
Gerald R. Ritzow, Racine, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed June 18, 1970, Ser. No. 47,226
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 E **7 Claims**



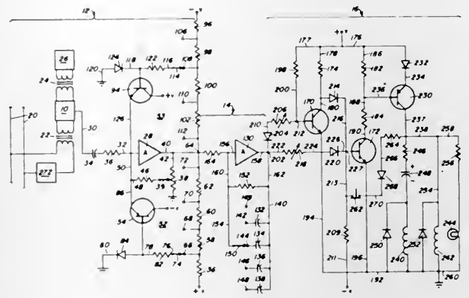
A contact protecting circuit for a relay having its operating coil energized from a DC supply and its contact controlling an AC load circuit. A triac connected in parallel with the contact conducts before the contact closes and after the contact opens to protect the contact from electrical arcing. In a first version, the triac is controlled by a secondary winding magnetically coupled to the relay coil. In a second version, the triac is controlled by a transformer connected in parallel with the relay coil. In this manner, the triac is gated only for a short time interval when triac conduction is needed and the triac will not continue to conduct in the event the relay contact fails to close.

3,639,809
UNIVERSAL ENVIRONMENT PACKAGE WITH SECTIONAL COMPONENT HOUSING
Graydon A. Phlieger, Jr., Cocoa, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 16, 1970, Ser. No. 98,773
Int. Cl. H05k *5/06*; **B65d** *7/06*
U.S. Cl. 317—117 **5 Claims**



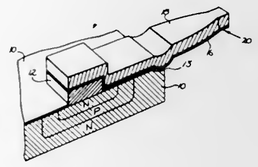
A housing that can be readily assembled for packaging equipment, such as electrical components and meters. The housing includes a pair of spaced end rings, each of which has an endless groove in the inner wall thereof. A thin elongate shell is positioned within the groove and end plates are carried adjacent ridges on the opposite side of the end rings. Bolts extend through the panels for drawing the panels flush against ridges carried on the end ring and supporting panel boards within the housing. Thus, an airtight package or housing can be readily assembled.

3,639,810
POWER SYSTEM MONITORING RELAY
Ferber R. Schleif, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior
Filed Feb. 18, 1971, Ser. No. 116,318
Int. Cl. G08b *21/00*
U.S. Cl. 317—147 **6 Claims**



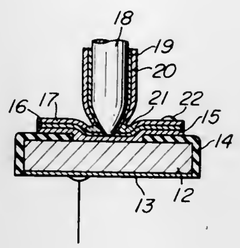
An electrical power system subsidiary relay for controlling system normalizing and operation recording mechanisms which in response to detection by the relay of system frequency deviation from standard operating frequency derives in a differentiator-amplifier circuit component thereof an acceleration of deceleration signal predictive of system disturbance conditions. Adjustable devices in circuits interconnected with the differentiator-amplifier circuitry are settable to predetermine the sensitivity, or magnitude for response, and the minimal response and pickup timing for the relay.

3,639,811
SEMICONDUCTOR WITH BONDED ELECTRICAL CONTACT
Jon M. Schroeder, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, L.I., N.Y.
Original application Nov. 13, 1967, Ser. No. 682,193. Divided and this application Nov. 19, 1970, Ser. No. 71,363
Int. Cl. H01l *5/02*
U.S. Cl. 317—234 **4 Claims**



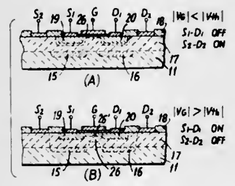
A method is disclosed for batch forming extended beam leads to the pads or contact areas of a solid state device (e.g., monolithic integrated circuit hybrid integrated circuit, discrete device) whereby external connections to the device may be made. The process involves depositing a metal or a plurality of metals over the device in a predetermined manner with the metal adhering to the device contact area but only weakly, if at all, adhering to the remainder of the surface. The device is separated by backside scribing which leaves the beams extending from the contact area of each device.

3,639,812
MECHANOELECTRICAL TRANSDUCER HAVING A PRESSURE APPLYING PIN FIXED BY METALLIC ADHESION
Yasuo Iijima, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Dec. 2, 1969, Ser. No. 881,383
Claims priority, application Japan, Dec. 4, 1968, 43/89780
Int. Cl. H01l *3/00*, *5/00*
U.S. Cl. 317—234 R **5 Claims**



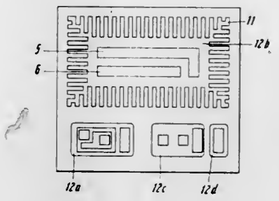
In a transducer utilizing the pressure-sensitive property of a semiconductor, a pin for applying pressure is adhered onto a pressure-sensitive portion of the semiconductor by the metallization of the surface of the pin and the semiconductor body. Using this means, the pressure application pin is prevented from moving except in contact with a small portion, thereby enhancing the lifetime and stability of the device.

3,639,813
COMPLEMENTARY ENHANCEMENT AND DEPLETION MOSFETS WITH COMMON GATE AND CHANNEL REGION, THE DEPLETION MOSFET ALSO BEING A JFET
Mototaka Kamoshida, and Sho Nakanuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Apr. 14, 1970, Ser. No. 28,325
Claims priority, application Japan, Apr. 15, 1969, 44/30130
Int. Cl. H01l *13/00*, *19/00*, *5/06*, *11/14*
U.S. Cl. 317—235 R **6 Claims**



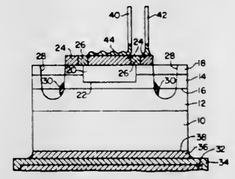
A semiconductor device comprising a pair of FET's having a common electrode has operating characteristics similar to paired complementary FET's. In one embodiment of the invention the device functions as paired IGFET's, having a common gate electrode, and in a second embodiment the device functions to couple an IGFET to a JGFET.

3,639,814
INTEGRATED SEMICONDUCTOR CIRCUIT HAVING INCREASED BARRIER LAYER CAPACITANCE
Reiner Engbert, Talheim, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany
Filed May 20, 1968, Ser. No. 730,284
Claims priority, application Germany, May 24, 1967, T 33,927
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **4 Claims**



An integrated semiconductor circuit having semiconductor regions isolated from each other by separation barrier layers and semiconductor devices inserted in these regions, the separation barrier layers being configured to have an increased capacitance which is used to stabilize the supply voltage.

3,639,815
EPI BASE HIGH-SPEED POWER TRANSISTOR
Frederick G. Ernick, Latrobe; Paul M. Kisinko, Greensburg; Joseph Marino, Irwin, all of Pa., and Peter J. Kannam, Princeton, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 694,552, Dec. 29, 1967, now abandoned. This application Sept. 30, 1969, Ser. No. 862,280
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 R **7 Claims**

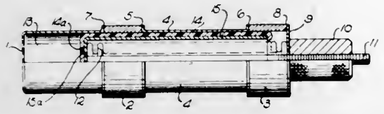


A transistor having an epitaxially grown base region has the good secondary breakdown voltage performance of a single diffused transistor having a base region comprising suitably doped material having a uniform level of impurity concentration as well as all of the desirable frequency response benefits achieved by epitaxially formed transistors.

3,639,816
VACUUM CAPACITOR WITH SOLID DIELECTRIC
Wesley N. Lindsay, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 10, 1970, Ser. No. 62,324
Int. Cl. H01g *5/04*
U.S. Cl. 317—245 **10 Claims**

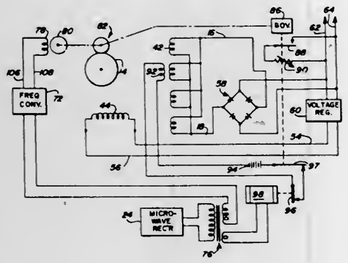
A unique combination of vacuum component techniques to a solid dielectric capacitor. The vacuum-type enclosure includes at least one generally cylindrical body shell member of

insulating material and one or more metallic cylindrical sections attached thereto. A control shaft operating through a vacuum-type bellows moves an internal cylindrical member encased in an insulating material sleeve of polytetrafluoroethylene to provide variable capacitive engagement within at least one of the outer metallic shell members. The bearing arrangements common in vacuum variable capacitors are eliminated, because the fluorocarbon insulat-



ing dielectric material preserves the spacing and coaxial relationship of the inner and outer shells and provides a sliding surface of very low friction. Advantage is taken of the desirable dielectric strength of the fluorocarbon dielectric material without the destructive effects of corona in air. An alternative planar element embodiment of the invention using disc plates and a spring disc variable plate is also shown. In that embodiment the dielectric is also a planar element.

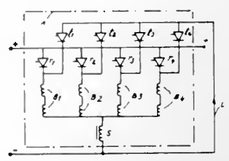
3,639,817
MAGNETIC ACCELERATOR
Gregory Grosbard, 353 West 19th Street, New York, N.Y.
Continuation-in-part of application Ser. No. 558,465, June 17, 1966, now Patent No. 3,480,811. This application Oct. 20, 1969, Ser. No. 867,602
Int. Cl. B64g *1/00*
U.S. Cl. 318—16 **14 Claims**



Energy is transferred by microwave radiation over long distances to an energy storage device in which the radiant energy is converted to electromagnetic pulses accelerating a rotor to increase its energy level. The kinetic energy level of the rotor, which is determined by its rotational speed, is sustained by radially directed, electromagnetically induced forces. Energy is withdrawn through coils toroidally surrounding the rotor within which current is generated by rotation of the rotor.

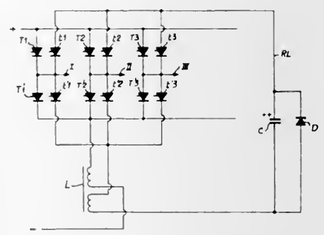
3,639,818
ELECTRONIC SWITCHING FOR THE WINDINGS OF ELECTRICAL MACHINERY
Albert Wiart, Sannois, Val d'Oise, France, assignor to Societe Anonyme dite: Jeumont-Schneider, Paris, France
Filed Oct. 24, 1969, Ser. No. 869,289
Claims priority, application France, Oct. 25, 1968, 171311; June 10, 1969, 6919048; Oct. 9, 1969, 6934509
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **13 Claims**

A system for switching and chopping DC current flowing through the windings of an electric machine, characterized in that the system comprises: a smoothing reactor common to the various windings; supply thyristors interposed between the winding ends and one of the poles of the power supply; freewheeling thyristors connected, like the first-mentioned thyristors, to the winding ends and to a common connection of a freewheeling circuit made by way inter alia of the



smoothing reactor, at least one winding and the corresponding freewheeling thyristor; and a system for controlling the switch and driving the thyristor control electrodes so as to initiate the chopping or switching operations, with the intervention of the freewheeling circuit, in dependence upon the value of the control parameters.

3,639,819
SWITCHER-CHOPPER FOR CONTROLLING CURRENT IN BRUSHLESS ROTATING MACHINES, SUPPLIED BY A DC SOURCE
Albert C. Wiart, Sannois, France, assignor to Jeumont-Schneider, Paris, France
Filed Nov. 28, 1969, Ser. No. 880,650
Claims priority, application France, Nov. 27, 1968, 175549
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **11 Claims**

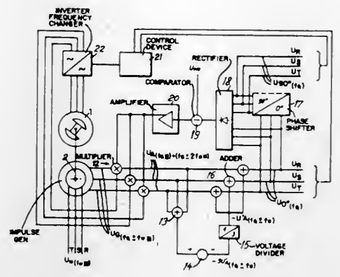


A system for switching, reversing and varying the current flowing through the windings of a DC energized electrical machine, comprising: a two-winding smoothing reactor; two sets of supply thyristors connected by their anodes and cathode respectively to the machine terminals and to the two sides of a DC supply via one of the reactor windings; two sets of freewheeling thyristors connected like the supply thyristors to the machine terminals and interconnected to form two common points, one of which is taken to one end of the second reactor winding; and means for triggering chopping, switching and reversing operations with the use of at least one freewheeling or braking circuit.

3,639,820
CONVERTER ARRANGEMENT FOR FEEDING VARIABLE AC MOTOR
Herbert Stemmler, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri Cie, Baden, Switzerland
Filed Mar. 25, 1970, Ser. No. 22,530
Int. Cl. H02p *5/24*
U.S. Cl. 318—147 **9 Claims**

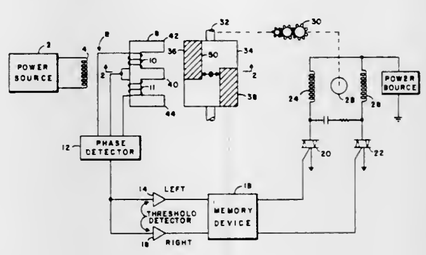
A regulable and controllable inverter or converter for feeding alternating current motors with a regulated current

and frequency in which adjustment of the converter output voltage per phase is effected by the voltage output of a slip



ring armature-asynchronous machine driven by the motor, means being provided to rotate the winding axis of the asynchronous machine relative to that of the motor.

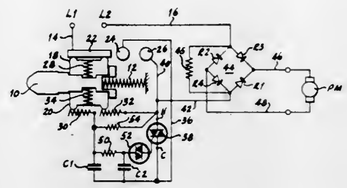
3,639,821
ELECTROMAGNETIC MOTOR REVERSING CONTROL
Charles A. Byers, Lenixa, Kans., and Robert A. Becker, Cedar Rapids, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed Sept. 28, 1970, Ser. No. 76,184
Int. Cl. H02p *3/10*
U.S. Cl. 318—282 **5 Claims**



A motor control means for cyclically reversing an electric motor. The motor control includes an electromagnetic switch comprising a transformer having an E-shaped core and a center-tapped secondary winding, together with a pair of magnetic pole pieces carried by a rotatable shaft mounted in proximity with the transformer and driven by the motor to alternately cause the respective pole pieces to differentially influence the current flow through respective halves of the secondary winding and thereby produce a signal to effect reversal of the motor.

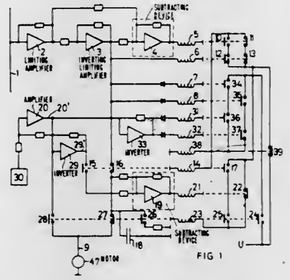
3,639,822
SOLID STATE POWER CONTROLLER FOR DC PERMANENT MAGNET AND SHUNT FIELD WINDING MOTORS SUPPLIED FROM AN AC SOURCE
Harry W. Brown; Walter L. Rutchik, and Lawrence J. Ryczek, all of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed May 11, 1970, Ser. No. 36,124
Int. Cl. H02p *5/36, 7/58*
U.S. Cl. 318—345 **1 Claim**

A solid state switching circuit and power controller for permanent magnet and shunt field winding motors used in portable power tools and the like. The power controller employs a bidirectional thyristor triode and trigger diode for varying the current supplied to the motor armature, and a



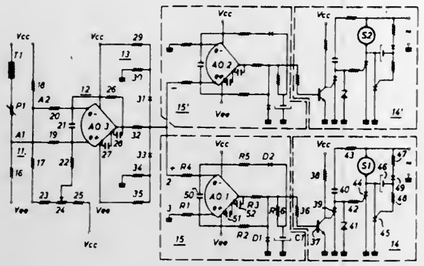
full-wave rectifier bridge to establish unidirectional current flow through the motor armature on opposite half cycles of the AC power supply. A resistor across the AC terminals of the rectifier bridge enhances control action under light loads.

3,639,823
FINE AND COARSE POSITION CONTROL DEVICE
Alexandre Leglise, Montignies-le-Tilleul, Belgium, assignor to Acec Ateliers De Constructions Electriques De Charleroi, Charleroi, Belgium
Filed Nov. 19, 1969, Ser. No. 878,131
Claims priority, application Belgium, Nov. 18, 1968, PV66.321
Int. Cl. G05b *11/18*
U.S. Cl. 318—595 **9 Claims**



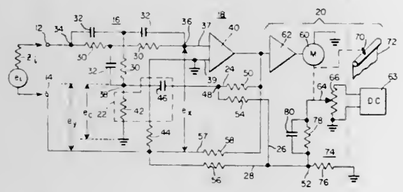
A device for governing the speed of a mobile member comprising: fixed indexing means located on the path of said mobile member; means located on said mobile member for detecting said indexing means; a variable speed motor located on the mobile member and operating a device for driving said mobile member, said motor being connected to a fixed portion of said position control device by means of flexible cables; a coarse measuring device responsive to said detecting means and including a coarse error voltage generator for generating a voltage proportional to the difference between a predetermined final position of said mobile member and the position actually occupied by said mobile member measured in coarse units, said coarse measuring device providing a constant speed control voltage to said motor; a fine measuring device coupled to the motor driving said mobile member and providing a decreasing speed control voltage for said motor; a commutator for replacing said constant speed control voltage applied to said motor by said decreasing speed control voltage; and means responsive to said coarse measuring device for detecting that said mobile member is approaching its final position and for operating said commutator.

3,639,824
POWER FEED REGULATOR SYSTEM FOR TEMPERATURE REGULATION AND THE LIKE
Claude Malavasi, 12, Avenue d'Alsace-Lorraine 74, Annemasse, France
Filed Aug. 3, 1970, Ser. No. 60,569
Claims priority, application France, Aug. 11, 1969, 6927489
Int. Cl. G05d *23/24*
U.S. Cl. 318—599 8 Claims



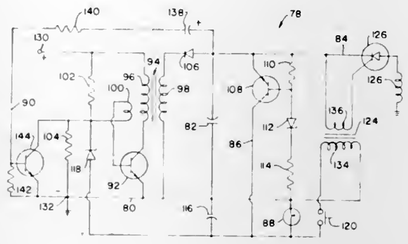
A power feed regulator system for temperature regulation and the like includes an input analog circuit which provides a control signal related both to ambient temperature and to a preset control point. The control signal is amplified and applied both to the inverting input of a first power feed regulator and to the noninverting input of a second power feed regulator. Depending on whether the signal is positive or negative, only one or the other power feed regulator is operated and actuates a triggering circuit which starts up a servo motor provided for turning on or off an appliance such as a hot water supply valve. Each power feed regulator has a hysteresis comparator comprising an operational amplifier, a resistor and a capacitor in series between the output of the amplifier and the ground with a feedback loop applying to the inverting input of the power feed regulator a part of the voltage between the terminals of the capacitor. The power feed regulator delivers an output periodic square-wave voltage having lower and higher values independent of its input voltage and an average power substantially proportional to the input voltage.

3,639,825
NULL-BALANCE SYSTEM WITH ENHANCED NOTCH-TYPE INPUT FILTER
Samuel J. MacMullan, Newtown, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.
Filed Mar. 13, 1970, Ser. No. 19,235
Int. Cl. G05b *6/02*
U.S. Cl. 318—621 13 Claims



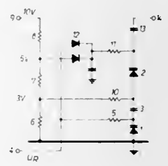
A null-balance system having a twin-T input filter, a high-impedance amplifier, and an output circuit having a large time constant. A feedback circuit between the amplifier output and the common terminal of the twin-T filter in combination with an RC circuit connected to the common terminal enhances the frequency response characteristic of the filter signal for null-balance comparison with the input is not affected by the twin-T filter. Another feedback circuit between the output circuit and the common terminal of the twin-T filter provides compensation so that the null-balance feedback circuit between the output circuit and the input of the amplifier provides a signal for null-balance comparison with an unknown input signal.

3,639,826
ELECTRONIC CONTROL CIRCUIT
Kenneth Grundberg, 3012 Maplewood, Royal Oak, Mich.
Continuation-in-part of application Ser. No. 701,384, Jan. 29, 1968, now abandoned. This application Mar. 12, 1970, Ser. No. 18,010
Int. Cl. H02m *3/32*; H05b
U.S. Cl. 321—2 6 Claims



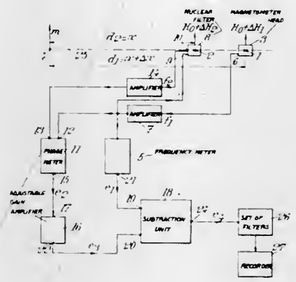
An electronic control circuit for providing an output signal for missile firing or the like comprising a source of oscillating electrical energy, structure for storing a predetermined amount of electrical energy, an electrical reactance for transferring the oscillating electrical energy into the storage structure, means for limiting the electrical charge stored in the storage structure and for indicating the storage structure is charged, trigger structure for providing a controlled discharge of the stored energy to provide the output signal, and means for shutting off the source of alternating electrical energy during discharge of the storage means.

3,639,827
CIRCUIT ARRANGEMENT FOR FORMING A VARIABLE REACTIVE IMPEDANCE
Horst Behlen, Wilferdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 26, 1970, Ser. No. 66,956
Int. Cl. H03h *11/00*; H03b *3/04*
U.S. Cl. 323—74 4 Claims



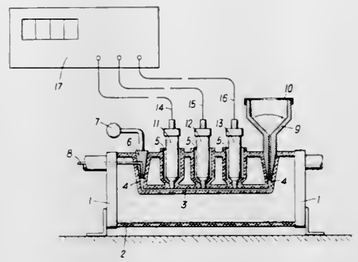
A circuit arrangement for forming a variable reactive impedance having at least two variable capacitance (varactor) diodes which are biased in the reverse direction. The value of the reactive impedance being almost linearly dependent upon the applied control voltage, and the varactor diodes, of which the first one is directly applied to the control voltage, are connected in series. A voltage divider is applied to a fixed voltage, for adjusting the remaining varactor diodes to predetermined capacitance values. To the base point of the voltage divider there is connected the first varactor diode and one pole of the source of control voltage.

3,639,828
COMPENSATION OF PARASITIC OR STRAY MAGNETIC FIELDS, ESPECIALLY ABOARD AN AIRCRAFT
Antoine Salvi, Fontaine, France, assignor to Commissariat a L'Energie Atomique, Paris, France
Filed Oct. 15, 1969, Ser. No. 866,501
Claims priority, application France, Oct. 17, 1968, 170,274
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 15 Claims



A magnetometer head generates a e.m.f. f_1 at a frequency ϕ_1 proportional to $(H_o+\Delta H_1)$, value of the total magnetic field intensity at a first point aboard a plane or similar object; a frequency meter derives from frequency f_1 a voltage e_1 proportional to ϕ_1; at a second point (located aboard said plane or object), where the magnetic field intensity is $(H_o+\Delta H_2)$, a nuclear filter is fed by e.m.f. f_1 and delivers an e.m.f. f_2 out of phase with f_1 by $d\phi$ proportional to $(\Delta H_2-\Delta H_1)$; a phase-meter is fed by f_1 and f_2 and delivers a voltage e_2 proportional to $d\phi$; an amplifier having an adjustable gain amplifies the output of said phase-meter and delivers a voltage e_3; a subtraction unit receives voltages e_1 and e_3 and delivers a voltage e_4 proportional to (e_1-e_3), said voltage e_4 being a measure of the external magnetic field H_o to be measured as e_1 is proportional to $(H_o+\Delta H_1)$ and e_3 is proportional (with the same proportionality factor) to ΔH_1 if $\Delta x=x(\sqrt[3]{\rho}-1)$ and $k_2\cdot\phi/k_1=x/3$
with
ΔH_1 parasitic magnetic field in the first point,
ΔH_2 parasitic magnetic field in the second point,
Δx distance between the first and the second point,
x distance of the first point from the barycenter of the parasitic magnetic sources,
k_1 the proportionality factor between f_1 and $(H_o+\Delta AH_1)$,
k_2 the proportionality factor between f_2 and (ΔH_2-H_1),
ϕ (function of x) adjustable gain of said amplifier,
ρ ratio between ΔH_2 and ΔH_1, i.e. $\rho=\Delta H_2/\Delta H$
In a modification, at the first point a magnetometerhead, identical to the head located in the first point, is substituted to said filter, and a differential frequency-meter fed by the outputs of both heads is substituted to said phase-meter.

3,639,829
MEASURING INSTRUMENT FOR THE DETERMINATION OF THE PARTIAL PRESSURE OF OXYGEN AND CARBON DIOXIDE AND OF THE PH VALUE OF A BLOOD SAMPLE
Karl Harnoncourt, Graz, Austria, assignor to Hans List, Graz, Austria
Filed Apr. 22, 1969, Ser. No. 818,288
Claims priority, application Austria, Apr. 30, 1968, A 4208/68
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R 2 Claims

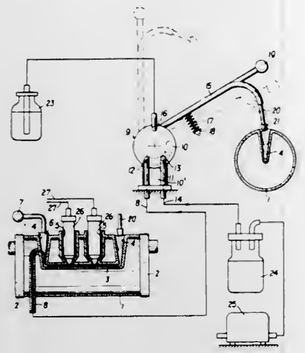


A measuring instrument and system for the determination of the partial oxygen and carbon dioxide pressures and of the pH value of a blood test sample having a thermostatized measuring vessel with a measuring capillary tube inserted therein to contain the blood test sample with three receiving bores in the measuring vessel and three measuring electrode units one of which being oxygen sensitive with the second carbon dioxide sensitive and the third being pH sensitive. Each of the measuring sensors are in contact with the said blood test sample and a measuring and recording device for electrode conductively connected with one of the measuring electrode units with a conical receiving bore provided on the measuring vessel. Three control bores terminate in the conical receiving bore and a switch element is inserted in the receiving bore to register with the control bores in three different positions with a pumping device providing for alternate suction and delivery strokes and a pipeline connects the pumping device with the control bores. A gas intake pipe connects the pressure tank with the second control bore and a suction pump and a suction pipe connect the latter with the third control bore and a conical filler connection is mounted on the measuring vessel and is connected with the extremity of the measuring capillary tube opposite the switch member.

3,639,830
ATTACHMENT FOR THE MICROANALYSIS OF BLOOD GASES
Karl Harnoncourt, Graz, Austria, assignor to Hans List, Graz, Austria
Filed Apr. 23, 1969, Ser. No. 818,560
Claims priority, application Austria, Apr. 30, 1968, A 4209/68
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R 4 Claims

An attachment for the cleaning and drying of measuring capillary tubes for the microanalysis of blood gases having a

measuring vessel containing the capillary tube to receive a blood test sample and a measuring electrode arrangement in



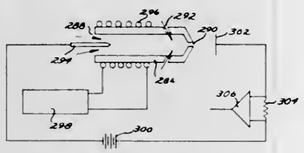
contact with the test sample and having a scavenging duct connectable to one end of the tube.

3,639,831

METHOD AND APPARATUS FOR PRODUCING A DIRECTABLE CURRENT-CONDUCTING GAS JET FOR USE IN A METHOD FOR INSPECTING AND MEASURING NONCONDUCTIVE FILM COATINGS ON CONDUCTIVE SUBSTRATES

Charles Richard Cushman, Broomfield, Colo., assignor to Autometrics Co., Boulder, Colo.

Filed Nov. 12, 1968, Ser. No. 774,758
Int. Cl. G01n *27/62*
U.S. Cl. 324—33 **14 Claims**



A method and apparatus for producing a directable, electrically conducting gas jet along a path across a test zone, passing an electric current along the jet paths and detecting variations in the current flow in the gas jet stream as a function of the presence of anomalies in the path or changes in the path dimensions. Such anomalies include, but are not limited to, insulators, conductors and semiconductors, gases diffusing into the stream, particulate solids introduced into the stream, electric fields parallel and traverse to the stream and variations in bias potential.

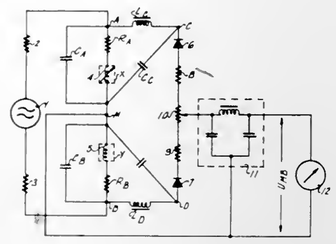
3,639,832

ELECTRICAL BRIDGE APPARATUS FOR AND METHOD OF MEASURING MECHANICAL FORCES BY MAGNETOELASTIC MEMBERS

Hermann Goebbels, Brockenberg, Germany, assignor to EMA-Dorries GmbH, Stolberg, Germany

Filed Dec. 11, 1969, Ser. No. 884,130
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 R **3 Claims**

Force-measuring apparatus and method employing two similar measuring members, one loaded and the other unloaded, carrying magnetizing windings disposed in different branches of a bridge energized by alternating current. The present invention changes the energy relationships of the magnetizing fields by providing additional measuring circuits and auxiliary circuits with inductive, capacitive and ohmic



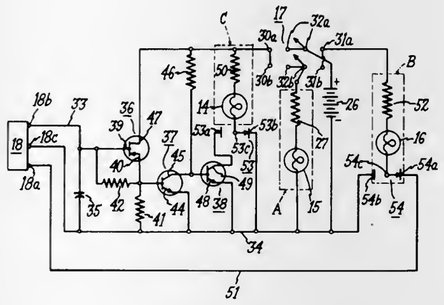
resistance or resistance combinations which, when load changes occur, bring about changes in the measuring potential such as to increase the measuring voltage output, at least substantially linearize the measuring members, and substantially or wholly eliminate the creep or creeping effects of the measuring members.

3,639,833

SOLID-STATE VOLTAGE AND FAULT DETECTOR MEANS HAVING INTEGRAL CIRCUIT INTEGRITY INDICATORS

Henry N. Tachick, Pittsfield, Mass., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,053
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **7 Claims**



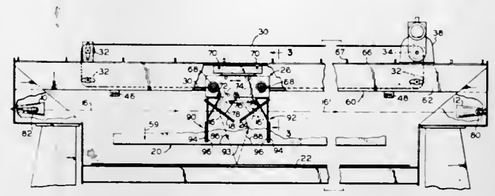
Solid-state detector circuit and portable circuit housing for safely sensing the presence of a voltage or a fault in a high-voltage electric power distribution system. The apparatus is housed in a unitary case and is provided with interchangeable probes to permit it to be either directly or indirectly coupled to a circuit under test. Integral indicating means are provided for selectively monitoring the integrity of the detector circuit to assure its operability before and after it is used on a high-voltage circuit, thereby affording a safeguard for personnel using information provided by the detector.

3,639,834

MICROWAVE MOISTURE MEASUREMENT APPARATUS HAVING MOVABLE MIRROR SCANNING MEANS

Charles W. E. Walker, 855 McBride Blvd., Apt. 307, New Westminster, British Columbia, Canada

Filed Apr. 17, 1970, Ser. No. 29,441
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 B **15 Claims**



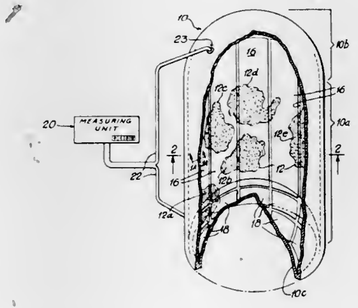
A microwave apparatus for measuring the moisture content of sheet material by producing a moisture signal proportional to the amount of microwaves absorbed by the water therein is described which employs a movable mirror scanning means for scanning the sheet material with a microwave beam transmitted between fixed transmitting and receiving antennas. A fixed mirror is positioned on the opposite side of the sheet from such scanning means for receiving the microwave beam reflected from a first movable mirror and reflecting the beam back through the sheet material to a second movable mirror. The movable mirrors are mounted on a carriage which is reciprocated back and forth across the moving sheet by a reversible motor coupled to a potentiometer for producing a position signal proportional to the position of such carriage. This position signal and the moisture signal are applied to the inputs of a computer for indicating the percentage moisture content of a sheet portion and its position on the sheet. The microwave beam passes through the sheet at an acute angle, in the range of 40° to 65°, to prevent standing wave interference distortion of the microwave beam. A telescope and light source are employed for optical alignment of the antennas and the movable mirrors.

3,639,835

CAPACITIVE TANK GAGING APPARATUS BEING INDEPENDENT OF LIQUID DISTRIBUTION

Alvin H. Dammig, Jr., Readville; Arthur E. Sherburne, Bedford, and Rodney A. Brooks, Lexington, all of Mass., assignors to National Aeronatuics and Space Administration under the provisions of 42 U.S.C. 2457(d)

Filed Jan. 27, 1967, Ser. No. 612,265
Int. Cl. G01r *27/26;* **G01j** *23/00*
U.S. Cl. 324—61 **9 Claims**



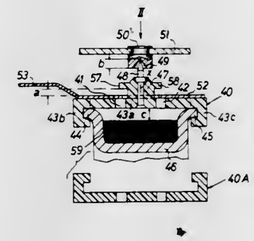
Capacitive gaging apparatus for fluid measurement. Longitudinally extending electrodes are circumferentially disposed on the interior of an elongated container or conduit and energized by a time variable signal to generate a uniform electric field across the container or conduit. In one embodiment, transverse fields are generated across the container. Changes in energizing current are converted to indicate liquid quantity or density. The electrodes may be shielded, formed of variable widths and energized to produce at least alternately orthagonal electric fields to obtain maximum accuracy.

3,639,836

MOVING-COIL ASSEMBLY FOR ELECTRICAL MEASURING INSTRUMENTS

Willy Kisselmann, Grunwald; Fritz Rumpelein, Munchen; Paul Kopf, and Franz Landbrecht, both of Unterhaching, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 4, 1969, Ser. No. 830,328
Claims priority, application Germany, June 7, 1968, P 17 66 527.9
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 R **10 Claims**



The moving-coil assembly of a moving-coil electrical measuring instrument comprises two coaxial staffs extending into recesses provided in two stationary bearings and mounted on elastic sections of plastic carriers which are secured to the coil-supporting frame. The extent of flexing of the elastic sections is limited by stops provided on the carriers in such a way that the tips of staffs cannot leave their recesses when the sections are flexed in response to shocks and that the sections cannot contact the outermost windings of the coil which is convoluted around the frame.

3,639,837

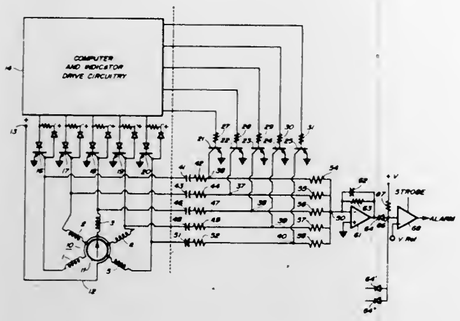
METHODS OF AND APPARATUS FOR TESTING ELECTROMAGNETIC INDICATORS

Marvin Masel, Teaneck, and Albert J. Wedlake, Totowa, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,781
Int. Cl. G01r *35/00, 35/02*
U.S. Cl. 324—158 R **9 Claims**

An electromagnetic indicator can be tested to determine whether or not it is properly positioned to the desired indicia. This is achieved by applying electrical signals to two stator windings of the electromagnetic indicator so as to induce an electrical signal in a third of the stator windings. The induced signal varies depending upon the position of the indicia of the

electromagnetic indicator. The stator windings are selected such that an induced signal of predetermined phase and of



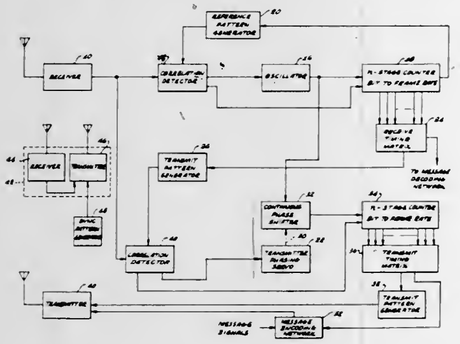
predetermined magnitude is obtained for an accurately positioned indicia.

3,639,838

SYNCHRONIZED VARIABLE DELAY TIME DIVISION COMMUNICATION SYSTEM

Henry G. Kuhn, deceased, late of Malibu, Calif. (by Alida Kuhn, executrix), and Ross Corless Winterbottom, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 30, 1968, Ser. No. 701,786
Int. Cl. H04b *7/20*
U.S. Cl. 325—4 **4 Claims**



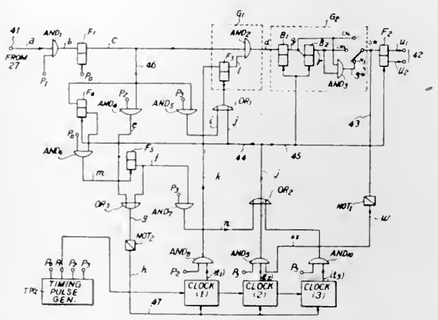
A locally-generated reference sync signal and the master sync signal received from the repeater are compared in time of occurrence to develop an error signal which varies the frequency of a controllable oscillator to synchronize the reference sync signal to the master sync signal. A counter and timing matrix in the master sync loop controls the generation of own-sync reference signals during the station's time slot. The own-sync reference signals are compared in time of occurrence with the own-sync signals as received via the repeater to develop an error signal which varies the phase of a continuously variable phase shifter to synchronize the own-sync generator to the own-sync reference signals. In another embodiment, the range to the repeater obtained by means of a ranging signal is compared with the time difference between the output of the counter and timing matrix in the master sync loop, and the output of the transmit counter and timing matrix. The resultant error signal varies the phase of the continuously variable phase shifter to correct the timing of the transmit control circuits.

3,639,839

BROADCAST SYSTEM FOR A CONTROL SIGNAL

Masayuki Fukata, 94, Shimorenjaku, Mitaka-shi, Tokyo, Japan

Filed Sept. 16, 1969, Ser. No. 858,345
Claims priority, application Japan, Sept. 19, 1968, 43/67286
Int. Cl. H04b *1/00*
U.S. Cl. 325—64 **3 Claims**



A system for controlling, from the sending side, the receiving side in a broadcast system using an intermittent control signal, where a false signal similar to the regular control signal is detected from the broadcast signals before the receiving side is spuriously triggered by the false signal, and elimination filter means is inserted in the path of the broadcast signal during only a predetermined time to eliminate the same frequency components as the control signal, whereby the control signal can be transmitted with no chance of spurious triggering. In this case, the false signal is detected from the broadcast signals by the use of a first decision means for deciding false signals having only spaces each less than a first time t_1 as a single group of false signals, a second decision means for deciding successive two groups of false signals detected by the first decision means as "continuous" if a space between the successive two groups of false signals is less than a second time t_2 longer than the first time t_1 and for deciding the later of the successive two groups of false signals detected by the first decision means as a new group of false signals if a space between the successive two groups of false signals is longer than the second time t_2, and a third decision means for deciding a predetermined state just before the possible spurious triggering of the receiving side by counting the number of "continuous" groups of false signals.

3,639,840

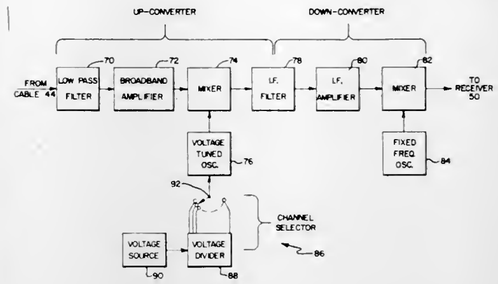
MULTI-CARRIER TRANSMISSION SYSTEM

Jacob Shekel, Brookline, and George H. Ray, Jr., Woburn, both of Mass., assignors to Spencer-Kennedy Laboratories, Inc., Winchester, Mass.

Continuation-in-part of application Ser. No. 814,340, Apr. 8, 1969. This application Nov. 28, 1969, Ser. No. 880,839
Int. Cl. H04b *1/06*
U.S. Cl. 325—308 **15 Claims**

A converter for use in a cable television system and interconnected between a transmission path and a television receiver for selecting any one of a plurality of television signals carried by the transmission path. The converter includes a broadband section for translating all received television signals to intermediate frequencies higher than the

frequencies of the received television signals such that no images appear within the band of input signals. A selected one of the television signals at a predetermined higher inter-



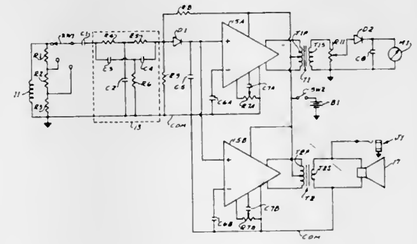
mediate frequency is then translated by a narrow band section to a lower frequency of a predetermined television channel for reception by the television receiver.

3,639,841

ELECTROMAGNETIC ENERGY DOSIMETER

Alfred W. Richardson, 318 Anthony Hall, Southern Illinois Universtiy, Carbondale, Ill.

Filed Jan. 16, 1970, Ser. No. 3,366
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **11 Claims**



Miniaturized dosimeter apparatus monitors the field density of radiated pulsed electromagnetic energy. An elongate cylindrical coil is used as a pickup and is positioned so that one-half of the coil protrudes from a small metallic case for the apparatus, providing uniform response substantially over a spherical angle of at least 180°. Means is interconnected with the coil for producing a periodic waveform having an average magnitude varying as a function of the field density of the radiated energy and having a period inversely proportional to the pulse repetition frequency of the energy. Means is responsive to this periodic waveform for providing a readily perceptible indication of the average magnitude of the periodic waveform whereby the field density of the radiated energy, and thereby the relative human thermogenic dosage thereof, is readily monitored.

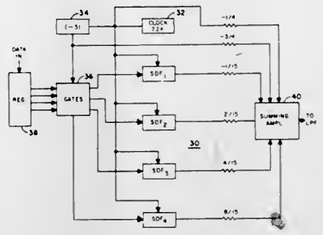
3,639,842

DATA TRANSMISSION SYSTEM FOR DIRECTLY GENERATING VESTIGIAL SIDEBAND SIGNALS

Carl J. Zarcone, Bruce M. Cleveland, and Donald F. Smith, all of Monroe, N.Y., assignors to General Dynamics Corporation

Filed Oct. 17, 1968, Ser. No. 768,426
Int. Cl. H03k *5/13*
U.S. Cl. 328—61 **5 Claims**

A system and technique for generating vestigial sideband signals capable of carrying digital information at high-bit rates is described. The bits are circulated through one or more delay lines and weighted samples are taken at a rate higher than the highest frequency of the sideband to be transmitted. The samples may be summed, directly or in weighted relationship when a multilevel signal is desired, to provide an output signal. This output signal is filtered to remove those



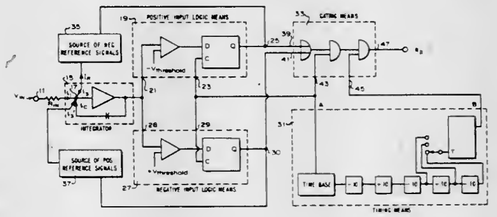
frequencies which lie above the band which is to be transmitted through the channel and thereupon applied to the channel. By apportioning the weight of each sample in accordance with the spectral characteristics of the channel, the output signal will be readily accommodated by the channel and be transmitted therethrough with least distortion.

3,639,843

VOLTAGE TO PULSE-RATIO CONVERTER

Rolf Schmidhauser, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 20, 1970, Ser. No. 56,577
Int. Cl. H03k *5/20*
U.S. Cl. 328—116 **6 Claims**



A voltage to pulse-ratio converter having an integrator, a source of reference signals, timing, gating, and logic means arranged to balance an applied input signal with a reference signal during a number N_2 of complete clock periods in a measurement period, there being N clock periods in a measurement period where N is an integer, such that the ratio N_2/N of the number N_2 of clock periods that the reference signal is applied to the number N of clock periods in a measurement period is proportional to the magnitude of the input signal.

3,639,844

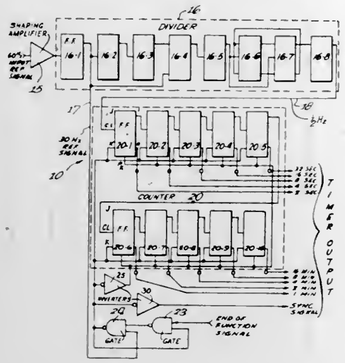
ELECTRONIC TIMER FOR A MULTIPLE FUNCTION APPLIANCE

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed June 27, 1969, Ser. No. 837,179
Int. Cl. G01r *29/02*; **H03k** *5/00*
U.S. Cl. 328—130 **14 Claims**

An electronic timer for a multiple function appliance, having a source of alternating reference signal connected with a

divider which provides a signal at a submultiple of the reference signal frequency. A series of J-K flip-flops forms a



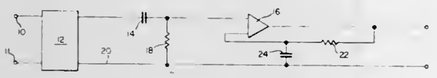
counter which establishes plural timing periods. On termination of a function of the appliance, the counter is automatically reset.

3,639,845

COMPENSATING THRESHOLD LEVEL DETECTOR

Arthur F. Camp, Jr., Redington Beach, Fla., and Harry W. Getz, Phoenix, Ariz., assignors to General Electric Company

Filed Nov. 19, 1970, Ser. No. 91,031
Int. Cl. H03b *3/02*; **H03k** *5/20*
U.S. Cl. 328—146 **2 Claims**



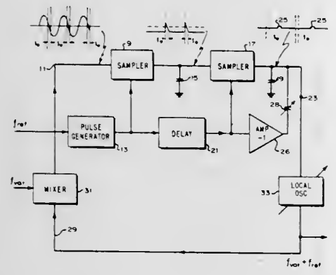
A circuit including a comparator for indicating when an input voltage crosses a threshold voltage. Compensation for input signal droop is provided by causing a controlled droop of both the input signal and the threshold, thereby avoiding erroneous threshold crossings.

3,639,846

TANDEM SAMPLING CONTROLLER USING DELAYED OPERATION OF PLURAL SAMPLING GATES

Gregory Justice, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 11, 1970, Ser. No. 18,649
Int. Cl. H03k *17/00*
U.S. Cl. 328—151 **3 Claims**



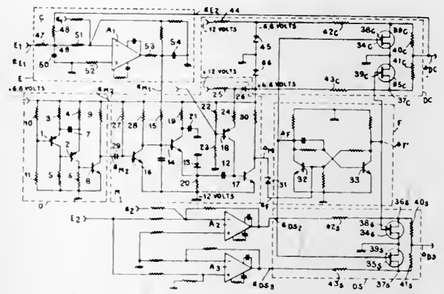
A signal sampler is arranged to sample the output of a preceding signal sampler to produce a DC control signal having extremely low-level amplitude variations.

3,639,847

CIRCUIT FOR MULTIPLYING TWO ELECTRICAL VALUES

Claude Remy, 21 Allee Circulaire, Foret de Vernon par 27, Vernon; Claude Lejannou, Apartment B. 135, 2 rue d'Archimede, Le Val Foure, Jolie, and Jacques Leclere, 39 Allee des Penitents, Foret de Vernon par 27, Vernon, all of France

Filed May 15, 1970, Ser. No. 37,680
Claims priority, application France, May 20, 1969, 6916222
Int. Cl. G06g *7/00*
U.S. Cl. 328—160 **13 Claims**



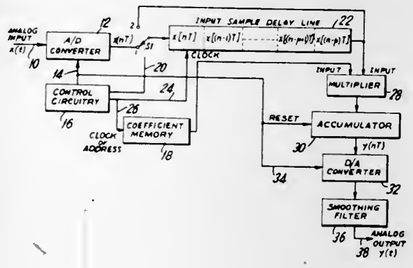
This invention relates to a circuit for multiplying two electrical values. A monitoring oscillator transmits short sampling pulses to a pulse time modulator to which a signal corresponding to the first electrical value is also impressed. A control chopping stage is inserted in a feedback line between the input of said modulator and its output, which is connected to an output chopping stage to which a voltage corresponding to the second electrical value is impressed, and on the output of which pulses appear having a duration and an amplitude respectively proportional to the first and second electrical values.

3,639,848

TRANSVERSE DIGITAL FILTER

James W. Elliott, Largo, Fla., assignor to Electronic Communications Inc., Petersburg, Fla.

Filed Feb. 20, 1970, Ser. No. 13,098
Int. Cl. H03k *13/02*
U.S. Cl. 328—167 **10 Claims**



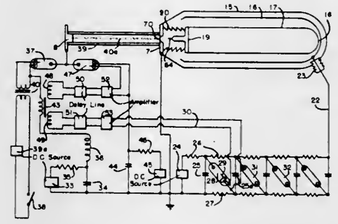
A digital transversal filter converts an input analog signal into a plurality of digital components which are transferred into a storage device. Those components are thereafter sequentially multiplied by predetermined coefficients stored in a circulating memory. The combined products of the coefficients and the components constitute an output digital word which is thereafter converted to an analog signal bearing a predetermined functional relationship to the input signal.

3,639,849

APPARATUS FOR PRODUCING A HIGHLY CONCENTRATED BEAM OF ELECTRONS

Willard H. Bennett, 604 Appleton Drive, Apt. B, Raleigh, N.C.

Original application Nov. 28, 1966, Ser. No. 597,392, now Patent No. 3,516,906, and a continuation-in-part of 569,549, July 19, 1966, now Patent No. 3,510,713, dated May 5, 1970. Divided and this application May 20, 1968, Ser. No. 749,231
Int. Cl. H01j *29/56*
U.S. Cl. 328—228 **9 Claims**



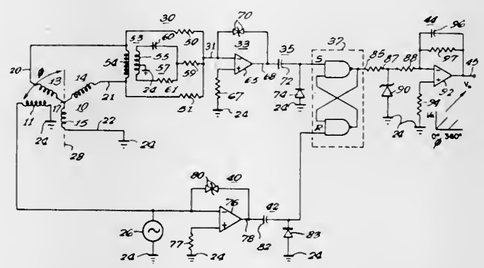
The invention resides in apparatus for producing a highly concentrated electron beam. The electron beam producing apparatus is arranged to collimate the beam, and the collimated beam passes into apparatus that produces a pinched discharge having a self-magnetic field. The pinched discharge pinches the already collimated electron beam, thus further concentrating the same.

3,639,850

DEMODULATOR FOR ANGULARLY RELATED SIGNALS

Herman H. Brooks, Goleta, Calif., assignor to Sundstrand Data Control, Inc.

Filed Sept. 16, 1969, Ser. No. 858,486
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **6 Claims**



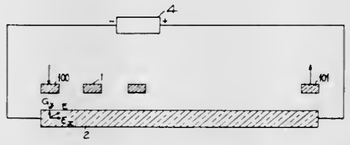
A demodulator for signals angularly related to the position of a rotor of a synchro or resolver uses, in one embodiment, only one transformer in a circuit for subtracting, adding, and phase shifting the signals to produce a single signal phase shifted in proportion to the rotor angle. In another embodiment, a transformerless circuit uses an operational amplifier to derive the phase shifted signal. The phase shifted signal is compared with a reference signal to produce a rectangular wave with a variable duty cycle, which is integrated to produce a DC voltage representing the rotor angle. A pair of the circuits are used in an altitude warning system connected to synchros for the actual altitude and the command altitude of an aircraft. The derived phase shifted signals from both synchros are compared to produce a rectangular wave with a variable duty cycle, which is integrated and compared with voltages representing preselected altitudes to indicate when the aircraft is at those altitudes.

3,639,851

NOVEL SEMICONDUCTOR AMPLIFIER

Felix Diamond, Paris, France, assignor to Thomson-CSF

Filed June 26, 1969, Ser. No. 836,784
Int. Cl. H03f *3/14*
U.S. Cl. 330—38 M **5 Claims**



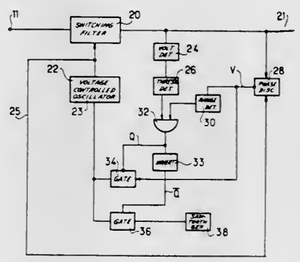
The present invention invention relates to a semiconductor-type travelling wave structure. A thin extrinsic semiconductor strip is located in the field of a delay line; a continuous field is applied between the two ends of the strip; the line has an HF input and an HF output.

3,639,852

CONTROL ARRANGEMENT FOR NARROW BAND SWITCHING FILTER

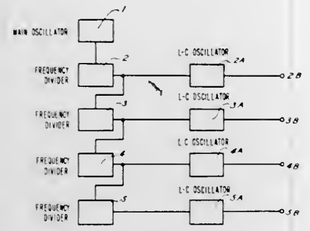
Marcel Louis Boyer, Chatillon, France, assignor to C. I. F.-Compagnie Industrielle Des Telecommunications, Paris, France

Filed June 16, 1970, Ser. No. 46,734
Claims priority, application France, June 16, 1969, 6920019
Int. Cl. H04b *3/04*
U.S. Cl. 331—1 A **6 Claims**



A switching-type matching filter whose switching frequency is extracted from the incident signal, characterized in that it comprises a switching frequency control loop comprising an electronically regulated oscillator, a phase discriminator supplied, on the one hand with a filtered frequency, on the other hand with the frequency of the said oscillator, as well as means for bringing the said oscillator within the coverage range of the phase discriminator and for keeping it within that range if the signal leaving the filter corresponds to predetermined conditions.

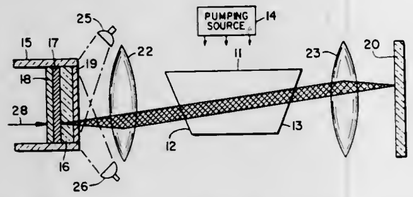
3,639,853
TONE OSCILLATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT
Tadao Sakai, No. 767-11, Uenoshiba, Mu Rogaoka, 3-chome, Sakai-shi, Osaka, Japan
Filed Aug. 21, 1970, Ser. No. 65,806
Claims priority, application Japan, Mar. 27, 1970, 45/26192
Int. Cl. H03b *5/08*
U.S. Cl. 331—51 **3 Claims**



A plurality of frequency dividers are connected in series with an oscillator having a fundamental frequency.

The outputs obtained from the frequency dividers are applied to a plurality of L-C oscillating circuits. Each L-C oscillating circuit produces a sinusoidal and a complex output signal which are combined to obtain a musical tone.

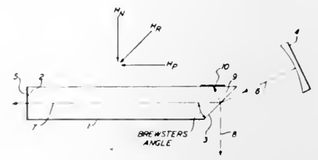
3,639,854
ELECTRON BEAM SCANLASER HAVING PHOTOCHROMIC Q-SPOILER
William J. Baldwin, West Roxbury, Mass., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 22, 1968, Ser. No. 778,231
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **18 Claims**



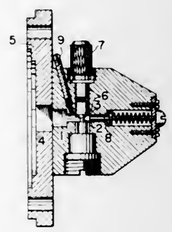
An optical system for controlling the direction of lasing action by utilizing photochromic material as a passive Q-switcher in the cavity of an angularly degenerate laser. By controlling the optical density at various points on the photochromic material, the laser can be made to radiate in any desired direction. A cathode-ray tube is used to generate a controllable spot of light, the wavelength of which is such that it changes the optical density of the photochromic material.

3,639,855
LASER DEVICES
Joseph F. Dillon, Jr., Morris Township, Morris County, and Charles G. B. Garrett, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Continuation of application Ser. No. 577,010, Sept. 2, 1966. This application Dec. 19, 1969, Ser. No. 882,773
Int. Cl. H01s *3/14, 3/05;* **G02f** *1/22*
U.S. Cl. 331—94.5 **1 Claim**

A magnetically saturable laser rod (e.g. doped YIG) has one end cut at Brewster's angle and is included in an optical cavity. Modulation is accomplished, via Faraday's effect, by varying the direction of the rod magnetization and by using the Brewster's angle face as the polarization sensitive element in the cavity. Light reflected out of the cavity at the Brewster's angle face can be detected and used in a feedback sense to control the applied magnetic field.



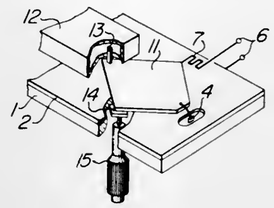
3,639,856
REENTRANT CAVITY RESONATOR SOLID-STATE MICROWAVE OSCILLATOR
Katuhiro Kimura, Toshima-ku, and Yoichi Kaneko, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 16, 1970, Ser. No. 3,281
Claims priority, application Japan, Jan. 24, 1969, 44/4769
Int. Cl. H03b *7/14*
U.S. Cl. 331—96 **8 Claims**



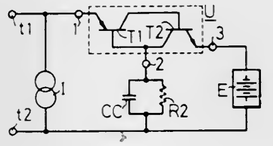
A solid-state oscillator which includes a reentrant cavity resonator having a resonant cavity and a post member insulated in a DC sense from a wall portion of said resonant cavity, a solid-state oscillating element disposed at the position of the highest high-frequency voltage within said reentrant cavity resonator whereby an oscillating frequency is greatly varied by changing the DC bias voltage to be applied to said element.

3,639,857
PLANAR-TYPE RESONATOR CIRCUIT
Takanori Okoshi, Tokyo, and Masatoshi Migitaka, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 30, 1970, Ser. No. 59,548
Claims priority, application Japan, Aug. 1, 1969, 44/60406
Int. Cl. H03b *7/14*
U.S. Cl. 331—107 R **8 Claims**

A planar-type resonator circuit comprising a conductive plate and a resonating conductive plate provided on said conductive plate in face-to-face fashion with a dielectric layer disposed therebetween, said resonating conductive plate having an input portion on one end and an output portion on the other end and also having decreasing widths towards the ends.



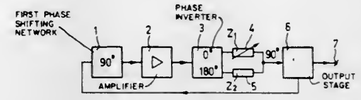
3,639,858
TRANSISTOR IMPEDANCE CONVERTER AND OSCILLATOR CIRCUITS
Takeo Miyata, Atsugi-chi, and Tsutomu Miura, Kawasaki-shi, both of Japan, assignors to Mitsumi Electric Company Ltd., Tokyo, Japan
Filed Aug. 26, 1969, Ser. No. 853,053
Claims priority, application Japan, Aug. 31, 1968, 43/62241; 43/62242; 43/62243
Int. Cl. H03b *5/12, 7/06*
U.S. Cl. 331—108 R **8 Claims**



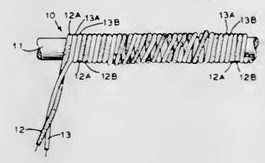
An impedance device adapted to represent various types of impedance which includes a two-transistor circuit equivalent to a single transistor with a common base current amplification factor greater than one and a predetermined impedance element or circuit, and circuits using such an impedance device. This impedance device represents an impedance corresponding to the impedance of the impedance element or circuit multiplied by $-(\alpha_0-1)$ where α_0 is the equivalent common base current amplification factor of the equivalent single-transistor circuit. One of the circuits using the impedance device is an oscillator which is constructed without an inductance element. Another of the circuits is an inductor having a pure inductance and which is constructed without using any inductance element.

3,639,859
OSCILLATOR HAVING SINGLE PARAMETER TUNING MEANS
Wilhelmus Antonius Joseph Marie Zwlisen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,884
Claims priority, application Netherlands, Sept. 2, 1968, 6812495
Int. Cl. H03b *5/24*
U.S. Cl. 331—108 B **6 Claims**

An oscillator having a first phase-shifting network, an inverting amplifier and a second phase-shifting network comprising two impedances; one of the impedances is externally adjustable and determines the frequency of the oscillator signal. A total phase shift of 180° is achieved by means of the first phase-shifting network which provides a phase shift of substantially 90° in a frequency independent manner and by the second phase-shifting network which provides an additional phase shift of substantially 90° in a frequency-dependent manner.

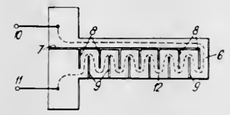


3,639,860
DELAY LINE
Otto Breitenbach, Nurnberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnung-shutte Aktiengesellschaft, Hannover, Germany
Filed July 31, 1970, Ser. No. 59,872
Int. Cl. H03h *7/30*
U.S. Cl. 333—29 **3 Claims**



A delay line having outgoing and return conductors stranded together in a manner such that upon winding the stranded conductors about a core, two windings of the same conductor lie in abutting relation to each other, whereby to substantially increase the inductance of the line and to maximize the delay time for a minimum length of line.

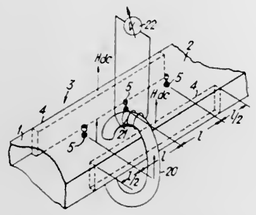
3,639,861
MAGNETOSTRICTIVE FILTER AND STRAIN GAUGE
Albert Russen, Cheshunt, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jan. 24, 1968, Ser. No. 700,230
Claims priority, application Great Britain, Feb. 24, 1967, 8,970/67
Int. Cl. H03h *9/22;* **H01v** *9/00*
U.S. Cl. 333—71 **2 Claims**



One or more layers of magnetostrictive material are arranged to have a meandering current running therethrough or through a closely spaced sheet of conductive material, to provide longitudinal, torsional or flexural modes of mechanical vibration. For torsional vibration a cylindrical structure having a spiral strip either conductive or magnetostrictive, is described. Copper or gold is deposited on the magnetostrictive material. Ladder filters using magnetostrictive structures

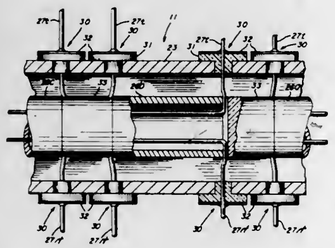
consist of a thin sheet with a layer of magnetostrictive material thereon suitably cut to provide a number of reeds.

3,639,862
WAVEGUIDE FILTER UTILIZING EVANESCENT WAVEGUIDE, WITH TUNABLE FERRITE LOADING
George Frederick Craven, Sawbridgeworth, and Richard Finnie Skedd, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 9, 1967, Ser. No. 681,637
Claims priority, application Great Britain, Nov. 30, 1966, 53,635/66
Int. Cl. H03h *7/00, 7/10*
U.S. Cl. 333—73 W **9 Claims**



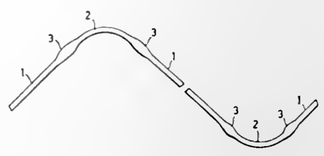
A waveguide filter wherein transversely magnetized ferrite-loading strips are mounted within a waveguide section to produce cutoff at a higher frequency than in an empty waveguide, thereby providing evanescent-mode operation at the operating frequencies. The waveguide section is then terminated in a capacitive reactance which at the center frequency of the desired passband is the conjugate of the positive imaginary characteristic impedance of the length of evanescent waveguide. Means for varying the magnetic field applied to the ferrite-loading strips is provided for tuning the filter over a predetermined range of passband frequencies.

3,639,863
RADIOFREQUENCY FEEDTHROUGH
Stephen R. Monaghan, Harvard, and Jerome D. Hanfling, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 22, 1970, Ser. No. 48,233
Int. Cl. H01h *7/14*
U.S. Cl. 333—79 **5 Claims**



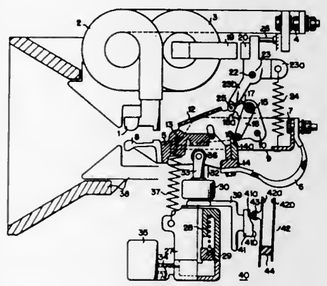
A feedthrough for supporting a wire passing through the wall of a waveguide into a radiofrequency field. The body of the feedthrough is made from a lossy dielectric material and is formed so that its outer portion overlies the outer wall of the waveguide. The outer surface of the feedthrough supports a metallic film which in combination with the outer surface of the waveguide forms a radial transmission line. The dimensions of the feedthrough are such as to form a low Q resonant cavity for the resonant frequency field.

3,639,864
TRANSPORTABLE COAXIAL CABLE
Bernt Klostermark, Smedsbacksgatan 3B, Stockholm, Sweden
Filed Oct. 14, 1969, Ser. No. 866,314
Claims priority, application Sweden, Oct. 22, 1968, 14245/68
Int. Cl. H01b *11/18*; **H01p** *3/06*
U.S. Cl. 333—96 **9 Claims**



Coaxial cable for connection between an antenna and a receiver in nonpermanent or mobile installations. The cable is joined by short lengths of bendable sections thereby enabling the cable to be folded into an easily transportable unit.

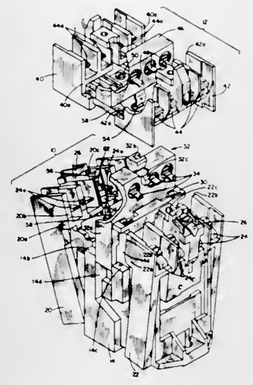
3,639,865
CIRCUIT BREAKER
Chuzo Takeda; Yoshihiro Kojima; Yamaguchi Toshiyuki, and Yasuo Ariyama, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Feb. 9, 1971, Ser. No. 113,854
Claims priority, application Japan, Feb. 9, 1970, 45/10901
Int. Cl. H01h *75/00*
U.S. Cl. 335—18 **11 Claims**



A circuit breaker is provided which is capable of effecting an instant cutoff when excess current is introduced while the circuit breaker is in operation. In addition, the circuit breaker has means cooperatively associated therewith for selectively indicating normal cutoffs and those arising because of excess current from the condition in which the contact members are engaged during normal operation. In this device, a movable arm rotatably disposed on a second rotatably mounted arm has a contact secured to one end which detachably contacts a fixed contact to switch a circuit. Means are provided for normally urging the first movable arm in a direction to separate the contacts. A driving device for displacing the first movable arm and the second movably arm jointly through an engaging mechanism connected therebetween causes the contacts to engage, and another

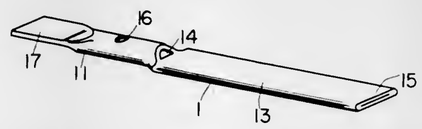
device responsive to an excess current sensing means is provided for disengaging the engaging mechanism to permit the contacts to be separated in such cases, even while the circuit breaker is being normally operated.

3,639,866
CONSTANT ACTUATING FORCE ARRANGEMENT FOR A RELAY AND A RELAY-ADDER COMBINATION
Hugh Kane, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 12, 1970, Ser. No. 79,904
Int. Cl. Ho1h *67/02*
U.S. Cl. 335—132 **5 Claims**



A relay and a relay-adder combination incorporating a constant force actuating arrangement allowing for the use of the same coil in both configurations whereby a reaction force which is encountered in the actuation of the relay per se is bypassed in the actuation of the relay-adder combination and is replaced by the force which is encountered in the actuation of the adder and which is equal to the reaction force.

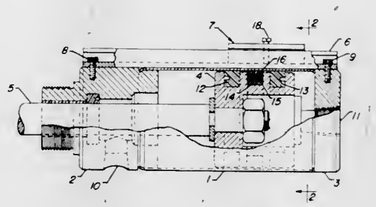
3,639,867
REED SWITCH
Shigeru Tanimura, Kyoto; Norio Maejima, Kameoka; Kilokazu Yoshimura, Osaka, and Seisuke Hinoda, Ikeda, all of Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan
Filed Mar. 17, 1970, Ser. No. 20,336
Claims priority, application Japan, Mar. 17, 1969, 44/20189
Int. Cl. H01h *51/28*
U.S. Cl. 335—154 **5 Claims**



A sealed switch having at least two reed-shaped magnetic poles of resilient metal, which respond to the surrounding magnetic field and cause contacts on their free ends to touch to each other, and also having an atmosphere confined to the area of and around said poles by a sealing means thereabout, which switch is characterized in that at least one of said reed-shaped poles is a partly flattened pipe of magnetic metal.

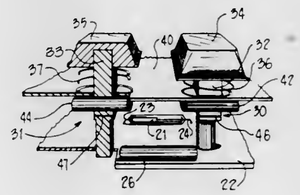
The part of said metal pipe, which is bonded to a sealing means such as a glass envelope, may be utilized as a tube for exhausting air from and admitting the confined gas to the envelope.

3,639,868
MAGNETIC SWITCH MOUNTING MEANS FOR A FLUID MOTOR UNIT
Ralph L. Gasper, Lansing, and Donald E. Riordan, Tinley Park, both of Ill., assignors to Bimba Manufacturing Company, Monee, Ill.
Filed Mar. 17, 1971, Ser. No. 125,282
Int. Cl. H01h *9/00*
U.S. Cl. 335—205 **6 Claims**



An adjustable form of magnetic reed switch mounting means which utilizes a movable arm member in a slotted track member adapted to be mounted along the exterior cylinder wall of the air cylinder or other fluid motor unit. A preferred form of the track has a cross section curved interior surface while the base portion of the arm member that moves in the track has corresponding curvature and is capable of having transverse angular rotation with respect to the track and to the air cylinder so as to be able to fit against different sized housings.

3,639,869
MAGNETICALLY LATCHED SWITCH ASSEMBLY
Egon A. Pedersen, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,570
Int. Cl. H01h *13/00, 3/12*
U.S. Cl. 335—207 **11 Claims**



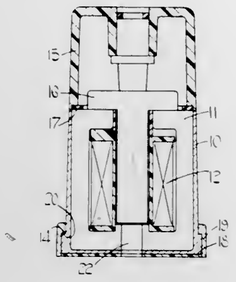
A magnetically latched switch assembly including a reed switch mounted on a baseplate adjacent a biasing magnet, whose field strength and orientation are sufficient to hold the reed switch actuated but insufficient to independently actuate the switch. A LATCH magnet and a RELEASE magnet are separately mounted on a pair of reciprocating key stems, the former with magnetic poles opposing, the latter with

magnetic poles assisting, the field associated with the biasing magnet. Movement of the LATCH magnet into proximity with the biasing magnet concentrates the field associated with the latter in the switch, closing the switch, which is subsequently held actuated by the latter. Movement of the RELEASE magnet into proximity with the biasing magnet reduces the field associated with the latter in the switch, opening the switch.

3,639,870
ELECTROMAGNETIC DEVICES

Reginald B. G. Benson, 81 Cotes Road, Barrow-on-Soar, Leicestershire, England

Filed July 10, 1970, Ser. No. 53,916
Int. Cl. H01f 7/08
U.S. Cl. 335—257 2 Claims

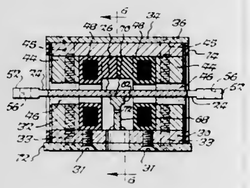


An electromagnetic device comprising a solenoid embedded within a moulded body and an associated armature. The device is adapted to be attached to a valve or other part which is to be actuated by the armature and incorporates a resilient means at its end adjacent the said part. Moreover, for attaching the device there is provided a surrounding and relatively slidable member adapted to be connected to the valve or other part and having internal shoulders coacting with complementary shoulders formed on the body.

3,639,871
TORQUE MOTOR

Nicholas D. Trbovich, West Seneca; William H. Meyer, East Aurora, and Paul R. Bauer, Akron, all of N.Y., assignors to Servotronics, Inc., Buffalo, N.Y., by said Meyer and Bauer

Filed May 21, 1970, Ser. No. 39,446
Int. Cl. H01f 7/08, 7/13
U.S. Cl. 335—274 10 Claims

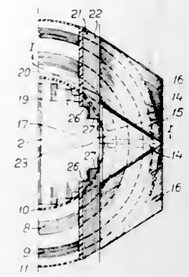


A torque motor having a housing and an armature mounted in the housing. The armature is supported for oscillatory movement on an upright, solid armature mounting member anchored at its lower end to the bottom shunt of the motor and carrying the armature at its upper end. The mechanical spring rate of the spring member can be adjusted by removing material from the web of the spring member, and this locates the armature pivot point.

3,639,872
MEANS FOR CONTROLLING THE LEAKAGE FLUX IN TRANSFORMERS

Petter Hessen, and Ruudi Siirak, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of application Ser. No. 866,881, Oct. 10, 1969, now abandoned, Continuation-in-part of application Ser. No. 827,877, May 26, 1969, now abandoned. This application Dec. 31, 1970, Ser. No. 103,302
Int. Cl. H01f 27/24
U.S. Cl. 336—84 2 Claims

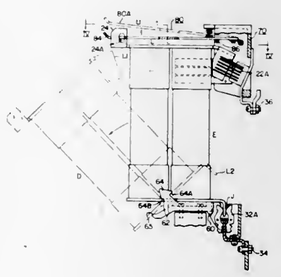


In transformers for high power amounts, for collecting the leakage flux and leading it back to the iron core, plates of laminated magnetic material are arranged close to the ends of the winding coils and at least one end of the plates is in magnetic connection with the core.

3,639,873
POWER FUSE APPARATUS

Alfred W. Hodgson, Orchard Park, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 21, 1970, Ser. No. 30,515
Int. Cl. H01h 85/02
U.S. Cl. 337—187 10 Claims



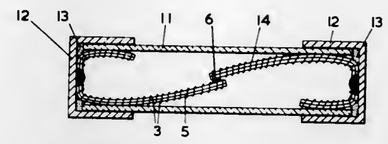
The invention relates to a power fuse assembly including a power fuse device having end ferrules and stab-type electrical contacts extending rearwardly from the end surfaces of the ferrules for electrically engaging stab-jaw connectors without protruding laterally beyond the lateral dimension of

the power fuse device. This electrical interconnect design permits compact lateral packaging of a plurality of power fuse assemblies in multiphase electrical systems.

3,639,874
FUSES

Gerardus Jacobus Deelman, Eindhoven, Netherlands, assignor to Olvis Smeltzekeringenfabriek N.V., Utrecht, Netherlands

Filed Nov. 24, 1969, Ser. No. 879,442
Int. Cl. H01h 85/08, 85/36
U.S. Cl. 337—185 2 Claims

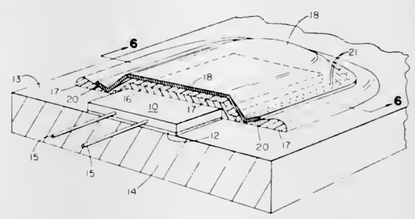


A fuse in which two current conductors are connected by fusible pellet, the connection between the current conductors being broken by mechanical spring action at the exceeding of a current threshold for which the pellet melts. One or each current conductor is combined and attached to an associated biased resilient element, thus forming an interruption element with both excellent mechanical and electrical characteristics for providing the wanted interruption action.

3,639,875
STRAIN GAGE ASSEMBLY AND METHOD OF ATTACHMENT

Given A. Brewer, Marion, Mass., assignor to Brewer Engineering Laboratories, Inc., Marion, Mass.

Filed Aug. 24, 1970, Ser. No. 66,484
Int. Cl. H01c 9/06
U.S. Cl. 338—2 8 Claims



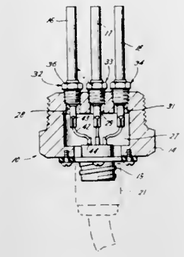
A strain-deformable wire resistance strain gage is cemented to a ship propeller, and covered with a settable plastic protective layer in unset state; a sheet metal overlay is spot-welded through the plastic to the propeller, after which the plastic is cured, forming a seal around the welds.

3,639,876
PROBE BODY FOR CORROSION TESTS

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Original application Oct. 3, 1968, Ser. No. 764,884, now Patent No. 3,558,462. Divided and this application July 28, 1970, Ser. No. 58,891
Int. Cl. B01k 3/00; H01c 7/00
U.S. Cl. 338—13 10 Claims

A metallic probe body formed of a pipe plug with an upper cylindrical cavity intersected by lower passageways carrying insulating members. Metallic terminal pins extend through these members for mounting field-replaceable electrodes in a side-by-side relationship. An electrical fitting is secured to the top portion of the plug for enclosing the cavity. Electrically conductive means in the cavity interconnect the electrical fitting and the pins. The conductive means are insulated

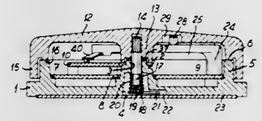


from one another and the probe body. The probe body may be readily installed in any piping system carrying corrosive fluids without introducing any weakness into such piping. The pipe plug subcomponent of the probe body can be manufactured by available pipefitting techniques.

3,639,877
VARIABLE-RESISTANCE FOOT CONTROL DEVICE, FOR REGULATING THE SPEED OF AN ELECTRIC MOTOR

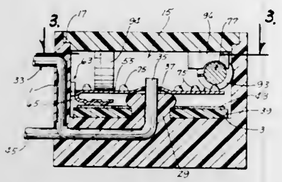
Marcel Fresard, Petit-Lancy, Geneva, and Jean-Charles Donnat, Chatelaine, Geneva, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed May 7, 1970, Ser. No. 35,348
Claims priority, application Switzerland, May 14, 1969, 7329/69
Int. Cl. H01c 9/02, 5/02
U.S. Cl. 338—153 4 Claims



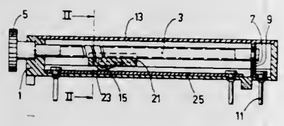
A variable-resistance foot control device for regulating the speed of an electric motor is particularly useful for sewing machines. It has a casing containing the variable-resistance element and a speed selection slider. The actuating member comprises a cover which pivots on a vertical axle against the action of a return spring which is fixed between the casing and said axle. The casing has a peripheral collar which the skirt of the cover surrounds and an annular support surface provided on the inside of the cover faces the collar. The slider is carried by a hinged lever actuated by turning the foot on the cover, whereby a pin and groove mechanism pivots the lever and moves the slider into contact with the contact points on the variable-resistance element.

3,639,878
ADJUSTABLE POTENTIOMETER WITH CONTACTOR RATCHET AND CENTRAL POST-SECURING MEANS FOR BASEPLATE
Louis W. Scheel, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.
Filed Dec. 18, 1969, Ser. No. 886,289
Int. Cl. H01c *9/02*
U.S. Cl. 338—174 **1 Claim**



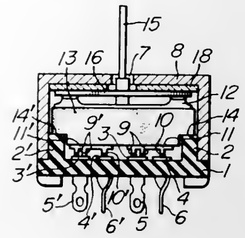
An adjustable potentiometer of the square-trim-type comprising a case having a compartment formed therein and which is closed by a cover extending thereover. An arcuate resistance element is positioned in the case compartment and has a central post extending upwardly therethrough from the bottom of the case. A circular electrical collector means is operatively rotatably mounted on the post and has a wiper element thereon which is in movable electrical contact with the resistance element. A first lead extends into the potentiometer case and extends upwardly through the post. The collector is rotatably mounted on the upper end of the first lead and includes means for preventing the upward movement of the collector with respect to the resistance element. The collector has spaced-apart teeth which are in threadable engagement with an elongated lead screw rotatably extending into the case. The collector is of flexible construction to permit the deflection or ratcheting of the threads with respect to the threads of the lead screw when the wiper reaches the limits of its travel to prevent damage to the unit. Second and third leads extend into the case and are operatively connected to the ends of the resistance element.

3,639,879
POTENTIOMETER COMPRISING A TRANSPORT SCREW
Jan Van Rooijen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 824,481, May 14, 1969, now abandoned. This application Aug. 24, 1970, Ser. No. 66,652
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **6 Claims**



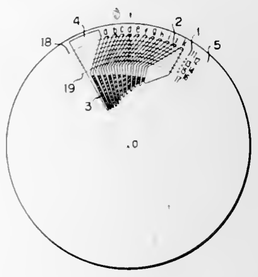
Potentiometer including a transport screw for the linear displacement of an insulating contact member, and a hairpin-like contact spring which engages the screw, the contact member and a resistance track respectively.

3,639,880
SLIDING-TYPE VARIABLE RESISTOR
Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 17, 1970, Ser. No. 73,012
Claims priority, application Japan, Sept. 27, 1969, 44/92322; 44/92323; June 5, 1970, 45/55883; June 12, 1970, 45/58704
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **5 Claims**



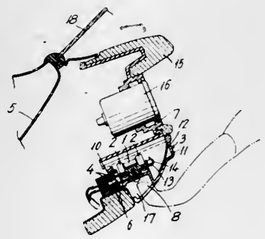
A sliding-type variable resistor comprising a baseplate with resistance elements and conductive elements disposed on the upper side thereof; a sliding block with contactors disposed on the lower side thereof and with a plate spring and an operating means provided on the upper side thereof, the contactors being maintained in contact with the resistance elements and the conductive elements; a housing which covers the baseplate in such a manner as to contain therein the sliding block; an operating means having a thumb fitting attached to the sliding block and being projected through the slot on the upper side of the housing; and a friction plate disposed on the upper surface of the sliding block and pressed against the ceiling of the housing by means of the plate spring, a gaseous grease layer being interposed between the ceiling of the ceiling of the housing and the friction plate so that a smooth sliding operation may be assured.

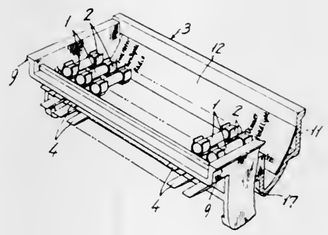
3,639,881
ROTARY VARIABLE RESISTOR WITH OBLIQUE TAPS AND BRUSH SPANNING PLURAL TAPS
Tatsuo Fujii, and Yutaka Watano, both of Tokyo, Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Continuation of application Ser. No. 768,721, Oct. 18, 1968, now abandoned. This application Nov. 25, 1970, Ser. No. 92,848
Int. Cl. H01c *9/04*
U.S. Cl. 338—190 **3 Claims**



A variable resistance element is provided in which a multicontact brush is slidable over a plurality of spaced tap terminals of a resistance element. The resistance element includes a resistance film deposited on a suitable backing and a deposited conductive film in spaced strip form forming extending tap terminals for the resistance film. The brush contacts are aligned transversely to the path of travel of the brush while the tap terminals are angularly disposed relative to the path of brush travel so that at least two tap terminals are engaged by the brush contacts as the contact brush is moved relative to the tap terminals.

3,639,882
FUSE BOX APPARATUS FOR A MOTORCAR
Soichiro Honda, and Hiroyuki Shimojima, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 17, 1970, Ser. No. 29,609
Claims priority, application Japan, Apr. 28, 1969, 44/38130
Int. Cl. H01r *33/00*
U.S. Cl. 339—10 **8 Claims**

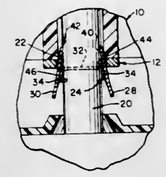




A fuse box in a motorcar has several fuse holders removably holding respective fuses and several plugs are electrically connected to the respective fuse holders and extend externally of the fuse box for engaging in plug sockets for respective electric circuits. The plug sockets are mounted in the car body so that the fuse box is removably engaged in a compartment of the body by insertion of the plugs in the plug sockets.

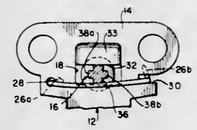
3,639,883
GROUND CONTACT FOR RECEPTACLE
William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,744
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **3 Claims**

A ground contact for use with an electrical receptacle comprises an integral metal stamping having two generally U-shaped bridges interconnected by two connecting portions at their open ends, and two leaf springs extending from respective connecting portions into a prong-receiving opening of the receptacle mounting strap. When a grounding prong is inserted into this opening, it forces the leaf springs against



edges of the mounting strap so that the springs can be flexed against these edges. As a result, the flexed leaf springs apply substantial holding pressure to the grounding prong.

3,639,884
GROUNDING CONNECTION FOR WIRING DEVICE
William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,452
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **5 Claims**

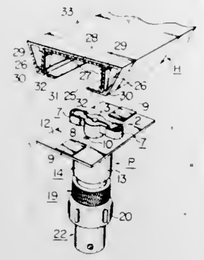


A grounding connection for a wiring device includes a mounting strap having a screw-receiving aperture by which the strap is secured to an outlet box and a single spring wire extending across the aperture and adapted to exert pressure on the shank of a screw inserted between an edge of the aperture and the wire. The ends of the wire are restrained from movement in a direction opposing the force applied to the wire by the screw shank, but at least one end of the wire is capable of lateral movement with respect to the screw so that bowing of the wire is possible.

3,639,885
DISTRIBUTION DEVICE
Yoshio Yoshiya; Yoshiyuki Ishida, and Masamichi Ito, all of Kodoma, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan
Filed Nov. 5, 1969, Ser. No. 874,128
Claims priority, application Japan, Nov. 11, 1968, 43/98274
Int. Cl. H01r *9/12*
U.S. Cl. 339—21 R **3 Claims**

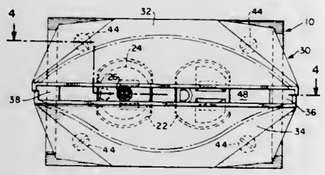
A distribution device for distributing electric power comprising a duct including a pair of opposing conductors respectively extending over the length of the duct and connected to an electric source, and a plug detachably mounted to the duct for transmitting the power from the conductors through a pair of contactors of the plug to an associated equipment. Each of the contactors of the plug as inserted

between the opposing conductors of the duct is resiliently pressed to each of the conductors in opposite direction to each other when mounted. The plug has a means to



resiliently clamp its body to the duct, for allowing the plug to be moved along the duct while keeping the contactors in their resilient contacting position with the conductors.

3,639,886
WEATHERPROOF ELECTRICAL OUTLET BOX AND RECEPTACLE
William Drapkin, Centereach, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,813
Int. Cl. H01r *13/44*
U.S. Cl. 339—36 **6 Claims**

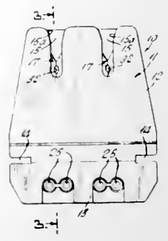


A weatherproof outlet box in which an electrical receptacle can be mounted includes a plastic hood secured to the outlet box and enveloping the receptacle. The hood includes top, bottom and side panels, with the side panels diverging outwardly and the top and bottom panels converging. The hood is made of a pliable material so that when pressure is applied to the side panels, the narrow elongated slot in the forward end of the hood is caused to open so that a plug can be inserted into the receptacle.

3,639,887
LAMPHOLDER FOR FLUORESCENT LAMPS
George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.
Filed Jan. 29, 1970, Ser. No. 6,789
Int. Cl. H01r *33/08*
U.S. Cl. 339—53 **4 Claims**

This invention relates to a push-in type of lampholder for a bi-pin type of fluorescent lamp and the contacts employed therein.

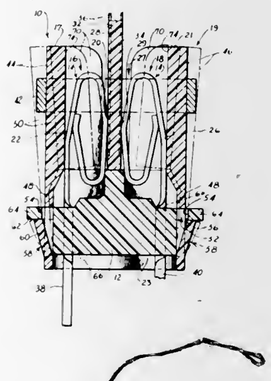
The lampholder has a hollow housing of insulating material in which a pair of pin-engaging contacts are mounted in spaced relation to each other. The contacts are formed of thin sheet material such as brass and each has a pair of lamp pin engaging fingers formed at one end thereof by a slit extending lengthwise of the contact and through a leg or base



portion of the contact extending at right angles to the fingers.

Said lamp pin engaging fingers of the contacts are aligned with open ended slots in the housing in position for reception of a lamp pin in the slits between the fingers with a straight movement of the lamp.

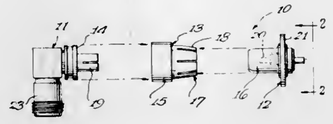
3,639,888
PRINTED CIRCUIT BOARD CONNECTOR
Robert B. Pittman, and Walter P. Kern, both of River Edge, N.J., assignors to Industrial Electronic Hardware Corporation, New York, N.Y., by said Pittman
Filed Jan. 15, 1970, Ser. No. 3,036
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **12 Claims**



A printed circuit board connector comprises a base and a series of contacts mounted on the base and exposed at their front sections. Structure is operatively connected to the base opposing and spaced from the contact front sections so as to define therebetween a space for receiving a printed circuit board. A backing member is articulately mounted on the base and located immediately behind the back section of the contacts. This backing member is movable between a first position in which it engages the contacts and presses them toward the opposing structure and a second position more remote from the opposing structure than the first position. As a result of this movement of the backing member, the contacts exert a greater or lesser force on a printed circuit board which is located in the space, depending upon whether the backing member is in its first or second position respectively. The backing member, which is in the preferred embodiment

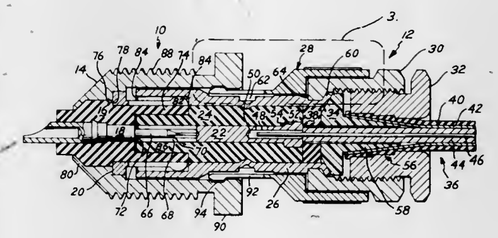
releasably engaged with the base, may be slidably or flexibly moved between the first and second positions.

3,639,889
ELECTRICAL CONNECTOR
George Komadina, 1428 Clark, De Kalb, Ill.
Filed Aug. 8, 1969, Ser. No. 848,576
Int. Cl. H01r *13/54, 17/06*
U.S. Cl. 339—75 R **5 Claims**



An electrical connector structure adapted for quick connection while yet maintaining the impedance characteristics of a transmission means, such as a transmission line. The connector may be arranged for use with coaxial electrical coupling elements permitting a plurality of simultaneous connections to be made as between components of an apparatus. The connector structure includes a tubular member providing releasable retained association of the electrical coupling elements for facilitated connection and disconnection.

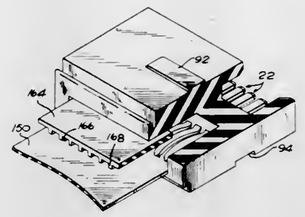
3,639,890
LOCKING CONNECTOR ASSEMBLY
William P. Stevens; George M. Hubbard, and William D. Wagner, all of Franklin, Ind., assignors to The Bendix Corporation
Filed June 9, 1970, Ser. No. 1,662
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **1 Claim**



An electrical connector assembly for use between a cable and stationary device, the improvement being in the locking mechanism of the connectors.

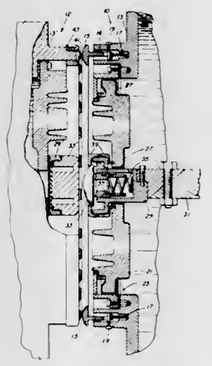
3,639,891
TERMINATION OF FLAT CABLES
John W. Anhalt, La Crescenta, and James W. Maston, Altadena, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,033
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **6 Claims**

An electrical connector member for use with insulated flat cable having a housing member with a bore extending therethrough. A plurality of contact spring members are mounted in the bore, each of said spring members terminating in a piercing surface. An actuating plate is adapted to be inserted in the bore and cause the spring member piercing surfaces to pierce the insulation of the flat cable and thus make contact with conductors in the flat cable. The actuating plate may be formed of rib members with each rib member



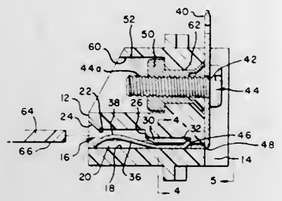
being associated with one of the spring members. Further, the spring members may be mounted in the bore in an unstressed condition prior to insertion of the actuating plate. Moreover, the spring members may be in the form of semieliptical beam, with the end thereof having a pair of piercing surfaces formed thereon.

3,639,892
HIGH-VOLTAGE CONNECTOR
William E. Dill, Natick; Maurice G. La Vault, Ashland; Stanley L. Kokoszka, Framingham, and William W. Shrader, West Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 18, 1970, Ser. No. 38,161
Int. Cl. H01r *17/14, 13/46*
U.S. Cl. 339—143 C **4 Claims**



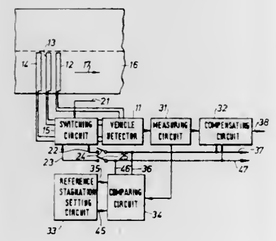
A high-voltage power connector, and method of manufacture thereof, for use with plug-in modules, each section of the contemplated connector consisting of at least one central conductor and a shielding member coaxially disposed about the at least one central conductor and held in position by a dielectric disc which is so shaped as to eliminated areas of excessive electrical stress, the free ends of each conductor and shielding member being movable orthogonally to the dielectric disc so that when the modules are in their operating positions a shielded power connection is formed.

3,639,893
PRINTED CIRCUIT BOARD EDGE CONNECTOR
John Philip Kunkle, and William Vito Pauza, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 31, 1969, Ser. No. 889,427
Int. Cl. H05k *1/07*; H01r *13/64*
U.S. Cl. 339—184 M 6 Claims



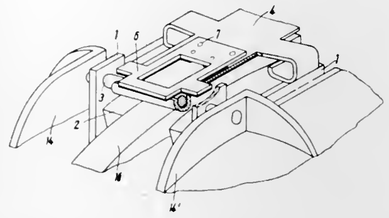
The disclosure relates to a one-piece molded housing having terminals located therein in a cavity for making electrical contact with a printed circuit board and the like. At one end of the terminal are circuit engaging fingers for engaging a circuit on a printed circuit board, and at the other end is a hole for receiving a screw which secures the terminal end to the housing in conjunction with a nut; the screw receiving under its head the bared end of wire conductor. This end of the terminal may also have extending therefrom a tab portion for mating engagement with a receptacle terminated wire conductor.

3,639,894
APPARATUS FOR DETECTING TRAFFIC INFORMATION
Ryohei Tanaka, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Feb. 11, 1970, Ser. No. 10,404
Claims priority, application Japan, Feb. 19, 1969, 44/12386
Int. Cl. G08g *1/08*
U.S. Cl. 340—31 A 12 Claims



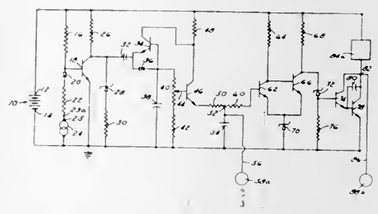
An apparatus for detecting traffic information on a street, which includes a vehicle detector provided with a plurality of vehicle-detecting elements having their respective predetermined detection areas on the street. One of the detecting elements is always operatively connected to the detector to provide for the detector a detection area extending a minimum distance or length along the street in the direction in which vehicles run, for measurement of traffic information under the normal traffic condition; while the other detecting elements are selectively and additionally connected to the detector to increase the distance of the detection area of the detector for measurement under stagnated traffic conditions.

3,639,895
VEHICLE BRAKE LINING WEAR WARNING DEVICE
Heiner Wilhelmi, Hamburg, Germany, assignor to Jurid Werke GmbH, Reinbek, Postfach, Germany
Filed June 2, 1970, Ser. No. 42,718
Claims priority, application Germany, June 3, 1969, P 19 28 215.6
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 A 6 Claims



A signal generating means in an electric circuit cooperates with the friction linings of an automotive vehicle warning signal in case that the wear of the friction linings has reached a minimum limit.

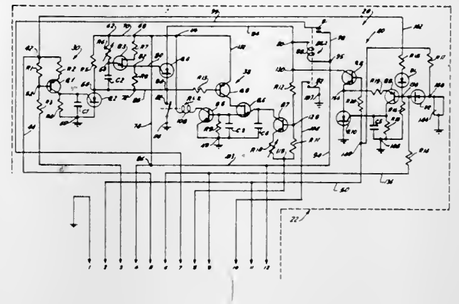
3,639,896
VEHICLE SPEED RESPONSIVE WARNING ACTUATING SYSTEM
Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 4, 1970, Ser. No. 34,266
Int. Cl. B60q *1/00*
U.S. Cl. 340—62 6 Claims

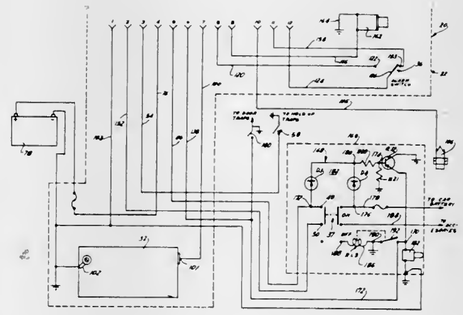


Electronic control circuitry responds to vehicle speed to actuate sequentially a plurality of warning lamps when vehicle speed reaches predetermined values. Actuation of each warning lamp automatically extinguishes its preceding lamp. Other devices also can be operated by the system, which attains extremely high accuracy from conventional electrical components.

3,639,897
VEHICLE HOLDUP AND THEFT ALARM
Rudor M. Teich, New York, N.Y., assignor to Babaco Research, Inc., North Arlington, N.J.
Filed June 11, 1969, Ser. No. 832,363
Int. Cl. B604 *25/04*; B60r *25/10*
U.S. Cl. 340—64 9 Claims

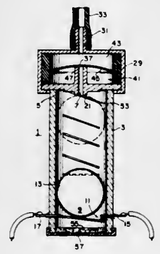
An alarm system for a vehicle provides both theft and holdup prevention. When the vehicle is unattended any unauthorized attempt to open the cargo doors or to move the vehicle causes an alarm to be sounded and the motor to stall. An attempt at a holdup in which the cab door is opened while the driver is within the cab causes an alarm to sound





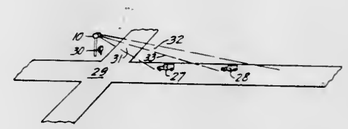
and the motor to stall after a predetermined period of delay. The siren will continue to sound for at least a predetermined period even if the thief should gain possession of the alarm key and turn the alarm circuit off.

3,639,898
DIFFERENTIAL PRESSURE CONTROL SYSTEM AND SWITCH MEANS THEREFOR
Robert G. Booth, 6661 Banning Drive, Oakland, Calif.
Filed Apr. 2, 1969, Ser. No. 812,668
Int. Cl. B60q *1/44*
U.S. Cl. 340—71 6 Claims



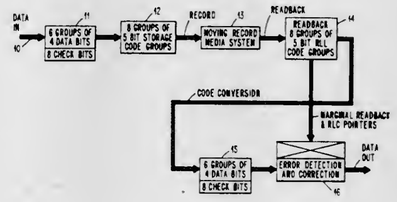
A signal system adapted to anticipate application of brakes in an automotive vehicle, utilizes a vacuum operable switch assembly coupled into the intake manifold and designed to respond to vacuum in said intake manifold above a threshold value representative of an emergency condition, as brought on by rapid removal of one's foot from the gas feed pedal.

3,639,899
PROGRAMMED TRAFFIC SIGNAL AND METHOD OF USING
Gunnar R. Ljungkull, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 11, 1969, Ser. No. 832,300
Int. Cl. F21q *3/02*; F21v *13/14*
U.S. Cl. 340—110 12 Claims



A signal or display device comprising a condensing lens, aperture means having all aperture-defining edges located substantially at the focus of the lens, and a light source for providing diffuse illumination to the lens from the focus and from the entire aperture, contains a moveable filter member for interposing between source and lens and located substantially at said focus.

3,639,900
ENHANCED ERROR DETECTION AND CORRECTION FOR DATA SYSTEMS
Harry Carl Hinz, Jr., Arvada, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 27, 1970, Ser. No. 40,836
Int. Cl. G06k *5/00*; G11b *27/36*
U.S. Cl. 340—146.1 16 Claims



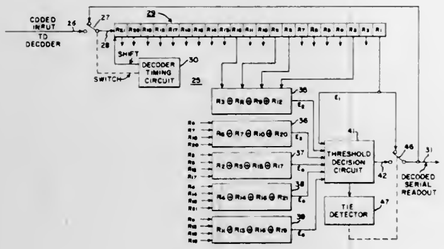
Quality of record readback operations on a real time basis is used as pointers to possible error conditions. The pointers are combined with error detecting and correcting coding schemes, preferably of the residue type, for detecting and correcting large numbers of errors in a group of data bits. The data and check bits are preferably organized in a geometric array in a self-clocking record system of the magnetic media type, the data within check bits are uncoded run-length-limited code. During readback, the run-length-limited code is first converted to data and check bits, then error detection and correction is effected using the pointers. Validity of the run-length-limited code is used as an additional pointer. Examples of marginal operation pointers are excessive phase shift in the readback signal, undesired amplitude

deviations in the readback signal, undesired velocity variations in the record system and incorrect wavelengths.

3,639,901
ERROR CORRECTING DECODER UTILIZING ESTIMATOR FUNCTIONS AND DECISION CIRCUIT FOR BIT-BY-BIT DECODING

Michael E. Mitchell, Syracuse, N.Y., assignor to General Electric Company

Filed June 10, 1969, Ser. No. 831,860
Int. Cl. H04l *1/10;* **H03k** *19/42*
U.S. Cl. 340—146.1 **5 Claims**

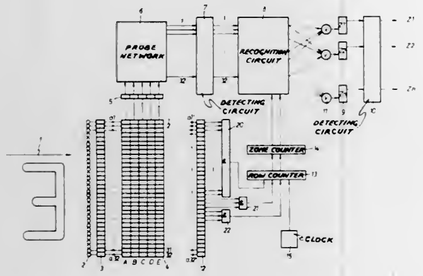


An error-correcting decoder circuit is disclosed, for decoding redundantly coded digital signals. The disclosed circuit includes a plurality of modulo 2 adders for generating estimator function bits from selected bits of a received code word, and a decision circuit that generates an output bit in accordance with the majority of the estimator functions if a majority decision is possible, and which substitutes the appropriate received bit in place of the undefined majority decision output that arises in the event of a "tie" between the estimator functions (i.e., when half of the estimator functions are "1" and the other half are "0").

3,639,902
CHARACTER RECOGNITION USING SHAPE DETECTION

Walter Dietrich, Breslauerstr, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,515
Claims priority, application Germany, Mar. 5, 1969, P 19 11 269.7
Int. Cl. G06k *9/13*
U.S. Cl. 340—146.3 J **5 Claims**

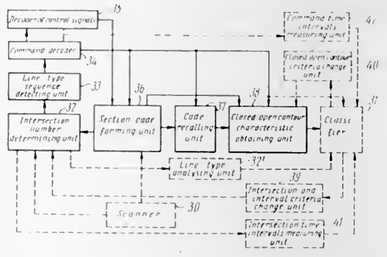


The arrangement according to the disclosure provides, in addition to the actual recognition, that there is detected a distinction in identical zones with respect to similar characters appearing in those zones. The result of this added discrimination serves to increase the recognition reliability of the character detected and to reduce the possibility of errors in the case of similar characters.

3,639,903
METHOD OF AND AUTOMATIC SYSTEM FOR RECOGNITION OF OBJECTS BY THEIR CONTOUR REPRESENTATIONS

Rimantas Alfonso Nashljunas, Vilinjus, ul. L. Giros, 3, kv. 2; Romualdas Alberto Zhlabys, Vilinjus, ul. Eisukyavichus, 46, kv. 86; Kazimieras-Gediminas Kazimiero Buchjunas, Vilinjus, ul. Antakalnio, 105, kv. 18, and Povilas Prantsishkaus Shvagzhdys, Vilinjus, ul. Eidukyavichus, 38, kv. 14, all of Vilnjus, U.S.S.R.

Filed Apr. 30, 1968, Ser. No. 725,316
Int. Cl. G06k *9/10*
U.S. Cl. 340—146.3AC **25 Claims**



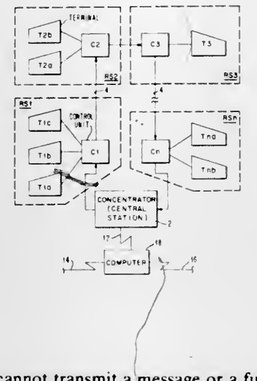
A method and apparatus for recognizing objects by their contour representations being similar to the contour of a reference object. The method and apparatus includes dividing the contour representation into scanning lines, coding the lines into code line digits, determining the number of intersections of the background and contour in each line, determining transitions from lines with one number of intersections to lines with another number of intersections, automatically fixing lines at the places of transitions, dividing the contour representation by the fixed lines into sections, forming section codes of the sections from present digits of respective section line codes, detecting in the section line code being obtained code portions confined between the code digits corresponding to the intersections in at least one of the fixed lines defining the boundaries of the sections, determining closed-open contour characteristics of the contour portions between intersections in the fixed lines by the character of the code portions, and determining by the obtained closed-open contour characteristics of the contour portions whether the object being recognized belongs to one of the reference objects.

3,639,904
DATA COMMUNICATION SYSTEM OF LOOP CONFIGURATION AND SERIAL TRANSMISSION OF TIME SLOTS

Jeganandaraj A. Arulpragasam, Westhill, Ontario, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1970, Ser. No. 34,778
Claims priority, application Canada, Nov. 10, 1969, 067,036
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **18 Claims**

In a data communication system a plurality of remote stations and a central station are arranged in a series loop. The central station transmits a succession of time slots to the loop and information is transferred between the central station and the remote stations with character interleaving under control of the central station. Each remote station includes one or more terminals. A terminal wishing to transmit a message sends a request-for-service signal to the central station in the first free time slot received by its remote station.

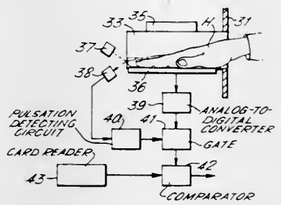


The terminal cannot transmit a message or a further request-for-service signal until it receives a proceed signal from the central station. After receiving a proceed signal the terminal can transmit a message. At the end of the message the terminal is again locked out (i.e. it cannot transmit message data) but remains free to transmit a request-for-service signal by which means it may again obtain a line position.

3,639,905
CREDIT CARD SYSTEM HAVING MEANS FOR SENSING IF OBJECT IS LIVING

Koichi Yaida, Osaka, and Shizuya Ano, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 27, 1970, Ser. No. 92,977
Int. Cl. H04q *3/00*
U.S. Cl. 340—149 **6 Claims**

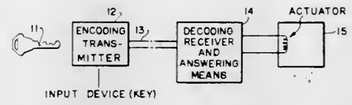


A system for identifying the user of a credit card or the like, wherein a predetermined portion of the living body, such as a finger or a hand, of the user of a card is used for identification of the user. The system is provided with means for checking whether the object presented by the user of a card is the predetermined portion of the living body of the user so that any fraudulent use of an object simulating the portion of a human body can be prevented.

3,639,906
KEY IDENTIFICATION SYSTEM HAVING KEY CODE CONTROL

Peter R. Tritsch, 192 Marlboro St., Boston, Mass.

Filed Oct. 14, 1968, Ser. No. 767,209
Int. Cl. H04q *3/00*
U.S. Cl. 340—149 **9 Claims**

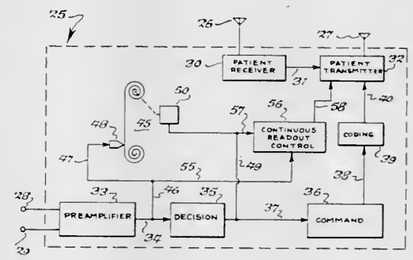


A type of ordinary key is inserted into an ordinary looking lock that provides a group of unique tone pairs characteristic of the code identified by the key. These groups of tone pairs are transmitted to a central processing unit. The central processing unit responds to the pairs of frequencies by transmitting appropriate control signals that unlock or refuse to unlock an appropriate lock or indicate that the key holder may or may not be entitled to credit.

3,639,907
INTERROGATED TELEMETRY ALARM SYSTEM FOR PHYSIOLOGICAL MONITORING

Wilson Greatbatch, Clarence, N.Y., assignor to Mennen-Greatbatch Electronic, Inc., Clarence, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,582
Int. Cl. H04q *9/00*
U.S. Cl. 340—150 **4 Claims**

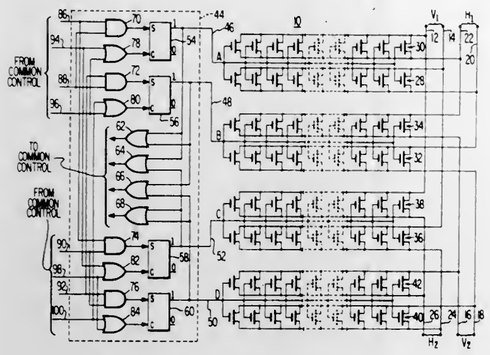


Apparatus for monitoring from a single station a physiological condition of each of a plurality of remotely located patients. A radio transmitter at the station generates sequentially a plurality of tone signals, one for each patient and each of a different frequency, on a common carrier. A radio receiver with each patient has a band pass corresponding to a particular one of the tone signals. Each receiver when addressed activates a radio transmitter with the patient for transmitting to a single receiver at the station a coded signal indicative of the physiological state of the patient, derived from signal generating means operatively connected to the patient. The signals received at the station are sequentially routed, decoded, and applied to suitable indicators.

3,639,908
SOLID-STATE ANALOG CROSS-POINT MATRIX HAVING BILATERAL CROSSPOINTS

Norman Hovagimyan, Cherry Hill, and Robert Neale Van Delft, Pennsauken, both of N.J., assignors to RCA Corporation

Filed Mar. 2, 1970, Ser. No. 15,396
Int. Cl. H04q *1/00, 3/00, 9/00*
U.S. Cl. 340—166 **7 Claims**

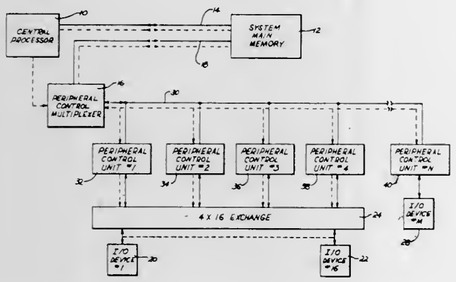


A solid-state switching matrix building block which utilizes bilateral devices to couple analog signals from an input terminal to desired output terminals. The building blocks, including associated logic circuits, are such that they may be built on a single P–MOS integrated circuit chip.

3,639,909
MULTICHANNEL INPUT/OUTPUT CONTROL WITH AUTOMATIC CHANNEL SELECTION

Erwin Arthur Hauck, Arcadia, and Jacob F. Vigil, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,545
Int. Cl. G06f *3/04, 13/00*
U.S. Cl. 340—172.5 **5 Claims**

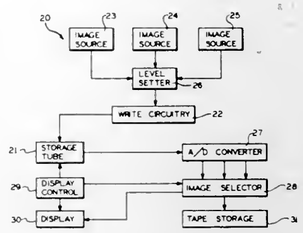


A multiplexed input/output system for controlling transfer of data between a large number of input/output units and a buffer memory on a time-shared basis over a small number of channels in which any one of several channels may be used to service any one of a number of input/output units through an input/output exchange. In response to the designation of a particular unit, special logic determines which of the several channels is to be used and establishes the proper connection between the selected channel and the designated input/output unit through the exchange.

3,639,910
MULTI-IMAGE AND SIGNAL STORAGE ON A STORAGE TUBE TARGET

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.

Filed Feb. 9, 1970, Ser. No. 9,699
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **8 Claims**

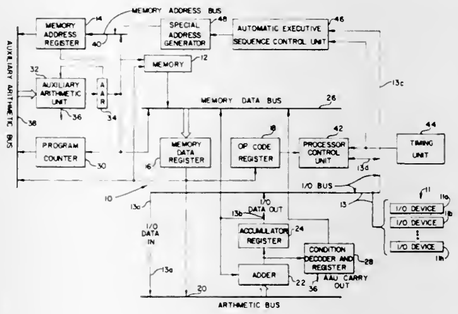


Method and apparatus for enabling simultaneous storage of multiple images and/or digital data on a storage tube target, and for selectively retrieving such information.

3,639,911
DIGITAL PROCESSOR HAVING AUTOMATIC CONFLICT-RESOLVING LOGIC

Neil G. Frieband, Framingham, and Douglas O. Kendrick, Northborough, both of Mass., assignors to Incoterm, Marlboro, Mass.

Filed June 10, 1970, Ser. No. 45,026
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **17 Claims**

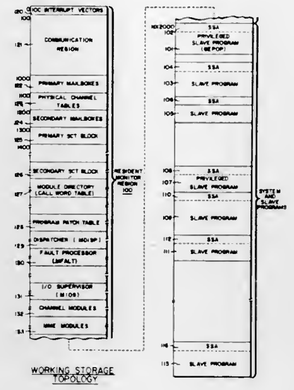


A digital data processor for transferring information with associated devices has an automatically operating executive, i.e. conflict-resolving, logic unit that resolves operating conflicts arising from the asynchronous operations of the processor and the associated devices when one calls for an information transfer with the other. The processor operates under control of the logic unit to store off interrupted status at and load in new status information from memory locations dedicated to this purpose and identified, at least in part, by the particular device with which the processor is operating.

3,639,912
MANAGEMENT CONTROL SUBSYSTEM FOR MULTIPROGRAMMED DATA PROCESSING SYSTEM

Donald J. Campbell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed Apr. 16, 1969, Ser. No. 816,624
Int. Cl. G05b *19/04*
U.S. Cl. 340—172.5 **4 Claims**

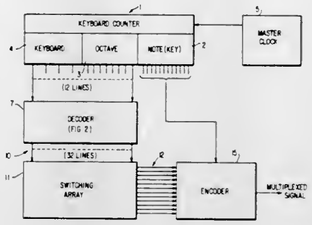


A management control subsystem for a multiprogrammed data-processing system, wherein a varying amount of working storage space is reserved for the use of the management control subsystem in providing management control services for the user programs, the amount of working storage space reserved corresponding to the number of user programs in execution.

3,639,913
METHOD AND APPARATUS FOR ADDRESSING A MEMORY AT SELECTIVELY CONTROLLED RATES

George A. Watson, Tustin, Calif., assignor to North American Rockwell Corporation

Filed Nov. 10, 1969, Ser. No. 875,178
Int. Cl. G06f *15/34*
U.S. Cl. 340—172.5 **12 Claims**

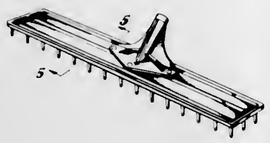


A memory contains digital data of related informational content in a plurality of discrete locations identified by respective addresses. The memory is addressed, or accessed, at a rate which depends upon the desired spacing between data from the various locations as it is sequentially read from the memory. In a specific embodiment, the data constitutes amplitude values of a complex waveform of the type produced by a musical instrument, at equally spaced points in time along an axis of the waveform. Apparatus for addressing the memory at any of a plurality of selectively controlled rates includes a calculator for continuously computing a set of numbers each defining a different spacing between the data during readout of the memory. When a desired rate of readout is selected, as by selecting a desired frequency of repetition of a complete cycle of the stored waveform, the number associated with that rate is sampled from the computed set and is periodically increased by its own value to identify appropriate data addresses in the memory, for accessing that data, at intervals of the periodic increase corresponding to the desired rate of readout.

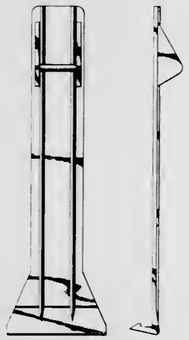
DESIGNS

FEBRUARY 1, 1972

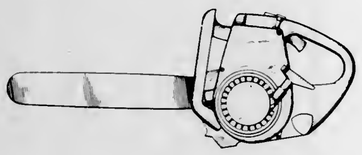
222,900
RAKE FOR SHAG RUGS
Mildred Derian, Redondo Beach, Calif., assignor to J. F. Kerns Industries, South El Monte, Calif.
Filed June 12, 1970, Ser. No. 23,456
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—3



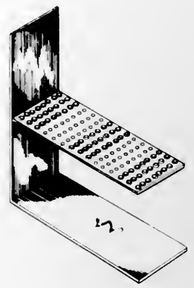
222,901
MATERIAL HANDLING HOOK
Jerome E. Meadows, 124 W. Kyle Place, Gadsden, Ala. 35901
Filed Mar. 13, 1970, Ser. No. 21,884
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



222,902
CHAIN SAW
Richard W. Condon, Frankfort, Vernon L. Krabbe, Beecher, Henry R. Johannes, St. Anne, and Roscoe Combs, Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.
Filed Nov. 16, 1970, Ser. No. 26,027
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—65



222,903
CARTON STACKING BRACKET FOR PALLETS OR THE LIKE
Robert Lee Griffith, 501 Russell St., Covington, Ky. 41011
Original design application Aug. 21, 1969, Ser. No. 18,794, now Patent No. 220,166, dated Mar. 16, 1971. Divided and this application July 15, 1970, Ser. No. 23,949
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—233



222,904
CARTON STACKING BRACKET FOR PALLETS OR THE LIKE
Robert Lee Griffith, 501 Russell St., Covington, Ky. 41011
Original design application Aug. 21, 1969, Ser. No. 18,794, now Patent No. 220,166, dated Mar. 16, 1971. Divided and this application July 15, 1970, Ser. No. 23,953
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—233



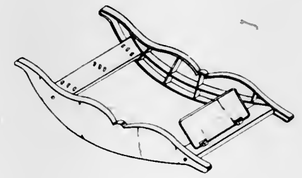
222,905
CLOSURE OR SIMILAR ARTICLE
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Feb. 5, 1970, Ser. No. 21,290
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267



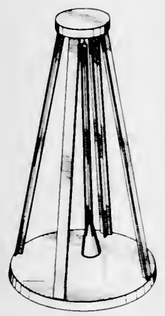
222,906
CHAIR
Ivan L. Loesch, Huron, S. Dak., assignor to Spacer Furnishings Corporation, Huron, S. Dak.
Filed May 21, 1970, Ser. No. 23,079
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



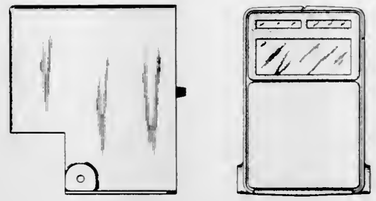
222,907
ROCKER SUPPORT FOR AN INFANT SEAT
William H. Rymes, Center Ossipee, N.H. 03814
Filed Dec. 10, 1969, Ser. No. 20,445
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D15—6



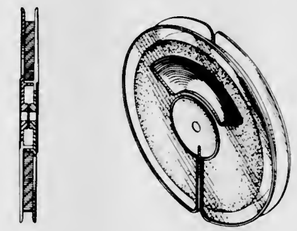
222,908
PENDULUM AMUSEMENT DEVICE
Robert J. Voth, San Diego, Calif., assignor to Ess'Tee Industries, San Diego, Calif.
Filed Aug. 21, 1970, Ser. No. 24,634
Term of patent 7 years
Int. Cl. D19—*08*
U.S. Cl. D25—1



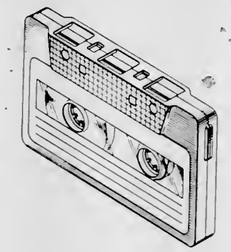
222,909
HOUSING FOR A TACHOGRAPH
George R. Stehl, Stony Brook, and Daniel November, Kew Gardens, N.Y., assignors to Wagner Electric Corporation
Filed June 3, 1970, Ser. No. 23,262
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D26—14



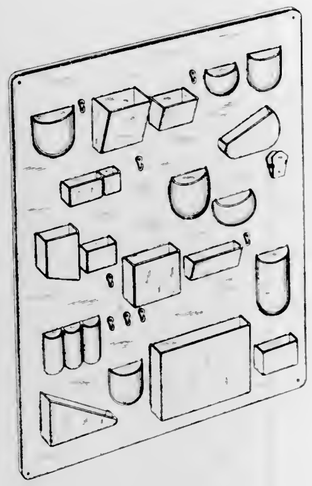
222,910
COMBINED MAGNETIC TAPE AND TAPE REEL THEREFOR
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Sept. 14, 1970, Ser. No. 24,978
Term of patent 14 years
Int. Cl. D14—*01*; D16—*07*
U.S. Cl. D26—14



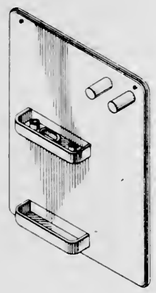
222,911
MAGNETIC TAPE CASSETTE
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Sept. 14, 1970, Ser. No. 24,971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



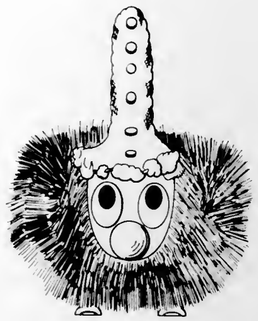
222,912
WALL RACK FOR HOLDING HOUSEHOLD ARTICLES
Dorothee M. Maurer, Hafsburger Platz 2, Munich, Germany
Filed Apr. 22, 1970, Ser. No. 22,566
Claims priority, application Germany Oct. 30, 1969
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—3



222,913
SUPPORT RACK FOR TOOLS AND SMALL ARTICLES
Anne M. Searcy, Thomasville, Ga., assignor to Handy Anne, Inc., Thomasville, Ga.
Filed June 25, 1970, Ser. No. 23,663
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—3



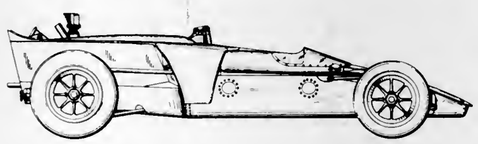
222,914
TOY FIGURE
Alan S. Reynolds, Bournemouth, England, assignor to Wonkie International Inc., Woonsocket, R.I.
Filed Aug. 14, 1970, Ser. No. 24,485
Claims priority, application Great Britain Feb. 17, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



222,915
ROCKING AND SPINNING HOBBYHORSE
Leroy Alston, 1242 Hicks Blvd., Fairfield, Ohio 45014
Filed Sept. 11, 1970, Ser. No. 24,944
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



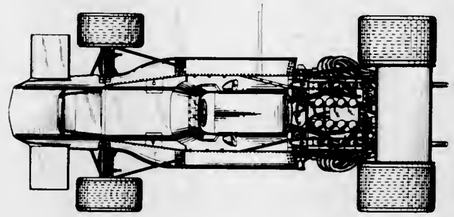
222,916
MODEL RACING CAR
Josef Helmut Karasek, Lenggries, Germany, assignor to McNamara Racing K.G., Lenggries, Germany
Filed Sept. 18, 1970, Ser. No. 25,061
Claims priority, application Great Britain Mar. 22, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



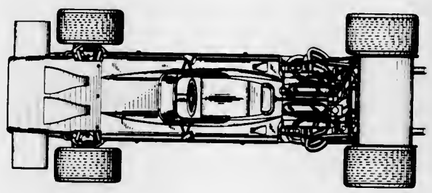
222,917
MODEL RACING CAR
Eric Harrison Broadley, Pangborne, near Reading, England, assignor to Lola Cars Limited, Slough, England
Filed Sept. 18, 1970, Ser. No. 25,062
Claims priority, application Great Britain Mar. 23, 1970; May 20, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,918
MODEL RACING CAR
Gianpaolo Dallara, Modena, Italy, assignor to Frank Williams (Racing Cars) Limited, Slough, England
Filed Oct. 1, 1970, Ser. No. 25,291
Claims priority, application Great Britain Apr. 7, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,919
MODEL RACING CAR
Anthony Colin Bruce Chapman, Norfolk, England, assignor to Lotus Components Limited, Norwich, Norfolk, England
Filed Nov. 5, 1970, Ser. No. 25,847
Claims priority, application Great Britain May 9, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



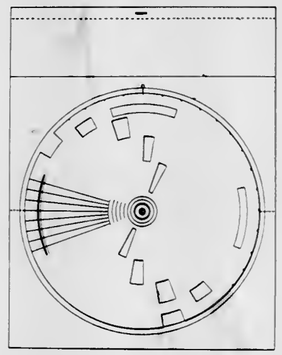
222,920
LAMP
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed June 3, 1970, Ser. No. 23,272
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



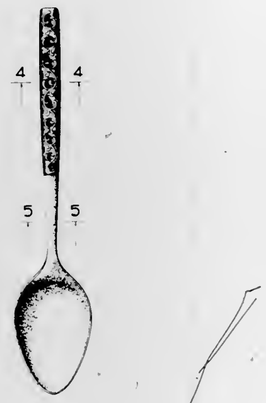
222,921
LITTER RECEPTACLE
Eleanor V. Kingsley, 490 Preciado St., Pomona, Calif. 91766
Filed Nov. 13, 1970, Ser. No. 25,949
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—35



222,922
TV PROGRAM SELECTOR
Joseph A. Doumit, 109 N. Evangeline St., New Iberia, La. 70560
Filed Mar. 12, 1970, Ser. No. 21,874
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6



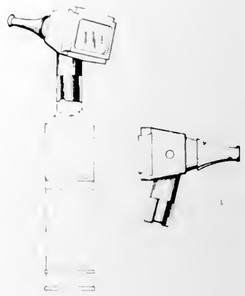
222,923
SPOON OR SIMILAR ARTICLE
Robert S. Conland, Vernon, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 24, 1970, Ser. No. 22,618
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



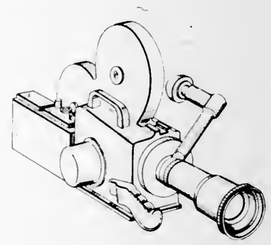
222,924
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 27, 1970, Ser. No. 22,683
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



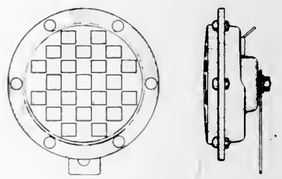
222,925
OTOSCOPE
Arthur J. Pulos, Fayetteville, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Sept. 2, 1970, Ser. No. 24,793
Term of patent 14 years
Int. Cl. D24—*02*; D16—*08*
U.S. Cl. D57—1



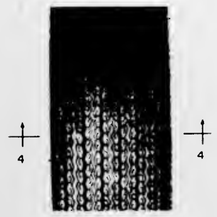
222,926
PORTABLE SHOULDER SUPPORTED MOTION PICTURE CAMERA
Herbert Sawasky, 31 Brewster Road W., West Massapequa, N.Y. 11758
Filed Aug. 14, 1970, Ser. No. 24,484
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



222,927
HORN
Fusaaki Tsuhata, Fusocho, Japan, assignor to Imasen Electric Co., Ltd.
Filed Sept. 30, 1970, Ser. No. 25,282
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1



222,928
TIRE
Gilbert Joseph Hoke, Kenmore, N.Y., assignor to Dunlop Tire and Rubber Corporation, Buffalo, N.Y.
Filed Jan. 30, 1970, Ser. No. 21,157
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—20



222,929
ELECTRIC DRY SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to Carinthia Elektrogerate G.m.b.H.
Filed May 15, 1970, Ser. No. 23,010
Claims priority, application Austria Nov. 18, 1969
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF FEBRUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Ault, Wayne E., 3,638,734.

Aasen, Torulf F.: *See—*
Thomas, Herbert P.; Hartman, Thomas E.; and Aasen, Torulf F.,3,639,057.

AB Ljungmans Verkstader: *See—*
Eklund, Hans Erik, 3,638,689.

Abbot, Earl: *See—*
Lickliter, Robert Paul; Abbot, Earl; and Reeves, John F.,3,638,465.

Abbott, Bobby R. Collapsible stool. 3,638,588, Cl. 108-128.

Abbott Laboratories: *See—*
Prillig, Elliott, 3,639,565.

Abe, Yoritsune, to Hitachi, Ltd. Refrigerator with capillery control means. 3,638,447, Cl. 62-222.

Abel, Bernard: *See—*
Birr, Jacques; Colson, Georges; Abel, Bernard; and Charbonnier, Patrice,3,639,178.

Abromavage, John C.; and George, James F., to Arcoa, Incorporated. Multiphasic medical examinations screening laboratory construction. 3,638,641, Cl. 123-2.

Acec Ateliers de Constructions Electriques de Charleroi: *See—*
Leglise, Alexandre, 3,639,823.

ACF Industries, Incorporated: *See—*
Dare, Roy R.; and Carney, John L., Jr., 3,639,007.

Ackroyd, Harry Briggs, to Scot Meat Products Limited. Production of cooked meats. 3,638,554, Cl. 99-107.

Adams, Bobby F.; Pyne, William J.; and Gullo, James M., to Diamond Shamrock Corporation. Method of killing fungus on plants. 3,639,608, Cl. 424-274.

Adams Rite Manufacturing Company: *See—*
Davidson, Robert E., 3,638,984.

Adams, Thomas F.; Mattes, Lyle T.; and Roulund, Poul B., to FMA, Inc. Segmented light table. 3,639,746, Cl. 240-2.

Adelman, Robert Leonard, to Du Pont de Nemours, E. I., and Company. Ethylene-vinyl acetate-allyl glycidyl ether terpolymer and plasticized compositions containing same. 3,639,365, Cl. 260-80.72

Adicoff, Arnold: *See—*
Woodman, Alan L.; and Adicoff, Arnold,3,638,698.

Aerojet-General Corporation: *See—*
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39 3,638,341
106.21 3,638,342
124.1 3,638,343

CLASS 42
71R 3,638,344

CLASS 43
8 3,638,345
17.1 3,638,346
42.39 3,638,347
75 3,638,348

CLASS 44
7E 3,639,108
62 3,638,349
66 3,639,109
72 3,639,110

CLASS 46
23 3,638,352
47 3,638,350
92 3,638,353
117 3,638,351
132 3,638,354
179 3,638,355
221 3,638,356
240 3,638,357

CLASS 48
111 3,639,111

CLASS 49
248 3,638,360
325 3,638,358
479 3,638,361
490 3,638,359

CLASS 51
170MT 3,638,362
249 3,638,363
269 3,638,364
281 3,638,365
326 3,638,366
392 3,638,367

CLASS 52
2 3,638,368
16 3,638,369
36 3,638,370
91 3,638,371
92 3,638,373
97 3,638,372
100 3,638,374
116 3,638,375
122 3,638,376
167 3,638,377
169 3,638,378
185 3,638,379
236 3,638,380
309 3,638,381
359 3,638,382
473 3,638,383
589 3,638,384
665 3,638,385
704 3,638,386
741 3,638,387
748 3,638,388

CLASS 53
22B 3,638,389
35 3,638,390
3,638,391
123 3,638,392
180 3,638,393
255 3,638,394

CLASS 54
46 3,638,395

CLASS 55
16 3,638,396
3,638,397
25 3,638,398
59 3,638,399
69 3,638,400
158 3,638,401
307 3,638,402
389 3,638,403
473 3,638,404

CLASS 56
10.4 3,638,405
14.9 3,638,406
15.6 3,638,407
219 3,638,408
339 3,638,409

CLASS 57
34HS 3,638,410
3,638,411
52 3,638,412
77.45 3,638,413
93 3,638,414
108 3,638,415

CLASS 58
23TF 3,638,416
26 3,638,417
57.5 3,638,418
109 3,638,419

CLASS 60
24 3,638,420
39.28 3,638,422
39.31 3,638,421
51 3,638,423
3,638,424
54.5P 3,638,425
54.6P 3,638,426
3,638,427
226 3,638,428

CLASS 61
.5 3,638,431
1F 3,638,429
3,638,430
2 3,638,432
11 3,638,433
16 3,638,434
39 3,638,435
46.5 3,638,436
64 3,638,437
72.1 3,638,438
72.4 3,638,439

CLASS 62
3 3,638,440
6 3,638,441
49 3,638,442
52 3,638,443
81 3,638,444
184 3,638,445
202 3,638,446
222 3,638,447
233 3,638,448
272 3,638,449
329 3,638,450
344 3,638,451
485 3,638,452

CLASS 64
9R 3,638,453
14 3,638,454
23 3,638,455

CLASS 65
29 3,639,112
30 3,639,113
3,639,114

CLASS 66
50R 3,638,456

CLASS 68
12R 3,638,457
189 3,638,458
200 3,638,459

CLASS 70
52 3,638,460
92 3,638,461
186 3,638,462

CLASS 71
92 3,639,115

CLASS 72
12 3,638,463
53 3,638,464
181 3,638,465
208 3,638,466
237 3,638,467
238 3,638,468
263 3,638,469
324 3,638,470
377 3,638,471
391 3,638,472
448 3,638,473
476 3,638,474

CLASS 73
3 3,638,475
61.1R 3,638,476
65 3,638,477
73 3,638,478
88F 3,638,479
134 3,638,480
141A 3,638,481
146 3,638,482
147 3,638,483
152 3,638,484
155 3,638,485
161 3,638,486
194B 3,638,488
194E 3,638,487
3,638,489
212 3,638,490
304 3,638,491
315 3,638,492
317 3,638,493
355R 3,638,494
362AR 3,638,495
398R 3,638,496
3,638,497
422TC 3,638,498
422R 3,638,499
423 3,638,500
492 3,638,501

CLASS 74
5.34 3,638,502
18 3,638,503
25 3,638,504
54 3,638,505
230.17 3,638,506
424.8 3,638,507
426 3,638,508
436 3,638,509
3,638,510
440 3,638,511
595 3,638,512
820 3,638,513

CLASS 75
5BB 3,639,116
49 3,639,117
121 3,639,118
157 3,639,119

CLASS 76
101B 3,638,514

CLASS 81
3.1R 3,638,515
9.51 3,638,517
3,638,518
43 3,638,516
177G 3,638,519

CLASS 82
24 3,638,520

CLASS 83
22 3,638,521
345 3,638,522
700 3,638,523

CLASS 84
95 3,638,524
319 3,638,525

CLASS 89
43 3,638,526

CLASS 90
57 3,638,527

CLASS 91
52 3,638,460
6 3,638,528
50 3,638,529
172 3,638,530
189 3,638,531
220 3,638,532
241 3,638,533
399 3,638,534
411R 3,638,535

CLASS 92
92 3,638,536

CLASS 93
51R 3,638,537
93DP 3,638,538

CLASS 94
44 3,638,539
46R 3,638,540

CLASS 95
4.5 3,638,541
10CE 3,638,543
10CT 3,638,542
3,638,544
11R 3,638,545
15 3,638,546
31R 3,638,547
42 3,638,548
44 3,638,549
53 3,638,550

CLASS 96
1.5 3,639,120
3,639,121
1.8 3,639,122
28 3,639,123
29 3,639,124
35 3,639,125
95 3,639,126
101 3,639,127
109 3,639,128

CLASS 98
2.16 3,638,551
2.18 3,638,552

CLASS 99
23 3,638,553
64 3,639,129
107 3,638,554
175 3,639,130
303 3,638,555
329 3,638,556
348 3,638,557
408 3,638,558

CLASS 100
93PB 3,638,560
93P 3,638,559
118 3,638,562
215 3,638,561

CLASS 101
18 3,638,563
35 3,638,564
111 3,638,565
114 3,638,566
170 3,638,567
219 3,638,568

CLASS 102
22 3,638,569
24 3,638,570
41 3,638,571
75 3,638,572
90 3,638,573

CLASS 104
1 3,638,574
3,638,575
3,638,576
6 3,638,577
12 3,638,578

CLASS 105
26R 3,638,579
215C 3,638,580
3,638,581
218R 3,638,582

CLASS 106
2 3,639,131
39R 3,639,132
298 3,639,133

CLASS 108
6 3,638,584
9 3,638,585
58 3,638,586
66 3,638,587
128 3,638,588

CLASS 109
76 3,638,589

CLASS 110
7A 3,638,591
7 3,638,590

CLASS 112
121.14 3,638,592
210 3,638,593
218R 3,638,594
235 3,638,595

CLASS 113
54 3,638,596
116FF 3,638,597

CLASS 114
16A 3,638,598
200 3,638,599
222 3,638,600
235B 3,638,601

CLASS 116
114 3,638,602
121 3,638,603

CLASS 117
7 3,639,134
10 3,639,135
3,639,136
26 3,639,137
33.5CS 3,639,138
37R 3,639,139
46CB 3,639,140
47A 3,639,141
51 3,639,142
54 3,639,143
3,639,148
56 3,639,144
62 3,639,145
68 3,639,146
71R 3,639,639
73 3,639,147
76F 3,639,149
93 3,639,150
93.4 3,639,151
113 3,639,152
118 3,639,153
138.8A 3,639,154
3,639,155
139.5A 3,639,156
3,639,157
152 3,639,158
161C 3,639,160
161 3,639,159

202 3,639,161
215 3,639,162
217 3,639,163
222 3,639,164
224 3,639,640
227 3,639,165
234 3,639,166
240 3,639,167

CLASS 118

50 3,638,604
50.1 3,638,605
69 3,638,606
249 3,638,607
406 3,638,608
426 3,638,609
625 3,638,612
636 3,638,610
637 3,638,611
3,638,613
3,638,614

CLASS 119

4 3,638,615
5 3,638,616
51 3,638,617
51.12 3,638,618

CLASS 122

13A 3,638,619
115 3,638,620
140R 3,638,621
182R 3,638,622

CLASS 123

45 3,638,623
90.18 3,638,624
117A 3,638,626
3,638,627
122H 3,638,625
139AF 3,638,629
139R 3,638,628
148D 3,638,630
179L 3,638,631
182 3,638,632

CLASS 124

4 3,638,633

CLASS 126

41R 3,638,634
3,638,635
110R 3,638,636
113 3,638,637
197 3,638,638

CLASS 127

29 3,639,168
3,639,169
31 3,639,170
37 3,639,171

CLASS 128

2F 3,638,639
2R 3,638,640
3,638,641
2.1A 3,638,642
9 3,638,643
16 3,638,644
25B 3,638,645
33 3,638,646
133 3,638,647
202 3,638,648
214R 3,638,649
221 3,638,650
284 3,638,651
305 3,638,652
340 3,638,653
3,638,654
351 3,638,655
419P 3,638,656
422 3,638,657
535 3,638,658

CLASS 130

27W 3,638,659

CLASS 131

2 3,638,660
94 3,638,661
261B 3,638,662

CLASS 132

54 3,638,663
79C 3,638,664
129 3,638,665

CLASS 134

25R 3,639,172
57R 3,638,666

CLASS 135

5A 3,638,667
20R 3,638,668

CLASS 136

3 3,639,173
20 3,639,174
30 3,639,176
154 3,639,175

CLASS 137

68 3,638,669
81.5 3,638,670
3,638,671
3,638,672

205 3,638,673
375 3,638,674
550 3,638,675
576 3,638,676
3,638,677
595 3,638,678
604 3,638,679
606 3,638,680
607 3,638,681
624.12 3,638,682
624.27 3,638,683

CLASS 138

97 3,638,684

CLASS 139

125 3,638,685
127R 3,638,686

CLASS 140

71 3,638,687

CLASS 141

98 3,638,688
214 3,638,689
354 3,638,690

CLASS 143

46F 3,638,691
168B 3,638,692

CLASS 144

3D 3,638,693
34A 3,638,694

CLASS 146

3R 3,638,695
6 3,638,696
83 3,638,697

CLASS 148

6.3 3,639,177
9C 3,639,178
11.5F 3,639,179
12.7 3,639,180
15.5 3,639,641
100 3,639,181
103 3,639,182

CLASS 149

2 3,638,698
18 3,639,183
44 3,639,184

CLASS 150

.5 3,638,699

CLASS 151

69 3,638,700

CLASS 152

158 3,638,701
330 3,638,702
3,638,703
353 3,638,704
356 3,638,705
359 3,638,706
365 3,638,707

CLASS 156

13 3,639,185
17 3,639,186
57 3,638,709
62 2 3,638,938
3,639,195
149 3,639,187
231 3,639,188
244 3,639,189
272 3,639,190
284 3,639,191
327 3,639,192
433 3,639,193
470 3,639,194

CLASS 159

47WL 3,638,708

CLASS 160

144 3,638,710
330 3,638,711

CLASS 161

14 3,639,196
35 3,639,197
43 3,639,198
57 3,639,199
116 3,639,200
143 3,639,201
158 3,639,202
173 3,639,203
3,639,204

CLASS 162

23 3,639,205
29 3,639,206
146 3,639,207
158 3,639,642
168 3,639,208
175 3,639,209

CLASS 164

76 3,638,712
82 3,638,713
83 3,638,714
85 3,638,715

CLASS 165

9 3,638,716
30 3,638,717

39 3,638,718
164 3,638,719

CLASS 166

.5 3,638,720
3,638,721
3,638,722
215 3,638,723
224 3,638,724
226 3,638,725
236 3,638,726
259 3,638,727
273 3,638,728
3,638,729
291 3,638,730
314 3,638,731
315 3,638,732

CLASS 169

19 3,638,733
42 3,638,734

CLASS 171

63 3,638,735

CLASS 172

719 3,638,736

CLASS 173

60 3,638,737
90 3,638,738
114 3,638,739

CLASS 174

14R 3,639,671
15C 3,639,672
16B 3,639,673
36 3,639,674
50.61 3,639,675
68B 3,639,676
84S 3,639,677
117FF 3,639,680
138F 3,639,681
145 3,639,678

CLASS 175

53 3,638,740
215 3,638,741
325 3,638,742

CLASS 177

16 3,638,743

CLASS 178

3 3,639,682
5.4CK 3,639,683
5.4MA 3,639,685
5.4R 3,639,684
5.8R 3,639,686
6 3,639,687
6.6TC 3,639,689
6.6P 3,639,688
22 3,639,690

CLASS 179

1VS 3,639,691
2.5R 3,639,692
15AL 3,639,694
15AT 3,639,693
15.55R 3,639,695
16F 3,639,696
100.2CF 3,639,698
100.2C 3,639,699
3,639,700
3,639,701
100.2Z 3,639,697
110B 3,639,679
175.2C 3,639,702
175.3 3,639,703

CLASS 180

6.2 3,638,744
8A 3,638,745
8D 3,638,747
25R 3,638,746
64R 3,638,748
68 3,638,749
79.2R 3,638,750
98 3,638,751

CLASS 181

.5R 3,638,752
31B 3,638,753
33R 3,638,754
36R 3,638,755
57 3,638,756

CLASS 182

63 3,638,757
112 3,638,758
194 3,638,759

CLASS 184

6.23 3,638,760

CLASS 187

9 3,638,761
52 3,638,762

CLASS 188

72.6 3,638,763
73.1 3,638,764
73.5 3,638,765
106P 3,638,766
268 3,638,767
294 3,638,768
298 3,638,769

CLASS 192

2 3,638,770
3.33 3,638,771
4B 3,638,772
18A 3,638,773
42 3,638,774

CLASS 195

28R 3,639,210
29 3,639,211
51 3,639,212
63 3,639,213
80 3,639,214

CLASS 197

17 3,638,775
186A 3,638,776

CLASS 198

20 3,638,777
31AC 3,638,778
127 3,638,779
130 3,638,780
208 3,638,781
233 3,638,782

CLASS 200

1V 3,639,704
6A 3,639,705
17R 3,639,706
33C 3,639,707
44 3,639,708
51 3,639,709
61.48 3,639,710
83H 3,639,711
148A 3,639,712
148R 3,639,713
153J 3,639,714
166E 3,639,715
168B 3,639,716
172A 3,639,717

CLASS 204

16 3,639,215
30 3,639,216
35R 3,639,217
40 3,639,218
47 3,639,219
49 3,639,220
58 3,639,221
94 3,639,222
95 3,639,223
181 3,639,224
212 3,639,225

CLASS 206

45.14 3,638,783
45.34 3,638,784
47A 3,638,786
47R 3,638,785
3,638,787
52R 3,638,788
63.2R 3,638,789
65S 3,638,790

CLASS 208

37 3,639,226
143 3,639,227
153 3,639,228
181 3,639,229
213 3,639,230

CLASS 209

12 3,638,791
73 3,638,792

CLASS 210

23 3,639,231
73 3,638,793
98 3,638,794
169 3,638,795
170 3,638,796
393 3,638,797
404 3,638,798
462 3,638,799

CLASS 211

40 3,638,800
57 3,638,801
71 3,638,802
148 3,638,803
177 3,638,814

CLASS 212

8 3,638,804
38 3,638,805
55 3,638,806

CLASS 213

22 3,638,807

CLASS 214

6B 3,638,808
57 3,638,809
75G 3,638,810
77P 3,638,811
83.26 3,638,812
148 3,638,813
390 3,638,815
517 3,638,817
521 3,638,816
762 3,638,818

CLASS 215

9 3,638,819
13 3,638,820

48 3,638,821
100A 3,638,822
3,638,823

CLASS 219

10.67 3,639,718
69E 3,639,719
76 3,639,720
91 3,639,721
127 3,639,722
131R 3,639,723
137 3,639,724
401 3,639,725
413 3,639,726
491 3,639,727

CLASS 220

21 3,638,824
66 3,638,825
69 3,638,826
97D 3,638,827

CLASS 221

176 3,638,828
219 3,638,829
246 3,638,830

CLASS 222

1 3,638,831
16 3,638,832
57 3,638,833
105 3,638,834
107 3,638,835
113 3,638,836
134 3,638,837
136 3,638,838
193 3,638,839
402.24 3,638,840

CLASS 223

38 3,638,841
73 3,638,842

CLASS 224

5G 3,638,843
42.1F 3,638,844

CLASS 226

97 3,638,845
142 3,638,846

CLASS 227

120 3,638,847

CLASS 229

16 3,638,848
28R 3,638,849
33 3,638,850
40 3,638,851
41 3,638,852
51TS 3,638,853

CLASS 233

27 3,638,854

CLASS 235

60TK 3,638,855
61.11E 3,639,728
3,639,729
3,639,730
3,639,731
61.12 3,639,732
69 3,639,733
92EA 3,639,734
94 3,639,735
151.3 3,639,737
151.35 3,639,738
152 3,639,736
3,639,739
153 3,639,740
154 3,639,741
160 3,639,742
3,639,743
3,639,744
181 3,638,856
201

CLASS 236

1B 3,638,857

CLASS 237

50 3,638,858

CLASS 239

102 3,638,859
127 3,638,860
216 3,638,861
265.39 3,638,862
276 3,638,863
280.5 3,638,864
424 3,638,865
544 3,638,866
573 3,638,867

CLASS 240

2SP 3,639,745
2R 3,639,746
2.1 3,639,747
7.1G 3,639,748
10B 3,639,749
11.4R 3,639,750
47 3,639,751
78R 3,639,752

CLASS 241

44 3,638,868
46 3,638,869
140 3,638,870

255 3,638,871

CLASS 242

18.1 3,638,872
45 3,638,873
55.19A 3,638,874
71.2 3,638,875
106 3,638,876
128 3,638,877
129.8 3,638,878
192 3,638,879
3,638,880
204 3,638,881

CLASS 244

1SS 3,638,882
1 3,638,883
12D 3,638,884
17.27 3,638,885
42D 3,638,886
102 3,638,887

CLASS 246

182B 3,639,754
182C 3,639,753
187B 3,639,755

CLASS 248

97 3,638,888
206R 3,638,889
215 3,638,890
221 3,638,891
3,638,894
300 3,638,892
312 3,638,893
361R 3,638,895
399 3,638,896
400 3,638,897
441 3,638,898
483 3,638,899
488 3,638,900

CLASS 249

20 3,638,901
28 3,638,902
69 3,638,903
122 3,638,583
213 3,638,904

CLASS 250

41.9TF 3,639,757
41.9G 3,639,756
51.5 3,639,758
3,639,759
3,639,760
68 3,639,761
71 3,639,762
83.3D 3,639,763
3,639,764
83.3H 3,639,765
202 3,639,766
3,639,767
205 3,639,768
211 3,639,769
218 3,639,770
225 3,639,771

CLASS 251

94 3,638,905
145 3,638,906
148 3,638,907
329 3,638,908

CLASS 252

1 3,639,643
8.1 3,639,232
8.5M 3,639,233
8.6 3,639,234
8.75 3,639,235
13 3,639,236
3,639,237
3,639,644
49.6 3,639,238
49.9 3,639,239
52R 3,639,240
54.6 3,639,241
56R 3,639,242
62 3,639,276
62.1 3,639,243
3,639,244
3,639,245
3,639,246
62.57 3,639,247
63.5 3,639,275
78 3,639,277
82 3,639,278
86 3,639,279
88 3,639,280
89 3,639,281
95 3,639,282
98 3,639,283
99 3,639,284
100 3,639,285
109 3,639,286
135 3,639,287
3,639,288
179 3,639,292
180 3,639,293
3,639,645
182 3,639,646
3,639,294
3,639,295

186 3,639,248
300 3,639,249
3,639,250
3,639,251
301.4F 3,639,252
301.4P 3,639,253
301.4S 3,639,254
312 3,639,255
316 3,639,256
3,639,257
3,639,258
3,639,259
355 3,639,262
358 3,639,260
373 3,639,261
389 3,639,263
390 3,639,431
400 3,639,264
411R 3,639,265
421 3,639,266
431 3,639,267
437 3,639,268
3,639,269
439 3,639,647
441 3,639,270
3,639,271
442 3,639,272
455R 3,639,273
465 3,639,648
514 3,639,274
527 3,639,289
545 3,639,290
548 3,639,291

CLASS 254

29A 3,638,909
88 3,638,910
89R 3,638,911
161 3,638,912

CLASS 256

13.1 3,638,913

CLASS 259

1R 3,638,914
4 3,638,915
3,638,916
8 3,638,917
48 3,638,918
95 3,638,919
104 3,638,920
109 3,638,921
154 3,638,922
177 3,638,923

CLASS 260

2R 3,639,296
2.5AJ 3,639,307
2.5FP 3,639,298
3,639,299
3,639,302
3,639,304
3,639,305
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243 3,639,781
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	3,639,906	37	3,639,045	195	3,639,069	156	3,639,091	117	3,639,581	275	3,639,611
150	3,639,907	92	3,639,046	199	3,639,070	175	3,639,092	118	3,639,582		3,639,613
166	3,639,908		CLASS 353		CLASS 408	177	3,639,093	125	3,639,583		3,639,614
172.5	3,639,909	101	3,639,047	91	3,639,071		CLASS 424	127	3,639,584	276	3,639,610
	3,639,910		3,639,048		CLASS 415	12	3,639,558	128	3,639,585		3,639,612
	3,639,911		CLASS 355	9	3,639,072		3,639,559	153	3,639,586	280	3,639,615
	3,639,912	3	3,639,049	109	3,639,073	22	3,639,560	173	3,639,587	300	3,639,616
	3,639,913		3,639,050	110	3,639,074	28	3,639,561	180	3,639,588		3,639,617
	CLASS 350		3,639,051	163	3,639,075		3,639,562	195	3,639,589	302	3,639,618
3.5	3,639,029		3,639,052		CLASS 416	35	3,639,564	203	3,639,590	304	3,639,619
	3,639,030	13	3,639,053	30	3,639,076		3,639,565	216	3,639,591		3,639,620
	3,639,031	18	3,639,054	111	3,639,077	37	3,639,566		3,639,592	308	3,639,621
	3,639,032	29	3,639,055	132	3,639,078	43	3,639,568	218	3,639,593	311	3,639,622
	3,639,033	40	3,639,056		3,639,079	48	3,639,569	224	3,639,594	317	3,639,623
31	3,639,034	51	3,639,057	186	3,639,080	49	3,639,563	227	3,639,595		3,639,624
96R	3,639,035	83	3,639,058		CLASS 417	54	3,639,570	236	3,639,596	319	3,639,625
97	3,639,036	86	3,639,059	7	3,639,081		3,639,571	238	3,639,597	320	3,639,626
126	3,639,037	104	3,639,060	214	3,639,082	63	3,639,572		3,639,598		3,639,627
161	3,639,038		CLASS 356	282	3,639,083	78	3,639,574	239	3,639,599	325	3,639,628
162SF	3,639,039	72	3,639,061	394	3,639,084		3,639,575	242	3,639,600	326	3,639,629
184	3,638,996	97	3,639,062	410	3,639,085		3,639,576	244	3,639,601	327	3,639,630
193	3,639,040	106	3,639,063	454	3,639,086	88	3,639,577	250	3,639,602	330	3,639,631
	CLASS 351	120	3,639,064	572	3,639,087	93	3,639,578		3,639,603	335	3,639,632
14	3,639,041	225	3,639,065		CLASS 418	94	3,639,579	270	3,639,604	346	3,639,633
30	3,639,042	237	3,639,066	74	3,639,088			271	3,639,605		3,639,634
38	3,639,043	240	3,639,067	93	3,639,089			273	3,639,607	349	3,639,636
103	3,639,044		CLASS 401					274	3,639,606		3,639,637
									3,639,608		3,639,638
											CLASS 431
										115	3,639,094
										177	3,639,095

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3,638,814	3,638,615	3,639,102	3,639,776	3,639,529	3,639,132
3,639,399	3,638,632	3,639,111	3,639,778	3,639,534	3,639,141
2 : 3,638,742	3,638,640	3,639,156	3,639,781	3,639,622	3,639,301
4 : 3,638,286	3,638,642	3,639,163	3,639,782	3,639,724	3,639,728
3,638,395	3,638,643	3,639,170	3,639,806	3,639,735	3,639,730
3,638,641	3,638,652	3,639,183	3,639,811	3,639,762	3,639,757
3,638,671	3,638,657	3,639,188	3,639,816	10 : 3,638,291	3,639,768
3,638,774	3,638,666	3,639,200	3,639,838	3,638,786	3,639,809
3,638,910	3,638,669	3,639,218	3,639,843	3,638,826	3,639,848
3,639,071	3,638,682	3,639,221	3,639,846	3,638,968	13 : 3,638,762
3,639,075	3,638,696	3,639,227	3,639,850	3,639,029	3,638,965
3,639,845	3,638,698	3,639,261	3,639,869	3,639,032	3,638,983
3,639,912	3,638,711	3,639,268	3,639,891	3,639,033	3,639,039
5 : 3,638,317	3,638,719	3,639,271	3,639,898	3,639,100	3,639,068
3,638,726	3,638,724	3,639,273	3,639,909	3,639,174	3,639,664
6 : 3,638,255	3,638,725	3,639,275	3,639,913	3,639,240	16 : 3,638,871
3,638,282	3,638,732	3,639,282	8 : 3,638,350	3,639,267	17 : 3,638,277
3,638,283	3,638,743	3,639,299	3,638,785	3,639,292	3,638,319
3,638,296	3,638,766	3,639,356	3,639,073	3,639,294	3,638,323
3,638,298	3,638,776	3,639,369	3,639,110	3,639,295	3,638,330
3,638,309	3,638,804	3,639,413	3,639,277	3,639,298	3,638,342
3,638,315	3,638,806	3,639,428	3,639,345	3,639,343	3,638,354
3,638,324	3,638,808	3,639,439	3,639,584	3,639,365	3,638,390
3,638,338	3,638,811	3,639,462	3,639,810	3,639,378	3,638,394
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3,638,345	3,638,818	3,639,470	3,639,900	3,639,438	3,638,409
3,638,347	3,638,833	3,639,494	9 : 3,638,251	3,639,443	3,638,438
3,638,353	3,638,839	3,639,523	3,638,294	3,639,492	3,638,444
3,638,356	3,638,863	3,639,524	3,638,381	3,639,493	3,638,453
3,638,376	3,638,866	3,639,545	3,638,419	3,639,535	3,638,473
3,638,377	3,638,880	3,639,546	3,638,430	3,639,633	3,638,488
3,638,397	3,638,883	3,639,547	3,638,439	11 : 3,638,373	3,638,528
3,638,401	3,638,905	3,639,551	3,638,509	3,639,225	3,638,532
3,638,429	3,638,933	3,639,555	3,638,594	3,639,510	3,638,534
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3,638,433	3,638,938	3,639,576	3,638,658	3,638,295	3,638,624
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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral, or ethical, or other grounds should be furnished the Commissioner of Patents on or before February 29, 1972.

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LUTRELLE F. PARKER,
Jan. 13, 1972. *Chairman, Committee on Enrollment.*

Identification of Goods and Services in Trademark Applications—(Reprint of Notice and Amendment)

Effective immediately, the Alphabetical List of Goods and Services which appears in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied" (published by the World Intellectual Property Organization (WIPO)) is adopted as a general guideline for determining the degree of particularity of identification of goods and services required in trademark applications.

Terms which appear in the International Classification listing will generally be accepted as proper identifications of goods and services. The use in the listing of more specific identifications indented below the heading term does not necessarily preclude acceptability of that heading. For example, the International Classification lists, as Item A407, *Ammunition,* followed by specific types of ammunition, as Items A408 and A409 and A410. "Ammunition" will be accepted as an identification in accordance with *In re Dynamit Nobel AG,* 169 USPQ 499 (TTAB, 1971). However, if the more specific term is used whenever appropriate, prosecution of the application may be shortened since the possibility of a requirement of greater particularity (see below) is reduced.

Greater particularity than is set forth by the terms in the International Classification listing may not be required by the Examiner in the absence of a clear need therefor. Typical illustrations of clear need can be found in the following situations:

(1) The broad term includes items which are classified in more than one class. (For example, "artists' materials.")

(2) The broad term is too indefinite for proper examination. (For example, "metallic parts.")

(3) (*a*) The identification is inconsistent with the goods or services disclosed by the specimens.

(*b*) The ordinary meaning of the identification is at variance with the goods or services disclosed by the specimens or the record. (For example, "decalcomanias" are not adequately identified by the term "publications." See also *Ex parte Consulting Publishing Co.,* 115 USPQ 240.)

(4) Wording included in the mark requires limitation of the identification. (For example, "beer" may not be included in the identification where the mark is "Newark 'Olde Town' Ale" (*Ex parte Consumers Brewing Co.,* 55 USPQ 426).)

On the other hand, some situations do *not* constitute clear need, as illustrated by the following:

(1) The existence of a decision holding that a likelihood of confusion exists in relation to items which are narrowly identified does not in itself constitute a clear need to require amendment of a broad identification to the more specific items mentioned in the decision.

(2) If the identification is understood when read in association with the title of the class in which it is placed and is otherwise satisfactory, further qualifying amendment should not be required. (For example, "mufflers" in the clothing class would not require further modification to indicate that articles of clothing are intended; similarly the term "house organ" in the class for printed publications would not need further qualification.)

In a few instances, the terminology in the International Classification of Goods and Services is not in common usage in the United States. Where this occurs, the term more commonly used in this country should be selected.

The English edition of the "International Classification of Goods and Services to Which Trade Marks Are Applied" can be ordered from:

Sales Branch, The Patent Office
Block C, Station Square House
St. Mary Cray, Orpington, Kent, England

Certain modifications and additions to the Classification have been published as supplements and are also available from the British Office.

We have been advised by the British Patent Office that the only acceptable methods of payment are by International Money Order or banker's draft, payable in sterling and drawn on a bank in the United Kingdom. Orders for the International Classification and for the supplements can be made by remittance in the following amount(s):

International Classification	50 pence
Nov. 15, 1967, supplement	5 pence
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Mar. 3, 1971, supplement	10 pence
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Orpington, Kent, England

RENE D. TEGTMEYER,
Assistant Commissioner for Appeals, Legislation and Trademarks.

Date: Jan. 13, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,774,951, Kinkaid and Hammell, TERMINAL CLIP, **filed** May 18, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1210, *AMP Inc.* v. *Ramex Mfg. Co.* By consent order defendant enjoined, Oct. 12, 1971.

2,867,001, Lewis, Rice and Estrin, MEANS AND METHOD FOR FORMING INDICIA ON THE SURFACE OF CONTINUOUS VULCANIZED PRODUCTS, **filed** May 24, 1971, U.S. Ct. of Appeals, First Circuit, Mass. (Boston), Doc. 71–1164, *Teledyne Mid-America Corporation* v. *International Telephone & Telegraph Corporation.* The judgment of the district court in so far as it holds the patent in suit to be invalid is affirmed, Oct. 7, 1971.

2,881,476, Mark Page, HOLLOW OBJECT MOLDING APPARATUS WITH MOVING HEATERS, **filed** Oct. 31, 1967, D.C., E.D.N.Y. (Brooklyn), Doc. 67–C–1024, *Mark Page* v. *County Plastics Corp. et al.* Dismissed, Nov. 3, 1971.

2,909,134, J. A. Kniefel, MACHINE FOR LAYING FLEXIBLE PIPE WITH ATTACHED RISERS, **filed** Mar. 22, 1971, D.C., E.D. Calif. (Fresno), Doc. F–504–C, *Joseph A. Kniefel* v. *Agwater, Inc.* Consent judgment, plaintiff is valid owner of patent and defendant has infringed, Nov. 12, 1971.

2,909,816, Robert J. Wood, POST SUPPORT, **filed** Nov. 1, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–2100 LHB, *Woodmark Products, Inc.* v. *Simpson Mfg. Co.*

2,932,397, John F. Ogden, CONDUIT SYSTEM FOR SWIMMING POOLS, **filed** May 15, 1971, D.C., N.D. Ala. (Birmingham), Doc. 70–352–S, *Paddock of California, Inc.* v. *National Filtronics, Inc.* Judgment enjoining defendant from infringing on patent, patent valid, Sept. 30, 1971.

2,959,555, Martin and Abel, COPPER AND IRON CONTAINING SCALE REMOVAL FROM FERROUS METAL, **filed** Sept. 28, 1971, D.C., N.D. Okla. (Tulsa), Doc. 71–C–346, *Halliburton Company* v. *Dow Chemical Company.*

3,021,871, Frank J. Rodgers, HOSE FOR PORTABLE PNEUMATIC EQUIPMENT, **filed** Nov. 25, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70–C–663, *Samuel Moore & Company* v. *Imperial-Eastman Corporation.* Order dismissing plaintiff's claim and defendant's counterclaim, with prejudice, etc., Aug. 6, 1971.

3,039,773, Teeguarden and Teeguarden, BALLS, **filed** Nov. 8, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2659–ALS, *Harry W. Teeguarden and Lillian Teeguarden* v. *A. G. Spalding & Bros., Inc.*

3,083,349, Isaac S. Blonder, TRANSMISSION-LINE CLAMP-AND-CONNECTOR, **filed** Oct. 12, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2459–HP, *Blonder-Tongue Electronics* v. *Macon Industries.*

3,104,799, Donald J. Steidinger, ENVELOPE ASSEMBLY, **filed** Sept. 1, 1967, D.C., N.D. Ill. (Chicago), Doc. 67c1522, *UARCO Incorporated* v. *Moore Business Forms, Inc.* Order certain claims declared invalid, defendant awarded attorney's fees and costs, cause hereby dismissed, Nov. 19, 1969, Notice of Appeal by plaintiff filed Dec. 17, 1969, from U.S.C.A. Final judgment, it is ordered and adjudged by this court that the judgment of the said district court finding the No. 3,104,799, Steidinger patent invalid be, and the same is hereby reversed, the judgment making an allowance for attorney fees to defendant, be and the same is hereby reversed and cause be, and it is hereby remanded to the said district court for full consideration of the issue as to alleged infringement, in accordance with the opinion of this court filed this day, Nov. 2, 1971.

3,104,924, Frederick E. Capel, LAMP CONNECTOR, **filed** Oct. 28, 1970, D.C., S.D.N.Y., Doc. 70–C–4748, *Ward Foods, Inc.* v. *Spartans Industries, Inc.* Consent-stipulation that this action is dismissed under Rule 41(a)(1) FRCP without costs, Nov. 4, 1971.

3,140,035, Frederick A. Wenzel, SERVICE TRAY, **filed** Sept. 24, 1971, D.C. Mass. (Boston), Doc. 71–2052–F, *St. Regis Paper Company* v. *Winchester Carton Corporation.*

3,167,279, Brian R. A. Reffell, PARACHUTE, **filed** Oct. 5, 1971, U.S. Court of Claims, Washington, D.C., Doc. 755–71, *Walter Kidde & Company, Inc. and Walter Kidde Company Limited* v. *The United States of America.*

3,187,949, John J. Mangel, SPRAY DISPENSER FOR PRESSURIZED LIQUID HAVING TIMER CONTROL, **filed** Nov. 5, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2655 WPG, *John J. Mangel and C-H Products Corporation* v. *William G. Kempton et al.*

3,220,522, Thomas G. Carter, Jr., POSITIVE CLUTCH, **filed** Sept. 29, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–3587C, *Thomas G. Carter, Jr.* v. *D & J Gear Company.* Thomas G. Carter, Jr. owner of patent which is valid. Defendant is perpetually enjoined, Sept. 29, 1971.

3,226,916, Bradford and Jenkins, MUD TREATING APPARATUS, **filed** Nov. 2, 1971, D.C., S.D. Tex. (Houston), Doc. 71–H–1220, *Well Control, Inc.* v. *11–7 Service, Inc. et al.*

3,229,880, Ewald A. Arp, STAMP DISPENSING MACHINE, **filed** June 30, 1969, D.C., N.D. Ill (Chicago), Doc. 69c1360, *Artag Plastics Corp.* v. *Patents Development Quorum.* Final judgment, complaint dismissed with prejudice, Oct. 8, 1971.

3,241,255, Martin S. Hanley, TICKET ASSEMBLY, **filed** Jan. 27, 1969, D.C., N.D. Ohio (Cleveland), Doc. C69–60, *Sherburne Corporation* v. *Ohio Spring Specialties, Inc.* Permanent injunction issued restraining defendant from infringing patent, Nov. 3, 1971.

3,249,270, Benjamin Zuckerman, GARMENT SUPPORT MEANS, **filed** Sept. 28, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71–C–1277, *Mr. Hanger, Inc.* v. *Plasti-Form Enterprises Corporation.*

3,266,173, Gene H. Sheridan, TRAINING APPARATUS, **filed** Sept. 24, 1971, D.C. Del. (Wilmington), Doc. 4231, *The Aetna Casualty and Surety Company* v. *Singer-General Precision, Inc.*

3,288,520, Klaus E. B. Krutzikowsky, COLLAPSIBLE TRAILER, **filed** Sept. 27, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–488, *K. E. B. Krutzikowsky* v. *Trade Winds Co., Inc.*

3,302,647, Arthur E. Marsan, SEALING PAD FOR A POST-SURGICAL DRAINAGE POUCH, **filed** Sept. 3, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–406–C, *Hollister Incorporated* v. *Howmet Corporation.*

3,304,371, Alex J. Rosenberg, INFORMATION PROCESSING SYSTEM, **filed** May 28, 1968, D.C., E.D.N.Y. (Brooklyn), Doc. 68–C–530, *Alex Jacob Rosenberg* v. *Standard Food Products Corp.* Order of dismissal, Oct. 1, 1971.

3,313,355, Leslie M. Pierce, APPARATUS FOR SUPPORTING AND CONTROLLING POWER FASTENER TOOLS AND THE LIKE, **filed** Oct. 24, 1969, D.C., N.D. Iowa (Cedar Rapids), Doc. 69–C–31–CR, *Clary Corporation* v. *Douglas, Inc. et al.*

3,313,545, James R. Bartsch, UNITARY MOLDED GOLF BALL, **filed** Oct. 8, 1971, D.C.R.I. (Providence), Doc. 4738, *PCR Golf Ball Company, Inc.* v. *Uniroyal, Inc.*

3,321,081, Allan H. Willinger, AQUARIUM FILTER APPARATUS, **filed** Nov. 10, 1971, D.C. Mass. (Boston), Doc. 71–2550–C, *Metaframe Corporation* v. *Pace Plastics Inc.*

3,326,692, Martino and Blaese, METHOD OF AND APPARATUS FOR COOKING, **filed** May 17, 1971, D.C., N.D. Ill. (Freeport), Doc. 71c24, *Restaurant Technology, Inc.* v. *Geropco Inc.* Consent judgment, patent valid and infringed. Permanent injunction, parties to bear own costs, Sept. 4, 1971.

3,334,361, Robert E. Watson, SHIELDED-HINGE TOILET SEAT CONSTRUCTION, **filed** Sept. 29, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–495, *Swedish Crucible Steel Company* v. *Bemis Manufacturing Company.*

3,343,961, Harry Truax, METHOD FOR TREATING SOYBEANS AND THE LIKE USING INFRA-RED HEAT, **filed** Oct. 23, 1970, D.C., N.D. Iowa (Cedar Rapids), Doc. 70–C–30–CR, *Mix-Mill, Inc. and Harry Truax & Sons Company, Inc.* v. *Walter Johnson and Merritt Fisher, etc.* Dismissed by plaintiff without prejudice, Nov. 30, 1970.

3,355,625, William A. Ward, RECURRENT PULSING SYSTEM WITH SEMICONDUCTOR JUNCTION RECTIFIER IN CAPACITOR DISCHARGE PATH, **filed** Sept. 30, 1971, D.C. Mass. (Boston), Doc. CA 71–2068–W, *United States Scientific Instruments, Inc.* v. *EG & G Inc.*

3,368,932, Weill, Woods and Solomon, APPARATUS FOR LAMINATING TWO FABRICS TO FOAM IN ONE SINGLE OPERATION, **filed** Jan. 6, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69C8, *Flame Laminating Machines Corporation* v. *Ideal Foam Corporation.* Order of dismissal, Nov. 9, 1971.

3,394,405, Clayton E. Conklin, METHOD FOR REINFORCING TEXTILE GARMENTS, **filed** Nov. 18, 1968, D.C., S.D.N.Y., Doc. 68–C–4540, *The B. F. Goodrich Company* v. *Mann Manufacturing, Inc.* Filed stipulation and order of dismissal as to complaint and counterclaim, each party to bear own costs, June 18, 1971.

3,401,269, Michael A. Tabet, COMPOSITE COVER FOR PHOTOELECTRIC CONTROL UNIT AND METHOD FOR MAKING SAME, **filed** Sept. 27, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2339, *Michael A. Tabet* v. *City of Chicago.*

3,425,626, Dietz and Dietz, DRINKING STRAW, **filed** Feb. 24, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69–C–197, *John F. Dietz et al.* v. *Newman Premier Corp.* Order of Dismissal, Nov. 8, 1971.

3,444,865, Guy F. DeVita, TRANSFORMATION WIG, **filed** Oct. 12, 1971, D.C., N.D. Ohio (Cleveland), Doc. 71–1012, *Carousel Fashions, Inc.* v. *The Higbee Company.*

3,452,964, Lionel Bibeault, PORTABLE LIFTING AND/OR SPRING WINDING DEVICE, **filed** Oct. 5, 1971, D.C.R.I. (Providence), Doc. 4734, *Paul Fimbel* v. *Lionel Bibeault.*

3,480,912, Speeth and Norem, SOUND LEVEL VISUAL INDICATOR HAVING CONTROL CIRCUITS FOR CONTROLLING PLURAL LAMPS, **filed** Sept. 27, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–5146–D, *Autotelic Industries, Inc.* v. *Kinder Kollege Educational Systems, Inc. et al.*

3,485,694, Bauder, Hart and Cleminshaw, METHOD FOR USING HIGH FREQUENCY HEAT TO MAKE A SEAM IN A FILTER, **filed** May 12, 1970, D.C., S.D.N.Y., Doc. 70-C-1924, *Cambridge Filter Corp.* v. *ARCO Manufacturing Corp.* Final judgment on consent, defendant enjoined. Defendant's counterclaim for a declaratory judgment dismissed without prejudice, Sept. 20, 1971.

3,516,163, Charles A. Hisserich, MARKING MACHINE, **filed** Nov. 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2690-RJK, *E. E. Simmons* v. *Yard Newcport.*

3,525,457, Hausmann and Hausmann, DEVICE FOR HOLDING AND EMPTYING TUBES, **filed** Sept. 15, 1971, D.C., S.D.N.Y., Doc. 71-C-4107, *Else Hausmann & Heinrich Hausmann* v. *Alfred E. Knobler & Company, Inc.*

3,565,083, Samuel J. Popell, METHOD FOR SETTING HAIR, **filed** June 4, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1352, *Popeil Brothers, Inc.* v. *Aldens Inc.* **Same, filed** Apr. 23, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c978, *Popeil Brothers, Inc.* v. *Associated Mills, Inc.* **Same, filed** Apr. 23, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c979, *Popeil Brothers, Inc.* v. *Sunbeam Corporation et al.*

3,598,064, Edward H. Stempel, SHELVING, **filed** Oct. 1, 1971, D.C., S.D. Fla. (Miami), Doc. 71-1527-C-TC, *Belaco, Inc.* v. *Advance Metal Products, Inc.*

3,601,385, Senter and Johnson, ATTACHMENT FOR CHANGING REAR END SUSPENSION IN AUTOMOBILES, **filed** Sept. 29, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2346-HP, *Ansen Automotive Engineering, Inc.* v. *Roy H. Gammell et al.*

D. 213,860, David T. Ditman, PACKAGING TRAY, **filed** Sept. 10, 1971, D.C., M.D. Tenn. (Nashville), Doc. 631, *Pet Incorporated* v. *Mountain Farm Bakery, Inc.*

D. 217,331, Robert F. Bernhard, BOTTLE, **filed** July 30, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-1449, *Pioneer Soap Co., Inc.* v. *Flexible Plastics Corp.*

Certificates of Correction for the Week of Feb. 8, 1972

3,343,053	3,578,516	3,590,434
3,437,823	3,579,353	3,590,553
3,479,852	3,579,497	3,591,059
3,498,955	3,581,091	3,592,438
3,511,599	3,581,138	3,592,507
3,513,136	3,581,971	3,593,509
3,528,489	3,582,359	3,594,092
3,529,268	3,583,227	3,594,158
3,539,689	3,583,293	3,594,441
3,542,087	3,583,304	3,594,927
3,542,737	3,583,697	3,595,177
3,548,875	3,584,766	3,595,282
3,552,700	3,585,032	3,595,491
3,555,750	3,585,237	3,595,540
3,556,299	3,585,323	3,595,641
3,557,590	3,585,344	3,596,705
3,560,273	3,585,875	3,596,780
3,563,737	3,586,928	3,597,313
3,563,985	3,587,253	3,597,472
3,564,141	3,587,383	3,599,103
3,566,172	3,587,545	3,602,812
3,566,775	3,588,358	3,603,078
3,568,777	3,588,496	3,603,701
3,571,535	3,588,950	3,606,727
3,575,463	3,589,698	3,607,114
3,576,051	3,589,898	3,607,767
3,577,528	3,589,913	3,608,016
3,578,264		

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 25, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-06-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-03-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-23-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-18-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-10-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-25-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-27-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-01-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	12-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	12-07-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-05-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-01-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-05-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during January 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,700,764 to 2,702,900, inclusive
Plant Patents ..... Numbers 1,345 to 1,354, inclusive

PATENTS

GRANTED FEBRUARY 8, 1972

GENERAL AND MECHANICAL

3,639,914
METHOD OF MAKING MACHINE SEWN JACKET AND JACKET CONSTRUCTION

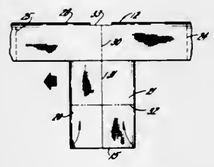
Harold R. Ellman, 871 Fairview Road, Highland Park, Ill.
Filed July 7, 1970, Ser. No. 52,799
Int. Cl. A41d *1/00*
U.S. Cl. 2—93 — 10 Claims



A man's jacket having a sweater-type feel sewn entirely by machine and made of stretchable materials. It includes a shoulder cap assembly blind stitch machine tacked thereto at several points only. It has the appearance of a tailored jacket, but does not require hand sewing operations conventionally used in making tailored jackets.

3,639,915
DISPOSABLE GARMENT AND METHOD AND APPARATUS FOR MAKING SAME

Frederick J. Hrubecky, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed June 20, 1969, Ser. No. 834,993
Int. Cl. A41b *9/00*
U.S. Cl. 2—114 — 2 Claims



A disposable garment is composed of a rectangular torso section having its quarter sections folded inward to define front and back panels, and a rectangular yoke and sleeve section folded longitudinally, with the torso section secured between the edges of the folds of the yoke and sleeve section. Method and apparatus are provided for making the garment from two continuous fabric webs.

3,639,916
NECKWEAR CONSTRUCTION

Richard C. Vaughn, 216 Delhi St., Syracuse, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,496
Int. Cl. A41b *3/00*; A41d *25/04*
U.S. Cl. 2—130 — 3 Claims



Simulated cravat comprising a relatively stiff section of fabric having a knot portion and panel portion adapted to depend from the knot portion, the knot portion having wing portions extending beneath the left and right collar tab portions of a shirt, and the knot portion and the panel portion each having an aperture, the spacing between which is an exact multiple of the common shirt front button and buttonhole spacing, the cravat being combined with a shirt having a collar button and buttonhole, and shirt front buttons and buttonholes, and a buttonhole adjacent the collar button, the cravat having its knot portion secured to the shirt collar by a cuff link like fastener projecting through the knot portion aperture, and through both buttonholes, and being secured to the shirt front at the button in alignment with the panel portion aperture by a second cuff link like fastener extending through the cravat aperture, the shirt front buttonhole in alignment with said last named cravat aperture, and an additional aperture adjacent the button.

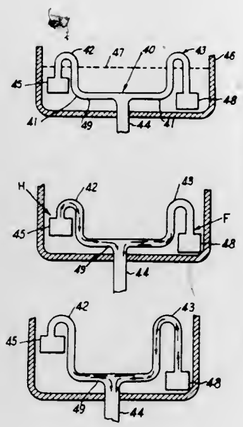
3,639,917
HEAT RECOVERABLE ARTICLE

Victor E. Althouse, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Apr. 7, 1970, Ser. No. 26,347
Int. Cl. A41d *27/11*
U.S. Cl. 2—270 — 8 Claims



Heat recoverable elastomeric materials are used to form gathers in fabrics, especially disposable garments of non-woven fabrics.

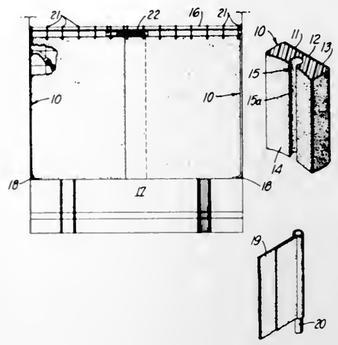
3,639,918
FLUSHING APPARATUS
Gobind R. Mansukhani, B7 Ananta, Rajaballi Patel Road, Bombay, 26, India
Filed Feb. 2, 1970, Ser. No. 7,699
Int. Cl. E03d *1/04, 1/06*
U.S. Cl. 4—67 **8 Claims**



The present invention relates to a flushing apparatus. Conventional sanitary flushing apparatus generally employ either a flush or reservoir tank, or a flush valve without a reservoir tank and connected directly to water mains. Such flush tanks or flush valves usually have one lever operated by a single action, which lever when operated permits the quantity of water to flow necessary to flush out waste bulk. Such quantity, however, is in excess when waste matter is small like urine deposit.

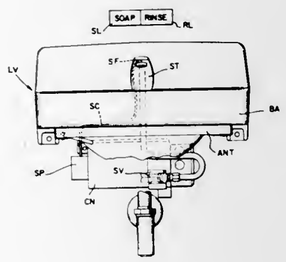
3,639,919
SHOWER CURTAIN HOLDER
Richard E. White, 7630 Willow Glen Road, Los Angeles, Calif.
Filed Sept. 2, 1970, Ser. No. 68,900
Int. Cl. A47k *3/14*
U.S. Cl. 4—149 **7 Claims**

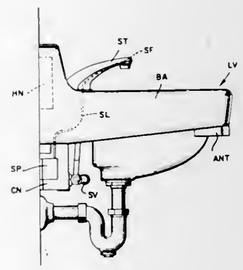
A holder for a pair of bathroom shower curtains comprising a pair of flexible seal strips permanently adhered to a bathroom wall and extending downwardly from adjacent the shower curtain rod. A pair of corner blocks permit the strip to be bent and extend across the top of the tub. Each strip has a keyhole slot extending for its entire length. The outer edge of each curtain contains a cord which is pressed into the seal strip slot to make permanent waterproof connections between the outer edges of the curtains and the bathroom walls and tub. An extension provides overlapping of the inner



edges of the curtains where they meet to prevent leakage between them.

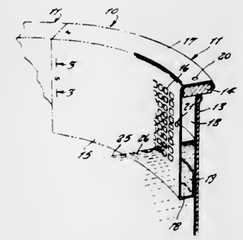
3,639,920
PROGRAMMED PLUMBING SERVICE
James 051water will be R. Griffin, and Norman A. Forbes, both of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.
Filed June 8, 1970, Ser. No. 44,501
Int. Cl. A47k *1/04*
U.S. Cl. 4—166 **18 Claims**

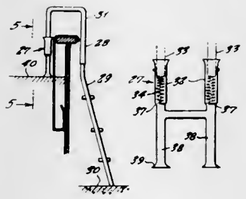




Covers a proximity apparatus for a lavatory or basin or other plumbing fixture which responds to the approach of the user to the plumbing fixture to dispense water and soap according to a predetermined pattern. Water may be turned on for a first predetermined interval, for example, when the user reaches the front of the plumbing fixture, after which the water will be briefly turned off and the soap will be turned on for another predetermined interval. Then there will be a predetermined pause during which neither soap nor water will be dispensed, after which the flow of n- stated and the flow continued until the user has departed from the plumbing fixture.

3,639,921
POOL RINK CONVERSION KIT
William J. Siler, 4029 Kingsbury Ave., Toledo, Ohio
Filed May 4, 1970, Ser. No. 34,625
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.11 **4 Claims**

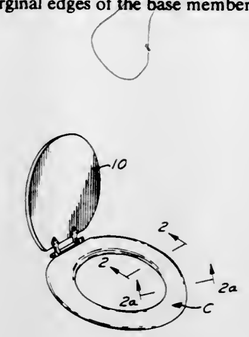




An accessory for converting a swimming pool into an ice skating rink, the device comprising a series of shields positioned around the inner upper portion of the swimming pool liner attachable together, and an extension ladder positioned upon the ice surface and to which a swimming pool ladder can be fitted.

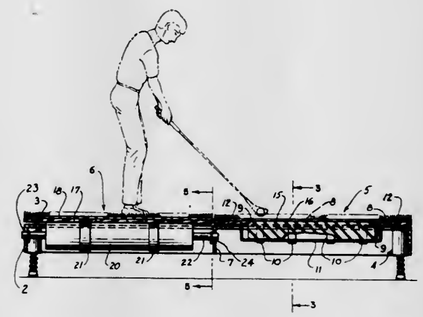
3,639,922
CUSHIONED TOILET SEAT
Stanley J. Samuels, 2031 Locust St., and Samuel Samuels, 1801 John F. Kennedy Blvd., both of Philadelphia, Pa.
Original application July 20, 1967, Ser. No. 654,883, now Patent No. 3,513,050. Divided and this application Feb. 17, 1970, Ser. No. 14,858
Int. Cl. A47k *13/00*
U.S. Cl. 4—237 **3 Claims**

This invention comprises a cushioned toilet seat in which a foam rubber cushion element is superimposed upon a rigid base member of annular configuration, and a plastic skin is vacuum formed thereabout with lapped over heat-sealed joints at the marginal edges of the base member. Apertures in



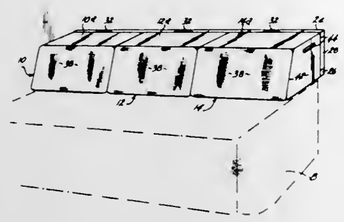
the bottom of the plastic sole sheet communicate with channels extending through the base member to permit air entrapped within the cushion to be expelled when the skin is compressed against the cushion.

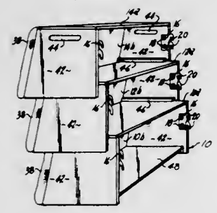
3,639,923
GOLF PRACTICE PLATFORM
Albert A. Stewart, 150 Fox Meadow Road, Scarsdale, N.Y.
Filed Nov. 25, 1970, Ser. No. 92,563
Int. Cl. A63b *69/36*
U.S. Cl. 273—187 R **4 Claims**



A golf practice platform is divided into two sections one of which is stationary, and the other of which is mounted to tilt slightly as the golfer's weight shifts from one foot to the other in order to indicate the instant when the shift occurs. Each section has an artificial turf surface and the turf surface of the stationary section from which the ball is driven is laid above a pad of cellular elastomeric material to simulate actual playing conditions. The entire platform may be tilted in various directions to simulate uphill, downhill and sidehill lies.

3,639,924
STACKABLE FURNITURE UNITS
Peggy Snider Cadle, 1283 Bell St., San Bernardino, Calif.
Filed Dec. 29, 1969, Ser. No. 888,797
Int. Cl. A47c *13/35, 4/02*
U.S. Cl. 5—2 **8 Claims**



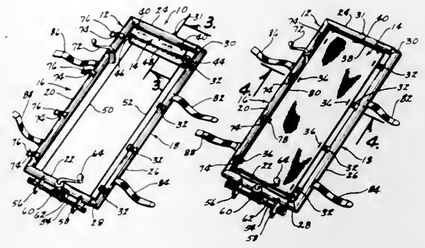


Three stackable units which can be arranged above the top of a twin bed to convert the bed into a sitting couch. The units are hollow and have steeply sloping fronts, enclosed sides and enclosed tops. The sloping fronts are upholstered, and serve as backrests for those using the couch. The units can be manually hung on a support frame attached to a wall adjacent the bed, or on such a frame attached to the bed itself, by means of interlocking hooks on the units and bars or pins incorporated in the frame, for suitable positioning over the bed. When the sitting couch is to be converted back into a bed, the units are unhooked from the frame by hand, and can then be stacked to form a night stand. To make this possible, the units differ incrementally in size so as to stack with the top of one inside the bottom of another, in telescoping fashion. Strips along the inner surfaces of the sides of the upper two units in the stack serve as stops to prevent excessive telescoping of the units and to fix the height of the night stand.

3,639,925
RECOVERY OF GOLD FROM CARBONACEOUS ORES
Bernard J. Scheiner, Sparks; Ronald E. Lindstrom, Reno, both of Nev., and Thomas A. Henrie, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior
Original application May 15, 1968, Ser. No. 729,382, now Patent No. 3,574,600. Divided and this application Nov. 17, 1970, Ser. No. 90,428
Int. Cl. C22b *11/08*
U.S. Cl. 75—101 R **5 Claims**

Carbonaceous gold ores are rendered amenable to a conventional cyanide recovery process by pretreatment with sodium hypochlorite or calcium hypochlorite compounds at temperatures under 70° C. Hypochlorite solutions can be generated in situ by electrolysis of chloride solutions.

3,639,926
LITTER DEVICE
Gerald E. Steelman, R.R. #3, Adel, Iowa
Filed July 2, 1970, Ser. No. 52,022
Int. Cl. A61g *7/10, 1/02*
U.S. Cl. 5—81 **10 Claims**



A litter device comprising a frame means having opposite side members and opposite end members and having a rectangular flexible sheet member supported thereon. The sheet member is initially secured at one end thereof to one end of the frame means and is pulled beneath the person by means of a winch means or the like operatively connected to the other end of the frame means and having a cable means extending to the sheet member. After the sheet member has been pulled beneath the person, one side of the sheet member is secured to one side of the frame means. The other side of the sheet member is then connected to a tensioning means mounted on the other side member to enable the sheet member to be drawn to a taut condition between the side members of the frame. A strap means is provided on the frame means for maintaining the person on the sheet member for transportation purposes.

3,639,927
MATTRESS FOR INVALIDS
Josef Munch, Duisburg-Hamborn, Germany, assignor to Firma Otto Bock Orthopadische Industrie KG., Duderstadt, Germany
Filed May 4, 1970, Ser. No. 34,094
Claims priority, application Germany, May 7, 1969, G 69 18 374
Int. Cl. A61g *7/02*
U.S. Cl. 5—91 **8 Claims**

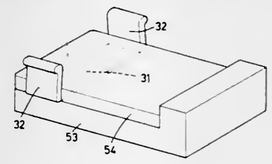


A frame of foam polymer with a rectangular cutout, positioned to underlie the major part of the body of a patient recumbent thereon, rests on a baseplate serving as a support for a multiplicity of square or rectangular inserts of like foam material detachably pasted onto the base so as to be removable at locations proximal to a pressure-sensitive part of the patient's body. A transverse pad at the foot end of the mattress has vertical recesses open toward the head end to receive the feet of the patient whose legs rest on anatomically shaped wedge pieces which extend into these recesses but terminate short of their closed ends to leave room for the unsupported heels of the patient.

3,639,928
ACCELERATOR COMBINATION FOR EPOXY CURING
Floyd Edward Bentley, and Norman Bell Godfrey, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed Nov. 27, 1970, Ser. No. 93,431
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EC **5 Claims**

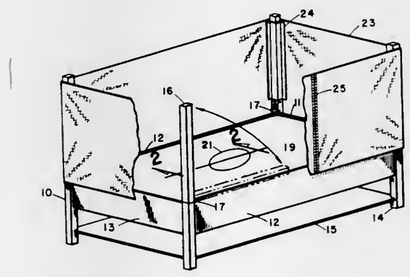
An accelerator combination of N-(3-aminopropyl)piperazine and salicylic acid is synergistic for accelerating the cure of a polyglycidyl ether of a polyhydric phenol cured with a polyoxyalkylenepolyamine. The epoxy resin product is useful in castings, coatings, adhesives, laminates, filament reinforced compositions, seamless flooring, terrazo flooring, crushed-stone aggregates and in grouting, caulking and sealing compositions.

3,639,929
COMBINATION LEG/FOOT REST AND BED COVER RETAINER
Noboru Ichise, No. 18, 3-chome, Takaidahondori, Higashiosaka-shi, Osaka-fu, Japan
Filed Sept. 29, 1969, Ser. No. 861,623
Claims priority, application Japan, Aug. 15, 1969, 44/64900
Int. Cl. A47c *21/02, 21/08*
U.S. Cl. 5—327 **5 Claims**



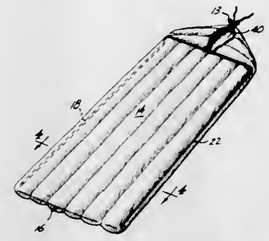
A leg and foot rest device to alleviate leg and foot fatigue, which device is readily insertable between the mattress and its support of a bed, to project from lateral sides thereof and also acts not only as a leg and foot rest, but also to preclude both the bed covers and occupant from inadvertently inadvertently off the bed, as contrasted to means elevating bed covers at the lower end of the bed to preclude contact thereof with the occupants legs and feet.

3,639,930
HUMIDITY TENT
Gary E. Miller, 333 North Liberty St., Delaware, Ohio
Filed Aug. 14, 1970, Ser. No. 63,776
Int. Cl. E03d *11/10;* **A47c** *21/00*
U.S. Cl. 5—330 **3 Claims**



A bed with folding integral corner posts for holding a privacy screen or an oxygen tent and equipped with a sectional, invalid-type mattress and has integral storage provisions for said privacy screen and a conventional bed pan.

3,639,931
SLEEPING BAGS
William L. McGuire, Seattle, Wash., assignor to Eddie Bauer, Inc., Seattle, Wash.
Filed Feb. 2, 1970, Ser. No. 887,033
Int. Cl. A47g *9/00*
U.S. Cl. 5—343 **2 Claims**

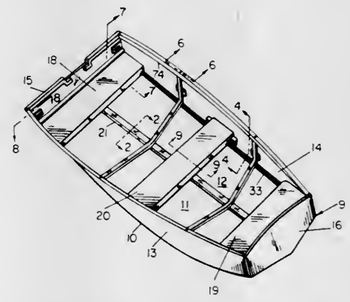


This invention provides a sleeping bag which is formed of a double length insulated structure folded upon itself. Slide fastener means joining the side edges are separable adjacent the fold, the separable elements being reversely arranged at the sides of the folded structure whereby two or several such sleeping bags may be joined together side by side.

3,639,932
RARE EARTH OXIDE PHOSPHOR HAVING A CONTROLLED DECAY TIME
John L. Ferri, Towanda, and James E. Mathers, Ulster, both of Pa., assignors to Sylvania Electric Products Inc.
Filed Nov. 13, 1970, Ser. No. 89,473
Int. Cl. C09k *1/10*
U.S. Cl. 252—301.4 R **8 Claims**

A cathodoluminescent phosphor composition with a controlled decay time is disclosed wherein the phosphor consists of a matrix of Y_2O_3 contaminated with dysprosium, and a dopant of europium and a predetermined amount of at least one of terbium and praeseodymium. A process for controlling the decay time is also disclosed.

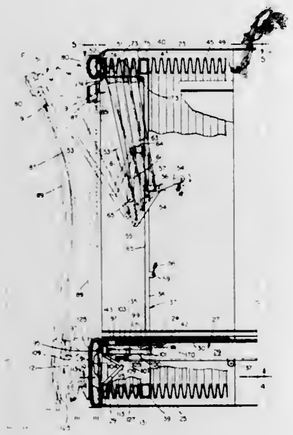
3,639,933
FOLDABLE BOATS
James L. Trowbridge, Route #2, Neshkoro, Wis.
Filed Aug. 6, 1970, Ser. No. 61,647
Int. Cl. B63b *7/00*
U.S. Cl. 9—2 F **11 Claims**



A foldable boat having removable end panels, a pair of hinged bottom panels and a pair of side panels each of which

is hingedly connected to one of the bottom panels. The hinged connections are provided by flexible, water-resistant fabrics secured to the connected members, and compressible gaskets are employed between connected members to provide a watertight seal. The hinged panels are maintained in their open, watertight position by transverse ribs, the removable end panels, and seats which are removably attached to the side panels and end panels.

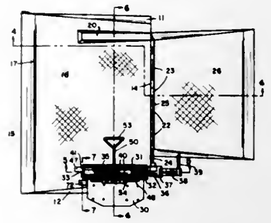
3,639,934
CANOPY APPARATUS
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.
Filed Sept. 25, 1969, Ser. No. 860,882
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **17 Claims**



A flexible canopy extendable from an aircraft passenger transfer vehicle for mating with passenger airplanes having different fuselage airfoil shaped configurations. The gangway includes a rigid upright frame which carries a pivotal bow frame from its upright sides and includes a lower frame having a threshold plate which is extendable from the gangway. The lower frame includes a crossbar which is connected to the upper bow frame and includes bumpers which encircle the doorway opening in the aircraft. The frames stretch a flexible bellows around the gangway to keep out wind and weather.

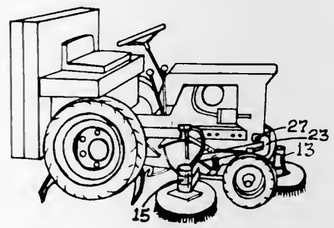
3,639,935
PORTABLE DOCK LEVELLERS
Karl Kumpolt, 1820 Selkirk Ave., Winnipeg, 14 Manitoba, **Canada**
Filed June 15, 1970, Ser. No. 46,383
Int. Cl. E01d *15/12*
U.S. Cl. 14—72 **5 Claims**

A dock platform having a resiliently pivot-liftable wing on one side thereof which is adapted to bridge a space between a dock and the floor of an adjacent carrier, when lowered, for transport of material thereover, said wing being frictionally locked against said lifting until released by a foot pedal; ground wheels rockably mounted on one side and a castered dolly hinged to the opposite side of the platform, and said parts interconnected, for raising the platform thereon to an elevated and locked position by a lever, for portability of the platform and wing; and a second foot pedal



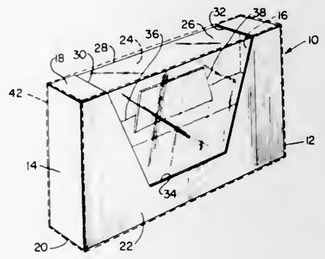
for the release of the platform from said elevated and locked position onto the dock.

3,639,936
SELF-PROPELLED FLOOR SCRUBBER
Walter G. Ashton, Winnetka, Ill., assignor to Star Industries, Inc., Chicago, Ill.
Filed June 8, 1970, Ser. No. 44,168
Int. Cl. A47l *11/29*
U.S. Cl. 15—4 **8 Claims**



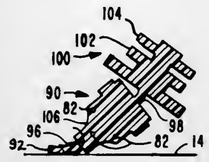
A hydraulic motor-propelled occupant-driven floor scrubber having a subframe supporting structure for rotating brushes and squeegee assemblies that are each independently hydraulically movable into and out of operating floor-engaging position, with each of the subframe structures having floating shock-absorbing arrangements.

3,639,937
DISPOSABLE SELF-PACKAGING DUSTPAN KIT
Robert Sweeney, 10 Wilton Drive, Wilmington, Mass.
Filed July 17, 1969, Ser. No. 842,668
Int. Cl. A46b *17/08*; **A47l** *13/42*, *13/52*
U.S. Cl. 15—104.8 **6 Claims**



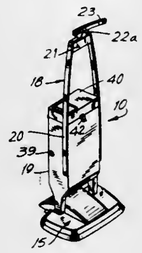
A disposable carton is provided with a charge of granular absorbent material. The package is formed with at least one flat wall, one edge of which is contiguous to a removable panel whereby the package may be opened, the contents distributed over spillage and swept back into the box by means of an included paddle.

3,639,938
WINDSHIELD-CLEANING SYSTEM
Gerald J. Golden, 875 Comstock, Apt. 4A, Los Angeles, Calif.
Filed Oct. 15, 1969, Ser. No. 866,476
Int. Cl. B60s *1/38*; **A47l** *1/16*
U.S. Cl. 15—250.06 **13 Claims**



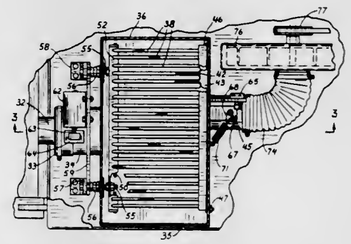
A windshield-cleaning system, especially useful for cleaning automobile windshields of layers of adhering ice, is disclosed. The system includes wiper blades each having electrical heating means embedded within the blade to establish a heating zone on the portions of the blade surface adapted to contact the windshield. The wiper blade is normally curved and is transversely and longitudinally flexible so as to readily conform to the surface to be wiped despite the presence of the embedded heating means. The heating means may take the form of a number of flexible resistance wires in an array in close proximity to the wiping surfaces of the blade and connected to an external supply circuit through wires having high fatigue strength. The blades are driven across the windshield by an electromechanical system whose operation may be controlled independently of the blade heating circuit. An automatic control circuit for energizing the wiper-heating wires when the windshield temperature drops below a predetermined level during operation of the wiper drive mechanism, is also disclosed.

3,639,939
COMBINATION SURFACE TREATING AND SUCTION CLEANING APPARATUS
Bengt Olof Crener, Taby; Erik Arne Anderson, Hagersten, and Stig Carl-Oskar Ernolf, Sollentuna, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Dec. 11, 1969, Ser. No. 884,166
Claims priority, application Sweden, Dec. 11, 1968, 16899/68
Int. Cl. A47l *11/206*
U.S. Cl. 15—320 **15 Claims**



This invention relates to a combined surface treating and polishing and suction cleaning apparatus having rotatable brushes movable over a surface. A movable control shutter in a first position covers an opening in the air passageway of the suction cleaning component of the apparatus so that it will operate properly as a suction cleaner. When the control shutter is in its first position mechanism for dispensing liquid wax from a container onto the surface is rendered inoperable. When the control shutter is in its first position a vessel for holding a body of liquid treating agent cannot be removably mounted on the apparatus for dispensing such liquid onto the surface. In the second position of the control shutter the opening in the passageway of the suction cleaning component is uncovered so that atmospheric air will be drawn into the air passageway by a fan and the apparatus cannot operate properly as a suction cleaner. When the control shutter is in its second position the mechanism for dispensing liquid wax from its container is rendered operable. When the control shutter is in its second position the vessel for the liquid treating agent can be removably mounted on the apparatus for dispensing such agent onto the surface. The mechanism for dispensing wax from its container and the mechanism for dispensing liquid treating agent from the vessel include parts which are common to both mechanisms, such parts operating in one way to dispense liquid wax from its container when the vessel for liquid treating agent is not mounted on the apparatus and operating in another way to dispense liquid treating agent from the vessel when it is mounted on the apparatus.

3,639,940
FILTER CHAMBER
Alfred D. Carlson, and Joseph G. Kasper, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Aug. 22, 1969, Ser. No. 852,326
Int. Cl. A47l *9/20*
U.S. Cl. 15—352 **9 Claims**

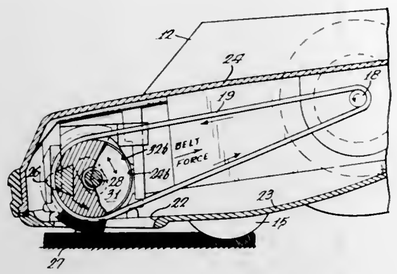


A filter chamber including a shaking mechanism for vibrating dust from filter bags in a sweeping machine wherein an eccentric weight is mounted onto an electric motor, and the motor in turn is mounted on spring means which are attached to the filter bags and retain the bags under spring tension. The control for turning on the vibrator motor also controls a valve which shuts off vacuum flow to the filter compartment so that the dust will more easily fall down from the sides of the filter bag at the same time the shaking occurs.

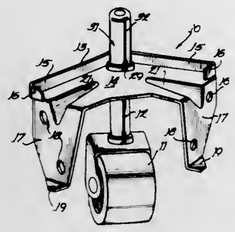
3,639,941
VACUUM CLEANER
Warren J. Kirwan, Melrose Park, and Elmer E. Bruning, Westmont, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed June 16, 1970, Ser. No. 46,615
Int. Cl. A47l *5/34*
U.S. Cl. 15—372 **8 Claims**

A rotary brush for a vacuum cleaner including mounting means for biasing the brush downwardly against the rug

through the use of the tension applied by the belt drive from the motor.



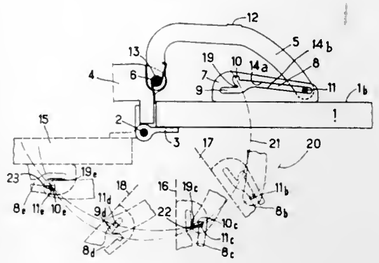
3,639,942
CASTER BRACKET ASSEMBLY
Martin E. Ostrom, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Dec. 22, 1969, Ser. No. 886,959
Int. Cl. B60b *33/00*
U.S. Cl. 16—29 **8 Claims**



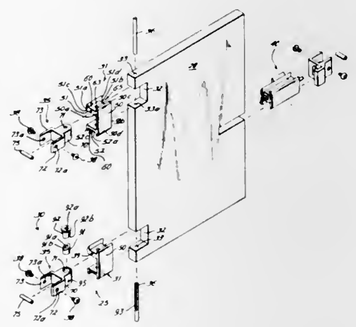
A caster bracket assembly to mount a caster onto the interior surface of a furniture base utilizing a one-piece caster bracket having an integral caster socket or a separate caster socket secured thereto. The caster bracket and socket are both formed of the same or similar materials, and the bracket has a pair of legs or flanges with means to fasten the bracket legs to the interior surface of the furniture piece and positioning flanges or tabs engaging the lower edges of the furniture piece.

3,639,943
DOORSTOP MEANS
Jean G. Cadiou, Saint-Cloud, France, assignor to Citroen S.A., Paris, France
Filed Aug. 21, 1969, Ser. No. 851,993
Claims priority, application France, Sept. 6, 1968, 165393
Int. Cl. E05f *5/14*
U.S. Cl. 16—82 **2 Claims**

This invention relates to a doorstop means particularly for a motor vehicle, and in which a draw rod is articulated at one end to the door upright by means of a pin that is substantially parallel to and spaced from the hinge pin and the door itself. The other end of the draw rod carries a finger movable in a slotted member secured to the door, the slot running parallel to the door plane but branching into two extensions of the end nearest the hinge pins, one extension curving inwardly towards the door but the other extension extending substantially perpendicularly to the door to form a catch in which the finger on the draw rod engages to lock the door in a fully open or an intermediate position.

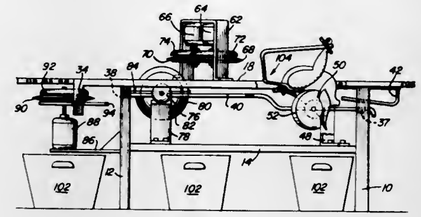


3,639,944
HINGE ARRANGEMENT INCLUDING A PARTIALLY CONCEALED MEANS FOR SECURING WITH A SWINGING DOOR
Ralph B. Mott, Sr.; Ralph B. Mott, Jr., and Richard C. Cantella, all of Houston, Tex., assignors to Reserv-A-Roll Co., a partnership composed of Ralph Beach Mott, Sr. and Ralph Beach Mott, Jr., by said Cantella
Filed Nov. 3, 1970, Ser. No. 86,513
Int. Cl. E05f *1/06*
U.S. Cl. 16—153 **5 Claims**



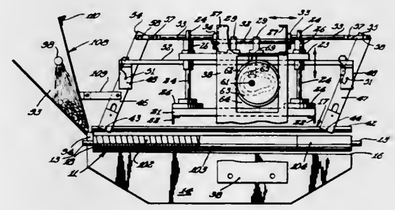
A hinge arrangement including a hinge housing and a hinge bracket for hingedly or swingingly supporting a swinging door adjacent a stationary wall surface. The means for securing the hinge arrangement to the swinging door is partially concealed so as to inhibit attempts at removal of the hinge arrangement either by vandalism or idle curiosity. The hinge arrangement is also constructed to present a smooth uninterrupted surface on the exterior of the door while having a minimum number of exposed screws or other securing means. The arrangement for maintaining the swinging door in a partially open position is such that it can be quickly and easily adjusted to maintain the door in any desired partially open position.

3,639,945
POULTRY CUTTER
William D. Duncan, and Carolyn L. Duncan, both of Route #4, Box 46A, Kokomo, Ind.
Continuation-in-part of application Ser. No. 779,990, Nov. 8, 1968, now abandoned , Continuation-in-part of application Ser. No. 682,955, Nov. 14, 1967, now abandoned. This application Aug. 21, 1970, Ser. No. 66,038
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **31 Claims**



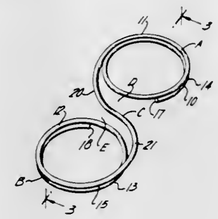
Apparatus for automatically sectioning poultry into a predetermined number of pieces comprising a pair of cutting blades for severing the wings, a pair of cutting blades for severing the breast and legs, a cutting blade for splitting the poultry into two pieces and a cutting blade for severing the thighs from the ribs whereby the poultry is sectioned into nine pieces. A first embodiment utilizes a carriage attached to conveyor chains for moving poultry past the cutting blades, and a second embodiment is vertically aligned to allow gravity to move the poultry past the cutting blades. Another embodiment includes a mechanism for folding the severed wing portions.

3,639,946
SHRIMP-PROCESSING APPARATUS
Clyde J. Welcker, and Roland Welcker, both of New Orleans, La., assignors to The Welcker Corporation, New Orleans, La.
Filed Feb. 2, 1970, Ser. No. 7,526
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **13 Claims**



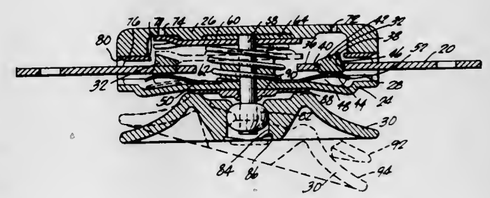
An apparatus for processing shrimp and like marine life of the type utilizing a pair of horizontally extending, parallel rollers spaced apart a distance to accommodate a centerplate for defining a processing channel and also including an elongated impeller overlying an upper edge of the centerplate is characterized as having mechanical drive means including cams and eccentrics for operating the centerplate and the impeller from a single rotating line shaft. The cam means is arranged and configured to drive the centerplate and the impeller in undulatory patterns having both horizontal and vertical components of movement selected to operate on the marine life in conjunction with the rollers for peeling, deheading, deveining and otherwise cleaning the marine life and moving the same from an inlet end of the machine to a discharge end thereof. Further, the machine characteristics including cycle speeds, size and surface finish of the rollers and configuration of the centerplate have been optimized for most varieties of shrimp.

3,639,947
CLOSURE DEVICE FOR FOOD-CONTAINING BAGS AND THE LIKE
Myron Jenner, Bethel, Vt.
Filed Jan. 21, 1969, Ser. No. 792,705
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 R **5 Claims**



The disclosure sets forth an S-shaped double multicoil device for engaging open necks of bags and affording a temporary removable and replaceable closure thereof and for other purposes. The device is formed by winding wire on an automatic coil winder to form spaced coils having about one inch diameter, each of which is about 1¾ tightly wound turns which are spaced ⅛ inch or ¾ inch apart. The spacing may in general determine the generation of the interconnection curve. The double coils are then turned away from each other and pulled apart in sequence or in one operation. The final device has an oblique integral connection forming an S-shape with each loop of the S having about 1¾ turns and with the loops separated so that the spacing between the coils is about equal to the diameter of a coil.

3,639,948
MULTIHARNESS BUCKLE
Gale K. Sherman, Tustin, Calif., assignor to McDonnell Douglas Corporation
Filed Mar. 3, 1970, Ser. No. 16,157
Int. Cl. A44b *17/00, 11/25*
U.S. Cl. 24—205.17 **8 Claims**

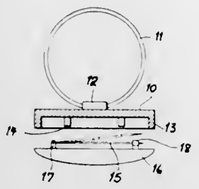


A buckle for attaching and releasing one or more harnesses used to strap cargo or occupants of a moving vehicle securely in place. A sequential method is provided for release of selected harnesses while retaining others permanently or for subsequent release. A tiltable release handle tilted to a first position aligns certain captive toggles for release from locked position and further tilt to a second position releases others.

3,639,949
ORNAMENTAL SCARF CLIP

George R. Beck, 775 16th St., Boulder, Colo.

Filed May 14, 1969, Ser. No. 824,652
Int. Cl. A41d 25/04
U.S. Cl. 24—49 O 5 Claims

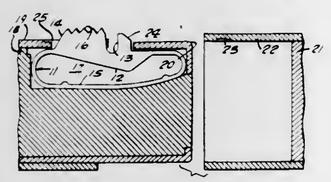


A scarf clip, comprising a base hinged to a ring at its rear surface, is provided on its front surface with resilient clips or magnetic studs to retain a fastening pin of a brooch or similar ornament interchangeably supported thereon.

3,639,950
LATCHING DEVICE

Leland H. Lutz, Los Angeles; Richard C. Heileman, Whittier; Harlan R. Upstone, Arcadia; John M. Leonard, Buena Park, and Melvin A. Ottow, Duarte, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 13, 1968, Ser. No. 759,723
Int. Cl. A44b 17/00
U.S. Cl. 24—230 1 Claim



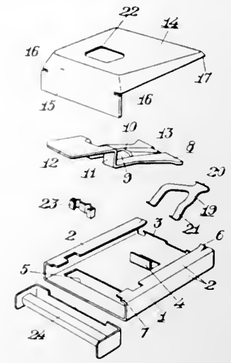
The invention includes a closed loop of a plastic material which has a projection molded integrally therewith to act as a detent. The detent is released by squeezing the loop together. The loop is resilient and springs back for engagement of the detent. The plastic material has a low-friction, corrosion-resistant surface for trouble-free detent operation. The loop and projection may be molded integrally. Thus, the device may be made and assembled easily and quickly at low cost.

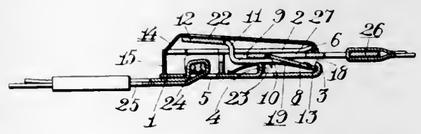
3,639,951
SAFETY BELT BUCKLE

Masahiko Inoue, Toyota-shi, and Ken Tojyo, Nagoya-shi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Japan

Filed Feb. 26, 1969, Ser. No. 802,535
Claims priority, application Japan, Mar. 1, 1968, 43/15756
Int. Cl. A44b 11/26
U.S. Cl. 24—230 4 Claims

A safety belt buckle so constructed that the minimum number of components are employed for convenience and simplicity of assembling; a movable portion is enclosed by a cover plate and a baseplate so as to be protected from an unexpected impact of any other object, in order to preclude an unexpected disengagement of the tongue from a latched position; and disengagement of the tongue is precisely effected only by pressing on it by means of a finger inserted through an aperture on the cover plate, but is not unexpectedly effected as a result of the force of inertia exerted thereon on collision.

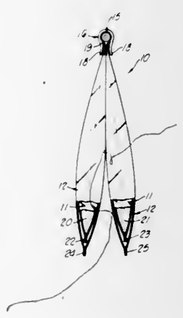




3,639,952
SAFETY PACKAGE ASSEMBLY AND DIVIDER CLAMP THEREFOR

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Filed Oct. 27, 1969, Ser. No. 869,504
Int. Cl. B65d 77/10
U.S. Cl. 24—255 BC 8 Claims



A divider clamp assembly having many uses such as isolating reactive potting compound constituents in a flexible walled package assembly until the constituents are ready for use.

3,639,953
METHOD OF PRODUCING CARBON FIBERS

Isao Kimura, and Hidetsugu Habata, both of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

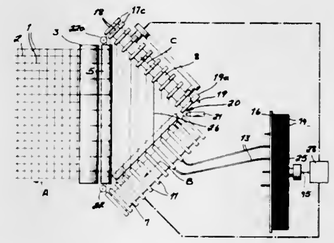
Filed Aug. 3, 1970, Ser. No. 60,608
Claims priority, application Japan, Aug. 7, 1969, 44/62461; Sept. 30, 1969, 44/78353; 44/78354
Int. Cl. C01b 31/07
U.S. Cl. 23—209.1 20 Claims

Nonflammable fibers are produced by subjecting a composite fiber comprising a pitch and a synthetic organic polymer bonded uniformly along the longitudinal direction of the fiber to an oxidation treatment to render it infusible and then to a set treatment in air or gaseous nitrogen at a temperature of 200° to 500° C. for at least 2 hours. The nonflammable fiber is converted to carbon fiber by heating to a temperature higher than 800° C. in gaseous nitrogen. Suitable pitches include petroleum asphalt, coal tar pitch, and pitch obtained by baking polyvinyl chloride. Suitable synthetic organic polymers include polyamides, polyesters, polyolefins, polyvinyl chloride, polyvinylidene chloride, polyurethane, epoxy resins, and phenol resins.

3,639,954
APPARATUS FOR MAKING A REINFORCED WEB

Horst Kirzinger, and Alfons Kirzinger, both of Neustadt, Germany, assignors to KIRSON Patentverwertung und Vertriebsgesellschaft mbH, Neustadt, Germany

Filed Dec. 31, 1969, Ser. No. 889,565
Int. Cl. D04h 3/04, 3/14
U.S. Cl. 28—1 CL 4 Claims



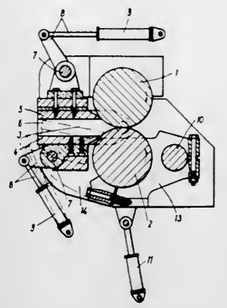
A filamentary web intended to be imbedded in a synthetic-resin sheet is made by inserting a succession of weft or transverse filaments into a continuously moving warp of longitudinal filaments at a web-forming location at which the web is compacted between rollers drawing the filaments into a compression gap. These weft filaments are drawn from a plurality of separate spools on a rotating turntable or disk whose threads are fed through guides on a continuously moving conveyor belt and whose thread ends are held in clips on a second belt similar to the first and forming with the first a V open toward the web-forming location so that the weft threads are drawn out transversely to the warp as they are moved into the compression gap. Small heated wires at the web-forming location serve to cut off the individual weft filaments while apparatus is provided at the apex of the V to reengage the free end of each thread in its clip.

3,639,955
APPARATUS FOR CRIMPING GROUPS OF SYNTHETIC FILAMENTS

Heinz Fleissner, and Gerold Fleissner, both of Egelsbach, Germany, assignors to Vepa Ag.

Filed Dec. 19, 1969, Ser. No. 886,737
Claims priority, application Germany, Dec. 20, 1968, P 18 16 028.6
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 14 Claims

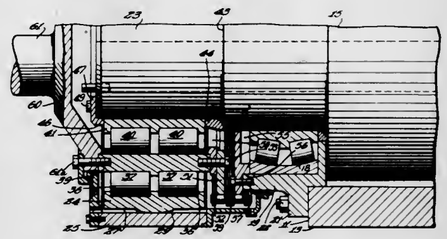
The present disclosure is directed to an improved device for crimping groups of textile filaments, for example, synthetic filaments utilizing a pair of rollers and a compression compartment. The device produces a uniform crimp and contains features which facilitate the cleaning and maintenance thereof.



3,639,956
BEARING SUPPORT AND DRIVE FOR CONTROLLED CROWN ROLL

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of application Ser. No. 457,753, May 21, 1965, now Patent No. 3,286,325, dated Nov. 22, 1966. This application June 25, 1965, Ser. No. 467,035
Int. Cl. B21b 13/02
U.S. Cl. 29—116 20 Claims



Support and drive for a controlled crown roll in which a controlled nip pressure is obtained between a roll couple. The roll is in the form of a hollow roll shell journaled on a stationary center shaft, in which pressure means between the center shaft and roll shell compensate for deflection of the shaft by the nip correcting pressure on the roll shell. The shaft is journaled at its ends in pedestals and one end of the shaft extends beyond the end of its pedestal to afford a means for holding the shaft from rotation and to adjust the position of the shaft with respect to the roll shell. A drive sleeve is journaled in this housing on one set of bearings and is journaled on the shaft on an aligned set of bearings and has driving connection with the roll shell. A torque-transmitting drive connection is provided between the sleeve and the shell.

3,639,957

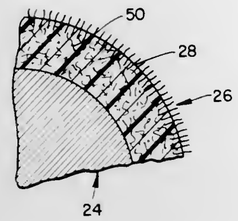
PAPER MANUFACTURING ROLL CONSTRUCTION AND PROCESS

Paul J. Mitchell, Jr., Griffin, Ga., assignor to SW Industries, Inc., Newton, Mass.

Continuation-in-part of application Ser. No. 606,412, Dec. 30, 1966, now Patent No. 3,460,222. This application June 6, 1969, Ser. No. 831,161

Int. Cl. B21b *31/08*

U.S. Cl. 29—120 **2 Claims**



In a paper making machine, following casting of the aqueous pulp suspension onto a moving web and partial drainage of water therefrom to form a wet sheet, water is pressed from the wet sheet by rolls that are characterized by a covering composed of a butadiene acrylonitrile elastomer and a dispersion of hydrophobic fiber strands penetrating through the outer surface of the elastomer. Such rolls have superior release characteristics with respect to the wet sheet.

3,639,958

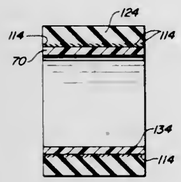
ROLLER AND METHOD OF MAKING SAME

Wilfred Griffiths, New South Wales, Australia, assignor to Abrasive Aids Pty. Limited, Banktown, Australia

Filed May 16, 1969, Ser. No. 825,174

Int. Cl. B60b *7/04*

U.S. Cl. 29—130 **8 Claims**



A roller comprises a rigid cylindrical sleeve formed of fiber glass which is coated with resin. The outer surface of the sleeve is machined to remove substantially all visible resin therefrom and to expose the fiber glass. The fibers of the fiber glass provide substantially fuzzy surface characteristics on the outer surface of the sleeve. An elastomeric sleeve is molded around the outer surface of the rigid sleeve. Fibers of the fiber glass extend into the elastomeric sleeve and define a zone having an elasticity modulus which is between that of the rigid sleeve and the elastomeric sleeve. The roller is formed by coating fiber glass filaments with resin and winding them upon a rotating mandrel. When a desired thickness of resin coated filaments are on the mandrel, the filaments are cut and the assembly is heated to partially cure the resin while the mandrel is rotated. Following the final curing of the rigid sleeve, it is placed in a lathe where its outer surface is machined to remove free visible resin on its exterior surface and to expose the fiber glass fibers. The exterior of the rigid sleeve is then coated with a bonding agent and an elastomeric sleeve is bonded to its exterior surface.

3,639,959

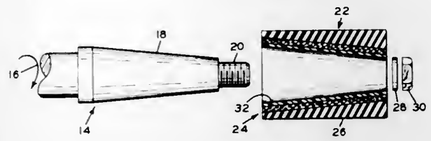
GLASS FIBER CORD RUBBER ROLLER

Donald H. Bagley, East Freetown, and Robert G. Cook, South Weymouth, both of Mass., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 23, 1970, Ser. No. 21,604

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **1 Claim**



A rubber coated roller is provided with a tapered core of a glass fiber material bonded in a phenolic resin. The glass fiber core roller is then mounted on a tapered shaft. Two adjacent rollers coact together to drive a yarn positioned between two rollers.

3,639,960

METHOD OF APPLYING A LUBRICATING AND FRICTION-REDUCING LAYER ON THE INNER SURFACE OF A TUBULAR BODY OF METALLIC MATERIAL

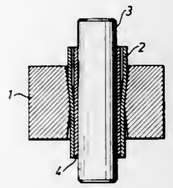
Bard Meyer Waage, Knivsta, Sweden, assignor to Habia Kommanditbolag, Knivsta, Sweden

Filed Oct. 14, 1970, Ser. No. 80,569

Claims priority, application Sweden, Oct. 20, 1969, 14378/69

Int. Cl. B23p *11/00*; **B21d** *53/10*

U.S. Cl. 29—149.5 NM **3 Claims**



A method for applying a lubricating and friction-reducing layer on the inner surface of a tubular metallic body comprising the steps of applying a lubricating and friction-reducing coating on the inner surface of the body and thereafter subjecting said coating to a deformation calibration by means of a bearer.

3,639,961

METHOD AND TOOL FOR SECURING A BEARING RACE WITHIN A BORE IN A HOUSING

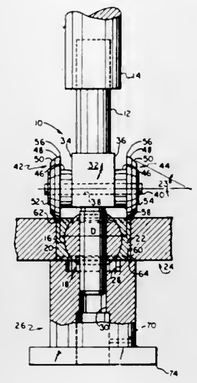
Robert H. Shiflet, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Feb. 9, 1970, Ser. No. 9,865

Int. Cl. B23p *11/00, 19/00*

U.S. Cl. 29—149.5 B **8 Claims**

An annular shoulder which retains a bearing race in a bore in a housing is swaged by beveled rollers mounted on a rotatable spindle. Pressure exerted by the rollers against the shoulder is maintained at a first predetermined level during at least half of a revolution of the spindle, then is increased to a second predetermined level while the spindle continues to rotate, and finally is maintained at the second level during at least half of a revolution of the spindle. The bevel of the rollers, radius of their larger diameter edges, and distance between their inner sides are designed to provide proper swaging of the shoulder.



3,639,962

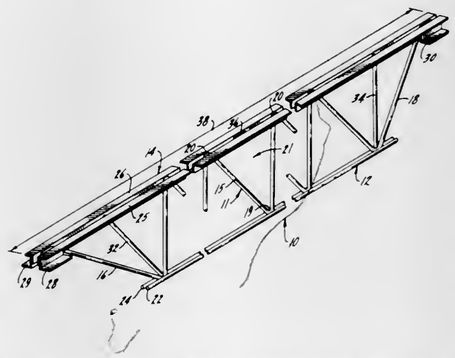
SYSTEM FOR FABRICATING STRUCTURAL MEMBERS

Robert M. Gooder, 2537 Country Club Drive, Olympia Fields, Ill.

Filed Feb. 11, 1970, Ser. No. 10,324

Int. Cl. B23p *17/00, 19/00*

U.S. Cl. 29—155 R **19 Claims**



An apparatus and process for completing the assembly of a joist including a support platform adapted to carry a joist in a generally horizontal orientation with a bottom chord extending along one side and a top chord extending along an opposite side, rollers carried by said support platform each having a plurality of laterally spaced recesses, ones on different rollers being generally aligned to receive said lower chord, a set of movable clamping bars located above said rollers, having laterally spaced gripping troughs adapted to cooperate with said roller recesses to selectively grip said bottom chord, two sets of laterally movable roller wheels having stationary baseplates associated therewith and being longitudinally spaced along a top chord side of said support platform, a first set positioned below or on an underside of said top chord and a second set positioned above or over said top chord, a set of clamping fingers interposed between said second set of roller wheels actuatable to engage said top chord and clamp the top chord and web together against the lower set of roller wheels, pneumatic means associated with said movable clamping bar, said first and second set of roller wheels and said clamping fingers, responsive to actuation of electrical controls firstly, to grip the lower chord, secondly, to laterally press said respective lower and upper sides of the top chord against said stationary plates, thirdly to clamp said top chord and web together, and welding means operative to weld said top chord to said web.

3,639,963

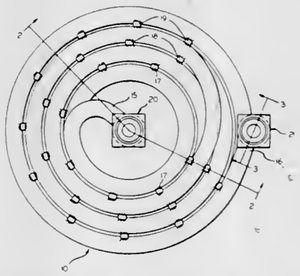
METHOD OF MAKING A HEAT EXCHANGER COIL ASSEMBLY

Frank A. Maher, Mount Prospect, Ill., assignor to Vapor Corporation, Chicago, Ill.

Original application Apr. 1, 1968, Ser. No. 717,516, now abandoned. Divided and this application Oct. 8, 1969, Ser. No. 868,970

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 R **4 Claims**



Method of making a heat exchanger coil assembly for a steam generator including coil turns arranged in concentric layers and spaced apart by spacer members, and including the step of dip soldering the assembly for securing the turns and spacer members together to form a unitized assembly and to anneal the assembly.

3,639,964

METHOD OF MOUNTING A PNEUMATIC TIRE ON A DEFORMABLE RIM

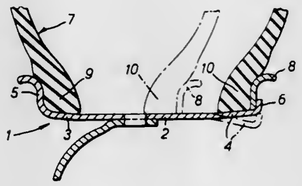
William Eric Mitchell, Coventry, England, assignor to The Dunlop Company Limited, Erdington, Birmingham, England

Filed Mar. 12, 1969, Ser. No. 806,658

Claims priority, application Great Britain, Mar. 21, 1968, 13,682/68

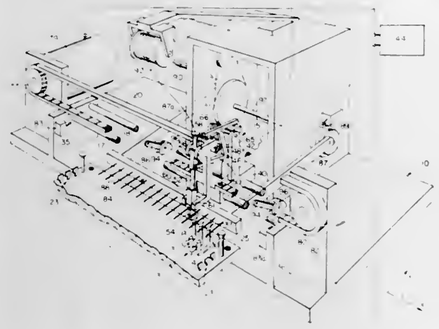
Int. Cl. B21h *1/02*; **B21k** *1/32*

U.S. Cl. 29—159.01 **5 Claims**



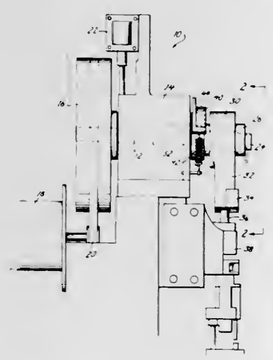
A method of mounting a tire on a wheel rim having an inwardly depressed bead seat and a detachable flange comprising arranging the tire on the rim and then expanding the bead seat to hold the tire and the detachable flange permanently in position.

3,639,965
WIRING LOOM
Ge Yao Chu, Lincoln, Mass., assignor to Wang Laboratories, Tewksbury, Mass.
Filed Mar. 19, 1970, Ser. No. 21,083
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 MM 6 Claims



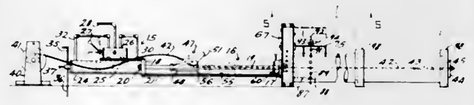
An automatic wiring loom in which a row of core posts is held on a stationary base in horizontal alignment with a track, a wire laying head is movably mounted on a track and includes a carriage rotatably supporting a threading arm carrying wire to be woven, connected to an electrically operated solenoid for displacement of the arm in a plane normal to the row of core posts between a first position in which the arm is spaced inwardly from the side of the row of core posts adjacent the track, and a second position in which the arm is spaced outwardly from the opposite, outer side of the row of core posts, a motor driven timing belt is operatively associated with the wire laying head for effecting reciprocal movement along the track and control means are connected to the solenoid to reciprocally move the arm between the first position and the second position to weave wire around portions of said posts in a predetermined pattern to form a computer matrix.

3,639,966
VARIABLE CRIMPING ECCENTRIC PRESS
Herbert D. Scharf, 437 Merwyn Road, Merion, Pa.
Filed June 18, 1970, Ser. No. 47,405
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 3 Claims



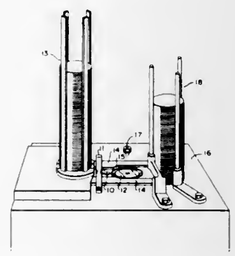
In a variable crimping eccentric press including a crankshaft for oscillating a rod that actuates a crimping die and wherein the crankshaft has a built-in eccentric throw, means to vary the eccentric throw of the crankshaft including a replaceable cylinder secured to the crankshaft at its connection to the rod whereby the cylinder is constructed to have a degree of eccentricity that will achieve a desired eccentric throw of the rod.

3,639,967
PIPE-JOINING MACHINE
Jack Edward Brighton, Hudson, Mich., assignor to B & B Pipul, Inc.
Filed May 26, 1969, Ser. No. 827,512
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 8 Claims



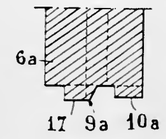
The present invention is a pipe-joining machine for installing successive pipe units. The pipe-joining machine includes a longitudinally extending base assembly having a front plate, a rear plate spaced from the front plate and connecting bars joining the front and rear plates. A hydraulic cylinder, having a drive rod, is mounted and extends horizontally rearwardly from the rear plate. Control mechanism including a multipassage hydraulic valve is in communication with the hydraulic cylinder. A gripper mechanism is provided on the free end of the drive rod and is effective for releasably grasping a cable. One end of the cable is fed through successive ones of the pipe sections being installed and rearward movement of the hydraulic cylinder drive rod applies a pulling force to the last pipe section in the chain to properly seat the last pipe section with respect to the adjoining pipe section.

3,639,968
CLOSURE-ARRESTING DEVICE
Raymond E. Price, Belmont, and Clifford F. Tirrell, South Weymouth, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Apr. 9, 1969, Ser. No. 814,645
Int. Cl. B23g *7/10*
U.S. Cl. 29—211 3 Claims



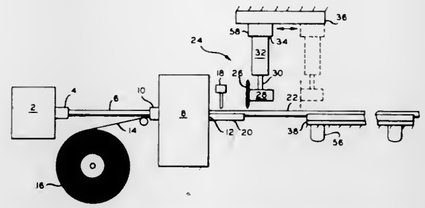
Holddowns which retain container closures such as can ends and maintain their proper alignment with rotating chucks of container closure-lining machines are made by suspending a narrow, bowed, leaf spring or wire above the path of travel of the closure through the machine and arranged to bear on the closure before it is stationed upon the chuck in a lining receiving position. It is preferred to arrange the spring so that pressure is applied on the closure substantially over the center of the closure.

3,639,969
METHOD AND DEVICE FOR MAKING AND FINISHING ZIP FASTENERS
Marcel Potin, Choisy-le-Roi, France, assignor to Societe Financiere Francoise De Licences Et Brevets, Choisy-le-Roi (Val de Marne), France
Filed Jan. 6, 1970, Ser. No. 912
Claims priority, application France, Jan. 8, 1969, 6900119
Int. Cl. B23p *11/00*, *19/04*; B23k *1/06*
U.S. Cl. 29—408 6 Claims



Method of manufacturing and finishing a zip fastener from a section taken from a continuous chain comprising two rows of coupling members of synthetic material carried by a pair of parallel tapes. This method consists in causing a tool to be lowered upon the position contemplated for constituting the "closed" end of the zip fastener to be completed, said tool being vibrated at supersonic frequency and having its operative end formed on the one hand with a projecting ridge extending across the full width of the chain and on the other hand a central protrusion registering with the two rows of coupling members, said tool being so positioned and directed that said protrusion lies on the side of the fastener's section being finished. The device according to the present invention consists essentially of a tool as described hereinabove.

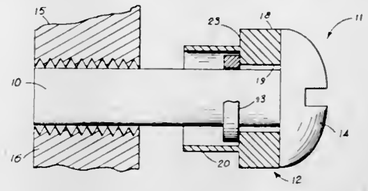
3,639,970
METHOD AND APPARATUS FOR FORMING PLASTIC-LINED METAL CONDUIT
Mark E. Larkin, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 2, 1969, Ser. No. 863,198
Int. Cl. B23p *17/00*
U.S. Cl. 29—411 3 Claims



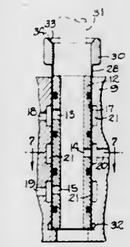
An apparatus for continuously forming a metal and plastic composite conduit having a metallic outer surface, cutting portions from the continuously formed conduit, and ejecting the cutoff portions from the apparatus.

3,639,971
METHOD OF PRODUCING A CAPTIVE JACKING SCREW
Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.
Original application Mar. 4, 1968, Ser. No. 710,294, now Patent No. 3,502,130, dated Mar. 24, 1970. Divided and this application Jan. 2, 1970, Ser. No. 163
Int. Cl. B23p *11/00*
U.S. Cl. 29—437 3 Claims

The method of providing a fastener for separating associated parts when the fastener is loosened in which the unthreaded shank of a screw blank is extended through a collar having an outwardly extending flange at one end and a thin-walled portion at the other end adapted to be bent outwardly in securing the collar to a workpiece, the collar also having an internal shoulder, after which a retainer ring is placed on the shank and is engageable with the internal shoulder, and threads are rolled on the end of the shank to hold the retainer ring on the shank.



3,639,972
METHOD OF FORMING A VALVE STRUCTURE WITH O-RING SEALS
Carl O. Schelin, and Arne L. Eisentraut, both of Rockford, Ill., assignors to Woodward Governor Company, Rockford, Ill.
Original application Nov. 27, 1968, Ser. No. 779,354, now Patent No. 3,547,158, dated Dec. 15, 1970. Divided and this application May 4, 1970, Ser. No. 34,115
Int. Cl. B23p *11/02*
U.S. Cl. 29—451 2 Claims

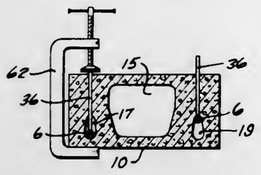


A sleeve having axially spaced external grooves and O-rings seated in the grooves form an assembly which is telescoped endwise into a bore to form seals from confining the flow of fluid through an intervening port in the bore and a hole in said sleeve. The sleeve and ring assembly is first inserted endwise into an imperforate tube smaller than the bore wall and larger than the sleeve so that, during the insertion of the tube and sleeve assembly, the O-ring is covered as it is moved past the edge of the port. After withdrawal of the tube from the bore, the O-ring is left unmarked with its original external surface contour expanded against bore wall.

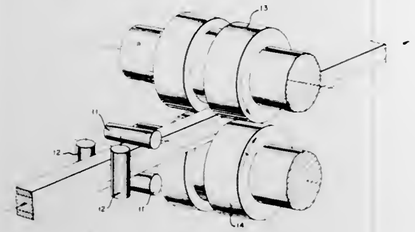
3,639,973
METHOD OF MAKING MULTIPLE TENDON, PRESTRESSED SEGMENTED CONCRETE BEAM
James M. Young, 3402 West Wells St., Milwaukee, Wis.
Original application Apr. 29, 1968, Ser. No. 724,980, now Patent No. 3,561,179, dated Feb. 9, 1971, which is a division of application Ser. No. 460,904, June 3, 1965, now Patent No. 3,407,554, dated Oct. 29, 1968. Divided and this application Mar. 6, 1970, Ser. No. 17,065
Int. Cl. B21d *39/00*
U.S. Cl. 29—452 5 Claims

A method of making a multiple tendon, prestressed segmented concrete beam includes the steps of locating and

stressing the tendons so as to produce equal compressive prestress laterally across the beam. The method eliminates the vertical end splitting which has occurred during the manufacture of multiple tendon beams in the past.



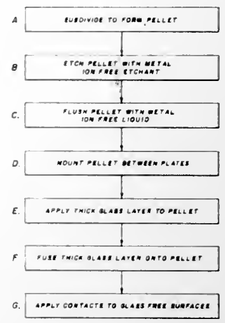
3,639,974
ROLL BONDING AN ALUMINUM-FERROUS COMPOSITE WITH GROOVED ROLLS
Walter D. Finnegan, Concord, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Feb. 2, 1970, Ser. No. 7,776
Int. Cl. B23k *5/22, 31/02*
U.S. Cl. 29—493 **5 Claims**



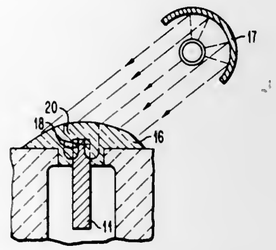
A method for forming long lengths of composite material suitable for the subsequent manufacture of transition inserts comprising assembling a ferrous element and an aluminum element, and, if necessary, an aluminous bonding element into a prebond sandwich, heating the sandwich to a temperature between 400° and 900° F. and subjecting the sandwich to a one-step thickness reduction by passing the sandwich through matching, rectangularly grooved rolls thereby forming a sound, solid phase metallurgical bond between the elements.

3,639,975
GLASS ENCAPSULATED SEMICONDUCTOR DEVICE FABRICATION PROCESS
Edward G. Tefft, Auburn, N.Y., assignor to General Electric Company
Filed July 30, 1969, Ser. No. 846,186
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—580 **13 Claims**

A silicon semiconductor device is manufactured by sandblasting a pellet from a wafer and etching the peripheral surface of the pellet formed by sandblasting with an essentially metal-ion-free acid in an environment also free of metal ions. The pellet is flushed after etching with deionized water and mounted between plates which expose only the peripheral surface. A thick glass layer is deposited on the peripheral surface of the pellet by electrophoresis and thereafter fired to form an impervious passivating and encapsulating layer tenaciously adhered to the pellet surface. Contacts are applied to form a completed device.



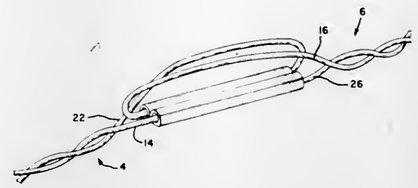
3,639,976
METHOD OF MOUNTING A FERRITE HEAD
Helen M. Hoogendoorn, Schenectady; Herbert E. Liberman; Bernt Narken, and Brian Sunners, all of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Original application Feb. 29, 1968, Ser. No. 709,457, now Patent No. 3,562,444. Divided and this application Aug. 3, 1970, Ser. No. 60,235
Int. Cl. G11b *5/42;* **H01f** *7/06*
U.S. Cl. 29—603 **8 Claims**



A method of mounting a ferrite head within a slider wherein the head is positioned within a slot on the slider, a mass of glass composition is heated to thereby fill the gap between the head and slider, machining the head while being held between solidified glass and subsequently heating a second mass of glass by infrared radiation to fill in the depression created by the machine operation.

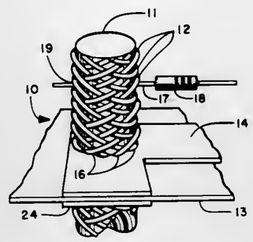
3,639,977
METHOD OF CONNECTING PAIRS OF WIRES
William Roderick Over, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Original application Feb. 1, 1967, Ser. No. 613,162, now Patent No. 3,444,312. Divided and this application Apr. 24, 1969, Ser. No. 820,700
Int. Cl. H01r *43/00;* **H02g** *15/08*
U.S. Cl. 29—628 **1 Claim**

Corresponding wires of two pairs of wires are connected to each other by single connectors having two electrically separate crimpable ferrules. A wire of each pair is positioned in a tool in a manner such that it extends axially into one ferrule. The remaining wire of each pair is positioned in the tool in a manner such that it extends externally past the connector, is reversely bent, and extends into the other ferrule.



Upon actuation of the crimping tool, the end portions of the four wires are trimmed and the crimpable ferrules are crimped onto the wire ends.

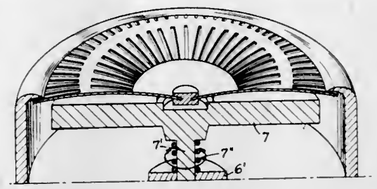
3,639,978
METHOD FOR MAKING FLEXIBLE ELECTRICAL CONNECTIONS
Walter R. Schurman, Centerville, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 3, 1969, Ser. No. 873,222
Int. Cl. H01r *43/00;* **H05k** *43/00*
U.S. Cl. 29—628 **4 Claims**



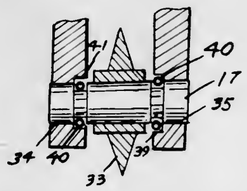
An apparatus and method for making electrical connection to an electrically conductive lead of a printed circuit board including a connector assembly of an elastomeric cylinder having a plurality of conductors woven thereabout with about 72 picks per inch and with each conductor oriented at an angle of at least about 30° from the axis of the cylinder, connection to the printed circuit board lead being effected by first stretching the elastomeric cylinder and associated mesh, inserting the stretched cylinder into a hole in the printed circuit board and lead, and releasing the cylinder to allow it to expand into and about the hole to press the plurality of conductors into electrical contact with the lead.

3,639,979
DRY-SHAVING APPARATUS
Frans Zuurveen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 670,506, Sept. 6, 1967, now abandoned. This application Sept. 17, 1969, Ser. No. 859,247
Int. Cl. B26b *19/16*
U.S. Cl. 30—43.6 **7 Claims**

This dry-shaving apparatus has a shear plate deflected into a partial toroidal shape, its surface being cooperatively engaged with a movable cutting member and having inner and outer opposing edges. A first restraining member engages and applies a torque to the inner edge while a second member slidingly engages the outer edge of the plate and resists the torque, thereby maintaining the toroidal shape.

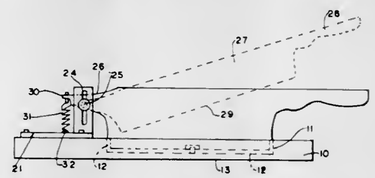


3,639,980
PIPE CUTTER
George H. Muse, and Peter J. Keane, both of Erie, Pa., assignors to Erie Tool Works, Erie, Pa.
Filed Feb. 3, 1969, Ser. No. 795,878
Int. Cl. B23d *21/08*
U.S. Cl. 30—102 **1 Claim**



The pipe cutter disclosed herein is made up of a frame having a slide. The frame has a cutting wheel rotatably supported on it and two spaced noncutting wheels supported on the slide. Instead of the two noncutting wheels and one cutting wheel, three cutting wheels may be used or two noncutting wheels and a cutting means of some other form, or any combination of cutting or noncutting wheels. Also, some known cutting means could be used in combination with the noncutting wheels within the scope of the invention. A threaded means is provided to move the slide toward the cutting wheels. The cutting wheels are supported on pins and the pins each have a peripheral groove which receives an O-ring or a C-washer. The O-ring or C-washer is received in a space on the inner face of the guide blocks which receive the pin. The pin is thus held in position in the support by the O-ring or C-washer.

3,639,981
CUTTER FOR PIZZA PIES AND THE LIKE
Cecil Nowensky, 87 Coralberry Ave., Winnipeg, 17 Manitoba, Canada
Filed Mar. 3, 1970, Ser. No. 16,032
Int. Cl. A47j *9/00*
U.S. Cl. 30—114 **1 Claim**



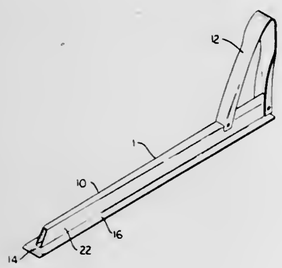
A turntable is mounted on a base to support the circular pizza pie or the like being cut. A knife is journaled by one

end thereof in a slotted support near the periphery of the turntable, the slots permitting the edge of the knife to engage the turntable throughout its length. A spring normally biases the inner end of the knife in the down position so that a complete cut is made through the pizza.

3,639,982
MORTISE GROOVE KNIFE

John E. O'Neal, Indianapolis, Ind., assignor to John J. Cotton, Indianapolis, Ind., a part interest

Filed Jan. 6, 1969, Ser. No. 789,315
Int. Cl. B26b *3/08*
U.S. Cl. 30—279 6 Claims

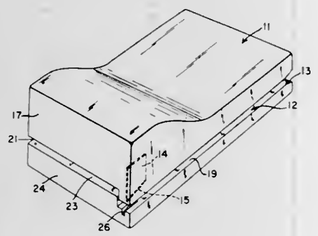


This invention is concerned with a mortise knife. More specifically, this invention is concerned with a mortise groove knife which is capable of cutting an elongated slot in porous materials which incorporate a skin. The knife of this invention generally comprises an elongated channel which is attached to a flat guide section wherein the width of said channel generally increases as the distance from the cutting edge increases.

3,639,983
ENVELOPE-OPENING DEVICES

Richard T. Knipfing, 8004 San Juan, N.E., Albuquerque, N. Mex.

Filed Jan. 13, 1970, Ser. No. 2,507
Int. Cl. B26b *29/00*
U.S. Cl. 30—294 5 Claims

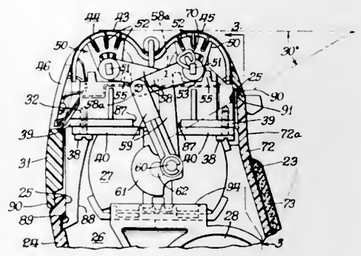


An envelope-opening device comprising an integral plastic body having coextensive portions flexibly connected at one end by an integral transverse portion and a longitudinal envelope receiving and guiding open side slot having opposite surfaces on the respective coextensive body portions, with a cutting blade projecting from one of the surfaces into the slot at the end of the slot opposite the hinge portion.

3,639,984
ELECTRIC DRY SHAVER WITH INCLINED SHAVING HEAD

Wilbur C. Jackson, Wheaton, and William P. Beck, Westchester, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed June 6, 1969, Ser. No. 831,179
Int. Cl. B26b *19/10*
U.S. Cl. 30—34.1 8 Claims

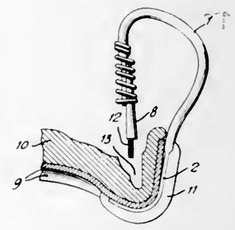


Electric dry shaver having a generally flat, rectangular housing with a shaving head extending the length of one of the edges of the housing and with the shaving head having a supporting frame which positions the shearing portion of the head in an inclined and displaced position with respect to the hand gripped portions of the housing. A long hair trimmer positioned at one end of the shear portion of the shaver extends perpendicular to the plane of the housing to facilitate the trimming of sideburns. The driving connection between the cutting assemblies in the shaving head and the shaver motor include elongated lever arms which overlap each other. The motor and battery power supply for the shaver are interconnected and supported between the shaving head and the housing by apertured yoke members.

3,639,985
DENTAL INSTRUMENT

Victor Pasko, 1053 North Winchester Ave, Chicago, Ill.

Filed Apr. 14, 1970, Ser. No. 3,835
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 2 Claims

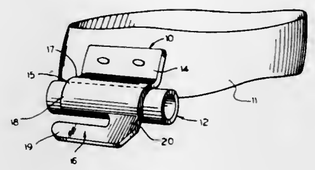


A dental instrument for use in a dental laboratory, particularly useful in making dental appliances. The dental instrument includes an elongated deformable rod which is manually deformed with facility. The elongated rod has a knurled flat mounting section on one end, particularly adapted for attachment to a mold tray, and a knurled flat holding portion on the other end. A coil spring is secured to the other end for holding releasably a dowel pin against the flat holding portion. The rod is manipulated to position the dowel pin in an appropriate location of a dental mold for making a dental appliance such as a wax model for a crown.

3,639,986
COMBINATION BUCCAL TUBE MOLAR PAD AND HOOK

Peter C. Kesling, Green Acres, La Porte, Ind.

Filed May 18, 1970, Ser. No. 38,045
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A 8 Claims

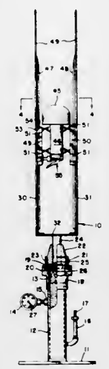


A combination buccal tube molar pad and hook integrally formed, and including an attaching flange for attaching to a tooth band, a buccal tube mounting plate, and a hook arranged at the gingival side of the plate.

3,639,987
PANTY HOSE MEASURING APPARATUS AND METHOD

Howard M. Page, Elon College, N.C., assignor to Leath McCarthy & Maynard, Inc., Burlington, N.C.

Filed Apr. 28, 1969, Ser. No. 819,613
Int. Cl. A41h *1/00*
U.S. Cl. 33—2 2 Claims



A panty hose measuring apparatus in which a pair of panty hose receiving forms are positioned parallel to each other for receiving the foot, leg, crotch and waist portions of a panty hose garment with the forms being displaceable in response to forces applied to the forms reflecting size and volume dimensions of the panty hose garment being tested. A method for testing volumes and sizes of panty hose garments having foot, leg, crotch and waist portions by placing the panty hose garment on a form to receive the panty hose garment portions, stretching the garment at least longitudinally and transversely, and applying a longitudinal force to stretch the garment to a prescribed extent and releasing the longitudinal force to a lower longitudinal force magnitude.

3,639,988
INSTRUMENT FOR ALTERING GARMENT PATTERNS

Leona Rocha Impastato, 315 East 86th St., New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,587
Int. Cl. A41h *3/00*
U.S. Cl. 33—11 7 Claims

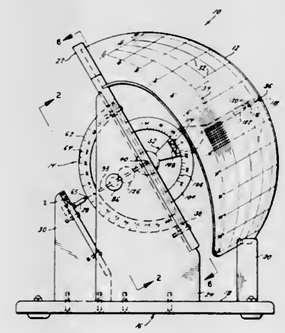


An instrument for altering patterns and making garment changes comprises a transparent ruler having on one side of straightedge and on the opposite side a curved edge one section of which constitutes a hip curve of long radius of curvature and a second section of which constitutes an armhole curve of shorter radius of curvature which curves over beyond a projection of the straightedge and then back to one extremity of the straightedge to provide a shape resembling the letter J. There are calibrated scales on both the straight and curved edges, a series of scaled lines parallel to the straightedge and also an elongate slot parallel to the straightedge.

3,639,989
COORDINATE CONVERSION CALCULATOR

William E. Rapsilber, 3621 McKibbon Road, St. John, Mo., and Richard G. Koenig, 5114 Hombert Road, Alton, Ill.

Filed Dec. 8, 1969, Ser. No. 883,186
Int. Cl. G01b *5/24*
U.S. Cl. 33—1 SA 15 Claims



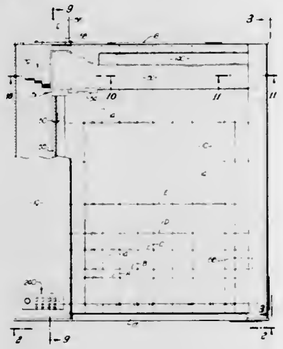
A calculator for converting between sets of azimuth and elevation angular coordinates which define the same direction but which are with respect to different planes, the planes being related to each other by pitch and roll angles therebetween. The calculator includes a gimbal assembly, an-

gular scales and cooperating pointers which form a mechanical analog of the direction, the planes, and the angles therebetween. When one set of angular coordinates and the pitch and roll angles between the planes are set into the calculator, the other set of angular coordinates is indicated thereby.

3,639,990
DRAFTING TABLE AND METHOD OF PRODUCING SAME

Andrew M. McInnis, Covina; Louis M. Ballard; Waldo I. Rogers, both of Arcadia; David C. Kramer, Redondo Beach, and Robert A. Nielsen, Pasadena, all of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Apr. 14, 1969, Ser. No. 815,697
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **26 Claims**

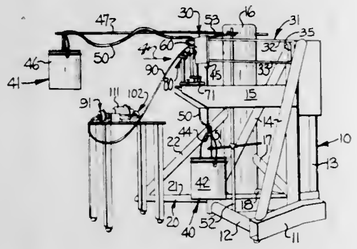


The disclosure concerns automatic drafting apparatus incorporating a drafting table in the form of a stone block with interior channels through which air is removable to apply suction to the underside of a worksheet placed on the table surface; the method of forming such channels in the block, with channel inserts; and provision for highly accurate driving and guiding over the table of a marking head supporting crossarm.

3,639,991
APPARATUS FOR AND METHOD OF MANUFACTURING DIFFRACTION GRATINGS

Robert A. Douglas, 1213 Chaney Road, Raleigh, N.C.

Filed Sept. 24, 1969, Ser. No. 860,551
Int. Cl. B43l *13/24*
U.S. Cl. 33—19 A **9 Claims**

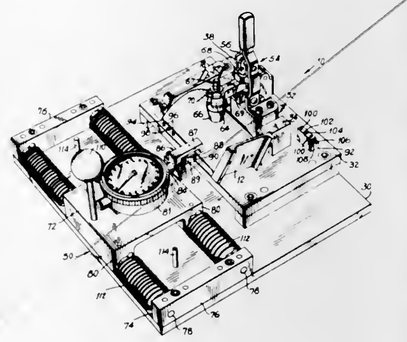


Apparatus for and method of manufacturing diffraction gratings wherein a series of parallel lines is impressed into a workpiece which is moved at a constant rate past a line-scribing means which is cyclically moved into contact with the workpiece in a predetermined time sequence correlated to the rate of movement of the workpiece and the desired number of lines per inch, and wherein both the workpiece and scribing means are mounted by flexible, resilient members for movement by flexure of the members.

3,639,992
CHORD LENGTH GAUGE

Charles Dabrush, and Irving Strauss, both of Monsey, N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,143
Int. Cl. G01b *3/20, 5/20, 5/28*
U.S. Cl. 33—174 PA **6 Claims**

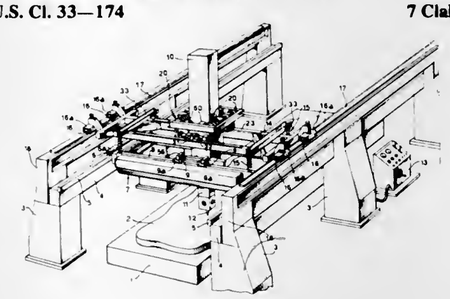


A measuring instrument to take a continuous reading of the variations in the chord lengths of airfoil vanes having an edge defined as a straight line. The instrument is adapted to determine whether the variations are within an acceptable range and readings are taken by a sliding dial gauge calibrated to indicate the acceptable range along an airfoil vane.

3,639,993
IMPROVEMENTS RELATING TO MACHINES AND APPARATUS HAVING A SUPPORT FOR GUIDING A MOVABLE MEMBER

Franco Sartorio, Turin, Italy, assignor to D.E.A. Digital Electronic Automation Societa per Azioni, Turin, Italy

Continuation-in-part of application Ser. No. 627,759, Apr. 3, 1967, now abandoned. This application Feb. 9, 1970, Ser. No. 9,778
Int. Cl. G01b *7/00, 7/04*
U.S. Cl. 33—174 **7 Claims**



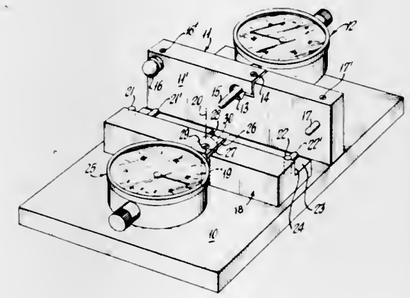
A machine with a working head for operating on a large stationary workpiece, e.g., to measure it, has a longitudinal

guide track along which a first bridge is slidable. A second bridge is slidable along a longitudinal load-bearing track parallel to the longitudinal guide track. A headstock carrying the working head is guided along a transverse guide track on the first bridge. A carriage is movable along a transverse load-bearing track on the second bridge, parallel to the transverse guide track. At least the greater part of the weight of the headstock is carried by the carriage on the second bridge, an extensible elastic suspension being connected between the headstock and carriage. The weight of the first bridge is carried at least predominantly by the second bridge through extensible elastic suspension units. This system allows high accuracy of the working head while avoiding the need for heavy precision load-bearing guides.

3,639,994
MEANS FOR MEASURING BOW IN A TURBINE BLADE

Edward C. Palmenberg, Nanuet, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,286
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 PA **27 Claims**



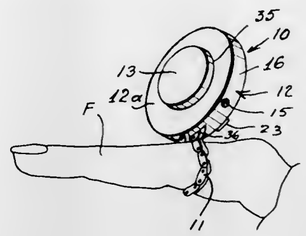
The invention contemplates a bow-measuring instrument in which simultaneous evaluation of the bow in a turbine vane is made at offset alignments, on both the convex and the concave surfaces of the airfoil section of the vane. The offsets are selected, for each type vane, so as to critically observe the extent of bow at or near the local regions at which these surfaces cooperate to define a nozzle throat, when vanes are assembled in side-by-side circumferential adjacency in a given gas-turbine stage; specifically, the "high point" in the center of the airfoil is observed for bow, at the center and along the alignment of the die-loading, in the hot-forming correction of vane shape. In this manner, a simple gaging operation helps to achieve greatly enhanced control of the uniformity and correct sizing of all nozzle-throat areas in a given stage of the turbine; and much better referencing is obtained for further gaging techniques.

3,639,995
DEVICE FOR MEASURING THE RING SIZE OF A FINGER

Irving Gardner, Hunter, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,885
Int. Cl. G01b *3/10*
U.S. Cl. 33—179 **7 Claims**

A device for measuring the size of a finger to determine the size of the ring that will fit the same. A disc is journaled in a casing formed of two parts. The disc carries a chain that is anchored on the exterior of the casing and on the disc within the casing so that the chain when pulled out of the casing is in the form of a loop through which a finger to be measured can be inserted. An arm carried on the disc has a pointed end exteriorly of the casing so that the size ring that will fit the finger is readily determined. When the chain links

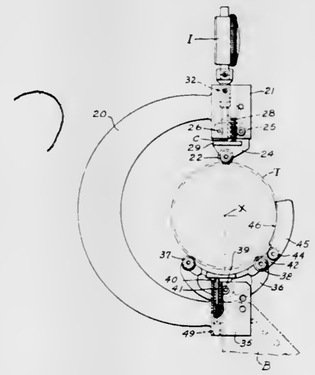


are not used for measuring they will readily retract into the casing by turning the disc.

3,639,996
SCREW THREAD GAGE WITH ALIGNER

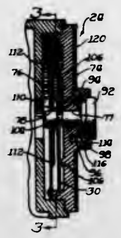
Lowell C. Johnson, West Granby, Conn., assignor to The Johnson Gage Company, Bloomfield, Conn.

Filed Mar. 26, 1969, Ser. No. 810,562
Int. Cl. G01b *3/00*
U.S. Cl. 33—199 **16 Claims**



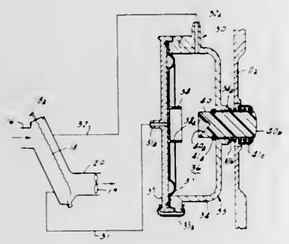
The invention relates to a screw thread gage having two or three thread-gaging elements, preferably rolls, and includes an aligner having an arcuate surface bearing screw thread means. The aligner is pivotally mounted at one end thereof adjacent to one of the gaging elements. The aligner assures that there will be no cross threading. For a test part having an external thread, the test part is laid in the threaded arcuate surface whereupon the aligner and test part are pivoted into gaging position between the gaging elements. For a test part having an internal thread the gaging elements are contracted and inserted in the test thread and the aligner is pivoted into engagement with the test thread whereupon the gaging elements are expanded into contact with the test thread with the aligner engaging the thread. The aligner may also serve as a part of a back stop in a two-element gage for retaining the test part in gaging position.

3,639,997
PENDULOUS RANGE FINDING DEVICE
Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Continuation of application Ser. No. 735,293, June 7, 1968. This application Nov. 16, 1970, Ser. No. 90,142
Int. Cl. G01c *1/00, 3/00, 9/12*
U.S. Cl. 33—221 **10 Claims**



A range finding device using the principle of triangulation and having a pendulous member selectively adjustable in low-frictional engagement about a support axle and lockable in an adjusted position with an indicator relative an expanded scale.

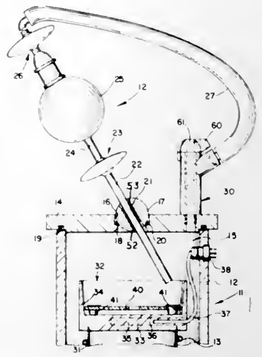
3,639,998
FILTER CONDITION INDICATOR
Anthony Mason, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed May 21, 1970, Ser. No. 39,455
Int. Cl. F26b *19/00*
U.S. Cl. 34—82 **10 Claims**



A pressure-responsive filter indicator assembly in a domestic clothes drier responsive to changes in a pressure drop across the filter positioned in an air exhaust passage to provide a continuously visible signal that is terminated only by manual reset operation. The indicator assembly includes a light-transmitting member and a diaphragm movable between two positions, with the light-transmitting member providing a visible signal on the control console of the drier when the diaphragm is in one position. The diaphragm is responsive to changes in the pressure drop across the filter to move to the position in which the light-transmitting rod provides a visible signal on the console.

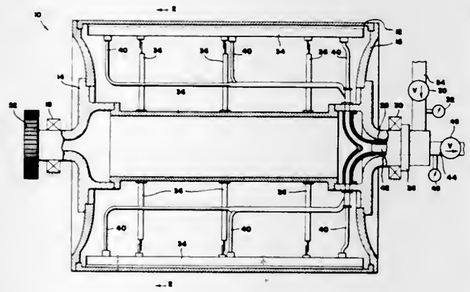
3,639,999
APPARATUS FOR TISSUE PREPARATION
Robert P. Adams, Walden, N.Y., assignor to Cenco Medical/Health Supply Corporation, Chicago, Ill.
Filed Apr. 16, 1970, Ser. No. 29,128
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **5 Claims**

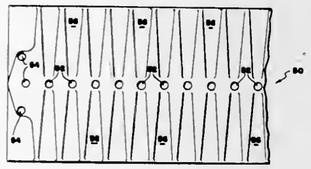
A tissue-embedding assembly is shown which is convertible to a resin option from a paraffin option. The tissue-embedding assembly permits the simultaneous embedding of multiple-tissue specimens with degassed embedding material. Full observation of the process as well as manipulation of the specimens is available during and up to solidification of the



degassed embedding material. A novel heat transfer arrangement is available which permits the heating of paraffin to cause melting and embedding without disconnection of the refrigeration.

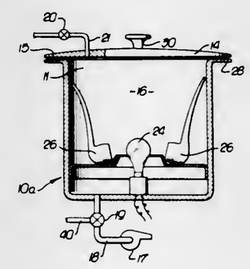
3,640,000
SYSTEM FOR REMOVING CONDENSATE FROM A ROTARY DRYER
Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.
Filed Aug. 4, 1969, Ser. No. 847,111
Int. Cl. F26g *11/02*
U.S. Cl. 34—125 **8 Claims**





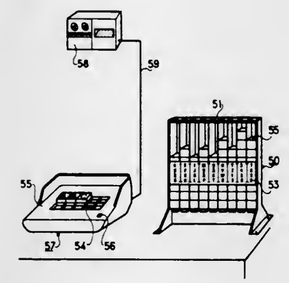
Condensate rimming the inner surface of the shell of a rotary dryer is removed with steam exiting from the interior of the shell through a plurality of orifices into an exhaust manifold within the shell, whence it is exhausted to the exterior of the shell. To assist in removal of the condensate, a plate attached to the manifold forms a plurality of flow channels substantially parallel to the surface of the condensate. The cross-sectional area of the flow channels decreases in the direction of flow of the steam so that steam driven from the interior of the shell is accelerated along the surface of the condensate over a substantial distance to shear water from the inner surface of the shell and entrain the water in the steam as the steam passes through the orifices into the manifold.

3,640,001
TOBACCO SMOKING PIPE CONDITIONING APPARATUS
John M. Ellison, 4907 Ethyl Ave., Sherman Oaks, Calif.
Filed Aug. 17, 1970, Ser. No. 64,335
Int. Cl. F26b *25/16*
U.S. Cl. 34—218 **1 Claim**



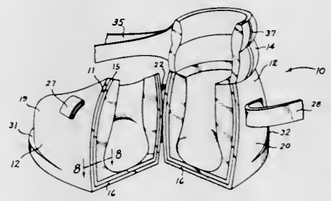
Tobacco smoking pipe conditioning apparatus comprises a pipe-receiving container, and means including an air evacuation pump in communication with the container interior for reducing air pressure in the container to a level at which smoking deposits on the pipe are vaporized and withdrawn from the container interior.

3,640,002
MAN-TO-MACHINE PERIPHERAL COMMUNICATION DEVICE
Pierre L. Braillard, Saint-Cloud; Jean-Louis Moreuil, and Marius Steru, both of Paris, all of France, assignors to Compagnie Generale D'Electronique Industrielle Lepaute CGEI-Lepaute, Paris, France
Filed June 22, 1970, Ser. No. 48,346
Claims priority, application France, June 23, 1969, 6921005
Int. Cl. G09b *1/06*
U.S. Cl. 35—8 R **10 Claims**



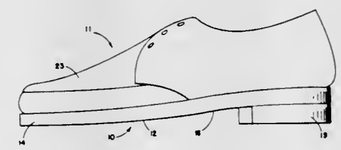
A man-to-machine peripheral communication device comprising a matrix having a number of matrix positions, a plurality of character supports each of which may be inserted in one of said positions, and interconnection means between said support and matrix for translating the character or characters borne by said supports into coded electrical signals. The said translating means may be electromechanical, electromagnetic, electrostatic or optical. The coded signal may be visually displayed or transmitted to data processing or storing equipment.

3,640,003
METHOD AND CONSTRUCTION OF A SKI BOOT
Roland M. Anderson, 1616 S.W. Sunset Blvd., Portland, Oreg.
Filed Mar. 2, 1970, Ser. No. 15,375
Int. Cl. A43b ; A43d *9/00*
U.S. Cl. 36—2.5 AL **14 Claims**



Footwear, such as a ski boot, include interfitting inner and outer shells. The shells are divided into corresponding toe and heel sections, hinged together for coordinate opening to permit foot entry from the rear of the boot. The inner shells are fabricated with a resilient, custom-fit lining formed to conform precisely to the contours of the wearer's foot. Removable inner soles and inner heels of adjustable height are provided with one embodiment of the inner shell. In fabricating the custom-fit shells, a liquid lining composition of uncured elastomer is injected into the shells, filling voids around the wearer's feet; and permitted to cure before the feet are removed. Stockings of polyethylene film can be placed over the feet before the custom-fitting operation to prevent the lining composition from adhering to the feet and to permit easy separation of the shells, when finished.

3,640,004
SHOE CONSTRUCTION
William E. Haselrig, 1802 East Granada Ct., Ontario, Calif.
Continuation-in-part of application Ser. No. 752,000, Aug. 12, 1968, now abandoned. This application Oct. 7, 1969, Ser. No. 871,471
Int. Cl. A43b *13/36*
U.S. Cl. 36—15 **14 Claims**



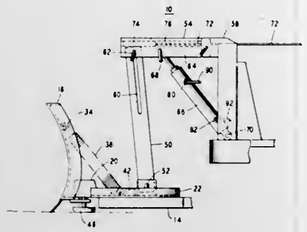
A shoe that includes an upper section and a lower section, the lower section having a forward peripheral recess that receives a projecting flange at the bottom edge of the upper section securing the parts together at that location while prongs projecting forwardly from the lower portion of the upper section are received in recesses in the lower section and provide stability against lateral shifting of the two sec-

tions. Sealed fasteners at the rearward portion of the shoe extend between the upper and lower sections, securing them together.

3,640,005
SELECTIVELY LOCKABLE FLOATING SNOWPLOW MOUNT

Generoso Chiarolanza, 127 Park Ave., and Joseph Chiarolanza, 149 Park Ave., both of Madison, N.J.

Filed Mar. 25, 1970, Ser. No. 22,584
Int. Cl. E01h *5/06*
U.S. Cl. 37—42 R **13 Claims**

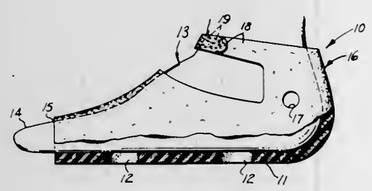


A plow adapter for use in conjunction with a vehicle allows the plow to be alternately used in two modes of operation: floating or rigid. The adapter comprises illustratively first and second members each having one end pivotally connected, respectively, to the plow frame and the vehicle frame, the other ends of the members are slidably engaged to permit floating operation in which the plow follows the contours of the road surface. In addition, one of the members is provided with a releasable locking member which can be adapted to fix the relative positions of the first and second members with respect to one another, thereby permitting rigid operation in which downward pressure exerted through the adapter forces the plow against the road surface for such operations as scraping.

3,640,006
FOOT GUARD

Zola F. Kendrick, Box 93, Devine, Tex.

Filed Apr. 27, 1970, Ser. No. 32,010
Int. Cl. A43b *5/08*
U.S. Cl. 36—8.1 **4 Claims**



A foam rubber device to be worn on the feet. This device is constructed of a continuous piece of foam rubber and includes velcro fasteners on the straps which secure it to the foot of the wearer. The device also has a flat sole portion having openings for ventilation, the side portions of the main body also having an opening for ventilation around the ankle area and the forward end of the main body is open so that the toes of the wearer may extend outward.

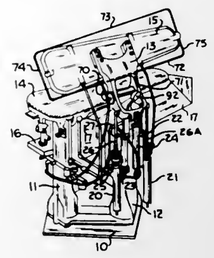
ERRATUM

For Class 37—42 see:
Patent No. 3,640,005

3,640,007
FLUID-OPERATED MACHINE AND SAFETY CONTROL SYSTEM THEREFOR

Frank H. Richterkessing, 1200 Park Hills Drive, Louisville, Ky.

Filed May 12, 1969, Ser. No. 823,722
Int. Cl. D06f *71/00*
U.S. Cl. 38—41 **7 Claims**



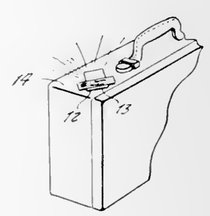
A fluid-operated machine having members for applying pressure to a workpiece placed therebetween by an operator, which machine is equipped with safety controls to prevent trapping of the hands of the machine operator, or of another person, between the members during closing of the same upon the workpiece.

A garment-pressing machine employing a valve-controlled conduit system with the safety controls included, and without detracting from the numerous operating capabilities required of a garment pressing machine, is employed to illustrate the invention.

3,640,008
LUGGAGE SPOTTER

Gordon C. Crail, 91-1311 Imelda St., Ewa Oahu, Hawaii

Filed Feb. 25, 1970, Ser. No. 14,121
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 R **2 Claims**

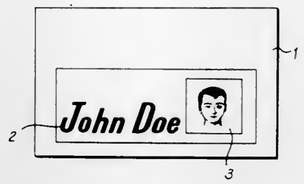


A label for luggage, the device comprising a flat card having adhesive on a rear side and the front side being provided with space for a luggage owner's name and address, a portion of the front side being colored with iridescent paint so that the luggage can be easily spotted.

3,640,009
IDENTIFICATION CARDS

Eizo Komiyama, 510, 1-chome Nakayama-cho, Ichikawa-shi, Chiba-ken, Japan

Filed Sept. 9, 1969, Ser. No. 856,286
Claims priority, application Japan, June 7, 1969, 44/53401
Int. Cl. G09f *3/20*
U.S. Cl. 40—2.2 **1 Claim**

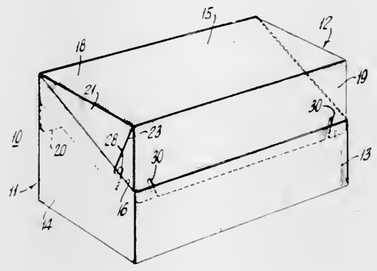


An identification system utilizing an identification card which has thereon identifying indicia which is invisible under normal, visible light. The card or other article of identification includes a portion formed with an opening receiving a sheet on which identifying indicia is located, and this identifying indicia includes at least a portrait of the individual who is authorized to use the identification article. The sheet can also carry a signature of this individual, and the nature of the indicia is such that it can be rendered visible by making use of light beyond the visible spectrum, such as ultraviolet light or infrared light, with a suitable filter being located over the sheet with the indicia thereon so as to permit only the desired light to reach the indicia.

3,640,010
DISPLAY DEVICE

Murray Altman, Valley Stream; Mordecai R. Craig, Demarest, and Irwin H. Block, New York, all of N.Y., assignors to The Purdue Frederick Company

Filed Feb. 16, 1970, Ser. No. 11,627
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **7 Claims**

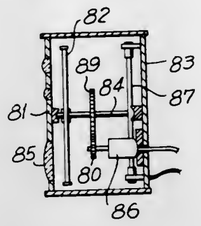


A carton cover which may be converted to an upright display panel comprises an information bearing rectangular top panel, and depending sideflaps having rearwardly downwardly inclined front edges, a relatively deep rectangular front flap and a relatively shallow rectangular rear flap, the flaps being delineated from the panel by fold lines. Upwardly outwardly inclined slots are formed in the front panel bottom edge proximate the corners thereof. Coupling tabs include upwardly projecting tongues along the lower front edges of the sideflaps and are spaced therefrom and connected thereto by integrally formed bridge sections. As an erected display the coupling tabs engage the slot, the tongues functioning as rear feet, and the panel is supported along its front edge in an upwardly rearwardly inclined position.

3,640,011
FLOWING-LIGHT DEVICES

Minoru Fukumitsu, Central P.O. Box 327, Tokyo, Japan

Continuation of application Ser. No. 681,434, Nov. 8, 1967, now abandoned. This application Sept. 14, 1970, Ser. No. 72,144
Int. Cl. G09f *13/06*
U.S. Cl. 40—133 A **5 Claims**

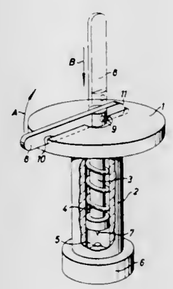


A cylindrical lenslike element is used with a multiple color light source to provide a flowing color effect. The source may be a lamp or reflected light. Mobile colored film may be used with the light source. The invention can be embodied in an advertising device, a lamp, etc. A day-night switching arrangement is also provided.

3,640,012
FIRING MECHANISM FOR A PYROTECHNIC DEVICE

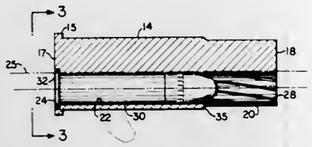
Alfred James Schermuly, Windswept Kingsdown, near Deal, Kent, England

Filed Mar. 27, 1970, Ser. No. 23,338
Claims priority, application Great Britain, Mar. 31, 1969, 16,683/69
Int. Cl. F41c *19/00*
U.S. Cl. 42—1 R **5 Claims**



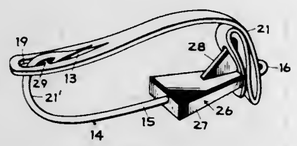
An improved mechanical firing mechanism of the kind in which a spring-urged striker pin is employed for detonating a percussion igniter in a pyrotechnic device. The mechanism comprises a manually actuated lever pivotally attached to the striker pin and employed to prime a striker spring in a first part of its movement and to release the primed striker pin when the lever is aligned with the striker pin.

3,640,013
SUBCALIBER ADAPTER FOR FIREARM
Clarence W. Franklin, Cedar Tree Farm, Milford, Calif.
Filed May 5, 1969, Ser. No. 821,616
Int. Cl. F41c *21/10, 21/12*
U.S. Cl. 42—77 **12 Claims**



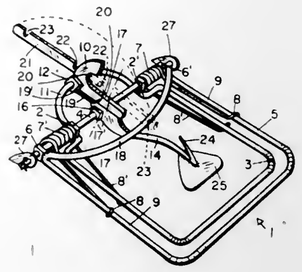
A chamber insert which defines a small caliber chamber through which an undersized or subcaliber projectile can be fired. The defined chamber is eccentric with respect to the larger chamber and barrel of the large caliber firearm so as to enable a center fire large caliber firearm to fire a smaller rim fire subcaliber projectile. The eccentricity of the defined chamber also imparts to the subcaliber projectile an initial trajectory passing adjacent one portion of the oversized barrel wall for guiding the projectile along its intended path. Provision is made for the simultaneous firing of a plurality of subcaliber projectile from a single insert within the oversized chamber and barrel.

3,640,014
FISHHOOK WITH WEED GUARD
Philip W. Gurka, 180 Bellevue Ave., Upper Montclair, N.J.
Filed Apr. 30, 1970, Ser. No. 33,406
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.43 **8 Claims**



A fish lure and/or hook with a self-locking detachable weed guard comprising a hooked portion terminating in a barbed point and with a relatively straight shank, an enlarged portion mounted on said shank and providing a transverse abutment formed on a prong outstanding from the shank in the plane of said hooked portion, an eye carried by one of said associated members and lying so as to provide a transverse abutment spaced from the prong, a weed guard comprising a one-piece elongated flexible normally flat strip attached to the shank and with a slot near one end for receiving said point and the adjacent portion of the bend of the hook as they curve toward the strip, said strip being bent over on itself, with the bend of said hook adjacent said point passing through said slot, the strip normally engaging and exerting shielding force on the inner side of the barbed point from the shank, said strip being stabilized with respect to the hook by having a series of elongated slots to receive the eye while folded to aperture-registry and pushed on, the folded portion being then given a quarter turn to resiliently lock between the eye and the adjacent surface of the abutment with said prong fitting a slot in the folded portion of said guard to prevent unintentional removal thereof.

3,640,015
HUMANE ANIMAL TRAPS
Arthur Miller Fisher, Box 253, Slave Lake, Alberta, Canada
Filed Sept. 23, 1969, Ser. No. 869,993
Int. Cl. A01m *23/26*
U.S. Cl. 43—83.5 **1 Claim**

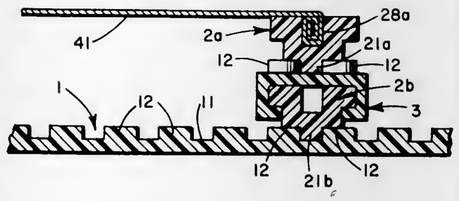


A pair of jaws are pivotally mounted on a common shaft and have springs for biasing the jaws from an open to a closed position. A trigger is pivotally connected to an offset portion of one jaw and has a latch portion adapted to engage an offset portion of the other jaw for holding the jaws in open position. A bait holder is pivotally connected to the jaw shaft and has a portion disposed on each side of the shaft for contact with an extended arm of the trigger.

3,640,016
DESULFURIZATION OF COAL
Bernard Shing-shu Lee, Lincolnwood, and Frank C. Schora, Jr., Palatine, both of Ill., assignors to Institute of Gas Technology
Continuation-in-part of application Ser. No. 579,923, Sept. 16, 1966, now abandoned. This application Mar. 28, 1969, Ser. No. 811,654
Int. Cl. C10l *5/00*
U.S. Cl. 44—1 **7 Claims**

A method for desulfurizing coal by reacting sulfur-containing bituminous coal with hydrogen in the presence of a hydrogen sulfide "getter" at a temperature about 600–800° F.

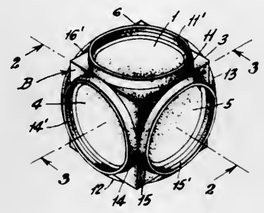
3,640,017
SLIDE-BAR ASSEMBLY HAVING COMPLEMENTARY SLIDABLE MEMBERS
Godtfred K. Christiansen, Billund, Denmark, assignor to A/S Modulex, Billund, Denmark
Filed Feb. 3, 1969, Ser. No. 796,065
Claims priority, application Denmark, Feb. 1, 1968, NR 42822
Int. Cl. A63h *33/06*
U.S. Cl. 46—23 **2 Claims**



A slide-bar assembly including an elongated hollow female member of substantially rectangular cross section and a slot

extending longitudinally along one face and two rows of coupling studs extending outwardly of the opposite face, and an elongated male member adapted for slideable mounting within the female member and provided on one face thereof with a longitudinal rib adapted to protrude outwardly of the slot in the female member when so mounted.

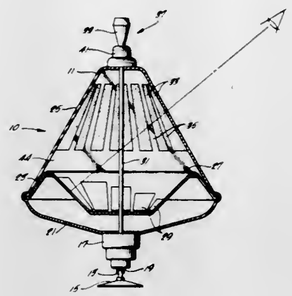
3,640,018
KNOCKDOWN STRUCTURAL TOYS
Stanley Light, 21 Beverly Road, Douglaston, N.Y.
Filed May 18, 1970, Ser. No. 38,112
Int. Cl. A66h *33/10*
U.S. Cl. 46—29 **17 Claims**



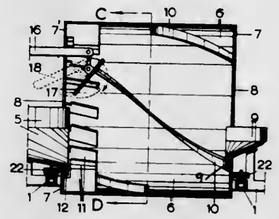
A modular structural toy constituted by comparatively few basic elements with which may be combined a virtually limitless number of cylindrical members, such as waste beverage cans, for the assembly of all types of structures striking the imagination of a child or an adult. A cubical block is fitted with annular resilient retainers, preferably of flexible plastic material, on five faces thereof, wherefrom may be branched selectively in one or more desired directions, a plurality of the cylindrical members which are integrated at the juxtaposed ends by annular connectors having resilient lips which encompass the annular beads at the ends of the cylindrical members. A cylindrical projection extends from at least one face of the central block which is shaped with an annular bead resembling that on a can so that the block may be coupled closely adjacent to another block by one of the annular resilient retainers on the latter, or by one end of an annular connector. In order to compensate for differences in length of the cylindrical members or cans which may be used in the setting up of a structural assembly, annular adapters may be interspersed in the assembly, each of which may be fitted on one end thereof with a resilient annular lip for encompassing the circular bead at the end of a can while the opposite end thereof is formed with an outwardly extending rib conforming to the outline and dimension of a bead, whereby it may receive the annular lip of another adapter or an annular connector. The lengths of the adapters and/or connectors may be varied to provide an additional capability of controlling the composite length of the cylindrical structural members integrated by said adapters or connectors.

3,640,019
TOY TOP UTILIZING A MOVING PICUTRE APPARATUS
Lawrence Temple Jones, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Jay Smith, III, Pacific Palisades, all of Calif., assignors to California R & D Center, Pacific Palisades, Los Angeles, Calif.
Filed Feb. 9, 1970, Ser. No. 9,891
Int. Cl. A63h *1/22*
U.S. Cl. 46—49 **8 Claims**

A toy top is disclosed having a main body member rotatable about its base. Conventional screw drive means are threadedly engageable with the main body member to impart a rotary motion to the top upon reciprocation of the screw. The main body member includes a plate mounted for rotation about the base having a graphic surface of sequential pictures peripherally mounted thereon. The body member further includes a transparent dome located over the graphic surface and rotatable therewith having a plurality of dark surfaces intermittently spaced about the periphery thereof. The intermittent spaces form viewing slots and are oriented in such a manner that the line of sight of the operator to the graphic surface extends through the viewing slots. Upon revolving the top, the sequential pictures thereon when viewed through the slots, give the illusion of natural and continuous movement.



3,640,020
PLANT POTTING MACHINE
Franz Laible, 7761 Guettingen Kr., Konstanz/Bodensee, Germany
Filed July 30, 1970, Ser. No.
Claims priority, application Germany, Feb. 12, 1970, P 20 06 242.4
Int. Cl. A01g *9/08*
U.S. Cl. 47—1 **18 Claims**

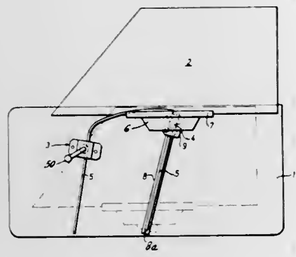


This invention relates to a machine for the potting of plants, for example, for the potting of flower seedlings and the like, the plants being inserted into a cavity which can be formed by means of a conically shaped planting ram, a rotatable carrier being positioned to carry a plurality of plant pots and intermittently move the pots into a container charged with earth and which is rotated to move the earth over the pots, to be dropped therein for filling thereof.

3,640,021
METHOD FOR THE CONSOLIDATION OF SOIL
Fritz Grafmuller, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Aug. 15, 1969, Ser. No. 850,635
Claims priority, application Germany, Aug. 31, 1968, P 17 92 422.0
Int. Cl. A01g *7/00*
U.S. Cl. 47—9 **9 Claims**

For the protection against erosion the surface of soil is sprayed with an aqueous plastics dispersion containing water insoluble polymeric substances of natural or synthetic origin and water-soluble phosphates whereby a coherent crust is formed. The addition of phosphates enables dispersions having a content of polymeric substance of 20 to 70 percent to be used.

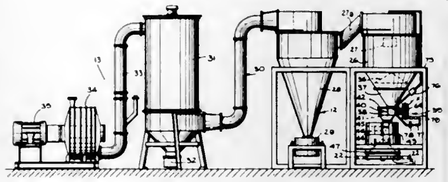
3,640,022
WINDOW-GUIDING DEVICE
Herbert Kouth, Kilianstadten, and Fritz Marr, Offenbach, both of Germany, assignors to H. T. Golde GmbH, Frankfurt (Main), Germany
Filed Oct. 29, 1969, Ser. No. 872,041
Int. Cl. E05f *11/38*
U.S. Cl. 49—420 **10 Claims**



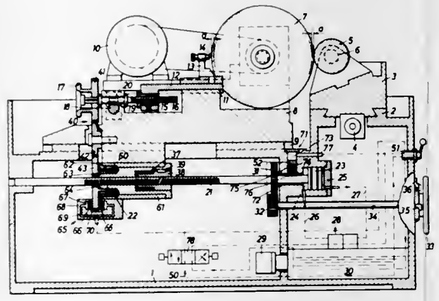
A window-guiding device particularly for an automobile window includes a guide tube which is adapted to be raised and lowered by a driving handle and which is secured to a carriage. The carriage carries a member which is engaged with the lower edge of the window and the carriage is provided with a plurality of guide rolls which are guided on respective opposite sides of an elongated guide rail or track member. The guide rail includes opposed track sides each with at least two track guide surfaces arranged at an angle to each other and which engage with respective rollers. The rollers engage the guide surfaces simultaneously with equal effective roll diameters.

3,640,023
ABRADING MACHINES
Anthony Gerard Field, deceased, late of Redditch, England; Denis Cyril Field, administrator, and Madeleine Helen Field, administrator, both of Malvern, England, assignors to Abrasive Development Limited, Henley in Arden, Solihull, Warwickshire, England
Filed Aug. 19, 1969, Ser. No. 852,155
Int. Cl. B24c *3/04*
U.S. Cl. 51—8 **7 Claims**

This application discloses a machine for abrading a workpiece with a blast of abrasive in which the reusable abrasive and detritus are removed by suction from the workpiece and the reusable abrasive is returned for redirection at the workpiece through the airlock arrangement of three hoppers, the middle one of which has its pressure changed periodically. The pressure changes in the middle hopper are effected automatically and cyclically by a diaphragm connected to a source of suction so that the suction forces gradually build up on one face of the diaphragm while the pressure in the middle hopper is at one value, then the diaphragm moves in response to said forces and thus changes the pressure in the hopper to another value and then the diaphragm returns to its initial position and the suction forces gradually build up again to commence another cycle.

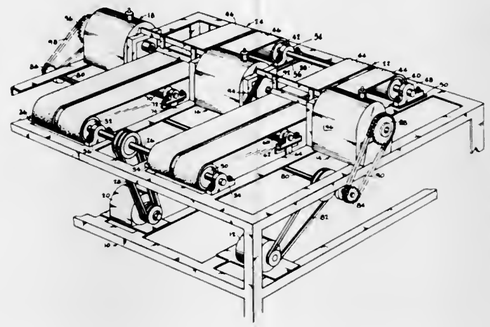


3,640,024
DEVICE FOR ADJUSTING THE POSITION OF A GRINDING WHEEL RELATIVE TO A WORKPIECE
Georg Stahn, Berlin, Germany, assignor to Firma Herbert Lindner GmbH, Berlin, Germany
Filed Jan. 20, 1970, Ser. No. 4,222
Claims priority, application Germany, Apr. 10, 1969, P 19 18 784.9
Int. Cl. B24b *49/18*
U.S. Cl. 51—165.87 **10 Claims**



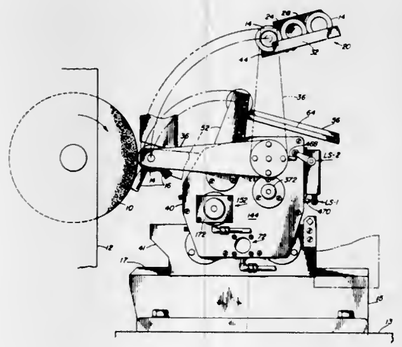
A device for adjusting the position of a grinding wheel relative to a workpiece in order to automatically compensate for the change in diameter in the grinding wheel during the trimming thereof by a trimming tool includes a gear connection between a trim spindle which is engageable with a nut on a trim carriage for shifting a trimming tool relative to the grinding wheel and to an adjusting spindle which is threaded into an adjusting nut carried on the grinding wheel carriage. The construction includes braking means for holding the gearing and the associated adjusting nut during the times at which the adjusting spindle is rotated for shifting the carriage, for example, by actuation of a hand wheel. The brake may be released during the time at which the trim spindle is rotated to shift the trim carriage in order to dress the surface of the grinding wheel and during this time the adjusting spindle will rotate relative to the adjusting nut so that the position of the adjusting nut with the carriage will be shifted in respect to the spindle by an amount corresponding to the movement of the dressing tool during the dressing operation.

3,640,025
WORKPIECE ADVANCING MEANS
Lucius P. Arnold, deceased, late of Hogansville, Ga.; L. P. Arnold, and Evelyn S. Arnold, heirs, assignors to J. E. (Johnnie) Williamson, Hogansville, Ga.
Filed June 15, 1970, Ser. No. 46,112
Int. Cl. B24b *21/02*
U.S. Cl. 51—215 AR **12 Claims**



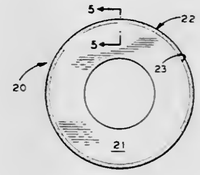
This invention relates to a cylindrical workpiece sanding machine which includes a plurality of workpiece driving heads for advancing a piece to be sanded through a sanding operation. Each of the workpiece driving heads includes a pair of shaped rollers biased into engagement with the workpiece, a drive train for rotating the rollers about a respective roller axis to advance the workpiece along its axis and for simultaneously rotating the rollers about the workpiece axis thereby spirally advancing the workpiece. A plurality of abrading belts are located on the sanding machine with means for driving an abrading surface on each of the belts adjacent the workpiece advancing axis.

3,640,026
WORKPIECE TRANSFER MECHANISM FOR CENTERLESS GRINDER OR THE LIKE
Richard J. Flanigan, Longmeadow, Mass., assignor to Gulf & Western Precision Engineering Company, Manchester, Conn.
Filed May 22, 1970, Ser. No. 39,802
Int. Cl. B24b *5/32*
U.S. Cl. 51—215 R **22 Claims**



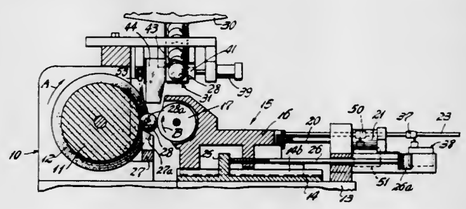
A mechanism for sequentially transferring annular workpieces to and from the work station of a centerless grinder and including a frame mounted for limited sliding movement parallel to the axis of rotation of a workpiece located at the work station, a workpiece loading arm pivotally mounted in the frame for rotational movement in a plane perpendicular to the direction of movement of the frame and between angular limits defined by the work station and a load station, and a workpiece unloading arm pivotally mounted in the frame for rotational movement in substantially the same plane between angular limits defined by the work station and an unload station. First and second crank arms have pin members thereon that engage and drive first and second geneva quadrants, which quadrants respectively drive the loading and unloading arms intermittently between their respective angular limits and with dwell intervals at each associated station. The oscillating motion of these arms is so timed that as the loading arm is moved from the load station to the work station it lags the unloading arm as the latter moves from the work station to the unload station. The sliding frame is moved forwardly during a dwell overlap interval when the loading arm is at the loading station and the unloading arm is at the work station and said frame moves rearwardly during the dwell overlap interval when the loading arm is at the work station and the unloading arm is at the unload station.

3,640,027
ANNULAR CUTTING BLADES
Shirley I. Weiss, deceased, late of Ramsey, N.J. (by Joel M. Albert, executor), assignor to Sel-Rex Corporation
Filed July 25, 1969, Ser. No. 844,904
Int. Cl. B24d *5/00, 7/00*
U.S. Cl. 51—206 **2 Claims**



Annular cutting blades having thin metal cores carrying annular cutting portions comprising abrasive particles such as diamond dust and a metallic matrix in which the particles are embedded; the matrix being of metal or metal alloys of selected hardness.

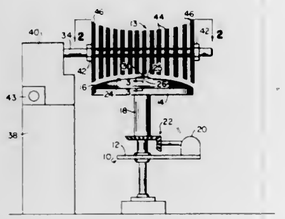
3,640,028
METHOD OF REMOVING MOLDING FLASH AND THE LIKE FROM THE SURFACE OF GOLF BALLS
Henry P. Richard, South Hadley Falls, Mass., assignor to A.G. Spalding & Bros. Inc., Chicopee, Mass.
Filed July 9, 1969, Ser. No. 840,438
Int. Cl. B24b *1/00*
U.S. Cl. 51—289 S **5 Claims**



The method of automatically removing molding flash and the like undesired material from golf balls having a molded

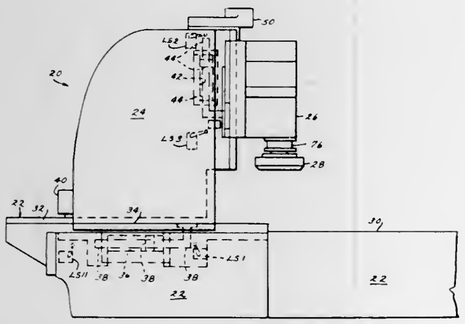
outer surface provided with the usual dimples or depressions by a circumferential grinding operation and without damaging or interfering with the dimples.

3,640,029
METHOD OF BUFFING A METAL PERCUSSION INSTRUMENT
Robert Zildjian, Norwell, Mass., assignor to Avedis Zildjian Avedis Company, North Quincy, Mass.
Filed Feb. 16, 1970, Ser. No. 11,673
Int. Cl. B24b *1/00*; **B24d** *13/08*
U.S. Cl. 51—322 **5 Claims**



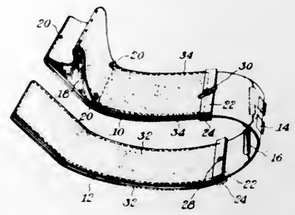
A buffed metal cymbal or the like percussion instrument is produced by a method in which a surface of the instrument is pressed against a deformable buffing surface moving at high speed at a pressure and for a time period sufficient to produce a shiny buffed finish but insufficient to raise the temperature of the metal enough or to remove sufficient metal to impair the prebuffed tonal quality or resistance to fracture of the instrument.

3,640,030
METHOD FOR GRINDING TOOTHED FACED MEMBERS
James F. Clarke, and Thomas A. Deprez, both of Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.
Filed Mar. 3, 1969, Ser. No. 803,683
Int. Cl. B24b *1/00*
U.S. Cl. 51—325 **22 Claims**



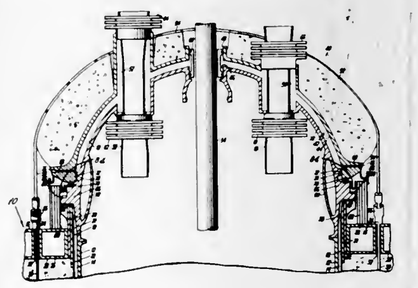
The present invention comprises provision for automatic, tape-controlled, precision operation of a machine for grinding toothed face members, such as couplings and clutches, and of large size, wherein there will be a succession of different machine functions, including periodic dressing of a grinding wheel and rough cutting of the work throughout several passes in the rough grinding stage, followed by another dressing function, and then a float grinding stage and subsequently a finish grinding stage utilizing, a corrective index system for precisely intermittently indexing the workpiece through equal, predetermined angular distances.

3,640,031
LOUVER DOOR SANDER
Mark Descant, 3617 1/2 Iberville St., New Orleans, La.
Filed Jan. 15, 1969, Ser. No. 791,451
Int. Cl. B24b *1/00*; **B24d** *11/00*
U.S. Cl. 51—391 **4 Claims**



A hand-operated sander which can be used to sand both sides of a louver (front and back) simultaneously. The louver can be part of a shutter, folding door, blind or any other louvered object. The sander consists of two elongated flexible members which are hingedly secured to each other at adjacent ends. Each member is adapted to detachably receive sandpaper. In use, one sandpaper carrying member is used in sanding one side of the louver while at the same time the other sandpaper carrying member is used in sanding the other side of the louver. A louver edge sander can be incorporated into the remainder of the structure described above whereby the edge as well as both sides of the louver can be sanded at the same time.

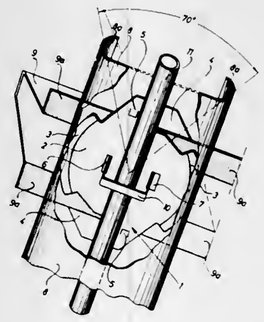
3,640,032
PRESSURE VESSELS
Albert Jubb, Kenilworth, England, assignor to Rolls Royce Limited, Derby, England
Filed July 17, 1969, Ser. No. 842,580
Claims priority, application Great Britain, July 17, 1968, 33,976/68
Int. Cl. E04h *7/20*; **G21c** *13/08*
U.S. Cl. 52—2 **10 Claims**



A prestressed pressure vessel having an opening in one of its external surfaces to the interior thereof, and a removable closure member for closing the opening. The removable closure member includes an inner lid for engaging the one surface and an outer lid spaced from the pressure vessel by the inner lid and forming with the inner lid a fluidtight enclosure therebetween in which fluid under pressure can be supplied so as to move the inner and outer lids relative one another. At least one securing cable extends over the outer lid and is connected to the vessel at at least two points, and when fluid

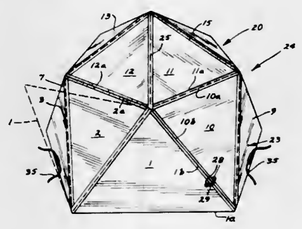
under pressure enters the fluidtight enclosure, tension on at least one cable is increased and is operatively transferred by the outer lid to the inner lid for urging the inner lid into tighter engagement with the portion of the pressure vessel surrounding the opening.

3,640,033
PANEL HOLDER FOR WALL OR CEILING FINISH WITH PANELS ARRANGED ON THE SUPPORTING MEMBERS
Willem Rijnders, Ridderkerk, Netherlands, assignor to Hunter Douglas International Ltd., Pointe Claire, Quebec, Canada
Filed June 16, 1969, Ser. No. 833,635
Claims priority, application Germany, June 14, 1968, P 17 59 845.7
Int. Cl. E04c *5/16*; **A44b** *21/00*
U.S. Cl. 52—36 **8 Claims**



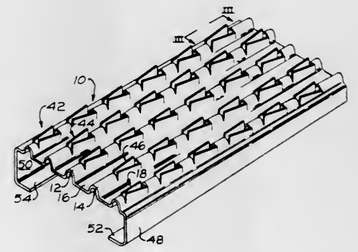
The panel holder disclosed is in the form of a flat plate generally in the shape of a pie plate including a flat central section provided with opposite panel-supporting segments projecting from one surface for respectively engaging the opposite margins of a panel, said segments being parallel to the plane of the wall or ceiling finish and having an arcuate peripheral shape in said plane. Opposed attachment tabs extend from the opposite face of the plate for securing the holder to a support, the segments and tabs alternating around the peripheral portion of the holder with the tabs arranged to engage a support when the holder is rotated relative thereto. The holder may be cut from sheet plate material and cut and formed to provide the panel-supporting segments and the attachment tabs.

3,640,034
COLLAPSIBLE SHELTER STRUCTURE
Robert H. Shotwell, Jr., 11400 Valley Ct., Burnsville, Minn.
Filed Mar. 2, 1970, Ser. No. 15,760
Int. Cl. E04b *1/344*, *7/10*
U.S. Cl. 52—70 **2 Claims**



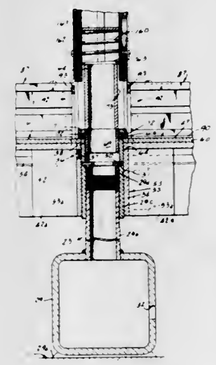
A collapsible shelter comprising a polyhedron in form and being formed of a unitary strip of substantially rigid sheet material, said strip comprising hinged triangular portions, said portions being so disposed as to have said strip arranged to form a sidewall and a top cover of said shelter and means releasably securing the abutting free edges of said portions.

3,640,035
ANTISLIP SAFETY SURFACE
Max E. Butterfield, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 27, 1970, Ser. No. 32,096
Int. Cl. E04f *11/16*
U.S. Cl. 52—177 **8 Claims**



An antislip safety surface consisting of a plate member having a plurality of parallel, spaced corrugations or ridges formed therein, and a plurality of overlapping, spaced rows of apertures formed in said ridges by bending upward the ridge material on either side of a diagonal center cut to produce vertical projections having oppositely sloping edges providing a maximum multidirectional holding effect. In an alternate embodiment, adjacent nonoverlapping rows of apertures have located therebetween a plurality of transverse drain apertures.

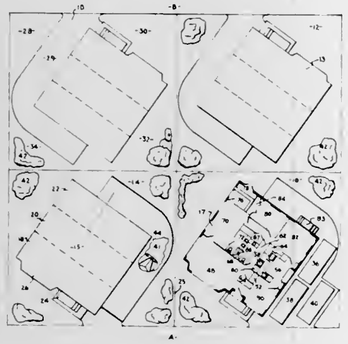
3,640,036
ARCHITECTURAL SYSTEM OF INTERIOR MODULAR CONSTRUCTION
Yoshio Nakazawa, Evanston, and Harold A. Lipper, Chicago, both of Ill., assignors to Yosh Nakazawa & Associates, Inc., Evanston, Ill.
Original application Mar. 22, 1968, Ser. No. 715,281, now Patent No. 3,503,166, dated Mar., 1970. Divided and this application July 15, 1969, Ser. No. 870,942
Int. Cl. E04b *5/10*, *5/43*, *5/58*
U.S. Cl. 52—126 **7 Claims**



An architectural system of modular construction for building structures including floor and ceiling rails or stringers

forming rectangular floor and ceiling sections in vertical alignment with one another, pedestals adapted to be supported on a structural concrete floor for supporting the floor rails, suspension rods adapted to be hung from a structural concrete ceiling for supporting the ceiling rails and vertical cornerposts which may be erected at the corners of any of the vertically aligned floor and ceiling sections to extend between the floor and ceiling rails. Panels for the floor and ceiling are supported in the same plane as the floor and ceiling rails. Thus the panels are disposed adjacent the rails, and do not overly the rails. Partition wall panels may be mounted between the erected corner posts in abutting relation with the floor and ceiling rails for selective partitioning of the floor and ceiling sections. The pedestals are adapted for vertical adjustment from above the floor line without removing the floor panels and the cornerposts and partition wall panels can be erected and removed without interference with the floor and ceiling rails and panels to provide for a highly flexible and easily altered modular construction.

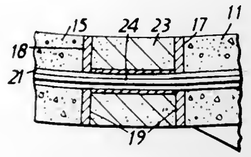
3,640,037
LOW-COST HOUSING
Fred S. Renauld, and Noemie A. Renauld, both of Route 3, Box 1224, Rosebury, Oreg.
Filed Feb. 4, 1970, Ser. No. 8,466
Int. Cl. E04b *1/348*
U.S. Cl. 52—169 **7 Claims**



Three-module, prefabricated or mobile homes are described in combination with a unique angular placement of the homes in a mobile home park which provides maximum privacy and enjoyment of the home site. The homes comprise a utility core module which is assembled to two additional modules on the lot. The substantially greater width of the assembled home permits use of shorter modules than the conventional two-module mobile homes without sacrifice of floor space. The shorter units permit faster and simpler positioning on the home site. Preferably, the units are placed at an angular orientation to the lot lines so that four triangular areas are thereby defined in the corners of the lot which provide increased off-street parking, greater privacy and more useful outdoor recreational areas than possible with conventional two-module homes which are positioned on their lots parallel to the lot lines.

3,640,038
CONCRETE STRUCTURES
James Heron, Samford, Queensland, Australia, assignor to The Pre-Load Company Inc., Garden City, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,318
Int. Cl. E04b *1/06, 7/20*
U.S. Cl. 52—224 **9 Claims**

In a structure comprising a precast concrete sections, the sections are arranged in generally edgewise relationship and the edge portions of adjacent sections are spaced apart and have relatively flexible or resilient material (such as bituminous or elastomeric material) applied thereto; a mass of setting composition is provided between the edge portions of



each two adjacent sections, to form joints between said sections, and the structure is stressed by means of stressing rods or cables so as to maintain said joints in permanent compression and to render them substantially fluidtight.

3,640,039
BUILDING STRUCTURE
James R. McKee, Muncie, and James K. Chastain, Gaston, both of Ind., assignors to Ball Corporation, Muncie, Ind.
Filed May 5, 1969, Ser. No. 821,761
Int. Cl. E04c *1/10*
U.S. Cl. 52—281 **10 Claims**

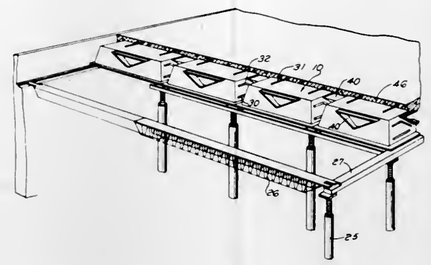


An assembly structure for building panels having undercut channels in the end portions thereof wherein a key is inserted into a plurality of such channels to loosely join the panels, and resilient inserts are thereafter driven into spaces between the panels to render the junction rigid, and a method of joining the assembly by progressively positioning the inserts.

3,640,040
CAST-IN-PLACE STRUCTURAL TRUSS SLAB AND MANUFACTURED PAN
Charles C. MacLean, III, and Alfonso Villa, both of San Juan, P.R., assignors to Hovey T. Freeman, Jr., Barrio Rio Guaynabo, P.R.
Filed Sept. 19, 1969, Ser. No. 859,289
Int. Cl. E04b *1/16, 5/16, 5/26*
U.S. Cl. 52—337 **5 Claims**

A structural two-way truss slab of egg-crate form is provided with manufactured pans that have openings in the sidewalls thereof with interconnecting members between the openings. The arrangement is such that the pan can remain in place and thus provide a finished ceiling effect. The system

further provides an ability to run air-conditioning, electrical, plumbing and other conduits through the slab itself after the



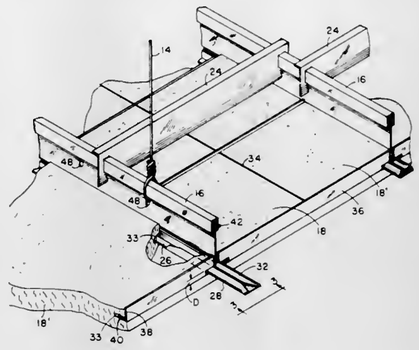
slab has been poured. The slab is structurally equivalent to conventional two-way slabs but is of less gross weight.

3,640,041
TRIANGULARLY SHAPED CONCRETE SEAT WITH TILE COVERING
Roy E. Michieli, 545 Begier Ave., San Leandro, Calif.
Filed Dec. 4, 1969, Ser. No. 882,007
Int. Cl. E04f *13/18*; **A47k** *3/12*
U.S. Cl. 52—390 **2 Claims**

A triangularly shaped seat covered with tile along its top, hypotenuse side, and bottom margins which border a triangular recess in the bottom.

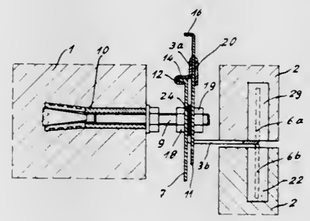
3,640,042
ACCESS-PROVIDING DIRECT SUSPENDED CEILING STRUCTURE WITH REMOVABLE LOCKED-IN TILE SECTIONS
Bruce W. Kidney, 57 Montague St., Brooklyn, N.Y.
Filed July 11, 1969, Ser. No. 840,910
Int. Cl. E04b *5/54*
U.S. Cl. 52—475 **21 Claims**

An access-providing, rigid, properly aligned, suspended ceiling structure for acoustic tiles and the like is described, having removable locked-in tile sections and hidden support structure. The structure employs selectively shaped horizontal parallel beams which have flanges to fit within tile kerfs to provide a tile-supporting structure, which is hidden from view of persons in the room below. Spacer bars extend across between the beams and rigidly anchor them in place. Enlarged ceiling sections are removable by the employment of crossbars sized to fit in tile kerfs between beams with the ends of the crossbars being provided with selectively sized cutouts to permit free longitudinal, unobstructed movement of slidable splines located on the beam flanges. The slidable splines have lengths smaller than tile dimensions supported by the beam flanges and are movable within tile kerfs for ceiling section removal. The horizontal parallel beams are



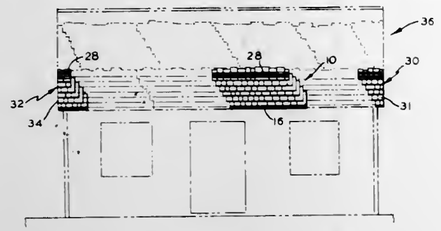
shaped to provide a high load-carrying capability, with their shaping advantageously employed to enhance removability of individual tiles.

3,640,043
WALL FACING
Hermann Querfeld, Hannover; Heinz Otto Mattes, and Friedrich Flesch, both of Emmendingen, all of Germany, assignors to Max Langensiepen Kom. Ges., Emmendingen, Germany
Filed June 29, 1970, Ser. No. 50,046
Claims priority, application Germany, June 30, 1969, P 19 33 085.9; Jan. 23, 1970, G 70 02 245.6
Int. Cl. E04b *2/88*
U.S. Cl. 52—508 **10 Claims**



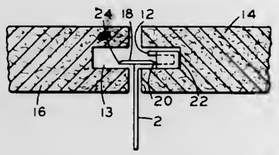
A wall facing consists of facing plates which are situated at a distance from the wall of a building, mounted in pairs on those branches of angular bearing rails which face away from the wall of the building and held in position by securing elements in the form of lugs affixed in a vertical position to the horizontal branch of each bearing rail. The securing elements extend into upper and lower recesses in the edges of the facing plates, each of said bearing rails being designed so that its vertical branch, provided with an elongated slit, can be screwed in a vertically adjustable position onto a wall clamp connecting it to the wall of the building. A first plate is attached to the vertical branch so as to be longitudinally displaceable in a guide between the two branches and has an elongated slot rising at a moderate angle and crossing that of the vertical branch and delimiting an aperture to give passage to a threaded portion of the wall clamp. A second plate is vertically displaceable on the vertical branch of the bearing rail and contains an inclined elongated slot which crosses over the elongated slot of the longitudinally displaceable plate in the opposite direction.

3,640,044
PREFABRICATED PANEL OF SHINGLES
Raymond W. Watts, 4 Nash's Lane, Westport, Conn.
Filed Sept. 11, 1969, Ser. No. 856,981
Int. Cl. E04d *3/365, 1/20*
U.S. Cl. 52—543 **10 Claims**



A prefabricated panel of shingles having a plurality of courses and a thin mounting strip extending over the upper face of the shingles in each course and secured thereto. The strip is so positioned relative to the lower edge of the shingles in each course as to be covered by the lower margin of the shingles of the next course. Staples extending through the thin strip and through each shingle on adjacent opposed vertical edges thereof.

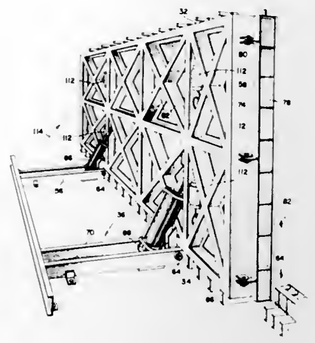
3,640,045
APPARATUS AND METHOD OF INSTALLING A SPLINE IN A CEILING BOARD JOINT
Charles F. Gilbo, Lancaster, and Norman A. Johnson, Lititz, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Feb. 19, 1970, Ser. No. 12,620
Int. Cl. E04b *5/52;* **E04g** *21/16*
U.S. Cl. 52—747 **2 Claims**



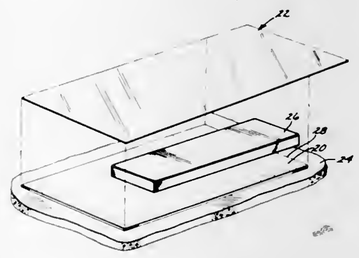
A plurality of ceiling boards are held in position by splines stapled to a backing. Removal of a damaged board is complicated by the replacing of the spline which is inserted into a kerf in two adjacent boards. The replacement is accomplished by the use of a narrow spline which fully fits in the kerf of one board and, after the boards are in place, a special tool is used to slide the spline from the kerf of one board to a position where it is positioned with one-half of its width in the kerf of each adjacent board. Staples may now be passed through the spline to hold the boards in position.

3,640,046
MEANS FOR PREFABRICATING BRICK PANELS
Yngve R. Anderson, Streetsville, Ontario, and George K. Escott, Willowdale, Ontario, both of Canada, assignors to Canadian Structural Clay Association, Willowdale, Ontario, Canada
Filed Jan. 22, 1970, Ser. No. 4,844
Int. Cl. E04g *21/22*
U.S. Cl. 52—749 **9 Claims**

Prefabricated brick panels are formed course by course on a table, starting against a movable footing course. Course spacers and individual brick spacers are laid in advance of each course and brick respectively. The table has a roller platform projecting from the edge opposite that alongside which the courses are laid. The footing and finished courses are successively pushed towards the platform to bear against it. When sufficient courses are laid to constitute a panel a cement grout is poured between the bricks. As soon as it has stiffened enough to support the bricks as a panel the table is rotated into the vertical and the panel rolled off in the plane. The footing riding the rollers of the platform for further curing of the panel.

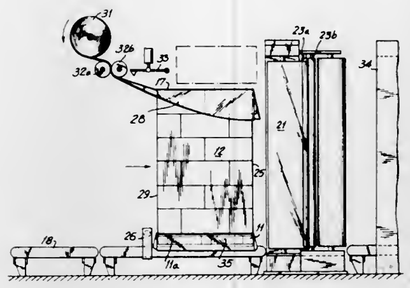


3,640,047
PACKAGING METHOD
Clifford N. Brignall, 54 Balboa Coves, Newport Beach, Calif.
Filed Mar. 9, 1970, Ser. No. 17,693
Int. Cl. B65b *43/08*
U.S. Cl. 53—22 A **7 Claims**



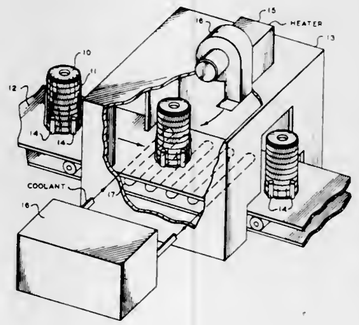
A method of making a package for displaying articles for sale. The method includes positioning a die over a porous or perforated backing card and a transparent plastic cover film over the die and card. A vacuum is then applied to the underside of the card so as to bond the film to the face of the card. The die is then removed to expose a pocket that receives the article or articles to be displayed. The portion of the film adjacent the open end of the pocket may be heat sealed to the card or alternatively bent around the card to retain the article or articles in place. In modification of the method, a transparent formed shield may be interposed between the transparent film and the backing card to provide for crushable or sharp-pointed articles. Also, a chemically protective shield may be interposed between the face of the backing card and the pocket.

3,640,048
METHOD AND APPARATUS FOR A PALLET LOAD
Seymour Zelnick, Orange, N.J., and Martin Michael Wildmoser, Staten Island, N.Y., assignors to Weldotron Corporation, Newark, N.J.
Filed Oct. 7, 1968, Ser. No. 765,302
Int. Cl. B65b *11/10, 53/02*
U.S. Cl. 53—30 **11 Claims**



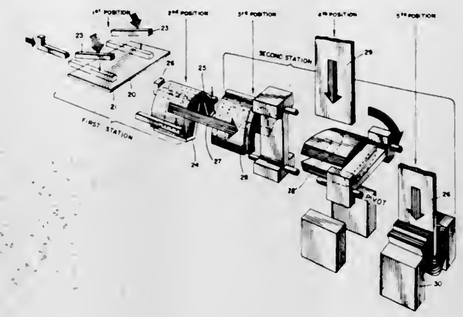
A pallet load of product is secured onto a pallet by forming a sleeve of heat-shrinkable film around the pallet load with its open top extending above the pallet load and its open bottom extending below the platform of the pallet. One or both of the top and bottom surfaces of the pallet load are covered with a sheet of heat-shrinkable film having a portion extending beyond the corresponding surface. The sheet or sheets and the sleeve are shrunk and fused around the pallet load.

3,640,049
PACKAGING WITH HEAT-SHRINKABLE FILM
Richard C. Fritz, and Aldo B. Galvanoni, both of Cincinnati, Ohio, assignors to Phillips Petroleum Company
Filed Jan. 29, 1969, Ser. No. 795,097
Int. Cl. B65b *53/06*
U.S. Cl. 53—30 **1 Claim**



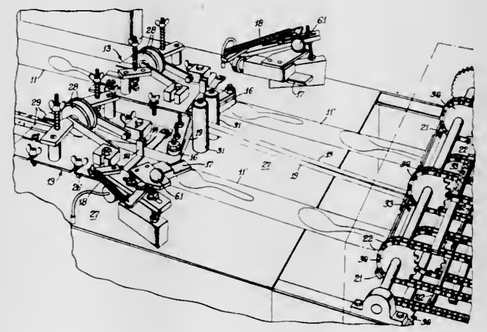
A stack of articles is packaged in a bag or sheet of heat-shrinkable film. Film at the bottom of the stack is not heat shrunk so that individual articles can be removed without destroying the package.

3,640,050
BAG-BOXING MACHINE
Ernst Daniel Nystrand; Harvey J. Spencer, and Paul Ziegelboffer, all of Green Bay, Wis., assignors to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed July 2, 1970, Ser. No. 51,976
Int. Cl. B65b *63/04*
U.S. Cl. 53—120 **6 Claims**



A machine for introducing a twice-folded stack of bags into a carton wherein the bags are singly delivered through a first path to a partial folding support, thereafter a partially folded stack being conducted along a second path into a housing consisting of two pivotally interconnected jaws and finally the once-folded stack is ejected from the housing which achieves a second fold in the stack incident to introducing the twice-folded stack into a carton.

3,640,051
TUBE-FORMING PACKAGING MACHINE
William S. Cloud, Jr., 730 Greenwood Ave., Wilmette, Ill.
Filed Apr. 13, 1970, Ser. No. 27,550
Int. Cl. B65b *9/06*
U.S. Cl. 53—178 **7 Claims**



A strip of plastic film is formed into a tube with a succession of articles enclosed in the tube. As the tube is sealed and the trim cut from it, the trim is drawn around the roller on which it is cut more than 90° and around a guide roller to move parallel to the tube. Pairs of pulling bars grip the tube and the trim to pull both, and to seal the tubes between the articles therein. Projecting sponge rubber on the bars seizes the trim in a way tending to pull it faster than the tube, yieldably. The gripper bars are secured firmly at the two ends

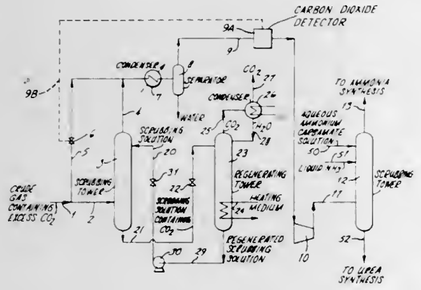
and loosely at an intermediate point so that the bar is controlled even if one of the securing means fails. A rubber band parallel to the bars aids in ejecting the completed and severed packages. Two lines of articles may be packed in one web by forming a tube around the two lines and simultaneously slitting and heat-sealing between the two lines to form two tubes.

3,640,052

PROCESS FOR REMOVING CARBON DIOXIDE IN A COMBINED SYSTEM FOR PRODUCING AMMONIA AND UREA

Keizo Konoki, Yachiyo, and Kozo Ohsaki, Oguramachi, both of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., Chiyoda-ku, Tokyo, Japan

Filed Mar. 11, 1970, Ser. No. 18,607
Claims priority, application Japan, Mar. 15, 1969, 44/19259
Int. Cl. B01d *53/14*
U.S. Cl. 55—19 **7 Claims**



A process and apparatus for removing excess carbon dioxide from a crude ammonia synthesis gas to be used for producing ammonia and urea, in which the incoming crude ammonia synthesis gas is separated into two streams. One stream is flowed into a scrubbing zone wherein it is contacted with a scrubbing solution so that the partial pressure of the carbon dioxide in the one stream leaving the scrubbing zone is in the range of about 0.02–1.5 atmospheres, under a total pressure of above about 10 atmospheres, at a temperature of about 85°–130° C. The other stream is not scrubbed. The two streams are then combined and are fed to an ammonia and a urea synthesis system. The amount of carbon dioxide removed is changed by adjusting the amounts of gas flowing in the two streams.

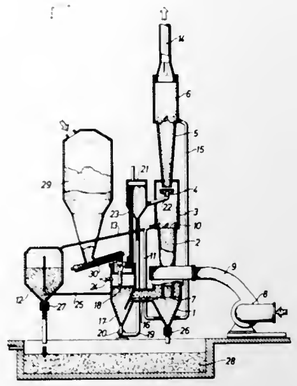
3,640,053

APPARATUS FOR CLEANSING FLUE GASES

Karl-Axel Goran Gustavsson, Enkoping, Sweden, assignor to Aktienbolaget Bahco Ventilation, Enkoping, Sweden

Continuation-in-part of application Ser. No. 763,424, Sept. 27, 1968, now abandoned. This application June 1, 1970, Ser. No. 42,231
Claims priority, application Sweden, June 2, 1969, 7759/69
Int. Cl. B01d *47/02*
U.S. Cl. 55—227 **2 Claims**

The invention relates to an apparatus for purifying the gases to remove sulphur dioxide. The apparatus comprises a container for a body of treatment liquid and is provided with a gas inlet so arranged that the gas is caused to flow substantially at right angles to the surface of the liquid therein. A treatment passage extends substantially vertically upwards from the liquid surface in the container, so that the gas after contact with the liquid flows substantially linearly therethrough entraining droplets of liquid. The container communicates below the liquid level with an equalizing tank having means for introducing alkali thereinto to maintain the treatment liquid at a suitable alkalinity and with means for introducing fresh water. The equalizing tank also has means to maintain the liquid level therein constant whereby the liquid level in the treatment container adjusts automatically



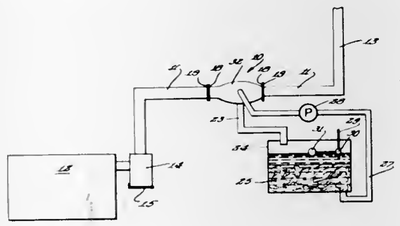
to variations in the rate of gas supplied thereto. The invention also includes means in the equalizing tank for accelerating the admixture of powdered alkali in the liquid.

3,640,054

CLEANING POLLUTANTS FROM FURNACE AND INCINERATOR SMOKE AND THE LIKE

Norman Katz, 2150 W. Smithwick Lane, Hoffman Estates, Ill.

Filed Apr. 17, 1970, Ser. No. 29,553
Int. Cl. B01d *47/06*
U.S. Cl. 55—228 **12 Claims**



A means for cleaning pollutants from moving gases, such as furnace and incinerator smoke, comprising conducting the gas through a cleaning zone passage of substantial length defined by an encompassing wall from which washing liquid is sprayed to form a dense shower of the washing liquid so that the gas is continuously washed as it progresses through the shower.

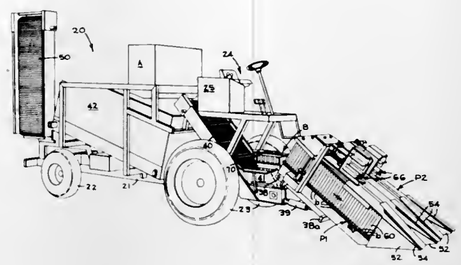
3,640,055

CORN HARVESTER WITH TRASH BLOWER

Olin L. Looker, Milford, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 29, 1969, Ser. No. 854,227
Int. Cl. A01d *45/02*
U.S. Cl. 56—106 **4 Claims**

A corn harvester particularly adapted for harvesting market corn has two picker heads which deliver severed ears to a takeaway conveyor. Slide panels project upwardly and outwardly from the sides of the conveyor and a specially constructed blower is disposed above the conveyor and the picker heads for directing streams of air laterally. As the crop slides down the slide panels it is cleaned of trash with counterflowing streams of air. The blower has superposed fans



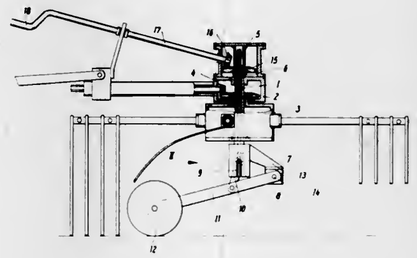
with front, rear, top and bottom inlets and louvered side outlets.

3,640,056

HAY-HARVESTING IMPLEMENTS

Martin Maier, and Eberhard Wolf, both of Gottmadingen, Germany, assignors to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany

Filed Oct. 13, 1969, Ser. No. 865,800
Claims priority, application Germany, Nov. 6, 1968, P 18 07 318.2
Int. Cl. A01d *79/00*
U.S. Cl. 56—370 **8 Claims**



A hay-harvesting machine of the type using a tined body rotating about a vertical axis, comprises a ground-engaging wheel mounted on a pivoting support arm whose inclination can be changed, for adjusting the ground clearance of the implement, by means of a threaded rod, which can be turned to cause it to move vertically, and whose lower end is guided in bearing means and is connected with the arm by means of one or more links in a pivoting manner.

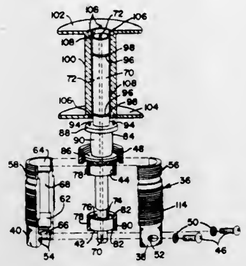
3,640,057

YARN-COVERING APPARATUS

Tony R. Branson, P.O. Box 2229, Burlington, N.C.

Filed Jan. 28, 1970, Ser. No. 6,393
Int. Cl. D01h *7/12, 7/88;* **B65h** *49/20*
U.S. Cl. 57—18 **8 Claims**

A spindle unit for wrapping a covering yarn about a core yarn being drawn therethrough includes a spindle shaft supported by bearings within a hollow casing. The shaft includes a portion of substantially uniform cross section extending from the casing having a spindle whorl secured thereto. Pin members directed axially of the shaft and O-rings provided within grooves on the portion of the shaft having a uniform cross section drivingly engage yarn covering packages mounted thereon.

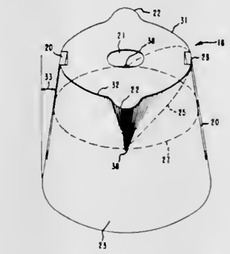


3,640,058

APPARATUS

Irby Ennis Hartley, Jr., Chattanooga, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 27, 1970, Ser. No. 67,527
Int. Cl. D01h *1/38, 9/02;* **B65h** *67/04*
U.S. Cl. 57—34 TT **6 Claims**



A waste spool for use with a ring twister comprising a frustoconical body member having a pair of tabs extending outwardly from its top surface. The particular structural relationship of the tabs with the tapered surface of the body member, coupled with a specified taper of the body member, provide a starting location for the waste windings that will enable their easy removal as a circular yarn wrap over the end of the waste spool.

3,640,059

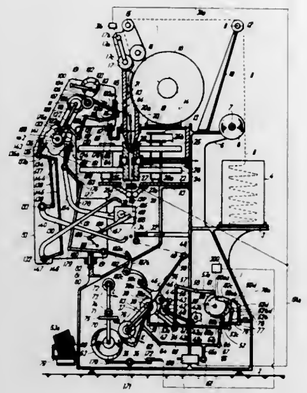
METHOD OF SPINNING-IN YARN UPON INTERRUPTION OF THE SPINNING PROCESS IN SPINDLELESS SPINNING MACHINES AND DEVICE FOR PERFORMING SAID METHOD

Josef Lutovsky, Liberec, and Vladimir Prasil, Brno, both of Czechoslovakia, assignors to Elitex-Zavodny textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Oct. 8, 1969, Ser. No. 864,772
Claims priority, application Czechoslovakia, Oct. 10, 1968, 7145/68
Int. Cl. D01h *13/26*
U.S. Cl. 57—34 R **10 Claims**

A method and apparatus for spinning-in yarn into a spindleless spinning machine when, during the operation thereof, the spinning process has been interrupted due to the breakage of the main yarn thread. The device of the invention is provided with an automatic knotting mechanism which automatically feeds into a spinning nozzle an auxiliary yarn thread. The impurities in the spinning nozzle, as well as

the fiber material located therein, is spun onto the auxiliary thread which is then automatically knotted to the broken-off end of the finished yarn thread by the knotting mechanism.

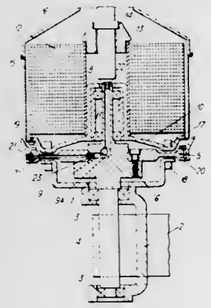


Means are provided in the device of the invention for automatically interrupting the feeding of unfinished fibers as well as the takeup of the finished yarn thread during the knotting operation.

3,640,060
DOUBLE-TWIST SPINDLE

Jacques Boyer, Sauzet, France, assignor to Societe Rhodiaceta, Paris, France

Filed Dec. 31, 1969, Ser. No. 889,646
Claims priority, application France, Dec. 31, 1968, 50,893
Int. Cl. D01h *7/86, 1/10*
U.S. Cl. 57—58.84 5 Claims

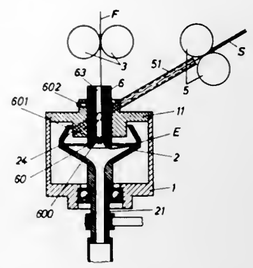


A double-twist spindle for doubling a yarn in which an integral shaft and rotor rotate with respect to a stator, which is magnetically held against rotation and carries a spool of yarn. An axial and a radial passage in the shaft and rotor respectively join in the rotor at the location of a removable, normally fixed yarn guide.

3,640,061
METHOD AND APPARATUS FOR SPINNING A FIBER BAND

Hans Landwehrkamp, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Oct. 20, 1969, Ser. No. 867,607
Claims priority, application Germany, Oct. 30, 1968, P 18 06 054.3
Int. Cl. D01h *7/00, 1/12*
U.S. Cl. 57—58.89 3 Claims

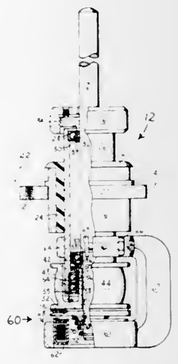


A spinning apparatus comprises a spinning chamber, a centrally arranged thread drawoff tube for drawing off thread from the spinning chamber, the thread drawoff tube opening having a radial outer smooth face extending into the path of the thread and an interior annular face which is rough or notched.

3,640,062
SPINDLE ASSEMBLY

Gordon C. Anderson, and John D. Page, both of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed Oct. 1, 1970, Ser. No. 77,058
Int. Cl. D01h *7/12, 7/22*
U.S. Cl. 57—88 10 Claims

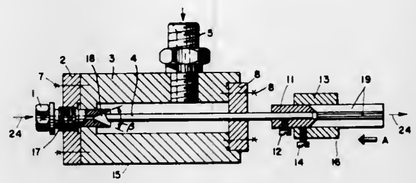


An improved spindle assembly for textile spinning and twisting machines is disclosed wherein a plurality of spindle blade supporting ball bearing sets and a whirl-supporting ball bearing set are aligned and supported by a single support sleeve concentric with the spindle blade which sleeve vertically terminates intermediate the whirl. One or more of said sets may have a flexible or resilient member interposed between a bearing set and the sleeve and/or the whirl and/or the spindle blade to help provide and maintain the precise alignment required of all sets from the axial centerline of the spindle blade. Also disclosed is an electromagnetically operable drive and brake clutch subassembly which is positionally adjustable on and supported by the sleeve.

3,640,063
PROCESS AND APPARATUS FOR CRIMPING YARNS AND THE LIKE

Hans Schmid, Ludwigshafen; Heinrich Feldhoff, Bad Duerkheim; Wolfgang Martin, Ludwigshafen; Heinz Fessmann, Neumuenster, and Edeleried Hahn, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Sept. 10, 1969, Ser. No. 856,557
Claims priority, application Germany, Sept. 13, 1968, P 17 85 344.0
Int. Cl. D02g *1/16, 3/24;* D01d *5/22*
U.S. Cl. 57—140 R 12 Claims



Process and apparatus for crimping yarns or the like by the action of a heated flowing gaseous medium, the yarns being exposed to the heated flowing gaseous medium in two successive treatment chambers. Yarns of synthetic linear high molecular weight substances can be crimped by means of the process and apparatus according to the invention in a simple way and at high yarn speeds.

3,640,064
NOVELTY YARN

Clifford W. Palm, Denver, N.C., and William R. Gibson, Cumberland, Md., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 359,814, Mar. 25, 1964, now abandoned , which is a division of application Ser. No. 811,066, May 5, 1959, now Patent No. 3,144,747.
This application Jan. 19, 1970, Ser. No. 4,155
Int. Cl. D02g *3/34, 3/36*
U.S. Cl. 57—144 7 Claims

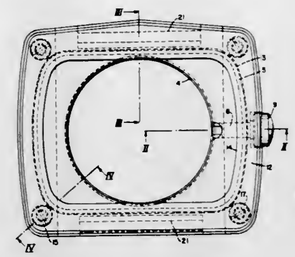


A continuous filament slub yarn is described which comprises a substantially unbulked core yarn and an auxiliary yarn having slubbed and unslubbed portions along its linear length. The auxiliary yarn supplies the slubs in a random distribution and random size along the length of the yarn by looping upon itself and attaching to the core yarn by interlacing at least some of the auxiliary yarn filaments through the core yarn.

3,640,065
WATERTIGHT WATCHCASE FOR WRISTWATCHES

Marc Lederrey, and Canton Grenchen, both of Soleure, Switzerland, assignors to Schlup & Cie., S.A., Lengnau b. Biel (Canton of Berne), Switzerland

Filed Feb. 16, 1970, Ser. No. 11,592
Claims priority, application Switzerland, Feb. 17, 1969, 2363/69
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R 5 Claims

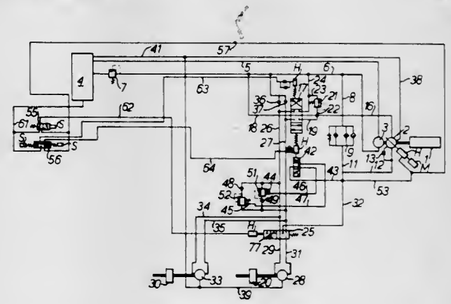


An internal capsule constituted by a vessel made of a soft plastic material and by the watchglass is kept closed by an external capsule constituted by two metallic pieces fixed onto one another by screws. These pieces press the glass axially on the upper edge of the lateral portion of the plastic vessel so as to form a tight seal therebetween. The watch movement is held in place within the internal capsule by clamping. The lateral portion of the plastic vessel is therefore transversely compressed between the movement and one of the metallic pieces of the outer capsule.

3,640,066
HYDRAULIC POWER TRANSMISSION SYSTEMS

John Stephen Marshall, Birmingham, and William S. Turnbull, Wolver-Hampton, both of England, assignors to Rubery, Owen and Company Limited, Darlaston, Wednesbury, Staffordshire, England

Filed Dec. 9, 1969, Ser. No. 883,658
Claims priority, application Great Britain, Dec. 10, 1968, 58,619/68
Int. Cl. F16d *31/00;* F15b *11/16*
U.S. Cl. 60—53 R 7 Claims

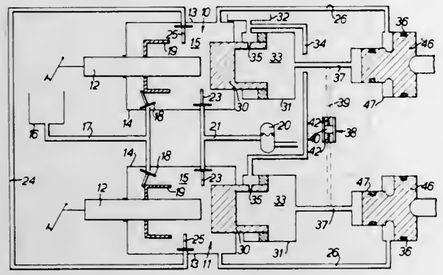


When the fluid supply to an hydraulic motor normally driving a vehicle is insufficient to maintain the momentum of the vehicle, pressure reversal occurs in the motor which then acts as a pump. A relief valve, in addition to the main relief valve, is included in the vehicle transmission system to limit the pressure in the system only when this overrun condition occurs. When the system includes two or more motors a valve is provided to isolate one of the motors from the fluid supply. A single valve assembly includes the additional relief valve, its ancillary control valves and the isolating valve.

3,640,067
TWO-PEDAL HYDRAULIC BRAKING SYSTEM

Brian Ingram, Warwickshire, England, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Mar. 31, 1970, Ser. No. 24,195
Claims priority, application Great Britain, May 8, 1969, 23,442/69
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 P 11 Claims

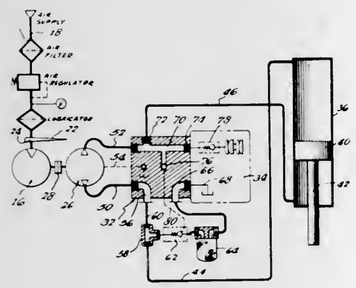


A two-pedal hydraulic braking system incorporates two separate pedal-operated master cylinders. Each master cylinder includes a pressure space in a cylinder bore in front of a pedal-operated piston working in the bore. The pressure spaces are connected by a transfer connection which permits fluid to pass between the pressure spaces to compensate for uneven wear of the linings of brakes on opposite sides of the vehicle. Normally communication between each master cylinder and the transfer connection is cut off by a normally closed valve which is opened when the piston is moved axially in the bore.

3,640,068
ARBOR PRESS POWER SOURCE

Robert L. Mann, Park Ridge, Ill., assignor to Resinoid Engineering Corporation

Filed Dec. 10, 1969, Ser. No. 883,864
Int. Cl. F15b 15/18
U.S. Cl. 60—52 HF 3 Claims

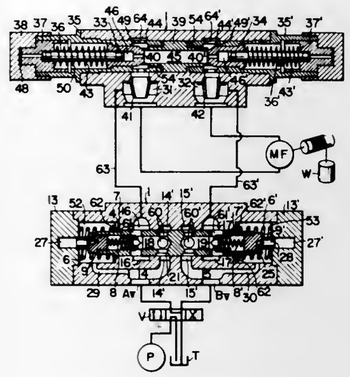


A power drive for an arbor press combining a rotary compressed air motor coupled with a variable volume reversible hydraulic pump supplying hydraulic fluid under pressure to a piston and cylinder moving the ram of the press whereby combinations of speed, direction and pressure at the ram may be manually achieved with stalling of the drive being inconsequential to the operativeness of the drive.

3,640,069
OIL-PRESSURE-CONTROLLING DEVICE FOR BIG INERTIAL LOAD

Takashi Sugahara; Minoru Suzuki; Tadayuki Fukunaga, all of Akashi-shi, Hyogo, and Shozo Fukushima, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Filed Aug. 14, 1969, Ser. No. 850,034
Claims priority, application Japan, Aug. 14, 1968, 43/58152
Int. Cl. F15b 11/08, 13/04; F01k 13/00; F22b 33/00
U.S. Cl. 60—105 5 Claims



Cavitation and stalling of a hydraulic motor coupled to a large inertial load is prevented by a self-operating valve sensitive to applied oil pressure and the pressure of oil returned to the sump for controlling the pressurized fluid operating on the hydraulic motor.

3,640,070
HYBRID PROPELLANT SYSTEM

Martin H. Kaufman; John D. O'Drobinak, and James O. Dake, Jr., all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

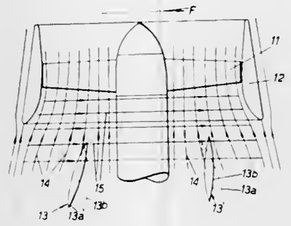
Filed Oct. 28, 1964, Ser. No. 407,262
Int. Cl. C06d 5/10
U.S. Cl. 60—220 5 Claims

1. The method for creating propulsive thrust by burning a solid phase with a liquid phase injectant and exhausting the products from a rocket nozzle; said solid phase comprising from 17 to 22 percent by weight of a fluorocarbon binder selected from the group consisting of 1H, 1H, 9H-Hexadecafluoro-1-nonanomethacrylate, 1H, 1H, 7H-Dodecafluoro-1-heptanoacrylate, 1H, 1H, 5H-Octafluoro-1-pentanoacrylate and mixtures thereof; a plasticizer selected from the group consisting of triethylene glycol dinitrate, pentaerythritol trinitrate, trimethylol ethane trinitrate, butanediol dinitrate, a copolymer of vinylidene fluoride and perfluoropropylene, bis(2-fluoro-2,2-dinitroethyl)formal and mixtures thereof; and a free radical catalyst selected from the group consisting of azo-bisisobutyronitrile, benzoyl peroxide, dichlorobenzoyl peroxide, and methylethylketone peroxide; from 10–22 percent by weight of a metal fuel being a member selected from the group consisting of aluminum, beryllium, zirconium, thorium, uranium, boron, and mixtures thereof; and from 43 to 55 percent by weight of an oxidizer comprising a member selected from the group consisting of ammonium perchlorate, sodium perchlorate, potassium perchlorate, sodium nitrate, potassium nitrate, and barium nitrate; said liquid phase injectant comprising from 4 to 12 percent by weight of a member selected from the group consisting of hydrazine, monomethylhydrazine, unsymmetrical dimethylhydrazine, perchlorofluoride, tetrafluorohydrazine, hydrogen peroxide, nitric acid, tetranitromethane, tri(difluoroamine)fluoroethane, and mixtures thereof.

3,640,071
DUCTED PROPELLER SYSTEMS FOR MARINE VESSELS

Ewan Christian Brew Corlett, Basingstoke, England, assignor to Hydroconic Limted, Basingstoke, Hampshire, England

Filed Sept. 29, 1970, Ser. No. 76,508
Claims priority, application Great Britain, Oct. 13, 1969, 50,217/69
Int. Cl. B63h 11/10
U.S. Cl. 60—221 3 Claims

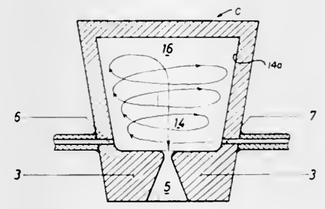


In a ducted propeller system for ship propulsion, comprising a propeller working in a fixed propulsion nozzle and rudder blades or shutters disposed at the nozzle entry on either side of the central vertical fore-and-aft plane of the nozzle, the rudder blades are toed out and the angle of the toeing is varied up the height of each blade to correspond to the different nozzle flow entry conditions that obtain at different regions of the nozzle entry due to the effect of propeller rotation.

3,640,072
ROCKET ENGINE

Lutz Tilo Kayser, Am Bismarckturm 10, 7000 Stuttgart, Germany

Filed Aug. 1, 1969, Ser. No. 846,696
Claims priority, application Germany, July 20, 1968, P 17 51 740.7; June 11, 1969, P 19 29 629.8; P 19 29 628.7
Int. Cl. F02k 9/02
U.S. Cl. 60—258 3 Claims

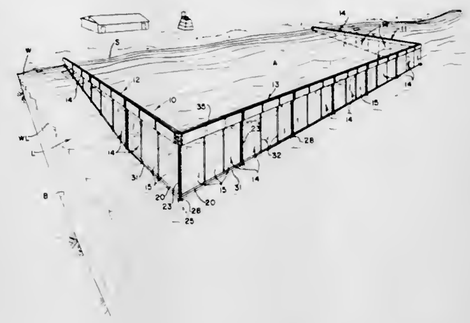


A rocket engine has an internal combustion chamber provided with a front wall. An outlet nozzle is provided in the front wall. At least two injection conduits communicate with the chamber rearwardly of the front wall in such a manner as to inject into the chamber respective streams of reactive propellants in direction tangentially of the chamber walls thus providing a short heat conduction path from the nozzle throat to the injected but yet unburned propellants rotating at high speed along the chamber walls.

3,640,073
BARRIER FOR DEFINING A SWIMMING AREA

Frank J. Samsel, 13455 Lake Ave., Lakewood, Ohio

Filed May 7, 1969, Ser. No. 822,400
Int. Cl. E02b 3/00, 15/00, 15/04
U.S. Cl. 61—1 F 6 Claims

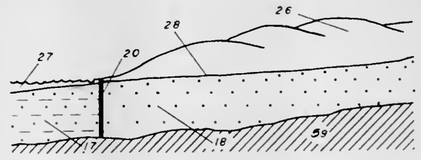


This invention relates to a floatable barrier comprising a plurality of sections or panel members, removably secured together to form an integrated structure for use in isolating or defining a confined area along the edge of a body of water, which area can be treated and made safe for human occupancy. Each section or panel member is formed of a flexible sheet of impervious material with the upper edge portion thereof overlapped to define a chamber coextensive with the width of the section for receiving floatable material which may be either a solid or a gas and the lower edge portion reinforced and secured to anchoring means, for maintaining the sections in a substantially vertical position when disposed within the water.

3,640,074
PROCESS FOR COLLECTING AND STORING FRESH WATER IN EARTH

Adolph Kopp, Jr., P.O. Box 137, Swan Lake, Mont.

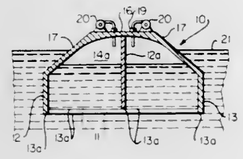
Continuation-in-part of application Ser. No. 560,921, June 23, 1966. This application Oct. 24, 1969, Ser. No. 871,417
Int. Cl. E02b 3/02
U.S. Cl. 61—1 R 6 Claims



A thin water impermeable barrier is established in water permeable earth adjacent to the shore of a body of salt water and extended downward from the level of the high point of salt water intrusion into the water permeable earth to a non-water-permeable earth layer. The barrier is extended laterally along the shore and upland from the shore to points where the nonwater-permeable earth layer is as high as said level, thus isolating an area of water permeable earth from the body of salt water. The salt water thus trapped in the water permeable earth is then extracted from the isolated water permeable earth by transferring it from the bottom part of the water permeable earth to the other side of the barrier. Fresh water is then stored in the isolated water permeable earth, thus establishing an available reservoir of fresh water. The barrier is formed and maintained by continuously circulating refrigerant downwardly from the level of the high point

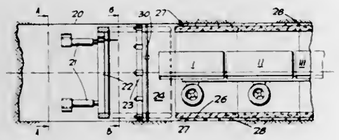
of salt water intrusion through a row of closely spaced holes to the nonwater-permeable earth layer. The heat extracted from the earth in forming and maintaining the barrier is employed to evaporate water from the salt water adjacent to the barrier and return the fresh water thus recovered to the reservoir.

3,640,075
METHOD OF INSTALLING BREAKWATER CAISSONS
James H. La Peyre, 13 Richmond Pl., New Orleans, La.
Filed Oct. 16, 1969, Ser. No. 866,823
Int. Cl. E02b *3/06*
U.S. Cl. 61—5 **2 Claims**



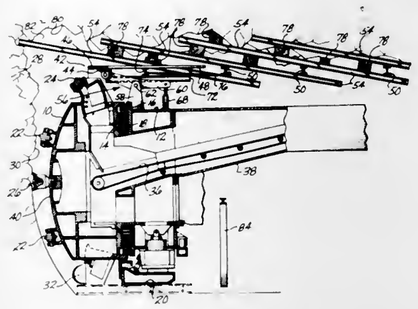
This disclosure is directed to caissons and to a method of constructing seawalls, breakwaters, jetties, groins and the like utilizing the caissons which are closed sided, hollow, bottomless and compartmented precast concrete structures adapted to be air pressurized for flotation in water with their bottomless sides downward to the erection site and then depressurized and sunk into position and anchored against movement by imbedding in the water bottom and by filling with dredged and/or pumped in solids.

3,640,076
TUNNELS OR TUNNELLING
Donald Frank Rees, Wentworth; John Baron Garnett, Alresford, and Michael Alexander Richardson, Knaresborough, all of England, assignors to William F. Rees Limited, Old Woking, Surrey, England
Filed June 9, 1970, Ser. No. 44,809
Claims priority, application Great Britain, Sept. 4, 1969, 43,907/69
Int. Cl. E01g *5/04*
U.S. Cl. 61—42 **7 Claims**



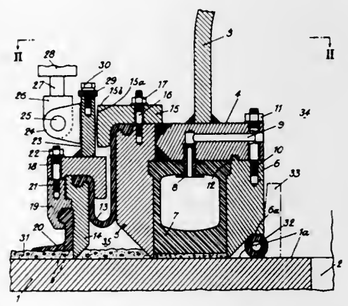
A method of constructing a lined tunnel comprises the steps of excavating a short length of tunnel of internal diameter greater than the external diameter of the lining, erecting within the said length of tunnel a ring of three 120° lining segments, repeating the steps of excavating a short length of tunnel and erecting a lining ring within the short length, and pressing each successive ring into endwise engagement with the previously erected ring.

3,640,077
SHIELD TUNNELING METHOD
Frank George Watson, Victoria, and David Burnet Sugden, Tasmania, both of Australia, assignors to James S. Robbins and Associates, Inc., Seattle, Wash.
Filed Mar. 19, 1970, Ser. No. 21,032
Claims priority, application Australia, Mar. 5, 1970, 0528/70; Mar. 26, 1969, 52612/69
Int. Cl. E01g *5/00*
U.S. Cl. 61—42 **4 Claims**



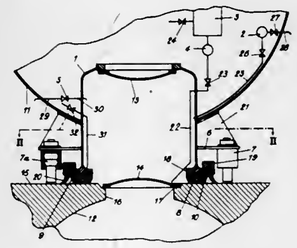
An axially slotted roof shield is supported at its front end on a tunneling machine (or shield) frame. The frame includes a fulcrum support portion inset from said shield slots. One or more fulcrum members are movably supported on said support portion. A tunnel set or the like is anchored in the tunnel rearwardly of the frame. The fulcrum member(s) is initially positioned forwardly on its support. Elongated support poles are inserted from below the shield upwardly and forwardly through the slots. The forward portions of the poles extend into or under ground ahead of the shield. Intermediate portions of the poles rest on the fulcrum member(s). The rear portions of the poles underlie the tunnel set. The fulcrum member(s) is tied to the tunnel set so that it is axially fixed during forward movement of the frame.

3,640,078
DEVICES AND METHODS OF CONNECTING TWO INHABITABLE ENCLOSURES UNDER WATER
Francisco M. Serrano, Paris, France, assignor to Compagnie Francaise Des Petroles, Societe Anonyme, Paris, France
Filed June 4, 1970, Ser. No. 43,522
Claims priority, application France, June 11, 1969, 6919307/69
Int. Cl. B63c *11/34*
U.S. Cl. 61—69 A **8 Claims**



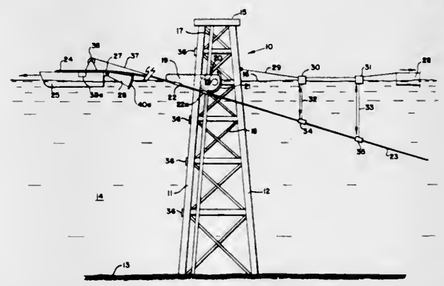
Apparatus for connecting two underwater inhabitable enclosures at atmospheric pressure, one of them being mobile and the other being anchored on the ocean bottom. The apparatus eliminates leakage caused by the presence of marine concretions on the outer surface of the anchored enclosure. The mobile enclosure comprises a pipe whose open end, having a sealing joint on its periphery, is applied around the opening of the fixed enclosure. The pumping of water from the pipe creates a pressure differential which forces the mobile enclosure into tight engagement with the anchored enclosure. At the periphery of the pipe, the mobile enclosure further comprises an annular chamber defined by two circular knives connected by a flexible membrane, one of the knives having a lip joint on its outer side, and the other having an inflatable joint on its inner side, with a third circular knife positioned within the inflatable joint.

3,640,079
METHOD AND APPARATUS FOR CONNECTING TWO SUBMERGED INHABITABLE ENCLOSURES
Louis G. Le Therisien, and Henri A. Marion, both of Paris, France, assignors to Compagnie Francaise des Petroles, Societe Anonyme, Paris, France
Filed Feb. 16, 1970, Ser. No. 11,602
Claims priority, application France, Feb. 14, 1969, 6903654
Int. Cl. B63c *11/34*
U.S. Cl. 61—69 **18 Claims**



A method and apparatus for connecting two submerged enclosures one fixed and one mobile wherein the mobile enclosure has a tubular passageway, the outside end of which has an inflatable joint and a lip joint for connecting in sealing engagement, the tubular passageway of the mobile enclosure with an opening in the fixed enclosure.

3,640,080
METHOD AND APPARATUS FOR CONNECTING A FLOWLINE TO AN OFFSHORE INSTALLATION
William J. Neal, Manvel, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 5, 1970, Ser. No. 16,794
Int. Cl. F16l *1/00;* **B21d** *11/02*
U.S. Cl. 61—72.3 **11 Claims**



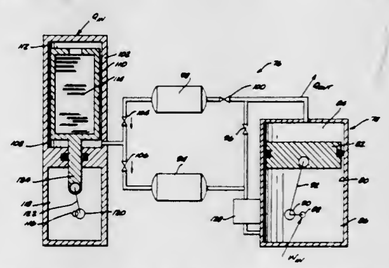
A method and apparatus for connecting a flowline having a major portion adapted to lie along the floor of a body of water to an offshore installation of the type having a substantially vertical support positioned on the floor of a body of water and a platform carried by the support. The flowline is positioned at the water surface adjacent the installation and terminated a distance beyond the installation approximately equal to the depth of the water. The portion of the flowline adjacent the installation is slidably connected to the support and the flowline is lowered to the floor of the body of water while gradually bending the flowline in such a manner that the portion of the flowline between the support and its terminal end is substantially parallel to the support when the flowline reaches the floor of the body of water. The terminal end of the flowline is subsequently connected to the platform. In this manner, the flowline has a sufficient curvature to prevent buckling thereof.

3,640,081
HOLLOW SPHERICAL ICE BODIES AND METHOD OF MAKING THE SAME
Edward H. Hadden, Granby, Conn., assignor to Olin Mathieson Chemical Corporation
Filed Apr. 2, 1969, Ser. No. 812,782
Int. Cl. F25c *1/10*
U.S. Cl. 62—1 **11 Claims**



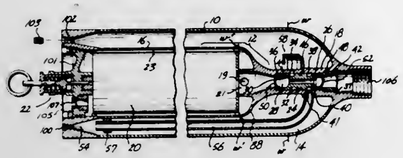
A hollow body of ice for use as a target, the ice body being sufficiently frangible to shatter when struck by a fired pellet. A method of making the hollow ice bodies comprising introducing a measure of water into a mold cavity so as to cover substantially the entire surface of the mold cavity with water. The water is then cooled to a temperature below its freezing point to form a thin shell of ice adjacent to the mold cavity surface. The mold is then opened and the shell of ice is removed from the mold cavity.

3,640,082
CRYOGENIC REFRIGERATOR CYCLE
Axel G. Dehne, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 8, 1970, Ser. No. 44,303
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **8 Claims**



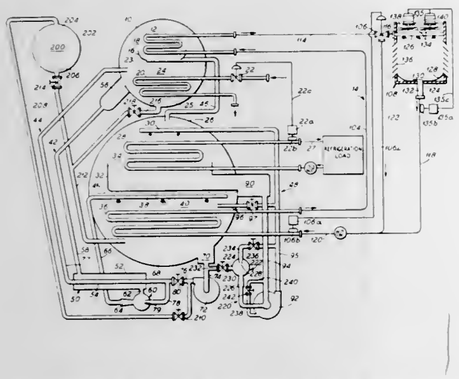
Where a cryogenic refrigerator cycle incorporates pistons operating between a plenum and the working volume and the plenum pressure is controlled to control the loading on the plenum side of the pistons, short time increased refrigerator capacity is obtained for cooldown by bleeding fluid from the plenum into the working volume.

3,640,083
GENERATOR OF COOL WORKING GASES
Lyle D. Galbraith, Redmond, and William F. Thorn, Mercer Island, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.
Filed Mar. 27, 1970, Ser. No. 23,154
Int. Cl. F17c 7/02
U.S. Cl. 62—52 26 Claims



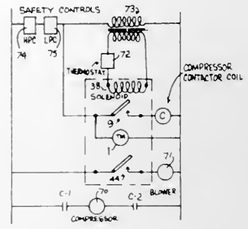
Hot pressure gases are generated by burning a solid fuel grain. A portion of the gases are used to pressure feed a liquid from its storage chamber into a mixing zone. The remainder of the hot gases are directed into the mixing zone for mixing with the liquid. The hot gases provide the heat of vaporization for, and cause the vaporization of, the liquid. The gas generator comprises a one-piece housing of composite welded construction, defining liquid storage, breech and mixing chambers. A control cartridge containing burst discs, flow control orifices and seals is inserted into the housing through the outlet passageway. A solid fuel cartridge is inserted into the breech through an opening at the opposite end of the housing.

3,640,084
REFRIGERATION SYSTEM AND METHOD
Neil E. Hopkins, York, Pa., and Paul W. Muench, Medford Lakes, N.J., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,260
Int. Cl. F25b 15/06
U.S. Cl. 62—101 14 Claims



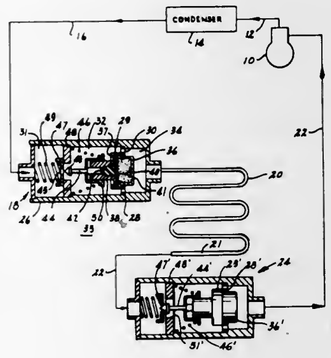
An alternative method of operating a refrigeration system of the type normally operated in an absorption refrigeration cycle. When a cooling medium such as water is available at temperatures below a chilled fluid temperature which will satisfy the refrigeration load, the absorption refrigeration cycle is suspended, the supply of heat to the generator being discontinued, and the absorber is operated as a condenser to liquefy the refrigerant vaporized in the evaporator. Means are provided for operating the system in such a manner.

3,640,085
REFRIGERATION SYSTEM WITH DELAY TIMING MECHANISM
John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.
Original application Aug. 14, 1969, Ser. No. 849,961, now Patent No. 3,598,214, dated Aug. 10, 1971. Divided and this application Apr. 12, 1971, Ser. No. 133,038
Int. Cl. F25b 19/00
U.S. Cl. 62—158 9 Claims



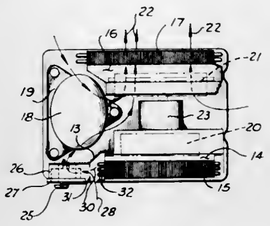
Protection against refrigeration compressor burnout by short cycling is provided by a delay timing mechanism having a motor and solenoid. The motor is constantly energized and the solenoid controlled by a thermostat stalls or releases the mechanism causing timer operation through its cycle. The timer runs through its delay period during the normal off period, allowing fast restart of the compressor. Also the timer provides a longer delay following a short cycle then following a normal cycle. This is accomplished by operating the timer for a period of time after the compressor is started.

3,640,086
REFRIGERANT FLOW CONTROL EMPLOYING PLURAL VALVES
Herbert M. Brody, Columbus, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Feb. 27, 1970, Ser. No. 15,160
Int. Cl. F25b 41/00
U.S. Cl. 62—210 9 Claims



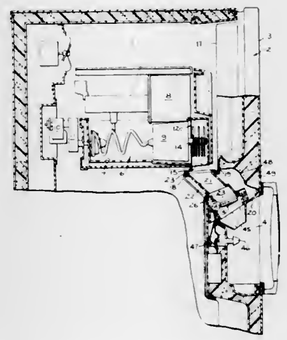
A mechanical refrigeration system having flow metering devices therein for causing a balance between the boiling capability of the evaporator and the pumping capability of the compressor, whereby the system is adapted for air conditioner usage subject to varying evaporator heat loads and varying condenser coolant action.

3,640,087
FROST-ANTICIPATING BIMETAL CONTROL FOR AN AIR CONDITIONER
Bobby G. Harrison, Evansville, and Charles D. Esche, Newburgh, both of Ind., assignors to Whirlpool Corporation
Filed May 8, 1970, Ser. No. 35,611
Int. Cl. F25b 1/00
U.S. Cl. 62—227 9 Claims



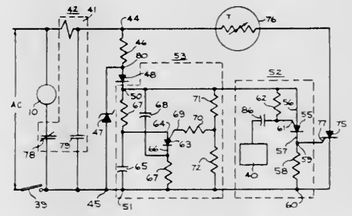
An air conditioner for cooling room air having a separate electrical apparatus compartment within the air conditioner housing completely enclosing a temperature responsive device such as a bimetal thermostat element within the compartment. Means are provided for establishing a subsidiary flow path for room air over the thermostat and separate from the main room airstream that is directed over the air conditioner evaporator. The subsidiary airstream is directed through the electrical apparatus compartment in heat exchange relation with the temperature-responsive device and then to the exterior of the room rather than being returned to the room. In a preferred embodiment an end portion of the evaporator is arranged in the subsidiary air flow path in heat exchange relationship with the subsidiary airstream so as to effect the temperature of this air. Frost buildup on the air conditioner evaporator is anticipated by a lowering evaporator temperature which is reflected at the unit thermostat as a result of room air passing over the end portion of the evaporator in its passage to the thermostat.

3,640,088
HOUSEHOLD REFRIGERATOR INCLUDING EXTERIOR ICE SERVICE
Dwight W. Jacobus, and Michael L. Simms, both of Louisville, Ky., assignors to General Electric Company
Filed June 3, 1970, Ser. No. 43,104
Int. Cl. F25c 5/18
U.S. Cl. 62—320 6 Claims



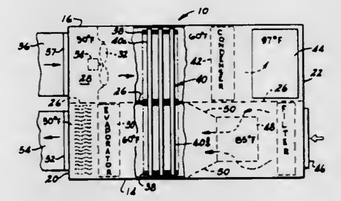
A refrigerator including an ice dispenser and crusher in a freezer compartment and an ice delivery passage through the refrigerator door for delivering ice exterior of the cabinet. The passage includes a normally closed closure member and a heater and is so constructed and arranged within the door as to maintain the various portions of the passage at temperatures preventing the accumulation of ice slush and water in the passage and the freezing of the closure member.

3,640,089
HOUSEHOLD REFRIGERATOR WITH EXTERIOR ICE SERVICE
Lauren L. Frazier, Louisville, Ky., assignor to General Electric Company
Filed June 8, 1970, Ser. No. 44,271
Int. Cl. H03k 17/56; G08b 13/00
U.S. Cl. 62—320 10 Claims



A refrigerator including a freezer compartment containing a combination ice dispenser and crusher, a passage for conveying ice from the crusher outlet exteriorly of the refrigerator and exterior means for operating the dispenser and crusher is provided with safety means for stopping operation of the dispenser and crusher upon the thrusting of an arm or other elongated member into the passage. This safety means comprises a proximity detection circuit including a sensing plate associated with the ice passage.

3,640,090
COLD-HEAT RECOVERY FOR AIR CONDITIONING
Roland A. Ares, Wilmington, N.C., assignor to American Standard Inc., New York, N.Y.
Filed June 3, 1970, Ser. No. 42,972
Int. Cl. F25d 17/02
U.S. Cl. 62—436 7 Claims

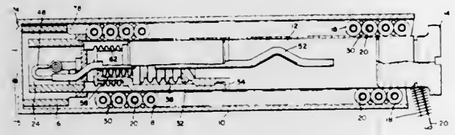


A cold air replenishment unit for an enclosed building space comprising a purge air system, a replenish air system, a heat pipe assembly spanning the two systems to simultaneously provide cold-heat potential transfer from the purge air to the replenish air, a mechanical refrigeration system comprising the commonly known cycle components, having an air-over fin tube evaporator located downstream of the replenish air heat pipe section, and having an air-over fin tube condenser located upstream of the purge air heat pipe section, all systems jointly forming a cold-heat recovery apparatus.

3,640,091
VALVE ARRANGEMENT TO PROVIDE TEMPERATURE LEVEL CONTROL AT CRYOGENIC TEMPERATURE RANGES

Joseph S. Buller; Michael J. Nagy, and Eugene W. Peterson, all of Santa Barbara, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed May 13, 1969, Ser. No. 824,177
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **3 Claims**

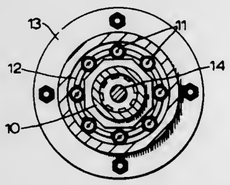


A cryostat assembly is provided having a finned cryogen delivery tube spirally surrounding an internal cylinder. The terminating end of the tube is sealed and a cryogen escape port is located adjacent a detector heat load. The central cylinder contains a bellows arrangement having sealed therein the cryogen utilized in the delivery tube, or other suitable fluid. The bellows has attached thereto a needlepointed element having its needlepoint in operative relationship with the escape port in the delivery tube. Spring means normally bias the element to bring the needlepoint into closed relationship with the port. As ambient temperature varies, the fluid within the bellows expands and contracts, moving the needlepoint into and out of sealing relationship with the port thereby accomplishing bleeding feed of the cryogen from the delivery tube, the expansion of which into the lower pressured area induces cooling of the detector by virtue of what is known as the Joule-Thomson effect.

3,640,092
TORQUE LIMITER

Francis John Neal, Brewood; Jerzy Leon Courtenay, and John Richard Simmons, both of Wolverhampton, all of England, assignors to H. M. Hobson Limited, London, England

Filed July 10, 1970, Ser. No. 53,927
Int. Cl. F16d *7/06*
U.S. Cl. 64—28 **3 Claims**



A torque limiter for limiting the torque which can be applied by an input shaft to an output shaft and comprising a fixed outer race, a cage within the race constituting the output member of the limiter, a cam constituting the input member of the limiter and normally operative to drive the cage by cooperation with one or more rollers confined by the cage and a torsion spring connected between the cam and the cage, the spring yielding, when excessive torque is reacted by the driven mechanism, to cause the cam to displace the roller or rollers into locking engagement with the outer race.

3,640,093
PROCESS OF CONVERTING METALORGANIC COMPOUNDS AND HIGH PURITY PRODUCTS OBTAINED THEREFROM

Leon Levene, Toledo, Ohio, and Ian M. Thomas, Temperance, Mich., assignors to Owens-Illinois, Inc.

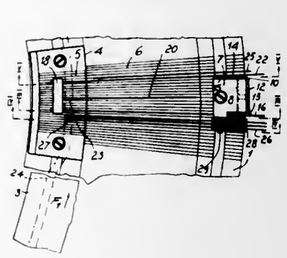
Continuation-in-part of application Ser. No. 805,841, Mar. 10, 1969, now abandoned. This application July 22, 1969, Ser. No. 843,777
Int. Cl. C03b *5/16*; **C03c** *13/00*; **C08h** *1/34*
U.S. Cl. 65—134 **30 Claims**

There is disclosed the preparation of high purity oxide products by hydrolyzing a silicon alkoxide with less than a stoichiometric amount of water so as to provide a partially hydrolyzed product. The partially hydrolyzed product is then reacted with a metal alkoxide and/or a metal salt in the presence of sufficient water to initially form a clear solution which subsequently converts to a clear gel. The gel is then heated so as to substantially remove organic and free liquid components therefrom. A homogeneous, high purity oxide product is recovered.

3,640,094
DEVICE FOR CUTTING AND GRIPPING THREADS IN CIRCULAR KNITTING MACHINES AND THE LIKE

Francesco Piana, and Angelo Brega, both of Varese, Italy, assignors to Mecmor S.p.A., Milan, Italy

Filed May 6, 1969, Ser. No. 822,149
Claims priority, application Italy, May 6, 1968, 16151 A/68
Int. Cl. D04b *9/06*
U.S. Cl. 66—19 **2 Claims**



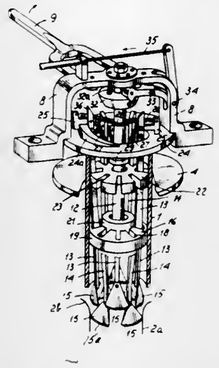
This disclosure relates to a device for cutting and gripping threads in circular knitting machines of the type with a fixed needle cylinder and a fixed needle dial arranged thereon and rotating thread guide units, said device comprising a shears unit including a cam-actuated mobile blade which extends radially to said needle dial and a counterblade which extends tangentially to the needle dial; resilient means being provided for permitting slight adaption movements of said counterblade tangentially to said needle dial.

3,640,095
PUSHER UNIT FOR DOUBLE-CYLINDER KNITTING MACHINES

Francesco Lonati, Via S. Polo 11, Brescia, Italy

Filed Apr. 14, 1969, Ser. No. 815,670
Claims priority, application Italy, Dec. 2, 1968, 832246
Int. Cl. D04b *35/00*
U.S. Cl. 66—147 **3 Claims**

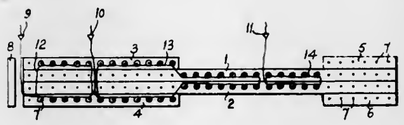
This disclosure relates to a pusher unit for pushing knitwear downwards in double-cylinder knitting machines, which comprises two series of levers of different length arranged about a central shaft to rotate together with the needle cylinders, the lower ends of said levers being bladed, means being provided to cause the vertical sliding and oscillation of the levers along a closed endless path, the arrangement being such that in working conditions the levers are caused to penetrate into the lower cylinder and push the knitwear downwards as it is formed.



3,640,096
KNITTING METHODS

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed July 8, 1969, Ser. No. 840,004
Claims priority, application Great Britain, July 22, 1968, 34855/68
Int. Cl. D04b *7/04*
U.S. Cl. 66—176 **7 Claims**



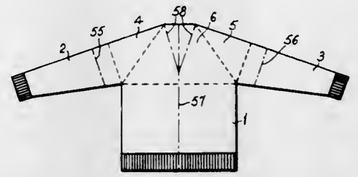
A method of knitting a jersey-type garment on a flat bar knitting machine of the kind comprising at least two pairs of opposed needle beds extending generally parallel to each other, the beds of one pair being laterally movable relative to the beds of the other pair, said method comprising tubular knitting two sleeve portions and a body portion united by a fourth tubular portion forming the upper portion of the jersey and fashioning the fourth tubular portion in Wales which are an extension of or are intended to extend into the body portion of the jersey. A machine for carrying out the method is also claimed.

3,640,097
KNITTING METHOD

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed July 17, 1969, Ser. No. 842,512
Claims priority, application Great Britain, July 22, 1968, 34,853/68
Int. Cl. D04b *7/00*
U.S. Cl. 66—176 **4 Claims**

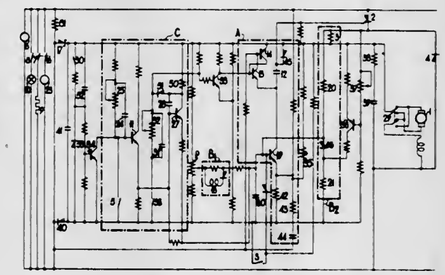
A method of making a sleeved garment on a knitting machine, the method including the steps of knitting a shoulder portion of each sleeve, in the direction towards the upper end of the sleeve, in reciprocatory manner on both beds of a pair of opposed beds of the machine, so that the pieces of fabric of each shoulder portion on opposite beds are continuous at the edge of the shoulder portion outermost on the machine and in the finished garment, knitting the body of the garment commencing at the lower end and knitting front and rear upper body portions of the garment as flat fabric on different beds of a pair of opposed beds of the machine and joining the front and rear upper body portions to the shoulder portions of the sleeves subsequent to knitting of these portions, for example by a stitch transfer procedure or a stitching procedure. A knitting machine for carrying out the method is also claimed.

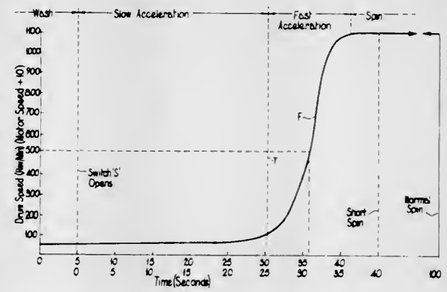


3,640,098
CLOTHES-WASHING AND SPIN-DRYING MACHINES

Martin Harold Eastall, Peterborough, England, assignor to British Domestics Appliances Limited, Peterborough, England

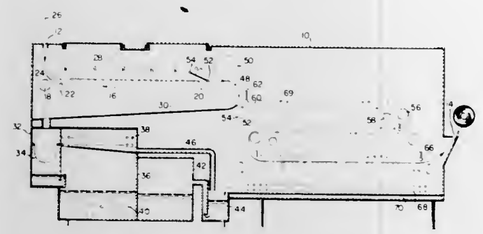
Filed June 19, 1969, Ser. No. 834,686
Claims priority, application Great Britain, June 20, 1968, 29,412/68
Int. Cl. D06f *33/00*
U.S. Cl. 68—12 R **11 Claims**





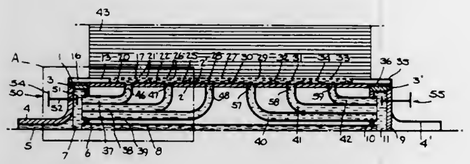
A clothes-washing and spin-drying machine having a drum rotatable about a nonvertical axis at a relatively slow speed for washing and at a much higher speed for spin drying, including control means for accelerating the driving motor, and hence the drum, relatively slowly through a speed at which the centrifugal force on the clothes within the drum equals the force due to gravity, to produce a uniform distribution of the clothes within the drum, and subsequently more rapidly towards the spin-drying speed.

3,640,099
APPARATUS FOR CONTINUOUSLY SCOURING WEBS OF KNIT MATERIAL OR THE LIKE
William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Filed Dec. 2, 1969, Ser. No. 881,497
Int. Cl. B05c *3/132*
U.S. Cl. 68—19.1 4 Claims



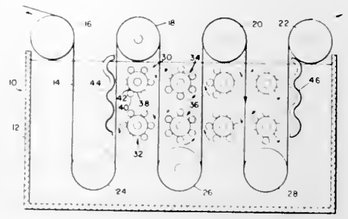
A running web of easily stretchable material such as knit goods or the like is solvent scoured on a continuous basis by means of a plurality of conveyor belts which deliver the web from a solvent spray station in an enclosure through a drying stage, the longitudinal tension in the fabric itself being employed to control the speed of the conveyors. The web is transferred from one conveyor to the next in a relaxed condition and in the drying stage steam coils are employed to heat the enclosed atmosphere whereby the vaporized solvent itself serves as a drying agent in flashing off liquid solvent in the web.

3,640,100
APPARATUS FOR THE FLUID TREATMENT OF THREAD OR SHEETLIKE MATERIAL
Horst Marz, c/o PM-Duy 5 P.O. Box 31, Pinetown/Natal, South Africa
Filed July 30, 1970, Ser. No. 59,608
Claims priority, application Switzerland, Aug. 7, 1969, 11994/69
Int. Cl. B05c *8/02*
U.S. Cl. 68—150 13 Claims



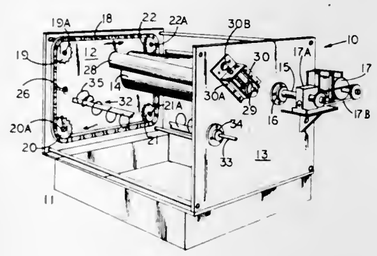
A drum rotatable about its longitudinal axis is equipped with an outer perforated jacket, the space between the drum and jacket being divided into separate chambers and means for supplying fluid to the chambers whereby the fluid will pass through the perforations to contact thread or sheet material wound on the jacket by reason of centrifugal force, pumping pressure, or both.

3,640,101
CONTINUOUS OPEN WIDTH WASHER
Harold R. Wilcox, Maynard, Mass., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Filed Apr. 11, 1969, Ser. No. 815,329
Int. Cl. D06f *17/10*
U.S. Cl. 68—175 10 Claims



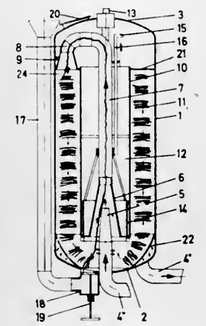
An apparatus is provided for the continuous washing of a running open width textile web. Idler and driven rolls guide the web in and out of a tank containing washing liquid so that the web follows a plurality of spaced parallel paths. Mounted in the tank below the liquid level are rotary impellers located on opposite sides of the web adjacent to the web paths. The impellers are separately driven and, when rotated, deliver pulses of liquid against opposite sides of the web providing a highly agitated washing action independent of the speed of the web.

3,640,102
WINCH APPARATUS FOR TREATING MATERIAL IN STRAND FORM
Charles Blount, Jr., Westport, Conn., and Nelson Crandall, Edenton, N.C., assignors to The United Piece Dye Works, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,604
Int. Cl. B05c *3/134*
U.S. Cl. 68—176 9 Claims



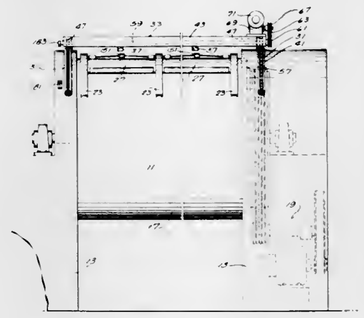
This disclosure is directed to an apparatus for treating material in a strand or ropelike form. The apparatus includes a bath means for containing a treating fluid and a supporting roller for the strand material spaced thereabove. Winding means in the form of an endless conveyor to which one end of the strand material and a cooperating guide roller are operatively associated with the support roller whereby in operation the strand material is successively unwound at its trailing end and rewound at its leading end about the supporting roller as the intermediate convolution is successively drawn through the treating bath.

3,640,103
APPARATUS FOR TREATING TEXTILES
Friedrich Richter, Zofingen, and Rudolf Steiner, Roggwil, both of Switzerland, assignors to Scholl AG, Zonfingen, Switzerland
Filed Sept. 14, 1970, Ser. No. 71,940
Claims priority, application Austria, Sept. 26, 1969, 9109/69
Int. Cl. B05c *3/134*
U.S. Cl. 68—177 2 Claims



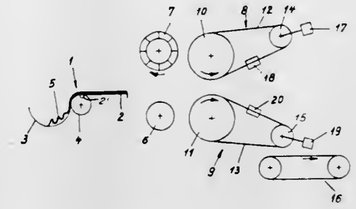
An apparatus for treating textiles in the form of endless ropes or tubes, comprising a container with a central rising pipe and an annular chamber surrounding it, the processing liquor being kept in circulation all through the container and the rope propelled through the rising pipe by means of an injection effect. The rising pipe takes the form of a positioning pipe which rotates or pivots backwards and forwards and during its rotating or pivoting movements brushes across the upper orifice of the annular chamber and lays out the rope conveyed through the positioning tube in loops in the annular chamber. The lower end of the rising pipe is surrounded by an axially displaceable cylindrical port.

3,640,104
MECHANIZED DOOR
William C. Lutzen, and Edward J. Berry, both of Wauwatosa, Wis., assignors to Ludell Mfg. Co., Milwaukee, Wis.
Filed Mar. 30, 1970, Ser. No. 23,793
Int. Cl. D06f *37/28*
U.S. Cl. 68—210 10 Claims



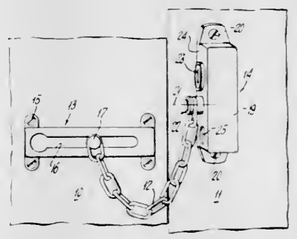
Disclosed herein is a washing machine comprising a frame, a washing drum rotatably mounted on the frame and having a circumferentially extending opening, a door mounted on the drum for movement relative to a first position closing the opening and a second open position clear of the opening, and mechanical means movably mounted on the frame for displacing the door between its open and closed positions.

3,640,105
APPARATUS FOR PROCESSING TANNED HIDES
Gerhard Richter, and Norbert Schmid, both of 84 Regensbury, Regensburg 13, Germany
Filed Dec. 19, 1969, Ser. No. 886,675
Claims priority, application Germany, Dec. 28, 1968, P 18 173 65.4
Int. Cl. C14b *1/08*
U.S. Cl. 69—41 7 Claims



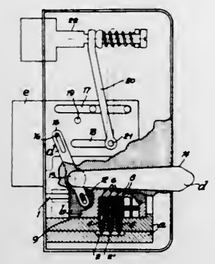
A machine for wringing tanned hides of the kind including a spreading device and a wringing device, has the spreading device situated near the feed-in end of the machine and the wringing device situated near the delivery end of the machine. A hide-feeding device is provided which, in operation, is moved towards the wringing device to feed a hide into the wringing device, and when the hide is held by the wringing device is moved back again ready to receive a subsequent hide, the feeding device, the spreading device and wringing device being arranged to cooperate together in such a way that an entire hide is wrung in one pass through the machine.

3,640,106
KEY-OPERATED CHAIN DOOR-LOCK CONSTRUCTION
Eugene M. Lorincz, Cinnaminson, N.J., assignor to Wessel Hardware Corporation, Philadelphia, Pa.
Filed Oct. 12, 1970, Ser. No. 79,838
Int. Cl. E05b *65/06*; E05c *17/36*
U.S. Cl. 70—93 14 Claims



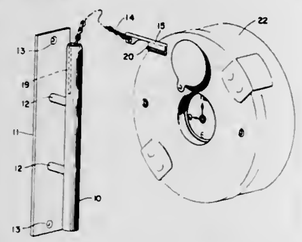
The invention contemplates a key-operated housing structure for chain door-lock mechanism, wherein a bolt at one end of the chain is releasably retained, subject to the control of the key. The bolt is enterable in a bore in the housing, and before reaching the home position, a recess in the bolt is dogged to a spring, which is otherwise normally in the path of movement of the inserted bolt. The key-operated means is directly engageable with the spring to relieve the dogged engagement of the bolt, and means coating between the spring and the housing assures that unauthorized attempted removal of the bolt will not impair the normal spring suspension and action.

3,640,107
KEY-CONTROLLED LOCKS
Noel Litvin, Buenos Aires, Argentina, assignor to Abraham Isaac Scherz, a part interest
Filed Dec. 8, 1969, Ser. No. 886,211
Claims priority, application Argentina, Sept. 24, 1969, 224,306
Int. Cl. E05b *63/08, 19/14*
U.S. Cl. 70—129 12 Claims



A key-operated combination lock having a locking latch operated by a pivotable handle. Movably secured to the handle is a slidable bolt control element which constitutes the main closing element. The bolt control element is locked by the penetration of a number of bolt pins through tne bolt control element and into perforations which house drive pins of varied sizes in a fixed base. The bolt control element may only be moved after the insertion of a key having a plurality of grooves which coincide with the drive pins into the keyway between the clasp and the fixed frame.

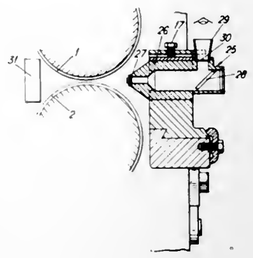
3,640,108
MODEL 'C' WATCHCLOCK KEYHOLDER
Robert H. Cairns, 370 East St., Wrentham, Mass.
Filed Aug. 13, 1970, Ser. No. 63,476
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R 4 Claims



A captive key on a chain with respect to a storage tube from which the key is temporarily removed for application to a watchman's clock.

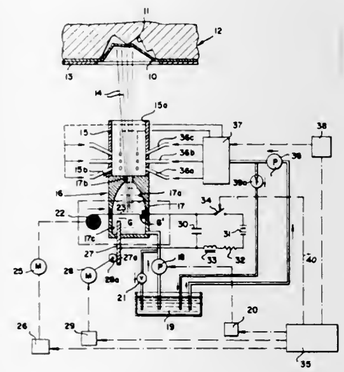
3,640,109
METHODS OF AND APPARATUS FOR SETTING ROLLER GUIDES IN ROD MILLS
George Walker Ashton, Totley, Sheffield, and John Congreve Ashton, Sheffield, both of England, assignors to Ashlow Steel & Engineering Company Limited, Sheffield, England and Templeborough Rolling Mills Limited, Rotherham, England
Filed Apr. 14, 1969, Ser. No. 815,583
Claims priority, application Great Britain, Apr. 23, 1968, 19,221/68
Int. Cl. B21c *51/00;* B21b *39/20;* B21d *43/16*
U.S. Cl. 72—37 7 Claims

In the setting of the guide rollers of a rolling stand in a rod-rolling mill use is made of an optical device instead of the human eye. The optical device and a holder for the guide rollers are made interchangeable in a support for the holder. The support and the rolls in the stand are adjusted in position



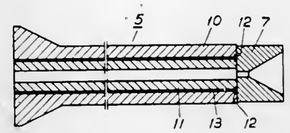
while the optical device is in the support, and then the optical device is replaced by the holder. The position of the guide rollers in the holder is preset with the use of the same or another optical device.

3,640,110
SHOCK FORMING
Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Tokyo, Japan
Continuation-in-part of application Ser. No. 735,760, June 10, 1968, now Patent No. 3,566,647. This application Aug. 14, 1969, Ser. No. 850,056; Oct. 11, 1968, 43/73973; 43/73974; June 10, 1969, 44/45531; 44/45532; Jan. 31, 1969, 44/8455
Int. Cl. B21d *26/12*
U.S. Cl. 72—56 49 Claims



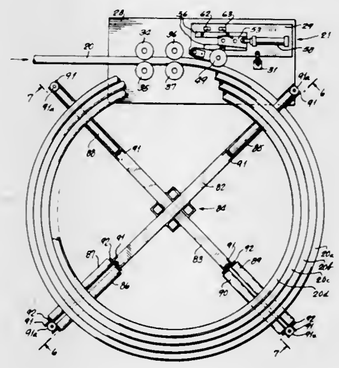
Method of and apparatus for the shock-wave forming of metallic and other workpieces in which an electrical discharge in a liquid produces a shock wave, preferably in a power jet directed against the workpiece. The discharge is produced between a pair of permanent electrodes with a gap between them temporarily bridged at least in part by a fusible conductor. The electrical supply preferably includes at least one high-voltage, low-current source for initiating the discharge and at least one high-current, low-voltage source for sustaining the discharge thereafter. Control of the power jet is effected by fluidic methods using transverse jets of the same or another fluid, preferably under the control of a programmer.

3,640,111
PRESS FOR HYDROSTATIC EXTRUSION HAVING A COMPOSITE CYLINDER EXTERNALLY EXCUSED TO HIGH PRESSURE
Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebologet, Vasteras, Sweden
Filed Feb. 16, 1970, Ser. No. 11,479
Claims priority, application Sweden, Feb. 14, 1969, 2024/69
Int. Cl. B21c *27/00*
U.S. Cl. 72—60 5 Claims



A press for hydrostatic extrusion includes a press stand and a high-pressure cylinder arranged in the press stand. These parts form a pressure chamber to enclose a pressure medium, and a piston is provided extending into the chamber for effecting a pressure in the enclosed pressure medium. A tubular element having a die at its inner end projects into the pressure chamber on the opposite end from the piston. The tubular element is formed of a number of tubes arranged one inside the other between which is an annular gap when the tubular element is unloaded; but the tubes come into contact when the outer part is subjected to working pressure.

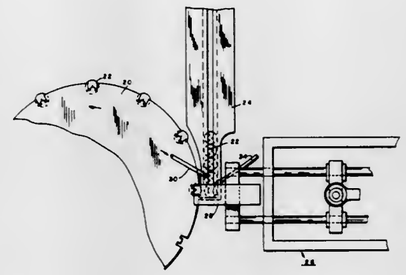
3,640,112
COILING METHOD AND APPARATUS
Herbert J. Meyfarth, Cleveland, Ohio, and John J. Crosby, Cambria Heights, N.Y., assignors to Republic Steel Corporation, Cleveland, Ohio
Filed May 12, 1969, Ser. No. 823,764
Int. Cl. B21f *3/10;* B21c *47/00*
U.S. Cl. 72—138 14 Claims



A coil made of a continuous piece of elongated material such as tubing, prebent into pancakelike spirals called radial layers, each radial layer made up of several concentric and coplanar convolutions, with several radial layers stacked axially, and method and apparatus for making such coils.

The material is bent prior to coiling at predetermined bending radii which are different for different convolutions within a radial layer. One or more of the convolutions within each radial layer may be bent at constant bending radius; the rest may be bent at gradually changing radii. The bending radius is controlled by an electric and hydraulic network employing both timed and feedback controls. The coil may be built either upwardly, with the most recently made radial layer always at the bottom of the coil, or it can be built downwardly, with the most recently made radial layer always on the top of the coil.

3,640,113
APPARATUS FOR PROCESSING TRANSISTOR LEADS
Martin G. Heller, Warren St., West Orange, N.J., and Donald D. Kelly, 19 Mitchell Ave., Roseland, N.J., said Kelly assignor to said Heller
Filed Feb. 3, 1970, Ser. No. 8,192
Int. Cl. B21f *45/00*
U.S. Cl. 72—332 15 Claims



In an apparatus for processing transistor leads as in U.S. Pat. No. 3,396,758 to R. L. Hall on Aug. 13th, 1968 there is provided improvements in the transporting wheel and in the cutting and shaping die mechanism used to automatically cut and shape the leads of transistors. There is also provided improvements in maintaining the alignment and orientation of the transistors as they are fed from a discharge chute to the transporting wheel.

3,640,114
METHOD OF HOT ROLLING METAL
William R. Foley, Jr., Allison Park, Pa., assignor to Teledyne, Inc., Los Angeles, Calif.
Continuation of application Ser. No. 656,365, July 27, 1967, now abandoned. This application June 23, 1969, Ser. No. 835,809
Int. Cl. B21b *1/00*
U.S. Cl. 72—365 6 Claims

In the art of moving metal at hot forgeable temperature through and reducing such metal in a hot rolling mill, engaging the metal by a roll and applying to the roll coolant at a temperature below the boiling point of water so that the roll is subjected to repeated heating and cooling cycles, the roll having a surface contacting the metal which surface is of chromium alloy steel which has simultaneously exceptional resistance to thermal fatigue cracking and good resistance to wear at the temperatures produced by contact with metal at hot forgeable temperature and which has the following composition:

Element	Broad range (%)	Narrow range (%)	Preferred (%)
Carbon	0.03–0.2	0.05–0.2	about 0.15
Chromium	3–8	4.5–6	about 5
Molybdenum	0–2	.5–1.5	about 1
Tungsten	0–7	.5–4	about 1.5
Vanadium	0–1	0–0.5	about 0
Manganese	.3–3	.3–2.5	about 2
Silicon	.2–2	.2–2	about 1

the sum of the percentages of the chromium, molybdenum, tungsten and vanadium being between about 4 and about 9, the balance being substantially iron. The roll may comprise a ferrous metal body to which the metal contacting surface of chromium alloy steel is applied. The metal contacting surface may be and preferably is applied to the roll body by weld

deposition. The metal moved through the rolling mill is preferably iron or steel above its critical temperature.

3,640,115
TUBE SPACER TOOL

Richard D. Duncan, and George H. Salzano, both of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 19, 1969, Ser. No. 886,632
Int. Cl. B21d *41/02*; B21b
U.S. Cl. 72—393 **2 Claims**

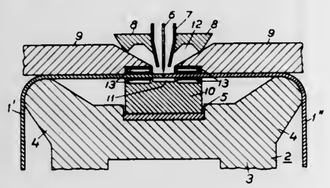


A tool assembly for making spacing projections on a heat exchanger tube is inserted into the tube. A piston with wedges on the sides is moved longitudinally under hydraulic pressure. The wedges force balls outward through openings in the tool assembly and against the inside surface of the tube to form the projections.

3,640,116
MANDREL FOR USE IN MANUFACTURING A HOLLOW ELONGATED THIN-WALLED METALLIC BODY AND METHOD OF USING SUCH MANDREL

Erik Hellman, Irsta, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Original application June 3, 1968, Ser. No. 734,061, now Patent No. 3,559,278. Divided and this application June 15, 1970, Ser. No. 46,344
Int. Cl. B23k *31/02*
U.S. Cl. 72—476 **3 Claims**



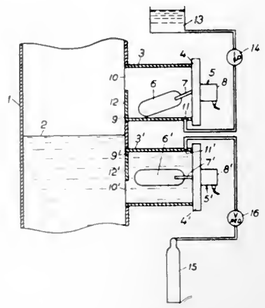
A hollow, elongated, thin-walled body is formed by welding at least one seam to close the body around a mandrel of a material having a greater coefficient of thermal expansion than the material of the body, whereafter the body and mandrel are heated until the thermal stresses in the body are greater than the yield strength of the material of the body.

3,640,117
LEVEL CONTROL MEANS

Jens Ole Stilling, Lakemba, Australia, assignor to Aktiebolaget Asea-Atom, Vasteras, Sweden

Filed Sept. 21, 1970, Ser. No. 73,803
Claims priority, application Sweden, Sept. 26, 1969, 13246/69
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 R **3 Claims**

A liquid level indicator has a level monitor arranged in a chamber adapted to be connected in parallel with a container for the liquid whose level is to be indicated. An artificial liquid level is formed in the chamber by introducing liquid or gas depending on whether the indicator is intended to indicate a too high or too low liquid level. The liquid or gas

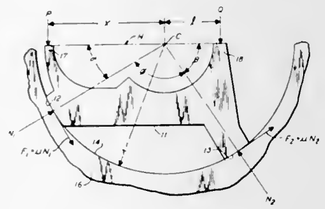


used is allowed to escape into the container, thereby testing the level monitor even when it is part of an operating system.

3,640,118
FRICTION-TESTING APPARATUS AND METHODS

David G. Geis, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 9, 1970, Ser. No. 17,664
Int. Cl. G01n *19/02*
U.S. Cl. 73—9 **7 Claims**

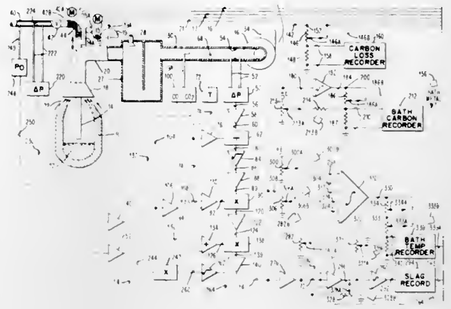


A more accurate determination of the coefficient of friction between a clutch shoe and drum of a metallic friction clutch is attained from an output measured force which bears a nonlinear relationship to the coefficient of friction. The output force is obtained by (1) applying an input predetermined force on one side of the clutch shoe, which has a pair of bearing surfaces engaging the drum, (2) applying an aiding torque to the drum, and (3) measuring the force transmitted to the opposite side of the clutch shoe. Alternatively, a friction-measuring device of general application utilizes a fixture for holding a pair of samples of a first material in engagement with an arcuate surface of a second material to which a predetermined input force and torque are applied while the fixture is restrained from movement to produce an output reactive force on the holder from which the coefficient of friction between the two materials may be computed by the solution of three simultaneous equilibrium equations of the forces on the materials.

3,640,119
CARBON CONTENT MEASUREMENT IN A BASIC OXYGEN FURNACE

Bernard Blum, Buffalo, N.Y., and John W. Schwartzenberg, Maple Glen, Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Original application Feb. 14, 1966, Ser. No. 534,617, now Patent No. 3,528,800, dated Sept. 15, 1970, which is a continuation-in-part of application Ser. No. 479,867, Aug. 16, 1965, now abandoned. Divided and this application May 6, 1970, Ser. No. 34,936
Int. Cl. G01n *31/00*; C21c *5/00*
U.S. Cl. 73—23 **5 Claims**



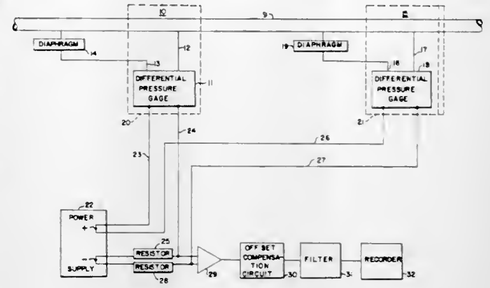
A system for controlling the operation of a basic oxygen furnace in response to measurements of the carbon loss through the exhaust gases and the oxygen flow rate to the lance. The carbon content of the bath as determined from the carbon loss rate and the measured oxygen flow rate as well as the calculated bath temperature provide a basis for controlling the furnace. Oxygen flow is maintained constant until silicon is removed and is then increased at a steady maximum rate. Simultaneously, the lance is brought down as slag buildup occurs. Oxygen flow is modified by a positive feedback signal responsive to carbon loss rate and is limited when carbon loss rate changes rapidly. Also, lance height is modified in response to rate of change of oxygen flow. The oxygen is then shut off and the lance raised when the carbon content of the bath, as determined from carbon loss rate divided by oxygen flow, is at a desired value and the temperature of the bath is also at a desired value.

3,640,120
METHOD AND APPARATUS FOR DETECTING AN INTERFACE BETWEEN TWO LIQUIDS IN A PIPELINE

Hendrikus J. Nihof, and Albertus C. H. Borsboom, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 7, 1969, Ser. No. 848,155
Claims priority, application Netherlands, Aug. 16, 1968, 6811659
Int. Cl. G01n *9/26*
U.S. Cl. 73—53 **3 Claims**

Detecting a change in the composition of a liquid which is being transported through a pipeline, characterized in that the pressure drop is measured simultaneously across two spaced-apart measuring sections in the pipeline. At least one measuring section is horizontal or has a rising slope in the direction of flow. The results of the measurements are compared with each other, if necessary after correction to allow for different circumstances in the measuring sections. A change in the difference between the two results indicates

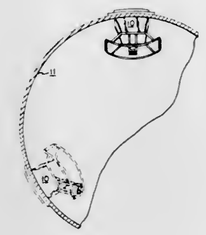


that an interface in the liquid is passing through one of the measuring sections.

3,640,121
SLUMP INDICATOR

Julian J. Mercier, 11302 East 4th Ave., Spokane, Wash.

Filed Mar. 9, 1970, Ser. No. 17,687
Int. Cl. G01n *9/02*, *33/38*
U.S. Cl. 73—54 **3 Claims**



A liquid filled vial pivotally and resiliently mounted is operable to unlock the dial mechanism of the invention in one and only one position as the slump indicator is rotationally carried in a mixing drum and to maintain the indicator in a fixed position and thus maintain the reading throughout the rotational cycle of the drum. Deflector walls are provided on two opposing sides of a sample cage hingedly carried by a strain gauge indicator assembly. The strain gauge indicator assembly comprises a tension plate mounted on a spring and slidably carried in a multiplicity of yokes on a mounting base, a normally locked indicator, a shaft suitably fixed at one of its terminal ends to the tension plate and having a sample cage hingedly carried at the opposite end thereof.

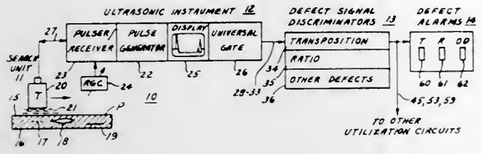
3,640,122
ULTRASONIC DEFECT SIGNAL DISCRIMINATOR

Edward M. Nusbickel, Jr., Allentown, Pa., assignor to Bethlehem Steel Corporation

Filed Nov. 20, 1969, Ser. No. 878,482
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.9 **10 Claims**

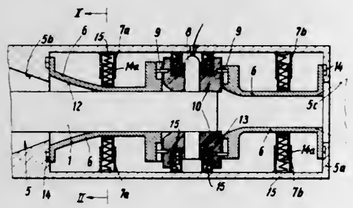
Ultrasonic instrument with pulsed transducer provides a plurality of gating pulses and analog output signals related to test piece surface spacing and defect characteristics. Separate transposition, ratio, and other defect signal discriminators sample these output signals simultaneously and, by means of logic elements combined with a "strobe" gate, provide for characterizing defects and occurrences of events.

A transposition alarm is enabled when two different analog signals rise and fall relative to respective thresholds according to a prescribed sequence. A ratio alarm is enabled when,



for example, the defect and rear surface analog signals are compared and they exceed a predetermined ratio thereof. A third alarm is enabled when defects occur that are not characterized by the transposition or ratio methods.

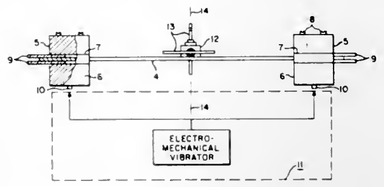
3,640,123
APPARATUS FOR NONDESTRUCTIVE MATERIALS TESTING OF CONTINUOUSLY ADVANCED WORKPIECES
Herbert Vogt, Dechant-Linden-Weg 31, 5042 Liblar, and Helmut Pause, Gotenring 59, 5 Cologne-Deutz, both of Germany
Filed Mar. 21, 1969, Ser. No. 809,240
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 **12 Claims**



An apparatus for nondestructive materials testing of continuously advanced workpieces of preferably oblong shape. This apparatus has at least one holder, in order to support an ultrasonic transducer. The holder is mounted in the throughfeed section to transmit and receive, respectively, testing signals, to and from said workpiece. Further, pressure structure is provided for pressing the transducer against the workpiece, to provide a measurement coupling of the transducer with the workpiece, when latter is passing said transducer. The holder is provided with at least one funnel-type inlet throughfeed to adjust the direction of the workpiece with respect to the holder. There is at least one movably supported guide which is arranged ahead of the transducer holder. In order to guide the workpiece, when passing the transducer a spring structure is provided also for pushing the guide into the throughpassing space and against the throughpassing workpiece. The resilient structure is arranged around the perimeter of the guide in order to have an equal distribution of resilient forces on the guide.

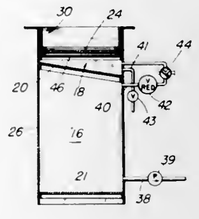
3,640,124
RESONANT FIXTURE VIBRATION AMPLIFIER
John Verga, Rockville Centre, N.Y., assignor to Hazeltine Research, Inc.
Filed June 18, 1969, Ser. No. 834,399
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.6 **5 Claims**

Disclosed is a resonant fixture vibration amplifier capable of producing accelerations along a single axis without fatiguing. The amplifier utilizes a resonant member equally fixed at opposite ends, centrally loaded, and capable of resonating at



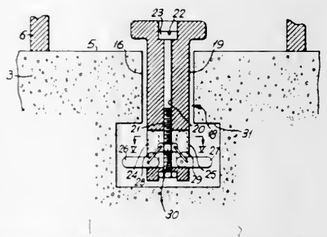
a selected frequency, thereby subjecting test specimens to accelerations along a single axis.

3,640,125
WATER ABSORPTION TEST METHOD
Christian F. Girard, Ottawa, Ontario, and Gerald J. Derouin, Hull, Quebec, both of Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada
Filed Nov. 17, 1969, Ser. No. 877,201
Int. Cl. G01n *33/34*
U.S. Cl. 73—73 **3 Claims**



Method for testing the water absorption characteristics of building board materials, for example, Masonite, in which the rough side of the board is submerged in water and the smooth side subjected to a predetermined vacuum for a predetermined interval of time. The time and vacuum parameters of the method are calculated to achieve as closely as possible the same water absorption and thickness results as are obtained with the standard 24-hour test method.

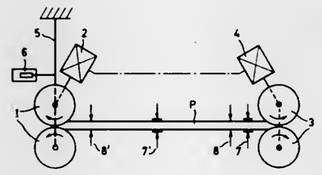
3,640,126
TESTING OF CONCRETE
Moshe Te'eni, Southampton, England, assignor to National Research Development Corporation, London, England
Filed Aug. 4, 1969, Ser. No. 847,228
Claims priority, application Great Britain, Aug. 7, 1968, 37,732/68
Int. Cl. G01n *3/00*
U.S. Cl. 73—88 R **3 Claims**



The strength of a brittle material, such as concrete, is tested by applying opposing forces on a ring of predetermined dimensions on the surface of the material and an area

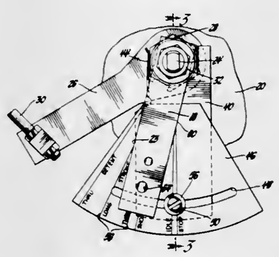
which is within the material and smaller than that of the ring, the forces being applied in the sense to pull out material against reaction on the ring. In practice the ring is defined by an annular member disposed on the material surface, and the small area by a boltlike insert which can be of simple unitary form embedded in cast material or expandible head form secured in a suitable bore and cavity in solid material, while the force is applied by a hydraulic ram coupling the insert and annular member. An important feature of the test is the predetermined containment of prospective material rupture by the ring, thus affording a controlled test which correlates well with conventional test results.

3,640,127
PROCESS AND APPARATUS FOR THE DETERMINATION OF STRESS-STRAIN RELATIONSHIPS OF SOLIDS AND VISCOUS LIQUIDS, ESPECIALLY OF MATERIALS IN THE VISCOELASTIC STATE
Joachim Meissner, Fussgoenheim, Germany, assignor to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhineland Theinland-Pfalz, Germany
Filed Apr. 30, 1970, Ser. No. 33,305
Claims priority, application Germany, May 2, 1969, P 19 22 414.7
Int. Cl. G01n *3/08*
U.S. Cl. 73—95.5 **14 Claims**



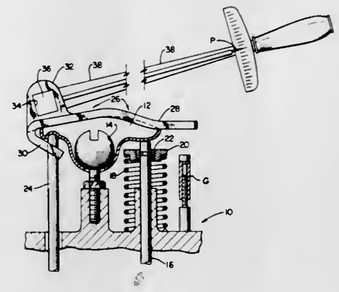
A process for determining the elastic and irreversible plastic parameters of materials of consistencies ranging from doughy to molten at a constant rate of extension, and an apparatus for carrying out said process in which two pairs of wheels separated by a predetermined distance act on a bar-shaped test specimen at a constant peripheral speed and in which molten specimens are supported by the surface of a liquid.

3,640,128
THROTTLE VALVE GAUGE
Alfred C. Cunning, Indianapolis, and Harry D. Wolverton, Brownsburg, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 10, 1969, Ser. No. 875,280
Int. Cl. G01m *13/02*
U.S. Cl. 73—118 **5 Claims**



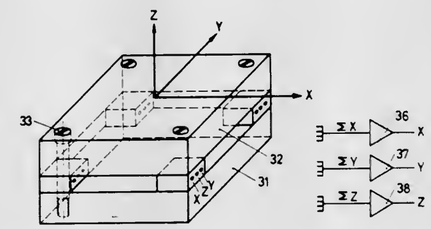
This gauge has a base member with a jaw which clamps to the selector lever nut of a transmission control to hold the gauge on the transmission housing. There is a gauging plate having spaced indicia thereon which indicates proper positions of the throttle valve lever from a fixed station when actuated by throttle pedal through the throttle valve linkage. The gauging plate is adjustably mounted on the base so that particular indicia on the plate can be aligned with the throttle valve lever when the lever is at a predetermined position to serve as a starting point in determining whether the linkage will accurately move the lever to other predetermined positions.

3,640,129
VALVE SPRING TESTER
John C. Bandimere, 3740 Fenton St., Wheatridge, Colo.
Filed Sept. 5, 1969, Ser. No. 855,653
Int. Cl. G01m *13/00*; G01l *1/04*
U.S. Cl. 73—119 R **9 Claims**



Valve spring tester and method for testing the strength of valve springs in situ on valve-in-head engines, the valves of which are operated by rocker arms, characterized by a lever tool affixed to a torque wrench. The tool may be readily secured directly to a rocker arm for rotating same and compressing its associated spring to desired length at which the torque wrench provides a reading which is a measure of the spring strength or force at the particular length to which it has been compressed.

3,640,130
FORCE AND MOMENT ARRANGEMENTS
Gelli Spescha; Karlheinz Martini, both of Winterthur, and Hans Conrad Sonderegger, Neftenbach, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland
Filed Oct. 30, 1969, Ser. No. 872,557
Claims priority, application Switzerland, Nov. 4, 1968, 16433/68
Int. Cl. G01l *5/12*
U.S. Cl. 73—133 **7 Claims**



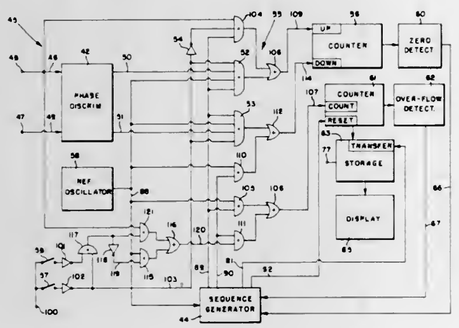
A force and moment measuring arrangement comprises a measuring unit embodying a plurality of force-measuring cells and amplifier arrangements operatively connected

thereto, the force-measuring cells being disposed in the measuring units in relation to ordinate axes in such manner that output signals which are obtained from said cells in response to forces and moments acting on the unit and which are applied to the amplifier arrangements produce output quantities which are proportional to individual force components and force moments. The force-measuring cells of a measuring unit may each be responsive in one or more component directions. Means are provided for eliminating interfering signals.

3,640,131
HORSEPOWER METER

James R. Turk, Solon, Ohio, assignor to Marine Electro Mechanical, Inc., Wickliffe, Ohio

Filed May 18, 1970, Ser. No. 38,108
Int. Cl. G01l *3/10*
U.S. Cl. 73—136 A **13 Claims**

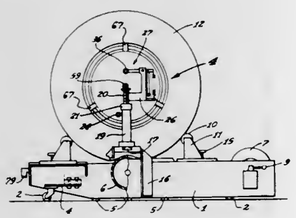


An instrument for providing a visual readout of horsepower, torque or r.p.m. consisting of a shaft interconnected between a load and a power source with a pair of tachometers coupled to the shaft at spaced locations to provide electrical indications of the speed of rotation and amount of twist of the shaft. A digital bidirectional counter and resettable binary coded decimal counter are gated for receipt of indications in two step sequences, to develop the desired signals in the latter counter. Cycling occurs continuously under direction of a sequence generator, and a storage register and display device retain the signals over a period of time to provide the visual readout.

3,640,132
TIRE UNIFORMITY TESTER

Edwin R. Miles, Huntsville, and Donald E. Dreier, Brownsville, both of Ala., assignors to Northrop Corporation, Beverly Hills, Calif.

Filed June 22, 1970, Ser. No. 48,299
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **10 Claims**

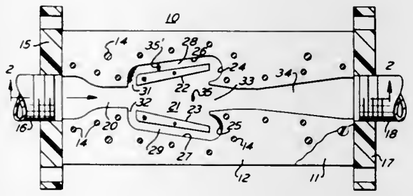


This machine tests the stiffness uniformity of a pneumatic tire body by rotating it while in place on a vehicle and resting on the tester, and recording vertical tire deflections (weak spots or hard spots) on a chart. The tester has a base frame with drive roller, an adapter carried by the tire wheel at its rim and holding a chart, a motion pickup linkage in touch with an axle of the adapter, and a scribe actuated by the linkage and bearing against the chart.

3,640,133
FLOWMETER

Robert B. Adams, Tredyffrin Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

Continuation-in-part of application Ser. No. 618,472, Feb. 24, 1967. This application Jan. 10, 1969, Ser. No. 790,408
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 B **15 Claims**

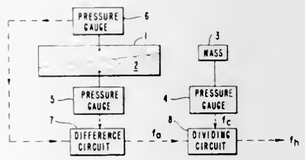


A flowmeter is provided having a through passageway for the flow to be measured with a fluid interaction chamber and feedback means to provide an oscillation of the flow. The frequency of this oscillation is linearly and proportionally related to volume rate of flow and is independent of all fluid properties in the turbulent range. That is to say that the frequency for a given volume flow rate will be the same for any liquid or gas as long as the flow is turbulent. Provisions are made for detecting this oscillation including means for reducing the turbulence at the detecting location and a sensor which is responsive to changes in the heat transfer rates to the surrounding fluid medium.

3,640,134
LIQUID LEVEL METER

Adrianus G. Hop, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,211
Int. Cl. G01f *23/14*
U.S. Cl. 73—299 **5 Claims**

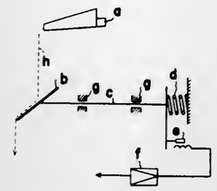


A method and apparatus for determining the mean liquid level in a container subject to motion wherein a signal related to the pressure exerted by the liquid near the bottom of the container is divided by a signal representing the acceleration forces on the container to provide a signal related to the mean liquid level in the container.

3,640,135
DEVICE FOR MEASURING FLOW RATES OF POWDERY AND GRANULAR MATERIALS

Hiroshi Tomiyasu; Tsuguya Inagaki, both of No. 162-2, Nagao, Kawasaki-shi, Kanagawa-ken; Hiroshi Kajiura, No. 22-7, 2-chome, Nishiazabu, Tokyo, and Kinnosuke Watanabe, No. 1948-11, Hosoyama, Kawasaki-shi, Kanagawa-ken, all of Japan

Filed Oct. 10, 1968, Ser. No. 766,515
Int. Cl. G01f *1/00*
U.S. Cl. 73—228 **7 Claims**

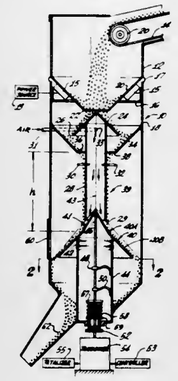


A method of measuring the flow rates of powdery and granular materials which comprises allowing a powdery or granular material to drop naturally by gravity from a certain height onto a detecting plate and then measuring the horizontal component of the force given to said plate as an impact load, and instruments for practicing the method.

3,640,136
MASS FLOW RATE METER

Claude B. Nolte, Placentia, Calif., assignor to Kingmann-White, Inc., Placentia, Calif.

Continuation-in-part of application Ser. No. 770,984, Oct. 28, 1968, now abandoned. This application Sept. 11, 1969, Ser. No. 857,174
Int. Cl. G01f *1/00*
U.S. Cl. 73—228 **27 Claims**

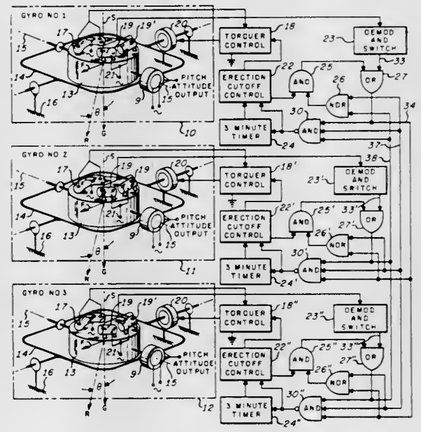


Apparatus for measuring the mass flow rate of particulate matter, such as flour, salt, grains, soap powder, sand, gravel, cement, sawdust and the like, using an impact sensor onto which the particulate matter is dropped in free fall through a substantially constant predetermined height. The sensor has an upwardly directed sharp edge or point and inclined surfaces and moves bodily in a substantially straight line, vertical direction only. The particulate matter is directed by inclined surfaces against vertical guide surfaces which direct the particulate matter to drop vertically onto the inclined sensor surfaces through a substantially constant, free fall distance. The average impulse of force applied to the sensor by the dropping particulate matter deflects it vertically to provide a measure of the rate of mass flow of the particulate matter through the apparatus. The displacement of the sensor is small with respect to the distance of particulate fall.

3,640,137
ERECTION CUTOFF SYSTEM FOR PLURAL GYROSCOPES

Terry S. Allen; Lynn R. Lane, both of Phoenix, and Harold Lee Swartz, Glendale, all of Ariz., assignors to Sperry Rand Corporation

Filed June 24, 1969, Ser. No. 836,027
Int. Cl. G01c *19/54*
U.S. Cl. 74—5.34 **6 Claims**

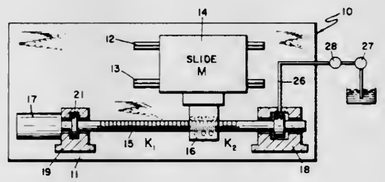


A system for ensuring that the long term erection sensors of a plurality of gyroscopes installed in the same aircraft and providing substantially identical attitude reference information are cut off simultaneously to thereby reduce discrepancies in the information supplied by each of the gyroscopes due to tolerances in the cutoff thresholds of the long term reference sensors of each gyroscope.

3,640,138
MACHINE TOOL

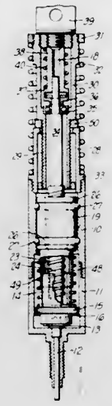
Robert S. Hahn, Northboro, and Thomas R. Keefe, Framingham, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Dec. 12, 1969, Ser. No. 884,450
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **5 Claims**



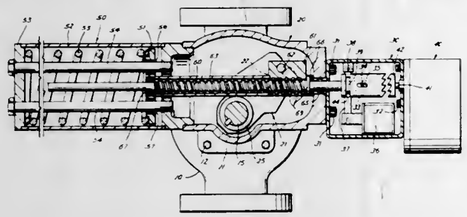
This invention relates to a machine tool and, more particularly, to machinery having a table which is slidable with substantially no friction, which is screw-driven, and which has means for restraining the screw to prevent erratic movement of the table.

3,640,139
MECHANICAL LOCK CYLINDER
Kamal Y. Aweimrine, 4209 West First St., Los Angeles, Calif.
Filed June 1, 1970, Ser. No. 42,330
Int. Cl. F16h 27/02
U.S. Cl. 74—89.15 7 Claims



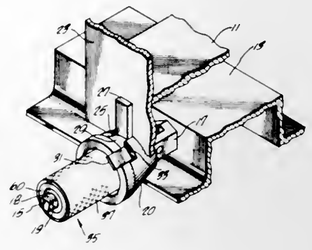
A mechanical lock cylinder which is particularly adapted for use on aircraft or other vehicle seats, as well as for other uses. The device includes housing means enclosing an elongated screw type of shaft which is mounted in a rotatable ball nut. The shaft is normally held against rotation by a pair of locking means disposed at opposite ends of the housing. Upon release of either locking means, the screw may be freed for selective inward or outward linear movement. A manually adjustable stroke limiting device is provided to limit the stroke of the screw or to prevent its rotation altogether.

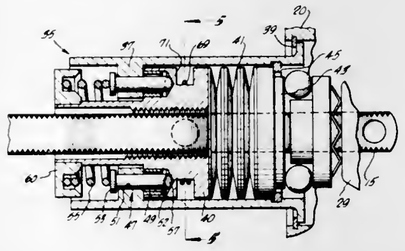
3,640,140
ACTUATOR
Ronald A. Gulick, Sugarland, and Charles H. Wicke, Richmond, both of Tex., assignors to Research Engineering Company, Houston, Tex.
Filed June 2, 1969, Ser. No. 829,523
Int. Cl. F16h 29/02
U.S. Cl. 74—89.15 17 Claims



An actuating device comprising: a ball screw arrangement having an externally threaded screw and an internally threaded nut engageable with the screw through ball bearings, the nut being longitudinally movable along the screw on rotation of the screw. The screw may be mounted on support means for rotation only. Power means may be connected to the screw through clutch means for rotation thereof to drive the nut longitudinally thereon from a first position to another. The nut is connected to a rotatable member by a mechanism adapted to convert longitudinal movement of the nut to rotational movement of a portion of a device connected to the rotatable member. A spring return unit may be attached so as to exert a force against the nut. The spring return unit may be adapted on disengagement of the clutch to drive the nut back to its first position.

3,640,141
EXTRACTOR HOLDDOWN APPARATUS
Robert A. Hollingsead, Yorba Linda; Abraham Kuchler, and Clyde Robert Pryor, both of Anaheim, all of Calif., assignors to Hollingsead-Pryor Enterprises, Inc., Santa Fe Springs, Calif.
Filed Dec. 19, 1969, Ser. No. 886,435
Int. Cl. F16h 27/02
U.S. Cl. 74—89.15 44 Claims

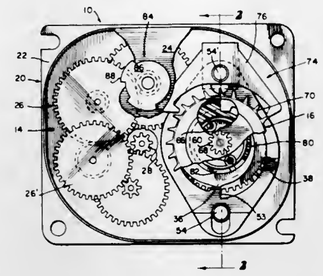




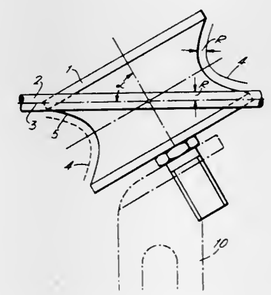
An extractor holddown apparatus is disclosed for displacing and securing a unit of electronic equipment onto a rack or shelf. The apparatus includes a spindle pivotally connected to the shelf. A carriage is threadedly mounted on the spindle and is adapted to be rigidly secured to the unit of electronic equipment. The carriage is driven along the spindle to apply a translational force on the unit to move the unit rearwardly into engagement with a rear connector, and to maintain the unit in a secured position with a desired amount of force. The carriage is also forwardly driven to function as an extractor. A drive assembly for driving the carriage along the spindle includes a knob shell having a drive nut located therein. The drive nut is threadedly mounted on the spindle and is resiliently coupled to the carriage for applying an axial force thereto. Spring biased drive pins interconnect the knob shell with the drive nut and are disengageable on a given amount of force. An indicator plate is also located within the knob shell to provide a visual inspection aid to indicate whether or not the apparatus is applying the desired amount of force on the carriage. Spring-biased self-locking means also interconnect the drive nut and the spindle to prevent antirotation therebetween.

3,640,142
COMBINATION SPEED REDUCTION AND ESCAPEMENT MEANS
Richard W. Stafford, Clayton, Ind., and Milenko Cuckovic, Lund, Sweden, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed June 17, 1970, Ser. No. 46,925
Int. Cl. F16h 27/04
U.S. Cl. 74—112 17 Claims

A gear reduction means and an escapement means are both disposed within a housing which carries a drive motor coupled to the reduction means. The escapement means includes a rotating positioning means coupled to the gear reduction means, a reciprocating regulating means responsive to movement of the rotating positioning means and an intermittent spring-biased rotating output means responsive to movement of the reciprocating regulating means.



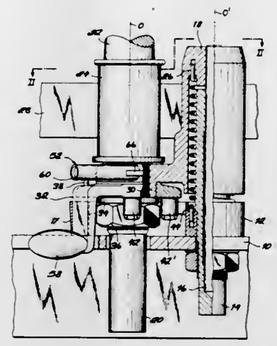
3,640,143
GUIDE PULLEY AND A METHOD FOR THE PRODUCTION THEREOF
Danckert Krohn-Holm, Oscarsgt. 13, Oslo 3, Norway
Filed Mar. 10, 1970, Ser. No. 18,233
Claims priority, application Norway, Mar. 11, 1969, 1006/69
Int. Cl. F16h 55/36
U.S. Cl. 74—230.05 2 Claims



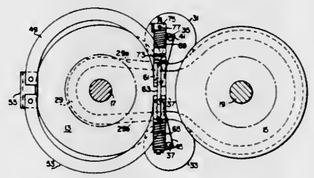
A guide pulley having a guiding groove shaped substantially as a hyperbolic body of rotation and the body guided thereby has at least a semicircular cross section rectilinearly moved at an acute angle to the pulley axis of rotation.

3,640,144
SPINDLE COUPLING
Heinrich Eckholt, Munster, Westphalia, Germany, assignor to Hamel G.m.b.H. Zwirnmaschinen, Munster, Westphalia, Germany
Filed Sept. 8, 1970, Ser. No. 70,122
Claims priority, application Germany, Sept. 11, 1969, G 69 35 778.4
Int. Cl. F16h 7/10; D01h 13/14, 7/46
U.S. Cl. 74—242.15 R 10 Claims

A spindle to be intermittently driven by a continuously rotating belt is journaled on mounting arm which is swingable on a supporting rail about a pivotal axis parallel to the spindle axis. A lever fulcrumed on the spindle carries two rollers coacting with an encircling track fixed to the rail, the two rollers defining with respective recesses in the track a pair of stable positions in which the lever can be indexed by a toggle mechanism articulated to the mounting arm and the lever. A torsion spring anchored to the rail and to the mounting arm tends to swing the latter into the first stable position in which a whorl on the spindle engages the driving belt for frictional entrainment thereby; in the alternate stable position the spindle is decoupled from the belt.



3,640,145
MOTION TRANSMISSION DRIVE
Charles E. Kraus, Allendale, N.J., assignor to Excelermatic, Inc.
Original application Aug. 20, 1968, Ser. No. 753,941. Divided and this application May 21, 1970, Ser. No. 48,602
Int. Cl. F16g 13/02
U.S. Cl. 74—248 7 Claims

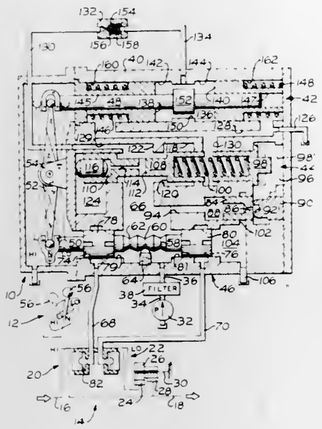


A chain for a power transmission device having longitudinally extending contact surfaces engaging the pulley flanges which lie along the centerline of the chain, are essentially flat, match the pulley flange surfaces, and are positioned between the joints of the chain links.

3,640,146
HYDRAULIC SAFETY OVERRIDE VALVE
Randolph C. Barnes, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 28, 1970, Ser. No. 41,202
Int. Cl. F16h 5/12; F15b 20/00; F16d 25/00
U.S. Cl. 74—364 9 Claims

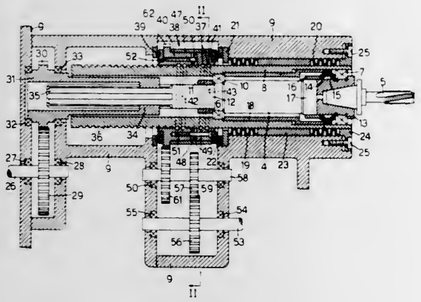
A hydraulic control valve for controlling a vehicle transmission comprising a manually actuable position selector valve for alternatively directing hydraulic fluid to first or second position clutches of the transmission from a neutral position, a pressure modulating relief valve for modulating the operation of the position selector valve, and a safety

override valve linked to the position selector valve for automatically returning the position selector valve to the neutral



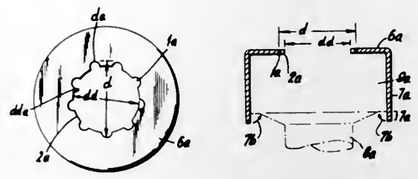
position when hydraulic pressure is low thereby avoiding system damage.

3,640,147
TOOLHOLDER ASSEMBLY FOR MACHINE TOOL
Giuseppe Fantoni, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Mar. 2, 1970, Ser. No. 15,491
Claims priority, application Italy, Mar. 3, 1969, 50820 A/69
Int. Cl. F16h *1/18, 55/18*
U.S. Cl. 74—424.8 R **7 Claims**



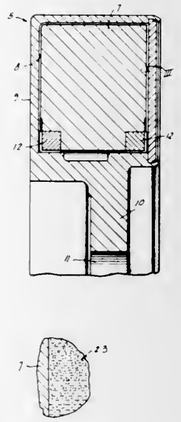
In a device for feeding a quill of machine tool, which is slidable axially in a support, the quill is threaded externally and cooperates with a lead nut rotatable concentrically with respect to the quill and is integral with a gear rotatable to effect the advance of the quill. The lead nut comprises two parts which are spaced axially by a flexible annular plate formed between an internal groove and an adjacent external groove in the lead nut to permit axial adjustment of the two parts. The lead nut includes two independent ball circulation circuits one for each one of the two parts respectively. The quill is mounted in the support by means of two elastic bushes spaced from one another and adjustable axially by means of a pressure collar to eliminate axial play of the quill.

3,640,148
RETAINER CAP FOR A STARTER PINION
Ronald Fischbach, 2045 East 21st St., Brooklyn, N.Y.
Filed Oct. 12, 1970, Ser. No. 79,900
Int. Cl. F16h *55/04*; **B60b** *27/06*; **F16d** *1/06*
U.S. Cl. 74—434 **10 Claims**



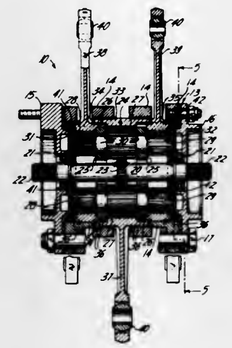
A retainer cap for retaining a rotatable pinion, the lockable roller bearings and associated springs, of an automobile starter shaft and pinion mechanism, the top of the cap having centrally located therein an aperture defined by the cap's aperture inside perimeter in a shape corresponding to a transverse cross section across the automobile starter pinion such that the aperture inside perimeter includes between radially outwardly extending cutout spaces, radially inwardly directed projections corresponding to the shape of spaces between teeth of the starter pinion, whereby the retainer cap is placeable into a retaining position by snug insertion of the teeth through the scalloped spaces, thereby eliminating the need for the prior art retainer annular washer and two half moon retainer rings.

3,640,149
VIBRATION DAMPERS UTILIZING REINFORCED VISCOELASTIC FLUIDS
Ronald L. McLean, Tonawanda, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Aug. 26, 1969, Ser. No. 853,135
Int. Cl. F16f *15/10*
U.S. Cl. 74—574 **8 Claims**



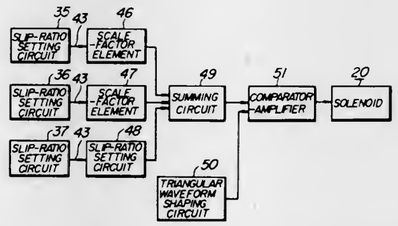
A vibration damper of the type having relatively movable parts with spaced confronting surfaces disposed to move in parallel relation during movement of the parts is provided with reinforced viscoelastic material in the space between the parts in engagement with the surfaces and shearingly resisting the relative movement.

3,640,150
POWER DRIVEN ACTUATOR OF THE COMPOUND PLANETARY GEAR TYPE
Robert L. Leiner, Pompton Lakes, and Salvatore Avena, Newark, both of N.J., assignors to Curtiss-Wright Corporation
Filed June 25, 1970, Ser. No. 49,657
Int. Cl. F16h *19/00, 1/32*
U.S. Cl. 74—674 **5 Claims**



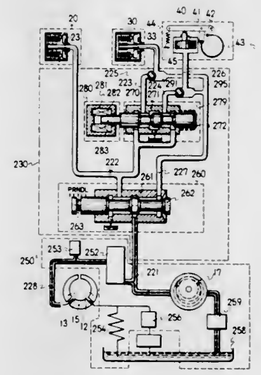
A power driven actuator of the compound planetary gear type which has two output members capable of movement relative to each other and to a fixed reference point through a combined arcuate distance of up to 360° for pivotally moving a member to be actuated via a crank linkage system interconnecting the output members and the member to be actuated.

3,640,151
DEVICE FOR CONTROLLING IN A STEPWISE MANNER HYDRAULIC PRESSURE OF WORKING OIL FOR USE WITH AN AUTOMATIC TRANSMISSION HAVING A TORQUE-CONVERTER
Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Chita-gun; Osamu Ito, Toyota, and Takaaki Kato, Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
Filed Apr. 22, 1970, Ser. No. 30,871
Claims priority, application Japan, June 3, 1969, 44/43886; June 4, 1969, 44/43827
Int. Cl. F16h *27/00*
U.S. Cl. 74—731 **4 Claims**



A device for step controlling the hydraulic pressure of working oil for an automatic transmission having a torque-converter comprising means for generating a signal representative of a slip ratio between speeds of a turbine and pump of the torque-converter, first valve means actuated by said signal so as to be opened or closed thereby varying the working oil pressure and second valve means actuated by the oil discharged from said first valve means for setting a predetermined pressure in response to said ratio depending upon whether it is higher or lower than at least two predetermined points, thereby reducing in a stepwise manner the pressure of working oil acting upon friction engaging means of the torque-converter when said ratio is increased whereby the working oil pressure can be suitably controlled in response to a desired torque transmission by the torque-converter.

3,640,152
CONTROL FOR AUTOMATIC TRANSMISSION
Takeaki Shirai, Nagoya-shi; Shigeru Sakakibara, Chita-gun, Aichi-ken; Masaaki Noguchi, Nagoya-shi, and Masaharu Sumiyoshi, Toyota-shi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippon Denso Kabushiki Kaisha
Filed Sept. 5, 1969, Ser. No. 855,510
Claims priority, application Japan, Oct. 18, 1968, 43/76293
Int. Cl. F16h *5/42*
U.S. Cl. 74—752 **5 Claims**

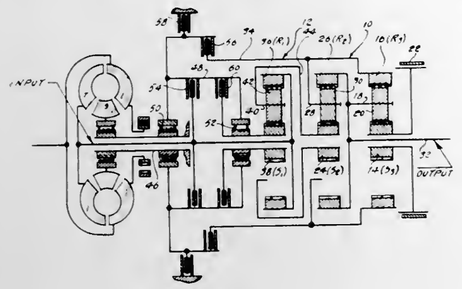


The present invention relates to a control for automatic transmission of a vehicle wherein the computation of the slip ratio may be established by any one of, mechanical means, means utilizing fluid under pressure, or electrical means; there being associated in combination therewith, a computing circuit which is applied for the determination of the number of revolutions of the engine of the vehicle, the number of revolutions of the output shaft of the torque converter or the power driven shaft of the drive unit of the vehicle, and there being additionally applied in connection therewith a logic product circuit, a logic sum circuit, a bistable memorial circuit and a synchronous time retaining circuit for effectuating the operation of electrically actuable distribution valve means to control the transition from high- to low-gear functions and vice versa for the vehicle.

3,640,153
FOUR-SPEED RATIO POWER TRANSMISSION MECHANISM HAVING SIMPLE PLANETARY GEAR UNITS
Larry A. Kepner, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 18, 1970, Ser. No. 73,523
Int. Cl. F16h *3/44, 57/10*
U.S. Cl. 74—759 **8 Claims**

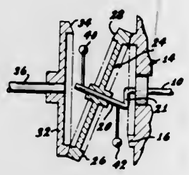
A power transmission mechanism for use in an automotive vehicle driveline comprising a three-speed ratio gear system having two torque input elements and a simple planetary ear unit situated between the torque input shaft and the two torque input elements of the three-speed ratio gear system, and clutches and brakes adapted to control the relative motion of the gear elements whereby the torque input shaft may be connected selectively to either of the torque input ele-

ments of the three-speed ratio gear system, the simple planetary unit being adapted to multiply the torque input to one of



the input elements of the three-speed ratio gear system during low-speed ratio operation thereby providing a fourth overall ratio.

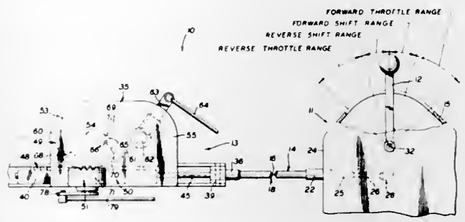
3,640,154
AXIAL GEAR TRAIN
Philip E. Massie, 4220 Irving Pl., Culver City, Calif.
Continuation-in-part of application Ser. No. 822,462, May 7, 1969, now Patent No. 3,587,349. This application Sept. 11, 1970, Ser. No. 71,306
Int. Cl. F16h *1/28*
U.S. Cl. 74—800 **12 Claims**



The device is an axial gear train or transmission for purposes of effecting a change of speed such as a substantial reduction in speed. A member having gear faces is mounted on a skew axle driven by a drive shaft; one gear face meshes with a nonrotating gear face. The other gear face meshes with a gear face on a driven shaft. The gear faces on the skew axle nutate or gyrate with the point of contact between meshing gear faces rotating. The skew axle is offset from the axis of the driving and driven shafts and the nutating gear faces are axially spaced from each other. The centers of the nutating gear faces are displaced radially from the axis of the driving and driven shafts. Gear trains for providing any desired speed ratios can be designed based on the parameters which are the number of teeth on respective gear faces; the axial spacing of the nutating gear faces; and the radial displacement of the centers of the nutating gears.

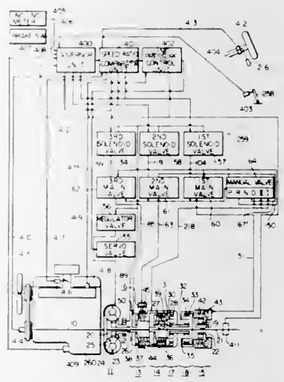
3,640,155
CONTROL SYSTEM FOR COORDINATED ACTUATION OF A TRANSMISSION AND THROTTLE
Donald W. Waner, Stow; John E. Litzell, Hudson; and Roger F. Olsen, Cuyahoga Falls, all of Ohio, assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Apr. 1, 1970, Ser. No. 24,566
Int. Cl. B60k *21/00;* **G05g** *9/08*
U.S. Cl. 74—875 **8 Claims**

A control system to provide shifting of a transmission in coordination with the opening and closing of a throttle, both located at a controlled station, by actuation of a single control lever at a control station remote with respect to the controlled station. Only a single push-pull cable is required to transmit motion from the control lever to a reciprocatingly slidable operating member at the controlled station. The operating member has a first drive means in the form of a full unbroken rack of teeth that meshingly engage a fully toothed pinion. Rotation of the fully toothed pinion in response to translation of the operating member effects a shifting of the transmission through a pair of cooperative, interrupted gears.



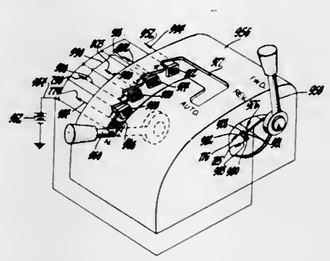
The operating member also has a second drive means in the form of an interrupted rack of teeth that interact with an interrupted pinion. The interruption of the teeth on both the rack and pinion maintain the interrupted pinion stationary in response to movements of the operating member during that portion of its translation by which the transmission is shifted. Thereafter, continued translation of the operating member brings the teeth on the second rack into meshing engagement with the teeth on the interrupted pinion to effect an opening or closing of the throttle.

3,640,156
CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION
Yoichi Mori, and Hiroshisa Ichimura, both of Yokohama, **Japan, assignors to Nissan Motor Company, Limited,** Yokohama, Japan
Filed Oct. 29, 1969, Ser. No. 872,253
Claims priority, application Japan, Oct. 30, 1968, 43/78830
Int. Cl. B60k *21/08;* **F16h** *47/00, 5/42*
U.S. Cl. 74—866 **11 Claims**



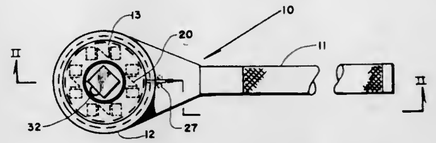
An automatic transmission mechanism for an automotive vehicle in which the transmission governing factors such as the position of the speed selecting lever, position of the accelerator pedal and the throttle valve, engine speed, vehicle speed and road grade are measured by electric means and the signals thus obtained are continuously fed into an electronic control system for evaluation of the requirements from the transmission. The electronic control system sends signals to elements converting them into hydraulic pressure which actuates friction elements to change gear ratios of the transmission.

3,640,157
POWER TRAIN CONTROL SYSTEM
Robert H. Schaefer, Westfield, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 27, 1968, Ser. No. 779,502
Int. Cl. B60k *21/06;* **B62d** *11/10;* **F16d** *67/00*
U.S. Cl. 74—869 **11 Claims**



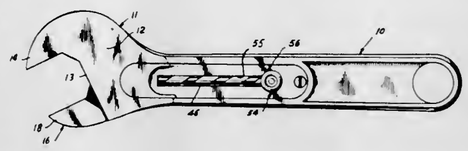
A control system is shown for a multispeed forward and reverse track-laying vehicle power train, the control system having a manual forward and reverse control for effecting manual shifts between forward and reverse, a manual drive range control and an automatic drive range control for effecting manual and automatic drive-range-shifting operation and a steering control for effecting steering operation. The manual forward and reverse control provides selection between forward and reverse drive in the lowest drive range and prevents such shifting by the operator in all of the higher drive ranges. The manual drive range control provides selection between the drive ranges with the selected drive range being established immediately on an upshift and by speed governed automatic shifting operation on a downshift. The automatic drive range control provides automatic shifting using separate speed-controlled upshift biases, an engine-torque-demand-controlled upshift-inhibiting bias and an engine-torque-demand-controlled downshift bias. Both the manual forward and reverse control and the manual drive range control are electrically activated and in the event there is an interruption in electrical power, the directional drive selected by the manual forward and reverse control is maintained while the range control, if under manual control, is automatically conditioned for automatic control to maintain power train control. A sequence control is effective to disengage the range drive to the load in the lowest drive range during shifting between forward and reverse to provide for engagement of the directional drive under no-load conditions. The steer control operates on a hydrostatic unit to control steering by controlling hydrostatic pump displacement while assuring straight vehicle no-drift motion when there is no steer demand. The controlling force effecting this pump displacement control is varied according to hydrostatic pump output to meet the varying steer load demands in both directions of steer. There is also provided a stroke or pump displacement limiter for limiting pump displacement regardless of the steer demanded by the operator to prevent pump overload. Hydrostatic system pressure is controlled by a pressure relief control in accordance with the engine torque demand and vehicle speed to both prevent overloading of the hydrostatic pump and limit the degree of steer bias. The steer control signals the range control to inhibit automatic range shifting during steering operation. The hydrodynamic torque converter in the power train has a lockup drive which is normally disengaged on range shifting and is held engaged during low speed operation in each range to provide for utilization of vehicle momentum to provide power for steering while preventing engine stall.

3,640,158
RATCHETLIKE WRENCH
Herman A. Myers, R.D. #1, Box 125, Lake Lynn, Pa.
Filed Dec. 4, 1970, Ser. No. 95,148
Int. Cl. B25b *13/00*
U.S. Cl. 81—5.83 **9 Claims**



A ratchetlike tool in which there are three operable positions. The tool functions by means of rollers which become wedged or cammed between a retaining means and a hub to force a bearing surface of the hub into frictional engagement with a stationary portion of the wrench. The retaining means include a plurality of pairs of intersecting inclined surfaces upon which are positioned the rollers and a spring means to separate the rollers. A separator cooperating with the pairs of rollers is adaptable to move the rollers along the inclined planes to cause the camming relationship. When the separator is in its middle position, the hub does not move in either direction and movement of the separator into either of its other two positions frees one of the rollers from its cammed position to permit rotation in the opposite direction.

3,640,159
ADJUSTABLE JAW WRENCH
Kenneth F. Halls, Dallas, and Alfred H. Brickley, Garland, both of Tex., assignors to Space Tool, Inc., Pasadena, Tex.
Filed Aug. 26, 1970, Ser. No. 67,054
Int. Cl. B25b *13/16*
U.S. Cl. 81—165 **10 Claims**

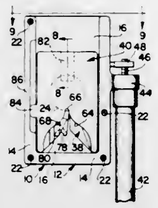


A movable member carrying a movable jaw toward and away from a fixed jaw is reciprocated by means of a worm in the well-known manner. A drive mechanism for the worm includes a shaft with a helical groove rotatably mounted in the handle, and a thumb actuated button mounted for reciprocating movement and including a boss extending into the helical groove for rotating the shaft. The helical shaft drives the worm through mating gears.

3,640,160
STRAND HANDLING
John Nelson, North Kingstown, and William E. Stoppard, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed Dec. 24, 1969, Ser. No. 887,817
Int. Cl. B65h *29/24*
U.S. Cl. 83—24 **18 Claims**

A method and apparatus for severing a generally axially moving strand carried in an airstream. Closing of a slide valve member reduces the velocity of, and preferably sub-

stantially stops the stream, thereby reducing the velocity of and preferably stopping the strand. Substantially simultaneously therewith, and preferably after the strand is substan-



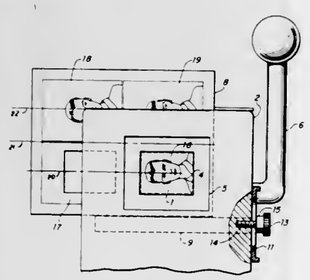
tially stopped, a scissor is operated to sever the strand. As the valve member is closed, a guide thereon positions the strand for receipt by the scissor which is operated by a cam on the closed valve member to cut the strand.

3,640,161

METHOD FOR CUTTING OUT INDIVIDUAL PICTURES FROM A MULTIPLE IMAGE PICTURE

Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.

Filed Feb. 9, 1970, Ser. No. 9,647
Int. Cl. B26d *7/16*
U.S. Cl. 83—36 **3 Claims**



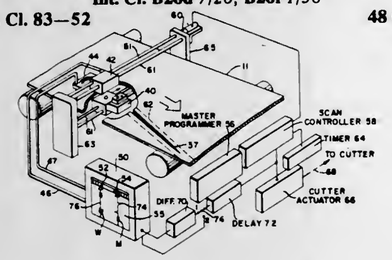
A cutting device for cutting out individual rectangular pictures from a multiple image picture, which pictures are utilized for I.D. cards, credit cards, badges or the like.

3,640,162

WEB-SAMPLING METHOD AND APPARATUS

John W. Fleming, Jr., and James Michael McMullen, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation

Original application Dec. 14, 1966, Ser. No. 601,750. Divided and this application July 24, 1969, Ser. No. 870,796
Int. Cl. B26d *7/26;* **B26f** *1/38*
U.S. Cl. 83—52 **48 Claims**



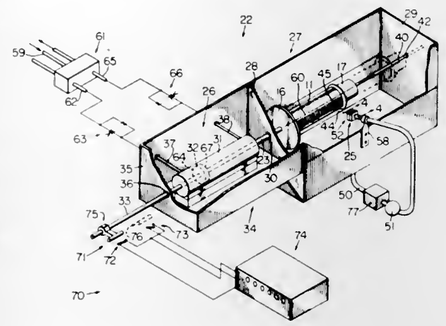
Method and apparatus for cutting samples from a longitudinally moving web in order to check calibration of online moisture gauge. The cutter and gauge are mounted on a carriage so that both may be moved transversely relative to the moving web in order that the cut sample has the same characteristics as the portion analyzed by the gauge. The cutter comprises a pair of blade edges tapering from a common point where the edges selectively intersect the web.

3,640,163

METHOD OF SEVERING FILAMENTARY MATERIAL

Dante S. Giardini, Dayton; George A. Preston, Xenia, and Richard N. Roney, Dayton, all of Ohio, assignors to The Bendix Corporation

Filed Oct. 15, 1969, Ser. No. 866,695
Int. Cl. B24c *1/00*
U.S. Cl. 83—53 **5 Claims**



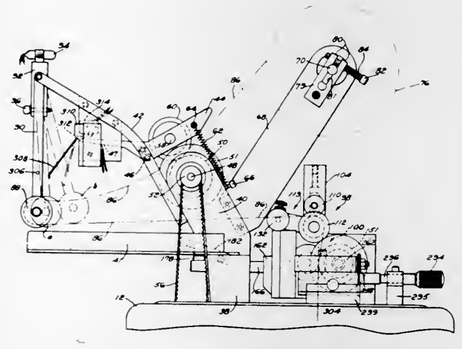
An apparatus for and method of severing a tangled sleevelike mass of a material, such as fiber glass yarn, from an associated spool using a high-velocity fluid jet defined either by a liquid or by a gas-containing abrasive particles wherein the high-velocity jet is impinged against the sleevelike mass while relatively moving the spool and high-velocity jet to provide efficient severing of the sleevelike mass along the full length of the spool.

3,640,164

AUTOMATIC CHAIN-CUTTING MACHINE

Thomas J. Crafford; Alexander I. Shilo, and Harry W. Cary, Jr., all of East Providence, R.I., assignors to Crafford Tool & Die Co., Riverside, R.I.

Filed May 7, 1969, Ser. No. 822,422
Int. Cl. B26d *5/24, 5/28*
U.S. Cl. 83—67 **10 Claims**



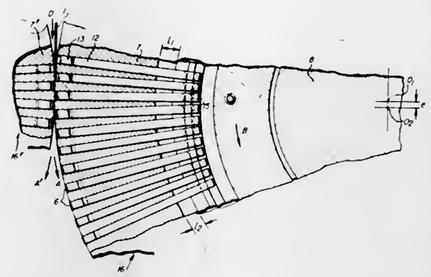
A machine for automatically cutting chain in predetermined lengths and including means for feeding the chain to a cutting station, means responsive to a drive for the feeding means for generating a series of electrical impulses, and a cutting assembly located at the cutting station and being operative in response to generation of a selected number of electrical impulses for periodically cutting the chain in the predetermined lengths.

3,640,165

DEVICE FOR FORMING THE STATOR CORES FOR DYNAMOELECTRIC MACHINES AND ALTERNATING CURRENT MACHINES

Terumoto Yamaguchi, Anjo-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 8, 1969, Ser. No. 883,128
Claims priority, application Japan, Dec. 26, 1968, 43/96200
Int. Cl. B23d *25/12*
U.S. Cl. 83—116 **2 Claims**



A device for forming the stator cores for dynamoelectric machines and alternating machines, comprising a pair of rotary cutter assemblies disposed in axially parallel relation with each other, each of said rotary cutter assemblies comprising a rotary cutter having a plurality of cutter blades arranged around the outer periphery of said rotary cutter in equiangularly spaced relation from each other by an angle corresponding to the pitch of the poles of said core, each of said cutter blades having suitable dimensions, and a plurality of slots formed therein between the adjacent cutter blades, a plurality of plungers slidably fitted into said plurality of slots respectively, a supporting plate disposed within said rotary cutter for holding in position the end portions of said plurality of plungers, and a shaft rotatable about the center of rotation offcentered by a suitable distance from that of said rotary cutter and adapted to rotate said supporting plate in the same direction and at the same angular velocity as those of said rotary cutter, whereby a long continuous strip introduced or fed between said pair of rotary cutter assemblies is cut in the zigzag form in the longitudinal direction and the direction perpendicular relative thereto, thereby forming a plurality of cutting strip each having a series of tooth-shaped poles from a single strip without causing any waste and at a low cost.

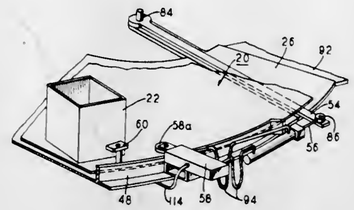
3,640,166

MACHINE FOR CUTTING SLABS FROM ICE BLOCKS

Chester S. Michals, North Hyde Park, N.Y., and Philip J. Motroni, Fox Lake, Ill., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,134
Int. Cl. B26d *4/42*
U.S. Cl. 83—201 **5 Claims**

A rotatable table carries a plurality of open-bottomed holders for blocks of material to be cut, more specifically dry ice. Under the table is a sector plate of about 240° to 270° of arc and spaced from the bottom surface of the table by a vertical distance not greater than the smallest thickness of slab to be cut. Beyond one edge of the sector plate, is mounted an indexing platform the height of which can be adjusted according to the exact thickness of slab desired. Beyond the edge of the indexing plate and still within the open portion of the sector plate, is a horizontal bandsaw blade operable with a slight clearance space from the bottom of the table. The block to be cut slides upon the sector plate as the table rotates and drops onto the indexing platform. Means then are actuated to hold the block in suspension within the holder as



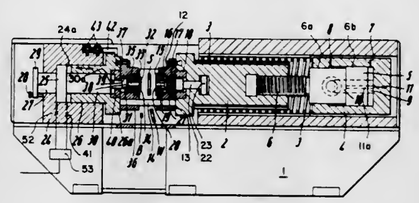
the block approaches the saw blade. An even cut is made parallel to the bottom face of the block without danger of jamming or breaking the block. When the clamped upper portion of the block is carried over the sector plate again, the clamping means is released and the block falls to the sector plate in preparation for another cut. A chute is provided below the saw blade and a sweeper arm is actuated after every cut to remove any debris from the indexing platform.

3,640,167

PUNCHING APPARATUS

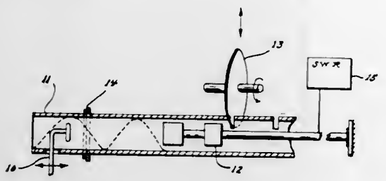
Adam Axtmann, Burbach, Germany, assignor to Maschinenfabrik Lorenz AG, Ettlingen (Baden), Germany

Filed June 15, 1970, Ser. No. 46,341
Claims priority, application Germany, June 14, 1969, P 19 30 398.1
Int. Cl. B26d *5/42*
U.S. Cl. 83—380 **11 Claims**



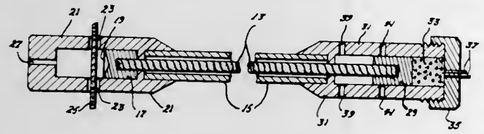
A punching apparatus in which two tool portions come together to punch out a workpiece. At least one tool portion is mounted on a cylinder housing with one part of that tool portion fixed relative to the cylinder housing and another part movable relative to the cylinder housing. Such movement of the tool parts is provided by inner and outer piston systems in the cylinder housing. Either piston system can be fixed to the cylinder housing while the other remains movable relative to the cylinder housing. The movable part of the tool portion can be connected to either piston system, depending on which is arranged to be movable relative to the cylinder housing.

3,640,168
ELECTRICALLY PRECISE SLOTTED WAVEGUIDE
John H. Staehlin, Baltimore, and Gilbert A. Peon, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Aug. 7, 1970, Ser. No. 61,887
Int. Cl. B26d *7/16*
U.S. Cl. 83—444 **3 Claims**



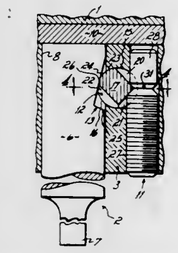
A waveguide-slotting apparatus having continuous slotting of radiating elements in standard rectangular extrusions or drawn tubing which are precisely located electrically.

3,640,169
PYROTECHNIC REMOTE CUTTER
Sidney Rosenthal, West Newton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force
Filed July 24, 1970, Ser. No. 57,917
Int. Cl. B26d *5/04*
U.S. Cl. 83—639 **2 Claims**



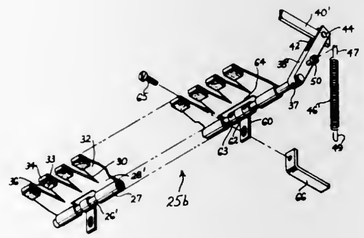
A flexible cable is interposed between a cutting element and an electrically ignitable pyrotechnic device. The cutting element is attached to one end of the cable and rests in a cylinder having an opening through which the rope or wire to be cut is passed. Energization of the pyrotechnic device at the other end of the cable produces forward movement of the cable causing the cutting element to move across the opening and cut the rope or wire.

3,640,170
RETAINER FOR PUNCH AND DIE SETS
Arthur D. Bennett, 8484 Daly Road, Cincinnati, Ohio
Filed Dec. 5, 1969, Ser. No. 882,608
Int. Cl. B26d *7/26*
U.S. Cl. 83—698 **9 Claims**



A retainer mechanism for a headless piercing punch (or the die button) comprising a cylindrical roll pin rotatably journaled in the punch-retainer block and extending at right angles to the longitudinal axis of the punch. The roll pin includes a locking portion intermediate its length which establishes a wedging engagement with an angular cross recess machined in the cylindrical shank of the punch to prevent displacement as the punch is stripped or withdrawn from the workpiece. An actuating screw is threaded into the retainer block parallel to the axis of the punch and has a necked portion in driving engagement with the locking portion of the roll pin so as to impart rotary motion to the roll pin in locking and unlocking directions upon rotation of the actuating screw with a suitable tool. When in the unlocked position the headless shank of the punch is free to be withdrawn outwardly from its bore in the retainer block. As applied to a coacting punch and die set, the angulation of the cross recess of the punch and die button is reversed so that both elements are capable of resisting the withdrawal forces as the piercing end of the punch is withdrawn from the aperture of the die button and workpiece.

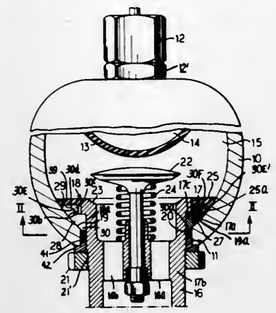
3,640,171
TONE MODIFIER AND MUFFLER FOR PIANO
John W. Giglio, 7419 Fifth Ave., North Bergen, N.J.
Filed Feb. 6, 1970, Ser. No. 9,350
Int. Cl. G10c *3/00*
U.S. Cl. 84—216 **3 Claims**



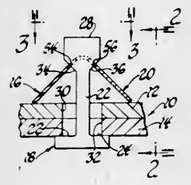
An attachment for a grand piano has a flexible strip secured on a shaft which is mountable rotatably underneath the strings of the piano. The strip and shaft can be turned by a linkage means terminating in a control knob at the front of the piano. In one position of the strip it is interposed between the hammers and strings to modify the tone of the piano and in a second position it is out of the way of the hammers. The tone can be modified to sound like a harpsichord or it can be muffled completely depending on the material of the strip.

3,640,172
LOCKING RING FOR PRESSURE VESSEL
Jacques H. Mercier, 49 Rue de Naples, Paris, France
Original application Feb. 2, 1967, Ser. No. 613,660, now Patent No. 3,537,481, dated Nov. 3, 1970. Divided and this application May 7, 1969, Ser. No. 822,445
Int. Cl. F16b *21/00*
U.S. Cl. 85—8.8 **3 Claims**

This invention relates to a locking ring for the closure plug of a pressure vessel for storing fluid under pressure and particularly of the type having a deformable partition such as a bladder therein. The closure plug has a flanged inner end of diameter slightly less than the diameter of the port of the pressure vessel into which it is to be inserted and the locking ring normally is of greater diameter than said port and is foldable for insertion through said port so that it may then be restored to its original shape to encompass the closure plug and restrain outward movement thereof from such port.

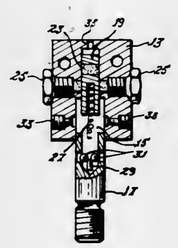


3,640,173
FASTENER MEANS
Curt G. Muller, 16265 Lockerbie, Birmingham, Mich.
Filed Sept. 18, 1969, Ser. No. 859,046
Int. Cl. F16b *21/06*
U.S. Cl. 85—8.8 **4 Claims**



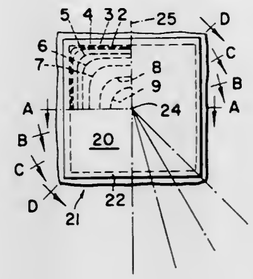
A generally flat bolt member, having an abutment end effective for engaging one of at least two structural members to be assembled, has a head end provided for engaging a compressible retainer member situated against the opposite surface of another of the structural members; the retainer and head portion are provided with recess means and abutment means cooperatively engageable so as to collectively define disengageable detent means effective for locking the bolt and retainer in assembled relationship.

3,640,174
PYROMECHANICAL RELEASE DEVICE
Bruce Eaton, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Jan. 13, 1971, Ser. No. 106,066
Int. Cl. F16b *21/10*
U.S. Cl. 85—9 **2 Claims**



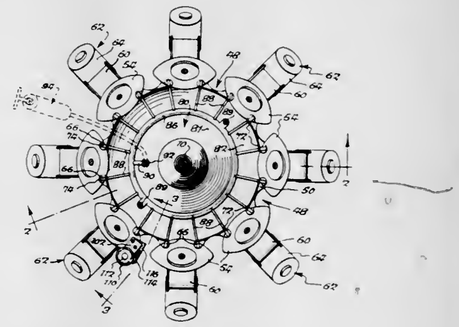
A quick-release disconnect device having a load bearing bolt positioned vertically in a central opening in a main body. A frangible shear pin positioned across the upper part of the central opening prevents vertical movement of an upwardly biased retainer member which retains the load bearing bolt in position by preventing inward movement of a plurality of balls positioned through the wall of the load bearing bolt and in the main body and held against the sidewall of the retainer member. Destruction of the shear pin permits upwardly biased movement of the retainer member allowing the balls to drop inward and release the bolt from the main body.

3,640,175
BALLISTIC SHAPE SCREWHEAD SOCKET
Allan Sangster Barclay, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada
Filed Oct. 18, 1968, Ser. No. 768,863
Int. Cl. F16b *23/00*
U.S. Cl. 85—45 **6 Claims**



Square socket-type head for screw fasteners, and punch for forming same, in which the socket has four equal sides each of which has an upper slightly inwardly inclined flat portion which merges without discontinuity at its lower end with a lower concave bottom portion.

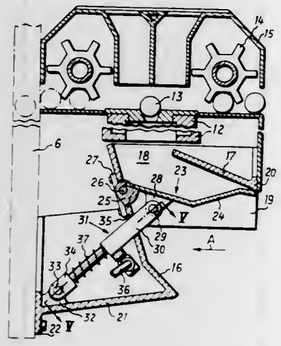
3,640,176
LUBRICATING SYSTEM FOR BRAIDING MACHINES
Robert G. Gaul, N. Tonawanda, N.Y., assignor to Paragon Wire & Cable Corporation, Buffalo, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,889
Int. Cl. D04c *3/00*
U.S. Cl. 87—33 **2 Claims**



This system is applied to braiding machines of the type which wind a plurality of threads or ribbons about a wire for insulating or protective purposes and these machines have a large number of moving parts which have heretofore required each of these parts to be lubricated by hand while

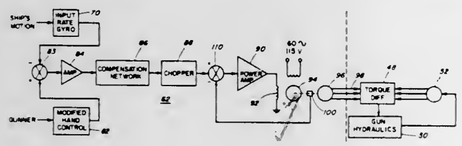
the machine was standing idle. This disclosure is for a system by means of which the moving parts can be lubricated at one time and thereby reduce the time during which the machine is standing idle.

3,640,177
FIRING BUTTON FOR RELEASING A TRIGGER AND OPENING A CARTRIDGE EJECTION GATE
Conrad C. Hottinger, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed June 4, 1970, Ser. No. 43,418
Claims priority, application Switzerland, June 18, 1969, 9276/69
Int. Cl. F41h *7/06*
U.S. Cl. 89—33 F **6 Claims**



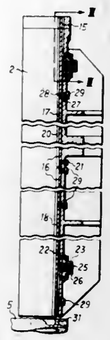
An automatic firearm having a breech casing with means for feeding cartridges thereto. A channel is associated with the casing for the ejection of empty cartridge cases and a trigger release for firing is provided. A gate for the channel has means for operating the gate to open and close the channel. A common control means is provided for operating the trigger release and the means for operating the gate so that the gate is opened before the first round is fired and shut after the last round has been fired.

3,640,178
RATE STABILIZATION SYSTEM FOR A VEHICLE MOUNTED DEVICE
James R. Chatham, Laurel, and William H. Licata, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 29, 1970, Ser. No. 32,947
Int. Cl. F41g *5/22*
U.S. Cl. 89—41 CE **11 Claims**



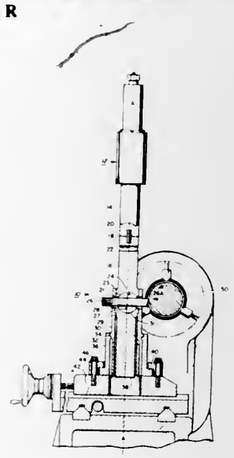
A rate stabilization system for a vehicle mounted tracking device employing an open loop control system that is interfaced with the existing control system of the device. Rate gyros detect movement of the vehicle and produce an error signal corresponding to this movement that is electronically processed to produce movement of the device in a direction that nulls out vehicle movement.

3,640,179
LOADING TRAY FOR A ROCKET
Hugo Sigrist, Hinwil, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Jan. 28, 1970, Ser. No. 6,476
Claims priority, application Switzerland, Feb. 7, 1969, 1883/69
Int. Cl. F41f *9/00*
U.S. Cl. 89—1.801 **3 Claims**



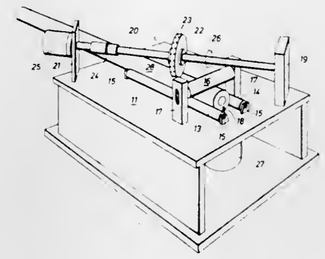
A loading tray for a rocket launcher having a longitudinally extending groove on the inside of the tray. A rail is mounted in the groove which may be sunk radially to the tray into said longitudinally extending groove. The rail has a guide groove for rockets. Spring elements are arranged between the base of the longitudinally extending groove and the two ends of the rail. The rail is fastened between the spring elements to the base of the groove.

3,640,180
APPARATUS FOR DELIVERING VIBRATORY ENERGY
Nicholas Maropis, West Chester, Pa., assignor to Aeroprojects Incorporated, West Chester, Pa.
Filed Apr. 17, 1970, Ser. No. 29,588
Int. Cl. B23b *3/00*
U.S. Cl. 90—11 R **12 Claims**



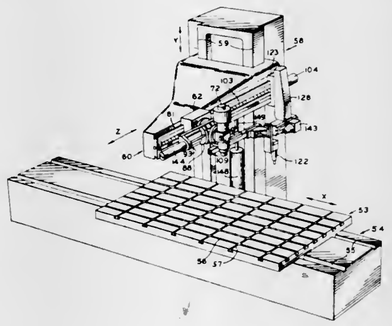
A device for delivering vibratory energy to a work-performing tool is disclosed having one end connected to a vibration generating means and providing for mechanical attachment and alignment of the tool at the work-performing locale which is located at a vibrational antinode in the vibratory system. The vibratory device, or toolholder, may be conveniently mounted on a lathe crossfeed table.

3,640,181
SPIRAL TUBING CUTTER
William A. Whitfill, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed June 2, 1969, Ser. No. 829,598
Int. Cl. B23c *3/32*
U.S. Cl. 90—11.4 **5 Claims**



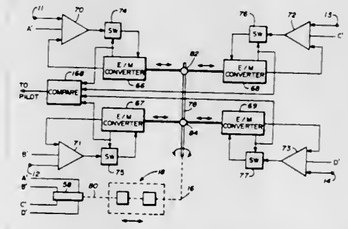
Apparatus for producing lengths of helical- or spiral-shaped filler material for use in the manufacture of marine seismic streamers. The cutting apparatus includes means for applying a simultaneous longitudinal and rotational motion to a length of tubular filler material, together with cutting means to smoothly cut through the tubing wall and means for holding the tubing in place against the cutting means while it is being moved both longitudinally and rotationally with respect to the cutting means.

3,640,182
METHOD AND MEANS FOR MAKING MASTER MODELS
Thomas D. Vertin, 37540 Lake Shore Road, Mount Clemens, Mich.
Original application Feb. 8, 1967, Ser. No. 614,752, Pat. No. 3,472,122. Divided and this application Oct. 8, 1969, Ser. No. 864,650
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.8 **8 Claims**



An apparatus for carrying out the automatic machining of three-dimensional lines and surfaces for making a master model comprising three components which are controlled to move in a straight line, including an X-component which has a horizontal longitudinal X-movement, a Y-component which has a vertical Y-movement, and a Z-component which has a horizontal Z-movement at 90° o the X-movement, a tool operatively mounted on one of said components, power means operatively connected to each of said three components for moving the components in said controlled straight line movements, a signaling device for each of two of said components for controlling the power means therefor, a first source of two-dimensional data mounted on one plane, and a second source of two-dimensional data mounted on another plane perpendicular to said one plane, and a sensing element for each of said signaling devices which engages and is responsive to one of said two-dimensional data sources, whereby the power means controlled by the signaling devices cause their respective connected components to move precisely in accordance with the two-dimensional data, thereby producing a three-dimensional relative movement between the tool and the workpiece.

3,640,183
FORCE SUMMING MULTIPLEX ACTUATOR
Werner G. Koch, Arlington, and Jack McCurley, Dallas, both of Tex., assignors to LTV Electrosystems, Inc., Dallas, Tex.
Filed Feb. 2, 1970, Ser. No. 7,673
Int. Cl. F01b *25/26, 31/12*
U.S. Cl. 91—1 **15 Claims**

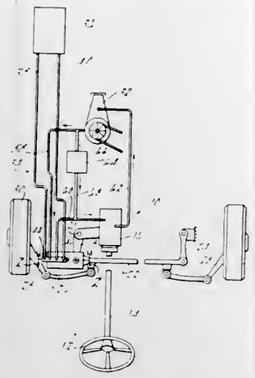


Four rotary-to-linear motion transducers each responsive to a separate but equal control signal are coupled together in a force summing arrangement to produce a linear motion output. Each of the rotary-to-linear motion transducers is part of a control channel that includes an asymmetrical breakaway force coupler for transmitting the linear motion output of the transducer to an attachment point on a torque tube. The breakaway coupler has a force responsive disconnect that is actuated when the force developed between the attachment point and the rotary-to-linear motion transducer exceeds a preset level. When the force between the attachment point and the transducer output exceeds the preset level, the disconnect actuates a switch to isolate the transducer for that channel from the control signal. Also included in each of the control channels is a position transducer for generating a feedback signal to balance out the generated control signals. At the output of the torque tube a linkage arrangement converts the rotary torque tube motion into a linear displacement that varies in accordance with the control signals.

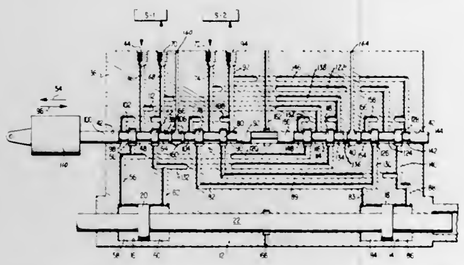
3,640,184
HYDRAULIC SERVO ACTUATOR ARRANGEMENT FOR AN ADAPTIVE STEERING SYSTEM
John T. Kasselmann, Southfield, Mich., assignor to The Bendix Corporation
Filed Mar. 20, 1970, Ser. No. 21,323
Int. Cl. F15b *13/16, 15/17*
U.S. Cl. 91—387 **3 Claims**

A servo actuator arrangement for incorporating an adaptive steering system into a conventional power steering mechanism, utilizing a fluidic signal controlled three-way open-center servo valve and a pressure relief bypass in parallel with each other, both in series with the power steering hydraulic supply circuit in order to eliminate the need for a separate actuator fluid pressure source. The servo actuator

features a resilient, through-the-port mechanical feedback, and also features a connecting arrangement providing support for the rest of the steering linkage so as to be capable of being inserted into the existing steering gear without additional supports.



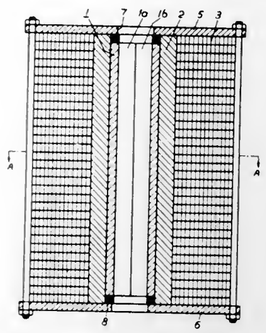
3,640,185
SERVOCONTROL FOR DUAL HYDRAULIC SYSTEMS
Kazimierz Korsak, Newtown, Pa., assignor to Piasecki Aircraft Corporation, Philadelphia, Pa.
Filed Jan. 7, 1970, Ser. No. 1,151
Int. Cl. F15b *11/16*
U.S. Cl. 91—411 R **12 Claims**



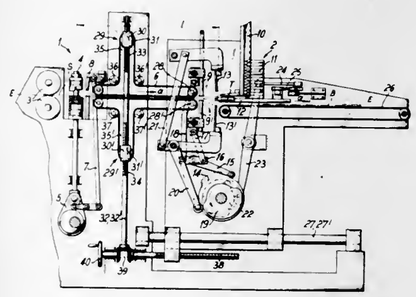
An improved servocontrol for redundant hydraulic fluid systems employing dual pressure sources each operating a separate actuator simultaneously to perform a common function. Two servo valve devices are employed, with each including valve elements connected in both hydraulic systems, thereby providing parallel control circuits from each pressure source to its associated actuator. The two servo valve devices are operated in synchronism by an input assembly permitting independent operation of one servo valve device in the event of jamming of the other. The parallel circuits, controlled through separate, independently operably valves, eliminate the possibility of a hydraulic lock in one actuator preventing operation of the other.

3,640,186
CYLINDER FOR ULTRAHIGH PRESSURE
Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Jan. 12, 1970, Ser. No. 2,322
Claims priority, application Sweden, Jan. 29, 1969, 1148/69
Int. Cl. F161 *9/22, 9/16;* **F02f** *1/00*
U.S. Cl. 92—169 **6 Claims**

A high-pressure cylinder for hydrostatic extrusion is formed of an inner tube, a prestressed outer tube around the inner tube and a prestressed sheath surrounding the outer tube. The inner tube is of such a structure that pressure medium introduced into the cylinder can reach the outer side of the inner tube. When the pressure in the cylinder is low, the inner tube takes up pressure from the outer tube, whereas when the pressure is increased the outer tube is expanded out of contact with the inner tube. The inner tube may be formed of three tube sectors with longitudinal radial partition surfaces.

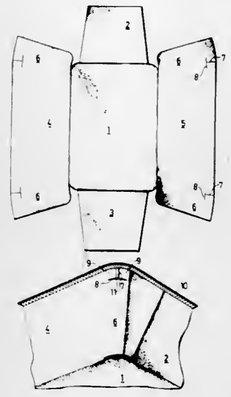


3,640,187
BAGMAKING MACHINES FOR MAKING PLASTICS SIDE-FOLD BAGS WITH CARRIER HANDLES
Friedhelm Mundus, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed July 2, 1970, Ser. No. 51,915
Claims priority, application Germany, July 23, 1969, P 19 37 480.2
Int. Cl. B31b *1/00*
U.S. Cl. 93—8 R **5 Claims**



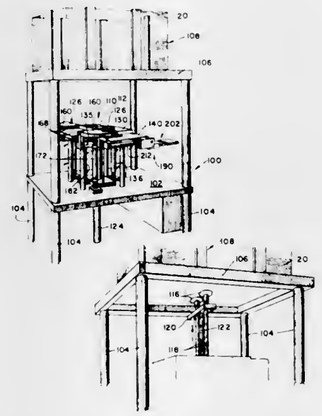
In a bagmaking machine for making plastic side-fold bags from a stepwise advanced tubular web provided with side folds, the tubular web is cut into lengths, and the bottom seams of the bags are formed by a transverse cutting and welding apparatus. A carrier handle fixing apparatus is controlled such that carrier handles are fed to the leading ends of the cut lengths of tubular web in the opposite direction to the direction of movement thereof and in the plane of movement thereof. The carrier handles are fixed while the cut lengths of tubular web are at a standstill. The finished bags are conveyed by a conveyor. The plane of the conveyor is displaced relative to the plane of conveyance of the cut lengths of tubular web such that discharge of the finished bags is not hindered by the carrier handle-fixing apparatus.

3,640,188
METHOD OF MAKING A PACKAGE, COMPRISING AN OUTER CARTON BLANK WITH ALINING AND PROVIDED WITH MEANS PREVENTING WEDGING
Rolf Magnus Dilot, Lund, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden
Original application Sept. 2, 1969, Ser. No. 854,575, now Patent No. 3,575,338, dated Apr. 20, 1971. Divided and this application Nov. 5, 1970, Ser. No. 87,114
Claims priority, application Sweden, Oct. 3, 1968, 13337/68
Int. Cl. B31b *49/02, 5/14, 1/62*
U.S. Cl. 93—36.01 **2 Claims**



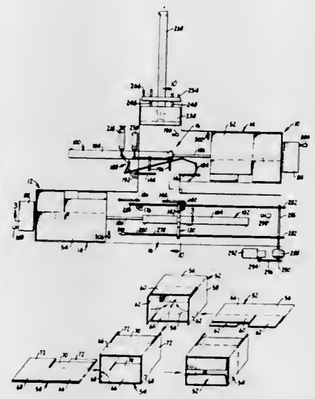
A method for providing projections at the edge of traylike packages to prevent wedging when nesting or stacking a plurality of packages. The projections are made by flaps formed by slots at the upper edge of the carton, which flaps are depressed outwardly when a plastic foil is deep-drawn into the package.

3,640,189
BOX MACHINE
Paul F. Bowman, Ridgewood, N.J., assignor to Broach Systems, Inc., Little Ferry, N.J.
Filed July 16, 1969, Ser. No. 842,117
Int. Cl. B31b *1/06, 1/54, 1/80*
U.S. Cl. 93—49 R **3 Claims**



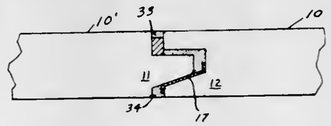
A machine for automatically setting up boxes, having a frame which supports a bed and a magazine above the bed for holding box blanks. A pneumatic system draws the blanks one at a time down to the bed, and a plurality of plates sequentially fold the various blank walls and flaps into position.

3,640,190
CARTON-HANDLING METHOD
Ralph A. Fuller, Exeter, and Earl D. Snodgrass, Lindsay, both of Calif., assignors to Herrick Waterman; Ralph A. Fuller and Earl D. Snodgrass, Exeter, Calif.
Original application Oct. 24, 1968, Ser. No. 764,049, now Patent No. 3,467,023, which is a continuation of application Ser. No. 558,731, June 20, 1966, now abandoned. Divided and this application Sept. 15, 1969, Ser. No. 871,149
Int. Cl. B31b *49/02, 1/78, 7/74*
U.S. Cl. 93—94 PS **2 Claims**



A machine for automatically unfolding pairs of carton blanks and telescoping them together to form a single composite carton. The machine comprises a pair of magazines adapted, respectively, to contain stacks of unfolded inner and outer carton blanks, a transfer and unfolder mechanism associated with each of the magazines to effect the one-at-a-time removal of carton blanks therefrom and the erection of the blanks upon removal, a plungerlike assembly mechanism to telescope the carton blanks together after their erection, and an extraction and delivery mechanism adapted to remove the erected and telescoped blanks from the area of the assembly mechanism.

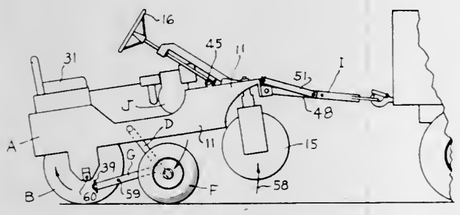
3,640,191
DECKING SYSTEM
John H. Hendrich, 542 West 6th St., Erie, Pa.
Filed July 25, 1969, Ser. No. 844,948
Int. Cl. E01c *5/00*
U.S. Cl. 94—13 **2 Claims**



The slab module disclosed herein consists of a precast prestressed slab section which may have solid or a hollow core. The slab module has a longitudinal male inserting edge which when installed mates with a complimentary-shaped female receiving edge on a similar slab module. However, the dimensions of the female edge are slightly greater than the

corresponding male edges. The bottom surface of both male and female members are inclined at an angle to the plane of a side of the slab module so that the inserted module will move upward in translation as well as move toward the module into which its edge is being inserted. When the top or bottom surface (as desired) of the inserting module is at the same plane as the corresponding surface of the inserted module, a positioning spacer may be inserted to limit further movement and to maintain the relative position of the modules. The spacers may be in the form of plates which will vary in thickness. The joints between slab modules will be grouted after the slab modules are assembled. The modules will be drawn together by tendons. After assembly and adjustment of the slab modules, the tendons are post-tensioned and permanently anchored. The finished deck will appear and function as a smooth, continuous slab.

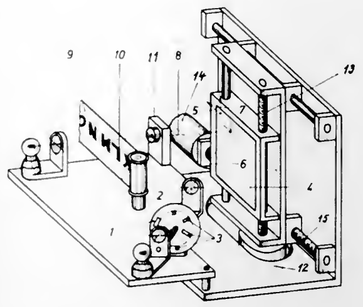
3,640,192
ROAD ROLLER
John H. Mauldin, 1606 N. Main St., Greenville, S.C.
Filed Oct. 1, 1970, Ser. No. 77,069
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 R **5 Claims**



A road roller having an apparatus mounted on the frame thereof for transporting the roller behind a towing vehicle. The apparatus includes a pair of opposed supporting arms with wheels attached to the lower end thereof. A linkage arm connects a driven roller with the supporting arms so that by rotating the driven roller the wheels are brought in contact with the pavement to raise the front end of the road roller. By rotating the driven roller further the rear end of the road roller is raised off the ground. The road roller is provided with a vibrating apparatus which includes a pair of weights which are eccentrically carried on a shaft. The position of the weights can be adjusted relative to each other to vary the vibration imparted to the frame of a road roller.

3,640,193
LINE-DRAWING APPARATUS IN PHOTOGRAPHIC COMPOSING MACHINES
Hans Linde, and Peter Thienel, both of Berlin, Germany, assignors to H. Berthold Messinglinienfabrik und Schriftgiesserei AG, Berlin, Germany
Filed Feb. 10, 1970, Ser. No. 10,265
Int. Cl. G03b *27/32*
U.S. Cl. 95—4.5 R **2 Claims**

Photographic composing machine for producing text layouts comprising a picture carrier having line elements, a sensitized photographic carrier having a light-sensitive coating interposed between the picture carrier and the photographic carrier which depicts a preselected line element in the plane of the light-sensitive coating whereby continuous relative motion of the depicted line element in relation to the sensitized photographic carrier draws lines in horizontal or

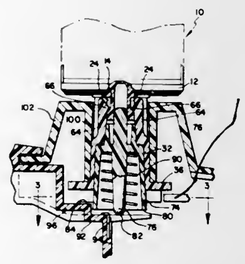


perpendicular directions in one process with composing of the text.

ERRATUM

For Class 95—11 see:
Patent No. 3,640,724

3,640,194
PHOTOGRAPHIC APPARATUS FOR MOUNTING A MULTILAMP FLASH UNIT
Bruce K. Johnson, Andover, and Donald H. Hendry, Quincy, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed June 29, 1970, Ser. No. 50,379
Int. Cl. G03b *17/48*
U.S. Cl. 95—11 L **13 Claims**



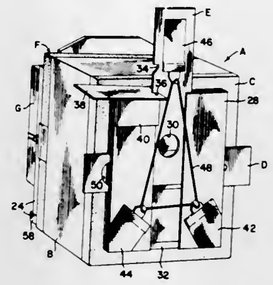
A mounting for a photographic flashcube. The mounting features two independently rotatable carriage members which are mechanically united upon engagement with the stem of a flashcube. A light spring within one of the carriage members provides for resetting the mounting upon removing a flashcube from engagement therewith.

3,640,195
CARDBOARD CAMERA AND KIT THEREFOR
Burton R. Zimmerman, Medina; Roger W. Bodley, Chesterland, and Robert C. Goodman, Shaker Heights, all of Ohio, assignors to Educational Research Council of America, Cleveland, Ohio
Filed Apr. 23, 1969, Ser. No. 818,748
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R **7 Claims**

A camera which is suitable for student scientific work wherein the camera is constructed from a kit made up

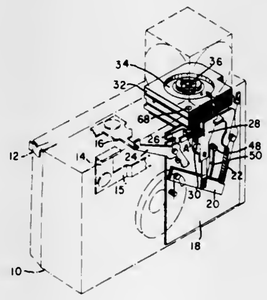
primarily of a plurality of cardboard pieces obtained from a die-cut sheet of cardboard. Two of the pieces form boxes which telescope one into the other to form the camera enclosure, one of the boxes defining the front side of the camera and the camera aperture, the other box defining the rear side of the camera and a rectangular enlarged opening therein.

The rear side supports a frame adapted to support in turn a commercial cut-film holder, the two boxes being telescopically movable to position a film in the holder at the focal length of the camera aperture. The cardboard sheet also provides a diaphragm in tab form having a plurality of openings



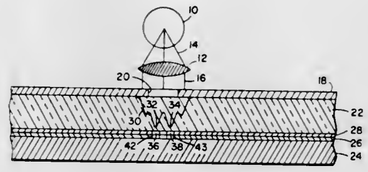
of different diameters positioned lengthwise on the tab, a shutter also in tab form with an opening, and a plurality of strips which can be glued to the front side of the camera to guide the diaphragm and shutter in separate planes across the front of the camera enclosure, with the openings of the shutter and diaphragm alignable with the aperture of the camera. The shutter is actuatable by a rubberband affixed to the camera enclosure, the kit also including cardboard pieces adapted to form a viewing screen holder which can be placed against the rear side of the camera enclosure in place of the commercial cut-film holder.

3,640,196
PHOTOGRAPHIC APPARATUS FOR MECHANICALLY ACTUABLE PHOTOFLASH UNITS
David N. Brooks, West Peabody, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 655,468, July 24, 1967, now abandoned. This application Feb. 12, 1970, Ser. No. 10,068
Int. Cl. F21k *5/02, 5/00;* **G03b** *9/70*
U.S. Cl. 95—11.5 R **1 Claim**



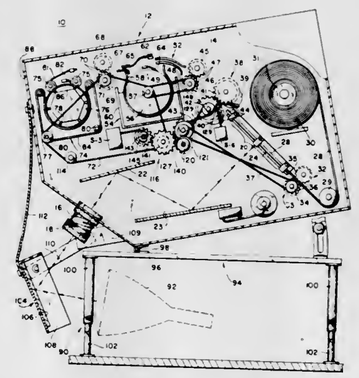
An assembly in photographic apparatus for mechanically firing percussively ignitable photoflash lamps preferably contained in a multilamp unit or flashcube. The assembly includes a mechanism responsive, for example, to film winding for sequentially indexing the flashlamps and setting the firing mechanism to prepare the apparatus for firing respective ones of the flashlamps at a firing locus or position. The firing mechanism includes a rapidly movable drive or hammer that is first cocked or set and then released to synchronously effect both ignition of the flashlamp and opening of the shutter.

3,640,197
PRODUCTION OF FINE SINGLE LINES AND OF DISCRETE CLOSELY SPACED FINE LINES
Arthur E. Sanera, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 22, 1970, Ser. No. 4,842
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **7 Claims**



An apparatus is provided to produce fine single lines and discrete closely spaced fine lines by use of an opaque mask having relatively wide transparent slits or lines therein. The apparatus includes, besides the mask, a source of monochromatic light and a spacer, which may be transparent, of the correct thickness.

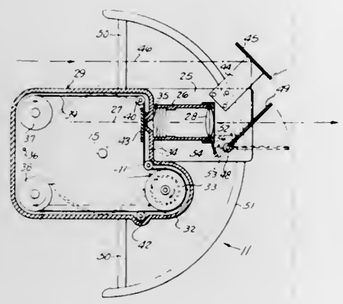
3,640,198
CONTROL APPARATUS AND METHOD FOR A PHOTOGRAPHIC DEVICE
Claire L. James, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 2, 1969, Ser. No. 854,482
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **17 Claims**



Apparatus for controlling the operation of a processor of photographic materials. More specifically, the control apparatus functions to advance a predetermined length of the sensitized, photographic material from a supply thereof to an exposure station, expose the sensitized material to an image, advance and sever the exposed portion of the sensitized photographic material at a first relatively high velocity and direct the exposed sheet of sensitized material through a heated station at a second slower speed. Further, the first

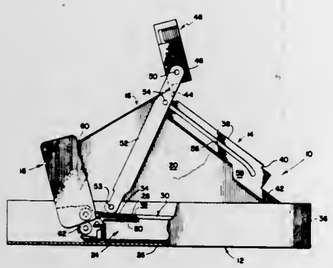
velocity of the severed sheet is maintained until the sheet is disposed substantially within the processing station to insure that the sheet is uniformly developed. Once the leading edge of the exposed sheet leaves the processing station, the velocity of the sheet of sensitized paper is increased to the first relatively high speed.

3,640,199
PHOTOGRAPHIC SCAN CAMERA USING A PIVOTED MIRROR
Jesse David Wolf, Golden, Colo., assignor to Trans-Horizons, Inc., Ontario, Calif.
Filed June 19, 1970, Ser. No. 47,250
Int. Cl. G03b *37/02*
U.S. Cl. 95—15 **14 Claims**



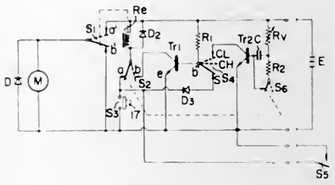
A continuously rotated panoramic camera mounted on a support having a fixed semicircular cam concentric with the axis of rotation of the camera. The camera is provided with an offset angled mirror fixed relative to the camera and with a pivoted mirror carrying a dog engageable with the cam to rotate the pivoted mirror into the field of view of the camera and into a position to receive images reflected from the angled fixed mirror. The parts are so arranged that in the course of a revolution, after the camera has scanned 180° of a scene during the first half of the revolution, the pivoted mirror is rotated by the dog and cam into a position causing the camera to repeat this scan during the second half of the revolution.

3,640,200
FILM-ADVANCING APPARATUS
Lawrence M. Douglas, Eastondale, and Irving Erlichman, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 21, 1969, Ser. No. 868,044
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 **8 Claims**



A camera having a support for locating a film unit in position for exposure, a shutter for admitting light into the camera to expose the film unit and a film-advancing member for engaging and moving the film unit subsequent to exposure toward the exterior of the camera. A control is positioned between the shutter and the film-advancing member to enable the latter to advance a film unit from its container subsequent to actuation of the shutter and a disenabling member for preventing the film-advancing member from moving another film unit from the container until the preceding film unit has moved a predetermined distance.

3,640,201
MOTOR-DRIVEN WINDING DEVICE FOR A CAMERA
Shuji Kimura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 24, 1969, Ser. No. 887,827
Claims priority, application Japan, Dec. 28, 1968, 43/96306
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 EL **10 Claims**



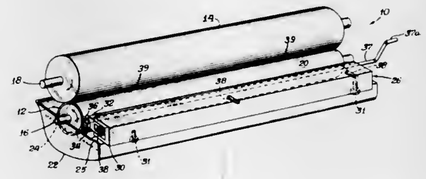
A motor-driven device for releasing the shutter, advancing the film and cocking the shutter of a camera, and permitting single frame or continuous exposures to be made. The motor control includes a single switch controlled by a relay coil. The relay coil is includable in and capable of being energized by either of two mutually exclusive circuit paths each including in series, one of the contacts of a two-position changeover switch which selects the particular path for energizing the coil. The motor controls a mechanical arrangement which has two sequences of operation; a first sequence which releases the shutter and places the changeover switch in the second position, and a second sequence which advances the film, cocks the shutter and places the changeover switch in the first position. An operating button is connected in series with the first circuit path and a transistor switch is connected in the second circuit path. A selector switch is connected between the two circuit paths. For single frame exposures the selector switch turns the transistor OFF when the button is depressed. For continuous exposures, the transistor remains ON all the time. A timing circuit is further added for time-delayed continuous exposures.

3,640,202
SINGLE LENS REFLEX CAMERA
Katsuhiko Nomura, Kawagoe-shi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 21, 1970, Ser. No. 4,651
Claims priority, application Japan, Jan. 31, 1969, 44/7942
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **5 Claims**



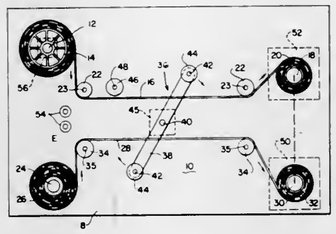
A single lens reflex camera with an automatic preset diaphragm includes a first spring loadable lever for advancing the camera mirror out of the objective light path and a second spring loadable lever for stopping down the diaphragm. The first lever includes a stop which engages a stop on the second lever to lock it in a retracted position when the first lever is in retracted position and cooperating elements releasably lock the first lever in its retracted position. Upon release, the first lever is spring advanced and advances the mirror and disengages the stops so that the second lever is spring advanced to stop down the diaphragm.

3,640,203
LIQUID DEVELOPING APPARATUS
Lester R. Raab, Greensburg, Pa., and Dennis E. Toby, Lake Zurich, Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Continuation-in-part of application Ser. No. 606,332, Dec. 30, 1966, now abandoned. This application June 9, 1969, Ser. No. 831,399
Int. Cl. G03d *5/06*
U.S. Cl. 95—89 R **13 Claims**



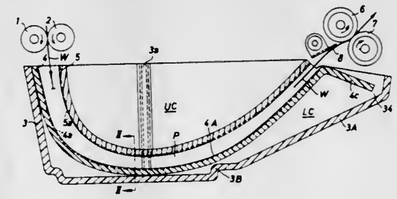
A roller-type developing apparatus with a wiping control for developing sensitized materials. The roller arrangement includes at least an applicator roller and a pressure applying member in contacting engagement forming a developing zone. The wiping control is a rod or blade that wipes controlled amounts of fluid from the applicator roll which has a surface finished to a degree of smoothness expressed in terms of the average depth of randomly formed depressions therein in microinches. An applicator roll having a smoothness of from 10–200 microinches center line average smoothness (or roughness), together with the wiping control, applies less than 3.0 grams liquid per square meter of the copy sheet to provide dry to the touch copies.

3,640,204
PHOTOGRAPHIC WEB PROCESSING DEVICE
Robert A. Gordon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 6, 1970, Ser. No. 34,953
Int. Cl. G03d *9/00*
U.S. Cl. 95—94 R **3 Claims**



A web processing device in which a web containing a processing ingredient or solution such as a developer is brought into intimate pressure engagement with an exposed film for a predetermined time to effect processing of the film. Transport and guiding mechanisms are provided for the film and web for guiding the film and web in spaced relation through a processing station. Processing is achieved at the processing station by a member movable from a normal retracted position, in which it is out of engagement with the film and web, to a laminating position, in which it moves portions of the film and web into intimate pressure engagement for a predetermined time interval. The web and film are separated upon return of the member to its normal retracted position by the combined action of the tension on the web and the angles of approach and separation defined by the film and web when they are in pressure engagement. An auxiliary separator member may be provided movable between the film and web and across the processing station to separate the film and web.

3,640,205
APPARATUS FOR WET TREATMENT OF PHOTOGRAPHIC FILMS OR THE LIKE
Fritz Waschk; Jurgen Muller, both of Munich; Heinrich Krieger, Starnberg, and Gunter Heindrich, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 23, 1970, Ser. No. 31,287
Claims priority, application Germany, Apr. 25, 1969, G 69 16 867
Int. Cl. G03d *13/04*
U.S. Cl. 95—95 **8 Claims**



A vessel which contains a supply of treating fluid for webs of photographic films or the like accommodates a guide having a concave upper surface along which a web advances lengthwise to be thereby immersed into the liquid and to continuously withdraw some liquid which is thereupon removed by two squeezing rollers. The thus removed liquid is caused to descend onto an inclined ledge which forms part of the guide and directs the liquid, as well as the impurities contained therein, into the compartment between the bottom wall of the vessel and the underside of the guide. Such compartment communicates with the remaining part of the internal chamber of the vessel by way of apertures provided in the guide and distributed and/or dimensioned in such a way as to at least reduce the rate of liquid circulation between the remainder of the internal chamber of the vessel and that part of the compartment wherein the impurities tend to accumulate by gravity.

3,640,206
PROCESS AND PLANT FOR FAST CONDITIONING OR THERMAL TREATMENT OF BREAD CEREALS, ESPECIALLY WHEAT
Gheorghe Moisescu; Valer Stoica; Carol Wolf, and Nicolae Spataru, all of Bucharest, Romania, assignors to Institutul de Cercetari Si Proiectari Alimentare, Bucharest, Romania
Filed Mar. 28, 1969, Ser. No. 811,420
Claims priority, application Romania, Apr. 1, 1968, 56296
Int. Cl. A23b *9/00*
U.S. Cl. 99—237 **7 Claims**

A process for treating cereals including the steps of fast heating the cereals with steam jets, storing the thus-treated cereals while at the same time mixing them, and then cooling and drying using a countercurrent flow of indirectly and in-

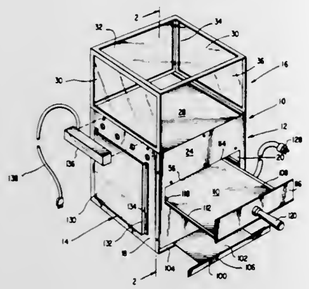
termediately heated air.

A plant for performing the process including in descending



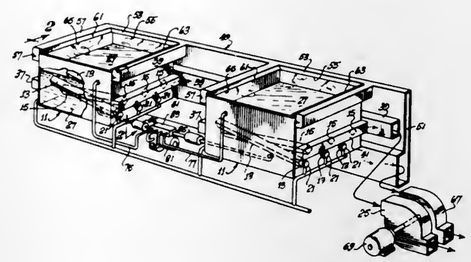
vertical order a prismatic bin for holding untreated cereal, a cereal fast heating and storage apparatus, a cooler-drier, and a metering device.

3,640,207
AUTOMATIC BAKING OVEN FOR PRETZELS
George E. Snyder, 539 West Howard St., Hagerstown, Md.
Filed Oct. 27, 1969, Ser. No. 869,590
Int. Cl. A47j 27/62
U.S. Cl. 99—327 3 Claims



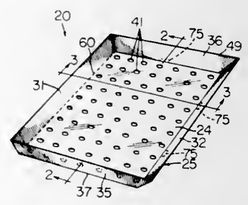
A merchandising pretzel baking oven has a vertical casing defined by a lower rigid wall portion and an upper transparent wall display case with a horizontal partition wall therebetween. The lower portion has a baking chamber constituted by upper and lower sections of truncated rectangular base pyramidal shape horizontally fixed therein with timer controlled electrical heating rods mounted at the closed top wall of the upper section and at the open bottom wall of the lower chamber. A baking tray adapted to contain frozen pretzels is slidably supported by the lower portion and is movable into and from the oven chamber horizontally intermediate the sections thereof through one wall of the lower portion with a cleanout tray, arranged below the oven chamber, being also slidable in such wall. The other walls of the lower portion have combined heat insulating and illuminated advertising display panels provided on their outer faces.

3,640,208
IMMERSION DEEP FRIER
Robert A. Size, 1250 West 130th, Gardena, Calif.
Filed Aug. 4, 1969, Ser. No. 847,041
Int. Cl. A47j 37/12
U.S. Cl. 99—408 7 Claims



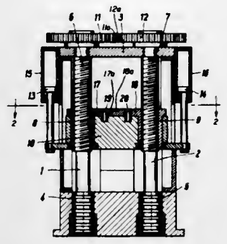
An immersion deep frier including a tank filled to a selected level with shortening and having a plurality of coextensive open-ended heating tubes disposed below such level. Alternate ones of the heating tubes are angled upwardly in one direction and the remaining tubes are angled upwardly in the opposite direction. Burners are disposed at the lower ends of each of the tubes and a blower is provided for forcing air upwardly through the tubes whereby the shortening at the lower ends of the tubes will be heated and caused to expand thereby moving inwardly along the respective tubes to approximately the center of the tank where it will encounter currents moving along the adjacent oppositely angled tubes and will rise upwardly and be turned outwardly to travel to the outer periphery of the tank where it will turn downwardly and inwardly to again commence travel inwardly along the respective tubes thereby providing a number of small currents circulating in the tank to prevent burning of the shortening and provide uniform agitation and circulation of foodstuffs disposed in the tank.

3,640,209
PAN HAVING ARTICLE-SUPPORTING WALL ABOVE BOTTOM WALL
Calvin L. Wilson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed July 24, 1969, Ser. No. 844,442
Int. Cl. A47j 35/00
U.S. Cl. 99—446 33 Claims



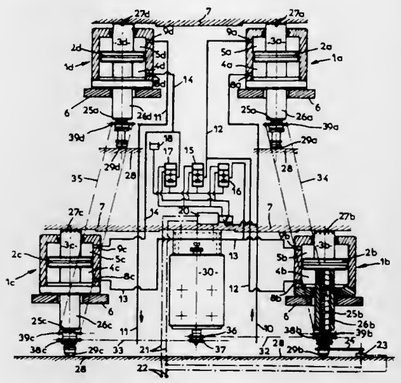
A disposable pan wherein such pan is particularly adapted for broiling food products and is defined by laminating a layer of metallic foil to a layer of a comparatively inexpensive nonmetallic material. The pan has metallic foil defining practically its entire exposed inside and outside surfaces and has an article-supporting wall arranged above a bottom wall with a space provided therebetween for collecting juice, or the like, exuding from a product contained in the pan.

3,640,210
MULTIPLE-SCREW FLY PRESS
Otto Georg, Ostatrasse 12, 5802 Breckerfeld, Germany
Filed July 18, 1969, Ser. No. 842,944
Int. Cl. B30b 15/28
U.S. Cl. 100—53 12 Claims



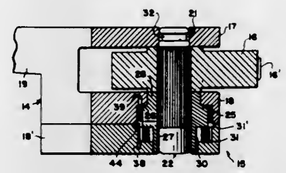
The fly press comprises a flywheel means and, in combination, at least two screws, connected to the flywheel means, ram drive means for at least one ram, and at least two nuts mounted in said ram and peripherally movable and axially immovable in said ram. Overload-preventing means are arranged between said nuts and said ram and are adapted to be nonresponsive to torques below a minimum torque between said nuts and ram, so that such torques will be fully transmitted, whereas the overload-preventing means are responsive to torques which are higher than the minimum torque so that such higher torques will not be transmitted.

3,640,211
HYDRAULIC DEVICE FOR MOVING IN TRANSLATION THE PRESSING ELEMENT OF A PRESS OR THE LIKE
Vittorio Louis Achille Bianchi, 37, Avenue Paul, Doumer, Paris; 16°, France
Filed Dec. 19, 1969, Ser. No. 886,646
Claims priority, application France, Dec. 17, 1969, 181043
Int. Cl. B30b 15/24
U.S. Cl. 100—258 5 Claims



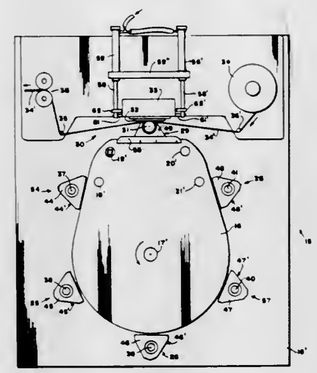
A device for driving in translatory motion the pressing element of a press, comprising a plurality of double-acting rams having their rods operatively connected to said pressing element said rams being hydraulically connected in series to each other, so that the driving of the piston of the first ram by a pressure fluid causes the rams to be fed by each other and the simultaneous sliding motions of their pistons, and means to keep constant the volume of hydraulic fluid contained in the front chamber of a ram and in the rear chamber of another ram with which it is connected.

3,640,212
ROTARY MARKING TOOLS
Jerome Friedman, 19 The Glenada, Roslyn, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,586
Int. Cl. B41f 13/10; B44b 5/02
U.S. Cl. 101—7 6 Claims



A journaled hollow main shaft which is an internal gear having many teeth, has thereabout a spiral spring arranged to bias it to a normal rest position, and also a helical coil spring clutch allowing shaft rotation in a direction to stress the spiral spring, but normally restraining said shaft against reverse movement. The marking wheel is also an internal gear whose position is between the arms of a clevis which is the tool body. One clevis arm is a casing housing said springs and mounting said shaft. A spindle which is a spur gear most of its length, extends coaxially through said shaft and wheel, and has all its teeth in engagement with the teeth of said internal gears, but is separable therefrom by relative longitudinal movement. The other arm of the clevis offers a bearing to support one end of the spindle and a means to releasably hold said spindle against longitudinal movement.

3,640,213
HOT STAMPING MACHINES FOR ROLL MARKING CYLINDRICAL ITEMS
Mortn Schwartzbach, No. 89-06 218th St., Jamaica, N.Y.
Filed May 9, 1969, Ser. No. 823,454
Int. Cl. B41f 17/08
U.S. Cl. 101—8 11 Claims



In the machine shown, a series of upright, parallel, equispaced rotatable spindles, which for tubular workpieces serve as the mandrels therefor, extend from individual bearings carried by a constantly moving, substantially horizontally mounted link chain belt, a portion of whose path is straight, wherealong workpieces associated with the spindles, in succession, pass a marking station presenting a

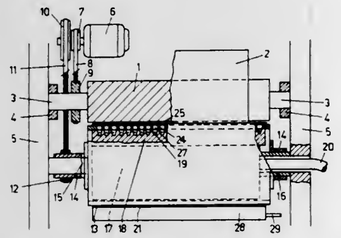
heated flat die whose face is upright and has thereacross a colored foil. In their passage along the die, the workpieces are roll marked thereby, but they are rotated by a positive drive, independent of contact with the die. Said die is allowed some wobble, but each bearing is held so the axis of its spindle is maintained in a fixed direction during passage along the marking station, and there is a means associated with each spindle, to adjust the peripheral speed of the workpiece in relation to the speed of said chain. An adjustably pressurized air cushion imparts the necessary pressure the die imposes on the work rolling thereon.

3,640,214

SELECTIVE PRINTER EMPLOYING INKING SPARK DISCHARGE

Hans-Jurgen Scheinhutte, Dietlikon, Zurich, Switzerland, assignor to Precisa A.G. Rechenmaschinenfabrik, Zurich, Switzerland

Filed June 11, 1969, Ser. No. 832,088
Claims priority, application Switzerland, June 21, 1968, 9254/68
Int. Cl. B41j *5/00*; **B41m** *5/02*; **B41j** *3/22*
U.S. Cl. 101—45 **8 Claims**



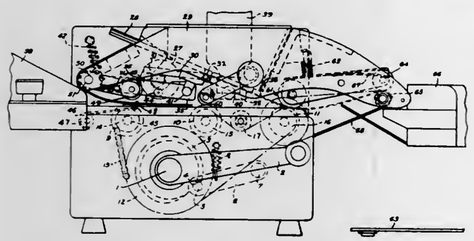
A metal foil containing capillary holes filled with ink and defining the character to be printed is placed so that the holes cover the opening of a chamber having two electrodes which are sparked to raise the pressure in the chamber and so to push the ink out of the holes and against an adjacent web of paper.

3,640,215

CONTROL MEANS FOR COPY SHEET FEEDING AND MOISTENING MEANS IN ADDRESS PRINTING MACHINES

George E. Shepherd, 51 Pasteur St., Dollard Des Ormeaux, Quebec, Canada

Filed Apr. 18, 1969, Ser. No. 817,310
Claims priority, application Canada, Mar. 3, 1969, 044,513
Int. Cl. B41l *47/24, 47/46, 11/02*
U.S. Cl. 101—53 **6 Claims**



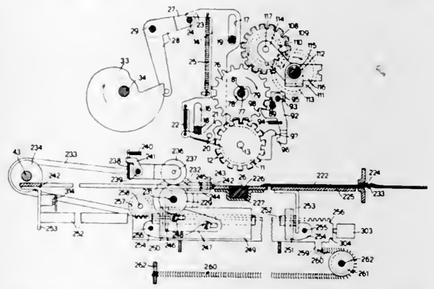
A spirit transfer printing machine has a drive shaft for rollers which pass a copy sheet from a receiving station through a printing station, the sheet being initially held at the receiving station by retractable positive stops. A countershaft driven by the drive shaft simultaneously actuates a moistener for a selected area of the sheet and a mechanism for superposing a master card on the moistened area for printing at the printing station. An adjustable drive mechanism between the countershaft and the drive shaft enables actuation of the moistener and card superposing mechanism to be preadjusted relative to feeding of the copy sheet so that moistening and superposition of the master card occur at an adjustably selected area of the sheet.

3,640,216

PARALLEL PRINTING APPARATUS FOR RECORDED DATA

Bruno Piazza, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Sept. 4, 1969, Ser. No. 855,082
Claims priority, application Italy, Sept 26, 1968, 53271-A/68; June 21, 1969, 52331-A/69
U.S. Cl. 101—93 C **20 Claims**



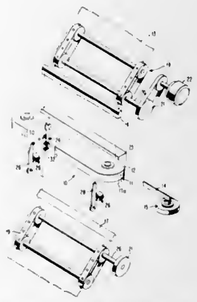
A parallel printing apparatus for data recorded in a store comprises a set of type wheels sequentially set up by a setting wheel, which is transversely moved step by step and is variably rotatable according to the code recorded for each type wheel. The setting wheel is rotated through a clutch which is held engaged under the control of a step counting device sensing a toothed wheel rotated synchronously with the setting wheel. The apparatus is adapted to print on a bank book both parallel and perpendicular to the seam of the book. The book is carried by a carriage, the line spacing of which is effected under the control of a program device.

3,640,217

PRINT HAMMER CONTROL MEANS FOR PIVOTALLY MOUNTED-TYPE MEMBERS

John E. Drejza, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,203
Int. Cl. B41j *9/14, 9/28*
U.S. Cl. 101—93 C **7 Claims**



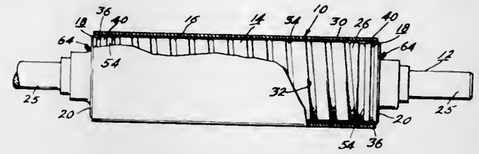
A printer has a plurality of print hammers which impact pivotal-type levers carried by type carriers moving along a track adjacent the print line. Cam surfaces on the body of the carrier cooperate with portions of the print hammer to prevent interference between the print hammer and an adjacent type lever when printing.

3,640,218

SEAL ASSEMBLY FOR SLEEVE-TYPE GRAVURE ROLLS

Thomas K. Allison, 590 Camden Ave., Moorestown, N.J.

Continuation-in-part of application Ser. No. 814,658, Apr. 9, 1969, now abandoned. This application June 25, 1970, Ser. No. 49,771
Int. Cl. B41f *13/20*; **B21b** *27/00, 31/32*
U.S. Cl. 101—375 **5 Claims**



A seal assembly for sealing a sleeve-type gravure roll to prevent ink penetration between the roll end members and the sleeve. Each seal assembly includes an inwardly beveled conical surface on the end member, a resilient seal ring disposed adjacent the conical surface, a pressure ring disposed adjacent the sealing ring, and a winding of pneumatic tubing located inwardly of and adjacent the pressure ring. Inflation of the tubing forces the pressure ring against the sealing ring and expands the sealing ring outwardly along the conical surface of the end member into engagement with the inner surface of the sleeve end, the sealing ring being elastically deformed so as to completely fill the space between the sleeve end and the end member to prevent penetration of ink beneath the sleeve.

3,640,219

METHOD OF DRY PREPARATION OF RELIEF PRINTING PLATES

Norman W. Farnham; William J. Mueller, both of Webster, and Donald J. Gorall, Rochester, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1969, Ser. No. 847,148
Int. Cl. B41c ; B41n
U.S. Cl. 101—401.1 **5 Claims**

An improved method for preparing relief printing plates by transfer of selected portions of a dry, uncured, heat-sensitive polymer dispersion layer from a donor sheet to a printing plate through fusion under infrared radiation. Infrared-absorbing indicia are deposited on a printing plate base having an affinity for fusion with the polymer dispersion under infrared heat. The printing plate base having indicia thereon is placed in intimate physical contact with the polymer dispersion layer of the donor sheet. By application of infrared energy, portions of the polymer dispersion layer are polymerized and hardened in the desired image and fused to the printing plate base to and through the indicia. The donor sheet with the unfused portions of the polymer dispersion, peels away easily leaving a finished printing plate with the indicia incorporated therein.

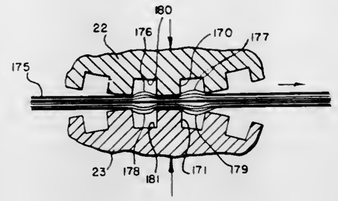
3,640,220

MATCHED PLATE METHOD FOR PRINTING ON MULTIPLE PAPER PARTS

James B. Fulk, 18309 Lexington Drive, Monte Sereno, Calif.

Filed Mar. 23, 1970, Ser. No. 21,948
Int. Cl. B41f *5/04*
U.S. Cl. 101—426 **3 Claims**

A method and apparatus for making graphic copies of indicia, lines, or designs on multiple paper parts which are impressed in unison between the members of a printing couple. The printing members may be in cylindrical form for a rotary printing press or in plate form for a flatbed press. Each member of the printing couple has embossed surfaces which



represent the indicia, lines, or designs to be printed. The embossing on one of the members is the mirror reverse of the embossing on the other member and the embossing characters are disposed in exact matching relationship. The printing operation is known as "crash" printing.

3,640,221

PLANOGRAPHIC PRINTING PLATE

Edward R. Wyke, Chelmsford, Mass., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,634
Int. Cl. B41n *1/00, 3/00*
U.S. Cl. 101—453 **2 Claims**

A planographic printing plate comprising a base having adhered thereto an insolublized coating, including a pigment mixture containing zirconium silicate so as to enhance rejection of ink in nonimaged areas of the plate

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3,640,222

BOOSTER-CAP ASSEMBLY

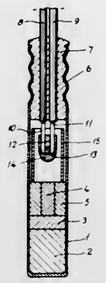
Donald P. Graham, Hurley, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 27, 1968, Ser. No. 787,413
Int. Cl. F42b *3/10*
U.S. Cl. 102—24 **13 Claims**



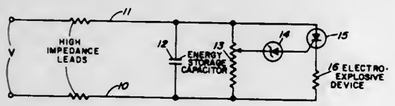
A booster unit containing a small base charge, and adapted to slip over the end of a cap-, or fuse-, type primary initiator to support the base charge in detonating relationship with the primary initiator; and resulting combination of booster unit and the primary initiator as a new booster assembly. The invention is advantageously applied to the elimination of need for conventional dynamite, or cast booster charge, primers for shooting relatively insensitive explosives such as those of the aqueous inorganic oxidizer slurry types, and ANFO's.

3,640,223
ELECTRIC BLASTING CAP HAVING INCREASED SAFETY AGAINST UNINTENTIONAL INITIATION
Per O. I. Olsson, Gyttorp, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden
Filed Oct. 1, 1968, Ser. No. 764,069
Claims priority, application Sweden, Oct. 6, 1967, 13698/67
Int. Cl. F42b *3/18*
U.S. Cl. 102—28 **2 Claims**



The present invention concerns an electric blasting cap having increased safety against unintentional initiation, said blasting cap presenting a bridge wire and in contact with said bridge wire a fuse head composition which latter is surrounded by a protective tubing of dielectric material.

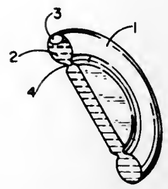
3,640,224
RF IMMUNE FIRING CIRCUIT EMPLOYING HIGH-IMPEDANCE LEADS
John T. Petrick, and Reginald I. Gray, both of Fredericksburg, Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 12, 1969, Ser. No. 857,443
Int. Cl. F42b *3/18*
U.S. Cl. 102—28 **7 Claims**



High-impedance leads in a firing circuit prevent radiofrequency induced currents from prematurely detonating the electroexplosive device. A capacitor across a serial arrangement of an electroexplosive device and an SCR permits the use of a standard size power source to detonate the (EED) electroexplosive device, notwithstanding the impedance introduced by the interference preventing leads.

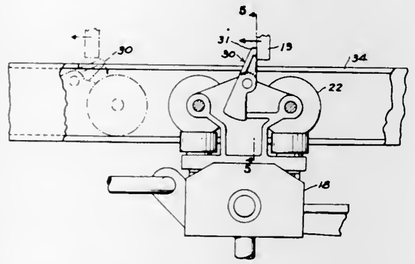
3,640,225
FUZE APPARATUS
Donovan R. Carlson, and William O. Maruska, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed June 20, 1969, Ser. No. 835,186
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 **3 Claims**

A centrifugally displaced fluid barrier for a spin-operated fuze arming delay. Safing and delay arming is provided by a relatively high density fluid positioned along the spin axis of a munition to block the output of a detonator along the spin axis. The fluid completely fills a chamber with the exception of a relatively small volume air bubble. Under sustained spin environment, the air bubble is displaced by centrifugal forces within the fluid into a position along the axis of the munition, allowing the detonator output to pass through the air



chamber. Various configurations of the chamber to provide arming delay are contemplated.

3,640,226
CONVEYOR SYSTEM
Paul Klamp, St. Clare Shores, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,845
Int. Cl. B65g *17/42*
U.S. Cl. 104—96 **8 Claims**



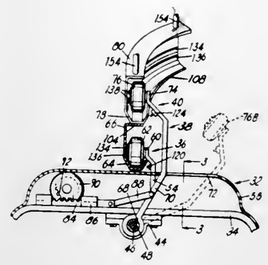
A conveyor system including a first load supporting track and a second load supporting track with an intermediate transfer portion. A powered conveyor is provided in association with each of the first and second tracks. A plurality of carriers are provided. Each of the carriers has a first dog that is in position for normal engagement with the pusher member of the conveyor and a second dog that is normally urged to an operative carrier pushing position but is held by the track out of operative position. At a transfer point a portion of the track is cut away to permit the second dog to move to operative carrier transferring position.

3,640,227
RAIL CAR AND SUPPORTING TRACK AND SWITCH SYSTEM
Austin A. Webb, 337 Espanola Ave., Kalamazoo, Mich.
Filed May 28, 1969, Ser. No. 828,685
Int. Cl. E01b *25/06*
U.S. Cl. 104—130 **8 Claims**

A rail car having two sets of supporting wheels swingable to upright operative car supporting positions at different elevations above the car, from laterally displaced inoperative positions; a track system having rails that converge and diverge at junction points, parallel reaches in said rails at the incoming ends of the junction points spaced vertically to support one set of wheels and register in unsupporting relation to the other set of wheels while the other wheels are moved into registry with the other track, vertically divergent portions at the ends of the parallel reaches arranged to transfer the support of the car from one set of wheels to the other, and selectively operable means to swing the sets of wheels to operative position to effect switching of the car from one rail

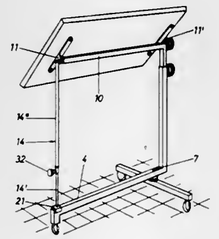
to the other at transfer points.

A refinement shows stretches of rails at an intermediate



spacing, along which the car may be supported and driven by both sets of wheels, for high-speed operation.

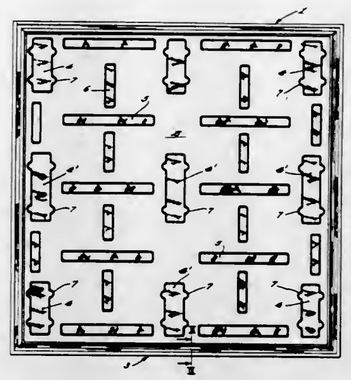
3,640,228
ONE-COLUMN TABLE
Fritz Busse, Solingen-Ohligs, Germany, assignor to Firma Bremshey & Co., Solingen-Ohligs, Germany
Filed Oct. 8, 1969, Ser. No. 864,614
Claims priority, application Germany, Mar. 1, 1969, P 19 10 593.2; Apr. 2, 1969; P 19 16 952.9; Apr. 18, 1969, P 19 19 714.9; May 30, 1969, P 19 27 616.5; June 4, 1969, P 19 28 416.3
Int. Cl. A47f *5/12;* **A47b** *85/00*
U.S. Cl. 108—6 **10 Claims**



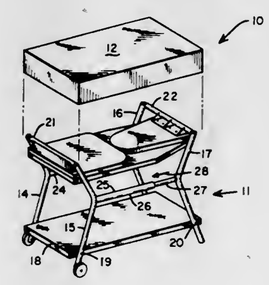
A one-column table which comprises a table column telescopically variable as to its length, and a foot-arm projecting from said table column. A horizontal arm supports a table top and likewise projects from the table column to the horizontal arm. A supporting stay is coordinated for the support of the free end of the horizontal. The horizontal arm, the foot arm and the table column constitute table members. Means are provided for permitting movement of the supporting stay from a coaxial position relative to one of said members into a supporting position.

3,640,229
PALLET
Joseph P. Bell, Route 83, Grayslake, Ill.
Filed Oct. 6, 1969, Ser. No. 863,991
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 **10 Claims**

A pallet constructed from formed sheet material, such as a plastic sheet, having a generally planar load-supporting member from which downwardly depend hollow leg members and hollow stiffening members, the leg and stiffening members being of such configuration and dimensions and so disposed that sufficient rigidity is imparted to said load-supporting member that the latter is relatively undeformable under normal loads thereon.



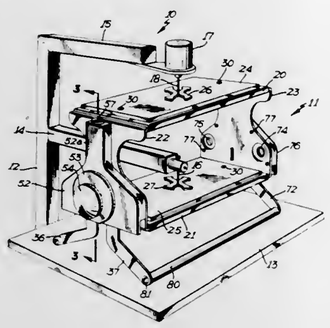
3,640,230
FOLDABLE IRONING BOARD
Donald J. Munson, Minneapolis, Minn., assignor to North Central Manufacturing Corporation, Minneapolis, Minn.
Filed Nov. 30, 1970, Ser. No. 93,576
Int. Cl. A21b *1/06*
U.S. Cl. 108—63 **11 Claims**



An elongated collapsible table structure suitable for use as an ironing board or the like, and comprising in combination, support frame means and a plurality of table forming segments, the segments being hingedly secured together and arranged to be disposed in a first collapsed disposition and a second extended disposition. Cover means are provided for covering or enclosing the structure while in collapsed disposition, the cover means providing a decorative or utilitarian purpose. The support frame means include a plurality of legs supporting a pair of generally axially parallelly disposed laterally spaced mounting rails and means are provided for accommodating relative lateral reciprocatory to-and-fro shifting of the mounting rails along a direction transverse to the rail axes, and means are provided for mechanically biasing said frame means and urging said mounting rails toward one another. The table forming segments include a central segment along with tip and butt segments, the tip and butt segments each being secured to the mounting rails with mounting brackets at a point adjacent the juncture with the central segment, the mounting brackets being arranged for pivotal arcuate rotation about the mounting rails between the collapsed disposition and the extended disposition, with the length of the arm of the mounting brackets providing for sig-

nificant differences in elevation for the table between the collapsed disposition and the extended disposition.

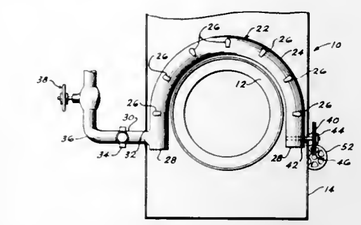
3,640,231
PARALLEL MECHANISM
John O. Lenz, 1161 98th Lane N.W., Coon Rapids, Minn.
Filed Oct. 8, 1969, Ser. No. 864,770
Int. Cl. A47b *57/06;* **B23c** *1/16*
U.S. Cl. 108—106 **16 Claims**



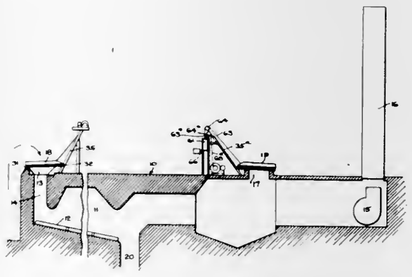
A carving apparatus including a spaced axially aligned tool and tracer and parallel mechanism including two spaced surfaces for carrying a workpiece and a pattern and for simultaneously presenting the pattern and workpiece to the tracer and tool, respectively. The parallel mechanism includes a base portion moveable on a reference surface and includes a mechanism for rendering the workpiece and pattern-carrying surfaces movable toward and away from the reference surface while continuously maintaining them parallel to each other and parallel to the reference surface. The parallel mechanism includes a generally boxlike structure including the pattern and workpiece carrying surfaces and identical and oppositely disposed endpieces connecting those two surfaces. At each end it includes a pair of identical and reversely disposed leg members, each pivotally connected to the boxlike structure at one end and having an opposite end operably engageable with the reference surface, and with means providing a pivotal connection between the two legs of each pair at a point intermediate the point at which they are pivoted to the boxlike structure and their opposite ends. The pivot point between the two legs of each pair is movable generally normal to the reference surface and is spring biased in one direction and movable against the spring in the opposite direction. An alternative embodiment includes selectively adjustable means for limiting the movement of the mechanism in a direction normal to the reference surface.

3,640,232
HIGH MOISTURE CONTENT FUEL DISPERSION APPARATUS
Joseph F. Mullen, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Sept. 19, 1969, Ser. No. 859,379
Int. Cl. F23g *7/00*
U.S. Cl. 110—7 R **6 Claims**

A method and apparatus for distributing high moisture content material fuel within the furnace of a steam generator organization, said fuel being transported to the furnace pneumatically. An angularly adjustable manifold having series of nozzles is located adjacent the discharge end of the fuel transport line at the point where it enters the furnace. Jets of a dispersion medium supplied to the manifold are directed through the nozzles to apply horizontal and vertical force components to the solid fuel particles issuing from the transport line. The dispersion pattern may be regulated by adjusting the manifold angle and/or the pressure of the dispersion medium.

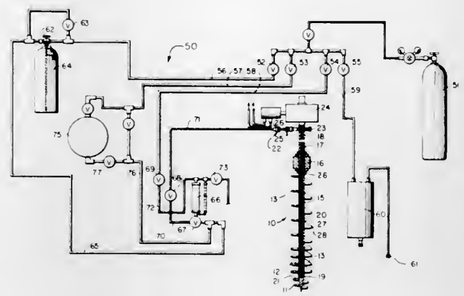


3,640,233
INCINERATOR SHIFTABLE CLOSURE GATE
Joel Russell Reiner, Philadelphia; William J. Preusch, Southampton, and William G. Davenport, Philadelphia, all of Pa., assignors to Beaumont Birch Company, Philadelphia, Pa.
Filed Oct. 8, 1970, Ser. No. 79,038
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **24 Claims**



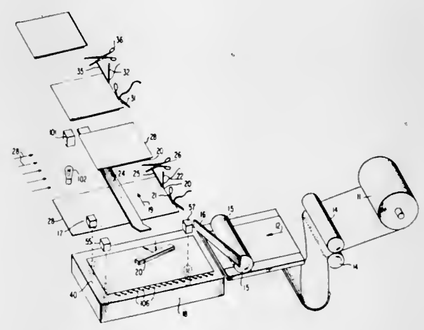
A wheeled closure gate for maintaining opened or closed as desired an aperture disposed in a substantially horizontal plane, the gate being shiftable along tracks embracing the aperture which are so relatively inclined with respect to the horizontal plane as to permit the gate to be moved upwardly along said tracks by power means into aperture-opening position and return thereof by gravity into aperture-closing position. The closure gate in this particular instance comprises a flat plate assembly which is bodily shifted from its aperture-closing position, as across the top of a charging hopper or across the top of an exhaust port, into an inclined position located immediately adjacent to one end of the aperture to completely expose the same for flow of material therethrough. Means are provided to controllably hold the gate in its power-operated raised position and to release it for gravity return to its lowered position. The tracks for and roller wheels of the gate are protected against the accumulation of debris thereon as might interfere with free movement of the gate. The gate when raised into its open position serves, when employed as a cutoff gate for an incinerator charging hopper, to deflect back into the hopper rubbish which would otherwise not be received by the hopper. The opposite sidewalls of the hopper may be also provided with swingable side covers which serve to shield the tracks and wheels of the gate from debris collecting thereon and to deflect back into the hopper rubbish spilling over the sidewalls of the hopper.

3,640,234
FUMIGANT INJECTION APPARATUS
William J. Carroll, West Lafayette, Ind., and Frank S. Mizusawa, Garden Grove, Calif., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.
Filed May 1, 1970, Ser. No. 33,709
Int. Cl. A01c *23/02*
U.S. Cl. 111—6 **6 Claims**



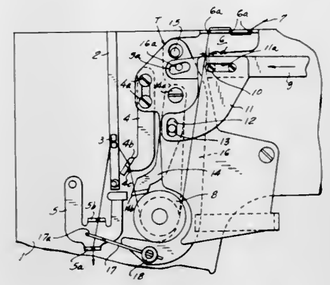
A system is disclosed for forming, filling and sealing capsules of volatile fumigant at least 3 feet underground. The system utilizes an apparatus which penetrates to the prescribed depth, forms a cavity at that depth, fills the cavity and withdraws sealing the filled cavity encapsulating the fumigant at the prescribed depth. The apparatus is particularly useful in combating pathogenic fungi such as *Armillaria Mellea.*

3,640,235
METHOD AND APPARATUS FOR CUTTING AND HEMMING CLOTH LENGTHS
Perry E. Burton, Atlanta, Ga., assignor to Burton & Noonan
Filed June 5, 1970, Ser. No. 43,756
Int. Cl. D05b *33/00, 35/08*
U.S. Cl. 112—121.29 **10 Claims**



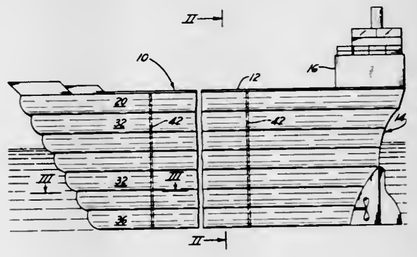
A method and apparatus for cutting and hemming cloth lengths wherein a continuous supply of cloth is fed along a first path to a cutting and transfer station, a predetermined length of cloth is cut from the supply and transferred to a second path extending approximately at a right angle to the first path, a first cut end of the cloth length is hemmed, the cloth length is folded across its length so that its second cut end overlaps the hemmed end, and the second cut end is hemmed.

3,640,236
THREAD RETAINER FOR SEWING MACHINES
Karl Nicolay, Bielefeld, Germany, assignor to Durkoppwerke GmbH, Bielefeld, Germany
Filed July 1, 1970, Ser. No. 51,530
Claims priority, application Germany, July 3, 1969, P 19 33 780.5
Int. Cl. D05b *49/00*
U.S. Cl. 112—243 **10 Claims**



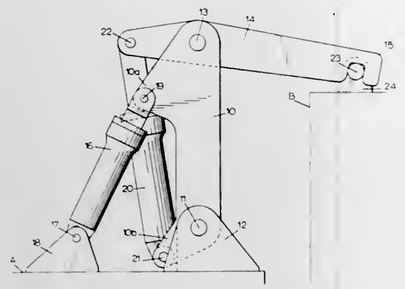
A double-lockstitch sewing machine, provided with a thread-cutting mechanism, has a thread retainer for supplying a predetermined thread length of upper thread at the conclusion of a stitching operation and as a preliminary to a subsequent stitching operation. The retaining arrangement includes a thread brake which is released at the end of the stitching operation and an eye for drawing the released thread from a spool or other supply to provide the desired length.

3,640,237
MULTICYLINDER VESSEL FOR TRANSPORTATION OF FLUIDS
Rex V. Phelps, Tulsa, Okla., assignor to Warren Petroleum Corporation, Tulsa, Okla.
Filed Apr. 23, 1970, Ser. No. 31,115
Int. Cl. B63b *25/16;* **B63g** *8/00*
U.S. Cl. 114—16 R **9 Claims**



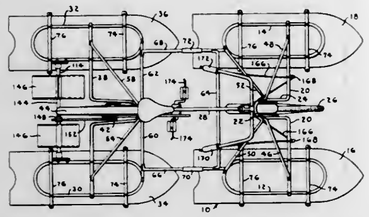
Surface vessels and submarines for the transportation of large volumes of fluids are constructed of a plurality of cylindrical segments joined along their edges. The cylindrical segments serve both as the wall of the storage tanks in which the fluids transported are contained and the skin of the vessel. Webs joined to the junctures of the cylindrical segments extend across the interior of the vessel and are joined to junctures of cylindrical segments on the opposite side of the vessel.

3,640,238
MEANS FOR DRAWING TOGETHER AND ALIGNING THE SEPARABLE PARTS OF COMPOSITE LOAD-CARRYING VESSELS OR WATERCRAFT
Geoffrey Stockdale, 57, Greenleas Road, Wallasey, England
Filed Feb. 13, 1970, Ser. No. 11,082
Claims priority, application Great Britain, Feb. 15, 1969, 8,357/69
Int. Cl. B63b *21/58*
U.S. Cl. 114—235 A 3 Claims



The invention provides power operated apparatus for pulling into alignment both with respect to draft and trim buoyant hull sections of composite vessels and the like. The apparatus comprises in association with a first hull section a power operated extendible and retractable articulated structure, gripping means provided on said extendible and retractable structure, and an anchoring point on a second hull section arranged so as to be engageable with said gripping means.

3,640,239
FLOAT APPARATUS FOR BICYCLE
Paul P. Petroskey, 1121 Chicago Ave., Hammond, Ind.
Filed May 27, 1970, Ser. No. 40,888
Int. Cl. B63b *35/38*
U.S. Cl. 115—27 7 Claims



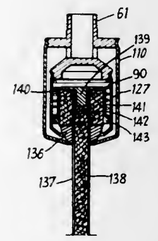
A float apparatus for attachment to a conventional bicycle comprising a frame member having horizontally extending distal ends which are connected to laterally spaced pontoon floats. The frame member is acutely angled intermediate the distal ends thereof to obtain a vertically extending loop portion for bridging the front wheel of the bicycle. The upright legs of the loop portion of the frame member carry brackets adapted to connect to the front wheel axle by which means the front portion of the float apparatus is attached to the bicycle. A similarly formed second frame member is provided to support a second pair of pontoon floats laterally spaced apart. A horizontally positioned axle is connected between the second pair of float members and is provided with paddle wheels and a sprocket gear. A sprocket chain connects a sprocket on the rear wheel of the bicycle and the sprocket on the paddle wheel axle and is driven by pedaling the bicycle. A swivelly connected rubber device is clamped to the nadir part of the front wheel and is movably controlled by lines strung to the handlebars.

3,640,240
FIN-PROPELLED WATERCRAFT
Erich Stein, 2, Josef-Graber-Gasse, A-5020 Salzburg, Austria
Filed Oct. 23, 1969, Ser. No. 868,771
Claims priority, application Austria, Mar. 7, 1969, A 2256/69; Sept. 8, 1969, A 8486/69
Int. Cl. B63h *1/36*
U.S. Cl. 115—28 5 Claims



A floating body is operable to rock about a predetermined axis. A torsion-elastic fin stem is mounted on the floating body and substantially intersects the axis and has a free end portion extending from this body. A fin is secured to the free end portion and adapted to produce a thrust in response to a rocking motion of the body about the axis.

3,640,241
WARNING DEVICE FOR CYLINDERS FOR LIQUEFIED GAS UNDER PRESSURE
Marie-Francoise Adaglio, 31 rue des Deux Ponts, Paris 4 eme, France
Continuation-in-part of application Ser. No. 680,821, Nov. 6, 1967. This application Apr. 1, 1969, Ser. No. 812,260
Claims priority, application France, Dec. 29, 1966, 89,270; May 17, 1967, 106,656; July 7, 1967, 113,291
Int. Cl. G01f *23/00*
U.S. Cl. 116—109 5 Claims



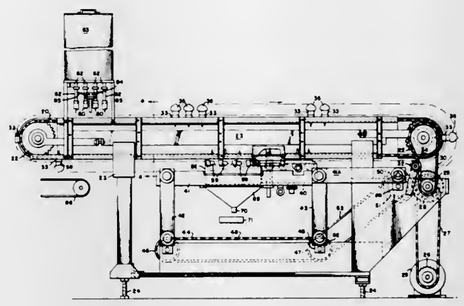
A warning device for a cylinder of liquefied gas under pressure for indicating to the operator when the level of gas in the cylinder is getting low, having a sleeve supported in the interior of the cylinder by a coupling connected to the tap of the cylinder and through which gas flows from the cylinder and which is closed off when the liquid falls below a predetermined level so that the consequent drop in pressure in the chamber sets a valve member into oscillation establishing a warning signal.

3,640,242
SIGNAL FLAG
Frank Guinn, 1305 Allen Ct., and George P. Baba, 1204 Purdue, both of Modesto, Calif.
Filed Nov. 4, 1970, Ser. No. 86,699
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 1 Claim



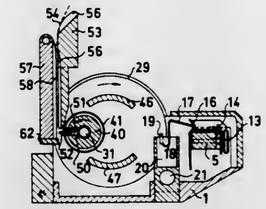
A safety device for water skiers, the device comprising a flag secured to a dowel which can be waved from a boat to warn other boats that a towed skier is down in the water, the flag upon its outer side being painted bright orange, the flag being able to be turned inside out so to change colors.

3,640,243
MACHINE FOR MANUFACTURING A NOVELTY ICE CREAM PRODUCT
Harry L. Dill, and Richard D. Collins, both of Baltimore, Md., assignors to Maryland Cup Corporation, Owings Mills, Md.
Filed Aug. 12, 1970, Ser. No. 63,109
Int. Cl. B05c *5/00*
U.S. Cl. 118—24 10 Claims



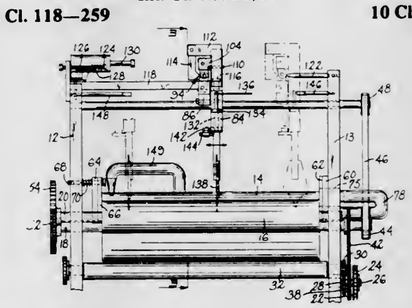
A machine for manufacturing ice cream cones having a coating material, such as chocolate and a particulate confectionary material such as crushed nuts, comprises a conveyor for linearly conveying the ice cream cones in upside down position. A tank for holding a coating material such as melted chocolate, is mounted below the conveyor for oscillation vertically relative to the path of travel of ice cream cones. The coating material in the tank contacts the exposed surfaces of the ice cream on each cycle of oscillation. A chamber is mounted for cooscillation with the tank for cyclically enclosing the coated ice cream balls of the ice cream cones. Means are provided for aspirating within the chamber particulate confectionary material, such as crushed nuts, against the coated surfaces of the ice cream cones.

3,640,244
GLUE-TRANSFERRING DEVICE
Sabud Axelsson, Vallingby, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden
Filed Sept. 2, 1970, Ser. No. 69,016
Claims priority, application Sweden, Sept. 8, 1969, 12,349/1969
Int. Cl. B05c *1/00*
U.S. Cl. 118—212 6 Claims



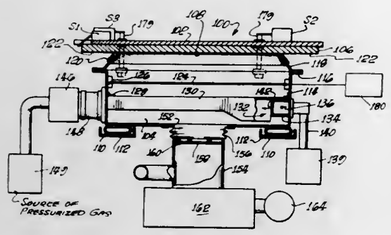
1. A glue-transferring device for rapid transfer onto a web of material (54) moving in one direction during a work cycle of a strand of glue transversely to the direction of movement of said web, said device including at least one glue-absorbing surface (55) adapted to be moved between a glue-taking-up station and a glue transfer station and formed on a glue-transferring member (52) mounted on a rotatable body (40), said glue-absorbing surface (55) having a length, calculated in the axial direction of said rotatable body (40), corresponding to the length of the strand of glue, characterized in that said rotatable body (40) is connected to a planetary wheel (38) on a planetary gear bearer (32) which is coupled to driving means (45) adapted to impart to the planetary gear carrier a rotative movement said planetary wheel (38) being in engagement with inner teeth on a fixed ring gear (36) the gear ratio between said planetary wheel and said ring gear being selected so as to cause the glue-transferring member (52) during the rotational movement of the rotatable body (40) to be directed towards, alternately, the glue-taking-up station for taking up glue and the web of material (54) for delivery of the taken-up glue.

3,640,245
CIRCULATING DEVICE
Charles F. Schaefer, Captain's Drive, Pilot's Point, Westbrook, Conn.
Filed Jan. 9, 1970, Ser. No. 1,797
Int. Cl. B05c *1/08*
U.S. Cl. 118—259 10 Claims



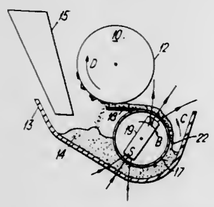
This disclosure relates to a device for preventing adhesive in an adhesive coating mechanism from thickening and decreases the problem of air drying of such adhesive. A mechanism is provided to constantly recirculate liquid adhesive which is deposited between a pair of cooperating rolls so that excess liquid is removed from between the rolls and air drying thereof is substantially decreased.

3,640,246
DEVELOPMENT APPARATUS FOR LATENT ELECTROSTATIC IMAGES
Lothar S. Jeromin, Sierra Madre, and Hazen L. Hoyt, III, Glendora, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 7, 1969, Ser. No. 874,746
Int. Cl. G03g *13/08*
U.S. Cl. 118—629 31 Claims



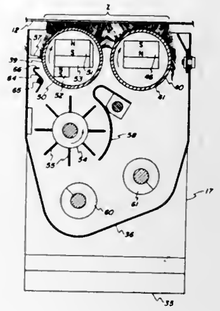
Powder cloud development apparatus for developing latent electrostatic images including an ion generator adjacent one wall of the development chamber. A cloud of toner particles is introduced into the development chamber through a port in the wall directly opposite the ion generator wall. Above the powder cloud port and the apertures in the ion generator wall, and extending completely between the opposed walls, is a baffle under which the powder and toner clouds meet and are thoroughly mixed. A grid electrode, positioned above the baffle and spaced much further from the photoconductive surface than a conventional powder cloud development electrode, is utilized to control image quality and contrast.

3,640,247
MAGNETIC POWDER APPLICATOR
Frederick Percival Mason, Burgess Hill, and Frank Arthur Oakley Waren, Hove, both of England, assignors to Creed & Company Limited, Hollingbury, Brighton Sussex, England
Filed Mar. 18, 1970, Ser. No. 29,330
Claims priority, application Great Britain, May 29, 1969, 27,166/69
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 6 Claims



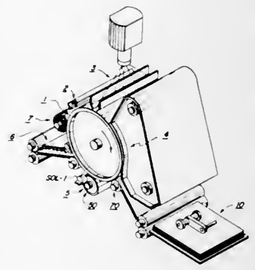
A magnetizable powder applicator arrangement in a printing or display apparatus employing for example a magnetizable drum. The powder is attracted to the outer surface of a nonmagnetizable tube which contains therein a rotatable row of bar magnets having like poles adjacent. The divergent flux field set up by the rotating magnets causes the powder to creep along the surface of the tube in a direction opposite the magnet rotation, and onto a ledge of nonmagnetizable material. The ledge is sufficiently close to the drum, yet sufficiently far from the flux field, for the powder to be attracted to the drum surface without disturbing the selective magnetization thereon.

3,640,248
ELECTROSTATIC MAGNETIC DEVELOPING APPARATUS
William B. Nielander, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,285
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 7 Claims



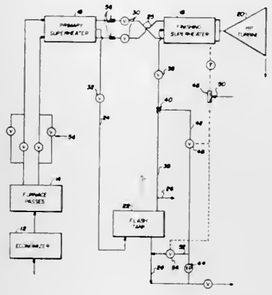
An arrangement of spaced magnetic brushes for developing latent electrostatic images wherein the magnetic fields associated with the brushes overlap so that magnetizable carrier particles are carried from one brush to the other across the space therebetween thereby presenting a continuous magnetic blanket of developing material during development.

3,640,249
TRANSFER APPARATUS
Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,175
Int. Cl. B05b *5/02*; G03g *13/00*
U.S. Cl. 118—637 7 Claims



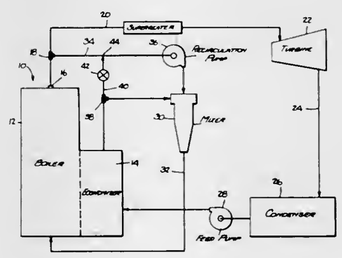
Apparatus for effecting transfer of electroscopic toner particles from a surface carrying electrical charges in image configuration to a support medium. An electrically biased transfer roller having an outer peripheral surface of electrically isolated segments of a conductive resilient material is positioned adjacent the electrical charge carrying surface with the support medium passing therebetween. The electrically isolated conductive segments are selectively actuated in response to the length of the support medium to effect transfer of the electroscopic toner particles thereto to the exclusion of effecting transfer of the toner particles to the transfer roller surface.

3,640,250
STEAM TEMPERATURE CONTROL SPRAY SYSTEM
Raymond M. Costello, Parsippany, and Eugene B. Beckman, Rockaway Township, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Mar. 24, 1970, Ser. No. 22,272
Int. Cl. F22b *29/08*
U.S. Cl. 122—406 ST 8 Claims



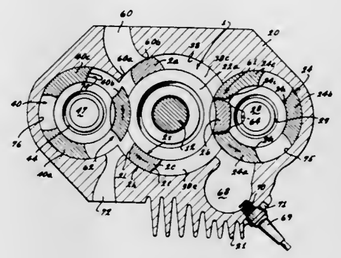
A spray control for adjusting finishing superheater outlet temperature in a once-through generator during startup. The control comprises a low-pressure pump arranged to withdraw liquid from the flash tank of the generator startup bypass and to introduce the liquid into the vapor flow from the flash tank at a point between the flash tank and the finishing superheater. The invention permits exact matching of the enthalpy of the bypass vapor flow entering the superheater with that at the primary superheater outlet at a stage in the turbine loading, when flow is being transferred from the bypass system to the main circuit.

3,640,251
CONTROL OF FLUID FLOW THROUGH CENTRIFUGAL PUMPS
Jeremiah M. Ferguson, Northboro, Mass., assignor to Riley Stoker Corporation, Worcester, Mass.
Filed Aug. 28, 1970, Ser. No. 67,772
Int. Cl. F22b *35/12*
U.S. Cl. 122—406 S 19 Claims



The flow through a steam power plant recirculation circuit is increased and made variable by injection of a certain amount of boiler feed water into the suction side of a centrifugal pump in the recirculation circuit thereby increasing the density of the fluid being pumped and correspondingly increasing the effective pumping pressure in the recirculation circuit.

3,640,252
ROTARY INTERNAL COMBUSTION ENGINE
Raymond G. Spinnett, 1961 A Mitchell, Santa Ana, Calif.
Filed Apr. 13, 1970, Ser. No. 27,539
Int. Cl. F02b *55/08*
U.S. Cl. 123—8.31 17 Claims



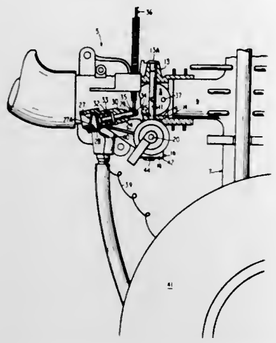
A rotary energy converter or engine, for converting fuel combustion into rotary mechanical motion, has a casing providing three annular chambers in which three rotors are mounted for timed rotation. The central rotor has pistons extending axially from one face of a rotor disc, which rotate in the central chamber and which juxtapose at timed periods with abutments on the two noncentral rotors to form momentary function-chambers that permit concurrent phases of intake, compression, power and exhaust functions to occur. The sealing between adjacent function-chambers is accomplished without physical contact of moving parts and especially without the need for minute clearance tolerances and without the need for precision gearing. Recirculation of combusted gases and recirculation of portions of fresh air-exhaust mixtures diminish undesirable emission products. An internal cooling system dissipates heat while another internal venting system entraps leakage gases for further combustion. The form of the juxtaposed pistons and abutments are simplified due to the relative configuration of chambers, pistons and abutments being made to permit circular approximations instead of requiring the perfection of a complex curvature form.

The basic reference for the various relative configurations is the minor radius of the central annular chamber which is made equal to the major radius of the noncentral annular chambers.

3,640,253
CARBURETOR THROTTLE CONTROL ASSEMBLY
Peter David Glover; Richard Forshaw, and William Henry Steele, all of Milperra, New South Wales, Australia, assignors to Victa Limited, Milperra, New South Wales, Australia
Filed May 1, 1970, Ser. No. 33,583
Claims priority, application Australia, Mar. 31, 1970, 13,181/70
Int. Cl. F02d *31/00*
U.S. Cl. 123—103 B 5 Claims

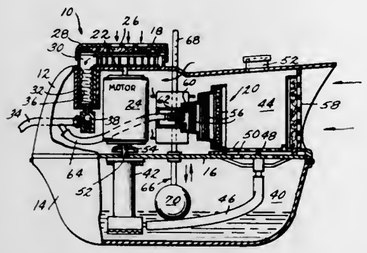
A single-ended control arrangement for the butterfly spindle in a carburetor, in which a speed governor shaft is geared

to one end of the spindle while the other end is sealed off, and an accelerator element is connected through a spring to



the shaft to influence together with a governor vane the rotation of the shaft.

3,640,254
SYSTEM FOR REDUCING AND CONTROLLING EXHAUST EMISSIONS FROM INTERNAL COMBUSTION ENGINES
Frank A. Manfredi, 2026 W. 95th St., Cleveland, Ohio
Filed Feb. 5, 1970, Ser. No. 9,018
Int. Cl. F02m *25/00*
U.S. Cl. 123—119 CF **20 Claims**

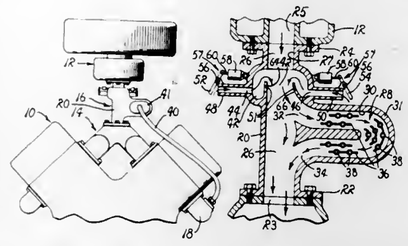


A system is described for reducing and controlling certain undesired byproducts from a combustion process in an engine by forcing supplemental air, preferably preheated, into the intake manifold of the engine at a point downstream from a conventional carburetor device. In addition, liquid vapor may be introduced into the intake manifold at approximately the same point. Preferably, a blower means for delivering supplemental air and a pumping means for pumping liquid are both operated by a single variable speed electric motor so that the functions of both devices can be related to changes in engine demands during operation.

3,640,255
CARBURETOR ADJUSTING METHOD
Frederick L. Voelz, Orland Park, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,930
Int. Cl. F02m *3/00*
U.S. Cl. 123—119 R **10 Claims**

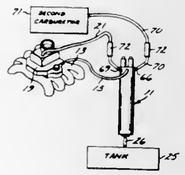
A method for optimizing the performance of an internal combustion engine carburetor to minimize the amounts of carbon monoxide and hydrocarbons in the engine exhaust gases while still providing for an efficiently operating engine is disclosed. The method involves adjusting the air-fuel mixture to the carburetor so as to minimize the amount of hydrocarbons in the engine exhaust gases.

3,640,256
SYSTEM FOR PRECONDITIONING A COMBUSTIBLE VAPOR
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles Mangion, Redondo Beach, Calif.
Filed Oct. 21, 1970, Ser. No. 82,647
Int. Cl. F02m *31/14*
U.S. Cl. 123—122 AB **9 Claims**



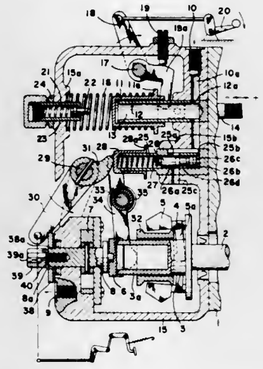
A system particularly adapted for use in preconditioning combustible vapors for delivery to internal combustion engines, characterized by a system housing including therein a full-flow bore communicating with a bypass conduit and having a vapor heater arranged therewithin, whereby a combustible vapor selectively is mixed and heated to a predetermined temperature as it is delivered in a continuous flow through the system. A particular feature of the invention resides in a provision of an improved control system having a reduced number of moving parts, and including a provision of fluidic bias ports, for imposing directional control on an established flow of vapor and directing predetermined portions of the flow across a heater, whereby the vapor selectively is preconditioned for enhancing subsequent combustion.

3,640,257
EVAPORATIVE LOSS CONTROL APPARATUS
George W. Cornelius, 279 West 7th St., San Pedro, Calif.
Filed Aug. 25, 1969, Ser. No. 852,854
Int. Cl. F02m *19/00*
U.S. Cl. 123—136 **12 Claims**



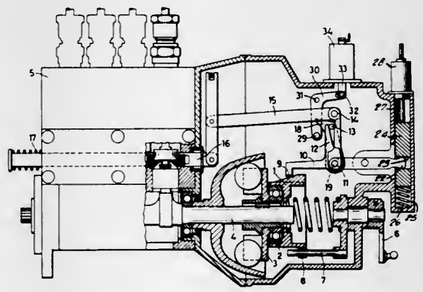
An evaporative loss control apparatus for draining the gas remaining in the carburetor of an internal combustion engine after the engine is stopped to prevent evaporation thereof by the residual engine heat. The evaporative loss control apparatus includes a vacuum tank connected with the intake manifold of an internal combustion engine and a check valve permits flow toward such manifold only. The vacuum tank is connected with the carburetor and a fuel control valve admits flow to such tank when the engine is stopped. The vacuum tank is connected with the automobile gas tank and a dump valve admits flow to the gas tank after the engine is stopped and the carburetor drained. Thus, when the engine is operating the vacuum tank is in communication with the intake manifold to pull a vacuum in such tank. When the engine is stopped the vacuum in such tank is effective to pull the residual gasoline from the carburetor and, when the vacuum tank approaches atmospheric pressure, the gasoline therein will be dumped into the automobile gas tank.

3,640,258
GOVERNOR FOR INTERNAL COMBUSTION ENGINES OF INJECTION TYPE
Hiroshi Isobe; Hachiro Aoki, and Noritoshi Tanaka, all of Saitama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1970, Ser. No. 60,221
Claims priority, application Japan, Aug. 4, 1969, 44/61052
Int. Cl. F02d *1/12*
U.S. Cl. 123—140 FG **5 Claims**



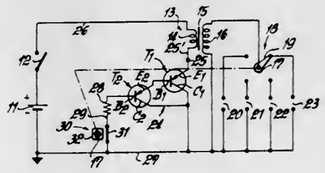
A governor for an internal combustion engine of the injection type. The position of a fuel rod is controlled by the balance of the opposing forces of the spring and a fluid pressure, the latter varying in response to engine speed. The pressure of this fluid is controlled by a control valve operable in one direction to open a bleed port by the force of fluid pressure and thereby increase fuel supply and operable in the opposite direction by the spring force to close the bleed port and thereby decrease fuel supply. Movement of the control valve in the bleed port closing direction is also caused by either a manually operated lever and/or a lever arm, the latter being operated by centrifugal weights in response to engine speed.

3,640,259
REGULATOR FOR GASOLINE INJECTION PUMPS
Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy
Continuation of application Ser. No. 735,332, June 7, 1968, now abandoned. This application June 12, 1970, Ser. No. 48,861
Int. Cl. F02d *1/00*
U.S. Cl. 123—140 MC **3 Claims**



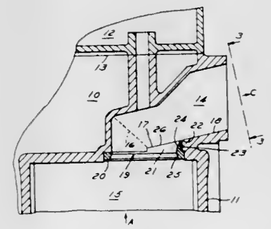
A regulating device for adjusting the rate of flow of a fuel injection pump for an internal combustion engine as a function of the temperature of the engine at its starting includes a cam and lever system responsive, via a thermostatic element, to the temperature of the engine at the instant of its starting. The device can be adjusted to inject the supplementary amount of fuel necessary for starting the engine properly when the engine is still cold, while the amount of injected fuel can be decreased when the engine to be started, or restarted, is already warm or in the neighborhood of its optimum working temperature.

3,640,260
IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES
Hermann Mittag, and Jorg Issler, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed June 30, 1970, Ser. No. 51,181
Claims priority, application Germany, July 12, 1969, P 19 35 517.0
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **10 Claims**



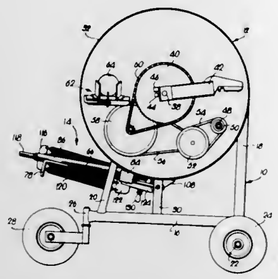
The ignition arrangement, which, as an integrated circuit, is fixed to the distributor housing, comprises a battery-powered circuit having two transistors Darlington connected, of which the common load is the primary winding of a spark coil or of an ignition capacitor charging transformer. A cam on the distributor shaft periodically opens a make-and-break switch in the circuit.

3,640,261
INTERNAL COMBUSTION ENGINES
Geoffrey Ernest Josey, 35 Norfolk Close, Maldon, England
Filed May 25, 1970, Ser. No. 40,011
Claims priority, application Great Britain, Aug. 7, 1969, 39,606/69
Int. Cl. F01l *3/22, 3/06*
U.S. Cl. 123—188 S **6 Claims**



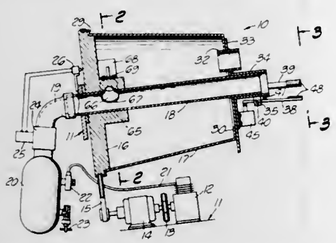
An internal combustion engine including a cylinder head having a passage positioned therein adapted to communicate with a combustion chamber and adapted to carry either a fuel-air mixture or products of combustion. The passage has first and second portions positioned at an angle to one another that are formed by a pair of retractable dies during a casting process thereby leaving a sharp discontinuity. A valve seat insert is positioned in one portion of the passage and it includes a lip having an inner surface which curves or tapers smoothly toward this discontinuity to improve the gaseous flow characteristics of the passage.

3,640,262
TRAJECTORY CONTROL MECHANISM FOR BALL PITCHING MACHINE
Paul Robert Hunsicker, Kansas City, Kans., assignor to Commercial Mechanisms, Inc., Kansas City, Mo.
Filed Aug. 17, 1970, Ser. No. 64,315
Int. Cl. F41b *3/04*
U.S. Cl. 124—7 **10 Claims**



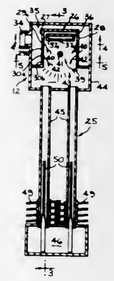
A ball-throwing machine having a throwing arm rigidly mounted on a rotatable shaft and a crank secured to the shaft for effecting a drive coupling provided with a force mechanism for acceleratedly driving the throwing arm through a portion of its path of travel to throw a ball. An elongated support structure is pivotally mounted with respect to the frame of the machine and supports the force mechanism for movement longitudinally of the structure. In this manner the line of force of tension spring means which comprises the mechanism is varied relative to the path of travel of the throwing arm. Thus, the point of application of the accelerative driving force, which is applied to the throwing arm as the latter reaches an overcenter position in its path of travel, is varied to alter the trajectory of a ball being thrown. A mounting component of the force mechanism has a locking element in the form of spring-biased detent means which is interengageable with a corresponding locking element in the form of a plurality of slots in the support structure. These cooperating elements are selectively interengageable to lock the spring means relative to the supporting frame of the machine. Springs bias the interengageable elements into their normal locking positions and a camming surface of the support structure is movable against the action of one of the springs to disengage the locking elements and permit swinging of the spring means longitudinally of the structure.

3,640,263
AUTOMATIC BALL-THROWING MACHINE
Barry V. Rhodes, 22358 Baltar St., Canoga Park, Calif.
Original application Apr. 22, 1968, Ser. No. 723,149, now abandoned. Divided and this application Apr. 22, 1970, Ser. No. 30,903
Int. Cl. F41b *11/00*
U.S. Cl. 124—11 **5 Claims**



A ball-throwing apparatus for throwing balls utilizing pressurized air and a fast-action valve. The barrel and breech are enclosed by a rotating cage containing a supply of the balls wherein a single ball is selected from the tumbling supply of balls by an L-shape leg member attached to the cage and leading to an opening in the barrel. The device includes randomly varied ball trajectory structure which is in the form of an adjustable bleeder valve venting air, to the atmosphere at different rates to vary the pressure which is discharging the ball and, or, movable fingers which randomly project into the path of a discharged ball to carom the ball into a different path. The varied trajectory structure can be manually controlled or prearranged by timer-driven cam discs.

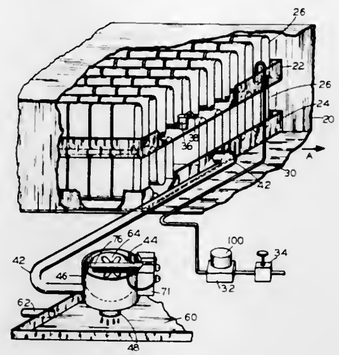
3,640,264
COMBUSTOR MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER
Richard C. Barnett, Tyler, Tex., assignor to General Electric Company
Filed Sept. 10, 1970, Ser. No. 71,007
Int. Cl. F24h *3/08*
U.S. Cl. 126—110 R **10 Claims**



This invention provides improved combustor means for mixing and burning fuel gas and pressurized air to produce a highly intense heat source for a gas-fired space heater. The combustor means comprises a generally horizontal elongate trough having generally vertical left and right long sidewalls that are pierced by a plurality of combustion air inlet apertures and a fuel gas supply conduit which extends longitudinally through the trough. The gas conduit has a surface that is pierced by a plurality of fuel gas inlet apertures which are arranged such that the gas enters the trough generally parallel to its two apertured sidewalls, and is turbulently mixed with pressurized combustion air in a fuel gas-air mixing area that is defined by the two apertured trough sidewalls and the apertured gas conduit surface. The percent invention provides the apertured surface of the gas conduit with at least two offset rows of apertures including a left row of gas inlet apertures aligned with the air inlet apertures in the trough left sidewall and a right row of gas inlet apertures aligned with the air inlet apertures in the trough right sidewall. This offset aperture pattern creates a swirling action within the combustor fuel gas-air mixing area which promotes more turbulent, and hence better, mixing of the pressurized combustion air and the fuel gas and thus promotes more complete combustion thereof and more intense heat production therefrom.

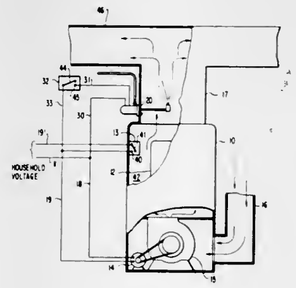
3,640,265
HUMIDIFIER CONTROL SYSTEM
Richard H. Swart, Sr., 817 Onondaga Ave., Syracuse, N.Y.
Filed May 4, 1970, Ser. No. 34,038
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **11 Claims**

Humidifier for hot air heating systems having a water-evaporating pan with an overflow, means to supply water to said pan, at a rate exceeding the rate of evaporation, a removable partially submerged fin, a float chamber receiving



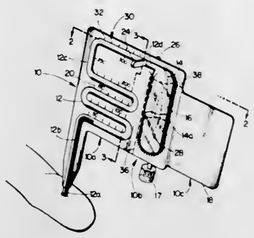
the overflow and having an adjustable bleed, and a float actuated switch to control the water supply.

3,640,266
AIR-HUMIDIFYING SYSTEM AND COMPACT SPRAY HUMIDIFIER FOR THE SAME
Dale S. Ernest, Beltsville, Md., assignor to Jesse I. Broughton and John G. Hannon, Md.
Filed July 1, 1970, Ser. No. 51,585
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **4 Claims**



A humidifier assembly comprises a housing coupled to the exterior of a furnace plenum chamber and carries a spray nozzle which extends through the plenum wall and into the plenum chamber along with a thermostatic switch responsive to temperature in the plenum chamber. The switch is connected to a solenoid valve controlling delivery of water to the spray nozzle. In turn, the solenoid valve and the plenum thermostatic switch are series connected with a humidistat responding to the humidity in the space served by the furnace. This circuit is connected in parallel with the furnace blower motor which is controlled by another thermostatic switch positioned in the air passage leading to the plenum chamber. The blower control switch closes at a temperature above, and opens at a temperature below, the temperatures which close and open the thermostatic switch of the compact humidifier assembly.

3,640,267
CLINICAL SAMPLE CONTAINER
Carl R. Hurtig, Scituate; Andres Ferrari, and Amin J. Khoury, both of Dover, all of Mass., assignors to Damon Corporation, Needham Heights, Mass.
Filed Dec. 15, 1969, Ser. No. 884,924
Int. Cl. A61m *1/00*
U.S. Cl. 128—2 **11 Claims**



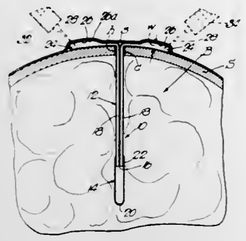
A container for the collection, storage and processing of a sample of body fluid has a graduated receiving tube for collecting the sample and which feeds a chamber that is resiliently collapsible to aspirate the sample into the tube and thence into the chamber. Initially, a frangible seal closes the tube-chamber junction to maintain a sample-treating reagent within the chamber. The tube and chamber are in a unitary, self-supporting structure which also has a panel or the like for carrying indicia identifying the sample.

3,640,268
METHOD AND DEVICE FOR BIOPSY SPECIMEN COLLECTING AND HANDLING
Hugh J. Davis, 507 North Castle, Baltimore, Md.
Filed Oct. 23, 1965, Ser. No. 503,679
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **16 Claims**



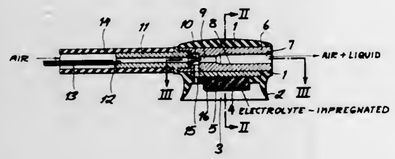
A method for procuring and processing samples of cellular material which comprises the steps of removing from a body cavity samples of cellular material, washing the samples of cellular material into a fluid container and processing the samples of cellular material directly within the container structure for eventual analysis in the cancer detection; the apparatus for use in carrying out the method includes a tubular member, a cap adapted to fit over one end of the tubular member to close the same, a fluid container adapted to be used as centrifuging container adapted to be connected to the other end and a swab structure or the like adapted to be removably connected with the other end of the tubular member. The dimension of the cap and other end are thereby so chosen that the cap can also be connected to the other end of the tubular member so as to form a pipette structure.

3,640,269
FLUID-CONDUCTING INSTRUMENT INSERTABLE IN LIVING ORGANISMS
Jose M. R. Delgado, 50 Autumn St., New Haven, Conn.
Filed Oct. 24, 1969, Ser. No. 869,170
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **5 Claims**



An instrument for insertion in living organisms, having two flexible fluid-impermeable tubes open at one end and provided at the other end with enlarged bag formations which are self-sealing after being punctured with a needle, and a porous bag closed except for an open end with which the open tube ends communicate, with the latter being received in and attached to the open bag end and sealed from the outside of the bag.

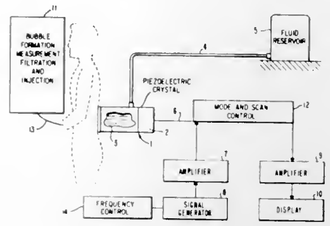
3,640,270
ELECTRIC CONTACTOR WITH VENTURI-SUCTION MEANS FOR ORGANIC TISSUE
Heiner Hoffmann, Herrlingen, Germany, assignor to Ingeborg Niess, Elektromedizinische, Herrlingen, Germany
Filed July 29, 1970, Ser. No. 59,283
Claims priority, application Germany, Aug. 2, 1969, P 19 39 523.4
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E **7 Claims**



A contactor for diagnostic or therapeutic use on human or animal tissue comprises a suction cup of elastomeric material containing an electrolyte-impregnated sponge near the mouth of the cup supported on an electrode plate from which a conductor extends insulatedly outwardly inside a tube leading to a source of air under pressure. This tube, traversing the cup inwardly of the electrode plate, forms a Venturi nozzle for aspirating air from the interior of the cup and terminates in an outlet which opens into the atmosphere for dispersing entrained liquid.

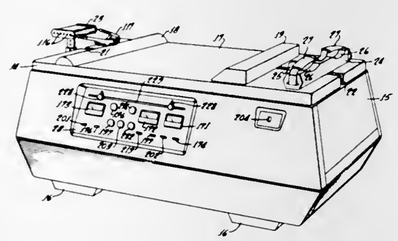
3,640,271
BLOOD FLOW PRESSURE MEASUREMENT TECHNIQUE EMPLOYING INJECTED BUBBLED AND ULTRASONIC FREQUENCY SCANNING
John W. Horton, Houston, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,737
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **7 Claims**

A nonsurgical technique of measuring blood characteristics of pressure and flow by injecting minute gas bubbles into the bloodstream. The bubbles are subjected to a beam of ultrasonic radiation and flow is determined by detecting the resultant scattering which is indicative of the time taken for



the bubble to pass between two points, while blood pressure is determined by varying the frequency of the ultrasonic beam to determine the resonant frequency of the bubbles which is proportional to pressure.

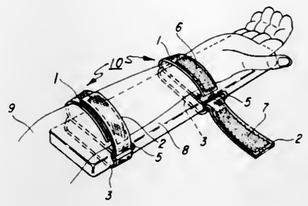
3,640,272
THERAPY TABLE
Joseph L. Hussey, Costa Mesa, Calif., assignor to Pete J. Bonin, Newport Beach, Calif.
Filed July 24, 1969, Ser. No. 844,581
Int. Cl. A61h *11/00*
U.S. Cl. 128—33 **41 Claims**



A therapy table for massaging the spinal column of a patient while the person is under traction applied to the cranial and pedal extremities. Identical and therefore interchangeable movable carriages are provided for connection to those body extremities. The carriages are separately provided with identical locomotion means for positively moving them to and fro longitudinally of the table, supplemented by means for controlling and limiting and cyclically varying the traction forces applied. Intermediate its ends the table is provided with still another carriage having locomotion means for moving it to and fro longitudinally of the table. This carriage has a vibratory support for rollers that may be brought with variable pressure against the back of a patient lying supine on the table, for massaging the spinal area.

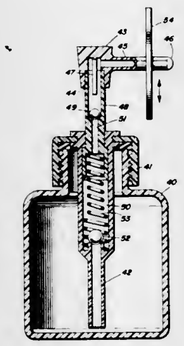
3,640,273
STRAP ASSEMBLY FOR SECURING A PATIENT'S ARM TO AN ARM BOARD
Tommy D. Ray, 2218 Edison Drive, San Antonio, Tex.
Filed Mar. 13, 1970, Ser. No. 19,153
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 **7 Claims**

A strap assembly having three strap sections extending from a near common center. One strap section has a slip ring attached to its free end, allowing the free end of a second strap section to be passed through the slip ring. The free end of either or both of the second and third strap sections has a



connection attachment so that the free ends of both strap sections can be temporarily connected to each other.

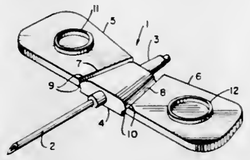
3,640,274
EYE-SPRAYING DEVICE HAVING MIRROR
Christopher Hollet Costello, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Original application Nov. 4, 1966, Ser. No. 592,025, now Patent No. 3,506,001. Divided and this application Sept. 3, 1969, Ser. No. 868,262
Int. Cl. A61m *11/00*
U.S. Cl. 128—173 **5 Claims**



The device disclosed herein includes a container for medicated solutions to be administered to the eye, an outlet member associated with the upper portion of the container serving as a directional sprayer, and a mirror mounted and positioned on the device so that the image of the eye is reflected to the user of the device.

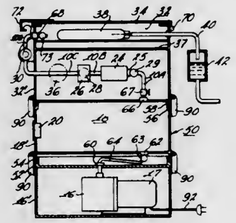
3,640,275
INTRAVENOUS NEEDLE ASSEMBLY
George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed May 5, 1970, Ser. No. 34,800
Int. Cl. A61m *5/32, 5/00*
U.S. Cl. 128—214 **13 Claims**

An intravenous needle assembly for administering medication into a patient comprising a cannula having a hub portion from the opposite sides of which extend a pair of hub wing sections. The hub wing sections are adapted to flex in either direction around said hub into abutting contact with one another to form a gripping handle for holding the cannula while it is being inserted into the vein of the patient. The wing portions include interlocking means thereon which serve both to lock the wing portions together in an upright position thereby preventing them from slipping relatively to one another and also to provide a roughened surface on the outside of said wing portions thereby lessening the danger of



the fingers of the person handling said needle assembly from slipping on said wing portions.

3,640,276
APPARATUS FOR MAKING INTRAVENOUS OR INTRA-ARTERIAL INJECTIONS
Robert C. Dancy, Jr., Brookfield, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 9, 1970, Ser. No. 1,745
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 F **2 Claims**

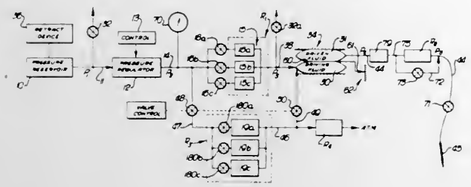


An apparatus for and method of making intravenous or intra-arterial injections such as forced blood transfusions or the like. In a preferred embodiment of the apparatus a modular construction is provided including a first housing unit for the air pressure chamber which receives the flexible blood container or the like and subjects it to a predetermined controlled air pressure. The modular assembly may include a second housing unit for a plenum chamber in fluid communication with the pressure chamber through an air pressure regulator. A third housing unit may be provided to receive an air compressor for supplying the plenum chamber with air. The plenum chamber may also be charged either from the hospital air supply or by the compressor with sufficient air for a predetermined number of blood transfusions and used in conjunction with the air pressure regulator and pressure chamber as a portable subassembly. In another modification, the pressure chamber or a pressure cuff may be connected directly to the hospital air supply through the air pressure regulator without using a plenum chamber in the system.

3,640,277
MEDICAL LIQUID ADMINISTRATION DEVICE
Marvin Adelberg, 4043 Cody Road, Sherman Oaks, Calif.
Filed Dec. 9, 1968, Ser. No. 782,399
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 F **28 Claims**

Positive pressure apparatus for providing an adjustable and reliably constant delivery rate of medical liquids from parenteral applicators, including a self-contained portable medical liquid administration device wherein precisely regulated gas flow through a first flow restrictor operates to pressurize and cause to flow at a substantially constant rate a

liquid from a supply through a second flow restrictor which has a flow/pressure drop characteristic such that the liquid



flow is essentially independent of gravity-induced pressure fluctuations.

3,640,278

HYPODERMIC SYRINGE DEVICE WHICH MAINTAINS STERILE CONDITION OF NEEDLE

Benjamin Friedman, 1064 Victory Blvd., Staten Island, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,818

Int. Cl. A61m *05/24, 05/26*

U.S. Cl. 128—218 D **5 Claims**



This invention is directed to a hypodermic syringe including a longitudinally windowed barrel having a pair of apertured ends, one of which is adapted to retain a normally fixed, but removable, needle assembly having its inner end projecting toward the other end, and the other of which is adapted to retain a reciprocable actuating rod having one end operatively connectable to the plunger of a dispensing or collecting cartridge removably retained within the barrel. Cartridges may be inserted or replaced at will through a window of the barrel without necessitating the removal of or causing contamination of the needle assembly. Releasable members are provided to secure the cartridge in its needle and actuating rod-engaging position within the barrel. Threaded members are employed for mounting the actuating rod, which members also assist in so securing the cartridge.

3,640,279

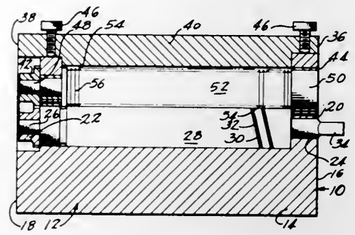
SKIN GRAFT CUTTING METHOD AND MACHINE

Warren F. Brown, deceased, Atlanta, Ga.; Margery Joy Brown, and The First National Bank of Atlanta (Executors of the estate of said Warren F. Brown, deceased)

Filed Dec. 7, 1967, Ser. No. 688,866

Int. Cl. A61b *17/322*

U.S. Cl. 128—305 **10 Claims**



Preparing a skin graft by removing a section of skin, splitting it along a plurality of equally spaced, closely associated lines, and interrupting each cut at intervals, then stretching the skin forming openings each bounded by four sides in a netlike, substantially flat graft. A machine for preparing a skin graft comprising a first roller of metal or the like having a plurality of equally spaced, cutting edges extending along the length of the roller and each being a circular, thin cutting edge having the plane thereof perpendicular to the centerline of the roller; and the second, plastic roller having grooves formed uniformly therein in spaced relation along the length thereof and the plane of the bottom of the groove being at an angle to the centerline of the roller at an angle to the cutting edge of the other roller so that when a skin graft is passed therebetween the skin is cut in a series of closely spaced, uniformly slit lines having solid portions at intervals where the cutting edge drops into the groove in the roller, thereby preparing the skin graft to be stretched in a netlike formation.

3,640,280

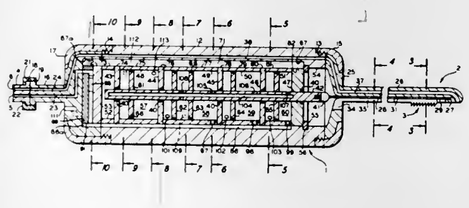
POWER-DRIVEN RECIPROCATING BONE SURGERY INSTRUMENT

Daniel R. Slanker, 2639 S. 90th East, Tulsa, Okla., and Edwin E. Slanker, Route 1, Box 541A, Bartlesville, Okla.

Filed Nov. 26, 1969, Ser. No. 880,094

Int. Cl. A61b *17/14;* **B23d** *49/16*

U.S. Cl. 128—317 **9 Claims**



A bone surgery tool is provided with a reciprocating drive means. The tool and a flexible drive band can be enclosed in a shroud to protect tissue against contact with the tool or the driving means. The shroud can also contain a channel for a flushing fluid. The power unit can utilize a double-acting fluid piston, with the reversal in the direction of movement of the piston being effected by a fluidic control device.

3,640,281

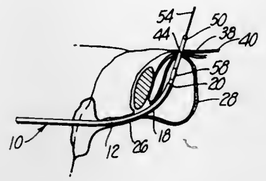
METHOD OF INSERTING A SUPRAPUBIC CATHETER

Jack R. Robertson, 1451 Refugio Road, Santa Ynez, Calif.

Filed Jan. 2, 1970, Ser. No. 297

Int. Cl. A61b *17/34*

U.S. Cl. 128—347 **5 Claims**



A method of and an instrument for inserting a suprapubic catheter. The instrument comprises a tube having a curved distal portion insertable through the urethra into the bladder to bring the distal end of the tube in engagement with the wall of the bladder in register with the suprapubic area of the abdominal wall. After inflating the bladder with a suitable fluid through the tube and a lateral opening in the curved distal portion thereof, an incision is made through the abdominal wall and the wall of the bladder in register with the distal end of the instrument, which then emerges outwardly through the incision.

3,640,282

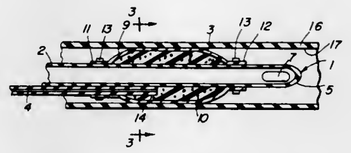
TRACHEAL TUBE WITH NORMALLY EXPANDED BALLOON CUFF

Jack M. Kamen, 440 Tippecanoe Pl., Gary, Ind., and Carolyn J. Wilkinson, Chicago, Ill., assignors to said Kamen, by said Wilkinson

Filed Aug. 6, 1970, Ser. No. 61,586

Int. Cl. A61m *25/00*

U.S. Cl. 128—351 **10 Claims**



A tracheal tube for use in intubation of a trachea, and embodying a resilient, yieldable cuff for effecting an air seal between the tube and the trachea. The cuff contains a resilient member, such as a rubber sponge, which resiliently maintains the cuff in an expanded position away from the tube. The cuff may be contracted by means of a vacuum applied thereinto by a secondary tube mounted on the tracheal tube. The cuff in its normal expanded position within the trachea affords a good seal and at the same time prevents injury to the tracheal wall by virtue of its yieldable contact therewith.

3,640,283

DISPOSABLE BLOOD-WARMING CONTAINER

Surindar Kumar Bhatia, Evanston, and Charles Rogers Memhardt, Morton Grove, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 2, 1970, Ser. No. 15,704

Int. Cl. A61f *07/00*

U.S. Cl. 128—399 **5 Claims**

A container for adjusting the temperature of liquids such as blood flowing therethrough, which comprises a plastic envelope, heat sealed to define a tortuous fluid flow conduit therein. The conduit has an inlet and an outlet communicating with the exterior of the container. The outlet communicates with the interior of a drip chamber, the end of the outlet being spaced from the walls of the drip chamber to permit liquid passing from the outlet to fall a short distance through space, to indicate the rate of liquid flow, and to separate and entrap in the drip chamber any gas bubbles present.

3,640,284

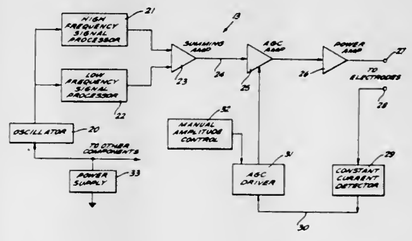
APPARATUS FOR ELECTROTHERAPY OF THE PUBOCOCCYGEUS

Philip A. De Langis, 3616 Palos Verdes Drive North, Palos Verdes Estates, Calif.

Filed Jan. 5, 1970, Ser. No. 762

Int. Cl. A61n *01/06*

U.S. Cl. 128—422 **4 Claims**



Apparatus for electrotherapy of the pubococcygeus muscle group of a female. The apparatus includes an electrode member contoured for insertion into the vagina. Spaced electrodes on the member are supplied with a carrier signal comprising shaped, bipolar pulses in the frequency range of from 20 Hz. to 8 kHz., the signal being carrier modulated at a rate of between 0.2 Hz. and 10 Hz. The bipolar pulses exercise striated muscle, while the low-frequency modulation contracts smooth muscle and prevents continuous tetany. A condom-type vaginometer permits measurement of vaginal volume and of vaginal pressure resulting from contraction of pubococcygeus muscles.

3,640,285

CIGARETTE PAPER AND METHOD FOR PREPARATION

Theodore Briskin, and Geoffrey R. Ward, both of Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.

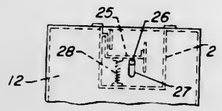
Continuation-in-part of application Ser. No. 745,372, July 17, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, now Patent No. 3,447,539, and a continuation-in-part of 674,994, Oct. 12, 1967, now abandoned. This application Dec. 17, 1968, Ser. No. 784,472

Int. Cl. A24b *15/00;* **A24f** *3/00;* **D21f** *11/00*

U.S. Cl. 131—2 **24 Claims**

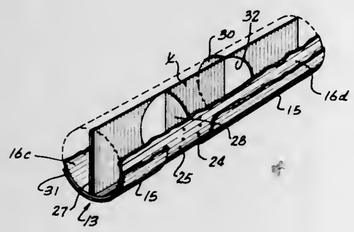
Cigarette paper having improved taste and aroma during pyrolysis wherein the paper is loaded with an agent comprising up to 45 percent by weight calcium oxalate preferably formed in situ internally in the paper fibers and/or conversion of the cellulosic fibers by selective oxidation to convert preferably 40 to 60 percent of the methylol groups on the C_6 position to carboxylic acid groups and further treatments.

3,640,286
ASHTRAY WITH USE INDICATOR
Gregory L. Wellnitz, Waterbury, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 15, 1970, Ser. No. 55,027
Int. Cl. A24f *15/08*
U.S. Cl. 131—235 **9 Claims**



An ashtray with interconnected indicator means for showing use thereof. The indicator means is particularly useful for ashtrays that are mounted in aircraft seat armrests or in other public conveyances such that only those showing usage need be cleaned by maintenance personnel. The indicator means is tripped by the opening of the ashtray lid, or by a movable snuffer section, so as to show usage, while a "reset" to show a clean ashtray is only accomplished by a "reset key" or by a special operation to be effected by the cleaning personnel.

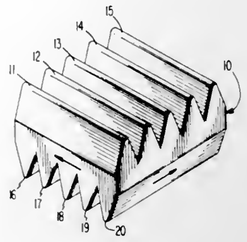
3,640,287
FILTER CONSTRUCTION AND METHOD OF FORMING SAME
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Sept. 22, 1969, Ser. No. 859,968
Int. Cl. A24d *01/04*; **A24f** *07/04, 13/06*
U.S. Cl. 131—261 B **9 Claims**



A filter is provided for attachment to the downstream end of a tobacco rod. The filter includes a unitary core piece formed from a single blank of sheet material and a sleeve unit encompassing said core piece and cooperating therewith to form a shallow passageway through which smoke is caused to flow subsequent to having impinged at a high velocity against a surface forming the passageway.

3,640,288
COLOR APPLICATOR FOR HAIR
Abram N. Spanel, 344 Stockton St., Princeton, N.J.
Filed July 29, 1970, Ser. No. 59,098
Int. Cl. A45d *24/24*
U.S. Cl. 132—9 **12 Claims**

In contrast with combs carrying coloring material in wet or dry form, there is utilized a block of wax in which the coloring matter is carried with the block having outwardly extending elongated and/or curved surfaces, some spaced one from the other for applying the wax and coloring matter to the hair with minimum deposit of either on the scalp.



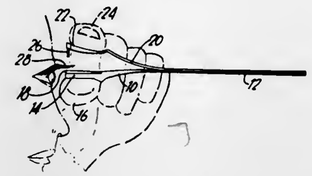
3,640,289
HAIR THREADER
Ralph A. Sbarra, 347 Graham Ave., Brooklyn, N.Y.
Filed Sept. 1, 1970, Ser. No. 68,743
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **2 Claims**





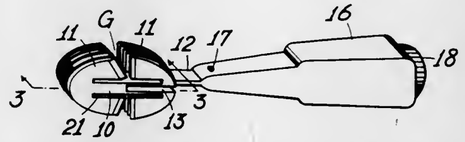
This invention consists of a clear plastic cylinder having one or more peripheral and external threads on each end thereof on which is screwed especially designed flat caps. The cap that is screwed onto the upper end of the aforesaid cylinder is provided with a plurality of round openings, and the same cap is encompassed by a flexible cone-shaped cover that has its apex terminating in encompassing the lower end of a vent tube. The cap that is screwed onto the lower end of the aforesaid cylinder is provided with a rectangular opening that is covered with a plurality of fibers that are cemented to the underside of the cap. A rectangular hair-threading member that is adapted to be placed through the rectangular opening in the aforesaid cap is a part of this invention and is used in the manner fully understood by those experienced in the art of hair styling. Another removable cap is part of this invention. The just-mentioned cap has a flattened tube that is elliptical when viewed from the end, the tube extending outward from the center thereof, the aforesaid tube having its outer end terminate in a peripheral flange that has a tip extending outward therefrom for a purpose known to hair stylists and the like.

3,640,290
APPARATUS FOR CURLING EYE LASHES
Kathlene Theis, Route 1, Blue Ridge, Tex.
Filed Aug. 28, 1970, Ser. No. 67,800
Int. Cl. A45d *2/42*
U.S. Cl. 132—32 C **3 Claims**



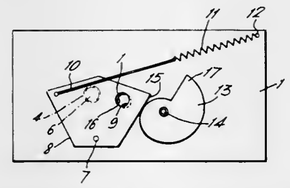
A first plate is supported by the thumb of a user. A second plate is supported by the index finger of the user. Eyelashes are held between the plates and when relative sliding motion is applied between the plates in a direction parallel to the lashes, a curling action ensues.

3,640,291
TOOTH-CLEANING TOOL
Miyoji Mizuno, 757, Tatsumicho, Hichijyo-agaru, Shinmachi-doori Shimogyoku, Kyotoshi, Japan
Filed Jan. 30, 1970, Ser. No. 7,011
Int. Cl. A45d *44/18*
U.S. Cl. 132—84 **5 Claims**



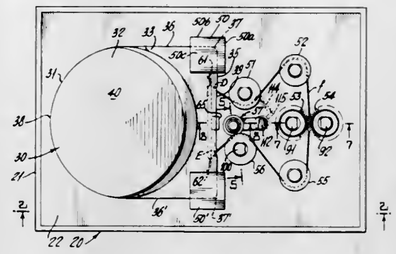
A tooth-cleaning tool having finlike plates formed integrally with a base plate, extending from both sides of the base plate, and a grip pivoting the base plate so that the base plate can be pivotable in relation to the grip, is found very effective in removing food remains sticking to teeth, and, simultaneously, giving massage to the gum portion.

3,640,292
AUTOMATIC PAYOUT DEVICE
Edward Hugh Clairmonte, New Barnet, England, assignor to Clairmonte Bros., Limited, London, England
Filed Dec. 30, 1969, Ser. No. 889,068
Claims priority, application Great Britain, Jan. 1, 1969, 153/69
Int. Cl. G07d *1/00*
U.S. Cl. 133—5 **6 Claims**



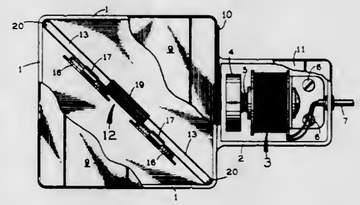
The invention relates to an automatic device for paying out a bonus on an automatic vending or coin-operated washing machine, the device comprising an intermittently operated ejector plate which transfers the bonus from a reservoir to an ejector chute.

3,640,293
METHOD AND APPARATUS FOR CLEANING FILM
Myron L. Freedman, c/o Comprehensive Service Corporation, 250 West 64th St., New York, N.Y.
Filed Feb. 18, 1969, Ser. No. 800,116
Int. Cl. B08b *1/02, 7/04*
U.S. Cl. 134—9 **11 Claims**



A method and apparatus for cleaning films of the continuous strip type housed in cartridges. Rotary brushes of a portable cleaning apparatus which receives a film cartridge are turned by the same drive which advances film withdrawn in a loop from the cartridge. Cleaning is accomplished without opening the cartridge to remove the film, so any user of such film cartridges may easily clean his own films.

3,640,294
ELECTRIC SONIC DEVICE FOR CLEANING SMALL ARTICLES
Jerry Piccolo, Miami Lakes, Fla., assignor to Advance Metal Products, Inc., Miami, Fla.
Filed Oct. 20, 1969, Ser. No. 867,803
Int. Cl. B08b *3/04, 11/02*
U.S. Cl. 134—117 **3 Claims**

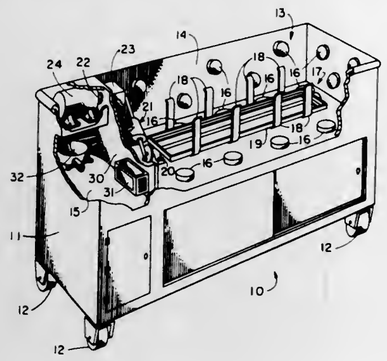


A rigid container for holding a cleaning liquid including a removable holder for suspending articles to be cleaned in the liquid and an electromagnetic device secured to said container for oscillating the container and liquid therein at sonic frequencies when energized for rapidly cleaning the aforesaid articles.

3,640,295
ULTRASONIC CLEANER AND SURGICAL INSTRUMENT CASE
Wendell C. Peterson, 7107 Prospect Pl., N.E., Albuquerque, N. Mex.
Filed Apr. 21, 1970, Ser. No. 30,458
Int. Cl. B08b *7/02*
U.S. Cl. 134—159 **1 Claim**

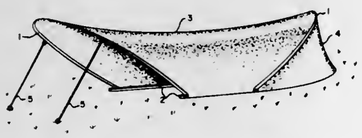
An ultrasonic cleaner and surgical instrument carrying case, which is usable separately and apart from or in combination with the ultrasonic cleaner, the ultrasonic cleaner including within at least one sink an oscillatable cradle which may carry the instrument case during the ultrasonic cleaning

process. Additionally provided as a part of the ultrasonic cleaner are a pump and filter to circulate a cleaning fluid within the sink of the ultrasonic cleaner and to remove particles and other matter from the fluid. The instrument case includes, within a chamber walled with expanded metal or



other perforated material, means for retaining the contained instruments at desired locations, which may include a plurality of posts adapted to receive various instruments and a plurality of retaining members attachable to the posts to lock the instruments in position.

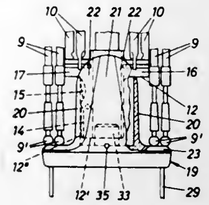
3,640,296
PAVILION WITH MECHANISM FOR AUTOMATICALLY CONTROLLING SAG AND TENSION
Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co.
Filed Aug. 28, 1970, Ser. No. 67,712
Int. Cl. E04b *1/347*
U.S. Cl. 135—4 R **9 Claims**



A tentlike structure, hereinafter called a "pavilion," which includes two arches inclined away from each other at acute angles to the vertical and mounted so that they may be swung about their leg ends toward and away from this position and moved bodily toward and away from each other, a membrance of which one end is attached to each of the arches, and means for automatically sensing departures of the tension and/or the sag in the membrane from the desired values and moving the arches to correct them.

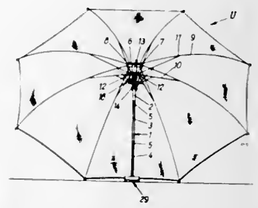
3,640,297
LONGITUDINALLY COLLAPSIBLE FLAT UMBRELLA
Fritz Bremshey, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed May 19, 1969, Ser. No. 825,824
Claims priority, application Germany, May 24, 1968, P 17 57 603.3
Int. Cl. A45b *19/06, 11/00*
U.S. Cl. 135—25 **1 Claim**

A telescopically collapsible umbrella producing a generally flat, rectangular package when collapsed, in which a crownpiece, runners and handle generally define the collapsed rectangular shape, and in which an improved handle and runner include cooperating recesses and orienting portions positively insuring orientation of the umbrella runner



carrying stretcher ribs and camming portions orienting dome-rib tips to insure proper operation of the umbrella during erection and collapse.

3,640,298
AUTOMATICALLY OPENED, LONGITUDINALLY COLLAPSIBLE UMBRELLA WITH IMPROVED HANDLE
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada
Filed Mar. 2, 1970, Ser. No. 15,728
Claims priority, application Germany, Mar. 12, 1969, P 19 12 437.9
Int. Cl. A45b *19/08*
U.S. Cl. 135—25 **7 Claims**

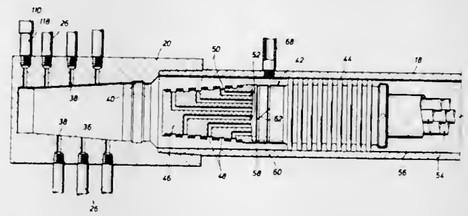


A longitudinally collapsible umbrella having a rectangular configuration when closed, collapsed and stored; including a power spring interposed axially between primary and auxiliary slides; the primary slide including a depending sleeve and having a T-shape in elevation; the primary slide including beneath its wings a pair of finger-receiving notches, one of the notches including a pivotal latch lever; the sleeve having a polyangular, lower cross section generally defining the points of an elipse, and the handle of the umbrella having lateral compartments for receiving the tips of umbrella dome-ribs when the umbrella is collapsed, and the handle also including a tubular tunnel having a bore correspondingly receiving the primary slide sleeve and orienting the primary slide wings and dome-rib tips in an optimum position.

3,640,299
SUBSEA WELLHEAD CONTROL SYSTEM
Norman A. Nelson, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 6, 1969, Ser. No. 866,789
Int. Cl. F16k *11/10*
U.S. Cl. 137—1 **13 Claims**

The invention concerns a fluid energized control system for controlling the valves of subsea wellheads and for controlling other like mechanical devices designed for fluid actuation. A single protective conduit is connected at one extremity thereof to a control facility while its other extremity terminates in connection structure located adjacent or attached to a remotely located wellhead or other mechanical

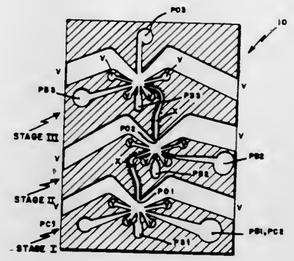
device. Suitable actuator control conduits extend from a plurality of fluid-controlled wellhead valve actuators and are connected in fluid communication to the connection structure. The terminal connection structure is provided with internal fluid passages communicating with respective ones of the actuator conduits and defines a pig-receiving recess. A locomotive pig is inserted into the protective conduit at the control facility and is moved within the protective conduit by fluid pressure applied from a suitable source of pressurized fluid or by a combination of fluid pressure applied at one side of the pig and a suction applied to the other side of the pig. A plurality of valve control conduits are connected to the pig in fluid communication with corresponding fluid passages formed in pig structure. The control conduits are pulled through the protective conduits by the pig as fluid pressure is applied. As the pig enters the pig-receiving recess, it is oriented, if necessary, by appropriate orienting structure and is locked into assembly within the recess with appropriate



fluid passage structure of the pig disposed in fluid communication with corresponding fluid passages in the terminal connection structure. A plurality of pilot valves, provided within or adjacent the pig or terminal connection structure, are controlled by application of fluid pressure through the control conduits and serve to control communication of pressurized actuating fluid, carried in the protective conduit externally of the control conduits, to the actuating conduits of the subsea wellhead. The valve actuators are energized by the actuating fluid responsive to actuation of the pilot valves. An accumulator and pressure-balancing circuit are communicated to the fluid circuitry of each of the valve actuators in order to allow quick energized and deenergized actuation of the valve actuators. Fluid pressure is transferred from the accumulator and pressure-balancing circuitry to the actuator fluid supply of the fluid system upon reduction of pressure in the actuator fluid supply and such transfer may be aided by the hydrostatic head of the sea water in which the system is submerged.

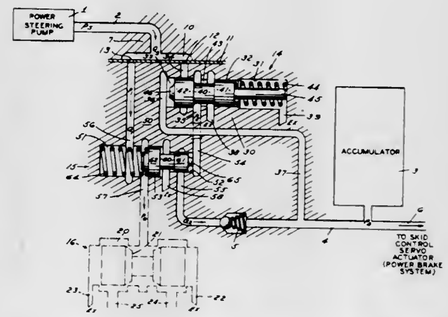
3,640,300
FLUID AMPLIFIER FREQUENCY MULTIPLIER
Willis A. Boothe, Scotia, and Salvatore Bottone, Jr., Schenectady, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 10, 1969, Ser. No. 883,711
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 **2 Claims**

The fluid amplifier may be considered as including a device in which is formed the initial fluid flow pattern and which constitutes the main power input, the control inputs and the receiver, or output. At chosen points second fluid jets are admitted in chosen directions and under chosen flow rate and pressures to modify and control the main jet in a chosen or logical way. A third jet may be interposed from an opposite direction for further modification of the main jet. The main jet may be modified in such a way as to produce an output wave having a frequency that is twice the input frequency. Using two amplifier elements in said series produces an output four times the frequency of the input, N



amplifiers in series producing 2^N times the frequency of the input.

3,640,301
HYDRAULIC POWER SUPPLY
Zbigniew J. Jania, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 15, 1970, Ser. No. 46,077
Int. Cl. G05d *11/03;* **F17d** *3/00;* **F01b** *25/02*
U.S. Cl. 137—101 **6 Claims**

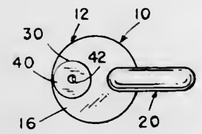


A common hydraulic power supply for a motor vehicle power-steering system and power brake system. The hydraulic power supply supplies hydraulic fluid from a power-steering pump continuously through a flow control valve to a power-steering system. The power brake system is supplied with hydraulic fluid from an accumulator as required. The accumulator is charged with hydraulic fluid by the power-steering pump. Accumulator charging occurs when the pressure in the accumulator falls below a predetermined value, and is accomplished by the diversion of a portion of the flow from the power steering pump to the power brake system. The diverted fluid passes through a pressure sensing valve, the flow control valve, a check valve, and into the accumulator.

3,640,302
SIPHONING DEVICE
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Mar. 10, 1970, Ser. No. 18,112
Int. Cl. F04f *10/02*
U.S. Cl. 137—142 **10 Claims**

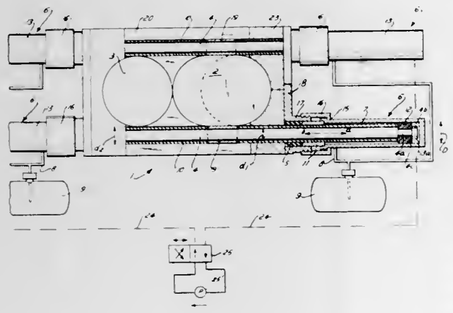
A siphoning device having a siphon tube connected to a cup-shaped member for transferring a liquid from a first receptacle containing the liquid to a second receptacle con-

taining a liquid. One end of the tube extends into the cup-shaped member. The other end of the tube is submerged in the liquid of the first receptacle, and the cup-shaped member is immersed in the liquid of the second receptacle. The cup-



shaped member is provided with a one-way valve to permit the compressed air to escape therefrom. Removing the liquid from the second receptacle causes the air pressure acting on the liquid in the first receptacle to start the siphoning action.

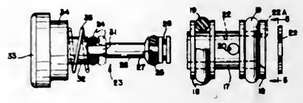
3,640,303
SLIDE VALVE FOR HIGH-VISCOSITY PUMPS
Cornelis Verheul, Amsterdam, Netherlands, assignor to Friedrich W. Schwing, Wanne-Eickel, Germany
Filed Feb. 3, 1970, Ser. No. 8,381
Claims priority, application Germany, Feb. 5, 1969, P 19 05 706.8
Int. Cl. F16k *41/00, 3/314*
U.S. Cl. 137—238 **13 Claims**



A slide valve for dense or viscous materials, e.g. concrete, has a slide element connected to a piston rod which extends out of the valve housing through a seal and carries a piston received in a cylinder which is clamped to the housing around the seal by a clamping nut. The cylinder has an outer actuation chamber while an inner annular chamber between the piston and the seal is a flushing compartment connected to a reservoir of liquid through a single duct. As the piston moves toward the seal, the liquid in the flushing compartment is expelled, taking with it any foreign matter which has gotten past the seal, and as the piston movement is reversed this compartment is filled with the liquid via this duct to flush the rod again. The valve element, valve guides, end stops, and sleeves surrounding the piston rods are all easily removable and replaceable to facilitate servicing of the valve.

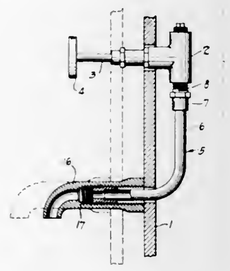
3,640,304
INSERTABLE VALVE ASSEMBLY
Marvin L. Fox, 7310 S. W. Hermos Way, Tigard, Oreg., and James R. Parry, Route 2, Box 46, Newberg, Oreg.
Filed May 1, 1970, Ser. No. 33,825
Int. Cl. F16k *1/44*
U.S. Cl. 137—315 **6 Claims**

A valve assembly, is shown and described, as operatively disposed in a dental syringe. Resilient ring means are disposed about the assembly to frictionally engage the adjacent structure housing the valve assembly. A sleeve of the valve assembly defines an inner chamber for reception of the



pressurized media being controlled with a valve core being moveable within the sleeve for release of the pressurized fluid or air for ultimate discharge.

3,640,305
CONNECTION FOR SPOUT ADJUSTMENT
Stephen A. Young, c/o Stephen A. Young Corp., Flora, Ind.
Filed Apr. 24, 1969, Ser. No. 818,902. The portion of the term **of the patent subsequent to July 15, 1985, has been disclaimed.**
Int. Cl. F16l *5/00, 17/02*
U.S. Cl. 137—360 **3 Claims**

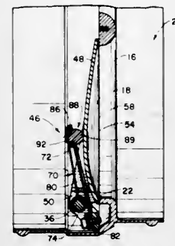


The disclosure herein relates to plumbing fittings and primarily to concealed plumbing fittings of the type in which a valve body is mounted behind a wall surface and provides for regulation of liquid flow outwardly from the wall surface through some kind of a connection, in this instance comprising an elbow at the outer end of which is provided a threaded section adapted to engage a corresponding threaded section of a spout, the threads providing for adjustment to compensate for varying positions of the valve within the wall and it being necessary to furnish some kind of sealing means to prevent leakage. The leakage in this instance is overcome by the provision of an O-ring section in the threaded section of the valve unit elbow upon which the O-rings are seated, the O-rings in turn engaging the threads in the spout to effect the leakage prevention and sought hereby.

3,640,306
PRESSURE RELIEF VALVE
Clarence L. Vogt, Burbank, Calif., assignor to Bobrick Aero Missile Products, North Hollywood, Calif.
Filed Oct. 19, 1970, Ser. No. 81,646
Int. Cl. F16k *15/03*
U.S. Cl. 137—512.1 **11 Claims**

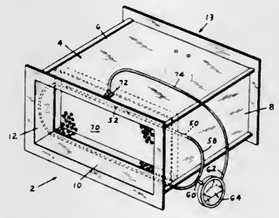
A multiflapper relief valve wherein individual flapper valve members are sector shaped laying in a common plane and rotatable through an arc from the closed or seated position to the open position and wherein each of the flapper valve members are provided with a cricket spring of the leaf-type to preload them to a selected value, which value must be overcome by fluid in the system in which the relief valve is used in order to unseat the valve members. When the fluid pressure in the system is greater than the cracking pressure, unseating occurs and the cricket spring thereafter exerts a

substantially insignificant, lower force in comparison once the flapper valve member is moved off of its seat and imparts



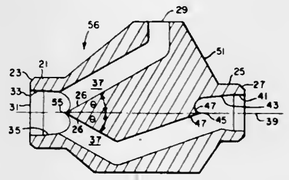
a snap opening and closing action to each of the sector-shaped valve members.

3,640,307
APPARATUS FOR BALANCING FLUID DISTRIBUTION SYSTEMS
Raymond J. Drzala, New Britain, Conn., assignor to Allied Thermal Corporation, New Britain, Conn.
Filed Feb. 24, 1970, Ser. No. 13,482
Int. Cl. F61k *37/00;* **F16k** *47/10;* **F24f** *13/14*
U.S. Cl. 137—557 **2 Claims**



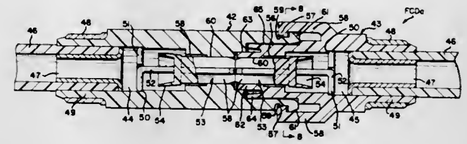
Apparatus for balancing the flow of a gaseous substance in the branch of a fluid distribution system comprising a set of variable gates to regulate the volume flow input, a screen to establish a pressure differential along the length of the unit and a pressure differential measuring system capable of detecting and measuring the pressure drop in the unit due to the screen as a function of the input flow rate and to allow regulation of the output flow by altering the input flow rate in accordance with prior calibration of the measuring system.

3,640,308
APPARATUS FOR DIVIDING AND RECOMBINING FLOW
Bruce Alfred Bydal, Martinsville, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 15, 1970, Ser. No. 28,743
Int. Cl. F17d *1/00*
U.S. Cl. 137—561 **2 Claims**



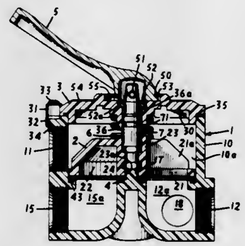
An apparatus for dividing a flowing multicomponent viscous stream into a plurality of sectors, each having the same weight percentage of each component as in the stream, includes a body member having an entrance and a plurality of exits connected by a plurality of passages. The passages, at one end, all intersect with the axis of the entrance at a common point and are equispaced from each other around the entrance axis.

3,640,309
FLUID COUPLING WITH CONNECTION AND SEALING FEATURE
Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of application Ser. No. 613,608, Feb. 2, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 517,747, Dec. 30, 1965, now Patent No. 3,378,282. This application Jan. 16, 1970, Ser. No. 3,447
Int. Cl. F16l *37/28*
U.S. Cl. 137—614.04 **9 Claims**



A fluid connection device comprises mateable connection sections having openings therein which are brought into communication when the sections are secured together. A valve member means is movably mounted in the opening of the one section with the opening also having a spacer and sealing assembly and the valve member means is maintained in sealing engagement with the spacer and sealing assembly when the member is connected to a source of fluid supply, the valve member means being moved out of engagement with the spacer and sealing assembly via a tubular section on the other of the mateable sections when the mateable sections are secured together. Guide means are provided on the valve member means and the opening in which the valve member means is movably disposed to guide the valve member means during movement thereof along this opening.

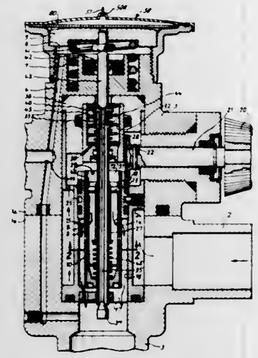
3,640,310
MULTIPORT VALVE
Giora Erlich, North Bergen, N.J., assignor to Hayward Manufacturing Company, Inc., Elizabeth, N.J.
Filed June 26, 1969, Ser. No. 836,795
Int. Cl. F16k *7/16*
U.S. Cl. 137—625.46 **11 Claims**



A multiport valve is provided having a manually operated rotor for selectively directing the flow from an inlet port to a desired outlet port. A high-pressure inlet port is positioned upstream of the rotor so that the inlet pressure biases the rotor against the seat to prevent the leakage of fluid in the selected position. The valve seat is a unitary resilient seal

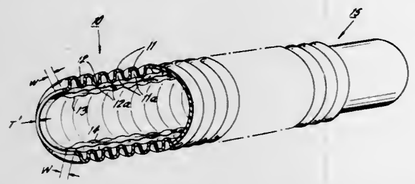
which is disposed within a groove surrounding the entrance portion of each outlet port. The unitary seal effectively prevents leakage by utilizing a raised seating portion to seal against the rotor and a dovetail lower portion to seal against the sides of the groove.

3,640,311
CIRCULATING VALVES
Rudibert Gotzenberger, Fellbach, Germany, assignor to Ernst Flitsch, Fellbach, Germany
Continuation-in-part of application Ser. No. 712,457, Mar. 12, 1968, now abandoned. This application Apr. 27, 1970, Ser. No. 31,916
Int. Cl. F16k *31/145*
U.S. Cl. 137—637.4 **7 Claims**



A valve for controlling the circulation of condensate in which two telescopically disposed shells are interposed between the inlet and the outlet of the valve, one of said shells being movable in axial direction relative to the valve body, the other being rotatable about its axis, the sidewalls of the shells having ports for the throughflow of the condensate, the opening of said ports being controlled by said axial and said rotational movement of said shells.

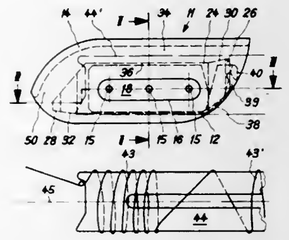
3,640,312
FLEXIBLE CORRUGATED TUBING HAVING IMPROVED PERFORMANCE CHARACTERISTICS
Joseph F. Bauman, Trenton; Edward Kurtz, Jr., Hamilton Square, both of N.J.; Adrian V. Cini, Bristol Township, and Robert E. Antrobus, Fairless Hills, both of Pa., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.
Filed June 27, 1969, Ser. No. 837,164
Int. Cl. A47l *9/24*; **F16l** *11/12*
U.S. Cl. 138—121 **5 Claims**



Flexible corrugated tubing, preferably formed of a thermoplastic material having a plurality of thin strips or beads of the same plastic material used to form the tubing. The stripes or beads are arranged at discrete angular positions along the interior surface of the tubing and extend from internal peak to internal peak for the length of the tubing section. The introduction of the thin plastic beads has no measurable effect upon the flexibility of the tubing and is extremely effective in eliminating whistling in operation.

The tubing may be formed in a continuous process, for example, in the manner described in U.S. Pat. No. 3,280,430, issued Oct. 25, 1966, which is further provided with means for either extruding beads of plastic material to form the plastic stripes or is provided with scraping means for scraping small portions of plastic material utilized to form the corrugated configuration and extending the scraped material from internal peak to internal peak along the length of the continuously formed tubing.

3,640,313
INSERTION ELEMENT FOR INSERTING WEFT THREADS ON A LOOM
Edgar H. Strauss, Ruti/Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti/Zurich, Switzerland
Filed Jan. 26, 1970, Ser. No. 5,837
Claims priority, application Switzerland, Feb. 19, 1969, 2492/69
Int. Cl. D03j *5/06*
U.S. Cl. 139—12 **14 Claims**

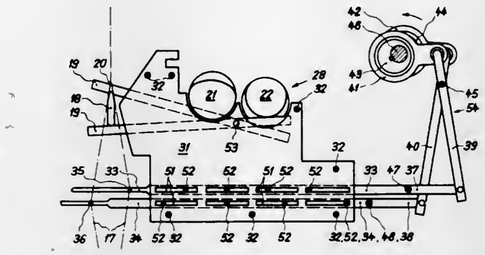


A shuttle for inserting a weft thread into a shed of a loom, the shuttle comprising a body of conchoidal shape, having two sidewalls that are connected along a closed edge portion of the body and are open over the remaining portion of the body; retaining means in the interior of said body for retaining a portion of thread of predetermined length in the form of a coil between said walls; and the interior of the body being so shaped that during its operation on the loom the interior is automatically cleaned of particles of fibers and like contaminants; said body defining a path for the removal of said particles and there being no obstruction along this path that inhibits the discharge of said particles therefrom. The portion of thread to be inserted is wound on a coil-forming member and then transferred to the shuttle by pushing the shuttle over the coil located on the coil-forming member in a direction at right angles to the axis of said member and by moving the shuttle away from the coil-forming member in a direction parallel with the axis of said member.

3,640,314
SHED-FORMING APPARATUS ON A LOOM
Edgar H. Strauss, Ruti/Zurich, Switzerland, assignor to **Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti/Zurich, Switzerland**
Filed Nov. 10, 1969, Ser. No. 875,034
Claims priority, application Switzerland, Nov. 13, 1968, 16901/68
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **22 Claims**

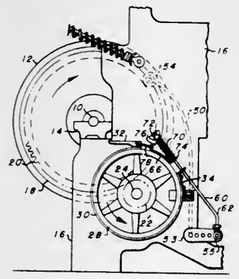
A shed-forming apparatus on a wave-type loom wherein a plurality of separate sheds move one after the other simultaneously across the width of the loom, a shuttle carrying a weft thread moving in each of the separate sheds and the warp threads forming the sheds are actuated by heddles, the apparatus comprising a plurality of heddles divided into

groups which execute phase-displaced movements, the periodicity of these movements being repeated at intervals corresponding to the shuttle-pitchs; drive means for causing selected groups of heddles to execute these movements; and a movement-imparting element connected to those groups of



heddles driven by said drive means and to other heddles not driven by said drive means. The heddles and the movement-imparting elements linked therewith are disposed in one plane, are movable therein, and are arranged so that actuation of the selected group of heddles by the drive means also causes actuation of the other groups of heddles.

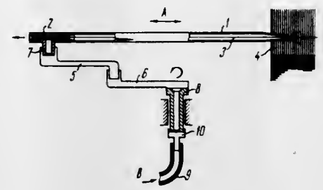
3,640,315
WARP BEAM LETOFF
Alfonso Tisdale, Gaffney, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Dec. 22, 1969, Ser. No. 887,464
Int. Cl. D03d *49/06*
U.S. Cl. 139—107 **1 Claim**



Apparatus to let the tension off of a loom warp beam as the warp yarn on the beam is being consumed by the loom.

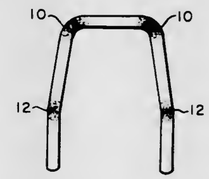
3,640,316
RAPIER IN THE DEVICE FOR INSERTING WEFT THREAD INTO THE LOOM WARP SHED
Nikolai Ivanovich Makachev, ulitsa Tsjurupy, 12, korpus 1, kv. 27; Alexei Nikolaevich Parshin, Nagarnaya ulitsa, 34, korpus 43, kv, 53; Georgy Sergeevich Smurov, Khoroshevskoe shosse, 92, kv. 43, and Alexei Trofimovich Stepanets, Leningradsky prospect, 48, kv. 78, all of Moscow, U.S.S.R.
Filed May 27, 1970, Ser. No. 40,936
Int. Cl. D03d *47/16*
U.S. Cl. 139—127 R **2 Claims**

A rapier in devices for inserting weft thread into the loom warp shed, in which one end of a tube is connected to a jet pump generating therein a suction flow to take up the end of the weft thread. The suction flow is directed by a sleeve serving for the passage of air from the shed, and by a bushing located behind this sleeve in the direction of air movement therein, and partially embracing the sleeve, so as to form an



annular slit for the passage of compressed air supplied from a pressure source.

3,640,317
CLIP FOR CLOSING FRAGILE STUFFED CASINGS
Jack Panfill, 1576 61st St., Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 749,404, Aug. 1, 1968, now abandoned. This application Mar. 21, 1969, Ser. No. 813,799
Int. Cl. B21f *45/22*
U.S. Cl. 140—82 **12 Claims**

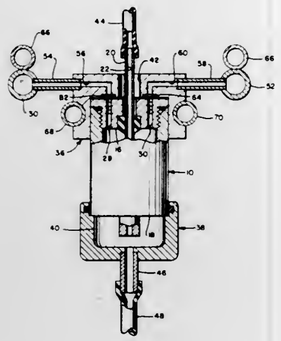


A clip for use in closing the ends of sausage casings and similar containers. The clip is formed as a U with legs having angularly bent portions. The zone of joinder of the legs with the base is work hardened to a degree that will resist bending by lateral forces which will produce bending at the angularly bent zones of the legs. In another form of the invention the clip is formed into a U and is of channel cross section. One leg of the U is dimensioned to slidably fit between the other legs of the U when the clip is applied to a casing. In either form of the invention the clip is preferably made of anodized aluminum or coated with a lubricant of synthetic resin or both and in each case dyed a suitable color.

3,640,318
METHOD AND APPARATUS FOR FILLING A THERMAL MOTOR WITH WAX
Kalman Shmueli, Upper Montclair; Robert T. Scott, Boonton Township, Morris County, and Wallace R. Mills, Mountain Lake, all of N.J., assignors to International Controls Corp., Fairfield, N.J.
Continuation of application Ser. No. 753,368, Aug. 19, 1968, now abandoned. This application June 25, 1970, Ser. No. 56,057
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—11 **16 Claims**

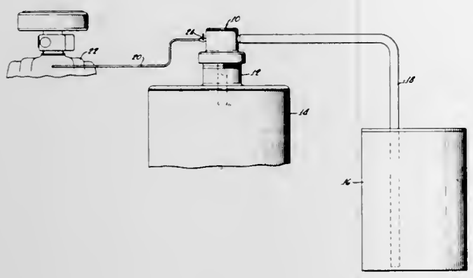
A method and apparatus for filling a thermal motor with wax. The thermal motor has an inlet and outlet ports and it also has an axially bored piston. The thermal motor is oriented with the inlet and outlet ports located at the uppermost part of the motor. Liquid wax is then introduced through the inlet port and discharged through the outlet port. After the interior of the motor has become filled with liquid wax, a chilling fluid is directed through the piston to bring about progressive chilling and solidification of the wax from the lower toward the upper end of the thermal motor.

Thereafter, chilling is provided at the region of the outlet port to provide a wax plug at the outlet port, and finally, chilling is provided at the region of the inlet port to provide a wax plug at the inlet port. These operations are brought



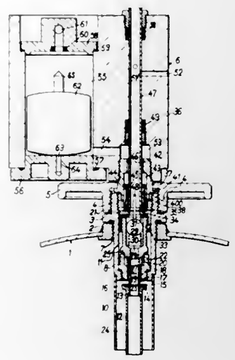
about by way of a suitable filling head having supply and discharge lines for the liquid wax. The filling head has passages chilled and cooled simultaneously with the chilling and cooling of the inlet and outlet port regions of the thermal motor by suitable temperature-control means.

3,640,319
VACUUM ACTUATED AUTOMATIC TRANSFER DEVICE
Kenneth O. Hougen, 3950 Virginia Road, Apt. 304, Long Beach, Calif.
Filed Aug. 21, 1969, Ser. No. 851,783
Int. Cl. B67d *5/00*
U.S. Cl. 141—42 **7 Claims**



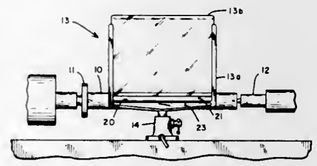
A transfer device for filling the fuel tank of a vehicle using a vacuum source such as the intake manifold of an internal combustion engine as the driving force. The transfer device forces the fuel into the fuel tank until the tank is full, at which time a buoyant member connected to a pivot arm actuates a valve to close off the vacuum line. The valve and buoyant member are in separate chambers of the transfer device so that fuel never contacts the valve. The pivot arm arrangement for actuating the valve assures dependable operation since both the valve and pivot pin are free from contamination by fuel sediments.

3,640,320
CONTAINER FILLING MEANS
Ludwig Elkuch, Gamprin, Bendern, Liechtenstein, assignor to Liongas Aktiengesellschaft, Bendern, Liechtenstein
Filed Jan. 26, 1970, Ser. No. 5,559
Claims priority, application Switzerland, Jan. 22, 1969, 970/69
Int. Cl. B65b *31/02*
U.S. Cl. 141—59 **5 Claims**



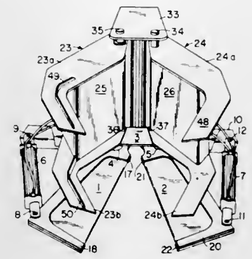
A filling device on a container for filling the same with a liquid gas comprises two parts adapted to be coupled to each other, the first of these parts being secured to the container and provided with two check valves having distinct flow paths which begin within the container at a certain level in the upper portion thereof. The second of said two parts comprises means for opening both check valves when the two parts are coupled together, and two separate passageways for liquid gas forming continuations of said two distinct flow paths, the first of said passageways being controlled by a valve which is responsive to the presence of liquid gas in the passageway and the second passageway being adapted for connection to a supply conduit for liquid gas. The first passageway may be connected to a suction pump whereby liquid gas is drawn through said supply conduit and the second passageway into the container until said valve responsive to the presence of liquid gas closes the connection of the first passageway with the suction pump.

3,640,321
PROTECTIVE SHIELD FOR LATHE
Charles L. Walton, 15014 Commerce Station, Minneapolis, Minn.
Filed May 15, 1970, Ser. No. 37,695
Int. Cl. B27c *7/00*
U.S. Cl. 142—55 **4 Claims**



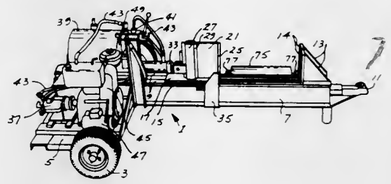
A protective transparent shield protects a lathe operator against flying chips and the like yet contains an opening through which the operator can pass a tool for working on the workpiece. The base of the shield frame is provided with a surface for guiding and resting the tool and also a groove for guidance and protection of the operator's hands as he manipulates the tool.

3,640,322
NIPPER APPARATUS FOR HARVESTING TREES
C. Andrew Allen, Savannah, Ga., assignor to S. A. Allen, Inc.
Filed June 26, 1970, Ser. No. 50,131
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **3 Claims**



Nipper apparatus comprises a pair of pivotally mounted blades disposed in substantially the same plane and each having a straight cutting edge, a reinforcing rib disposed about the periphery of each of the blades and each rib being arranged with its ends disposed at the ends of the cutting edge of the associated blade so as to constitute an abutment for arresting cutting movement of the blades. Gripping claws are disposed immediately above the blades and serve to envelop and grip a tree to be cut, the gripping claws and blades being operated from a common source of fluid pressure.

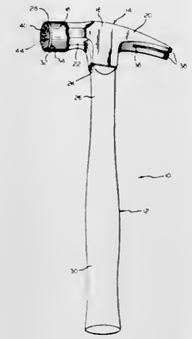
3,640,323
APPARATUS FOR SPLITTING AND CHOPPING TIMBER
Gordon W. Helle, Farmington, Ill., assignor to Sawmill Hydraulics, Inc., Farmington, Ill.
Filed Nov. 5, 1969, Ser. No. 874,304
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 A **9 Claims**



Apparatus for splitting and chopping timber having a blade adapted to chop as well as split timber actuated by a hydraulic cylinder supplied with fluid under pressure by a variable-displacement constant-pressure hydraulic pump adapted automatically to increase the force exerted on the blade in response to increased resistance to chopping or splitting while decreasing the speed of travel of the blade and vice versa over the normal operating range of the apparatus.

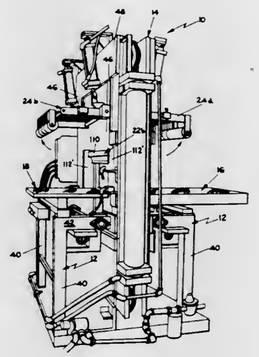
3,640,324
HAMMER HEAD HAVING AN ANTISLIP AND WEAR-RESISTANT STRIKING FACE SURFACE
Laurence W. Porter, Hebron, Ill., assignor to Vaughan & Bushnell Mfg. Co., Hebron, Ill.
Filed Nov. 13, 1969, Ser. No. 876,300
Int. Cl. B25d *1/00*
U.S. Cl. 145—29 R **1 Claim**

A forged steel hammer head including an impact head proper having a striking face on one end thereof is provided with a layer of tungsten carbide electrodeposited on the end, forming an outer surface on the striking face and penetrating



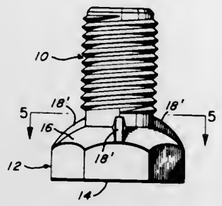
the impact head proper, thereby providing an antislip and wear-resistant surface on the striking face.

3,640,325
PLATE SKINNING MACHINE
Martin L. Harlan, Grand Rapids; Jerry L. Davis, Rockford, and Lloyd A. Nyland, Macatawa, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.
Filed July 22, 1970, Ser. No. 57,189
Int. Cl. A22c *17/12*
U.S. Cl. 146—241 **16 Claims**



This specification describes a plate-type skinning machine for animal sides, with a unique arrangement and mounting of blade and pressure roller apparatus.

3,640,326
BOLT
Edward L. Brown, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Oct. 17, 1969, Ser. No. 867,274
Int. Cl. F16b 39/282
U.S. Cl. 151—37 4 Claims

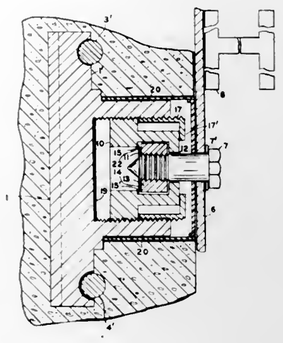


A bolt, for use with curved pieces having aligned apertures, including ribs of trapezoidal cross section on the underside of the bolt head for engaging a portion of one of the apertures to prevent rotation of the bolt while tightening a nut thereon.

3,640,327
FASTENER WITH FLOATING NUT
John Burt, Burbank, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.
Filed May 8, 1970, Ser. No. 35,853
Int. Cl. F16b 43/00
U.S. Cl. 151—41.74 12 Claims

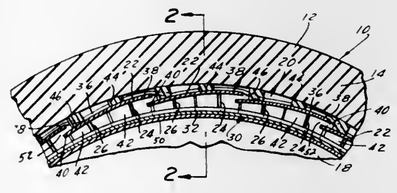
A fastener including a sleeve having a first flange at one end which extends radially outwardly and terminates in a portion extending longitudinally toward the opposite end of the sleeve for a limited distance, the opposite end of the sleeve being of reduced wall thickness and being adapted to be bent outwardly to form a second flange cooperating with the first flange in holding the sleeve to the workpiece when the sleeve has been inserted through an opening in the workpiece, a nut being received within the sleeve with clearance around its periphery, the nut having outwardly projecting tabs extending through slots in the sleeve into the space provided by the first flange, so that the nut is permitted limited lateral floating movement and precluded from substantial rotation, the bolt having a threaded shank with a pointed end for facilitating entry into the nut, and having a wide thin head provided with a central protrusion engaged by a tubular portion of the driving tool for aligning the driving tool with the head. The tubular portion of the driving tool is spring biased outwardly and is moved inwardly upon engagement with the head at the central portion thereof, while blades on the driving blade tool enter the slot in the bolt head.

3,640,328
MEANS FOR MOUNTING CONCRETE STRUCTURAL MEMBERS
Natale J. Tummarello, 2073 Hillside Ave., Bellmore, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,123
Int. Cl. F16b 5/02, 39/00
U.S. Cl. 151—41.7 5 Claims



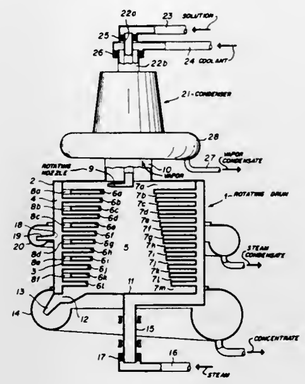
An adjustable mounting means is precast in the concrete structural member to be mounted. The adjustable mounting assembly consists of a first internally threaded hollow member anchored to the structural member. A second externally threaded member is mounted in the threads of the first member and the second member has a hollow interior space. A nut is magnetically mounted inside the interior space so that the nut may be moved in all directions both perpendicular to and along its axis in order to make proper alignment with a bolt mounted in a building frame.

3,640,329
ANTI-FLAT TIRE DEVICE
Alex Chien, 345 West 3rd St., Apt. No. 8, Long Beach, Calif.
Filed June 12, 1970, Ser. No. 45,766
Int. Cl. B60c 5/02
U.S. Cl. 152—205 3 Claims



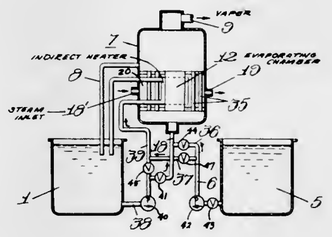
This invention provides a protective segmented metal band formed by a series of metal sheets or plates arranged within a pneumatic tire casing and disposed between the tire carcass and the pressurized area thereof. Each segmented plate is secured to a continuous annular belt of flexible material by a plurality of downwardly extending legs, said plate being relatively positioned independent of the carcass of the tire.

3,640,330
HEAT EXCHANGERS
Alain Javet, Geneva, Switzerland, assignor to The Battelle Development Corporation, Columbus, Ohio
Continuation of application Ser. No. 750,411, July 5, 1968, now abandoned. This application May 4, 1970, Ser. No. 48,793
Int. Cl. B01d 1/22, 3/08
U.S. Cl. 159—6 8 Claims



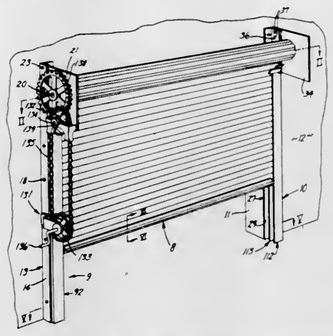
A hollow walled cylindrical revolving basket is provided with a heating medium in the hollow wall. To the inner wall are secured axially spaced flat, hollow rings whose successive inner diameters increase axially in liquid flow direction and into which rings the heating medium flows from the hollow wall. Alternate rings are provided with axial through passages at the inner wall connecting the channels between the rings. Liquid feed to be evaporated is injected into the channel between the ring with smallest inner diameter and the adjacent end wall of the basket. Concentrate is removed from the final channel and vapor is removed axially.

3,640,331
HEATING AND CONCENTRATING TOWER FOR PLATING WASTE RECOVERY UNIT
Aisaburo Yagishita, 5-2 Shinpo-cho 4-chome, Chigusa-ku, Nagoya, Japan
Original application Oct. 18, 1966, Ser. No. 587,607, now Patent No. 3,542,651. Divided and this application Aug. 24, 1970, Ser. No. 66,399
Int. Cl. B01d 1/00; E03b; F16k 49/00; F17d; F16l 53/00; B01k 3/00
U.S. Cl. 159—23 5 Claims



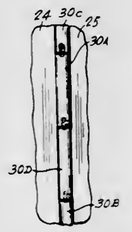
In the reclaiming of plating wastes containing chromic acid and the like, the rinse liquid from the first of a plurality of washtubs into which plated articles are dipped successively to rinse off the plating solution, is sucked into a tower, heated by steam to concentrate it to plating strength, and then is returned to the plating tank. The plating solution is also pumped from the plating tank into the tower where it is heated and recirculated back to the plating tank to maintain the solution in the tank at an elevated temperature. Means is also provided to pump the rinse liquid directly from the first washtub to the plating tank, if the rinse liquid in said first tub does not require concentration to raise it to plating strength.

3,640,332
ROLL-TYPE DOOR
John J. Luby, Duncanville, and Paul E. Pemberton, Dallas, both of Tex., assignors to Overhead Door Corporation, Dallas, Tex.
Filed Nov. 12, 1969, Ser. No. 875,914
Int. Cl. E06b 9/08
U.S. Cl. 160—133 5 Claims



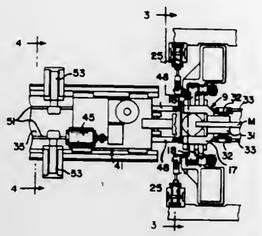
A roll-type door for closing an opening in a wall and having a plurality of horizontally hinged, relatively narrow slats, the lengthwise ends of which move along upright guide tracks mounted upon the wall adjacent the opposite sides of the opening. The door, when in opened position, is wound upon a plurality of flanged disks, some of which are secured to a shaft rotatably supported above the opening. Spring-biased counterbalance means yieldably resists downward unrolling movement of the door which can be effected manually, by a chain drive, or by a shaft and gear arrangement.

3,640,333
FOLDING DOOR OR THE LIKE
Lucien Leclerc, 79, 7ieme, L'Islet, Quebec, Canada
Filed June 25, 1970, Ser. No. 49,677
Int. Cl. E05d 1/06
U.S. Cl. 160—183 5 Claims



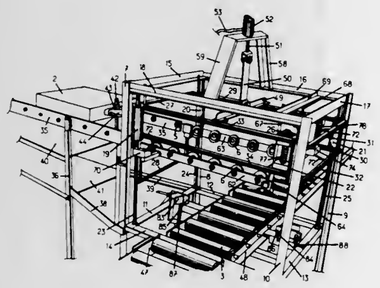
A folding door, partition or the like where each articulated panel is provided on its opposite side edges with a series of vertically aligned spaced-apart bead moldings interengageable with corresponding bead moldings of an adjacent panel by means of a snap-in locking movement; a semispheric seat provided on the upper edge of one bead molding of one panel receives the rounded head of a spring-biased plunger provided in and slidable in and out of the lower edge of the bead molding of the adjacent panel.

3,640,334
CASTING APPARATUS WITH MEANS FOR REMOVING INGOT ON BOTTOM MOLD ELEMENTS
Maurice Paul Sieger, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed June 1, 1966, Ser. No. 554,603
Int. Cl. B22d *29/00, 45/00*
U.S. Cl. 164—269 9 Claims



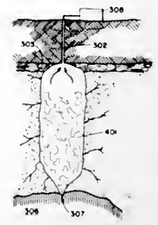
The disclosure of this invention relates to a device for removing a cast article from a bottom pressure-casting machine. It includes a carriage for supporting the bottom mold of the machine and hence, the cast article. A tractor-type power device is provided at one side of the casting machine which moves the carriage away from the upper mold elements of the machine so that the cast article can be removed from the bottom mold at a location remote from the upper mold elements.

3,640,335
PLANT FOR CLOSURE OF FOUNDRY MOLDS
Pierre Justin Auguste Darbonville, 95, Rue Anatole-France, 45 Fleury-les-Aubrais, France
Filed May 25, 1970, Ser. No. 40,053
Claims priority, application France, June 3, 1969, 6918139
Int. Cl. B22d *33/04*
U.S. Cl. 164—339 11 Claims



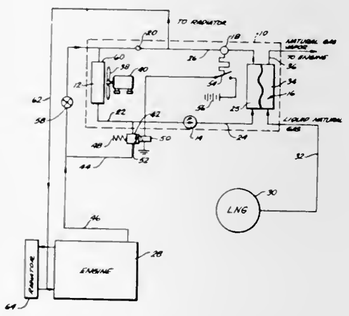
A plant for closure of foundry molds which comprise upper and lower halves, said plant comprising essentially a rolling track sloping at a shallow inclination, which by gravity conveys the lower halves of the molds to a positioning and closing station and which removes the molds after closure, a framework arranged over said rolling track and acting as a support for a device for transfer of the upper halves of the molds, coordinated with a device for infeed of the said halves, and means of ensuring the displacement of the transfer device in two directions.

3,640,336
RECOVERY OF GEOTHERMAL ENERGY BY MEANS OF UNDERGROUND NUCLEAR DETONATIONS
Rod P. Dixon, Salt Lake City, Utah, assignor to The United States of America as represented by the United States Atomic Energy Commission
Original application Jan. 30, 1969, Ser. No. 795,190, now Patent No. 3,608,636, dated Sept. 28, 1971, which is a continuation-in-part of application Ser. No. 734,661, June 5, 1968, and a continuation-in-part of 541,810, Apr. 11, 1966. Divided and this application June 19, 1970, Ser. No. 47,699
Int. Cl. F28f *13/12*
U.S. Cl. 165—1 1 Claim



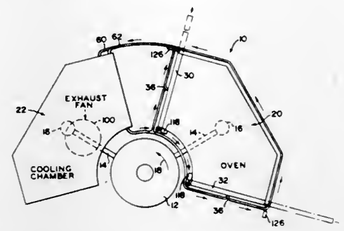
Geothermal steam is generated by setting off an underground nuclear detonation above a naturally hot stratum of igneous rock and thereafter introducing water into the formation above the hot stratum which has been made permeable by the nuclear detonation.

3,640,337
USE OF THE HEAT OF VAPORIZATION OF A FUEL AS AN AIR-CONDITIONING MEDIUM FOR A VEHICLE
Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.
Filed Mar. 13, 1970, Ser. No. 19,279
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 6 Claims



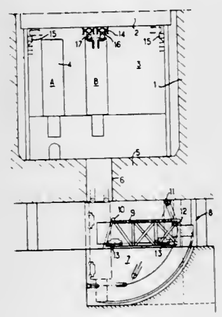
The energy required to vaporize a liquid fuel, such as liquid natural gas, of a vehicle is used to cool water in a loop. The cooled water is passed through a heat exchanger for heat exchange with air to cool the latter to effect air conditioning. A thermostatically controlled valve admits engine-cooling water to the loop when there is a danger of freezing of the water in the loop. The loop is also used when it is desired to heat the vehicle. During heating, engine-cooling water is admitted to the heat exchanger, passes through the loop to perform its vaporizing function, and then goes out a recirculating line for return to the radiator.

3,640,338
METHOD OF AND APPARATUS FOR COOLING OF ROTATIONAL CASTING APPARATUS
Alden C. Boyce, Stow, Ohio, assignor to Rota-Matic, Inc., Summit, Ohio
Filed Apr. 9, 1970, Ser. No. 26,860
Int. Cl. F25b *29/00*
U.S. Cl. 165—48 5 Claims



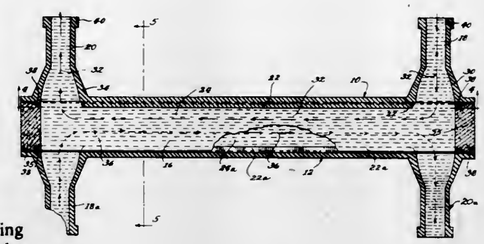
The casting apparatus includes an oven and a cooling chamber and a cooling tank is provided at the bottom of the cooling chamber while spray nozzles are positioned in the cooling chamber for spraying water onto molds therein for cooling action. A pump means connects to the cooling tank and to the spray nozzles for forcing water therethrough, which pump means also connects to a water-circulating system connecting to the oven doors for circulating cooling water therethrough. Improved oven door seal means are present. The invention also relates to a method of circulation of mold-cooling water.

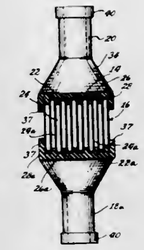
3,640,339
HEAT EXCHANGER ARRANGEMENT
Pierre H. Pacault, Ville d'Avray, and Albert Dostantni, Avon, both of France, assignors to Babcock & Wilcox, Limited, London, England
Filed May 13, 1968, Ser. No.
Claims priority, application France, May 12, 1967, 106188
Int. Cl. F28f *7/00*
U.S. Cl. 165—76 9 Claims



A heat exchanger arrangement wherein a plurality of cylindrical modular heat exchanger units are stacked upright in side-by-side relation within an enclosure and can be transferred into and out of the enclosure, one at a time, through a passage in the floor thereof. To transfer any given heat exchanger unit out of the enclosure, the unit is detached from its base, hoisted by an overhead travelling crane into a position overlying the floor passage and then lowered vertically into a basculating bridge underneath the floor. The bridge is then tilted into a horizontal attitude to discharge the unit. Transfer of a unit into the enclosure is accomplished by following the foregoing procedure in reverse order.

3,640,340
HEAT EXCHANGE DEVICE WITH CONVOLUTED HEAT TRANSFER WALL
Ronald James Leonard, Elk Grove Village, and Fred Michael Cohen, Chicago, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Nov. 20, 1970, Ser. No. 91,477
Int. Cl. F28b *3/00*
U.S. Cl. 165—166 5 Claims



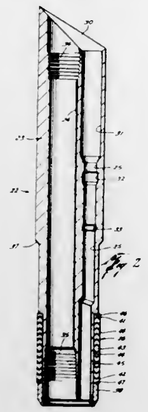


A heat exchanger device with a convoluted heat transfer wall to define a first and second set of flow channel defining pockets having oppositely opening mouths. Each set of pocket mouths communicates with a separate fluid inlet and fluid outlet means disposed adjacent opposite ends of the pocket mouths. Sets of continuous ridges fit into the pocket mouths between each fluid inlet and outlet to provide flow channels of unvarying width by preventing transverse movement of the convolutions of the heat transfer wall, as well as to seal the pocket mouths between each fluid inlet and outlet.

3,640,341
APPARATUS FOR COMPLETING PLURAL ZONE OIL AND GAS WELLS
Britt O. Braddick, Houston; Hiram E. Lindsey, Jr., Midland, and Charles J. McKiearnan, Odessa, all of Tex., assignors to Texas Iron Works, Inc., Houston, Tex.
Filed Nov. 6, 1969, Ser. No. 874,617
Int. Cl. E21b *33/12*
U.S. Cl. 166—115 9 Claims

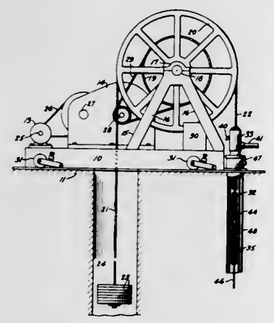
A tubular receptacle is connected in a string of permanent production liner at a point at which the production tubing for an upper one of two different subsurface producing zones is to be terminated. The interior of the receptacle is coated with Teflon. A first of two longitudinal flow passages in a cylindrical body member is connected at an intermediate point in a string of production tubing for the lower of the two producing zones and such tubing string is run into the well bore to seat the cylindrical body member in the liner receptacle. The cylindrical body member has resilient annular seal means on the exterior thereof for providing a fluidtight seal

between the liner string receptacle and the body member. The tubing string for the upper zOne is run into the well bore



and seated in the upper end of the second flow passage in the cylindrical body member.

3,640,342
OIL WELL PUMPING UNIT HAVING TRAVELING STUFFING BOX
Robert H. Gault, Midland, Tex., assignor to Bethlehem Steel Corporation
Filed Sept. 4, 1970, Ser. No. 72,930
Int. Cl. E21b *33/03*
U.S. Cl. 166—72 **2 Claims**

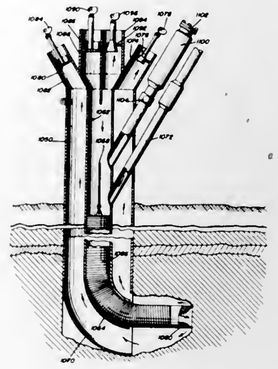


An efficient long-stroke pumping apparatus for oil wells. This apparatus comprises the combination of a low and relatively inexpensive supporting structure, an upright stroking wheel or sheave mounted thereon and driven near the ground level, and below-ground counterweight and traveling-seal means for actuating a pumping string. Said seal means reciprocate vertically in a polished pipe fixed within the well tubing, and provide protection against corrosive well fluids to the pumping cable actuated by the stroking wheel.

3,640,343
STABILIZATION OF HARD SHALY FORMATIONS WITH ALKALI METAL SILICATE
Henry C. H. Darley, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed May 20, 1970, Ser. No. 39,676
Int. Cl. E21b *21/04, 33/138*
U.S. Cl. 166—292 **10 Claims**

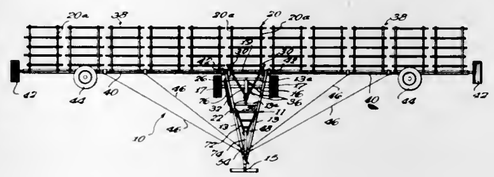
An improved method for stabilizing hard shaly earth formations comprising treatment of said formations with a low viscosity fluid consisting of an aqueous liquid containing a minor amount of a water-soluble alkali metal silicate having a pH in the range of from about 11 to about 12 and preferably between about 11.1 and 11.4.

3,640,344
FRACTURING AND SCAVENGING FORMATIONS WITH FLUIDS CONTAINING LIQUEFIABLE GASES AND ACIDIZING AGENTS
Clarence W. Brandon, Tulsa, Okla., assignor to Orpha Brandon, Nashville, Tenn.
Continuation-in-part of application Ser. No. 719,883, Apr. 9, 1968, now abandoned. This application Dec. 2, 1968, Ser. No. 780,385
The portion of the term of this patent subsequent to Feb. 7, 1984, has been disclaimed.
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—307 **60 Claims**



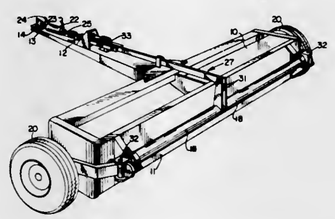
A method of fracturing formation with liquefiable gases, liquefiable gases and acidizing agents, and cleansing and scavenging of formations whereby energy waves and high-frequency vibrations may assist in the above.

3,640,345
FOLDABLE HARROW CART
Harry Sosalla, Sac City, Iowa, assignor to Noble Manufacturing Company
Filed Sept. 8, 1969, Ser. No. 855,840
Int. Cl. A01b *65/02*
U.S. Cl. 172—311 **9 Claims**



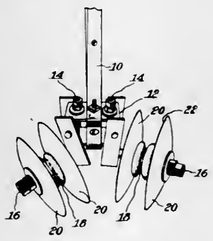
A foldable sectional tow-type implement, including a wheel cart having a centrally located drawbar revolvably mounted on a horizontal axis extending transversely of the direction of travel, and a pair of outboard sections interconnected to the centrally located drawbar and each being revolvable with the drawbar and swingable in a fore-and-aft direction relative thereto when revolved to a vertical transport position. Each of the drawbars serves to support an earthworking tool so that when the drawbars are in an operative position, the earthworking tools engage the surface of the ground and when the drawbars are swung to an inoperative position, the associated earthworking tools are raised to an inoperative or transport position. Flexible retaining members connect and support the outboard sections to the cart forward of the sections when the implement is in its operative position. The retaining members may be released when the tools are in the raised inoperative position to permit the outboard sections to be folded. The mechanism for revolving the drawbars and raising the tools is wholly independent of the release mechanism for the retaining members. The flexible retaining members are connected to an elongate release member pivotally connected to the cart in front of the sections. The elongate member has a hinge intermediate the ends thereof to permit the member to fold at least partially during folding movement of the end sections to prevent the flexible retaining members from rising into entanglement with portions of the tools in their folded positions.

3,640,346
DOUBLE-ACTING DEPTH STOP
Jerome L. Fueslein, Linden, Calif., assignor to International Harvester Company, Chicago, Ill.
Filed Dec. 29, 1969, Ser. No. 888,685
Int. Cl. A01b *63/14, 63/22, 63/16*
U.S. Cl. 172—318 **3 Claims**



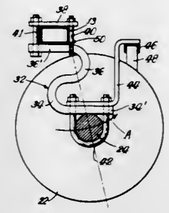
An implement having a scraping or leveling blade is provided with end wheels carried on arms mounted on a rockshaft in trailing relation behind the blade when used for scraping, the wheels being optionally disposable at the sides of the blade with the arms extending forwardly when the blade is used in forming dams and the like for irrigation purposes. Power transmission means for rocking the shaft is effective in either position of the wheels to rock the shaft, raise the blade, and return it to a predetermined operating position.

3,640,347
ROTARY HOE
Harry T. Miller, 2209 Miller Road, Flint, Mich.
Filed July 1, 1969, Ser. No. 838,147
Int. Cl. A01b *1/00*
U.S. Cl. 172—349 **2 Claims**



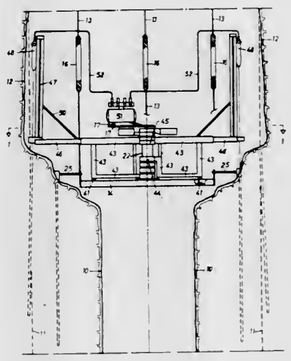
A manually operable hoe having a handle, a frame and rotary discs on caster axles extending outward angularly from the frame. The hoe provides the same rolling action as an ordinary farm disc.

3,640,348
S-SHAPED STANDARD
George E. Womble, Kewanee, Ill., assignor to Kewanee Machinery & Conveyor Company, Kewanee, Ill.
Filed Feb. 2, 1970, Ser. No. 7,614
Int. Cl. A01b *5/04, 61/04*
U.S. Cl. 172—573 **3 Claims**



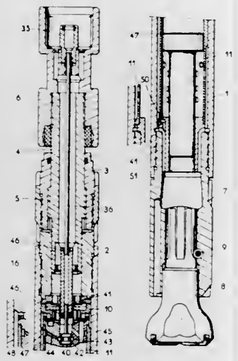
The use of a resilient standard, or bearing, to support a disc gang from the main frame, with the standard being made of a plurality of curved portions or convolutions, preferably of a reversed "S" shape.

3,640,349
STOPPING APPARATUS
Roland Granskog, Skelleftea, Sweden, assignor to Linden-Alimak Aktiebolag, Vasteras, Sweden
Filed June 8, 1970, Ser. No. 44,262
Int. Cl. E21c *23/00*
U.S. Cl. 173—32 **3 Claims**



The invention relates to an improvement in stopping apparatus permitting boreholes to be made with great accuracy and requiring little manpower attendance, said apparatus comprising a movable platform with lifting jacks thereon for fixing it in a horizontal position, and a plurality of arms each of which is articulated to a central stud on the platform, is swingable in a substantially horizontal plane, is adapted for carrying drilling means and comprises two telescopic parts tively to each other and for indicating the degree of their relative telescopic displacement.

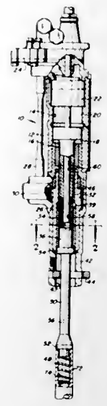
3,640,350
PNEUMATIC DRILL FOR BORING
Marcel Stenuick, Fontaine L'Eveque, Belgium, assignor to S.P.R.L. Stenuick Freres, Hainaut, Belgium
Filed Feb. 16, 1970, Ser. No. 11,588
Claims priority, application France, May 23, 1969, 6916870
Int. Cl. E21b *1/06*
U.S. Cl. 173—61 **3 Claims**



The invention is concerned with a pneumatic drill for use in a borehole having a tubular body enclosing a shock-absorbing piston through which the compressed air is supplied, a distributor unit, a percussion piston, and a drill bit which receives the blows from the percussion piston and transmits them to the rock. The percussion piston is movable in a cylinder formed by an inner liner, and between the liner and the inside wall of the drill body lie longitudinal passages for the supply of compressed air to operate the piston and other passages for the discharge of the air after it has acted on one of the faces of the percussion piston. The invention provides in such a drill a flushing fluid supply means which bypass the percussion piston and drill bit by way of longitudinal ducts for the fluid extending from a distributor to escape ducts extending through the body.

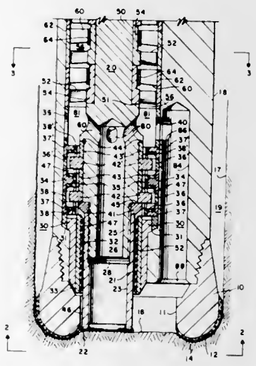
3,640,351
FORCE PULSE SHAPING MEMBER FOR PERCUSSION TOOL
Merton W. Coyne, Arvada, and Dieter K. Palauro, Denver, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.
Filed May 18, 1970, Ser. No. 38,422
Int. Cl. B25d *9/00;* **E21b** *17/00*
U.S. Cl. 173—105 **7 Claims**

A member comprising the shank or an integral shank-drill rod for a percussion rock drill and having a force-deflection or stiffness characteristic similar to the effective stiffness of the earth formation to be penetrated. The member is adapted to be removably inserted into the rock drill in blow-receiving relationship with a reciprocating hammer element. The



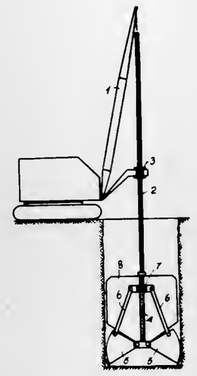
member is also operable to be a rotation transmitting means for rotating an extension drill string.

3,640,352
ROTARY DRILL ASSEMBLY
Robert W. Stuart, 13739 Hughes Lane, Dallas, Tex.
Filed Dec. 12, 1969, Ser. No. 884,494
Int. Cl. E21b *3/12*
U.S. Cl. 175—107 **8 Claims**



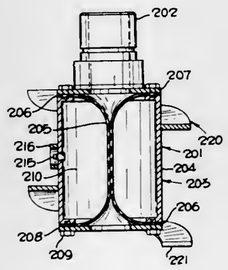
A rotary drill bit assembly is disclosed comprising a cylindrical body having a central opening in the lower face thereof which defines a chamber therewithin. An annular main cutting head is carried at the lower end of the body, and a supplemental bit assembly is supported from within the chamber which has an annular cutting head disposed perpendicular to the axis of the body and eccentric thereto. The outer radius of the supplemental cutting head and inner radius of the main cutting head substantially coincide along a line parallel to the body axis, with the outer radius of the supplemental head also extending at least to the axis of the central opening. Means are provided for rotating the supplemental cutting head relative to the main cutting head.

3,640,353
APPARATUS FOR EXCAVATION OF DEEP HOLES AND TRENCHES
Giuseppe Botto, c/o Costruzioni Cemento Compresso Fondisa S.p.A. Corso Europa 11, Milan, Italy
Filed Jan. 16, 1969, Ser. No. 791,701
Claims priority, application Italy, Oct. 23, 1968, 22880 A/68
Int. Cl. E21b *27/00*
U.S. Cl. 175—202 **1 Claim**



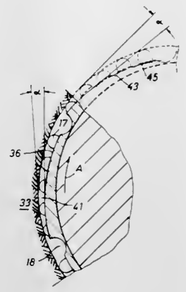
This disclosure relates to an apparatus for the excavation of deep holes and trenches, which comprises a grab bucket whose jaws are carried by a rigid rotatable support bar and are connected by a pair of arms to a sleeve member which is screwed onto a threaded end portion of said support bar.

3,640,354
HOLLOW-STEM AUGER HEAD WITH SEAL
Charles L. Rassieur, University City, Mo., assignor to Central Mine Equipment Company, St. Louis, Mo.
Filed Nov. 24, 1969, Ser. No. 879,239
Int. Cl. E21b *27/00*
U.S. Cl. 175—243 **5 Claims**



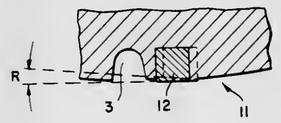
In a hollow-stem auger, wherein sampling tools are to be used through the hollow auger passage, a flexible seal is provided in the head which prevents or inhibits sand and the like from moving into the auger passage, but which permits a sampling tool to pass through.

3,640,355
DRILL BIT
Maurice P. Lebourg, 3700 Greenway Plaza Drive, Houston, Tex.
Filed June 4, 1970, Ser. No. 43,350
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **8 Claims**



A rotary drill bit design of the type adaptable to rotary diamond-drilling bits or the like having a drilling face crossed by a number of fluid passageways to provide drilling lands on which cutting elements, such as diamonds, are mounted employs a construction wherein the matrix portion of each drilling land defines a wedgelike volume open in the direction of bit rotation with respect to the drilling surface or gage surface defined by the exposed portions of the cutting elements upon rotation of the bit. Accordingly, upon rotation of the bit, drilling fluid is subjected to an increasing pressure gradient in this wedgelike volume between the matrix of the bit and the formation being drilled to assist in preventing differential sticking and to create a hydraulic pressure pattern which assists in rapid drilling.

3,640,356
DIAMOND BIT
Robijn Feenstra, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,396
Claims priority, application Great Britain, Apr. 30, 1969, 22,061/69
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **10 Claims**

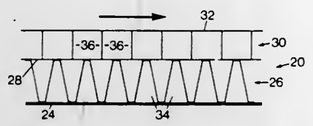


A diamond bit, the diamonds in the sidewall thereof being set in a blunt position in a direction radial to the central axis of the bit as well as in a cutting position in a direction tangential to a helical line passing through the cutting tip of the diamond and having a central axis coinciding with the central axis of the bit.

3,640,357
ACOUSTIC LININGS

Anthony George Kitching, Derby, and Mervyn Brown, Ticknall, both of England, assignors to Rolls Royce Limited, Derby, England

Filed Feb. 26, 1971, Ser. No. 119,308
Int. Cl. B64d *33/06;* **E04b** *1/84;* **F01n** *1/10*
U.S. Cl. 181—33 G **7 Claims**

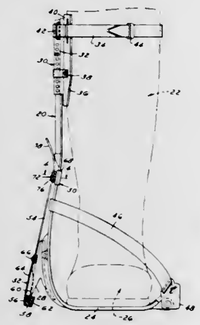


The invention provides an acoustic lining, suitable for a gas turbine engine, the lining comprising an impervious sheet, a channel layer, a first porous sheet, a honeycomb layer and a second porous sheet, the channel layer being secured to the impervious sheet and the first porous sheet and the honeycomb layer being secured between the first and second porous sheets.

3,640,358
UNIVERSAL GAFF GUARD

Kenneth J. Smith, 12101 West Rawson Ave., Franklin, Wis.

Filed Aug. 4, 1970, Ser. No. 60,897
Int. Cl. A63b *27/02*
U.S. Cl. 182—221 **11 Claims**



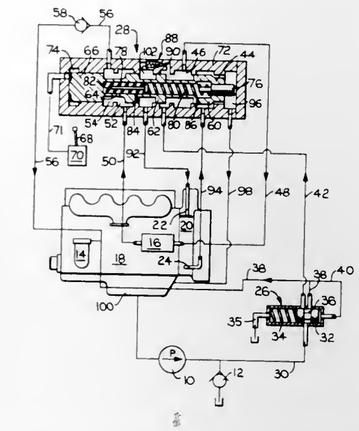
A universal guard assembly for the gaff of a climber, such as utilized by utility and telephone linemen. The guard assembly includes a telescopically adjustable clamp which is received on the leg iron of the climber, a generally cylindrical metal guard housing having a nonmetal, friction resistant insert which receives the pointed end of the climber gaff and a flexible, nonresilient strap which is secured at one and to the guard housing and releasably secured at the opposite end to the adjustable clamp.

3,640,359
CONTROL SYSTEM FOR HYDRODYNAMIC RETARDER

Richard B. Clark, Washington; Hugh C. Morris, Peoria, and Gerald E. Whitehurst, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 20, 1970, Ser. No. 4,338
Int. Cl. B60k *29/02;* **F16d** *57/00*
U.S. Cl. 192—3 R **11 Claims**

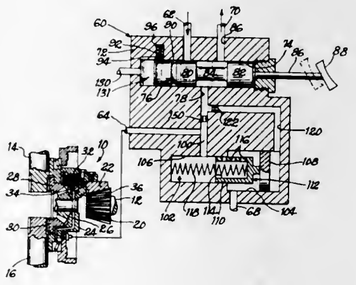
A control system is provided for use with a hydrodynamic retarder for providing braking to a vehicle by using engine lubricant as the working fluid. The system comprises a first pressure responsive, priority valve which functions to direct engine lubricant to a second, control valve from the engine lubricant pump only after the pressure in the engine lubricant system has achieved a sufficiently high level to supply the engine's requirements. In another embodiment, the first valve meters lubricant to both the engine and retarder at the same time by means of metering slots. The second control valve is operator-actuated and functions to direct lubricant through the heat exchanger, the lubricant filter, and then to the engine in one mode, or additionally by way of a hydrodynamic retarder in a second mode and thus to provide braking for the vehicle.



3,640,360
DIFFERENTIAL LOCK WITH PRESSURE MODULATING EXHAUST VALVE

William R. Dollase, Racine, Wis., assignor to J. I. Case Company

Filed Oct. 17, 1969, Ser. No. 867,281
Int. Cl. F16h *57/10*
U.S. Cl. 192—4 A **10 Claims**



A control system for a differential having first and second output shafts and hydraulic brakes for the respective shafts. The control system includes a friction device for locking and unlocking the differential and a valve which progressively pressurizes the friction device in timed relation to initial supply of pressured fluid from a source to the valve. The valve cooperates with the brakes and releases the friction device whenever either of the brakes is actuated.

3,640,361
FRICTION CLUTCH ASSEMBLY

Paul Spichala, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 11, 1970, Ser. No. 35,951
Claims priority, application Germany, May 20, 1969, G 69 20 201
Int. Cl. F16d *13/58*
U.S. Cl. 192—70.18 **9 Claims**

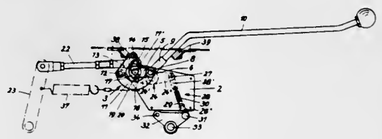


In a friction clutch in which the pressure plate is secured to the clutch casing by leaf springs normally extending in a common radial plane and elongated approximately tangentially to a circle about the clutch axis, the springs are fastened to the pressure plate, and axial movement of the pressure plate relative to the casing under the pressure of the clutch spring is limited by tubular fasteners passing through openings in the plate, the leaf springs, and the casing. The fasteners have terminal flanges and a central annular bead, the pressure plate and a spring are confined between one flange and the bead, and the casing is free to move between the bead and the other flange on each fastener.

3,640,362
CLUTCH CONTROLS FOR POWER TAKEOFF SHAFTS OF TRACTOR OR LIKE VEHICLES

Richard Six, 8011 Forstern, Sackgasse 2, Germany

Filed Aug. 3, 1970, Ser. No. 60,588
Claims priority, application Germany, Aug. 6, 1969, P 19 39 951.0
Int. Cl. F16d *21/08*
U.S. Cl. 192—48.7 **7 Claims**

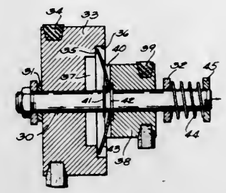


Controls for first and second clutches between a power drive of a tractor or like vehicle and a driving section of power takeoff shaft and between the driving and driven sections of the power takeoff shaft, comprising a lever-actuated crankshaft with first and second crank pins, and operating connections between the first crank pin and first clutch and between the second crank pin and second clutch, with the crank pins being so angularly displaced that the first clutch is actuated prior to and after each actuation of the second clutch.

3,640,363
FRICTION COUPLING

James R. Spalding, Wauwatosa, Wis., assignor to General Electric Company

Filed Dec. 23, 1969, Ser. No. 887,476
Int. Cl. F16d *11/06, 13/14, 51/00*
U.S. Cl. 192—65 **3 Claims**

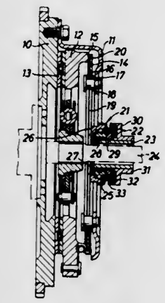


The invention provides for coupling or uncoupling adjacent relatively moveable machine elements. One element has a circular or elongated recess defining frictionally engageable surfaces. The other element carries a curved spring member which fits into the recess loosely normally and is adapted for being flattened and expanded by moving one of the elements toward the other. The ends of the spring member thereby grip the frictionally engageable surfaces and couple the two elements together.

3,640,364
CLUTCH BEARING WITH MAGNETIC SUPPORT

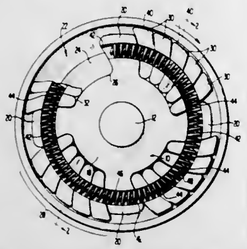
Norman Utton, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed Dec. 4, 1969, Ser. No. 881,993
Claims priority, application Great Britain, Dec. 9, 1968, 58,339/68
Int. Cl. F16d *23/14*
U.S. Cl. 192—98 **8 Claims**



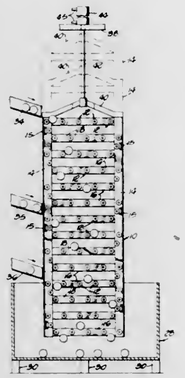
One race (25) of a release bearing (21) of a friction clutch release mechanism acts on the fingers (19) of a diaphragm spring (14) and the other race (27) is mounted on a bush (28) which surrounds a fixed sleeve (23) of nonmagnetic material with a clearance (29) therebetween. The bush (28) has a radial flange which affords an armature for cooperation with a permanent magnet (32) carried by a carrier (22) which is slidably mounted on the sleeve (23). The permanent magnet (32) may be a ring magnet or a circumferentially spaced array of separate magnets and the face of the or each magnet may be flush with the surrounding face of the carrier. In use of the friction clutch release mechanism, if the clutch and the fixed guide are not coaxial, the permanent magnet (32) permits the release bearing (21) to move radially relative to the carrier (22) into a position in which it is concentric with the clutch, and holds the release bearing (21) concentric with the clutch.

3,640,365
MULTIPLE SEGMENT CENTRIFUGAL CLUTCH
Charles Frederick Henry, Carson, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Oct. 30, 1970, Ser. No. 85,345
Int. Cl. F16d *43/24*
U.S. Cl. 192—105 BA **14 Claims**



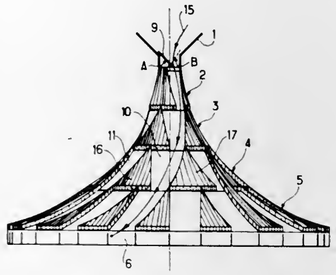
A centrifugal clutch having a driven assembly and a driving assembly including articulated clutch shoe assemblies that are spring biased radially inwardly into a nonclutching position by a coiled garter spring. Each clutch shoe assembly comprises a plurality of independent, generally radially extending segments which are operable to overcome the bias of the spring and to individually engage an inner cylindrical surface of a drum comprising a portion of the driven assembly. The segments are assembled for limited relative movement relative to one another and each segment includes an end surface for substantially conformingly engaging the drum surface. Radial and tangential force components are transmitted through each of the clutch shoe segments, to the driven assembly by driving fingers when the segments move outwardly against the spring bias in response to centrifugal force. By reason of the drum surface conforming nature of the end surfaces of each clutch shoe segment and the provision for relative movement therebetween, each clutch shoe assembly may engage the clutching surface of the driven assembly over substantially the entire clutching surface of the shoe as the individual clutch shoe segments independently move outwardly to engage the mating clutching surface of the drum.

3,640,366
GRAVITY CONVEYOR
John M. Ross, Upland; Warren V. White, Ontario, and Robert P. Wortman, Cucamonga, all of Calif., assignors to Sunkist Growers, Inc., Los Angeles, Calif.
Filed Aug. 4, 1969, Ser. No. 847,017
Int. Cl. B65g *11/10, 11/20*
U.S. Cl. 193—7 **34 Claims**



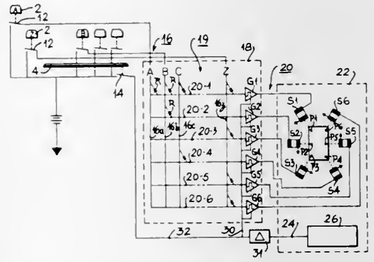
A structure for gravitational conveyance of objects such as citrus fruit from an upper level to a lower level having a plurality of laterally and vertically spaced yieldable barriers staggered at successive levels to repeatedly interrupt the free fall of the objects.

3,640,367
AUTOMATIC SORTING DEVICE
Philippe J. Noetinger, Chilly-Mazarin, France, assignor to Compagnie Generale D'Automatisme, Paris, France
Continuation-in-part of application Ser. No. 707,691, Feb. 23, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 12,580
Int. Cl. B65g *11/20*
U.S. Cl. 193—31 **15 Claims**



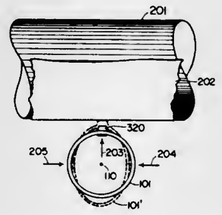
A device for automatically sorting objects, making possible the connection of one input station to one of 2ⁿ output stations, including n−1 superimposed coaxial truncated cones each capable of movement about the axis thereof between first and second specific positions, and one input station equipped with a shutter having two positions. Provided on each truncated cone are troughs or channels delimited by triangular wedges. For a given position of the shutter and each of the truncated cones, there exists one, and only one, track leading from the input station to a selected one of the output stations; thus, the output station is determined on the basis of binary information regulating the positioning of the respective cones and the shutter.

3,640,368
BRAILLE TYPEWRITER
Hershel Weinberger, Jerusalem, Israel, assignor to State of Israel
Filed Aug. 14, 1969, Ser. No. 850,202
Claims priority, application Israel, Aug. 20, 1968, 30578
Int. Cl. B41j *3/32*
U.S. Cl. 197—6.1 **3 Claims**



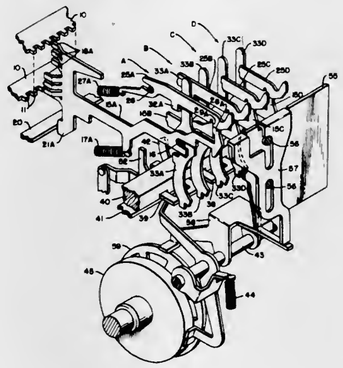
Apparatus for converting a standard typewriter to record in Braille includes a plurality of character-key switches, a Braille recording device, an electrical switching network between the character-key switches and the recording pin actuators of the Braille recording device, and record sheet advancing means. The electrical switching network includes a diode matrix having an input line for each character key and an output line for each recording pin actuator, and a pulse generator connected to each recording pin actuator. The standard typewriter has a shift-key and one or more double-element keys and therefore the apparatus includes a switch for each of these keys, and a circuit having a pair of AND gates for each of the double-element keys controlling the switching network in accordance with whether or not the shift-key is depressed with a double-element key.

3,640,369
FLEXIBLE SHELL PRINTING ELEMENT
Donald L. Rolph, Fairport, N.Y., assignor to The Singer Company
Filed Apr. 7, 1969, Ser. No. 814,052
Int. Cl. B41j *1/22*
U.S. Cl. 197—54 **3 Claims**



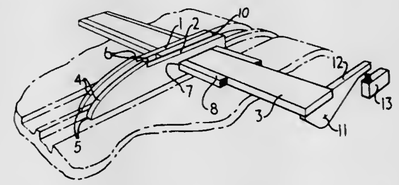
A character supporting type shell for use with a character-by-character printer is disclosed. The shell is constructed of a material and has a shape that cause it to have rotational and longitudinal rigidity when rotated and longitudinally reciprocated about and along an axis, respectively. In addition, the shell has radial resilience so that it is deformable when acted upon by a force in an appropriate direction and of an appropriate magnitude. The resultant structure is one which has a weight considerably less than prior art devices and also a reduced inertia. The last-named factors contribute characteristics which permit a greater printing rate than previously available.

3,640,370
FUNCTION-PERFORMING MECHANISM
Ronald S. Denley, Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Apr. 17, 1967, Ser. No. 631,232
Int. Cl. B41j *19/76*
U.S. Cl. 197—114 **8 Claims**



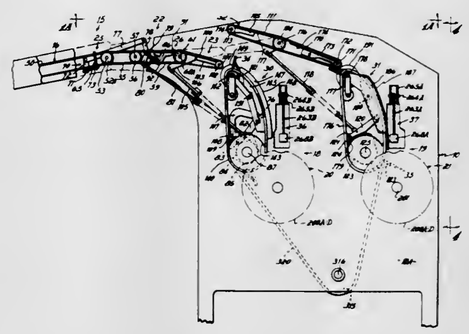
A pair of differently encoded function mechanisms each for operating the line feed mechanism of a printer and a pair of strippers one of which resets one of the function mechanisms after a single line feed operation and the other of which resets the other of the function mechanisms after more than one line feed operation. Similarly, a second pair of differently encoded function mechanisms each for operating the reverse line feed mechanism of the printer which are individually reset by the strippers after single and multiple reverse line feed operations.

3,640,371
CONVEYORS SYSTEMS
Peter J. Jenkins, Sandback, and William C. Neller, Frodsham, both of England, assignors to Dunlop Holdings Limited, London, England
Filed July 28, 1970, Ser. No. 58,913
Claims priority, application Great Britain, Aug. 9, 1969, 39,511/69
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **4 Claims**



A comb for a conveyor which has a longitudinally grooved load carrying surface. The comb being constructed from a series of rigid teeth resiliently mounted on a rigid transverse support so that the resilient mounting allows the teeth to move to accommodate transverse movement of the conveyor within its guides.

3,640,372
BOOK-TRANSFERRING APPARATUS
Ernest J. Sarring, Fort Thomas, Ky., assignor to Crawley Machinery Co., Newport, Ky.
Original application Jan. 25, 1968, Ser. No. 700,414, now Patent No. 3,494,455, dated Feb. 10, 1970. Divided and this application July 8, 1969, Ser. No. 871,000
Int. Cl. B65g *47/22*
U.S. Cl. 198—24 **7 Claims**

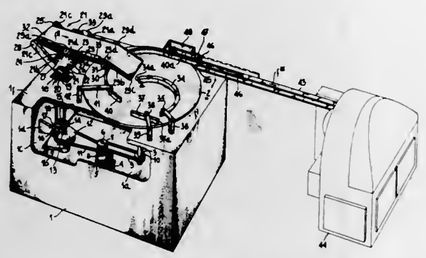


Apparatus for transferring books from a first upper station, to which books are sequentially conveyed horizontally with their backbones leading, alternatively to second and third lower stations at each of which the books are deposited at fixed positions in a vertical disposition with their backbones lowermost, and thereafter advancing the books horizontally from their fixed positions to selectively variable delivery positions.

3,640,373
DEVICE FOR ARRANGING ARTICLES SUPPLIED IN BULK AND INDIVIDUALLY AND SEQUENTIALLY DELIVERING THEM IN ALIGNMENT TO WRAPPING UP MACHINES

Ariosto Seragnoli, Bologna, Italy, assignor to G.D. Societa In Accomandita Semplice Di Enzo Seragnoli E Artosto Seragnoli, Bologna, Italy

Filed Mar. 3, 1970, Ser. No. 16,138
Claims priority, application Italy, Mar. 4, 1969, 1559/A
Int. Cl. B65g 47/24, 47/26
U.S. Cl. 198—30 7 Claims

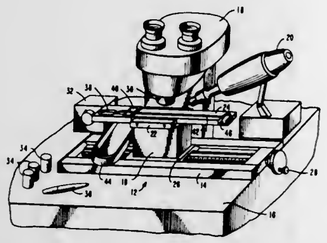


Articles such as chocolates are randomly supplied in bulk to near the center of a rotating disc. Fixed guiding means are located above the disc so that articles thereon are guided outwardly in a generally spiral path so that at the periphery of the disc oriented articles are sequentially and separately delivered to a wrapping-up machine. The guide members have at least one abutment surface angularly inclined to the vertical from the plane of the disc to assist orientation of the articles. Means for turning over articles onto a desired face may be included on the guide members.

3,640,374
MAGNETIC CORE INSPECTION DEVICE

Michael P. Peratis, Newbury Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 19, 1970, Ser. No. 21,096
Int. Cl. B65g 47/24, 47/26
U.S. Cl. 198—30 9 Claims

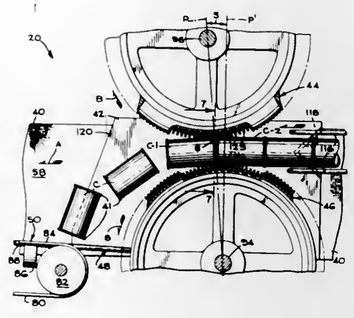


A magnetic core inspection device is provided in which magnetic cores loaded into a cavity at one end of a plate are caused to migrate along the length of the plate under the influence of a coupled vibrator past an orienting section of the plate to an inspection track, the orienting section functioning to arrange the cores in a single row along the inspection track to facilitate inspection of the cores for imperfections using a microscope. The orienting section of the plate includes an elongated element extending between apertures and having a pair of mutually perpendicular, intersecting surfaces forming a track for the cores. The lateral dimensions of the surfaces are respectively less than the overall diameter and thickness of each core, causing excess cores to fall through the apertures and into a catch tray and thereby allowing a single row of cores to migrate onto the inspection track.

3,640,375
HIGH SPEED ARTICLE-TURNING MECHANISM

James L. Reimers, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 9, 1970, Ser. No. 1,652
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AD 18 Claims

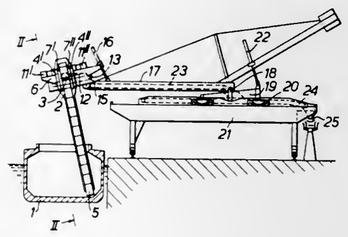


A series of ferromagnetic articles to be turned 90° are moved by an inclined conveyor along a linear path over a deadplate and between two turning drums having resilient peripheral surfaces shaped to conform to the curvature of the contacted surfaces of the articles being turned. One of the drums is driven at a higher speed than the other drum and has its axis of rotation disposed forwardly of a plane which is perpendicular to the linear path and has the axis of rotation of the other drum lying therein thereby providing an angular space or gap between one end of the article being turned and the next following article so that the resilient material on the high-speed drum will enter the space. The discharge edge of the deadplate is angled so as to be parallel to the partially turned articles causing both ends of each article to move off the deadplate onto the conveyor at the same time. A magnetic stabilizing conveyor is positioned to grip one end of each article as the article completes its turn.

3,640,376
UNLOADER FOR BULK MATERIAL IN WHICH A CHAIN BUCKET ELEVATOR CONSTITUTES THE RECEIVING AND ELEVATING APPARATUS

Kurt Peuker, Cologne, and Heinrich Sommer, Porz-Westhofen, both of Germany, assignors to Pohlig-Heckel-Bleichert, Vereinigte Maschinenfabriken A.G., Cologne, Germany

Filed Mar. 12, 1970, Ser. No. 18,847
Int. Cl. B65g 37/00
U.S. Cl. 198—91 3 Claims

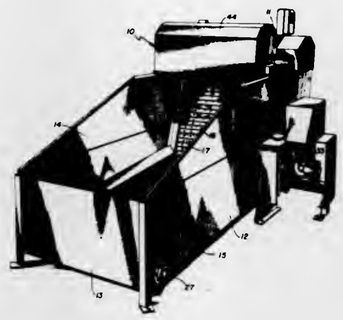


The invention relates to a chain bucket elevator for handling bulk material in the unloading of ships, in which the bucket elevator is swiveled in the plane of rotation of the buckets and in which the distance between the upper and lower axes of the bucket chain guides remains constant.

3,640,377
RAG FEEDER

Henry F. Benoit, P.O. Box 356, Charlton City, Mass.

Filed Jan. 14, 1970, Ser. No. 2,844
Int. Cl. B65g 17/16
U.S. Cl. 198—178 6 Claims

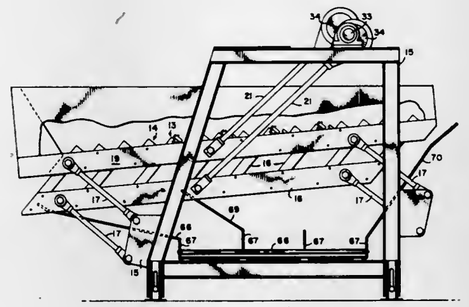


This invention relates to a rag feeder and, more particularly, to apparatus for presenting rags in a flat condition to a shoddy picker.

3,640,378
SHUFFLE FEED MOTION-TRANSMITTING CONNECTION

Melvin R. Elliott, San Jose, Calif., assignor to Genevieve I. Hanscom and Genevieve I. Hanscom, Robert Magnuson and Lois J. Thomson, as Trustees of the estate of Roy M. Magnuson, part interest to each

Filed Apr. 13, 1970, Ser. No. 27,845
Int. Cl. B65g 25/04
U.S. Cl. 198—218 1 Claim

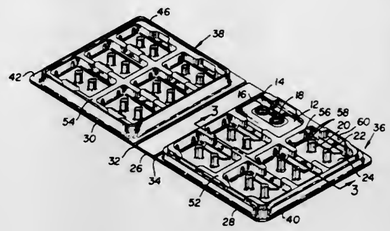


A shuffle feed structure wherein articles are progressed from valley-to-valley over a shuffle feed mechanism involving reciprocating shuffle feed members, where an additional function is involved employing movement of a member of the shuffle feed mechanism which is actuated by the movement of the shuffle feed members but is in a different direction.

3,640,379
CASSETTE ALBUM

Marshall L. Weingarden, 108-18 Queens Boulevard, Forest Hills, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,533
Int. Cl. A45c 11/00; B65d 43/04, 85/67
U.S. Cl. 206—1 R 1 Claim

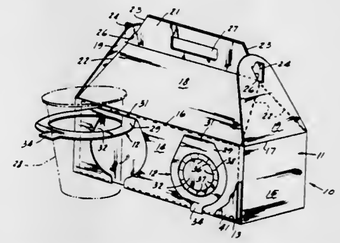


An album having front and back booklike flaps which respectively mount cassette-holding vacuum molded trays. Among other features, the trays are molded with interfitting peripheral structure providing a friction fit holding the album closed and also serving as a seal against dust and other contamination of the album interior.

3,640,380
PORTABLE FOOD AND DRINK CARRIER

William W. Huffman, Wilmette, Ill., assignor to Marketers, Inc., Wilmette, Ill.

Filed Nov. 20, 1969, Ser. No. 878,342
Int. Cl. A45c 11/20; B65d 5/44
U.S. Cl. 206—4 6 Claims



A portable food and drink carrier has cup-supporting flaps partially cut from a sheet-form spine portion and hingedly connected thereto along an upper edge, and a circular flap aperture is sized to supportingly receive a cup when the flap is outwardly folded to a horizontal position. The spin portion may take the form of an enclosure for receiving food items, and the flap may include yieldable tabs extending radially inwardly to accept differently sized cups.

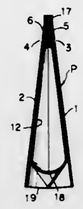
3,640,381
PACKAGE WITH DESTRUCTIBLE PORTION FOR DISPENSING

Takashi Kanada, 28 Shimsaka, 1 Chome, and Toshio Tanaka, 128, Yotsuyakamicho, both of Kawasaki-shi, Japan

Filed July 7, 1969, Ser. No. 839,237
Int. Cl. B65d 75/62, 33/02
U.S. Cl. 206—56 AA 4 Claims

A package comprising a pocket of a stiff material and a flexible bag secured within and to the edges of the pocket. The mouth of the pocket is expanded when the bag is supplied with the package material, to form a support and protective covering for the bag. The bottom of the pocket and

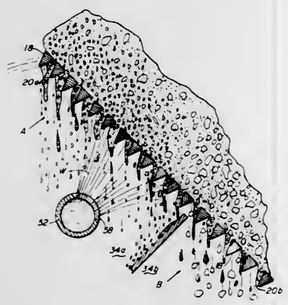
the bag portion connected thereto can be removed from the remainder by separation along a destructible portion to provide a dispensing opening in the bag for removal of the contents.



3,640,382
FLOTATION CONCENTRATION OF MAGNESITE WITH EMULSIFIED COLLECTOR REAGENTS
Tage L. B. Jepsen, Gabbs, Nev., assignor to Basic Incorporated, Cleveland, Ohio
Continuation-in-part of application Ser. No. 743,292, July 9, 1968, now abandoned. This application Feb. 4, 1970, Ser. No. 8,692
Int. Cl. B03b *7/00;* **B03d** *1/02*
U.S. Cl. 209—12 **7 Claims**

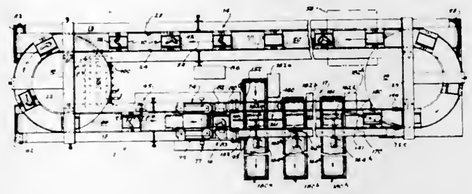
Concentration of magnesite present in ores containing siliceous and calcareous impurities and having some clay slimes as impurities by first reducing the slimes content of a magnesite ore pulp. cleaning same in a first flotation treatment wherein some of said impurities are separated as a float product, mixing a selected group of depressants for said siliceous and calcareous impurities in predetermined proportions in a liquid carrier, adding the premixed depressants to the cleaned pulp feed to a second flotation treatment at a predetermined rate, and stage adding an emulsifiable tall oil fatty acid collector reagent of low rosin content in starvation amounts at intervals in the progressive pulp flow through the second flotation treatment thereby floating a portion of the total magnesite content at each introduction stage.

3,640,383
SCREENING APPARATUS AND METHOD
Joseph W. Wantling, Wellington, Ohio, assignor to Wedge Wire Corporation, Wellington, Ohio
Filed Aug. 1, 1969, Ser. No. 846,726
Int. Cl. B03b *7/00*
U.S. Cl. 209—17 **15 Claims**



Water is sprayed toward an aggregate through the underside of a sloping screen at spaced intervals along its length. The gaps in the screen are of a constant width for separating the aggregate into two particle groups, an undersize group and an oversize group. In another embodiment, the gaps in the screen increase toward the discharge end for separating or sizing the aggregate into several different particle groups. In both embodiments, a portion of the undesired lightweight particles, such as clay, normally collected with the undersize particles overflows the screen with the oversize particles.

3,640,384
APPARATUS FOR WEIGHT-CLASSIFYING ODD-SHAPED ARTICLES
Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed July 10, 1969, Ser. No. 840,669
Int. Cl. B07c *5/28*
U.S. Cl. 209—74 M **13 Claims**



An apparatus for weight-classifying odd-shaped articles, wherein a plurality of open-topped carrier buckets having hinged bottoms adapted when closed to support articles thereon are continuously passed sequentially through a filling station at which articles are positioned in the buckets, a weighing station at which the articles are weighed, and a discharge classifying station at which the bottom of each bucket is opened to discharge an article into one of a plurality of article takeoff conveyors on the basis of its previously recorded weight.

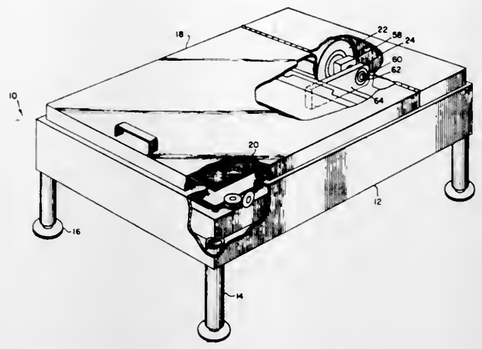
3,640,385
REAGENTS FOR BENEFICIATING ORES
Randal E. Smith, and Clarence W. Egbom, both of Carlsbad, N. Mex., assignors to Ideal Basic Industries, Inc., Carlsbad, N. Mex.
Filed Nov. 17, 1969, Ser. No. 877,509
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **8 Claims**

Flotation concentration of sylvite from sylvinite or other potassium chloride ores in a brine of the ore, particularly effective where brine carrier is dirty or at high temperature. Small amounts of silicone polymers are introduced as auxiliary agents in conjunction with primary aliphatic amines and aliphatic and/or aromatic oils as collectors reducing total reagent requirement with resulting cost reduction and substantial improvement in flotation efficiency.

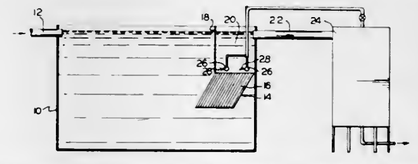
3,640,386
PORTABLE SIFTING APPARATUS
John W. Frangos, 2 Brimbal Hill Drive, Beverly, Mass.
Filed June 2, 1969, Ser. No. 848,373
Int. Cl. B07b *1/28*
U.S. Cl. 209—337 **2 Claims**

A compact, portable, power-driven sifter is provided for use in sifting flour or the like, and is particularly suited for restaurant and institutional use. A basket having replaceable screens is mounted in a housing for horizontal oscillatory movement by means of a motor-driven eccentric linkage, the basket being supported on rollers and guided by sheave rolls

against lateral displacement. The housing is supported in a highly raised position by elongated legs to permit pans, trays and the like to be moved in and out from under the unit from any side thereof.

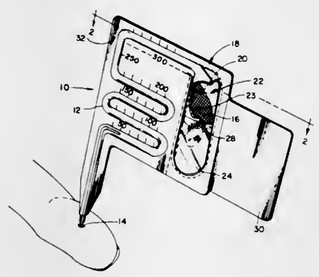


3,640,387
REMOVAL OF FLOC FROM SETTLING DEVICE
Walter R. Conley, and Gordon L. Culp, both of Corvallis, Oreg., assignors to Neptune Microfloc, Incorporated, Corvallis, Oreg.
Filed Dec. 15, 1969, Ser. No. 884,908
Int. Cl. B01d *21/02*
U.S. Cl. 210—73 **4 Claims**



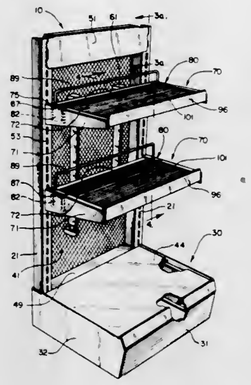
Floc buildup on top edges of inclined tube settling device prevented by causing slight flow of liquid across tops of tubes.

3,640,388
DIALYZING LIQUID-COLLECTING CONTAINER
Andres Ferrari, Dover, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed Aug. 20, 1970, Ser. No. 65,540
Int. Cl. B01d *31/00;* **A61b** *05/10*
U.S. Cl. 210—94 **9 Claims**



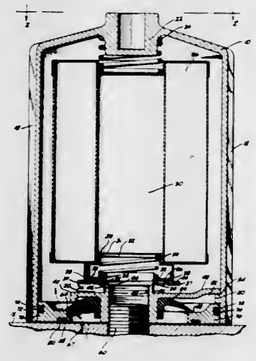
A liquid container, pumpable to aspirate liquid into it via an inlet passage, has a dialyzing membrane forming first and second compartments within the container on either side of the membrane. The inlet passage feeds into only one of the two compartments and that one compartment, at least, includes pumpable walls of the container.

3,640,389
DISPLAY STAND AND EXPENDABLE SHELF FOR USE THEREON
Alan K. Snyder, River Forest, Ill., assignor to Chicago Display Company, Melrose Park, Ill.
Filed May 12, 1969, Ser. No. 823,835
Int. Cl. A47b *96/02;* **A47f** *5/00*
U.S. Cl. 211—148 **15 Claims**



A display stand comprising a four-sided base and a pair of upright shelf support means wherein the base is slidably assembled, and an extendable shelf for use on the display stand comprising a first shelf means, and a second shelf means wherein the second shelf means is capable of vertical movement with respect to the first shelf means.

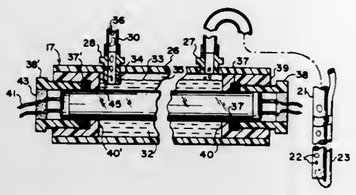
3,640,390
REPLACEABLE CARTRIDGE FILTER HOUSING
Thomas J. Goy, Canoga Park; Richard P. Knieriemen, Van Nuys, and James E. Reading, Sepulveda, all of Calif., assignors to Torite Enterprises, Inc., San Fernando, Calif.
Filed May 13, 1968, Ser. No. 728,674
Int. Cl. B01d *27/08*
U.S. Cl. 210—130 **13 Claims**



A replaceable cartridge is provided for a screw-on-type oil filter useful in automobile engines, or the like. A floating cartridge is provided which is spring loaded against the bottom

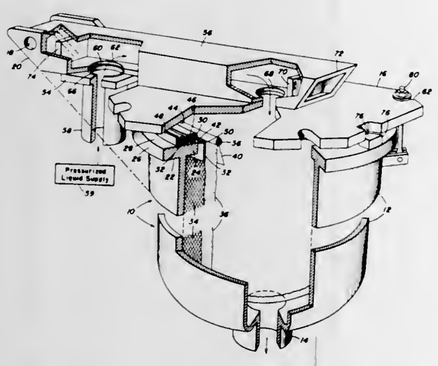
of a housing and held in place by spider-type clamping arrangement which is easily removable for the changing of the filter therein. There is also provided an antidrainback valve which is constructed of a single piece and prevents oil from draining back into the oil system when oil is not being pumped through the filter. The filter housing is provided with a plurality of coolant fins which permits the oil to be cooled as it is being pumped through the filter system.

3,640,391
AQUARIUM ACCESSORIES WITH SELF-STARTING WATER-CIRCULATING SYSTEMS
Paul David Carpenter, Jr., 1112 Burr Street, Algonquin, Ill.
Filed Aug. 27, 1969, Ser. No. 853,388
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **9 Claims**



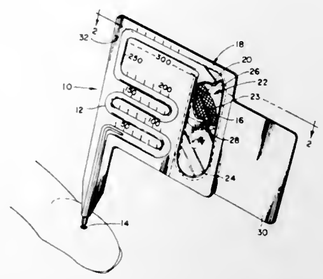
Self-starting, quiet, surge-free circulation of aquarium water to an accessory such as a filter or germicidal lamp is achieved by a system including an airlift into a substantially airtight accessory where the air and water are trapped so as to provide a pressure to lift the water out of the accessory. Air other than the quantity remaining trapped is bled through a constricted passage into the outflowing water tube, and appears to aid its outflow by a blowing action resembling an airlift.

3,640,392
PRESSURIZED LIQUID-FILTERING APPARATUS
Edward A. Smith, Glenville, and Arnold V. Baldwin, Wilton, both of Conn., assignors to GAF Corporation, New York, N.Y.
Filed May 19, 1970, Ser. No. 38,784
Int. Cl. B01d *29/10*
U.S. Cl. 210—232 **13 Claims**



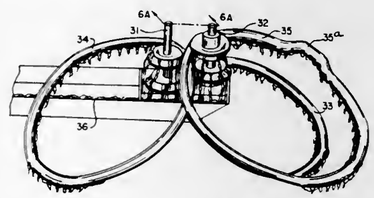
A vessel having a cover connected thereto by a unique hinge contains a basket supported filter bag for filtering liquid under pressure that enters the mouth of the bag through an inlet in the cover and is discharged through an outlet in the bottom of the vessel. The hinge is provided with a liquid inlet passage which communicates with a liquid supply plumbing connection which is permanent and need not be disturbed when the cover is arriving open, or closed. The cover contains a manifold that serves not only as a liquid inlet, but also as a handle. Annular seals caused by the rim of the basket are located on the annular wall of the body of the vessel so that when the cover is simply closed and clamped, leakage of the pressurized liquid is prevented above the bag, as well as from the vessel itself.

3,640,393
LIQUID CONTAINER HAVING PRESSURE-PROTECTED DIALYZING MEMBRANE
Carl R. Hurtig, Scituate, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed Sept. 4, 1970, Ser. No. 69,767
Int. Cl. A61b *05/10;* **B01d** *31/00*
U.S. Cl. 210—321 **8 Claims**



A liquid container has a dialyzing membrane forming first and second compartments within a chamber on either side of the membrane. An inlet passage feeds into only the first compartment, which is pumpable to aspirate liquid into it via the inlet passage. A liquid-pervious member in the first compartment backs up the membrane to support it when there is a greater pressure in the second compartment than in the first.

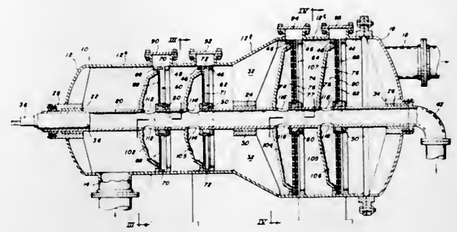
3,640,394
OIL SKIMMER WITH OSCILLATABLE CIRCULAR LOOP
Eugene L. Brill, and Beatrice M. Brill, both of 1803 West Royalton Road, Cleveland, Ohio
Filed May 25, 1970, Ser. No. 40,228
Int. Cl. E02b *15/04;* **B01d** *17/02*
U.S. Cl. 210—322 **15 Claims**



An apparatus is provided for skimming oil or the like floating on a pool of water including an endless substantially rigid loop of uniform cross section, generally circular. The loop is gripped at its upper edge by a pair of rolls rotating in opposite directions and drivingly engaging said loop at one zone in diagonally opposed quadrants, one above and one below the center of a section of the loop. The rolls rotate the loop in its own plane causing it to pass continuously into and out

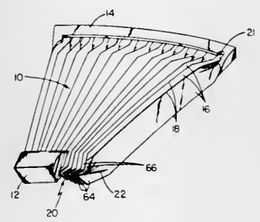
of the pool of water or hydrophilic liquid and to attract hydrophobic material, such as oil or the like or finely divided or colloidal material, which material is lifted by the coil and squeezed out upon passing through the rolls or separated by a scraper or by a blast of air. The loop may oscillate about an axis substantially tangential the loop at the driving zone. A modification utilizes a brushlike surface on the loop and on the driving rolls.

3,640,395
AUTOMATIC SELF-CLEANING STRAINER
Selwyne P. Kinney, Carnegie, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.
Filed Sept. 14, 1970, Ser. No. 71,680
Int. Cl. B01d *35/12, 29/38*
U.S. Cl. 210—334 **7 Claims**



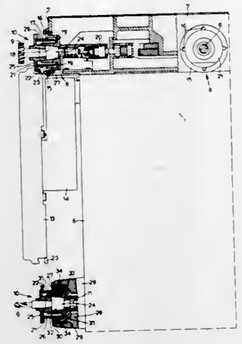
An automatic self-cleaning strainer having multiple stages of straining within a single housing. Straining media are spaced in the housing along the liquid flow stream. The straining media are of progressively finer mesh and the free flow area of each stage of media is preferably greater than the flow area through the inlet of the housing. Each stage of straining media is provided with a backwash shoe engaging the upstream surfaces of the media. Each backwash shoe is coupled to a common manifold shaft which receives the backwash liquid and discharges it outside of the housing.

3,640,396
FILTER
Peter Brownell, Providence, R.I., assignor to Fram Corporation, Providence, R.I.
Filed Apr. 3, 1970, Ser. No. 25,470
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **1 Claim**



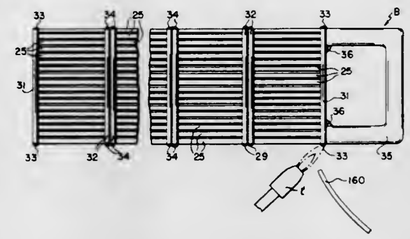
A fluid filter comprising a pleated filtering medium arranged in an annulus and having axial main pleats (defined by radial score lines), oblique secondary pleats (defined by "sawtooth" score lines) at the radial peripheries of the annulus, and seals around the peripheries which overlap at least a portion of the oblique pleats; the filter tapering at the oblique pleats to an axial dimension less than a corresponding axial dimension of the main pleats.

3,640,397
TOOLHOLDER FOR MACHINE TOOLS
Giorgio Ollearo, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Dec. 31, 1969, Ser. No. 889,571
Claims priority, application Italy, Jan. 28, 1969, 50322 A/69
Int. Cl. A47f *3/08*
U.S. Cl. 211—1.5 **3 Claims**



In a machine tool having a rotatable chuck and tool magazine drum, each tool holder is provided with a protective tube concentric with the shank of the tool holder. The chuck and each compartment of the magazine drum are provided with an annular recess. The tube is housed in the recess when the toolholder is placed in the compartment or chuck housing, creating a labyrinth which prevents the shank from dirtying during operation. The recess of the chick is also provided with packing, sealing the tube and the recess.

3,640,398
WAFER BOAT
Ted A. Loxley, Mentor; John M. Webb, Chagrin Falls, and Walter G. Barber, North Perry, all of Ohio, assignors to Edward J. Mellen, Jr., Cleveland, Ohio
Filed Mar. 30, 1970, Ser. No. 23,680
Int. Cl. H01l *7/00;* **B05c** *11/14*
U.S. Cl. 211—41 **19 Claims**

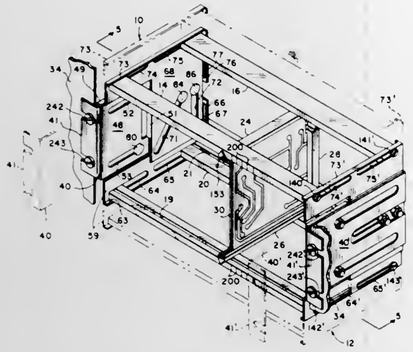


A quartz-glass carrier frame for supporting a series of rows of silicon wafers made by clamping a single row of flat quartz-glass rods together with rows of shims having a thickness substantially equal to the wafer thickness, welding the rods together at spaced locations along their length, and welding lateral quartz-glass spacer rods to the longitudinal rods and to a flat bottom plate.

ERRATUM

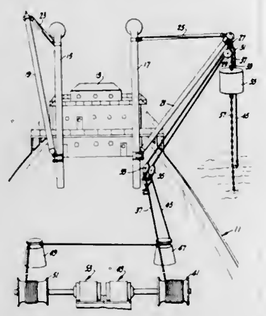
For Class 211—148 see:
Patent No. 3,640,389

3,640,399
PRINTED CIRCUIT CARD RACK
John H. Hartman, Bedford, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.
Filed Mar. 12, 1970, Ser. No. 18,893
Int. Cl. A47f *5/10*
U.S. Cl. 211—175 **11 Claims**



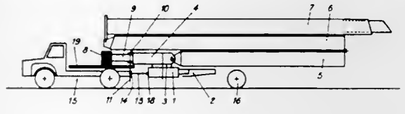
A printed circuit card rack is described having a pair of spaced-apart end assemblies between which a plurality of channel members are connected that support circuit card guides. Connectors are supported by the channel members in alignment with the guides. The end assemblies each comprise a plurality of members that permit selectively changing the distance of separation between selected channel members, so that printed circuit cards of different widths can be accommodated. The end assemblies also include members for attaching the rack to a panel, in which these members are selectively adjustable relative to the other end members, so that printed circuit cards of different depths can be accommodated.

3,640,400
SYSTEM AND METHOD FOR HOISTING SUBMARINE HOSE
Donald E. Becraft, Pacifica, Calif., assignor to C. J. Hendry Company, San Francisco, Calif.
Filed Dec. 9, 1970, Ser. No. 96,502
Int. Cl. B66c *23/52*
U.S. Cl. 212—3 **4 Claims**



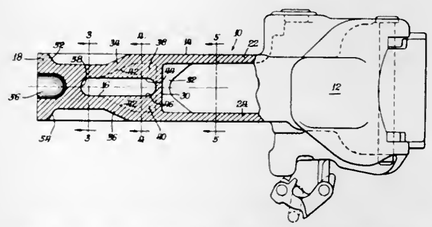
A system and method to be used on a ship moored offshore to hoist submarine hoses from the floor of the ocean to the deck of the vessel. The system and method employs utilization of two cables or falls, the first of which is first attached to a buoy connected to the submarine hose by a chain and then raised as high as possible. The second fall is then attached as low as possible to the chain and it too is hoisted as high as possible within the limits of the boom used. The buoy on the first fall is then lowered to the deck of the vessel and the first fall is then attached low on the chain and hoisted as high as possible. By alternately attaching the first and second falls as low as possible to the chain and hoisting them as high as possible the hose attached to the bottom of the chain is eventually brought to the surface and onto the deck of the vessel.

3,640,401
TRANSPORTABLE TOWER CRANE FOR RAPID ERECTION
Pierre Joseph Pingon, 7 Avenue du Parmelan, 74 Annecy, France
Filed Jan. 11, 1971, Ser. No. 105,350
Claims priority, application France, Jan. 14, 1970, 7001162
Int. Cl. B66c *23/72*
U.S. Cl. 212—49 **10 Claims**



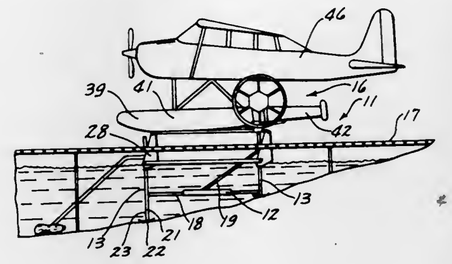
A transportable tower crane for rapid erection comprising a lower frame, an upper rotating frame carrying a mast comprising one or several parts and a foldable jib. A ballast is secured on a frame which is pivoted on the rotatable frame of the crane about a vertical axis but which can be immobilized in the rotational direction relatively to this rotating frame. Coupling means are fixed or may be fixed on the lower frame and are so arranged that it can be pivotally connected to a tractor vehicle about a vertical axis coincident with the vertical pivotal axis of the ballast-carrying frame. This arrangement enables transportation of the crane without dismantling the ballast, which rests about the platform of the tractor vehicle. When curves are negotiated during transportation the assembly pivots around the aforesaid pivotal axis.

3,640,402
INTERNALLY REINFORCED SHANK FOR A RAILWAY COUPLER
Russell G. Altherr; Paul F. Shramovich, and Nelson D. Metzger, all of Chicago, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed Nov. 10, 1969, Ser. No. 875,207
Int. Cl. B61g *7/10, 9/00*
U.S. Cl. 213—62 **10 Claims**



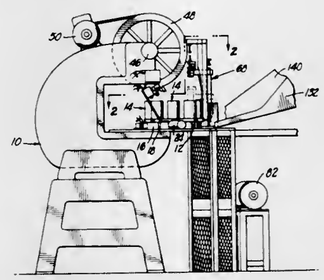
The key slot of a railway coupler shank is modified to distribute tensile forces to the top, bottom and sidewalls of the shank. Upper and lower straps angle away from the key bearing wall of the key slot and into the top and bottom walls of the shank providing openings above and below the key slot thereby lightening the shank and improving the containment of the key slot core for more effective manufacturing. An upper and a lower support rib in each opening is respectively connected to the top wall and the upper strap and the bottom wall and the lower strap to properly locate the key in the key slot.

3,640,403
FLOAT PLANE HOIST
Byron L. Godbersen, 710 Circle Drive, Ida Grove, Iowa
Filed July 27, 1970, Ser. No. 58,328
Int. Cl. B66f *7/06*
U.S. Cl. 214—1 A **4 Claims**



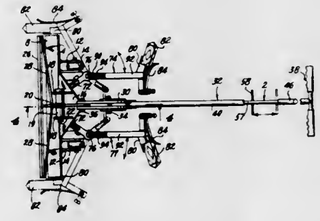
A float plane hoist is provided herein comprising, in combination, a frame having spaced-apart, upstanding legs, a pontoon support means which is movable upwardly and downwardly relative to the frame and a foldable winch for moving the pontoon support means upwardly and downwardly. The winch is foldable to provide clearance for the elevators of the float plane when the float plane is being loaded and unloaded from the pontoon support means.

3,640,404
PRODUCTION ASSEMBLY MECHANISM FOR TELESCOPICALLY ASSEMBLED AND INTERFERENCE FORMED PARTS INCLUDING TRANSFER ARM MECHANISM
Adolf Schoepe, 1620 North Raymond Avenue, Fullerton, Calif., and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif.
Original application Aug. 22, 1969, Ser. No. 852,316, now Patent No. 3,606,661, dated Sept. 21, 1971. Divided and this application Oct. 30, 1970, Ser. No. 85,674
Int. Cl. B66c *1/54*
U.S. Cl. 214—1 BB **6 Claims**



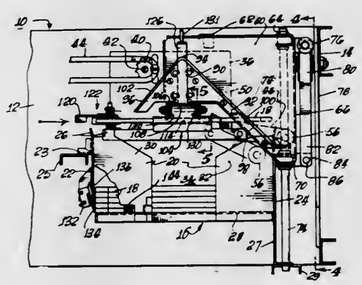
A series of spaced fixtures are mounted on a rotatable indexing table progressively movable between first and second and third assembly stations and a fourth pickoff station so that production parts, such as three parts of a ball cock lower assembly, may be received at the first assembly station in an initially telescoped condition, formed into an intermediate telescoped condition at the second assembly station by an intermediate assembly ram, formed into a final telescoped and interengaged condition at the third assembly station by a final assembly ram and automatically removed from the indexing table at the fourth pickoff station by a pickoff mechanism. The fixtures include resiliently urged pivotal holding fingers maintaining proper part alignment and permitting the various telescoping and reforming operations, while the intermediate and final assembly rams operate together, one preferably being mounted directly on the other. The pickoff mechanism includes a cam controlled, vertically and horizontally movable arm having releasable pickup means thereon automatically engaging and retaining finally assembled parts at the forth pickoff station and removing the parts both vertically and horizontally to a location remote from the indexing table.

3,640,405
SLIP PALLET LIFTER
Harry M. Carpenter, Jr., 404 Brookside Court, Augusta, Ga.
Filed Apr. 1, 1970, Ser. No. 24,741
Int. Cl. B62b *1/06*
U.S. Cl. 214—1 B **6 Claims**



A pair of jaws extend laterally at the front of the lifter and are manually closable to grip the edge of a slip pallet. The lifter is then tilted about supporting wheels close to the jaws to lift one edge of the pallet and load and arms on the lifter are swung forwardly to position blocks under the load. The blocks are releasably held by the arms so the load can be lowered onto the blocks and the lifter withdrawn to leave one edge of the slip pallet and load elevated for reception of the fingers of a forklift truck.

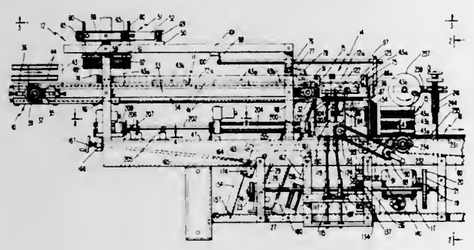
3,640,406
LOWERING DEVICE
Gunter E. Becker, Manhattan Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 31, 1970, Ser. No. 68,083
Int. Cl. B65g *57/112, 60/00*
U.S. Cl. 214—6 G **20 Claims**



A device for lowering a flat member from a first, upper level to a second, lower level in a storage magazine including

a pair of opposed vertical side plates, each of which supports an inverted V-shaped cam and means facing inwardly of the side plates for receiving and supporting an essentially flat member thereon. Cam followers, associated with means for positioning a flat member on the opposed support means, cause vertical movement of the lowering device as they ride over the upwardly inclined surfaces of the inverted V-shaped cams, prior to reaching the apex of each cam, whereby the flat member is lowered in a planar vertical fashion. As the cam followers move over the downwardly sloping legs of the inverted V-shaped cams, the lowering device is returned, under the action of upwardly biasing spring means, to its initial position. The specific structure of the opposed support means enables the flat member to be gently deposited on a support in the lower level and permits the lowering device to be smoothly returned to its initial position without interference from other flat members stored in the magazine.

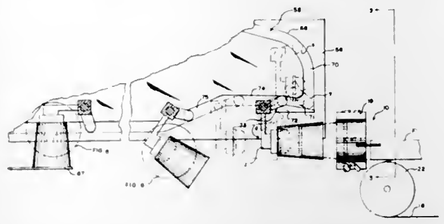
3,640,407
APPARATUS FOR HANDLING BOOKS
Frank J. Anastasio, Paramus; Clinton F. Brundage, Mahwah, both of N.J., and Clarence P. Strakosch, Tappan, N.Y., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed June 17, 1969, Ser. No. 833,985
Int. Cl. B65g *57/08*
U.S. Cl. 214—6 F **20 Claims**



Method and apparatus whereby books delivered on-edge, spine-up, as by a building-in machine, are alternately tipped in opposite directions on a continuously operating belt conveyor, funneled into alignment and then stacked with the spine joints of adjacent books at opposite sides of the stack and offset to prevent crushing thereof. The progressively formed stacks are progressively lowered on a photocell-controlled elevator, jogged, and then removed to a delivery conveyor while the building of the succeeding stack is begun on an auxiliary retractable platform for subsequent transfer to the elevator.

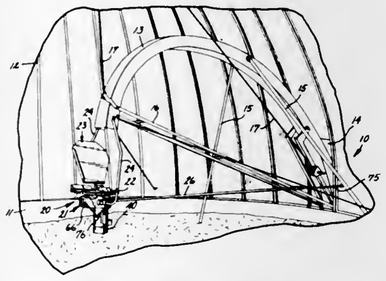
3,640,408
PART-REMOVING MECHANISM FOR REMOVING CONTAINER PARTS AND THE LIKE FROM NESTED STACKS OF PARTS
Gary A. Adams, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed June 9, 1969, Ser. No. 831,552
Int. Cl. B65g *59/10*
U.S. Cl. 214—8.5 A **18 Claims**

Continuously moving transfer mechanism having pairs of container part-gripping members are movable in toward the ends of endmost container parts which are supported, for example, in side-by-side nested stacks and thence are moved endwisely away in a linear path of travel and to a remote location where the container parts are released from the gripping members. One gripping member comprises a plug which is shaped to enter a container part having a radially inwardly extending lip and each plug has a rib for engaging behind the lip of the container part to pull the container part outwardly. The other container-gripping part comprises a suction cup. Restraining members are provided for insuring



that only the endmost container part in each stack of parts is removed by a set of gripping members.

3,640,409
SILAGE DISTRIBUTION APPARATUS
Newell B. Hanson, Lake Lillian, Minn., assignor to Hanson Silo Company, Lake Lillian, Minn.
Filed Aug. 20, 1970, Ser. No. 65,518
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB **3 Claims**

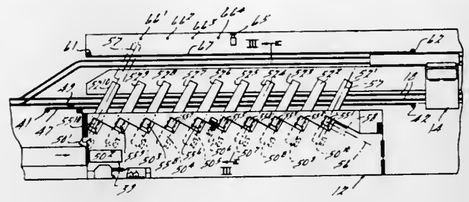


A frame pendulously attachable to the outlet end of a blower pipe or silage chute within a silo including a motor and gear box with a clutch arrangement therein so that a first generally horizontal plate is attachable to the motor for continuous rotation during energization of the motor and a second angularly disposed plate or deflection plate mounted above the generally horizontal plate for rotation during actuation of the clutch arrangement so that silage leaving the blower pipe is deflected onto the generally horizontal plate in substantially any desired direction. The entire pendulously mounted frame is adjustable relative to the end of the blower pipe so that silage can be distributed evenly throughout the entire silo.

3,640,410
WASTE-MATERIALS-HANDLING SYSTEM
Robert J. Pioch, Jackson, Mich., assignor to Kysor Industrial Corporation, Cadilla, Mich.
Filed June 30, 1969, Ser. No. 837,417
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 A **8 Claims**

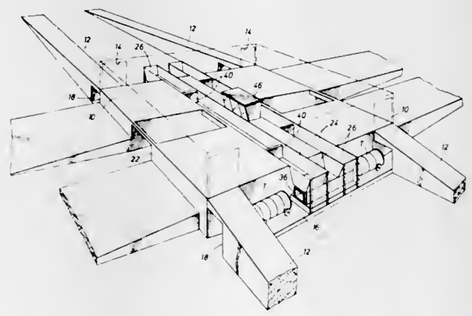
Apparatus for containerizing waste material under pressure in vans for hauling on railcars of the type having elevatable turntable-type van supports, and for loading and unloading the vans relatively to the railcars, includes a plurality of compactors spaced along and beside a rail siding on a raised platform. Another platform of the same height is on the opposite side of the siding track. The compactors work transversely of the track. The height of the platforms conforms to a raised position of the turntables so that each van can be turned,

when its turntable is raised, to a position such that the two ends of the van overlie the platforms. When the turntables are lowered the vans rest transversely on the platforms in bridging relation thereto, and the train is movable freely



under the bridging vans. Winches are used to move the train to align each van with its compactor, and to move loaded vans to another siding, as well as to move the train and vans at the disposal site. The vans when in the bridging position are closer together than when on the train.

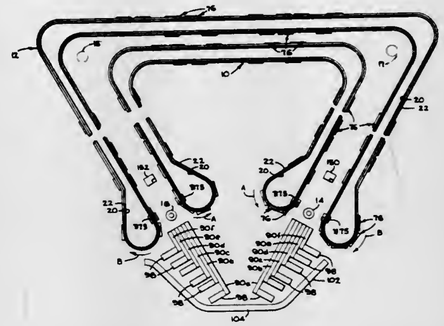
3,640,411
REFUSE DISPOSAL TRANSFER STATION
Orin M. Anderson, 1123 S.E. Military Drive, San Antonio, Tex.
Filed Mar. 23, 1970, Ser. No. 21,783
Int. Cl. B65g *67/04*
U.S. Cl. 214—41 **8 Claims**



A transfer station for the unloading of refuse from collection vehicles and the loading of the refuse into transfer vehicles for transportation to a final disposal location. The station has an unloading area at an upper level and a transfer vehicle loading area at a lower level, and the unloading area has open troughs positioned to receive refuse discharged from collection vehicles on the unloading area and means for moving the refuse in either direction along the troughs to hoppers into which the refuse may be moved and which are positioned to discharge the refuse downwardly into ram mechanism positioned to load the refuse into transfer vehicles located in the loading area.

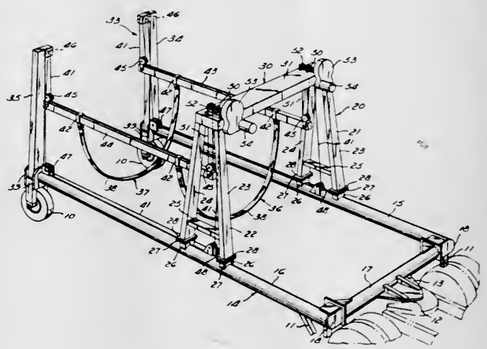
3,640,412
CONVEYOR SYSTEM
Robert J. Traube, San Mateo, Calif., assignor to FMC Corporation, San Jose, Calif.
Original application Aug. 21, 1968, Ser. No. 754,443. Divided and this application Nov. 17, 1969, Ser. No. 871,299
Int. Cl. B65g *37/00*
U.S. Cl. 214—152 **5 Claims**

A storage and retrieval system for goods has two power-operated conveyors movable in separate endless loops past two (or more) spaced-apart picking stations, each picking station common to both conveyors. Each conveyor has bins with compartments in which goods are stored. Although the bins on each conveyor remain in the same sequence, the bins are movable relative to each other on the conveyor to define "buffer" zones which permit simultaneous picking by two spaced-apart pickers. The control system for the conveyors includes a reader which receives digital data concerning a group of orders to be picked from a stack of cards, each card



giving the identity, quantity, and distribution of one of the articles to be picked. The two conveyors are automatically stopped alternately with the bins containing ordered goods at the picking stations, and the operator at each picking station picks goods from the bins in accordance with a readout unit which displays the card data. A plurality of packing lanes originate at each picking station and terminate at a plurality of packing stations. Each picker distributes goods to the separate packing lanes in accordance with the readout unit at the picking station.

3,640,413
BOAT CRANE
Carl Robert Klein, 403 Northwest Street, Bellevue, Ohio
Filed Dec. 29, 1969, Ser. No. 888,776
Int. Cl. B60p *3/10*
U.S. Cl. 214—396 **5 Claims**

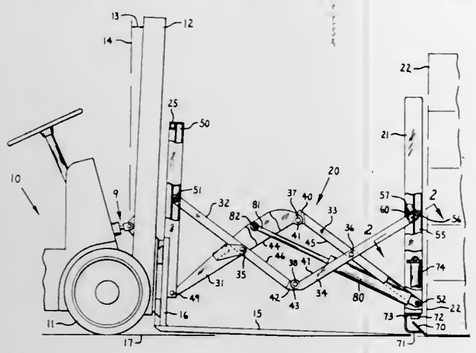


Straddle-type boat crane for lowering and lifting boats into and out of the water and for transporting them to and from the water. The crane includes fixed position forward and rear hoists, the latter being free of any fixed or movable transverse member and providing unlimited inside clear height at all times for ease and convenience in handling boats having high superstructures or tall spars.

3,640,414
PUSH-PULL ATTACHMENT FOR LIFT TRUCKS

Ronald A. Brudi, Longview, Wash., assignor to Brudi Equipment, Inc., Longview, Wash.

Filed Mar. 2, 1970, Ser. No. 15,385
Int. Cl. B60p 1/02
U.S. Cl. 214—514 6 Claims

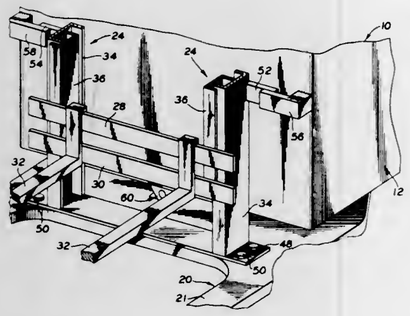


A novel lazy tongs has offset pivotal connections between the arms of the linkage allowing the arms to fold together compactly in vertical positions. The lazy tongs linkage actuates a push frame for pushing a load off the forks of the lift truck. An adjustable length connection between the upper forward arm and the push frame allows the upper end of the push frame to be tilted backward in extended position of the linkage so that the thrust may be applied principally at the bottom of the load. Since the adjustable length arm is vertical in retracted position, the push frame is always vertical in retracted position regardless of its tilt in extended position. The rearward tilt of the push frame in extended position is also advantageous in grasping sheetlike pallets to pull a pallet load onto the forks of the truck. The lower edge of the push frame may be equipped with pallet grippers for this purpose.

3,640,415
INDUSTRIAL VEHICLE

James A. Wahl, Langhorne, and Robert A. Nieminski, Philadelphia, both of Pa., assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed May 1, 1970, Ser. No. 33,611
Int. Cl. B65g 7/00
U.S. Cl. 214—672 3 Claims

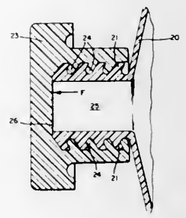


An industrial lift vehicle includes a driving portion and a load lifting portion. The load lifting portion includes a ground engaging outrigger which is pivotally connected to the driving portion about a horizontal axis. The load lifting portion includes a vertically extending mast structure mounted on the outrigger for pivotal movement therewith with respect to the driving portion. Means are provided on the driving portion and the mast structure for permitting articulation of the load mast and outrigger with respect to the driving portion about the horizontal axis while preventing movement of the mast structure with respect to the driving portion about another horizontal axis located transversely to the above horizontal axis.

3,640,416
REVERSE ANGLE THREAD SYSTEM FOR CONTAINERS

John J. Temple, 255 Kossuth Avenue, Milmont Park, Pa.

Filed Oct. 16, 1970, Ser. No. 81,279
Int. Cl. B65d 41/04
U.S. Cl. 215—43 7 Claims

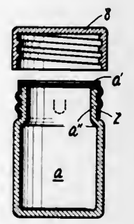


In a container for holding fluids having a neck portion through which the fluid is poured and a head portion, or cap which threadedly engages the neck portion, a thread system wherein the neck, or male threads are made of a relatively deformable plastic material, such male threads having a reverse downward angle and having parallel upper and lower edges, and the cap, or female member, being made of a harder less deformable material and having interengaging upward angled threads, the upward angle of the female member being greater than that of the male member such that upon threaded engagement the male threads hook within the female threads and are stressed into a strengthened engagement.

3,640,417
HEAT-SHRINKABLE SLEEVE FOR CLOSING A RECEPTACLE

Masao Sakurai, Yokohama City, Japan, assignor to Gilbreth International Corp., Philadelphia, Pa., a part interest

Filed Mar. 12, 1970, Ser. No. 11,762
Int. Cl. B65d 55/02
U.S. Cl. 215—83 7 Claims

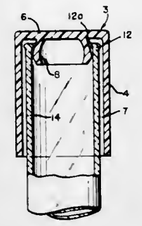


A closure for container which permits, when on display, the customer to look into and smell the products packaged therein and nevertheless prohibits him to touch the products directly with a finger. The container is sealed at its mouth portion by a flat, porous top member and has provided at the outer periphery of the container a U-shaped tongue for use in removing the entire closure when the container is to be opened.

3,640,418
THROWAWAY CLOSURE FOR TEST TUBE

Robert J. Williams, Dover, Ohio, assignor to Dover Molded Products Company, Dover, Ohio

Filed Apr. 6, 1970, Ser. No. 25,888
Int. Cl. B65d 41/22, 39/00
U.S. Cl. 215—41 1 Claim

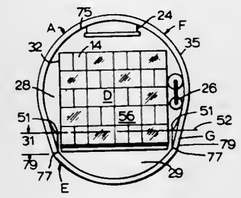


A disposable plastic closure cap for test tubes dimensioned to fit loosely over the exterior of the open end of a test tube, the cap having an annular plug extending down from the top of the cap to fit into the test tube snugly but not airtightly, the plug surface being in the form of two truncated cones having a common base and different conical angles.

3,640,419
APPARATUS FOR EXPANDING A CYLINDRICAL VACUUM COOLING CHAMBER

George W. Baker, P.O. Box 1756, El Centro, Calif.

Original application July 9, 1968, Ser. No. 743,447, now Patent No. 3,543,369, dated Nov. 24, 1970. Divided and this application July 20, 1970, Ser. No. 63,965
Int. Cl. B65d 7/04, 7/38, 7/44
U.S. Cl. 220—5 A 3 Claims



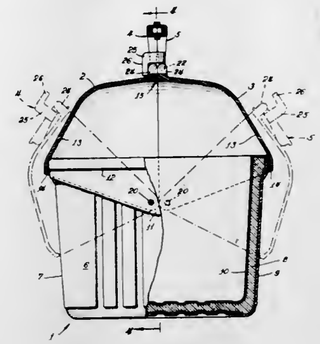
A method for converting and an apparatus comprising a cylindrical vacuum cooling chamber having an eccentric and increased overhead dimension. The cylinder as expanded provides substantially the strength of a cylindrical shell without elastic deformation of the cylinder or extensive piping reconnection during the expansion process.

3,640,420
COOLER CHEST

William R. Carter; Charles Jay Slaybaugh, both of Dallas, Tex., and Patrick M. Hodgins, Holdenville, Okla., assignors to Edward Kelley Corporation, Houston, Tex.

Filed Dec. 19, 1969, Ser. No. 886,545
Int. Cl. B65d 25/18
U.S. Cl. 220—9 R 6 Claims

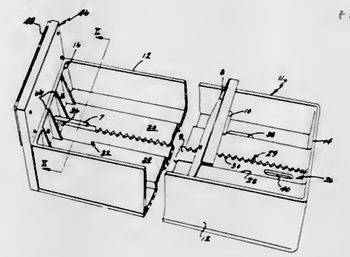
The cover of a portable, thermally insulated container consists of two identical parts which dovetail together and engage the container to seal it shut. Each cover part is pivoted at its ends to the container to swing outwardly away from each other to give full access to the container. A carrying handle also consists of two identical parts, each pivotally mounted upon a cover half to draw and lock these parts together when the two handle members are drawn together to form the handle.



3,640,421
DRAWER CONSTRUCTION FOR CARD FILES AND THE LIKE

Edward M. Conway, and Daniel E. Conway, both of Grand Rapids, Mich., assignors to Conway-Cleveland Corporation, Grand Rapids, Mich.

Filed June 12, 1969, Ser. No. 832,563
Int. Cl. B65d 1/24, 1/36, 7/42
U.S. Cl. 220—22.3 13 Claims



A card file drawer assembly formed of an integrally molded shell with a front panel structurally secured to the outer face of the front wall thereof. The shell has an undulated bottom forming drawer slide tracks, card supporting slide tracks and a guide track groove for a card compactor means, and also defines card stop ribs on the inner face of its front wall. The compactor means groove is closed on its sides and bottom and open at the top, with two horizontal rails projecting from the sides of the groove to partially hood the top thereof.

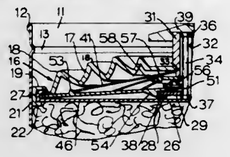
3,640,422
RESEALING CLOSURE FOR CANS AND THE LIKE

Jonas C. Harschel, 8 Maripasa Court, Burlingame, Calif.

Filed Mar. 9, 1970, Ser. No. 17,375
Int. Cl. B65d 39/12
U.S. Cl. 220—24.5 7 Claims

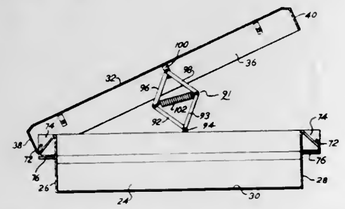
A closure to fit cans to reseal same when the contents have been partially removed. Top and bottom radially stretchable diaphragms enclose top and bottom flexible disks. Top flexible conical member is depressed by a handle and has means cooperating with means on the bottom flexible conical member to first radially expand the latter and then to lock

the same in expanded condition so as to force the edges of the diaphragms into sealing engagement with the can wall.



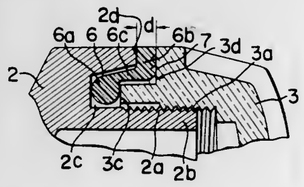
Pulling the handle upward disengages the flexible members from each other and permits the parts to assume collapsed condition out of sealing contact with the can wall.

3,640,423
TOOLBOX FOR PICKUP TRUCK
Shirley L. Parker, Warsaw, and John D. Rohrer, North Manchester, both of Ind., assignors to Parker Industries, Inc., Silver Lake, Ind.
Filed July 1, 1970, Ser. No. 51,599
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 R **8 Claims**



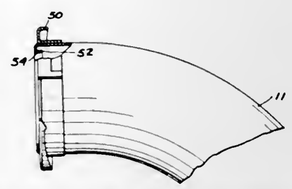
A toolbox for mounting across the bed of a pickup truck, the box having an elongated rectangular body and a cover, and a latch means at each end of the cover for releasably securing the cover to the body. Either of the two latch means can be released, thereby permitting the respective end to be raised while the other latch means functions as a pivot for the cover. A yieldable support is included near the longitudinal center of the body, to support the cover in an elevated position when the box is open. A single operating means is included at each end of the cover for operating the latch means which automatically locks when the end of the cover is lowered to closed position.

3,640,424
SEALING FOR UNDERWATER CAMERA HOUSING
Sadanao Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 23, 1970, Ser. No. 22,073
Claims priority, application Japan, Mar. 24, 1969, 44/26416
Int. Cl. F16j *9/00;* **F16k** *41/00*
U.S. Cl. 220—46 R **2 Claims**



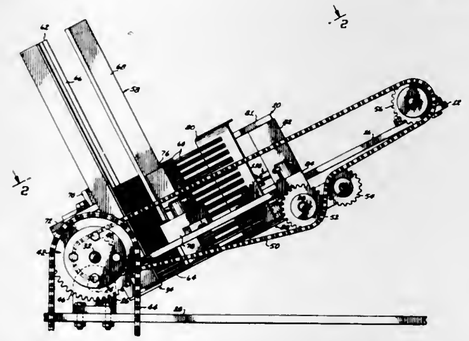
Sealing is provided for sealing both of the water and sand for underwater camera housing so as to prevent the wear and abrasion of the packing and screw threads by the sand. A packing consisting of a main body, a flange and an intermediate bridge portion therebetween, all formed integrally, is used. Watertightness is achieved mainly by the main body which is fitted in an annular groove formed around the base of an externally threaded cylindrical portion of the casing encasing therein a camera and compressed by the end face of an inwardly extending, internally threaded cylindrical portion of a cover having an optical window. Watertightness and sandtightness are achieved by the flange portion of the packing which is interposed between the end faces of the flanges of the casing and cover.

3,640,425
FILLER TUBE CONSTRUCTION FOR GASOLINE TANK
Louis J. Auer, 3111 Northeast 51st Street, Apt. 404, Fort Lauderdale, Fla.
Original application July 5, 1968, Ser. No. 742,560, now Patent No. 3,506,155. Divided and this application Jan. 23, 1970, Ser. No. 5,251
Int. Cl. B65d *41/00*
U.S. Cl. 220—86 R **4 Claims**



The specification discloses a tank for inflammable liquids, such as a gasoline tank for a motor vehicle, having filler tube including an improved construction of its upper end receiving the sealing cap. The disclosed construction provides a tight sealing joint between the tube and the cap and eliminates some serious disadvantages of the prior construction. The filler tube end is made in two pieces in order to eliminate the difficulties of producing the desired construction by stamping due to substantial length of the tube. At the same time the disclosed construction eliminates a passage in the juncture of the two pieces leading from the inside of the sealed space within the tube to the outside thereof and some other disadvantages known to have created serious difficulties and having safety implications. The construction possesses a number of additional advantages by virtue of having the cam plate thereof disposed on the outside of the filler tube sealing edge.

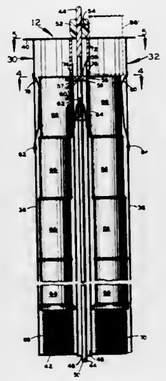
3,640,426
DEVICE FOR SEQUENTIALLY DISPENSING SETS OF SHEETS
Marvin H. Hammer, 1724 West Mulberry Drive, Phoenix, Ariz.
Filed Nov. 12, 1970, Ser. No. 88,578
Int. Cl. B65g *59/06;* **B65n** *3/30*
U.S. Cl. 221—67 **8 Claims**



A collating feeder for sequentially dispensing individual sets of sheets from a stack of crisscrossed sets. The stack is supported by two alternatively operative escapement means

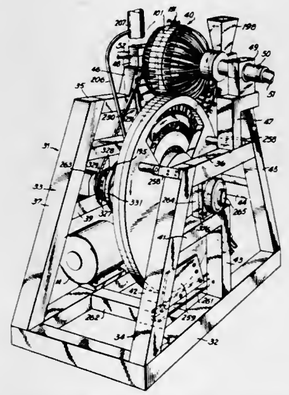
that oscillate into engagement with alternate sets to dispense the sets sequentially.

3,640,427
PLURAL STACK DISPENSER HAVING COMMON ACTUATION FOR STACKS
Bruce F. House, Miami, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.
Filed Sept. 22, 1970, Ser. No. 74,417
Int. Cl. B65g *59/02*
U.S. Cl. 221—127 **10 Claims**



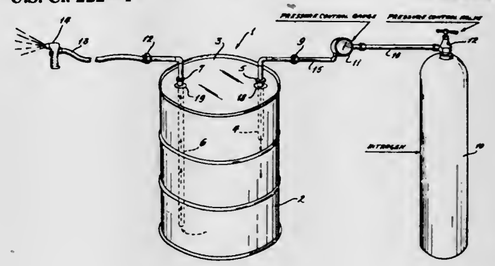
Beverage containers are dispensed selectively from a plurality of dispensing receptacles by actuation of a single actuator which is common to all of the receptacles. Each receptacle has a mouth at the top thereof and a stop spaced below the mouth less than the height of a container. Resilient means urges a stack of containers upwardly in each of the receptacles against the stop therein. The common actuator is selectively engageable with the uppermost container in each of the receptacles to disengage that container from its stop. The stack then moves upward to engage the next container in the stack with the stop. Thus, a single actuator serves all of the dispensing receptacles in a group.

3,640,428
SEED-CONTAINING PELLET-DISPENSING EQUIPMENT
Philip B. Knapp, Lynbrook, N.Y., assignor to Aptek Industries, Inc., Lynbrook, N.Y.
Filed Sept. 4, 1969, Ser. No. 855,289
Int. Cl. B23a *7/04*
U.S. Cl. 221—211 **19 Claims**



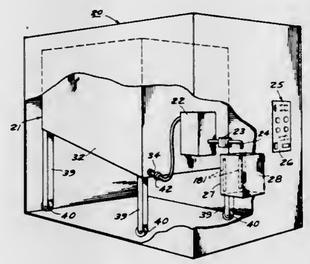
A seed-containing pellet-forming equipment for automatically removing a single seed at a time from a mass of seeds and depositing such seed into a mold cavity which previously had been loaded with a charge of pellet-forming material and after the seed is deposited onto such charge, loading a second charge of such material into the cavity and then compressing the contents of the cavity to form such pellet.

3,640,429
METHOD OF DISPENSING AN INDUSTRIAL SPRAY USING BOTH A PROPELLANT-DISPERSANT AND GAS PRESSURE
Carl N. Campbell, Kirkwood, Mo., assignor to Camie Company, Inc., St. Louis, Mo.
Filed Oct. 12, 1967, Ser. No. 674,916
Int. Cl. B67b *7/00*
U.S. Cl. 222—1 **4 Claims**



A bulk lot of silicone fluid, precharged with Freon or Genetron 11, contained in a storage drum. At the site of use a nitrogen tank and a spray nozzle are connected to fittings through the drum head.

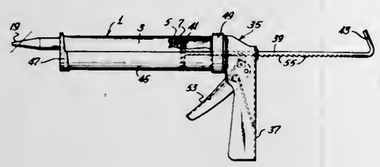
3,640,430
BULK DISPENSING SYSTEM
James Gordon Roberts, Omaha, Nebr., assignor to Roberts Dairy Company, Omaha, Nebr.
Filed July 22, 1969, Ser. No. 843,649
Int. Cl. G01g *17/04*
U.S. Cl. 222—1 **50 Claims**



The bulk dispensing system serves to dispense metered amounts of one or more refrigerated or nonrefrigerated products in either individual consumer or commercial consumer amounts. In one embodiment, the system dispenses food products and includes a bulk container of 50 to 250 gallon capacity mounted in portable or stationary manner within a refrigerated cabinet. The bulk container detachably connects to a metering mechanism and to a dispensing mechanism so that predetermined amounts of food product can be dispensed. The metering and dispensing mechanisms can be operated automatically by a coin operating mechanism or by manual means. The system can be employed with onsite cabinets, or mobile units and may or may not be refrigerated. The system is maintained under sanitary conditions at all times and can either dispense one product or

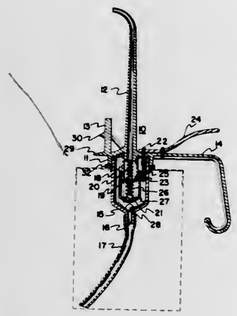
a selected one of a number of different products directly into a container supplied by the consumer or can be dispensed into a container supplied by the system. In the latter case, the system can also dispense filled containers of all types for removal by a consumer. Specially selected inert gas atmospheres can be used in assisting in the dispensing as well as the presentation of the product.

3,640,431
SHUTOFF NOZZLE FOR CAULKING CARTRIDGE
Lawrence H. Plumer, Rutland, Vt., assignor to Rutland Fire Clay Company, Rutland, Vt.
Filed Apr. 13, 1970, Ser. No. 27,537
Int. Cl. G01f *11/06*
U.S. Cl. 222—48 **6 Claims**



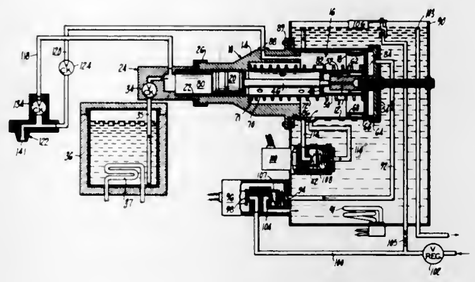
The caulking cartridge includes an end closure disc fixed in place at one end of the cylindrical body of the cartridge. The shutoff discharge nozzle comprises a circular base or flange portion seated against the end closure disc and rotatably mounted relative thereto. The dispensing opening formed in the closure disc and the discharge passage in the nozzle, which are radially offset with respect to the axis of rotation of the nozzle by substantially the same distance, may be aligned to permit dispensing of the material or nonaligned to prevent dispensing and drooling of the material upon rotation of the cartridge body relative to the discharge nozzle without removing the cartridge from the caulking gun.

3,640,432
CAN-MOUNTED PUMP DEVICE
Mike L. G. Cowley, P. O. Box 208, Coeur D'Alene, Idaho
Filed Mar. 23, 1970, Ser. No. 21,739
Int. Cl. B67b *7/26*
U.S. Cl. 222—82 **3 Claims**



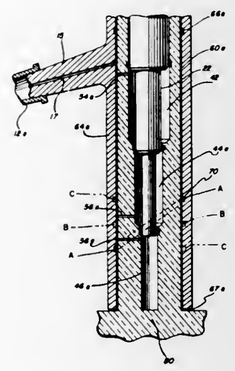
The can-mounted pump device comprises a housing including a hand pump assembly, a spout for dispensing viscous lubricants, and cutter means carried by the housing operable to cut a opening in a can container package, the opening being operable to receive the can-mounted pump device of the present invention.

3,640,433
BEVERAGE DISPENSER FOR METERING A PLURALITY OF LIQUIDS
Joseph J. Rodth, Swansea, Mass., assignor to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of application Ser. No. 681,219, Nov. 7, 1967, now abandoned. This application July 11, 1969, Ser. No. 842,793
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.2 **39 Claims**



Apparatus including a plurality of coaxial pistons reciprocable in unison in a chamber of a pump body for simultaneously admitting different fluids to and discharging them from the chamber, the pistons defining fluid-metering compartments and an operating compartment in the chamber, means for supplying fluids to the chamber including a tank for one of the fluids, and supply and return means including a conduit in permanently open communication with the operating compartment for alternatively supplying said one fluid in raw condition thereto for operating the pistons and for returning said one fluid when spent to the tank to be conditioned for subsequent discharge.

3,640,434
VARIABLE CAPACITY FLUID-DISPENSING DEVICE
Clarence L. Walker, Webster Groves, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed May 15, 1970, Ser. No. 37,809
Int. Cl. B67d *5/02*
U.S. Cl. 222—144.5 **19 Claims**

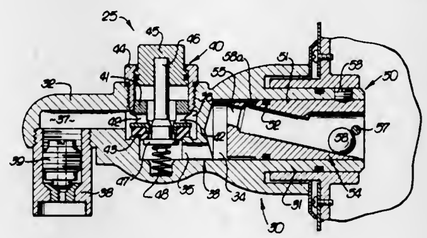


A pipette or other device for measuring and dispensing liquids which includes an aligned series of decreasing diameter, stepped cylinder chambers, e.g., three, contained in a barrel with the three chambers serviced by a common stepped piston for emptying and filling a receiver or reservoir

carried by the device in communication with the chambers. A chamber at one end of the array is maintained in unobstructed flow communication with the receiver or reservoir which may or may not be a removable tip or nozzle on the device. A vented passageway communicates with vent ports from each chamber. A valving member is provided in the passage for selectively venting one or more of the chambers or connecting them in flow communication with the receiver or reservoir.

In a specific form, the passageway can be formed between the barrel and a sleeve or collar surrounding the barrel which is rotationally slidable on the barrel. The valving member can be in the form of an elliptical ring on the inner surface of the sleeve or collar in sealing sliding engagement with the barrel outer surface, the ports of two of the other chambers falling between the longitudinal extents of the elliptical ring; and the center of the elliptical ring being located between the two ports. Rotation of the sleeve to a position placing the ring between the port vents one port while placing the other in flow communication with the nozzle, and rotation of the sleeve 90° one way or the other vents both ports or places both in flow communication with the nozzle to increase or decrease the liquid handling capacity of the device depending on the direction of rotation.

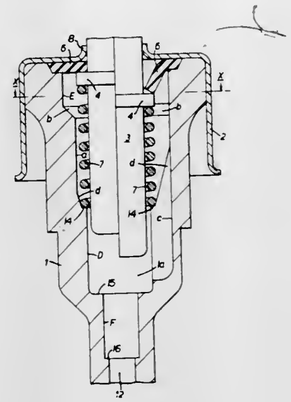
3,640,435
SOAP-DISPENSING METERING PRESSURE VALVE
Earl L. Morris, 1501 North Cloister Road, Whittier, Calif.
Filed Apr. 29, 1970, Ser. No. 32,985
Int. Cl. G01f *11/36*
U.S. Cl. 222—335 **2 Claims**



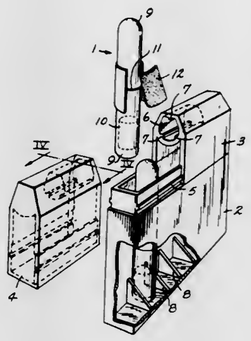
In a pressurized soap-dispensing system, a metering valve having a valve body including an inlet to be connected to a soap supply line and a forward outlet end for discharge of the soap and a fluid duct therebetween, a pushbutton-type valve mechanism carried by the body for selectively opening and closing the fluid duct, and a metering device for controlling the amount of soap discharged from the valve when the pushbutton is depressed including an inclined fluid passage in communication with the fluid duct and having a reduced area opening at its forward end and a stop pin at its rearward lower end, and a closure element in the inclined passage movable in response to dynamic soap pressure when the valve is opened so as to close the reduced area opening after a metered amount of soap is discharged.

3,640,436
AEROSOL VALVE FOR USE IN HIGH-RATE PRESSURE FILLING OF A CONTAINER
Frederick James Gallagher, 89, Balmoral Drive, Hayes Middlesex, England
Filed Jan. 14, 1970, Ser. No. 2,716
Claims priority, application Great Britain, Jan. 17, 1969, 2,915/69
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.24 **3 Claims**

An aerosol valve has a housing with a main flow passage at its inner end and an annular seal at its outer end. A valve stem extends through the seal and is movable inwards against a coil spring to open the valve in normal use, and to permit pressure filling by inward deflection of the seal. The internal cross section of the housing over a substantial part of its length is square and flow channels extend from corners of the square through the housing around the outside of the coil spring. Specific characteristics of the seal and spring are stated.

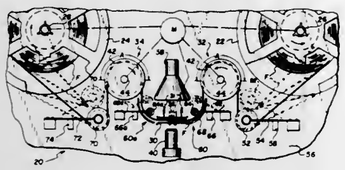


3,640,437
PACKAGE FOR AMPOULES CONTAINING LYOPHILIZED PRODUCTS
Michel Galy, Lyon, France, assignor to Societe Anonyme dite: Institut Merieux, Lyon, France
Filed Dec. 29, 1969, Ser. No. 888,370
Claims priority, application France, Dec. 27, 1969, 180,929
Int. Cl. B26f *3/00*
U.S. Cl. 225—96.5 **5 Claims**



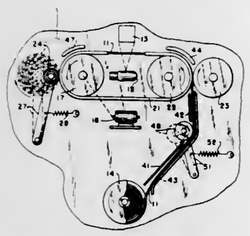
A package for ampuls containing lyophilized products comprising a box adaptable to contain a plurality of the ampuls and formed of at least two assemblable elements, two of which each have an internal orifice for engaging an end of the ampul over a certain length thereof so as to allow breaking of the ampul by grasping one element in each hand.

3,640,438
WEB-HANDLING APPARATUS
John E. Morse, and Norman J. Rosenburgh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,431
Int. Cl. B65h *23/26;* **G11b** *15/28*
U.S. Cl. 226—25 **25 Claims**



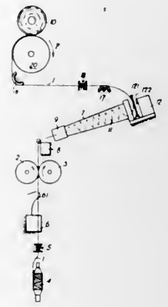
Web-handling apparatus has a web drive member for advancing the web past a particular station, such as a film gate of a motion picture projector, a transducer of a magnetic tape transport apparatus, etc. A pair of capstan members for driving the web are symmetrically mounted along a web path at opposite sides of the drive member. Both capstan members are driven simultaneously in a direction for advancing the web toward the drive member, and they are both driven at a speed that exceeds the normal maximum speed or velocity that can be imparted to the web by the drive member so that slippage continuously occurs between the web and the capstan members. The web-handling apparatus can maintain static and dynamic tensions and tension variations in the web adjacent the web drive members at very low levels, thereby avoiding forces that tend to create web damage and avoiding undesired movement of the web at the station that can produce unsatisfactory reproduction of images or other record information on the web. Various embodiments of the capstan devices are disclosed.

3,640,439
DEVICE FOR ADVANCING AN ENDLESS WEB OF FLEXIBLE STRIP MATERIAL
Lynn A. Selke, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 6, 1970, Ser. No. 9,173
Int. Cl. B65h *23/18*
U.S. Cl. 226—32 **9 Claims**



An advance mechanism for an endless web of flexible strip material utilizes a flexible, transparent carrier belt having a web-receiving channel therein. The web is trapped in the channel and is supported by the belt as it is moved thereby through the transducer area. A circuit for controlling the belt advance, and thereby the web advance, includes a differential optical detector for observing the position of a reference mark on the web after the web has been advanced. Deviation from the desired position of the mark causes the generation of an error signal which in one embodiment actuates the advance mechanism to correct the error. In another embodiment, the error signal is used to cause the following advance step to be either greater or lesser than normal depending upon the direction of deviation.

3,640,440
PNEUMATIC CIRCUIT FOR CONTROLLING THE FEEDING OF YARN INTO A YARN MAGAZINE
Jaroslav Sedlarik; Jiri Havlas, and Premysl Kostelecky, all of Liberec, Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstvi, Liberec, Czechoslovakia
Filed Apr. 17, 1970, Ser. No. 29,539
Claims priority, application Czechoslovakia, Apr. 25, 1969, 2933-69
Int. Cl. B65h *23/18*
U.S. Cl. 226—34 **10 Claims**

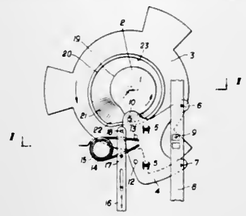


A pneumatic system for the control of the feeding of yarn into a magazine in textile machines, such as yarn-winding machines. The system functions exclusively by the use of pneumatic power; in one disclosed embodiment yarn fed from a source of supply by driven feed rollers passes under tension to a yarn magazine, and thence from the magazine to a yarn-winding device. Pneumatic sensors are provided for detecting (1) a failure of tension in the yarn between the feeding rollers and the magazine, and (2) the condition wherein the magazine is full of yarn. Pneumologic means, into which impulses from the two sensors are directed, controls a pneumatic power means for stopping the feeding of yarn by the feeding rollers upon the presence of either one or both conditions (1) and (2).

In another disclosed embodiment, the pneumatic power means is under the control of only a pneumatic sensor which detects a failure of tension in the yarn between the feeding rollers and the magazine.

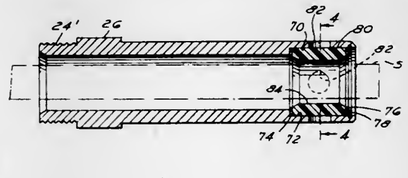
3,640,441
INTERMITTENT DRIVE MECHANISM FOR CINEMATOGRAPHIC APPARATUS
Eduard Keznickl, Vienna, Australia, assignor to Karl Vockenhuber and Raimund Hauser, Vienna, Austria
Filed Oct. 21, 1969, Ser. No. 868,073
Claims priority, application Austria, Oct. 23, 1968, A 10358/68
Int. Cl. G03b *1/22*
U.S. Cl. 226—49 **10 Claims**

An intermittent drive means for a cinematographic apparatus which is adapted to be used with perforated film. The intermittent drive means includes claw means adapted to engage and disengage the perforation holes of the film and to transport the same. A pair of cam means is rotatable about an axis in a single direction and has first and second cam surfaces. First and second cam follower means are connected with the claw means, and the first cam surfaces are adapted to impart forward film transporting motion to the claw means. The second cam surfaces are adapted to move the claw means periodically in perforation engaging and disengaging position. Third cam means are coaxial to the cam means having first cam surfaces. The third cam means are adapted to impart reverse film transporting motion to the claw means and have third cam surfaces symmetrically to the



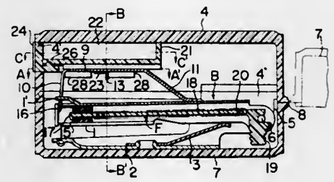
first cam surfaces with respect to a fictive surface being coaxial to the cam means. Transporting direction changing means are connected with the first cam follower means and are adapted to control the same for alternative cooperation with the first and the third cam surfaces, respectively.

3,640,442
STOCK PUSHER
Gilbert T. Lyon, 22501 Rio Vista, St. Clair Shores, Mich.
Filed Mar. 16, 1970, Ser. No. 19,818
Int. Cl. B65h *17/34*
U.S. Cl. 226—158 **7 Claims**



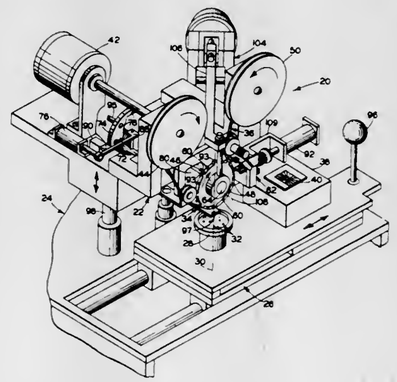
This disclosure relates to a stock pusher for use in automatic screw machines or the like and includes a urethane rubber body having a passageway therethrough for grippingly engaging the stock to be pushed. The urethane body may be either permanently or removably secured in the pusher shell at the end of the stock feed tube.

3,640,443
STAPLER
Kenichi Itagaki, Takasaki-shi, Japan, assignor to Max Corporation, Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,664
Claims priority, application Japan, Dec. 26, 1968, 43/94992
Int. Cl. B25c *5/02*
U.S. Cl. 227—120 **9 Claims**



A portable stapling apparatus having a closable housing which includes upper and lower cover members hingedly connected adjacent one end of the housing, which cover members when in a closed position define a closed chamber in which is positioned a stapling means. The stapling means includes a staple holding magazine and a staple base portion disposed for relative pivotal movement toward one another to permit a staple to be inserted into a selected article. The staple magazine and the base portion are each pivotally connected to the upper cover member whereby the magazine and base portion are pivotal relative to both the upper and lower cover members. A resilient pressing and driving mechanism is disposed between the upper cover and the magazine for permitting ejection of the endmost staple in the magazine. Further, a removable cartridge means is mounted in the upper cover for storing therein a plurality of spare staples.

3,640,444
APPARATUS FOR COMPLIANT BONDING
David P. Ludwig, Whitehall, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,259
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **12 Claims**



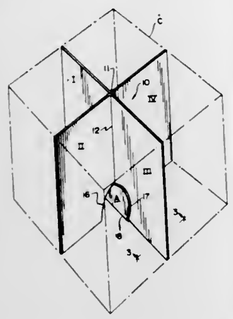
Compliant bonding of beam-lead devices such as integrated circuit chips is accomplished by engaging successive ones of the chips with successive portions of an apertured strip of a compliant bonding medium and bonding the chips to successive portions of substrates. A bonding head travels along a bonding axis both to pick up a chip from a tray and later to bond the chip to a substrate. After each bonding stroke a spent portion of the strip is removed from the bonding axis and a fresh portion is introduced onto the axis for the next bond.

In one illustrative embodiment the bonding head is in the form of a rotatable turret having a number of equally spaced tips projecting radially and outwardly therefrom. The strip is threaded around a portion of the circumference of the turret-like head. After each bond, the head is rotated until a different one of the tips and its associated portion of compliant strip are aligned with the bonding axis. Reels are provided to continuously supply and takeup the strip as progressive rotation of the head occurs. Each bond is thus made with an unspent portion of compliant bonding strip.

3,640,445
PARTITION DIVIDER
Robert E. Durham, Fort Worth, Tex., assignor to Container Corporation of America, Chicago, Ill.
Filed Sept. 22, 1969, Ser. No. 859,955
Int. Cl. B65d *25/04, 5/48*
U.S. Cl. 229—15 **2 Claims**

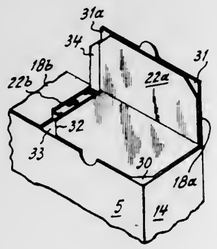
A partition structure for dividing a receptacle into a plurality of separate compartments. The structure is formed

from a cut and scored blank having a pair of interrupted foldlines extending along a common axis and a pair of interrupted slits extending laterally thereof to divide the blank into four quadrants defining partition members. A slit connects each of the aforementioned slits with a correlative one of the foldlines to define an area in the blank at the midportions thereof. Diagonally disposed quadrants are folded about



the interrupted foldlines to a position normal to the plane of the remaining quadrants, and are rotatable into position about a foldline extending along an axis coextensive with an axis passing through the laterally extending interrupted slits in sliding contact with each other to define a cruciform. By reason of the configuration of the area at the midportion of the blank, the rotatable quadrants are locked into position so as to maintain the structural integrity of the cruciform.

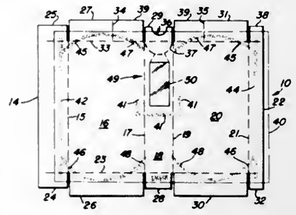
3,640,446
CARTON WITH TUCK-IN CLOSURE FLAP
Harold R. Grieve, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sept. 26, 1969, Ser. No. 861,253
Int. Cl. B65d *5/54*
U.S. Cl. 229—17 R **8 Claims**



The inner top closure flap of a rectangular carton is scored to permit easy opening, at least a portion of the inner flap remaining intact to constitute a lip beneath which a corresponding portion of the outer closure flap may be tucked to retain the flaps in reclosed position.

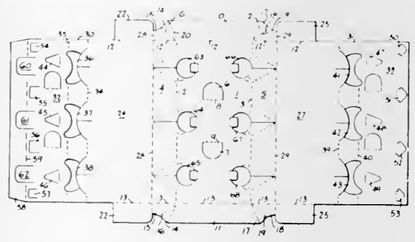
3,640,447
CARTON WITH SEPARATE INTERIOR POCKET
Hampton E. Forbes, Jr., Wilmington, and Lawrence J. La Freniere, Newark, both of Del., assignors to Westvaco Corporation, New York, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,593
Int. Cl. B65d *5/56, 5/72, 77/28*
U.S. Cl. 229—17 R **2 Claims**

A carton structure formed from a single blank of paperboard and including a film element adhered to the inside surfaces of one or more panels of said carton to form an interiorly positioned pocket between the film element and the carton panel for retaining a secondary item or the like isolated



from the primary product in said carton but which is accessible through an access panel formed in one of the panels of said carton without disturbing the primary contents of the carton.

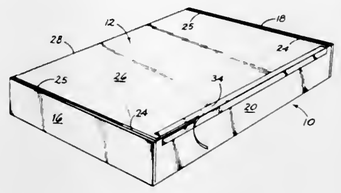
3,640,448
BOTTLE CARRIER
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation
Filed Oct. 23, 1970, Ser. No. 83,427
Int. Cl. B65d *5/02, 71/00*
U.S. Cl. 229—40 **9 Claims**



A blank for forming a wraparound-type bottle carrier is provided with apertures for receiving the necks of packaged bottles, the apertures being disposed so as to hold the bottles in spaced-apart relationship and the apertures being constructed so as to facilitate entry of the bottle necks therein so as to grip the bottle necks after insertion into the apertures. In order to insert the bottle necks and subsequently to form the package, the bottles are arranged in two rows to form a group and the blank is placed thereabove with its ends in transverse disposition with respect to the rows of bottles. The ends are then bowed upwardly to facilitate inserting the bottle necks into the apertures. Thereafter the bottle carrier blank ends are folded downwardly and secured together underneath the bottles, the downward folding of the ends of the blank being effective to force web structures defining a part of the edge of each aperture into snug gripping relationship with the associated bottle neck.

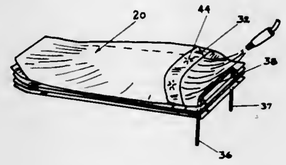
3,640,449
TRAY-FORMING CARTON
Donald Lee Bastian, Beaverton, Oreg., assignor to Western Kraft Corporation, Portland, Oreg.
Filed Dec. 24, 1969, Ser. No. 887,880
Int. Cl. B65d *5/54*
U.S. Cl. 229—44 **4 Claims**

A tray-forming carton comprises a folded sheet of stiff paperboard. It includes a bottom having side and end walls, and a top comprising an integral section of the sheet hinged through a fold line at one end to one of the walls of the bottom. A perforated tear line extends across the top, adjacent the fold line. The free end of the top-forming sheet section meets the opposite bottom wall, to which it is secured by



releasable securing means such as tear tape. The resulting closed carton may be converted to a tray by releasing the securing means and tearing off the top along the perforated tear line.

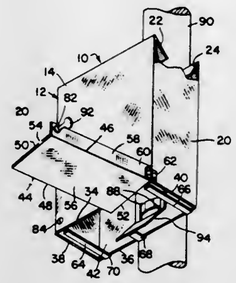
3,640,450
WICKET BAGS
Abraham Buddy Lieberman, 4755 Boulevard des Grandes Prairies, St. Leonard, Montreal 457, Quebec, Canada
Filed Feb. 9, 1970, Ser. No. 9,626
Int. Cl. B65d *33/00*
U.S. Cl. 229—53 **2 Claims**



The invention refers to wicket bags in which each bag is made from any suitable flexible material, such as polyethylene, polypropylene or other equivalent materials, and has two vertical closed sides and a bottom closed side and leaving an open mouth forming the fourth side. The rear and front walls of the bags are of equal lengths and have their vertical edges heat-sealed for the greater extent of their lengths, thus forming closed vertical sides, and leaving the vertical edges of the upper portions of the rear and front walls freely independent from one another so as to form the open mouth of the bag. The upper portion of the front wall thus becomes a free transverse portion, which is capable of being folded in a downward direction on the exterior surface of its front wall to form a lip, and leaving the upper portion of the rear wall exposed and which is provided with apertures located adjacent to its top edge for engagement by the legs or posts of a wicket. When the bag is filled with the required items, it is removed from the wicket, and the position of the folded lip is then changed and extended in an opposite direction so as to cause the front wall to be of equal length to the length of the rear wall. The open mouth of the bag is then suitably closed and tied.

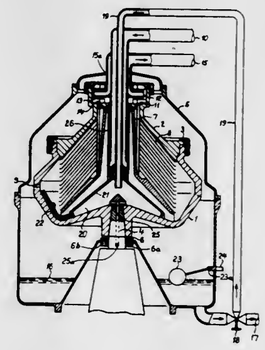
3,640,451
RECEPTACLE DEVICE
Linford H. Lewis, 3408 Ashville Street, Philadelphia, Pa.
Filed Aug. 6, 1969, Ser. No. 848,018
Int. Cl. B65f *1/00*
U.S. Cl. 232—43.1 **7 Claims**

A receptacle device comprising a body providing a chamber for storing refuse therein, an opening at the top of said body for receiving refuse into the chamber of said body, an opening at its bottom for removal of refuse from the chamber of said body, and a bottom member hingedly secured with the body for pivotal movement between a first closed terminal position and a second open terminal position, said member enclosing the opening in the bottom of said body when it is in its closed terminal position for retaining refuse in the chamber of said body, and exposing the opening



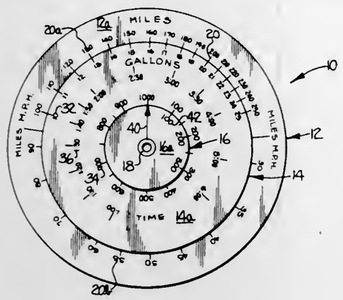
in the bottom of said body for allowing the removal of the refuse stored in the chamber of said body through said opening in its body when in its open terminal position, and including a plurality of elements at its bottom for engaging said member and guiding and positioning same as it is pivotally moved between its terminal positions.

3,640,452
CENTRIFUGAL SEPARATOR
Henric Wilhelm Thylefors, Stockholm, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Oct. 13, 1969, Ser. No. 865,798
Claims priority, application Sweden, Oct. 14, 1968, 13806/68
Int. Cl. B01d *21/26, 43/00;* **B04b** *11/00*
U.S. Cl. 233—1 **4 Claims**



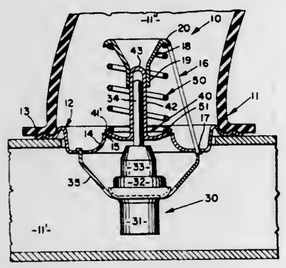
A liquid component separated in a centrifugal rotor is thrown therefrom into a surrounding housing where the level of the liquid component is controlled by an element responsive to changes in such level and operable to regulate the supply of a superatmospheric pressure gas to the interior of the housing, the latter having a bottom outlet for discharging the liquid component and which is subjected to a counterpressure.

3,640,453
PORTABLE COMPUTER
James J. Caillouet, Raleigh, N.C., assignor to American Imagination Corp., Raleigh, N.C.
Filed Nov. 10, 1969, Ser. No. 875,210
Int. Cl. G04f 7/04
U.S. Cl. 235—78 14 Claims



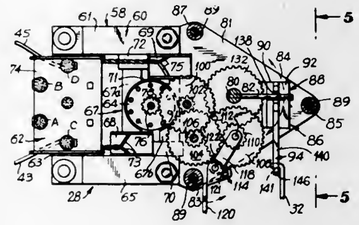
A portable computer comprising a planar base member having a circular, logarithmically spaced scale thereon indicative of a first value and having an opening disposed therethrough, a circular disc rotatably mounted in superimposed relation on the base member and having a logarithmically spaced scale disposed on a front face thereof which is indicative of a second value. The circular disc also has a logarithmically spaced scale on the back face thereof in alignment with the opening through the base member and being indicative of a third value which is the quotient of the first and second values so that when the circular disc is rotated relative to the base member with a predetermined first value aligned with a predetermined second value, then the resulting third value will be aligned in the opening in the base member. Preferably, the computer also includes an additional logarithmically spaced scale and an equally spaced scale on the circular disc member and also includes a second circular disc member having a fixed indicator means and an equally spaced scale thereon for cooperating with the first disc member to compute additional values. The portable computer may be specifically constructed for use by a motorist and the above scales include units indicating various motorist's values.

3,640,454
FORWARD POPPET THERMOSTAT
John S. Freismuth, Arlington Heights, Ill., and Nello L. Benedetti, deceased, late of Mt. Prospect, Ill. (by Lena Benedetti, executor, Mount Prospect, Ill.), assignors to Eaton Yale & Towne Inc., by said Freismuth
Filed July 24, 1970, Ser. No. 58,007
Int. Cl. Folp 7/16
U.S. Cl. 236—34 3 Claims



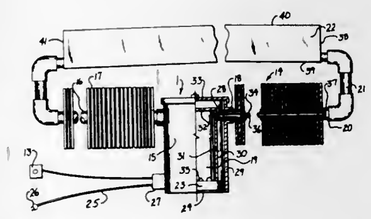
A thermostatic valve to be mounted in the coolant system of an internal combustion engine to control the flow of fluid through the system. A thermostatic valve of the forward poppet-type in which a single poppet cooperating with a single valve seating surface is independently responsive to both temperature and pressure for controlling the flow of fluid through said valve. The poppet is slidably engaged with the extending thermal element and spring biased into a seated or closed position. The poppet will unseat, or open, in response to an extension of the thermal element or, totally independently of the thermal element, will unseat in response to an upstream pressure sufficient to overcome the spring bias.

3,640,455
AIR TEMPERATURE CONTROL SYSTEM
Pat Romanelli, Harrington Park, N.J., assignor to Ram Domestic Products Company, Northvale, N.J.
Filed Feb. 6, 1970, Ser. No. 9,339
Int. Cl. F24f 7/04
U.S. Cl. 236—49 3 Claims



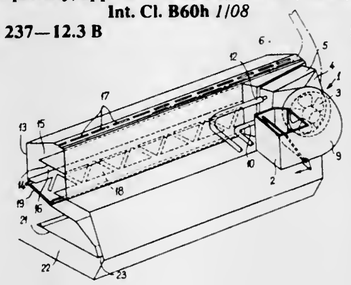
A multizone room air temperature control system comprises a thermostatically controlled louvered vent unit fitted to the mouth of the preexisting air duct register of the heating and air-conditioning system, in each room whose temperature is to be controlled. A continuously energized reversible shaded pole motor connected to the thermostat automatically opens and closes the vent louvres in response to room air temperature changes to thereby introduce or shut off the supply of either warm or cold air into the room for regulating the room air temperature independently of the other rooms.

3,640,456
SELF-CONTAINED STEAM HEATING UNIT
Clifford M. Sturgis, 1213 Westmoreland, Colorado Springs, Colo.
Filed June 25, 1970, Ser. No. 49,595
Int. Cl. F24h 3/08
U.S. Cl. 237—7 9 Claims



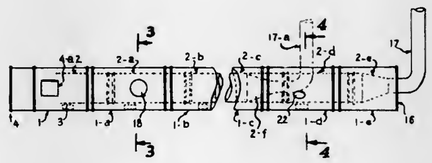
The invention is in a self-contained steam heating unit for heating an area or room, said unit being self-contained and not requiring any permanent connection or attachment to a liquid or heat source. The heating unit is a closed system including a radiator unit having a flow passage therethrough. A boiler containing a liquid and having a heater for heating the liquid and converting the same into steam is provided with a discharge distributing the steam through the radiator unit. A condenser chamber is connected to the radiator unit remote from the boiler, the condensed vapors returning to the boiler. A thermostat or the like is responsive to the temperature in the area to be heated and is operative to interrupt a circuit to the heater when the temperature in the area is above a predetermined amount. A cabinet encloses the heating unit and may be a baseboard cabinet type arranged with openings whereby air flow is from the bottom of the cabinet upwardly by the radiator to be heated thereby and then circulated into the room or area to be heated.

3,640,457
HEATING AND VENTILATION SYSTEMS OF VEHICLES
Andre Colinet; Jacques Mercier, and Claude Pernoud, all of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France
Filed June 1, 1970, Ser. No. 42,137
Claims priority, application France, June 11, 1969, 19393
Int. Cl. B60h 1/08
U.S. Cl. 237—12.3 B 5 Claims



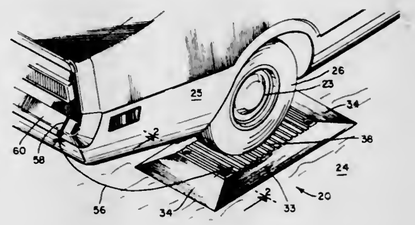
In this automotive heating and ventilation system comprising a fan, a heat exchanger connected to the engine-cooling water circuit a distributor chamber disposed beneath the windshield and formed in a transverse beam of the vehicle structure and communicating with the passengers' compartment through windshield demisting orifices and through a transverse passage substantially level with the floor, an air inlet box, the fan, a divergent pressurizing chamber and the exchanger constitute an air fan unit mounted at one end of said beam, the latter being divided into two compartments by a horizontal partition leaving a passage between these compartments, the warm water from the engine cooling system circulating upwards through said heat exchanger of which the height corresponds substantially to the beam height.

3,640,458
HOT AIR GENERATOR WITH VARIABLE LENGTH CONDUIT
Paul Marie Perrinet, Merignac, France, assignor to SEMIA S.A., Merignac (Gironde), France
Filed Apr. 28, 1970, Ser. No. 32,545
Claims priority, application France, May 2, 1969, 6912362
Int. Cl. F24d 5/04
U.S. Cl. 237—50 5 Claims



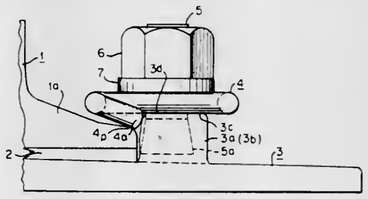
The invention relates to the art of hot air heating system, more particularly of the type having a plurality of interconnected units each including an inner and outer sleeve spaced to define an annular chamber therebetween with a heat generating means associated with the first of said units and having an associated blower or suction fan to draw ambient air into the system and force such air through the passageway defined by the interconnected inner sleeves which form a combustion chamber and through the annular passageway defined by the interconnected annular chambers which form a heat exchanger chamber, the end of the system being closed and having a discharge pipe connected to the adjacent inner sleeve for exhaust of gases, said outer sleeve having a plurality of outlets spaced along the length thereof.

3,640,459
SKIDPROOF TRACTION MAT FOR AUTOMOTIVE VEHICLES
Samuel L. Preisler, 3210 Avenue H, Brooklyn, N.Y.
Filed May 13, 1970, Ser. No. 36,806
Int. Cl. B62d 55/08; E01b 23/00
U.S. Cl. 238—14 3 Claims



A traction pad for an automotive vehicle having pneumatic tires, that comprises a flat, flexible mat formed with transverse treads on its upper surface. Studs embedded in the mat extend out of the smooth bottom surface of the mat for engagement with a slippery roadway. The mat is rectangular and has long beveled side and end edges to provide an incline on which the wheel can roll. Each stud has a cylindrical body with a reduced diameter cylindrical pin portion extending outwardly axially of one end thereof. Ridges are provided on the bottom surface between rows of protruding stud pin portions to cooperate with the studs in holding the mat in place on the roadway. The ridges elevate the pin portions from the carpet on the floor of the vehicle when the pad is stored thereover and being used as mat thereupon. Draglines may be attached to an end of the mat.

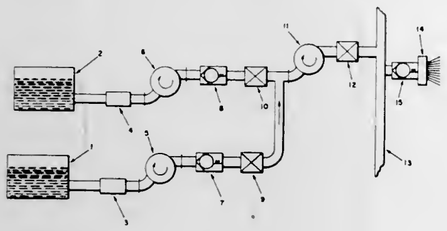
3,640,460
RESILIENT INTERCONNECTION ARRANGEMENT FOR RAILS TO CROSSTIES
Wolfgang Baseler, Waldstrasse 20, 8031 Stockdorf, Germany
Filed Aug. 11, 1969, Ser. No. 849,047
Claims priority, application Germany, Aug. 10, 1968, P 17 84 462.1
Int. Cl. E01b 9/48
U.S. Cl. 238—349 8 Claims



To provide for resilient interconnection between the holding element, such as a spike, screw connection, bolt or the

like of the base of the rail to the crosstie, a bowed spring is interposed between the head of the holding element (spike, bolt, etc.) which has a bowed loop portion essentially surrounding the holding element and a pair of divergent projecting wings, bowed slightly (a few millimeters) with respect to the loop portion and bearing over the base of the tie. The spring may be round or rectangular bar stock, and if rectangular, may be set on edge; the ends of the projecting wings have a reverse bend which bears against the inside of the edge of the shoulder, the loop portion bearing against the top surface of the shoulder of the tie plate.

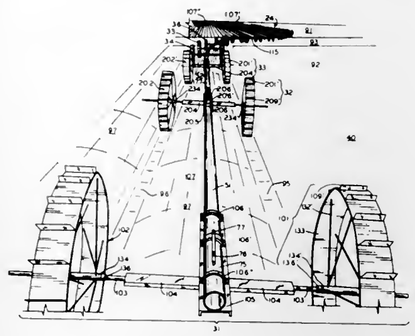
3,640,461
APPARATUS AND PROCESS FOR FORMING AND SPRAYING PESTICIDAL INVERT EMULSION
Laurel A. Koll, Ruleville, Miss., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of application Ser. No. 654,297, June 15, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 564,861, July 13, 1966, now abandoned.
This application Sept. 26, 1969, Ser. No. 861,421
Int. Cl. B05b *7/04*
U.S. Cl. 239—7 **13 Claims**



Disclosed are an apparatus and a continuous process for making and spraying a pesticidal invert emulsion from a Newtonian-type aqueous phase and a Newtonian-type oil phase. In the apparatus and process the two phases are (a) introduced into a mechanical dispersing chamber and (b) established and maintained under hydrostatic pressure in said chamber sufficient to push from said chamber invert emulsion formed therein through a conduit to the outlet of a spray nozzle and out of said outlet as a spray. In the chamber the aqueous phase is mechanically dispersed in the oil phase at least until said invert emulsion is formed. Invert emulsion in the chamber is expelled therefrom to the outlet of said spray nozzle, and discharged as a spray into the atmosphere. In one embodiment the mechanical dispersing chamber is provided by a centrifugal pump with the requisite hydrostatic pressure for the most part being provided by pumps in the phase feed conduits to the centrifugal pump.

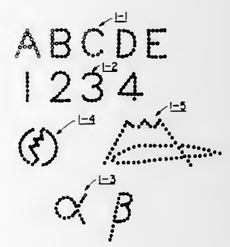
3,640,462
MOBILE IRRIGATION SPRINKLER PROCESS AND APPARATUSES THEREFOR
Milton H. Wagner, Rte. 1, Brownfield, Tex.
Filed Jan. 21, 1970, Ser. No. 4,632
Int. Cl. B05b *17/04*
U.S. Cl. 239—11 **5 Claims**

A tow-type irrigation apparatus and process operating without anchors wherein the moving pipe train is automatically maintained in a straight line along one portion thereof and along another portion parallel thereto and longitudinally



and laterally displaced therefrom while a third intermediate portion between is in a stable inverse curve form.

3,640,463
FORM-INDICATING WATER FOUNTAIN
Koreichi Kawamura; Yoshiko Kawamura, and Koichi Kawamura, all of 66, Jyomyoji, Kamakura, Japan
Filed Apr. 2, 1970, Ser. No. 25,206
Claims priority, application Japan, Aug. 30, 1969, 44/68294
Int. Cl. B05b *17/08*
U.S. Cl. 239—17 **9 Claims**

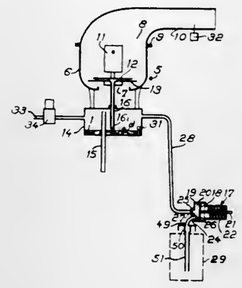


A water fountain having a plurality of nozzles, which are arranged in a disposition suitable for representing one or more of letters, numerals, patterns, and forms.

3,640,464
APPARATUS FOR DISINFECTING AND DISINFESTING PREMISES
Jeremie Malczewski, Boulogne-sur-Seine, France, assignor to Societe anonyme dite: Bronzavia, Courbevoie (Haute-de-Seine), France
Filed June 1, 1970, Ser. No. 42,083
Claims priority, application France, June 3, 1969, 6918270
Int. Cl. B05b *3/10*
U.S. Cl. 239—69 **6 Claims**

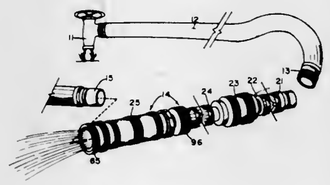
This invention relates to an apparatus for disinfecting and disinfesting various inhabited premises or quarters, particularly the cockpit of an aircraft, characterized by the combination of an aerosol generator and at least one volumetric adjustable discharge pump known per se, and wherein the delivery tube of the pump is placed in communication with the fixed tank of the generator, preferably above the maximum admissible level of the liquid and the suction tube is capable of being connected to a cartridge of the treatment product and a control programmer device is interposed between on the one hand a power source and on the other

hand the motor driving the or each disc of said generator unitary with the suction tube and the motor driving said pump in



order concomitantly to control their duration of operation and the instantaneous discharge of this pump.

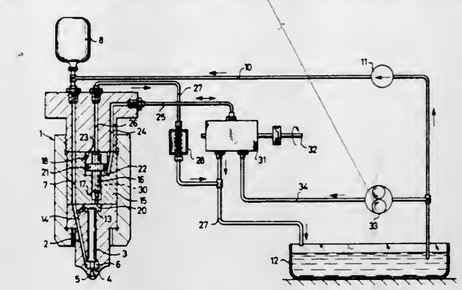
3,640,465
QUICK-CONNECT HOSE MEMBERS AND CONTROL SYSTEM
Margaret L. Hicks, Boulder, Colo., assignor to James C. Hicks, Boulder, Colo.
Filed Apr. 30, 1970, Ser. No. 33,196
Int. Cl. B05b *1/30*
U.S. Cl. 239—583 **11 Claims**



A hose system having releasable slide-fit inlet and outlet end coupling portions together with an on-off valve member and an adjustable spray nozzle member interconnected with lengths of flexible hose between the end coupling portions to be readily connected to and disconnected from the end of a variety of flow devices equipped with complementary slide-fit coupling portions so as to regulate flow therethrough and the spray through the outlet coupling portion.

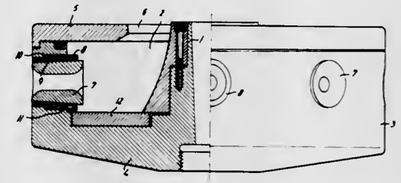
3,640,466
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION PISTON ENGINE
Anton Steiger, Illnau/Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Oct. 24, 1969, Ser. No. 869,035
Claims priority, application Switzerland, Nov. 5, 1968, 16457/68
Int. Cl. F02m *47/02*
U.S. Cl. 239—94 **4 Claims**

The valve needle is held closed under the differential pressure of the fuel acting at the ends of the needle. In order to open the valve, a low pressure is applied to lift the control valve body. This allows the fuel to pass from the rear fuel



chamber causing a pressure drop and a pressure differential to occur to unseat the needle valve.

3,640,467
ATOMIZER WHEEL WITH WEAR-RESISTANT, SINTERED BUSHINGS
Aage Moller, Farum, and Orla Straarup, Birkerod, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark
Filed Oct. 28, 1969, Ser. No. 871,925
Claims priority, application Denmark, Nov. 5, 1968, 5367/68
Int. Cl. B05b *3/10*
U.S. Cl. 239—224 **8 Claims**

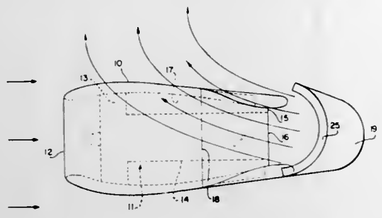


An atomizer wheel for the atomization of dispersions of very highly wearing materials for example a caoline dispersion, said wheel comprising an annular bowl-shaped space defined by a hub, a cylindrical wall concentrically surrounding the hub, and a bottom part connecting said hub and said wall. The wall is provided with a number of holes lined with bushings of a highly wearproof sintered material embedded in cylindrical bushings of a material able to resist tensile stresses such as steel or plastic, said cylindrical bushings fitting loosely in the holes and abutting at their outer end an inwardly projecting edge of the holes and with their inner ends projecting a distance into the annular space.

3,640,468
THRUST REVERSER FOR ASYMMETRIC EXHAUST EFFLUX DEFLECTION
Norman Searle, Marietta, Ga., and John W. Tatom, Franklin, Tenn., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 30, 1970, Ser. No. 23,826
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.29 **5 Claims**

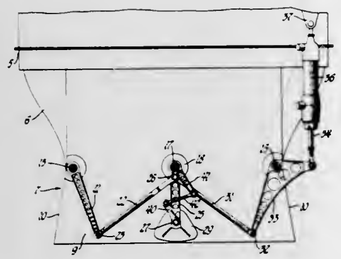
A scheme for increasing thrust reverser utilization particularly on STOL aircraft is provided whereby all of the exhaust efflux being diverted is deflected in an asymmetric direction away from the plane of the engine intake air. Exhaust ingestion is thereby reduced allowing more effective reversers to be used down to lower speeds with consequent reductions in ground roll of the aircraft. Preferably, this asymmetric

deflection of the exhaust efflux is directed upwardly at an angle to the horizontal to produce an additional load on the



landing gear due to the vertical component of the reverse thrust enabling greater wheel-braking force to be applied for a given wheel ground friction coefficient.

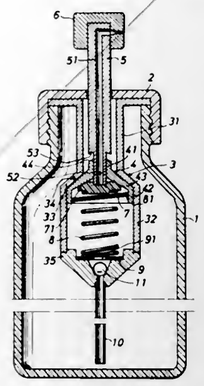
3,640,469
CONSTANT-AREA VECTORING NOZZLE
Charles F. Hayes, Indianapolis, Ind., and David R. Steffey, Allestree, Derby, England, assignors to General Motors Corporation, Detroit, Mich.
Filed July 14, 1967, Ser. No. 653,361
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.35 **2 Claims**



A jet nozzle to vector the jet about a single axis. The outlet is bounded on two opposite sides by swingable outer deflecting vanes, and a central swingable vane is mounted midway between the outer vanes. Linkage connects the three vanes for movement such that the nozzle remains convergent and of substantially constant area over the range of travel of the vanes.

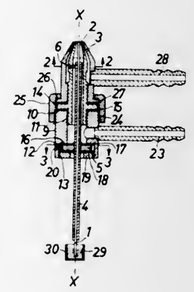
3,640,470
SPRAY PUMP
Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino, and Shinichi Araki, Funabashi, all of Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 19, 1970, Ser. No. 12,824
Claims priority, application Japan, Feb. 26, 1969, 44/17465
Int. Cl. A62c *11/02*
U.S. Cl. 239—333 **3 Claims**

A pump for spraying liquid finishing agents used in washing, medicines and the like comprising a cylinder consisting of an upper larger diameter portion, a lower larger diameter portion and a tapered portion interconnecting integrally said upper and smaller portions and having a suction port, and a piston axially movably fitted into said cylinder and having a tapered portion which is adapted to engage with said tapered portion of said cylinder. The positive spraying is ensured; the leakage of the liquid through the suction port can be positively prevented; and the air can be introduced through the



suction port for replacement of the discharged or sprayed liquid.

3,640,471
ANNULAR ATOMIZER FOR FLAME PHOTOMETRY
Ernst Winter, Jena, Germany, assignor to VEB Carl Zeiss Jena, Jena, District of Gera, Germany
Filed June 20, 1968, Ser. No. 742,120
Int. Cl. B05b *7/32*
U.S. Cl. 239—337 **1 Claim**

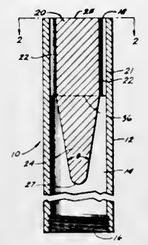


The annular atomizer is for use in flame photometry. Sensitive adjustment of the atomizer is ensured by means of a capillary tube at any time. This tube is surrounded by at least one nozzle and for the purpose of adjustment is tiltable all round near the orifice of this nozzle. The tilting motion is imparted to the tube at its end remote from the nozzle orifice.

3,640,472
LIQUID DISCHARGE NOZZLE HAVING IMPROVED FLOW CONTROL MEANS
John O. Hruby, Jr., Burbank, Calif., and Rain Jet Corp., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 784,541, Dec. 9, 1968, now Patent No. 3,558,053, Continuation-in-part of application Ser. No. 691,111, Dec. 8, 1967, now abandoned, Continuation-in-part of application Ser. No. 492,389, Oct. 4, 1965, now abandoned. This application Aug. 28, 1970, Ser. No. 67,917
Int. Cl. B05b *1/14*
U.S. Cl. 239—552 **15 Claims**

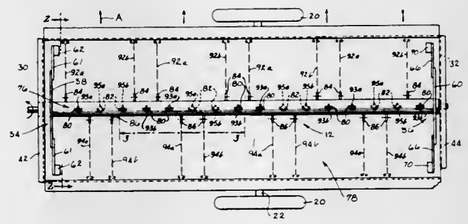
A family of aerating liquid discharge nozzles, each having an elongate body defining a duct therethrough between lower

and upper liquid inlet openings defined at opposite ends of the body, is described. A plug is disposed across the duct and has liquid flow passage means defined therethrough by a plurality of grooves formed in the plug sidewalls. The grooves are spaced uniformly around the circumference of the plug



and have an aggregate cross-sectional area substantially less than the cross-sectional area of the duct at the location of the plug in the duct. A conical projection extends from the plug toward the liquid inlet opening coaxially of the duct, the radius of the projection, at its base, being at least equal to the minimum radius of the plug.

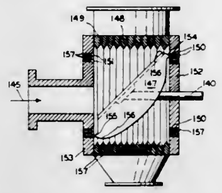
3,640,473
FLAIL-TYPE ROTOR FOR A MATERIAL SPREADER
Bryant F. Webb, and Bruce D. Schwalm, both of Leola, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 2, 1970, Ser. No. 24,999
Int. Cl. A01c *3/06*
U.S. Cl. 239—658 **1 Claim**



A flail-type material spreader has a semicylindrical tank for holding material and a rotor shaft extending the length of the tank with flexible flails connected thereto for discharging material on rotation of the shaft. The flails are arranged in groups of two assemblies and the assemblies are connected to the shaft at 90° to one another. Each assembly comprises two bending moments. The flails of one assembly are axially offset to form matching sets of flails along the shaft having bending moments in opposition to minimize the vibration of the rotor shaft.

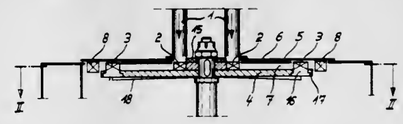
3,640,474
IMPELLER FOR HEAVY DUTY COMMINUTING PUMPS
Georg Niedl, Im Bisch 664, Schoan, Liechtenstein
Original application May 3, 1965, Ser. No. 452,502, now Patent No. 3,502,274. Divided and this application Feb. 18, 1969, Ser. No. 822,342
Int. Cl. B02c *18/06;* **F04d** *29/04;* **B01d** *35/26*
U.S. Cl. 241—46.02 **7 Claims**

An impeller for heavy duty comminuting pumps may include a blade which is not only disposed in angular relation to its turning axis but may have an irregularly curved surface, or several such surfaces arranged to intersect each other



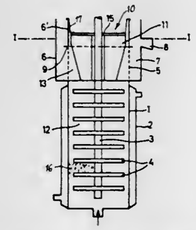
along a line which is angularly disposed with respect to the turning axis.

3,640,475
APPARATUS FOR BREAKING UP LUMPY MATERIAL
Richard Jung, Gummersbach, and Horst Lenkewitz, Derschlag, both of Germany, assignors to L & C Steinmuller GmbH, Gummersbach, Rhineland, Germany
Filed Apr. 1, 1969, Ser. No. 812,207
Claims priority, application Germany, Apr. 6, 1968, P 17 57 161.8
Int. Cl. B02c *13/18, 13/24, 13/288*
U.S. Cl. 241—55 **14 Claims**



Pulverizing equipment including a disc rotating on a vertical axis and having an inner row of impact elements thereon, which first engage the material and break it up and accelerate it radially outwardly toward an outer row of impact elements on the disc which cooperate with a surrounding stationary row of impact elements to complete the breaking up of the material. A housing surrounds the disc and has outlet means at the periphery of the disc for the withdrawal of pulverized material. A blower beneath the disc may supply air to the region of the periphery of the disc to assist in the withdrawal of the pulverized material from the housing.

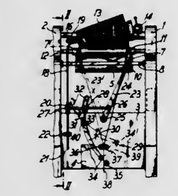
3,640,476
STIRRING MILL
Kaspar Engels, Mannheim, Germany, assignor to Draiswerke GmbH, Mannheim-Waldhof, Germany
Filed Jan. 13, 1970, Ser. No. 2,485
Claims priority, application Germany, Jan. 14, 1969, P 19 01 593.1
Int. Cl. B02c *17/16*
U.S. Cl. 241—74 **7 Claims**



Stirring mill for homogenizing, dispersing and comminuting solids in liquids comprising an upright milling container or housing filled with grinding bodies 0.2 to 3 mm. in size in

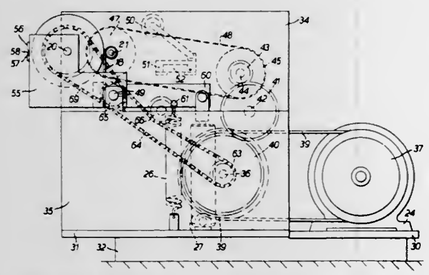
which a rapidly rotating stirring device is arranged and the material being ground is forced into the container from the bottom and leaves it by way of a separating device through the upper end, where the material being ground accumulates in a back pressure chamber defined by a cylindrical screen and a top element, where the outlet is above the cylindrical screen and the shaft of the stirring device is devoid of stirring elements in the area of the back pressure chamber and guide members are provided in the back pressure chamber which delay the movement of the grinding bodies and material being ground.

3,640,477
COIL WINDING MACHINE
Stefan Furst, Monchengladbach, Germany, assignor to Walter Reiners, Monchengladbach, Germany
Filed Aug. 14, 1969, Ser. No. 850,208
Claims priority, application Germany, Aug. 16, 1968, P 17 85 153.5
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 R **2 Claims**



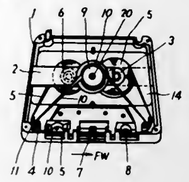
Coil winding machine for preferably conical cross-wound bobbins includes thread storage means for compensating for varying thread winding speeds, and means for automatically adjusting the length of the stored thread in accordance with the fullness with which the bobbin is wound.

3,640,478
WINDING APPARATUS
Hans Starke, Maidenhead, England, assignor to K.D.G. Instruments Limited
Filed Apr. 3, 1969, Ser. No. 813,120
Claims priority, application Great Britain, Apr. 11, 1968, 17,637/68
Int. Cl. B65h *54/08, 54/28*
U.S. Cl. 242—18 R **4 Claims**



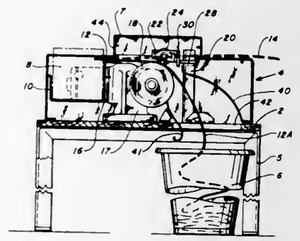
A winding apparatus for winding thread or the like onto packages at high speed comprises a thread guide consisting of a slot formed between the adjacent, closely spaced shaped edges of two coaxial cylinders of the same diameter, rotating together, the slot having helical segments, alternately left and right handed. The thread enters and leaves the slot at points which lie in a plane at right angles to the axis of rotation of the cylinder; preferably these points lie on or near a diameter of the cylinder.

3,640,479
CASSETTE TAPE DEVICE
Kiyoshi Hata, Kobe, Japan, assignor to Funai Electric Company, Limited, Osaka, Japan
Filed Oct. 26, 1970, Ser. No. 83,844
Claims priority, application Japan, Feb. 20, 1970, 45/14654
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **1 Claim**



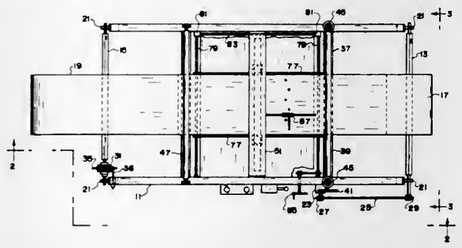
A tape cassette for tape recorders embodying a reel to reel tape and an endless tape wherein the tapes may be driven simultaneously or individually.

3,640,480
SCROLL STRIPPING METHOD AND APPARATUS
Nicholas P. Schleich, Golf, Ill., assignor to The Matix Corporation
Filed Mar. 9, 1970, Ser. No. 17,783
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 **14 Claims**



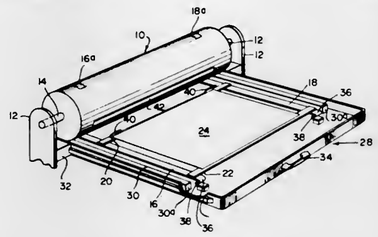
An apparatus and method are provided for unwinding and guiding scrolls of microfilm from film cartridges while concurrently severing and separating the leader tape from the body of the unwound scroll.

3,640,481
MULTIPLE BELT PUNCH
John G. Pugh, 1191 Monticello Road, Lafayette, Calif.
Filed May 12, 1969, Ser. No. 823,753
Int. Cl. B65h *35/02*
U.S. Cl. 242—56.8 **8 Claims**



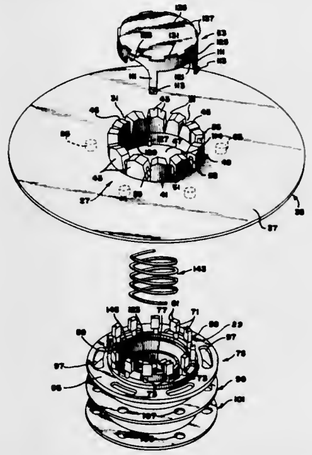
A worktable for supporting rolls of belting at each end thereof and having a set of reciprocating punches mounted over the table for perforating the belting as it is transferred from one roll to the other.

3,640,482
PAPER FEED MECHANISM
Eric A. Von Hippel, Weston, Mass., assignor to Graphic Sciences, Inc., East Rochester, N.Y.
Continuation of application Ser. No. 689,641, Dec. 11, 1967, now abandoned. This application Mar. 19, 1970, Ser. No. 19,542
Int. Cl. B65h *17/00, 75/48*
U.S. Cl. 242—67.1 **21 Claims**



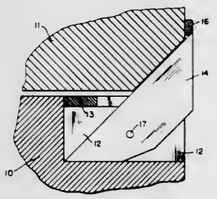
A device for quickly loading a document onto a drum for scanning or other purposes comprises a pair of bandlike spiral springs circumferentially wound around the drum adjacent its ends and exerting an inward force against the surface of the drum. Crossbands extending transversely between the springs hold the document flat against the drum surface under the force of the springs. The springs are each fastened to the drum at one end and are readily unwound from the drum by pulling on their free ends to extend them in a flattened position in which they receive the document for loading onto the drum. On release of the free ends the bands rewind around the drum to position the document against its surface.

3,640,483
TAPE REEL AND TAPE-THREADING SYSTEM
Fred R. Beck, Glen Ellyn; Robert J. Fanella, Villa Park, and Norman F. Gioia, Lombard, all of Ill., assignors to Ampex Corporation, Redwood City, Calif.
Filed Nov. 6, 1969, Ser. No. 874,495
Int. Cl. B65h *75/28;* **G03b** *1/04*
U.S. Cl. 242—74.1 **10 Claims**



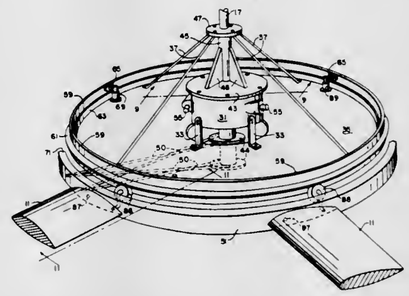
A leading end of a tape is readily threaded between a pair of gripping members which are movable from a tape-threading position in which a slot is formed therebetween to receive the leading end of the tape and a tape gripping position in which the gripping members move to grip the tape end therebetween. An actuator in the form of a pushbutton may be used to shift the gripping members relative to one another and into the tape-gripping position. Preferably, the tape end is released automatically by the gripping members when the tape is uncoiled.

3,640,484
RELEASE MECHANISM
Harry B. Porter, Lancaster, and Robert A. Weinhardt, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 4, 1970, Ser. No. 34,033
Int. Cl. F42b *15/02*
U.S. Cl. 244—3.21 **2 Claims**



A release mechanism for stabilizing rollerons of a missile. The device comprises a cager of a bar magnet fixed in a slot in the wing of a missile adjacent the rollerons. The cager is shaped and secured so that its inertia causes it to rotate toward the rear when the missile is accelerated forward. In the caged position one end of the cager fits in a recess provided in a nonmagnetic rolleron housing thereby preventing movement of the rolleron relative to the wing. Magnetic attraction between the cager and an iron member mounted on the edge of the rolleron housing holds the cager in position until the setback force on the cager exceeds the magnetic force between the bar and said iron member. The bar then moves back into position in the wing slot and is held there by the magnetic attraction of another iron member positioned in the top wall of said slot.

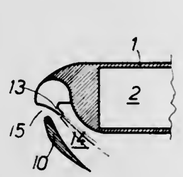
3,640,485
AMPHIBIOUS HELICOPTER-TYPE AIRCRAFT
Jean L. Mutrux, 6 Sumac Lane, Clayton, Mo.
Filed June 25, 1970, Ser. No. 49,879
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 C **11 Claims**



A fuselage is formed by an inner circular housing forming a dome which is spacedly surrounded by an annular housing

which forms a toroid. Thus the two housings form an annular venturi-type duct tapering downwardly and inwardly. Across the duct extend variable pitch radially disposed rotor blades driven from a ring driven by a prime mover in the inner housing for inducing downwash of air in the form of a vortex through the duct with resulting lift. Cyclic pitches of the blades are variously controlled by a tiltable swash ring having various elevations in the inner housing and acting as a cam for followers on linkages connecting the ring with the blades as they rotate. The double purpose of rotor pitch changes is to vary lift force and to trim the craft to level or slanting attitudes in flight. Extending radially across the duct below the blades are adjustable counterrotation fins functioning in response to air downwash to prevent rotation of the fuselage. Extending tangentially across the duct below the counterrotation fins are adjustable navigating fins. These are grouped to form four banks of them in quadrature around the duct and are adjustable within their respective banks for directional navigation control. Pneumatic inflated retractible landing pads provide for soft landings of the craft and for flotation on water.

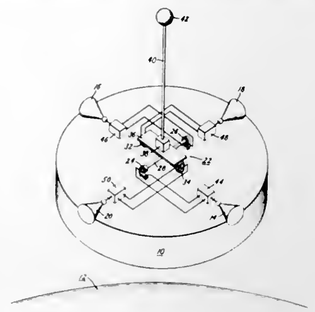
3,640,486
FLYING WING HAVING GROUND-EFFECT TAKEOFF AND LANDING
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France
Filed Mar. 24, 1970, Ser. No. 22,355
Claims priority, application France, Mar. 24, 1969, 6908543
Int. Cl. B60v *3/08*
U.S. Cl. 244—12 R **7 Claims**



Aerodyne for the transoceanic transport of freight, with a thick profile flying wing between thin longitudinal panels disposed in the direction of normal travel and provided at the bottom with transverse flaps adapted to project downwards or be retracted, one transverse flap being near the leading edge of the wing while other flaps are in an intermediate position and in a rear position, the said transverse flaps when in the downwardly extended position cooperating with the wing undersurface, the longitudinal panels and an intermediate longitudinal bulkhead, to form a space which acts as a cushion fed by pressure fluid-injection means. The latter comprise a static pump which is uncovered by the downward movement of the leading edge flap. The pressure fluid supply is provided solely at the front of the cushion, allowing action on the thrust center of the ground effect by means of the set of intermediate flap and rear flaps.

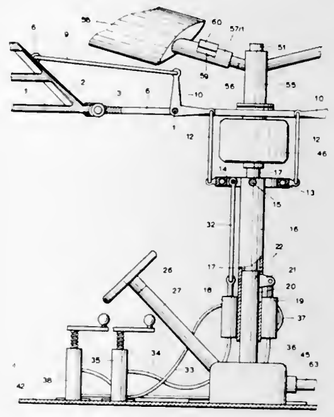
3,640,487
VERTICAL ORIENTATION DEVICE
Robert P. Wanger, Valley Forge, Pa., assignor to General Electric Company
Filed July 13, 1967, Ser. No. 653,195
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SA **4 Claims**

"Gravity-gradient" rod is connected to satellite by powered angular drive means controlled by attitude sensors which displace "gravity-gradient" rod in proper direction to produce increased torque by interaction with gravitational



field to maintain satellite in desired attitude toward local gravitational gradient.

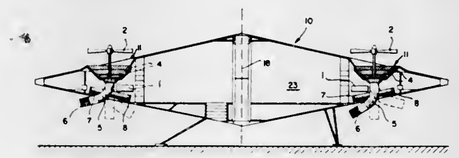
3,640,488
PEOPLE'S HELICOPTER
Franz Florschutz, 2300 Kiel, Kreienbarg 4, Germany
Filed July 15, 1969, Ser. No. 853,581
Claims priority, application Germany, Dec. 14, 1968, P 18 14 753.0
Int. Cl. B64c *27/82*
U.S. Cl. 244—17.19 **17 Claims**



The rotor consists of several groups of blades fixed to a slanting carrier in parallel position with a certain distance between them like the wing of a bird diminishing the rotor diameter, and the effect of torque and the unsymmetry, giving greater stability, and enabling higher peripheral speed whereby the flow at the backward-turning blade does not cease. The carrier of each blade group is connected by flapping hinges to the outside ring of the hub relatively large in relation to blade length. By turning the blade group the angle of incidence of blades is changed. The blade groups are periodically and collectively controlled by *y* control device based on a hydraulic system which is installed along the rotor shaft. A control wheel allows radial turning of the whole control device making it possible to control the helicopter in longitudinal and lateral sense. Compensation of torque and of the unsymmetry of rotor during forward flight is brought about by a long and large-surface rotor airfoil with counterweight which is installed variably and with opposite direction

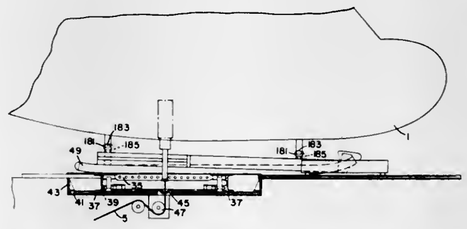
of rotation on top of main rotor through a differential gear in the rotor head. This airfoil is stopped during forward flight by the flow of drive wind, so that the helicopter shows an unsymmetric airfoil giving a lift by which the unsymmetry of the stream of rotor is eliminated. Compensation of torque and of the unsymmetry of rotor works automatically without special control. The blade group rotor, blade control and torque compensation are a compact unit propelled by an engine which is installed in the fuselage before the pilot.

3,640,489
VERTICAL TAKEOFF AND LANDING AIRCRAFT
Karl Jaeger, Im Stillen Winkel 21, 43 Essen-Margarethenhohe, Germany
Filed July 28, 1969, Ser. No. 845,242
Claims priority, application Germany, July 26, 1968, P 17 56 879.5
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 C **7 Claims**



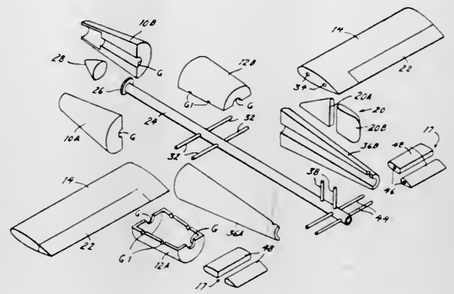
A vertical takeoff and landing (VTOL) aircraft has a discus-shaped fuselage with a plurality of angularly equispaced lift-generating assemblies. Each assembly comprises a rotor above or flush with the fuselage, a compressor in the fuselage drawing air in from above, and a nozzle below the fuselage for expelling the air from the compressor in a jet. The nozzles can be rotated to point in any direction. Thus, according to the settings of the nozzles, the aircraft can rise or sink vertically and move in any horizontal direction.

3,640,490
SHIPBORNE CONVEYING MEANS
Asbjorn Baekken, Dartmouth, Nova Scotia, Dartmouth, Nova Scotia, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defense of Her Majesty's Canadian Government
Filed Jan. 13, 1970, Ser. No. 2,528
Claims priority, application Canada, Jan. 21, 1969, 040,713
Int. Cl. B64f *1/22*
U.S. Cl. 244—116 **17 Claims**



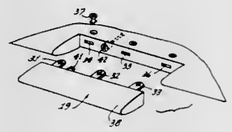
The disclosure relates to means for transporting a landed helicopter on the deck of a ship at sea. A probe on the helicopter is grasped in a trap device mounted on a turntable provided on the deck of the ship. A dolly device is then moved into position and the helicopter clamped to it. The dolly device is guided by suitable rails so that, once the helicopter is clamped to it and unclamped from the trap device, the helicopter under full restraint can be moved along the deck to a parking space.

3,640,491
AIRPLANE CONSTRUCTION FRAME
Robert R. Harrison, 207 Earlington Road, Havertown, Pa.
Filed Apr. 15, 1970, Ser. No. 28,767
Int. Cl. B64c *1/00*
U.S. Cl. 244—117 R **2 Claims**



A prefabricated, unitary frame and a body formed in prefabricated sections, the frame having body sections receiving and supporting members, and the body sections being formed of lightweight and strong alloys, or synthetics, and being provided with complementary engaging means for quick and easy securement of said body sections to said supporting members.

3,640,492
MODULAR AIRCRAFT STRUCTURES
Moe Star, Los Angeles, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.
Filed Feb. 19, 1970, Ser. No. 12,670
Int. Cl. B64c *1/00*
U.S. Cl. 244—124 **1 Claim**

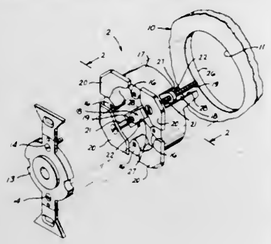


A mission-oriented avionics complement for military and like aircraft is insured by the use of interchangeable units or modules containing electronic or avionic equipment. These units are packaged to form part of the aircraft structure and conform with and maintain the aircraft's aerodynamic configuration and mold lines. These units configured as sections of wing, fuselage, tail, etc., are provided with quick mechanical and electrical connect-disconnect mechanisms. Internally provided electrical cables serve to integrate the plug-in electronic elements with the internally mounted power supply, display and control elements thereby enabling them to perform a required avionic function.

3,640,493
BRACKET FOR MOUNTING APPARATUS
Charles O. Thelen, Roselle, N.J., and Hans J. Ziegler, Brooklyn, N.Y., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,839
Int. Cl. G12b *9/08*
U.S. Cl. 248—27 **3 Claims**

A bracket, which is adapted to be mounted in an opening formed in a wall, has a pair of tab members which are threadedly mounted on an associated pair of screws posi-

tioned in the bracket. The tab members are restrained for sliding motion relative to the bracket within a pair of slots formed in the bracket wherein each slot has a long edge and a short edge. As the screws are rotated in one direction, the tabs advance through the slots in a rearward direction. When each of the tabs clears the short edge of the associated slot, the tab is permitted to rotate 180° to position clamping surfaces associated therewith in opposed relation to a plurality

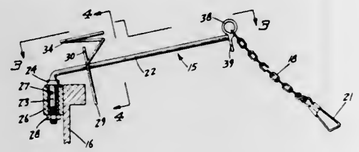


of flanges rigidly attached to the bracket and spaced forwardly of the tab. When the tab is in this position, portions of the wall adjacent to the opening are positioned between each flange and the clamping surfaces of the associated tab. Upon rotating the screws in the opposite direction, the tabs advance through the associated slots in the forward direction to clamp the edge of the opening in the wall between the tabs and the flanges, thereby mounting the bracket in the opening.

3,640,494
HOLDER

Lewis L. Ruter, 218 26th Ave. N., Apt. #7, Minneapolis, Minn.

Filed Mar. 2, 1970, Ser. No. 15,368
Int. Cl. A01k *97/10*
U.S. Cl. 248—42 10 Claims



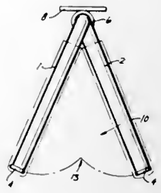
An elongated arm having a generally upright end portion positionable in the hole of an oarlock on a fishing boat for holding a floating fish basket in the water adjacent the boat. A stop member, secured to a portion of the arm adjacent the upright end, cooperates with the side of the boat to limit the pivotal movement of the arm relative to the boat and thereby maintain the arm in a generally lateral position with respect to the side of the boat. The outer end of the arm has a ring carrying a flexible chain attachable to the floating fish basket. Secured to spaced portions of the rod is a downwardly open loop and an upwardly open hook for accommodating a fishing rod. Located opposite the loop is an upwardly open spiral portion for accommodating a container, as a can, a box of worms or a container for liquid beverage.

3,640,495
REFUSE DISPOSAL ARRANGEMENT

Johannes Dietz, Apaztado 61.800, Caracas, Venezuela

Filed Mar. 10, 1970, Ser. No. 18,195
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 10 Claims

A refuse disposal arrangement includes a holder which is mountable on an upright support and includes a pair of arms each having a first end portion and a second end portion. Mounting means mounts the second end portions of these arms for turning movement in such a manner that the arms can turn together and with reference to one another about an upright axis common to them both. A plurality of disposable refuse bags are provided which are each releasably connectable with the holder and which each have an upper open end

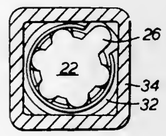


encircled by a tubular cuff provided with at least one aperture into which the first end portions of the arms can be inserted in mutually opposite circumferential directions of the respective bag. Thus, when the arms are turned away from one another the bag is opened whereas, when they are turned so that they are closely adjacent one another, the bag is closed.

3,640,496
PLUG OR STOPPER FOR THE OPEN ENDS OF TUBULAR METAL APPLIANCES

Leslie C. V. Duncan, Emsworth, England, assignor to Southbourne Rubber Company Limited, Emsworth, England

Filed June 18, 1969, Ser. No. 834,939
Claims priority, application Great Britain, June 21, 1968, 56,995/68
Int. Cl. A47b *91/06*
U.S. Cl. 248—188.9 2 Claims



A plug for insertion into an end of a metal tubular appliance, such as a leg of a chair or other article of furniture to form a protective cushion. The plug is formed from rubber or other incompressible material and has a shank portion, provided with axial grooves, which in use is embraced by a split ferrule. Upon being driven into the end of the appliance the ferrule contracts to tightly grip the shank portion and the material of the shank portion is displaced into the grooves.

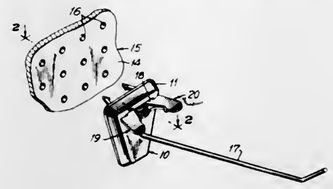
3,640,497
DETACHABLE SUPPORT DEVICE FOR PEGBOARDS

Isamu Waki, Kasai, Japan, assignor to Hartz Mountain Pet Foods, Inc., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,376
Claims priority, application Japan, Nov. 1, 1972, 45/2114
Int. Cl. A47f *5/00*
U.S. Cl. 248—225 9 Claims

A support device for detachable connection to two adjacent holes in a pegboard or other perforated panel. A hollow casing of dished-in configuration has extending from the front wall thereof a support rod the rear end of which extends through said front wall and is bent upwardly. Two laterally opposite clamping members with overlapping wings

extend through an upper horizontally disposed slotted portion in the casing and are pivotally mounted over said upwardly bent rod, said members having front arms adapted for manual grasping, and rear arms with hooked portions adapted for insertion through two adjacent holes in the pegboard and for holding engagement with the rear surface of the pegboard. The respective clamping members have notched portions the respective opposite sides of each of which straddle the adjacent sides of said slotted portion and

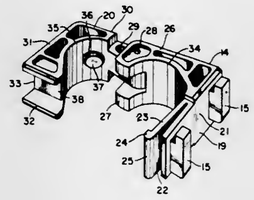


are engageable therewith to limit the pivotal movement of said clamping members between two limiting positions. At one of said positions the said hooked portions are spaced apart a predetermined distance, which is equal to the spacing between two adjacent holes in the pegboard, the other of said positions determining the holding positions of the said hooked arms. Spring means are provided to normally yieldably urge said hooked members into their operative holding positions.

3,640,498
ADJUSTABLE SHELF AND CABINET STRUCTURE

Vytant Aleks, Rockford, Ill., assignor to The Brearley Company, Rockford, Ill.

Filed Jan. 12, 1970, Ser. No. 2,280
Int. Cl. A47b *96/08*
U.S. Cl. 248—230 4 Claims



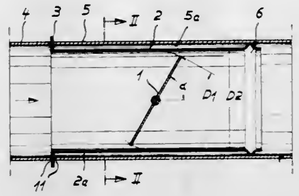
The present clamps are designed to be attached to a cabinet or shelf and applied in open form to the side of supporting poles that reach from floor to ceiling, the clamps serving when closed to support the cabinet or shelf at any desired height. Friction buttons of resilient material are compressed against the poles in the closing of the clamps to prevent slippage. Snap-action catches lock the clamps securely in place on the poles and there are no screws requiring tightening.

3,640,499
REGISTER CONSTRUCTION FOR CLOSING OFF CIRCULAR-CYLINDRICAL FLOW DUCTS

Richard Jung, Gummersbach, Germany, assignor to L & C Steinmuller G.m.b.H., Gummersbach, Rhineland, Germany

Filed Dec. 10, 1969, Ser. No. 883,748
Claims priority, application Germany, Dec. 11, 1968, P 18 13 885.7
Int. Cl. F16k *1/22*
U.S. Cl. 251—305 3 Claims

A register construction for closing off circular-cylindrical flow ducts includes a flexible cylindrical insert of a relatively thin material such as sheet metal or plastic which is mounted at one end to an annular flange which is secured to the flow duct and which includes an inner dimension which is slightly smaller than the duct with which it is to be associated. A circular flat plate valve or register member is pivotally mounted

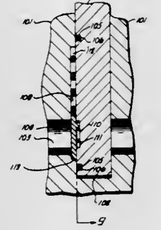


within the insert and the flow duct in a manner which permits it to be moved to close off the full area of the insert. The inner circumference of the insert is made slightly smaller than the circumference of the rotary plate so that in a closed position a formtight closure between the plate and the insert is obtained to close off all fluid flow through the duct.

3,640,500
GATE VALVE WITH IMPROVED SEAL ASSEMBLY

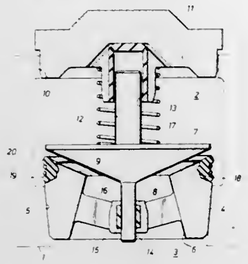
William A. Rogers, 746 West 28th Street, San Pedro, Calif.

Original application Jan. 24, 1969, Ser. No. 793,790, now Patent No. 3,561,731. Divided and this application Dec. 30, 1970, Ser. No. 102,825
Int. Cl. F16k *3/02*
U.S. Cl. 251—326 3 Claims



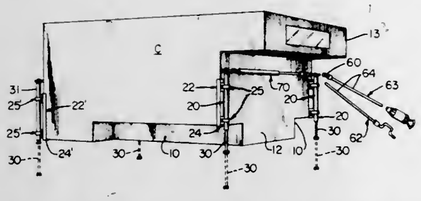
A valve having a body member defining a chamber with first and second ports, and a closure member movable in the chamber over the first port between open and closed positions to control flow between the ports. A resilient seal is mounted on either the body member or the closure member to seal the valve by bearing against a mating face of the other member when the valve is closed. A backup element is slidably mounted in the valve chamber to provide continuous confinement for the seal as the closure member is moved away from the closed position toward the open position. The backup element fits against the mating face member when the valve is opened to define a substantially continuous smooth surface in sliding contact with the seal and against which the seal is compressed. The smooth surface formed by the mating face member and the backup element is broken only by a line joint or seam between the member and element, and the seal passes easily over this joint without distorting or tending to extrude. After the closure member has retracted toward the open position sufficiently to pass the seal over the joint so the seal now bears entirely on the backup member, the closure member is further drawn past the first port to permit flow through the valve.

3,640,501
VALVE SEAL RING INCLUDING METAL RETAINER RINGS
George W. Walton, 8903 Devonshire, Dallas, Tex.
Filed Oct. 2, 1969, Ser. No. 863,274
Int. Cl. F16k *15/06*
U.S. Cl. 251—332 4 Claims



A valve having a metal ring with an annular seating surface at one end and a relief about the seating surface. A closure element moves toward and away from seating engagement with the seating surface, and a seal ring is mounted in the relief and has an end which protrudes above the seating surface of the metallic ring in position to be engaged by the closure element. There are circumferentially interfitting parts on the adjacent surfaces of the seal ring and relief, and a pair of metal retainer rings fit closely in grooves about the seal ring for holding the seal ring in the relief.

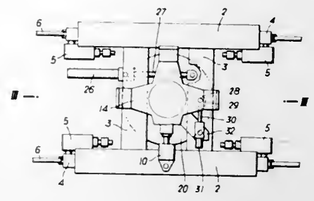
3,640,502
CROSS DRIVE FOR LIFT JACK APPARATUS
Dale L. Bargman, Jr., Broomfield, Colo., assignor to Colorado Leisure Products, Inc., Broomfield, Colo.
Filed June 1, 1970, Ser. No. 42,312
Int. Cl. B66f *7/26*
U.S. Cl. 254—45 17 Claims



A lift jack apparatus for a camper body includes lift jack units rigidly secured to each corner of the camper, each jack unit including a lift mechanism, and a cross drive assembly is releasably connected between adjacent pairs of jack units to transmit actuation of one unit through the lift mechanism of the other unit in loading and unloading a camper body onto and from a truck bed.

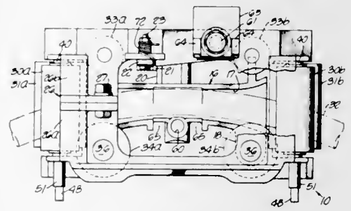
3,640,503
STEEL-CONVERTER-HANDLING VEHICLE
Ronald Spannlang, Linz-Ebelsberg, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Aug. 3, 1970, Ser. No. 60,384
Claims priority, application Austria, Aug. 5, 1969, A 7522/69; May 21, 1970, A 4538/70
Int. Cl. B66f *3/00*; B60s *9/14*
U.S. Cl. 254—84 7 Claims

The disclosure relates to a steel-converter-handling vehicle for mounting and dismounting a converter in a converter stand and for transporting a converter between two or several converter stands, comprising a bearing structure for the converter which is liftable and lowerable and rotatable around a vertical axis, and a vehicle frame carrying the bogies which is transposable at track intersections, in which the improvement resides in that the vehicle frame is provided with a sledge which is displaceable transversely to the direction of travel and connected with a vertical lifting cylinder arranged within said vehicle frame, a piston which is connected with the bearing structure for the converter being vertically movable in and rotatable relative to said lifting



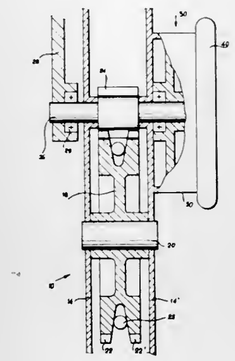
cylinder, and a supporting plate arranged within the vehicle frame being adapted for being pushed out in downward direction and thereby lifting the vehicle frame above the trackway. According to an embodiment of the invention, a single lifting device is used, affording a high simplicity of the construction and effect. It is possible to carry out adjusting movements horizontally and perpendicularly to the direction of travel and the converter is rotatable around the converter axis. The lifting means are adapted to absorb the lateral and tilting forces occuring when the converter is mounted or dismounted.

3,640,504
POWER CONDUCTOR STRINGING ASSEMBLY
L. E. Lindsey, 222 Vista Ave, Pasadena, Calif.
Filed July 30, 1969, Ser. No. 845,960
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3PA 22 Claims



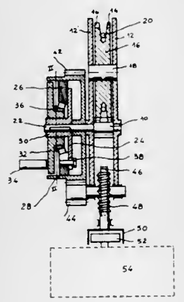
An article of manufacture for use in installing a power conductor along a power line while the conductor is being pulled across the outer end of installed insulators and supported closely above conductor clamping means carried by each insulator. When the conductor has been pulled into position antifriction supports therefor are released allowing the conductor to gravitate directly into the clamp seating channel without need for lifting the conductor. The stringing assembly and the insulator-supported clamping unit are designed for interlocking assembly during the stringing operation and the stringing assembly unit is thereafter readily separable from the clamping unit without need for tools.

3,640,505
WINCH OR HOIST WITH A FRICTION BRAKE DEVICE
Marcel Durand, Grenoble, France, assignor to Jean Pomagalski S.A., Fontaine, France
Filed Jan. 28, 1970, Ser. No. 6,356
Claims priority, application France, Feb. 5, 1969, 6902633
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 3 Claims



A winch or a load lifting or lowering apparatus wherein the load lowering movement is controlled by a brake device which prevents a speed of lowering higher than that determined by the rotation of a handwheel coacting with a threaded part. A bearing with tapered rollers transmits an expansion movement to brake blocks to set up friction on a brake drum.

3,640,506
POWER HOISTING APPARATUS
Marcel Durand, Grenoble, France, assignor to Jean Pomagalski S.A., Fontaine, France
Filed Mar. 24, 1970, Ser. No. 22,219
Claims priority, application France, Apr. 23, 1969, 6912933
Int. Cl. B66d *1/06*
U.S. Cl. 254—187 3 Claims



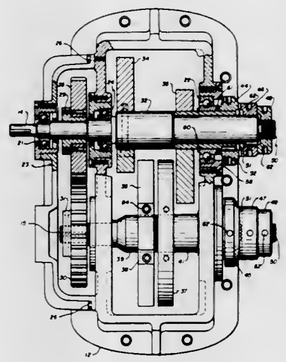
A power hoisting winch having a manual operating device with a friction brake for lowering the load in case of failure of the engine or normally if the engine provides only the lifting. The manual operating device is included in the kinematic chain between the engine and the cable-operating sheave.

3,640,507
BARBED WIRE OF INCREASED TEAR RESISTANCE
Heinz Volbach, Cologne, Germany, and Oscar Julien Van Driessche, De Pinte, Belgium, assignors to Arbed S.A. Arbed-Felten & Guilleaume Vereinigte Drahtwerke, Cologne-Muelheim, Germany
Filed Apr. 24, 1970, Ser. No. 31,655
Claims priority, application Germany, Sept. 10, 1969, P 19 45 730.8
Int. Cl. E04h *17/04*
U.S. Cl. 256—6 4 Claims



In the mounting of barbed wire as on fence posts it frequently happens that the wire is broken in the tensioning. This tensioning is generally done with a mechanical device. The difficulty is due to the fact that the wire has a very low extensibility prior to breaking. Methods of shaping the wire during manufacture are disclosed; by such shaping the extensibility is increased and the likelihood of breaking during the mounting process is decreased or eliminated.

3,640,508
VIBRATION FORCE GENERATOR
Eric A. Reibig, Waukegan, Ill., assignor to All American Tool & Mfg. Co., Skokie, Ill.
Filed June 25, 1969, Ser. No. 836,534
Int. Cl. B01f *9/00*
U.S. Cl. 259—72 10 Claims



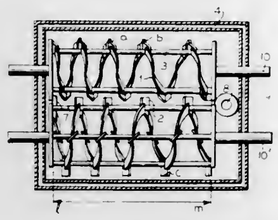
A reaction-type vibration generator which includes, generally, a housing having therein two fixed shafts which are geared together so that they rotate synchronously in opposite directions. Each of these two fixed shafts having an eccentric mass affixed to it, which mass comprises a portion one-half of the total mass rotated by that shaft. These shafts each further have a sleeve disposed concentrically about it, and these sleeves each support the other portion (one-half) of the total mass rotated by the individual shafts. The sleeves further are keyed to the shafts by means of a pair of toothed gears affixed to the shafts and to the sleeves, respectively, in a fashion such that the assembly can be easily loosened, the sleeves angularly rotatably displaced with respect to the shafts to vary the net unbalanced mass to, in turn, vary the amplitude of vibration of the vibration generator, and then fixedly keyed together again so that the masses affixed to the fixed shafts and to the sleeves rotate in synchronism. Scale

means are associated with each shaft and sleeve combination, to accurately establish the desired amplitude of vibration.

3,640,509
APPARATUS FOR CONTINUOUS REACTION OF HIGH VISCOUS MATERIALS

Seiichi Inamura; Yusuke Kondo; Minoru Akita, and Kenichi Chikanari, all of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 3, 1969, Ser. No. 813,209
Claims priority, application Japan, Apr. 6, 1968, 43/23021
Int. Cl. B01f 7/08
U.S. Cl. 259—104 6 Claims

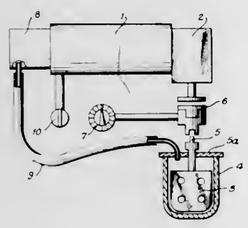


An apparatus for continuously treating a high-viscosity material. A vessel has two spiral agitating blades arranged substantially horizontally and in side-by-side relation therein. Neither has a central supporting shaft, and each has a plurality of scraping blades projecting outwardly close to the inside surface of the wall of the vessel. The agitating blades intermesh with each other when the blades are rotated in opposite directions for scraping substantially all of the viscous material on the adjacent side and bottom wall of the vessel off such wall.

3,640,510
VACUUM STIRRING DEVICE FOR DENTAL MATERIALS

Hans Lea, Frankfurt am Main, Germany, assignor to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Sept. 26, 1969, Ser. No. 861,326
Int. Cl. B01f 7/18
U.S. Cl. 259—108 1 Claim

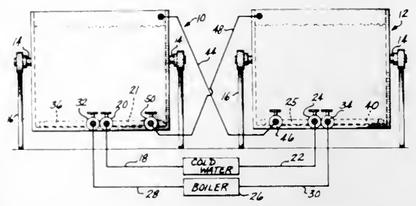


A mixing machine for materials used in dentistry where the elimination of entrained air, or air bubbles, is necessary in order to assure perfect results upon setting of the material, the machine including a closed mixing container, a rotary stirring device, and a vacuum pump for the rotary stirring device being driven by a motor by means of a magnetic clutch. A time switch is provided so that after a predetermined time of mixing the stirring device is disconnected, the vacuum pump, however, continuing to operate.

3,640,511
METHOD AND APPARATUS FOR MAKING AND PLACING LIGHTWEIGHT CONCRETE

Curtis C. Dils, Jr., 5033 119th St. S.E., Bellevue, Wash.

Filed Oct. 12, 1970, Ser. No. 79,927
Int. Cl. B28c 5/06; C04b 7/00
U.S. Cl. 259—148 21 Claims

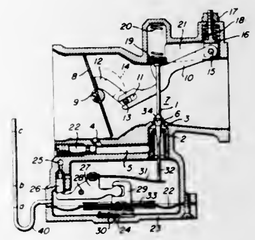


Immersing a lightweight porous aggregate for concrete in hot water in a container; then pumping cold water into the lower part of the container to displace the hot water so as to immerse the aggregate in cold water without exposure to the atmosphere, thus saturating the aggregate with water. Then removing the aggregate from the cold water and mixing it with cement, sand and water to make concrete, which is then pumped under pressure to a location for placement. An improvement being to provide two aggregate containers, and as the hot water is being displaced from the first container by the rising cold water, directing this hot water into the second container which contains aggregate and then back to the first container for another aggregate batch, thus conserving the hot water. A second embodiment being to immerse the aggregate in a steam atmosphere and then immersing it in cold water to saturate the aggregate which can then be mixed to make concrete and pumped under pressure.

3,640,512
METERINGROD CARBURETOR

Henri Morgenroth, 3090 Hidden Valley Lane, Santa Barbara, Calif.

Filed July 14, 1969, Ser. No. 841,398
Int. Cl. F02m 51/08
U.S. Cl. 261—34 A 11 Claims

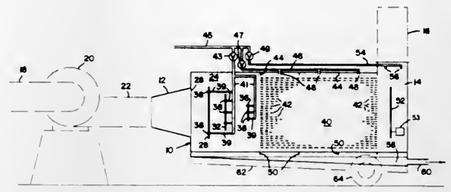


Interior discharge carburetor with a meteringrod controlling a fuel orifice (2). Throttleplate and meteringrod (1) mechanically linked by means of a thin lever (10) arranged inside the carburetor main passage. Displacement of leverpivotpoint (15), attached to body, adjusts idle position of meteringrod. Fuel mixed with bleedair and discharged into Venturi through second foam orifice, this bleedair coming from an airinlet which is subjected to a high percentage of Venturi suction at open throttle.

3,640,513
LOW VELOCITY GAS SCRUBBER

John S. Bowie, Fortuna, Calif., assignor to Bar Investment Company, Inc., Eureka, Calif.

Filed Aug. 26, 1968, Ser. No. 755,085
Int. Cl. B01d 47/06
U.S. Cl. 261—78 8 Claims

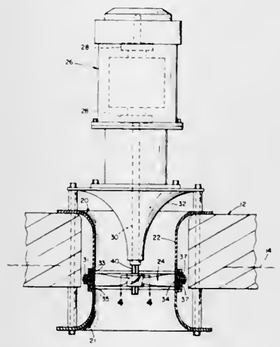


A low velocity horizontal gas scrubber in which gases to be scrubbed are led into a chamber in which there are baffles mounted across the gas flow path. The baffles have substantial orifices, with high pressure water spray nozzles mounted on the baffles spraying water counter to the flow of gases. A scrubbing unit made up of wooden slats stacked vertically and extending across the chamber in rows with sprays mounted above the slats to keep them wet occupies the balance of the chamber. A vertical baffle extending across the rear of the scrubber is vertically adjustable for equalizing gas flow through the upper and lower portions of the scrubber unit. The gases are exhausted from the unit through a stack with a water spray counter to the gas flow. A trough in the floor of the chamber collects the water and particles for discharge.

3,640,514
AERATION

George Washington Albritton, Houston, Tex., assignor to Ashbrook Corporation, Houston, Tex.

Filed Dec. 3, 1970, Ser. No. 94,803
Int. Cl. B01f 7/22
U.S. Cl. 261—91 5 Claims

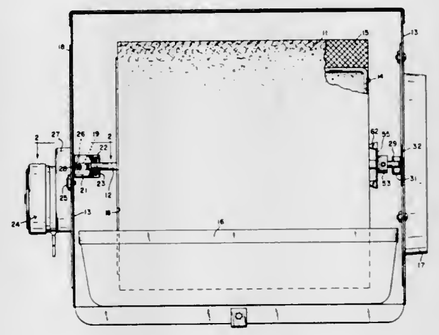


Aeration apparatus comprising a support, preferably a float having a load waterline and a cylindrical duct with a vertical axis and an interior peripheral surface, the duct providing a vertical flow passage. An impeller is mounted in the duct with its axis coincident with the axis of the duct. There are provided impeller thrust bearings supporting the impeller in the duct, preferably including a rubber bearing element positioned below the load waterline for water lubrication thereof. Such bearings include a peripheral bearing element mounted on and surrounding the impeller in cooperating thrust bearing relationship with a peripheral bearing element mounted on the interior peripheral surface of the duct. Impeller driving means are provided including a motor mounted on the support thereabove and having motor bearings supporting a drive shaft extending downwardly therefrom with its axis preferably coincident with that of the impeller and duct. For connecting the motor drive shaft and the impeller, there are provided torque transmitting coupling means permitting relative axial movement of the impeller and motor shaft, thus preventing imposition on the motor bearings of impeller induced thrust loads.

3,640,515
HUMIDIFIER DRIVE

Walter R. Stiles, Milford, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.

Filed Feb. 13, 1968, Ser. No. 705,184
Int. Cl. F24f 3/14
U.S. Cl. 261—92 13 Claims

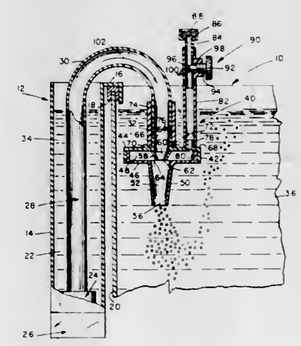


A humidifier for a warm air heating system comprises a water pickup drum rotating with its lower sector passing through a body of water, the drum rotor being rotatably mounted on a motor-driven shaft and connected to the shaft by a slip clutch that temporarily yields to excess torque between the rotor and shaft, and the clutch comprising a toothed spring element frictionally engaging formations on the side of a hub on the rotor.

3,640,516
AERATING DEVICE

Allan H. Willinger, Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed Mar. 18, 1970, Ser. No. 20,605
Int. Cl. B01f 3/04
U.S. Cl. 261—121 M 10 Claims



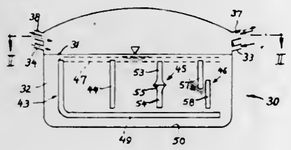
An aerating device having a sleevelike member for attaching the device to the discharge end of a filter tube sup-

plying a liquid to an aquarium tank. The liquid flows through a conical conduit positioned within an air chamber in the device to achieve a venturi effect so that the moving liquid draws the air from the air chamber, and carries the air into a conical discharge end of the device. The discharge end forces the air into the body of the liquid before the mixture of air and liquid is discharged into the aquarium liquid within the tank. A valve positioned on the device regulates the amount of the air to be supplied to the aquarium liquid. The device has a filter to purify the air being supplied and reduces any noise which may be generated by the suction action of the device.

3,640,517
METHOD AND APPARATUS FOR PROCESSING VITREOUS MELT

Alfred Sendt, Guetersloh, Germany, assignor to Hermann Heye, Obernkirchen, Germany

Filed Apr. 2, 1970, Ser. No. 25,103
Claims priority, application Germany, Apr. 3, 1969, P 19 17 450.6; July 22, 1969, P 19 37 124.5
Int. Cl. F27b *14/08;* **C03b** *5/16*
U.S. Cl. 263—11 **53 Claims**



A melt of vitreous material is heated uniformly by means of a heat tube or heat pipe, wherein circulation of a heat-exchange medium is effected independently of gravitational forces and exclusively as a function of a temperature differential existing within the heat tube. Various apparatus for accommodating and extruding melt of vitreous material are disclosed, and utilize the heat tube in different forms for controlling the temperature of the melt in desired manner.

3,640,518
BASIC REFRACTORIES

Trevor Wilkinson Lythe, Worksop, and Edward Arnold Ashworth, North Anston, both of England, assignors to Steetley (Mfg.) Ltd., Worksop, England

Filed Apr. 15, 1970, Ser. No. 28,977
Claims priority, application Great Britain, Apr. 18, 1969, 20,015/69
Int. Cl. F27d *1/04*
U.S. Cl. 263—52 **13 Claims**

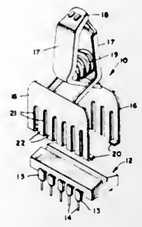
A basic refractory shape formed, for example, from dead-burned magnesia or dead-burned dolomite and having a high-carbon content is produced by heating a tar- or pitch-treated shape in the presence of vapors of a catalyst, such as an oxidation/polymerization agent, a polymerization/condensation agent or an inorganic oxidizing agent, and vapors of tar or pitch arising from the heating of the shape. The resulting shape can be fired to carbonize the tar or pitch. Impregnation with further quantities of tar or pitch subsequent to heating with the catalyst vapors is optionally effected before firing.

3,640,519
HANDLING AND HEAT-DISSIPATING DEVICE FOR ELECTRICAL COMPONENTS

William M. Halstead, P. O. Box 881, Glen Burnie, Md.

Filed Aug. 13, 1969, Ser. No. 849,831
Int. Cl. G03d *13/10*
U.S. Cl. 269—254 **6 Claims**

A pair of platelike metallic jaws are secured to a resilient clamp which urges the jaws in engagement with sets of metallic terminals at opposite sides of electrical components such as integrated circuit modules, so that when lead wires of the terminals are soldered or unsoldered, heat is dissipated by

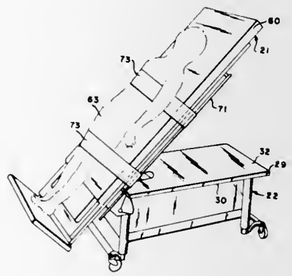


the jaws and clamp to prevent damage of the component by excessive heat. The clamp also provides a handle for the device, so that the component held between the jaws may be conveniently manipulated during installation or removal.

3,640,520
THERAPY TREATMENT TILT TABLE

Roman G. Wieland; A. John Weber; Clair A. Bearfield, and Raymond Cole, all of Valley City, N. Dak., assignors to Tri W-G Inc., Valley City, N. Dak.

Filed June 11, 1969, Ser. No. 832,280
Int. Cl. A61g *13/00*
U.S. Cl. 269—323 **5 Claims**



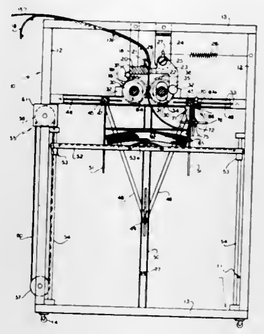
The invention comprises a therapy treatment table having a platform for receiving a patient and a main frame with the platform pivotally mounted to the top of the main frame, the main frame has four telescoping legs for raising and lowering the frame and platform, a motor for powering the telescoping legs, a telescoping drive member having one end pivotally connected to the main frame and the other end pivotally connected to the platform for pivoting the platform from a vertical position to a horizontal position to facilitate the placement of the patient onto the platform.

3,640,521
APPARATUS FOR STACKING FAN FOLDED PAPER

Ronald W. F. Hutley, Lansdale, Pa., assignor to Advanced Terminals, Inc., Herkimer, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,012
Int. Cl. B65h *45/101, 45/109*
U.S. Cl. 270—61 F **8 Claims**

Apparatus for receiving a continuous web of prefolded forms from a high-speed printer and stacking them refolded on a tray has brake means and feed rollers for the web, the brake means being applied intermittently to allow the folds to refold as the forms fall to the tray. Feeler fingers continuously sense the distance from the rollers to the stack top and control the automatic lowering of the tray as the stack builds

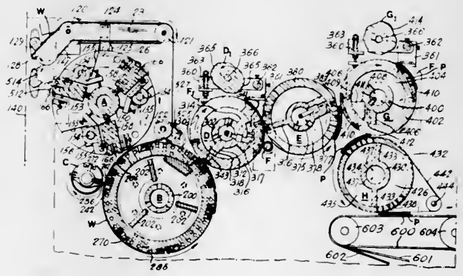


up. The feed rollers have nylon hubs and rims connected by sponge rubber cores for minimum gripping of the web whatever its thickness. A modification has continuously applied brake means and rollers with a flatted perimetrical portion for rapid intermittent feeding of web to stack.

3,640,522
SHEET FOLDING APPARATUS

Peter Oelmann, Mount Royal, Quebec, and Peter Weisshuhn, Willowdale, Ontario, both of Canada, assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 12, 1970, Ser. No. 18,947
Int. Cl. B65h *45/16*
U.S. Cl. 270—72 **36 Claims**

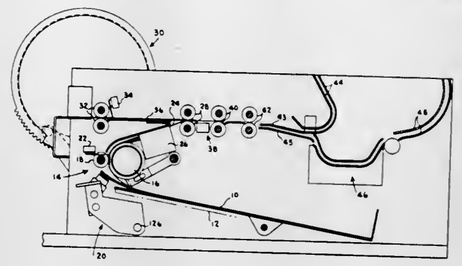


There is disclosed an apparatus for folding flexible material to form folded products such as dressings or surgical sponges at high production rate. The apparatus employs rotary drums to fold the flexible material in the longitudinal or machine direction and moving belts to fold the material in the lateral or cross machine direction. There are a number of rotary drums to cut and fold the material with transfer drums to move the material from one folding drum to the next.

3,640,523
COPY SHEET HANDLING APPARATUS FOR ELECTROSTATIC OFFICE COPIERS

Christian A. Beck, Ridgefield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 22, 1970, Ser. No. 74,349
Int. Cl. B65h *3/10*
U.S. Cl. 271—28 **17 Claims**

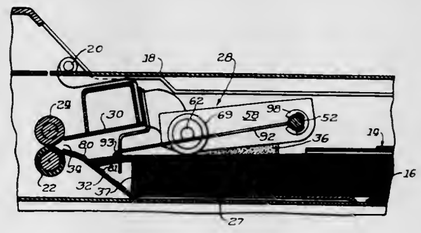


A bellows, incorporated within a sheet feed roller, is actuated by external actuating apparatus to create a partial vacuum at suction ports in the feed roller periphery. A pivotal pressure pad assembly momentarily presses a sheet stack against the ports, leaving the top sheet adhered to the feed roller which is then rotated to advance the separated top sheet to a prefeed position. Additional actuating apparatus, operating on command, rotates the feed roller through the remainder of a complete revolution to feed the prefed sheet from the apparatus and to reorient the feed roller for the next sheet separation and prefeed cycle.

3,640,524
SHEET-SEPARATING APPARATUS

Donald M. Fredrickson, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

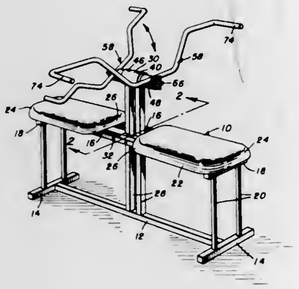
Filed June 30, 1969, Ser. No. 837,409
Int. Cl. B65h *3/06*
U.S. Cl. 271—36 **6 Claims**



This invention is directed to improved sheet-separating apparatus for enabling feeding of single sheets from a superimposed stack to adjacent sheet transport means. Desirably, single sheets are fed from the top of the stack by engagement by friction driving means. Fortuitous multiple feeds from the stack are separated by providing an inclined separating member in the path of the sheets having an irregular separating surface which cooperates with the leading edges of the fed sheets to releasably entrap them. Entrapment of the engaged sheet is overcome by the driving force of the friction driving means and only that sheet is moved past the separating member. Each of the other sheets are similarly engaged and successively moved past the separating member. The ir-

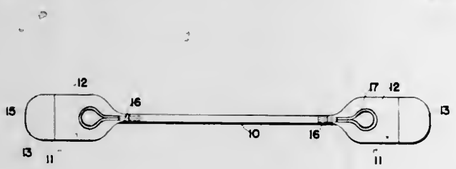
regular surface may comprise such materials as velour or pile, flock, abrasive material, or tricot fabrics.

3,640,525
FRICTIONAL RESISTANT-TYPE EXERCISE MACHINE WITH WAIST-LEVEL-MOUNTED OSCILLATABLE HANDGRIPS
Richard I. Proctor, 7245 Morningside Drive, Loomis, Calif.
Filed Sept. 8, 1969, Ser. No. 856,040
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 R **10 Claims**



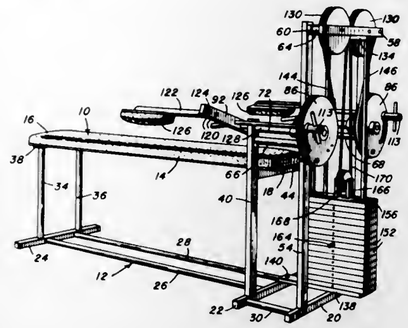
An exercise apparatus including a seat structure defining front and rear portions and including a standard portion projecting upwardly from the rear portion thereof from which a generally horizontally disposed transverse handle bar including forwardly directed end portions is supported at a generally central location for oscillation about a horizontal axis extending in front-to-rear direction in a direction intersecting a user seated on the seat structure. The handle bar and its axis of oscillation are disposed at an elevation relative to the seat structure so as to generally correspond to the elevation of the waist of a person seated on the seat structure.

3,640,526
RESILIENT-TYPE LEG-EXERCISING DEVICE
John Kenneth Olorenshaw, Box 425, Canmore, Alberta, Canada
Filed Jan. 26, 1970, Ser. No. 5,670
Int. Cl. A63b *21/28, 23/04, 21/00*
U.S. Cl. 272—80 **3 Claims**



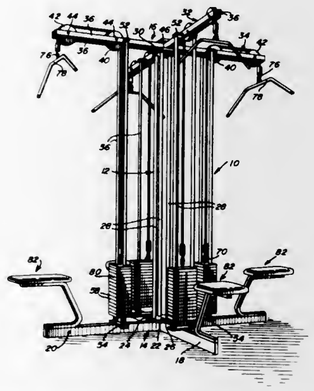
An elastic-type exercising device to be attached to the feet of a user. The exercising device has two feet-engaging members attached to the respective ends of a single elongated piece of resilient material. Two of the devices are to be positioned parallel to each other so that users may place feet in two adjacent foot-receiving members and exercise against the resistance of the other user when his feet are in adjacent feet-engaging members.

3,640,527
WEIGHT RESISTANT CHEST EXERCISING DEVICE
Richard I. Proctor, 7245 Morningside Drive, Loomis, Calif.
Filed July 25, 1969, Ser. No. 844,989
Int. Cl. A63b *21/00, 23/00*
U.S. Cl. 272—81 **13 Claims**



An exercising apparatus having body engaging members that are detachably fixed to offcenter locations on pulleys. The members rotate in opposite directions with respect to each other. Each pulley is connected to a cord that is reeved over another pulley and wherein said cord extends downwardly to attach to weights to be lifted. The apparatus includes a pair of pad members supported for swinging oscillatory movement about parallel axes spaced approximately shoulder width apart. The pad members are swingable between first positions with the pad members disposed on remote sides of their axes of oscillation and second positions displaced approximately 90° from the first positions thereof. The pad members are spaced outwardly of their axes of rotation approximately 5 ½ inches and are to be engaged by the inner surfaces of the forearm and upper arm spaced slightly from the elbow when the forearm is bent to form an acute angle with the upper arm. With the arms bent, they are to be engaged with the pad members and swung forwardly from oppositely extending opposite side positions forward to positions with the arms extending forwardly. The pad members are yieldingly biased toward the first positions thereof.

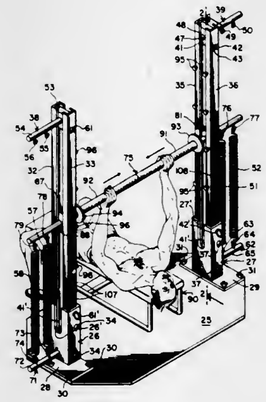
3,640,528
PULL-TYPE VARIABLE WEIGHT EXERCISING DEVICE
Richard Proctor, 7245 Morningside Drive, Loomis, Calif.
Filed Aug. 22, 1969, Ser. No. 852,289
Int. Cl. A63b *21/06, 23/02*
U.S. Cl. 272—81 **11 Claims**



An upright standard including four generally equally spaced, elongated base arms projecting generally radially

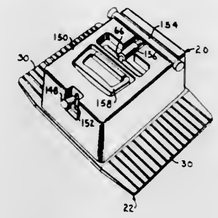
outwardly from the lower end thereof and four elongated support arms projecting outwardly of the upper end of the standard over the base arms. A seat is carried by the outer end of each base arm and aligned inner and outer pulleys are journaled from the inner and outer ends of each support arm for rotation about horizontal axes extending transversely of the corresponding support arm. An elongated tension member is trained over the pulleys and includes a first weighted end portion depending downwardly from the inner pulley and a second end portion depending downwardly from the outer pulley toward the seat. A horizontal handle bar is swivelly supported intermediate its opposite ends from the terminal end portion of the second end portion of the tension member for gripping by a person disposed upon the seat.

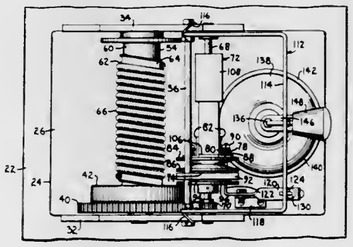
3,640,529
PUSH-PULL SPRING-TYPE EXERCISING DEVICE
John F. Kane, 1793 Riverside Drive, New York, N.Y.
Filed June 22, 1970, Ser. No. 48,085
Int. Cl. A63b *21/20, 23/04, 23/02*
U.S. Cl. 272—83 R **6 Claims**



An exercising apparatus for bar bell-type exercises for the development and strengthening of major portions of the body including arms and legs, in which the forces are provided by resisting springs with the same freedom that weights are used in connection with the bar bells themselves and which are used in connection with the bar bells themselves and which includes a horizontal work bar that can be vertically connected to springs at its opposite ends and the spring force resisted intermediate its ends while the user is positioned between vertical guides. Top, bottom and vertically adjustable intermediate spring arm supports are detachably carried on opposing channel supports. Parts are provided so that the arm supports can be easily adjusted or disassembled and the bar is carried in sliding bar guides adapted to be adjusted in and between space formed by opposed channel guides extending vertically and held upon the base by insertion at their lower ends into laterally-spaced sleeve supports. Knob projections are provided upon the vertical channel guides and upon the work bar are disposed sleeve disc assemblies adapted to be engage the knob projections of the vertical guides to support the bar when not being used and which can, by the user of the bar, be easily slid out of engagement with the knob projections when the bar is to be worked against the action of the springs.

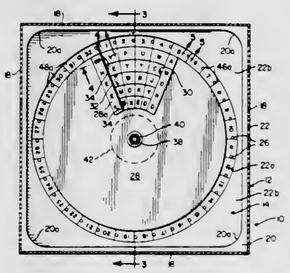
3,640,530
EXERCISE APPARATUS
Glen E. Henson, 3510 S. Cottage, Independence, Mo., and Milton W. Fisher, Fort Lauderdale, Fla., assignors to said Henson by said Fisher
Filed Apr. 10, 1969, Ser. No. 815,052
Int. Cl. A63b *21/00*
U.S. Cl. 272—83 A **7 Claims**





An exercise apparatus comprising a pair of relatively rotatable friction members, one of which is driven from a rotatable spool through a ratchet and pawl assembly. A rope wound on the spool drives the members when the rope is pulled and a centrifugal brake clamps the members to increase the friction force responsive to the speed at which the rope is pulled. In one form, the frame is rockable against springs. A follower moves along a helical groove in the spool and carries a marker for indicating the relative force exerted on the rope during each pull. A spring windup mechanism returns the rope for repeated pulling operation.

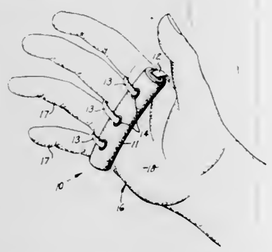
3,640,531
WORD FORMING GAME DEVICE
Edward F. Penders, 63 Parkside Drive, West Seneca, N.Y.
Filed Oct. 10, 1969, Ser. No. 865,437
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **4 Claims**



A word forming game device includes a board having a playing surface and a rotor disposed thereover. The playing

surface is marked with seven concentric circles connected by 32 radial lines to form 192 segmental spaces in 32 radially disposed groups or sectors of six each and in six circumferential groups or concentric rings of 32 each. The spaces in the outermost ring severally have numerical symbols arranged in numerical sequence to designate the corresponding radial groups therebelow, while the spaces in the remaining rings severally have specific alphabetical letter symbols or a "WILD" word symbol designating any desired letter, but normally do not form words either radially or circumferentially, and the spaces in the outermost ring severally are provided with upstanding stops along the radial lines. The rotor is in the form of a circular disc covering all but the outermost ring of spaces and provided with a sector-shaped slot rotatable to expose upon stopping all five spaces in each of the radial groups, but only four spaces in each of the five concentric circumferential groups, totaling 20 letter symbols and/or "WILD" symbols. A radial group of letter symbols is provided along each side of the slot in alinement with the exposed circumferential groups and spelling one or more words radially inwardly, such as the word "WHEEL" on one side and the words "A WORD" on the other side, to designate the preferred radially inward sequence of selecting the symbols in each of the five circumferential groups upon successive rotations and stops of the rotor, which also is provided along the side of the slot designated by the word "WHEEL" with a detent extending beyond the rotor periphery and engageable with the stops to stop the rotor between adjacent pairs of stops to positively designate the first symbols of the circumferential groups to be selected sequentially radially inwardly. As the rotor stops upon successive rotations, the four symbols in each of the five exposed circumferential groups are selected by each player until all 20 symbols are selected to form words by the use of playing pieces having corresponding symbols.

3,640,532
HAND DEVICE FOR BASKETBALL PLAYERS
William W. Bauer, Box 202, Oceanside, Oreg.
Filed Feb. 4, 1970, Ser. No. 8,618
Int. Cl. A63b *69/00*
U.S. Cl. 273—1.5 A **4 Claims**



A teaching device for the game of basketball. An elongated flexible tube is secured to the palm of a player's hand by means of an elastic loop which extends from each end of the tube around the back of the hand of the player. A plurality of auxiliary elastic straps are equally spaced apart along the tube and secured thereto. Each auxiliary strap extends between the fingers of the player's hand to keep them separated.

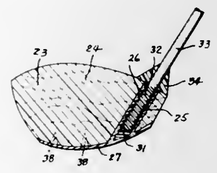
3,640,533
REINFORCING FACING FOR A STRUNG RACKET
Tyler B. Davis, Pawtucket, R.I., and Bancroft Racket Company
Filed July 8, 1970, Ser. No. 53,167
Int. Cl. A63b *49/14*
U.S. Cl. 273—73 C **1 Claim**

A strung wooden racket having reinforcement on a portion thereof in a plane parallel to the plane of the strings. The reinforcement comprises a mesh of metal including high portions and fiberglass reinforced resin covering opposite sides of the metal mesh. The coverings are of two thicknesses: an



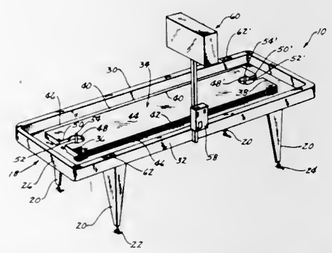
outer thicker covering providing a smooth surface and a thinner inner surface which allows the high portions of the metal mesh to show through and impart a rough surface. This rough surface aids the attachment to the wood racket.

3,640,534
HOSEL-LESS WOODEN GOLF CLUB WITH SHAFT RETAINER AND SOLE PLATE
Truett P. Mills, 1700 Second Avenue, Tuscaloosa, Ala.
Filed June 13, 1969, Ser. No. 832,994
Int. Cl. A63b *53/02*
U.S. Cl. 273—80.7 **7 Claims**



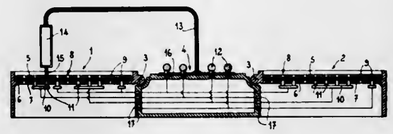
A hosel-less wooden golf club with a combined shaft retainer and sole plate in which the usual hosel formation provided on the wood portion of the club head is eliminated, to reduce cost and shaping of the club head and a combined sole plate and shaft retainer is fitted to the underface and rear portion thereof. The club shaft is screw threaded into the shaft retainer by the use of left-hand thread. By the elimination of the hosel the wind resistance to the movement of the club is considerably lessened, the weight lies in rear of the striking face and the club is more easily balanced.

3,640,535
HORSESHOE GAME DEVICE WITH RECESSED STAKE AREAS
Irvin F. Gendler, Omaha, Nebr., assignor to Daniel F. Murphey, Omaha, Nebr.
Filed June 30, 1969, Ser. No. 837,473
Int. Cl. A63b *67/14*
U.S. Cl. 273—126 R **3 Claims**



A game device of the horseshoe type comprising, a supported table having an elongated flat playing surface provided thereon adapted to have horseshoelike pieces slid thereon from one end to the other. A stake extends upwardly above the playing surface at each end thereof to present a scoring target for the person sliding the pieces on the playing surface. The table is provided with a gutter area extending around the playing surface adapted to receive those pieces which are improperly slid. Various embodiments are also disclosed which provide variations of the scoring target around the stakes at each end of the playing surface.

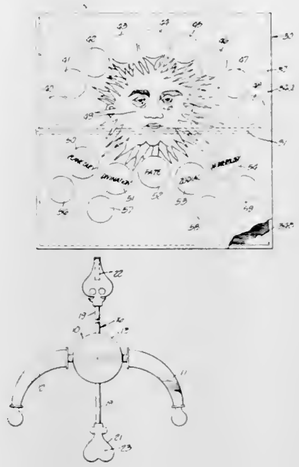
3,640,536
NAVAL COMBAT BOARD GAME APPARATUS
Laurent Godmer, "LeChambord" 2 Place Jean-Jaures, Romans, France
Filed Apr. 9, 1969, Ser. No. 814,660
Claims priority, application France, Apr. 16, 1968, 49.908
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 AB **4 Claims**



A game apparatus for playing "naval combat" with electrical responses has two invertible trays with parallel and orthogonal rows of corresponding holes on both faces. The holes are intersected by contact studs. Plug-in connectors representing ships, having as many pins as the number of shots needed to sink the ships are plugged into the holes in the lower faces to provide an electrical connection with the various studs. Each plug-in connector is connectable through a flexible conductor or a printed circuit to an electric bulb of color corresponding to the class of ship. A finder is formed by a flexible cable connecting a probe and a battery to a common ground for the bulbs. When the probe inserted into an upper hole contacts a stud which is connected to a light bulb through a plug-in connector underneath, the bulb is lit. Circuit-scrambling means may be included.

3,640,537
MAGNETIC DIVINING ROD GAME EQUIPMENT
Reuben B. Klamer, 245 S. Barrington, Los Angeles, Calif., and Marshall Levy, Los Angeles, Calif., assignors to said Klamer, by said Levy
Filed Feb. 20, 1970, Ser. No. 12,907
Int. Cl. A63f *9/18*
U.S. Cl. 273—161 **7 Claims**

There is disclosed herein equipment for a game including a divining rod device, gameboard and playing cards. The divining rod device includes a handle member having pivotally attached thereto a counterbalanced arm or rod with a magnet at one end thereof. The gameboard is of laminated construction and has a metal inner layer. The playing cards have various indicia thereon and are positioned at indicated locations on the gameboard. The divining rod device is held by the handle member substantially parallel with the board and several inches thereabove. The end of the rod with the magnet is in the form of a pointer which is swept back and forth over the board until this end makes contact with a card on the board because of the attraction of the magnet to the

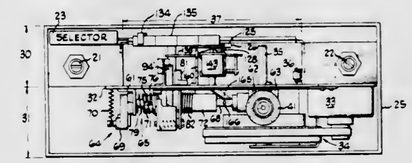


board. In this manner, a card is selected to thereby provide a "reading" according to the game.

ERRATUM

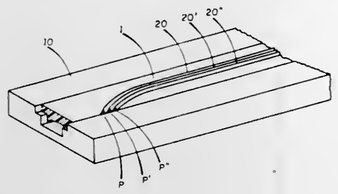
For Class 273—187 see:
Patent No. 3,639,923

3,640,538
UNIVERSAL TAPE RECORDER AND PLAYBACK INSTRUMENT
James H. Tolar, Mayfield Hgts., Ohio, assignor to Tenna Corporation
Filed June 29, 1966, Ser. No. 561,635
Int. Cl. G11b *15/00, 21/12*
U.S. Cl. 274—4 G **9 Claims**



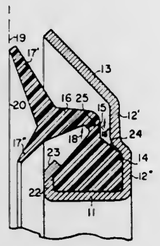
A tape recorder and playback instrument adapted to operate with different types of tape-carrying cartridges. The instrument includes a guideway for receiving different cartridges and is provided with a sensing member which detects the type of cartridge inserted into the guideway. With one class of cartridges, means responsive to the sensing member are employed for pivoting a toggle-mounted pinch roller into position to press the tape within the cartridge against a rotating drive capstan. When a second class of cartridge is inserted, means are employed for preventing the movement of the pinch roller. In addition, a positioning mechanism responsive to the sensing member locates the transducer adjacent the desired track on the magnetic tape.

3,640,539
LINEAR PHONOGRAPH RECORD STRIP
Clayton H. Allen, Wellesley, and John C. Heine, Cambridge, both of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.
Original application Feb. 3, 1967, Ser. No. 613,873, now Patent No. 3,480,281. Divided and this application Sept. 3, 1969, Ser. No. 854,935
Int. Cl. G11b *3/72, 3/78*
U.S. Cl. 274—42 **1 Claim**



Linear phonograph record strip with plural messages in parallel longitudinally extending record grooves, the grooves having starting points lying along a common line and successively spaced longitudinally of the record strip.

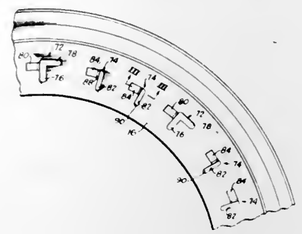
3,640,540
TIGHTENING RING HAVING A RIGID LINER AND AN ELASTOMERIC RING MOUNTED THEREON
Hans Tord E. Larsson, Trelleborg, Sweden, assignor to STEFA Industri Aktiebolag, Landskrona, Sweden
Filed June 25, 1969, Ser. No. 836,306
Claims priority, application Sweden, Jan. 13, 1969, 345/69
Int. Cl. F16j *15/32*
U.S. Cl. 277—25 **7 Claims**



A tightening ring for use around a shaft, including a liner having a portion adapted to engage the shaft and an elastomeric ring including a basic part carrying a hub part and at least one tightening lip carried by the hub part, the basic part having an inner surface which, in the tension-free state of the elastomeric ring, is inclined at an angle with respect to the axis of the tightening ring, the basic part being imbedded in the liner in a deformed condition to provide a secure connection between the liner and the elastomeric ring.

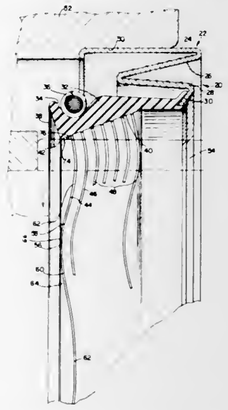
3,640,541
HYDRODYNAMIC LIFT-TYPE FACE SEAL
Ernest J. Taschenberg, Baltimore, Md., assignor to Koppers Company, Inc.
Filed June 12, 1970, Ser. No. 45,632
Int. Cl. F16j *15/34, 15/54*
U.S. Cl. 277—96 **6 Claims**

An annular shoulder arranged to be secured to a rotating shaft has a radially extending planar seal face or surface. An annular housing member nonrotatably supports an annular seal ring and is arranged to have the rotatable shaft extend therethrough. The seal ring has a planar radially extending seal face or surface that is positioned in face-to-face relation with the rotatable seal surface on the annular shoulder. The shoulder seal surface has a plurality of separate recessed pockets arranged in spaced relation to each other. The pockets have an L-shaped configuration with an angularly extending leg. The pockets have a relatively deep recessed portion and a shallow recessed portion connected thereto and extending angularly therefrom with a step therebetween. The step is chamfered to improve the fluid lift properties of the



pockets. The seal surface on the seal ring has an annular fluid distributor groove positioned in overlying relation with a portion of the radially extending portion of the recessed pockets to receive and distribute the fluid. The seal ring seal surface has a second annular vent groove-spaced radially outwardly from the distributor groove forming a seal dam therebetween. Radial vent passages are formed in the seal ring and are connected to the vent groove. The sealing function of the seal faces is performed radially outwardly from the outer shoulder of the distributor groove and the lifting function is performed radially inwardly of the outer shoulder of the distributor groove.

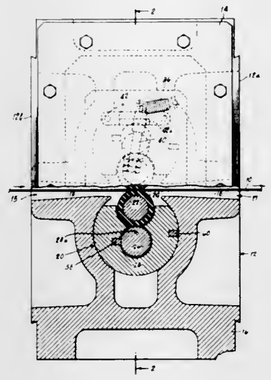
3,640,542
OIL SEAL WITH PUMPING ACTION
Keith B. Mowat, 186 Taylor Road, Ancaster, Ontario, Canada, and William O. Heyn, 256 Woodbine Place, Barrington, Ill.
Filed Feb. 18, 1970, Ser. No. 12,234
Int. Cl. F16j *15/32, 15/48*
U.S. Cl. 277—134 **11 Claims**



An oil seal for rotating shafts and the like having a portion adapted to be received within an opening in a machine ele-

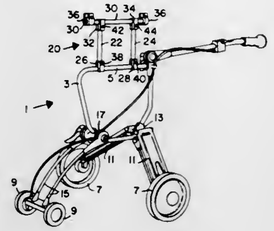
ment, and an inwardly facing flexible primary lip having portions thereof adapted to engage a part of the periphery of a shaft passing therethrough in oiltight relation. The inner surface of the primary lip resiliently but snugly engages the outer surface of an associated shaft to form a given contact area, with this portion of the lip cooperating with at least portions of one or more sinuous ribs lying on the inner surface of the primary lip, to effect a pumping action on oil trapped therebetween upon rotation of the shaft. One sinuous rib preferably has portions thereof tangent to the contact area, with the other portions of the sinuous rib being more or less closely spaced axially apart from the contact area to define therebetween a space of continuously varying axial dimension. In one embodiment, the primary lip is given its final dimension in molding, thereby predetermining the portion thereof which will form the contact area on the shaft, and in other embodiments, the final dimensioning of the primary lip occurs after molding, since the seal is trimmed to its final dimension by a subsequent operation. In the latter case, the sinuous rib may either intersect or be tangent to the contact area. The amplitude and frequency of the sinuous rib depend principally on the intended application and the material in question. In the preferred form, rib thicknesses vary as the ribs more or less closely approach the portion of the primary lip which contacts the seal.

3,640,543
SEAL FOR MOVING STRIP
George Main, Garfield Heights, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed Nov. 4, 1969, Ser. No. 874,003
Int. Cl. F16j *15/50*
U.S. Cl. 277—237 **13 Claims**



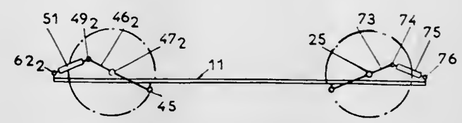
A seal for the opening of a treatment chamber for treating moving strip. An elongated roll or mounting member is pivotally mounted in a housing on each side of the opening. An elongated contact roller is rotatably mounted to each of the roll members, the contact rollers being yieldably biased toward each other through pivotal movement of the roll members so as to engage opposite sides of the strip. A backup roller is rotatably mounted in each of the roll members engaging the respective contact roller. The contact and backup rollers pivot about the axes of the roll members to accommodate strips of varying thickness and/or including nonuniformities. Seals between the elongated roll members and the housing facilitate the overall seal that is required.

3,640,544
HANDCART
Albert J. Buonassissi, 742 Lakewood Drive, Sunnyvale, Calif.
Filed June 8, 1970, Ser. No. 44,279
Int. Cl. B62b *11/00*
U.S. Cl. 280—47.35 **4 Claims**



Extension apparatus for a handcart adapted to support baggage containers, e.g., postal bags, the apparatus being adapted to be engaged to a standard cart and support containers at an elevated level relative to that of the standard cart.

3,640,545
AUTOMOBILE VEHICLE
Armand Citroen, Neuilly-sur-Seine, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France
Filed Nov. 24, 1969, Ser. No. 879,276
Claims priority, application France, Nov. 26, 1968, 175312; Nov. 15, 1969, 6939929
Int. Cl. B60g *9/02*
U.S. Cl. 280—124 **5 Claims**

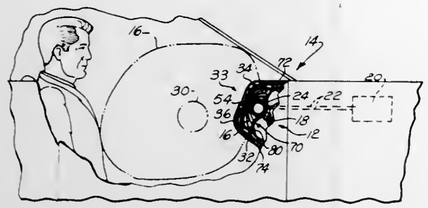


Automobile vehicle construction having a body coupled to wheels, preferably three in number, by a suspension system comprising levers rotatably mounted about the wheel axles, and members of rubberlike elasticity, acting longitudinally, the points of attachment to the body being such that the deformation of the members is substantially greater than the corresponding movement of the body.

3,640,546
SAFETY APPARATUS
Darrell S. Brawn, Livonia, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Sept. 15, 1969, Ser. No. 857,666
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **15 Claims**

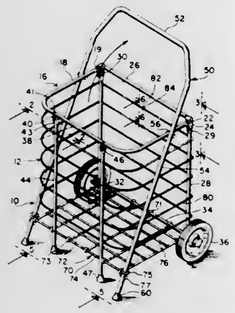
A safety apparatus for protecting an occupant of a vehicle during the occurrence of an accident includes an expandable confinement. The confinement has a collapsed inoperative

condition and an expanded operative condition for restraining movement of the occupant during the accident. A



breakaway dash panel is provided for at least in part enclosing the confinement when the confinement is in its inoperative condition.

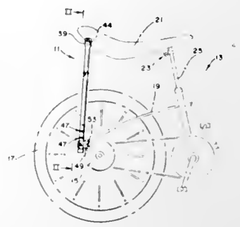
3,640,547
COLLAPSIBLE SHOPPING CART
Abraham Friedman, 1228 45th Street, Brooklyn, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,107
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C **15 Claims**



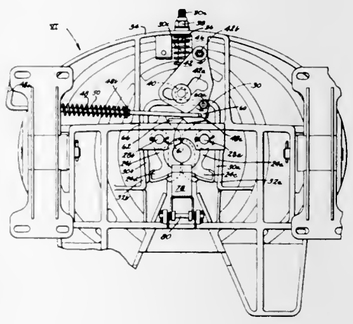
A collapsible shopping cart has a rectangular basket open at the top and closed at the bottom. The top of the basket has a rigid rectangular frame pivotally secured to vertical rear post carried by an axle provided with rotatable wheels. Vertical front legs are secured to the front of the frame. A handlebar is integral with lateral legs pivotally secured to sides of the frame and slidably engaging the bottom of the basket. The sides of the basket are formed by wire ribs arranged to flex outwardly at pivot joints at one or more sides of the basket. The bottom is a wire grid rotatably secured to the axle. Ends of the wire ribs can be rigidly joined together by welding.

3,640,548
BICYCLE SADDLE BRACE
George W. Worley, Bolivar, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.
Filed July 10, 1970, Ser. No. 53,865
Int. Cl. B62j *1/00*
U.S. Cl. 280—289 **7 Claims**

A brace for supporting an elongated bicycle saddle or seat adjacent the rearward end thereof from a bicycle. The brace includes a pair of members which are attached adjacent the upper ends thereof to the saddle and adjacent the lower end thereof to a part of the bicycle. The members respectively have upper and lower portions that are substantially parallel with one another and the members have intermediate portions integrally interconnecting the upper and lower portions. The intermediate portions are disposed in crossed relationship and are fastened together with fastening means to provide a rigid and stable brace.



3,640,549
NONSQUIRT FIFTH WHEEL ASSEMBLY
Charles G. Neff, Saratoga, and Louis V. Carrier, San Jose, both of Calif., assignors to Holland Hitch Company, Holland, Mich.
Filed Mar. 2, 1970, Ser. No. 15,485
Int. Cl. B62d *53/10*
U.S. Cl. 280—435 **5 Claims**

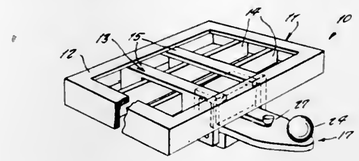


A fifth wheel assembly for a tractor-trailer connection, having a special yoke release mechanism.

3,640,550
HIDEAWAY TRAILER HITCH
Herbert Irvin Pearson, 303 Pineland Drive, Goldsboro, N.C.
Filed May 25, 1970, Ser. No. 39,961
Int. Cl. B60d *1/06*
U.S. Cl. 280—491 B **3 Claims**

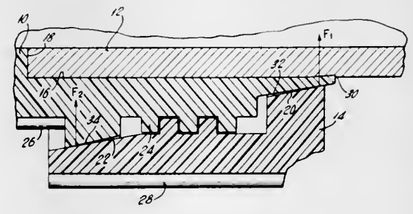
A trailer hitch secureable to a rear part of an automobile, the hitch including a tongue which extends rearwardly into

an exposed position when in use, and which is pivotable into



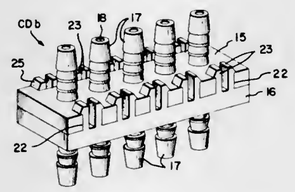
a hidden position when not in use, thereby not detracting from the appearance of the automobile.

3,640,551
COUPLING FOR PLASTIC PIPE
Leonard Shakesby, Alexandria, Ontario, Canada, assignor to Esso Research and Engineering Co.
Filed Oct. 1, 1970, Ser. No. 77,398
Int. Cl. F16l *19/00, 47/00*
U.S. Cl. 285—39 **5 Claims**



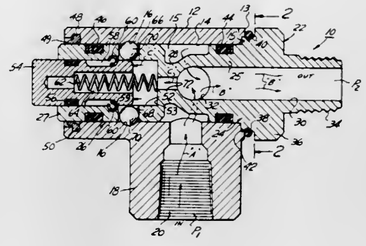
A coupling for use in connecting lengths of plastic pipe comprising two parts threaded together, which have mismatched beveled annular mating surfaces. During the assembly of the coupling, the mismatched surfaces coact to force the coupling against the pipe, providing an effective joining of the pipe to the coupling.

3,640,552
VACUUM OR PRESSURE COUPLING DEVICES
Henry William Demler, Sr., Lebanon, and Edward Landis Weist, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Original application Aug. 13, 1969, Ser. No. 858,241, now Patent No. 3,588,149, which is a continuation-in-part of application Ser. No. 690,896, Dec. 15, 1967, now abandoned. Divided and this application Dec. 21, 1970, Ser. No. 99,858
Int. Cl. F16l *39/00*
U.S. Cl. 285—110 **4 Claims**



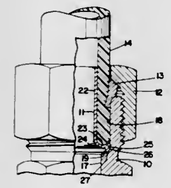
A vacuum or pressure coupling device comprises mateable body members each provided with means for connection to tubular members and each provided with means for maintaining the body members in engagement, one of the body members being provided with a stiffly flexible sealing member which is sealingly and telescopically mateable with a section of another of the body members.

3,640,553
SHIELDED AIRHOSE SWIVEL WITH SAFETY PUSHBUTTON DISCONNECT
Leland F. Blatt, 790 Shoreham, Grosse Pointe Woods, Mich.
Filed July 30, 1970, Ser. No. 59,522
Int. Cl. F16r *37/00*
U.S. Cl. 285—277 **6 Claims**



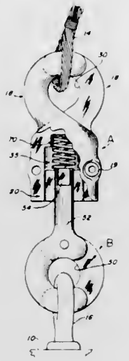
A swivel assembly for fluid conduits with a pushbutton disconnect which includes a body member having a stem member seated therein and both members are connected to fluid conduits, retaining balls seated in the stem for retaining the stem member in the body member, and a spring-biased pushbutton operatively seated in a bore of said stem member whereby the pushbutton is depressed, the retaining balls fall into a nonoperative position, thus freeing the stem member for removal from the body member; and a fluid passage is provided in the stem member for passage of fluid into the pushbutton bore to prevent release of the button when fluid pressure exists in the swivel assembly.

3,640,554
COUPLING FOR PLASTIC TUBE
Anthony F. Siwik, Kalamazoo, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 26, 1970, Ser. No. 5,480
Int. Cl. F16l *13/14, 33/20*
U.S. Cl. 285—382.2 **2 Claims**



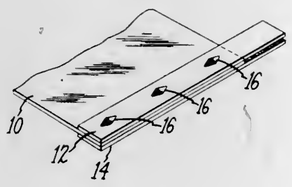
A body assembly for a coupling for plastic tube in which the body assembly comprises a body having a sleeve permanently assembled thereto by indentation of a portion of the sleeve in the wall of a bore in the body.

3,640,555
CONNECTOR FOR HANDTOOL SUSPENSION SYSTEM
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Oct. 24, 1969, Ser. No. 869,223
Int. Cl. F16b *7/00*
U.S. Cl. 287—103 A **4 Claims**



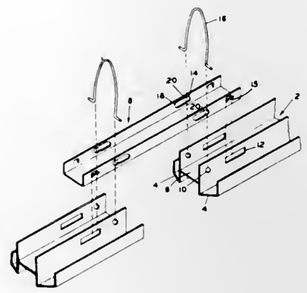
A coupling or connector is inserted as a segment of a tensively loaded support system for supporting the weight of heavy portable handtools. The coupling includes a male connector member and a female connector member which can be moved into and out of registry with one another in a first angular relation and locked together in a second angular relation to permit the coupling to transmit tensive loadings therethrough. The coupling members are completely removable from the handtool when uncoupled. Further, provision is made to securely lock the male and female connector members together to prevent inadvertent connector uncoupling when tensive loadings on the support system are rapidly changed during movement of the tool.

3,640,556
TAB WELDED JOINT AND METHOD OF MAKING
Moreland P. Bennett, 45 Concord Parkway, Pittsfield, Mass.
Original application Feb. 17, 1967, Ser. No. 616,945. Divided and this application Aug. 22, 1969, Ser. No. 868,259
Int. Cl. F16b *5/07, 5/08*
U.S. Cl. 287—189.36B **6 Claims**



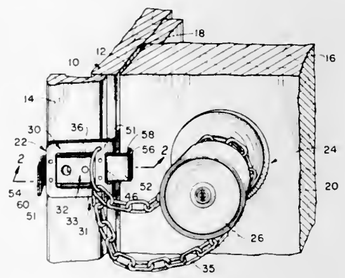
A welded joint comprising overlapped strips of metal with tabs formed by piercing or lancing through the overlapped portion. The formed tabs are flattened against the metal and resistance spot welded to such metal. The resistance welding forms a metallurgical bond between the metal members.

3,640,557
EXPANSION SPLICE
Ernest B. Nute, Jr., Mountville, and James C. Ollinger, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Dec. 19, 1969, Ser. No. 886,532
Int. Cl. E04c *5/18;* **E04b** *5/52*
U.S. Cl. 287—189.36A **3 Claims**



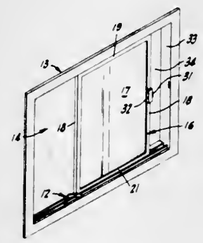
A splice joint is used to fasten together two pieces of runner structure for a suspended ceiling. The splice is constructed to permit expansion of the runner structures should they be exposed to heat. The splice joint and runner structures are held together by a wire clip which, during expansion of the runner structures, will override a stop structure and move into a slot region to permit expansion of the runner structure.

3,640,558
AUXILIARY LOCK FOR SWINGING DOORS
Harry R. Gewertz, Whittier, and George D. Read, Glendora, both of Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Oct. 5, 1970, Ser. No. 78,051
Int. Cl. E05c *17/36, 19/18*
U.S. Cl. 292—264 **10 Claims**



A combination bolt type and chain lock having an L-shaped frame with an edge part forming a strike plate and extending flatwise along and secured to a door jamb edge surface with a frame side part extending flatwise longitudinally along a door jamb side surface. A bolt opening is formed longitudinally through the juncture between the frame edge and side parts and the frame side part has longitudinally spaced overlying portions, with spaced protuberances acting as guide means for a sheetlike lock bolt, and is separated by intermediate underlying portions longitudinally slidably mounting the lock bolt movable through the frame bolt opening. The lock bolt is provided with spaced protuberances to act as abutment stops for the full open and locked positions thereof. Additional locking means is provided by the combination of a hasp secured to the overlying portions of said frame with a length of chain links sufficient in length to be looped around a doorknob of the door when in the closed position. With the swinging door in the closed position, the lock bolt may be extended overlapping the door side surface acting as a bolt lock, the strike plate of the lock frame edge part may be engaged by a main lock bolt extending from the door edge and the loop of secured chain positioned around the doorknob as an additional locking feature. Disengagement of the bolt lock allows partial opening of the door to the extent of the chain loop.

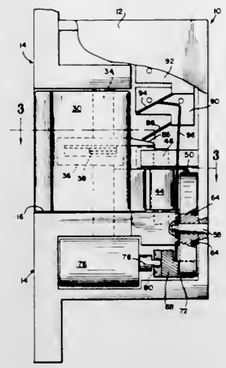
3,640,559
SECURITY DEVICE FOR SLIDING WINDOWS AND DOORS
James M. Royer, 1634 Huntington Drive, Roseville, Calif.
Filed Feb. 16, 1970, Ser. No. 11,699
Int. Cl. E05c *19/18;* **E06b** *3/00;* **E05d** *13/06*
U.S. Cl. 292—288 **3 Claims**



An elongated arcuate bar about 2 to 5 inches in length is provided along its bottom edge with at least one pair of transverse, spaced, parallel slots aligned on a chord of a segment of the arc to fit over one of the vertical walls of a track carrying a sliding window or door. A portion of the bar spanning the slots projects into the track into interfering relation with the adjacent corner of the window or door and prevents further movement in the direction of the stop. Clip members on top of the window or door preclude lifting movement of the window or door and removal thereof from the track.

3,640,560
ELECTRIC LATCH STRIKE
George Z. Zawadzki, and Maksimiljan Godec, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.
Filed Aug. 19, 1970, Ser. No. 64,961
Int. Cl. E05c *11/00*
U.S. Cl. 292—341.16 **9 Claims**

For use with a conventional retractable latch bolt, an electrically operated strike assembly comprising a strike lip movable between its closed position effective to block the latch bolt and its open position, solenoid means, a locking cam or locking member movable between a first position corresponding to the closed and locked condition of the lip and a second position corresponding to the unlocked condition of the lip, and cam means drivingly connected to the lip to be moved thereby when the lip moves from its closed condition to its open condition. The locking cam is effective to prevent movement of the said cam means by the lip when the locking cam is in its first position. The solenoid is operatively connected to the locking cam and arranged to move it from its first position to its second position.



3,640,561
CHOPSTICK DEVICE
Patrick Raymond Law, 114-116 Macdonnell Road, Apt. 502, Victoria, Hong Kong
Filed Dec. 10, 1969, Ser. No. 883,895
Int. Cl. B65g *7/00*
U.S. Cl. 294—16 **1 Claim**



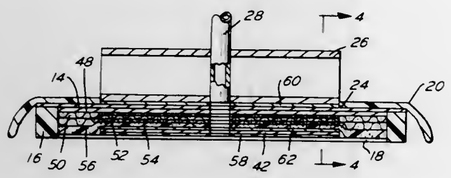
A device for picking up pieces of food for transfer to the mouth consists of a one-piece molding of resilient plastic material including a base and a pair of elongated members connected to the base and extending therefrom at an angle to one another such that their free ends are normally in opposed spaced relation, whereby said members may be flexed by finger pressure to move the free ends towards one another to grip and pick up pieces of food.

3,640,562
FLEXIBLE VACUUM LIFTER
Jacob J. Creskoff, Wynnewood, Pa., assignor to Vacuum Concrete Corporation of America, Philadelphia, Pa.
Filed Mar. 17, 1970, Ser. No. 20,280
Int. Cl. F16b *47/00*
U.S. Cl. 294—65 **10 Claims**

A flexible vacuum lifter which comprises a flexible elongated frame having a deformable resilient gasket secured to

peripheral areas of one of the faces of the flexible lifter in order to define an enclosure. In the preferred embodiment of the invention the flexible lifter is backed with a cover sheet having a peripheral skirt that extends beyond the edges of the flexible lifter, with the cover sheet having an opening that permits a lifting frame to be directly secured to the flexible lifter.

Secured to the opposing face of the lifter and located within the enclosure defined by the sealing gasket is an assembly sheet. Also located within the enclosure are a pair of screens separated by a piece of expanded metal, with one of these screens being secured to the assembly sheet. Secured to the other screen and also located within the enclosure is a

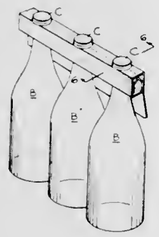


perforate sheet, and finally there is a stud assembly which is the structural component most remote from the cover sheet, but is also located within the enclosure.

A vacuum pipe passes through the lifting frame and is in good fluid or vacuum communication with the other components of the invention which have appropriate coinciding openings that terminate within the enclosure at approximately the level of the outer surface of the sealing gasket, with the outermost opening being located in a neoprene strip that is secured outwardly of the stud assembly.

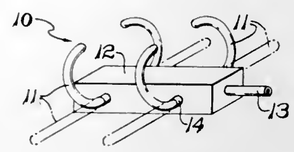
It will be seen that the foregoing construction constitutes a flexible vacuum lifter that is capable of lifting objects of varying size and shape, as well as objects, like sheet metal for airplane wings that is otherwise easily deformed.

3,640,563
CARRIER FOR FLANGED ARTICLE
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation
Filed Oct. 30, 1970, Ser. No. 85,431
Int. Cl. B65d *69/00*
U.S. Cl. 294—87.2 **5 Claims**



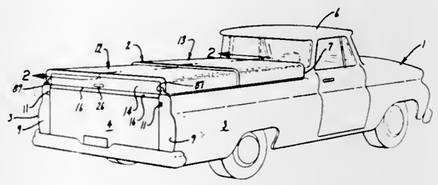
A carrier for elongated flanged articles comprises an elongated tubular structure formed from a single rectangular blank and folded along transverse fold lines so as to form a generally rectangular exterior tubular structure inside of which a pair of upwardly converging support panels are disposed, the support panels being foldably joined to each other along their top edges and being hingedly secured to the interior of the sidewalls and a plurality of aligned apertures being formed in the top and bottom panels and in the support panels, the apertures in the support panels being disposed astride the fold line therebetween.

3,640,564
FLUID-OPERATED ACTUATOR
Howard L. Kuster, Stow, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Jan. 13, 1971, Ser. No. 106,061
Int. Cl. B25b *11/00*; **B66c** *1/42*
U.S. Cl. 294—99 R **7 Claims**



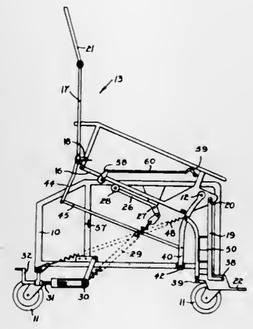
An actuator comprising a flexible elastomeric tube, which curls when one end is closed and the other end is connected to a fluid pressure source and has a uniplanarly flexible member provided in the bore of the tube and disposed so as to permit flexing of the tube only in a single plane. The tube preferably has an elongated longitudinal member of inextensible material embedded in the wall of the tube so as to extend transversely for less than one-half the tube periphery and so that the plane of curling includes the flexible member and the tension member. One embodiment includes a plurality of such tubes connected to a common manifold such that each tube curls about its respective tension member toward a central region for grasping an object.

3,640,565
TELESCOPIC COVER ASSEMBLY FOR OPEN BED VEHICLES AND LATCH ASSEMBLY FOR USE THEREWITH
Edwin G. Anderson, 804 Northey Drive, Sacramento, Calif.
Continuation-in-part of application Ser. No. 815,309, Apr. 11, 1969, now Patent No. 3,578,378. This application Feb. 5, 1970, Ser. No. 8,864
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B **26 Claims**



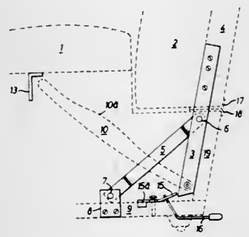
A telescopic cover assembly for open bed vehicles comprising a plurality of cover segments at least one of which is longitudinally movable relative to another. The movable segment carries wheel assemblies engageable with a pair of guide rails along which the segment is movable. Means are included for selectively elevating and lowering the movable segment during movement between extended and retracted positions. Detents are provided in which portions of the wheel assemblies are engageable for maintaining the movable cover segment in predetermined locations. Improved latch means also are provided for holding open a pivotal gate closure mounted at one end of the cover assembly.

3,640,566
INVALID CHAIR
George Alwyn Hodge, Port Lincoln, South Australia, assignor to Hodge Investments Pty. Ltd. and Hodge Distributors Pty. Ltd., Port Lincoln, South Australia
Filed Oct. 7, 1969, Ser. No. 864,424
Claims priority, application Australia, Oct. 11, 1968, 44,652/68
Int. Cl. A47c *1/02*; **A61g** *15/00*, *7/06*
U.S. Cl. 297—68 **6 Claims**



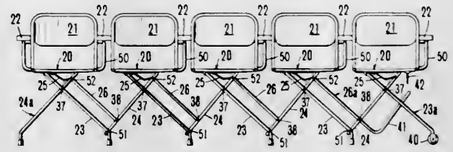
An invalid chair having a seat back hinged to the back of the seat and a lower frame hinged to the front of the seat to form an extensible assembly which is pivoted to a main support frame, the seat being spring loaded in a direction to extend the assembly of frames so that an invalid is assisted from the seat on to his feet, the assembly also being positionable in a recumbent position so that the chair functions as a bed.

3,640,567
DROP-END SEAT MECHANISM
Robin Howland, High Wycombe, England, assignor to Parker-Knoll Limited, High Wycomb, Buckinghamshire, England
Filed July 11, 1969, Ser. No. 840,981
Claims priority, application Great Britain, July 11, 1968, 33,123/68
Int. Cl. A47c *17/12*
U.S. Cl. 297—116 **3 Claims**



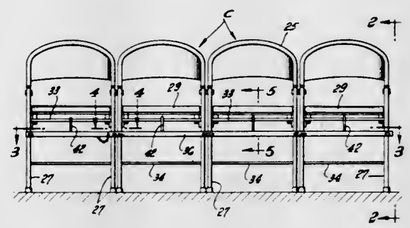
The invention concerns a drop-end mechanism for chairs and settees, particularly fully upholstered articles. The mechanism comprises an extension member fitted to the frame of the drop-end, a stay pivotally connected between the extension member and the frame of the chair and a cam track to guide the end of the extension member as the drop-end is raised and lowered. A particular feature of the invention is that as the drop-end is lowered it moves inwardly relative to the seat to prevent any gap between the seat and drop-end upholstery when in the dropped position. The drop-end is supported from below and, in a preferred arrangement, can be set in an intermediate position.

3,640,568
FOLDABLE CHAIR SET
Toshio Suzuki, and Toyo Kaneko, both of 5-16, Shimane 4-chome, Tokyo, Japan
Filed Aug. 6, 1969, Ser. No. 848,022
Claims priority, application Japan, Sept. 26, 1968, 43/69347
Int. Cl. A47c *15/00*
U.S. Cl. 297—232 **5 Claims**



A foldable chair set comprising a plurality of chairs secured together in foldable relation having a pantograph type of linkage which will fold to provide for compact storage; a further feature of the invention is the provision of wheels on the leg toward which the folding occurs to facilitate transportation of the set.

3,640,569
CHAIR COUPLING DEVICE
Feramorz H. Young, 393 Auburn Lane, Sierra Madre, Calif.
Filed June 16, 1969, Ser. No. 833,311
Int. Cl. A47c *15/00*
U.S. Cl. 297—248 **4 Claims**

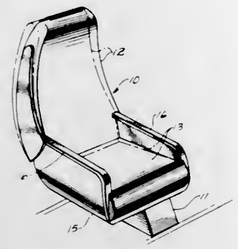


Multiple like chairs are coupled together in row alignment by an elongated locking bar mountable horizontally proximate the chair legs, the bar carrying holder means forming recesses opening lengthwise of the bar and at spaced locations therealong so that when the bar is shifted longitudinally the recesses closely receive the chair legs, and the bar being vertically supported by spaced hangers. Means also is provided for releasably retaining the bar against shifting from chair retaining position.

3,640,570
SEAT FOR RECLINING CHAIR
Asbjorn Karlsen, Pacific Palisades, Calif., assignor to Hardman Aerospace, Los Angeles, Calif.
Filed June 19, 1970, Ser. No. 44,920
Int. Cl. A47c *1/02*
U.S. Cl. 297—316 **12 Claims**

A reclining aircraft chair or the like having an articulatable seat portion providing full leg support for maximum comfort is described. The chairback pivots about an axis substantially

in line with the hip joints of a person occupying the chair, and when the chairback pivots from an erect position to a reclined position the rear part of the seat portion drops to better fit a person's contour. The front edge of the seat does not move and the seat articulates approximately about its middle to provide proper cradling of the chair occupant. To provide such motion, the seat portion is divided into a U-shaped seat pan, pivotally connected to the chairback so as



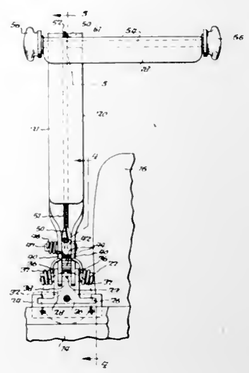
to lower therewith, and a leg frame pivotally connected to the forward part of the seat pan and also to the fixed front of the seat. Resilient straps between the back of the pan and the fixed seat front are interwoven with transverse straps between sides of the seat pan and between sides of the leg frame. The resilient straps across the leg frame provide augmented leg support for optimum passenger comfort in both the erect and reclined positions.

3,640,571
TRUNK SUPPORT FOR SITTING PATIENTS
Michael Keropian, 3870 California Street, Apt. 4, San Francisco, Calif.
Filed Sept. 12, 1969, Ser. No. 857,431
Int. Cl. B60r *21/10*
U.S. Cl. 297—384 **13 Claims**



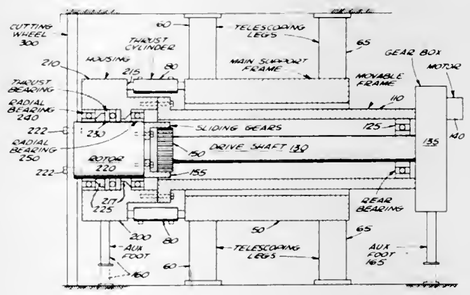
A trunk support for use with wheelchairs and the like having contoured trunk support plates disposed laterally of and in supporting contact with the patient's trunk. The plates are secured to the backrest of the chair, are universally movable for adjustment to the patient's size and shape, and are locked in the supporting position. The plates can be opened to permit the patient to enter or alight from the chair. Stop means are provided so that each time the plates are moved into their trunk supporting position they return to an identical, predetermined position to thereby eliminate the need for adjustments of the plate while used with the same patient.

3,640,572
VEHICLE SAFETY GUARD
Emil J. Doehler, 58 Dundee Street, Buffalo, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,424
Int. Cl. A62b *35/00*
U.S. Cl. 297—390 **5 Claims**



This disclosure is of a restraining device or support for holding a person in a seat in a vehicle in case of accident, causing sudden stop of forward motion of the vehicle. The support is so mounted that it is easily positioned in supporting relation to the front of the person when seated and also easily swung upwardly into an inoperative position and does not require attachment to the person.

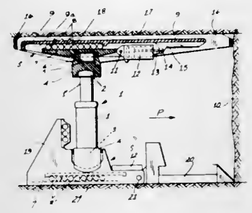
3,640,573
TUNNELING MACHINE
Frank Safar, Fullerton, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Oct. 6, 1969, Ser. No. 863,783
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **17 Claims**



A tunneling machine having a main support frame and also a movable frame which is longitudinally movable in stepwise fashion as the tunnel is being drilled, in which a main bearing assembly is utilized for transmitting both forward thrust and rotating drive to a cutting wheel, the main bearing assembly having a stator (housing) to which forward thrust is imparted by separate forward thrust drive means, the stator being attached to the forward end of the movable frame for pulling it forward, the main bearing assembly also including a rotor which directly drives the cutting wheel and which receives

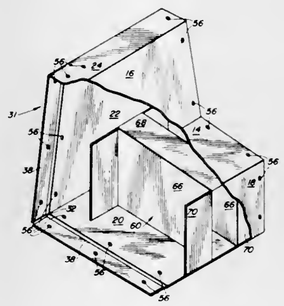
rotational drive through a mated pair of driving gears from the drive shaft of the machine; the rotor being supported from the stator by both radial and thrust bearings, and the pair of driving gears being longitudinally slidable so that vibration stresses from the cutting head are not transmitted back through the drive shaft to the rotating drive mechanism of the machine.

3,640,574
LONGWALL MINING APPARATUS
Hans-Joachim Von Hippel, Bergle 7771, Oberstenweiler, Germany
Filed Oct. 2, 1969, Ser. No. 863,078
Int. Cl. E21c *35/14*
U.S. Cl. 299—32 **10 Claims**



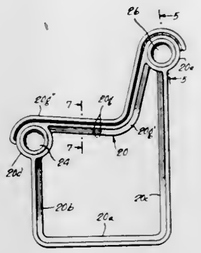
An underground excavating apparatus having a conveyor for removing material from the face of an underground excavation. The conveyor removes the material in a predetermined direction. An elongated cap is movable into engagement with the roof of the excavation above the conveyor extending transversely to the face and the direction in which the conveyor removes the material. A set of props including first props extending upwardly above the conveyor from one side thereof and of the predetermined direction, and second props extending upwardly above the conveyor from the other side of the latter and of the predetermined direction. The props are thus mutually inclined, meeting above the conveyor and engaging and maintaining the cap means in position above the conveyor.

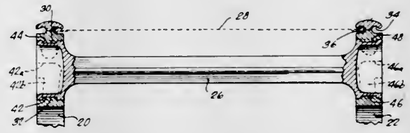
3,640,575
ARTICLE OF FURNITURE FORMED FROM PAPERBOARD
Giovanni E. Dosi, Merate, Italy, assignor to Container Corporation of America, Chicago, Ill.
Filed July 1, 1970, Ser. No. 51,652
Claims priority, application Italy, July 17, 1969, 19746 A/69
Int. Cl. A47c *7/00*
U.S. Cl. 297—440 **6 Claims**



An article of furniture is formed from suitably scored and cut blanks of paperboard. The article has a main tubular por-

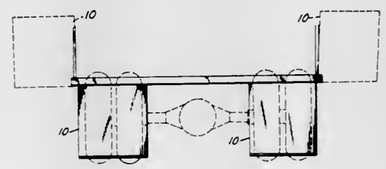
3,640,576
FURNITURE CONSTRUCTION
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, both of N.Y., assignors to Art Metal-Knoll Corporation, New York, N.Y.
Filed June 8, 1970, Ser. No. 44,158
Int. Cl. A47c *4/02, 7/20, 7/14*
U.S. Cl. 297—440 **9 Claims**





An article of furniture utilizing two identical sidepiece members and two identical stretcher members. The sidepiece and stretcher members are laterally coupled together such that upon pivotal movement of the stretcher members in one direction, the sidepiece members move toward each other and can be disengaged, and upon pivotal stretcher movement in the opposite direction, the sidepiece members move away from each other and become locked together. A piece of fabric is positioned between the two sidepiece members and is tensioned by appropriate pivotal movement of the stretcher members.

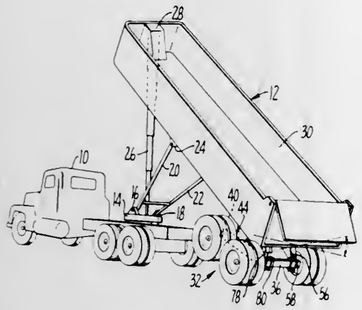
3,640,577
RETRACTABLE MUD FLAPS FOR DUMP TRUCKS AND TRAILERS
Nolan J. Ducote, 306 Keller Street, Bunkie, La.
Filed Apr. 20, 1970, Ser. No. 29,958
Int. Cl. B62b *9/16*
U.S. Cl. 298—1 SG **4 Claims**



Dump trucks are provided mud flaps and means automatically activated by shifting of the load bed to move the flaps

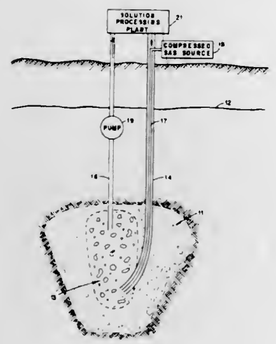
out of the way while dumping and to restore the flaps to normal position after dumping is completed.

3,640,578
LEVELLING SYSTEM FOR SEMI END DUMP TRUCKS
James Harold Finney, 150 Page Way, Fortuna, Calif.
Filed Feb. 6, 1970, Ser. No. 9,356
Int. Cl. B60p *1/16*
U.S. Cl. 298—17 S **4 Claims**



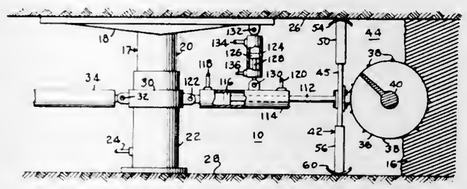
In a dump truck wherein the entire trailer chassis is lifted upon dumping automatically adjustable stabilizing means is provided to maintain the dump body in a substantially level plane even though the truck may be disposed on an inclined surface. To accomplish this an adjustable stop means is provided between the truck dump body and a wheeled carriage which supports the rear end of the dump body and is capable of angular movement in the vertical plane with respect thereto. The adjustable stop means is operatively associated with a control mechanism which automatically adjusts the stop means in accordance with the degree of inclination of the terrain surface upon which the truck is supported.

3,640,579
IN SITU PRESSURE LEACHING METHOD
Arthur E. Lewis, 844 Santa Rita Avenue, Los Altos, Calif.
Filed Apr. 28, 1970, Ser. No. 32,679
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 **10 Claims**



A nuclear chimney located below the water table in a primary ore deposit serves as an in situ pressure vessel in which ore can be oxidized and a desired element contained in the ore subsequently recovered in a leach solution. After the nuclear chimney has flooded with water under substantial hydrostatic pressure, oxidizing gas is percolated through the contained ore and water mixture to dissolve and oxidize the ore minerals. Ammonia may be added with the oxidizing gas to render the solution basic. The solution is pumped from the chimney and may be recirculated with or without heating until the desired concentration is obtained. The oxidizing gas may also be heated prior to its introduction into the chimney.

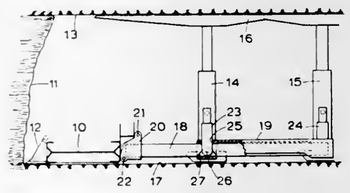
3,640,580
DUST-ELIMINATING COAL-MINING APPARATUS
Letcher T. White, 117 Wayne Street, Manchester, Ky.
Filed July 24, 1969, Ser. No. 844,269
Int. Cl. E21c *35/22*
U.S. Cl. 299—31 **11 Claims**



A coal-mining apparatus is fed against a vein of coal under pressure and advanced through the vein to progressively mine the coal. Back of the mining apparatus is arranged a board or partition which extends from the floor to the roof of the mine and combines with the floor and with the veil of coal to form a compartment. Means is provided, associated with the compartment referred to, for minimizing or eliminating light floating dust, this being done either by spraying through the air in the compartment or by exhausting air therefrom.

The invention further comprises a method of coal mining wherein the mining operation takes place in a confined space, and, during the mining operation, coal dust is constantly eliminated from said confined space.

3,640,581
IMPROVEMENTS TO ARRANGEMENTS FOR CONTROLLING THE GUIDANCE OF A MINERAL MINING PLOUGH
Christoph Rassmann, Lunen, and Willy Heyer, Bochum-Gerthe, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Westfalia, Germany
Filed Feb. 13, 1970, Ser. No. 11,244
Claims priority, application Germany, Feb. 20, 1969, P 19 08 483.4
Int. Cl. E21c *25/56*
U.S. Cl. 299—32 **16 Claims**

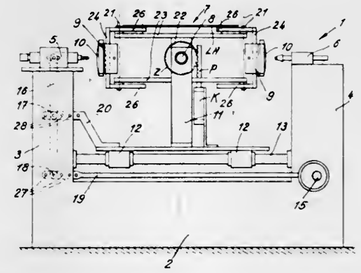


An arrangement for controlling the guidance of a mineral winning plough movable along one side of a conveyor. Control members in the form of leaf springs are disposed between the other side of the conveyor and a roof support assembly. The leaf springs are slidably received in a tubular housing suspended from the props of the assembly by means of independently operable hydraulic piston and cylinder units. The units are connected in an articulated manner to the housing to permit the springs to assume various angular control positions.

ERRATA

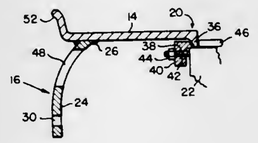
For Classes 299—31 and 299—32 see:
Patent Nos. 3,640,573 and 3,640,574

3,640,582
BRUSH-MAKING MACHINE
Heinz Zahoransky, Todtnau, Black Forest, Germany, assignor to Firma Anton Zahoransky, Todtnau, Black Forest, Germany
Filed Jan. 23, 1970, Ser. No. 5,302
Claims priority, application Germany, Jan. 25, 1969, P 19 03 771.9
Int. Cl. A46d *3/06*
U.S. Cl. 300—3 **5 Claims**



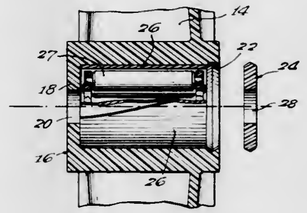
A brush-making machine comprising at least one rotatably mounted carrier member for chucking devices located on diametrically opposite sides of said carrier member, and possibly a depth compensating mechanism, said carrier member substantially having the form of a two-armed lever which carries the chucking devices at the ends of its arms.

3,640,583
DUAL WHEEL FOR TRUCKS
Ralph Gary Verbridge, Williamson, N.Y., assignor to Schovee & Boston, Rochester, N.Y., a part interest
Filed Aug. 27, 1969, Ser. No. 853,410
Int. Cl. B60b *3/02*
U.S. Cl. 301—9 DN **3 Claims**



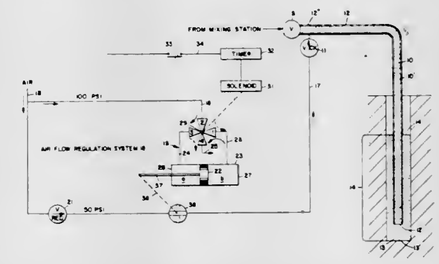
A wheel for a truck tire having a permanent first type of mounting means for attaching the wheel to a first type of truck wheel hub and also having a permanent second type of mounting means for alternatively attaching the wheel to a second type of truck wheel hub. The wheel includes a disc at one side of the wheel having a plurality of circumferentially spaced openings for receiving a plurality of circumferentially spaced bolts protruding from a disc-type hub. The wheel also includes an inwardly turned annular flange or lip at the opposite side of the wheel from the disc for attachment to a spider-type hub. The disc includes a plurality of large openings, one each corresponding to the number of bolts used when mounting the wheel by means of the lip, to accommodate a mounting tool or wrench therethrough.

3,640,584
SMALL VEHICLE WHEEL
Milton Solomon, Chicago, Ill., assignor to Circle Engineering Co., Inc., Chicago, Ill.
Filed Aug. 12, 1969, Ser. No. 849,307
Int. Cl. B60b *5/02*
U.S. Cl. 301—63 PW **16 Claims**



A small integral molded vehicle wheel comprising a rim, a hub and connecting support structure. A roller bearing assembly comprising a split outer race, rollers and cage structure, is disposed within the hub and a resilient retaining end cap lockingly engages the hub bore retaining the rollers and cage in proper axial alignment. An integral seal is formed with the end cap so as to prevent the ingress of dirt and foreign material. A method for making the above-described wheel comprising the steps of: injection molding the rim, connecting support structure and hub; inserting a split outer race into the bore of the hub while the injection-molded piece is still hot; and cooling the structure so as to cause the inner diameter of the hub to contract and thereby to secure the split outer race in position in the hub.

3,640,585
MAINTENANCE OF SLURRY EXPLOSIVE PUMPING ASSEMBLY FOR SUCCESSIVE LOADINGS
John F. Hamilton, Wilmington, Del., and Donald J. Pederson, St. Louis, Minn., assignors to Hercules Incorporated, Wilmington, Del.
Filed July 23, 1969, Ser. No. 844,114
Int. Cl. B65g *53/04*
U.S. Cl. 302—17 **11 Claims**



The invention provides method, and system, for automatically removing residual slurry explosive from a delivery con-

duit, or hose, of a slurry explosive pumping-loading assembly, after each loading, to maintain the assembly operable during a series of successive loadings.

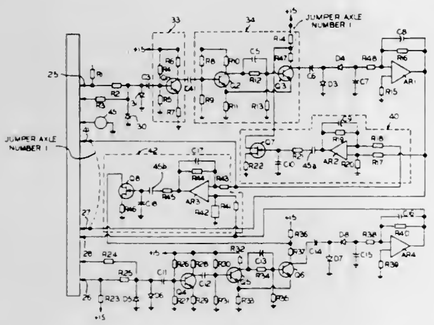
Thus, after the loading, residual slurry explosive is evacuated from the delivery hose while the hose remains extended into the emplacement zone and into the resulting mass of emplaced explosive therein, by introducing a gas (generally air) into the hose for displacement of the residual slurry into the emplaced slurry mass, and automatically terminating introduction of said gas into the hose in response to addition of a predetermined amount of the gas sufficient for the displacement.

The system includes means for introduction of the displacement gas into the hose, and means for maintaining the gas in displacement flow; and means for terminating the gas introduction in response to addition of the predetermined displacing amount.

In preferred practice, and as specifically illustrated, the invention terminates the gas flow in response to expiration of a predetermined time required for the displacement.

The invention, by automatic termination of the displacement gas flow, eliminates human error inherent in manual operation to prevent concomitant, and often violent, flow of excess displacement gas into the emplaced slurry and to thereby eliminate resulting impairment of the emplaced explosive properties encountered in manual operation heretofore.

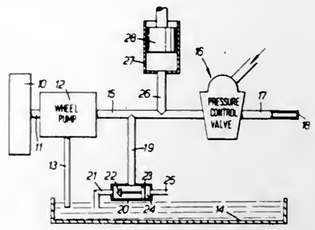
3,640,586
TACHOMETER AMPLIFIER
William H. Kohler, Worthington, Ohio, assignor to Abex Corporation, New York, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,595
Int. Cl. B60t *8/08, 8/10*
U.S. Cl. 303—21 R **12 Claims**



A tachometer amplifier for an antiskid brake system controlling skid conditions on a plurality of vehicle axles which includes circuitry receiving signals from a plurality of tachometer pickups, one on each wheel. The amplifier compensates for difference in wheel diameters due to wear by tracking the signal voltages of the pickups and adjusting same to produce equal voltage signals out for equal speeds, and thereby permit skid detection during braking based on a difference in wheel speed.

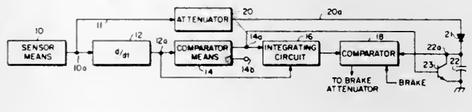
3,640,587
VEHICLE WHEEL BRAKING SYSTEMS
Peter James Milner, and Richard Keith Hodkin, both of Coventry, England, assignors to Rootes Motors Limited, London, England
Filed Mar. 30, 1970, Ser. No. 23,947
Claims priority, application Great Britain, Apr. 8, 1969, 17,840/69
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **7 Claims**

A vehicle wheel braking system having a hydraulic pressure operated brake capsule of causing wheel slip, a positive action pump driven in synchronism with the wheel to produce hydraulic pressure for operating the brake and



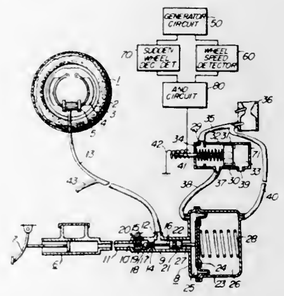
means for varying the braking effect to maintain wheel slip at a substantially constant value or within a predetermined range when maximum braking is required.

3,640,588
MEANS FOR DELAYING EFFECTIVE CONTROL OF VEHICLE BRAKING BY AN ADAPTIVE BRAKING SYSTEM UNTIL CERTAIN WHEEL VELOCITY AND DECELERATION CONDITIONS HAVE BEEN SATISFIED
Ralph W. Carp, Baltimore, and Frederick O. Miesterfeld, Jopps, both of Md., assignors to The Bendix Corporation
Filed Mar. 3, 1970, Ser. No. 16,166
Int. Cl. B60t *8/08, 8/12*
U.S. Cl. 303—21 P **14 Claims**



In an adaptive braking system for automobiles, trucks and the like there is provided apparatus for delaying automatic braking control of the vehicle until, after the brakes are applied, a controlled wheel attains a first level of negative acceleration (deceleration) and thereafter the time integral of wheel acceleration attains a level related to controlled wheel speed.

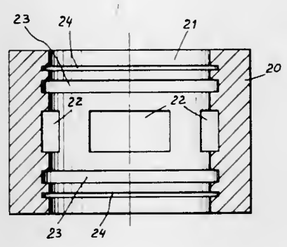
3,640,589
AUTOMATIC ANTISKID BRAKING SYSTEM
Koichi Taniguchi, Kariya-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
Filed Dec. 30, 1969, Ser. No. 889,065
Int. Cl. B60t *8/08, 8/12*
U.S. Cl. 303—21 BE **3 Claims**



An automatic antiskid braking system including a sudden wheel deceleration detector for detecting a sudden deceleration of the wheels and which emits a first signal upon detect-

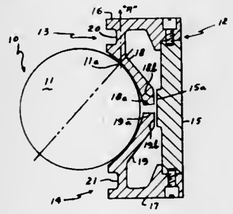
ing sudden deceleration and then maintains this first signal for a certain period of time even after the wheels have stopped rotating, a wheel speed detector for detecting the wheel speed being below a predetermined value for emitting a second signal in response thereto, an AND circuit emitting a third signal when the first and second signals from both the sudden wheel deceleration detector and the wheel speed detector are impressed thereon, and a pressure regulating mechanism for relieving brake pressure in response to the third signal from the AND circuit. A vehicle provided with such system can be stopped or decelerated within the shortest possible distance of travel on a good and relatively non-slippery road surface, while the vehicle can still be stopped and decelerated without encountering a skid condition on a slippery road surface.

3,640,590
MEANS UTILIZING COMPRESSED AIR FOR CONFINING A PRESSURIZED OIL FILM BETWEEN RELATIVELY MOVABLE BEARING SURFACES
Manfred Beisemann, Essen, Germany, assignor to P. Koning Machinefabriek, Swalmen, Netherlands
Filed Aug. 12, 1969, Ser. No. 849,369
Claims priority, application Germany, Aug. 13, 1968, P 17 75 454.0; Nov. 16, 1968, P 18 09 350.0
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **10 Claims**



A pressurized oil film is built up in a region between relatively movable bearing surfaces by means including a pressurized oil supply line and an oil return line. Compressed air is caused to impinge on the edges of the oil film region to provide a pneumatic pressure threshold for confining the extent of the region and preventing leakage of the oil.

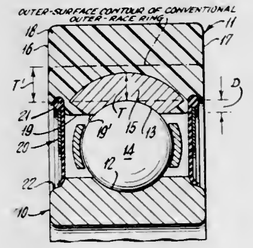
3,640,591
ROLLING CONTACT BEARING HAVING TEMPERATURE COMPENSATION
Phillip R. Eklund, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Mar. 4, 1970, Ser. No. 16,510
Int. Cl. F16c *27/00*
U.S. Cl. 308—184 **3 Claims**



A bearing assembly including a rolling contact bearing member, and a raceway structure incorporating a tempera-

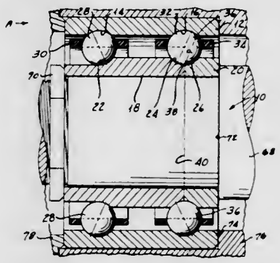
ture-compensating flexure-type rib arrangement for providing immediate bearing support to, and resiliently resisting excessive thermal expansion of, the bearing member to thereby counteract and inhibit spalling of the bearing components normally resulting from the excessive thermal expansion.

3,640,592
ANTIFRICTION BEARING WITH EMBEDDED RACE INSERTS
Ralph S. Howe, Jr., New Britain, Conn., assignor to Textron, Inc., Providence, R.I.
Filed Oct. 23, 1969, Ser. No. 868,736
Int. Cl. F16c *33/00*
U.S. Cl. 308—193 **4 Claims**



The invention contemplates a major economy in the metal required for manufacture of an antifriction bearing ring, such as the outer race ring of a ball bearing, said economy being realized without loss of integrity of the race or its radial-load capability, as compared with a conventional all-metal race ring construction of equivalent capacity. Economy is realized by forming an insert from a cylindrical annulus of a deformable and hardenable material, such as ductile steel, the deformation being to create a ring of substantially uniform thickness but continuously concaved, at one of the inner and outer surfaces, to define the raceway contour. The deformation is to an extent producing a concave surface of depth exceeding the desired ultimate raceway depth. The deformed ring is hardened and then embedded in a body molding of plastic or elastomeric material, depending on ultimate use requirements. Race finishing, including the step of removing excess insert metal to create the desired raceway depth, can proceed before or after molding.

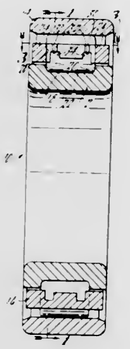
3,640,593
DOUBLE ROW BEARING
Lewis W. McKee, Brookfield, Conn., and Robert H. Feest, Jr., Juno Beach, Fla., assignors to The Borden Corporation, Danbury, Conn.
Filed Oct. 7, 1969, Ser. No. 867,429
Int. Cl. F16c *33/60*
U.S. Cl. 308—196 **6 Claims**



An improved double-row bearing in which two pairs of ball-receiving raceways comprise a first pair of deep groove-

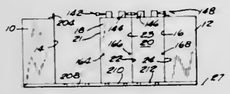
bearing raceways, one of which is formed in a unitary ring which also provides a raceway of the other pair, and the other of which is formed by two ring sections, one of which provides the other raceway of the other pair, the other pair and its rolling elements making up an angular-contact bearing.

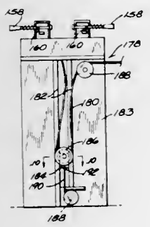
3,640,594
BEARING RETAINER CONSTRUCTION
Edwin Aho, Center Line, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Mar. 9, 1970, Ser. No. 17,741
Int. Cl. F16c *33/34*
U.S. Cl. 308—212 **7 Claims**



A roller bearing cage or retainer having pockets with pads provided to permit the rollers to be snapped into the pockets and past the pads with the pads having seats cooperating to hold the rollers in place and with the pads formed by a method whereby the location of the seats can easily be determined.

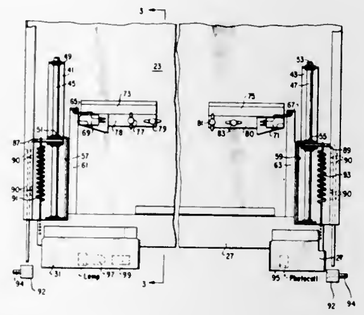
3,640,595
MOTORIZED MOBILE SHELVING UNITS
Maurice F. Staller, and Marvin A. Staller, both of Fort Atkinson, Wis., assignors to Staller Cabinet, Inc., Fort Atkinson, Wis.
Filed May 6, 1970, Ser. No. 35,214
Int. Cl. A47b *53/00, 77/00, 87/00*
U.S. Cl. 312—198 **16 Claims**





Storage apparatus which includes one or more mobile storage or shelving units moveable on guide tracks employs reversible electric motors in each mobile unit to move the units to open the desired access aisle. Direction-control switches located on the exposed ends of the mobile units and right and left limit switches on each of the mobile units afford selective energization of the motors to open the desired aisle.

3,640,596
SAFETY APPARATUS FOR MECHANICAL FILING CABINETS
Roy Edwin Kanitz, Belpre, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,690
Int. Cl. A47b *77/08, 81/00*
U.S. Cl. 312—223 **6 Claims**



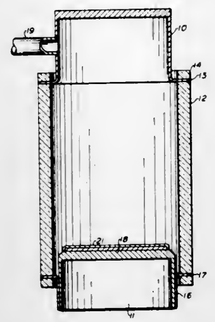
This disclosure describes a safety apparatus for use in a mechanized filing cabinet. A lower bar having a lamp at one end and a photocell at the other end is attached by springs to the rear of the posting board of the filing cabinet. An upper bar also having a lamp at one end and a photocell at the other end is attached by springs to the bottom of the closure door of the filing cabinet. When either of the photocell beams is broken, the motor that moves the trays of the filing cabinet is deenergized. In addition, when the door is closed, the upper bar impinges on rubber stops causing the upper bar to move upwardly. The upward movement of the upper bar opens microswitches which are also connected to deenergize the tray movement motor.

ERRATUM

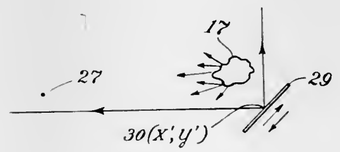
For Class 316—28 see:
Patent No. 3,641,391

3,640,597
METHOD OF PRODUCING NEUTRON SOURCE TUBE WITH COATED TARGET
Lowell A. Noble, Hillsborough, Calif., assignor to Varian Associates
Original application June 21, 1960, Ser. No. 371,803. Divided and this application Jan. 6, 1964, Ser. No. 336,075
Int. Cl. H01j *9/38;* **G21g** *3/04*
U.S. Cl. 316—10 **4 Claims**

A method of making an active metal target for a neutron source tube. Deuterium or tritium gas is sorbed into the active metal. The target is then heated and reacted with a coating gas to form a protective coating over the target which prevents desorbtion of the deuterium or tritium during operation of the tube.



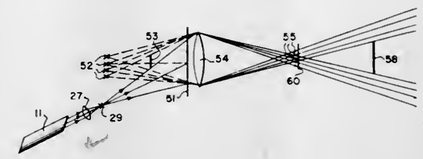
3,640,598
TECHNIQUE OF HOLOGRAPHY BY SOURCE SCANNING
Victor I. Neeley, Kennewick, and Hugo L. Libby, Richland, both of Wash., assignors to Holotron Corporation, Wilmington, Del.
Filed Aug. 23, 1967, Ser. No. 662,736
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **17 Claims**



A technique of making holograms of three-dimensional objects with electromagnetic or ultrasonic radiation; a point source of radiation for the object beam is scanned over a plane and is received at a point. Holographic information is then obtained by mixing the received object beam with a coherent reference beam, either derived from the object beam source or introduced electronically. Reciprocity between the disclosed source-scanning technique and the conventional receiver-scanning technique is shown and specific embodiments are disclosed which utilize the source-scanning technique and which are illustrative of benefits which may be obtained through the utilization of such technique over the receiver-scanning technique.

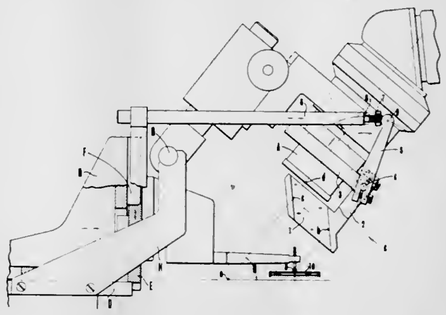
3,640,599
SIMULATION OF AN EXTENDED INCOHERENT OBJECT SOURCE IN HOLOGRAPHY SO AS TO ELIMINATE SPECKLE NOISE
Raoul F. van Ligten, Framingham Centre, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 4, 1969, Ser. No. 813,510
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **9 Claims**

This specification discloses systems for recording holograms and for reconstructing images from such holograms. The object of which the hologram is to be made is illuminated with a plurality of coherent point sources of light. Light from the object forms an interference pattern with light from a reference point source of coherent light. This interference pattern is recorded to provide the hologram. In the reconstruction, a lens is provided to produce images of the reconstructions of the coherent light sources and of the reconstruction of the object. A mask is provided in the plane



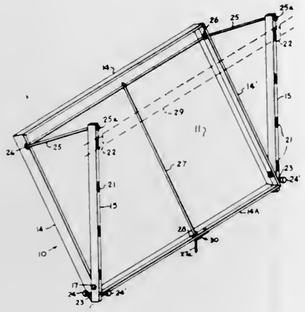
of the images of the reconstructed coherent sources, which mask is provided with means to transmit bundles of rays corresponding to different ones of the coherent light sources in sequence. As a result, a composite image will be produced approaching the appearance of the object illuminated by an extended incoherent source.

3,640,600
ROCKING-TYPE APPARATUS PROVIDED WITH PRISM OR MIRRORS IN MICROSCOPE FOR BONDER
Masahide Isobe, Hayamacho, Japan, assignor to Tokyo Sokuhan Co., Ltd., Zama-machi, Koza-gun, Kanagawa-ken, Japan
Filed Oct. 15, 1969, Ser. No. 866,526
Claims priority, application Japan, Oct. 29, 1968, 43/78818
Int. Cl. G02b *7/18*
U.S. Cl. 350—34 **6 Claims**



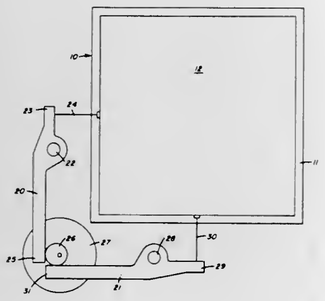
A rocking-type microscope apparatus for a dice bonder comprises a prism or a pair of mirrors pivoted about a rocking axis at the lower part of the front end of the microscope on the face toward the objective. The rocking axis is mounted on one side of a cylindrical casing accommodating the objective of the microscope, or is mounted on one end of a bracket secured to a guide member of a sliding head or other element at an optional position. The prism or pair of mirrors can be rocked into and out of operative relation with the objective by means of a push rod, secured to the sliding head, in connection with a lever pivotal on the rocking axis and fixed relative to the prism or mirrors.

3,640,601
PROJECTION SCREENS
Louis Daniel Murray, 5216 Ponderosa Way, Dallas, Tex.
Filed Dec. 18, 1969, Ser. No. 886,056
Int. Cl. G03b *21/56*
U.S. Cl. 350—117 **10 Claims**



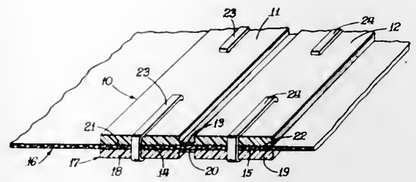
In the present device the screen is rotatably mounted along the lower ends of its sides by brads to vertical support arms, while the upper portion of the screen is fastened to a cord which is retained in an adjustable keeper so adjustment of the tilted position of the screen is provided by loosening or tightening of the cord. Vertical adjustment of the screen is provided by spaced pairs of slots in the vertical support arms, these slots accommodating the supporting wall hooks.

3,640,602
PROJECTION SCREEN
Robert N. Wolfe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,006
Int. Cl. G03b *21/56*
U.S. Cl. 350—120 **10 Claims**



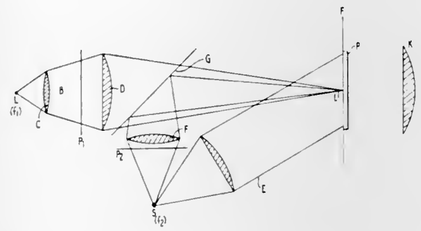
A projection screen for eliminating scintillations caused by a projected image in which the screen comprises two spaced and generally parallel glass plates that are maintained as a unit by a layer of transparent material therebetween. The plates are provided on their facing surfaces with a layer of light-diffusing material and the surfaces are joined by a transparent, resilient material which will permit orbital movement of one plate relative to the other.

3,640,603
PLASTIC REINFORCING EDGING FOR PICTURE-RECEIVING SCREEN
Michael J. Balmes, Spokane, Wash., assignor to Graflex, Inc., Rochester, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,267
Int. Cl. G03b *21/56*
U.S. Cl. 350—124 **5 Claims**



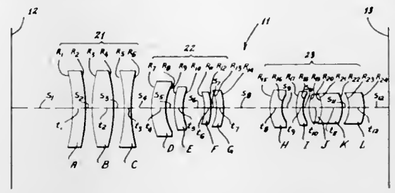
A reinforcing strip for application to the edges of a projected picture receiving fabric screen is provided with a pair of laterally spaced side portions. Complementary reinforcing edgings are applied to the top and underside portions of the upper and lower edging strips stapled together. The fabric and the central portions of the upper and lower reinforcing edgings are then cut so that the reinforcing strips form marginal reinforcing edgings for the lower part of one screen fabric and the upper part of a succeeding screen fabric. The inner flat surfaces of the side edges of the reinforcing strips are saw-toothed or otherwise roughened to cause a firm gripping of the intermediately disposed fabric.

3,640,604
OPTICAL INFORMATION PROCESSING METHOD EMPLOYING PHOTOCHEMICALLY GENERATED HOLOGRAMS AS SPATIAL FILTERS
John Yarnell, St. Albans, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, England
Continuation of application Ser. No. 649,594, June 28, 1967, now abandoned. This application May 1, 1970, Ser. No. 31,856
Claims priority, application Great Britain, 29,298/66
Int. Cl. G02b *27/22, 5/18*
U.S. Cl. 350—162 SF **2 Claims**



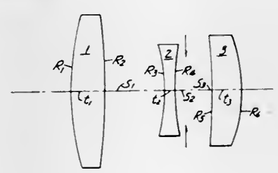
This invention provides a novel method of optical information processing, using a photochromically generated hologram as a spatial filter. A diffraction pattern is produced on a photochromic plate which is simultaneously illuminated by a reference beam from a coherent source. A second diffraction pattern employing light from a coherent source is superimposed on the first diffraction pattern on the photochromic plate, so that the reference beam illumination and the second diffraction pattern form a photochromically generated hologram to modify the first diffraction pattern. A photochromic plate may comprise material that exhibits normally unpopulated triplet states of molecular energy, population of which can be induced by photons of appropriate energy.

3,640,605
MECHANICALLY COMPENSATED ZOOM LENS SYSTEM
Harold N. Sissel, 133 S. Cedar Street, Glendale, Calif.
Filed Nov. 12, 1970, Ser. No. 88,787
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **2 Claims**



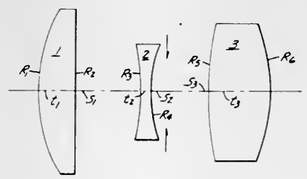
A mechanically compensated zoom lens system made up of three lens groups, the front lens group being fixed and the middle and rear lens groups being movable.

3,640,606
THREE-ELEMENT MICROPHOTOGRAPHIC OBJECTIVE LENS
Lawrence H. Conrad, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 20, 1970, Ser. No. 91,436
Int. Cl. G02b *9/16*
U.S. Cl. 350—226 **1 Claim**



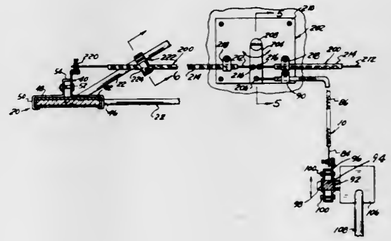
A three-element *f*/4.5, 19× magnification objective lens comprising three airspaced elements from front to rear including a biconvex lens element, a biconcave lens element and a concavo-convex lens element.

3,640,607
THREE-ELEMENT MICROPHOTOGRAPHIC OBJECTIVE LENS
Lawrence H. Conrad, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 20, 1970, Ser. No. 91,437
Int. Cl. G02b *9/16*
U.S. Cl. 350—226 **1 Claim**



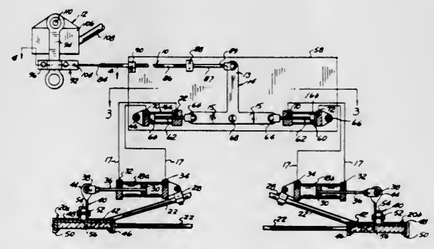
A three-element *f*/4.5, 19.5× magnification objective lens comprising three airspaced elements from front to rear including a planoconvex lens element, a biconcave lens element and a biconvex lens element.

3,640,608
AUTOMATICALLY CONTROLLED MIRROR
Clyde M. McKee, Taylor; Andrew V. Provenzino, Southgate, and Ward Scott, Rochester, all of Mich., assignors to Clyde M. McKee, Taylor; Ward Scott, Rochester, Mich. and Sandor Shapiro, part interest to each
Original application Feb. 20, 1968, Ser. No. 706,953, now Patent No. 3,536,382. Divided and this application Apr. 8, 1970, Ser. No. 31,039
Int. Cl. G02b *5/08*
U.S. Cl. 350—307 **5 Claims**



A mirror assembly for trucks or the like actuated in response to movement of the steering wheel to move to a position providing maximum visibility. A cable assembly is clamped to a member which is pivotally movable upon rotation of the steering wheel in such a way that pivoting of the member produces axial movement of a cable. In one embodiment the cable is connected through a pivotal member to a second set of cables which actuate the mirrors and in another embodiment a hydraulic system is connected with the cable to actuate the mirrors.

3,640,609
AUTOMATICALLY CONTROLLED MIRROR
Clyde M. McKee, Taylor; Andrew V. Provenzino, Southgate, and Ward Scott, Rochester, all of Mich., assignors to Clyde M. McKee, Taylor; Ward Scott, Rochester and Sandor Shapiro, Southfield, Mich., part interest to each
Original application July 17, 1968, Ser. No. 745,434, now Patent No. 3,527,528, which is a continuation-in-part of application Ser. No. 706,953, Feb. 26, 1968. Divided and this application Apr. 22, 1970, Ser. No. 30,637
Int. Cl. G02b *5/08*
U.S. Cl. 350—307 **4 Claims**



A mirror assembly for trucks or the like actuated in response to movement of a steering wheel to move to a position providing maximum visibility. Means are clamped to a

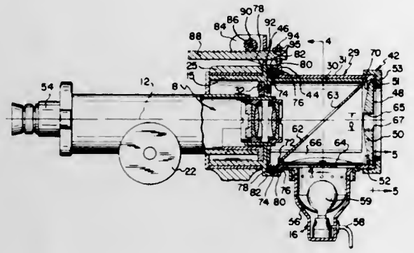
member which is a part of the steering mechanism and which is pivotally movable upon rotation of the steering wheel in such a way that pivoting of the member is translated through the means to a T-shaped pivotal member. The T-shaped pivotal member is connected to a hydraulic system to produce rotation of the mirrors upon pivotal movement of the T-shaped member.

3,640,610

OPHTHALMOMETER DEVICE HAVING TARGET MEANS INDEPENDENTLY ADJUSTABLE WHILE MAINTAINING THE CORNEAL IMAGE IN FOCUS

Joseph S. Nupuf, 1342 Cleveland Avenue, N.W., Canton, Ohio

Filed Sept. 28, 1970, Ser. No. 76,171
Int. Cl. A61b *3/10;* **G01b** *9/00*
U.S. Cl. 351—13 **8 Claims**



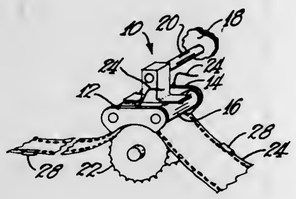
A device for determining the topography of an optic including a support member having a measuring unit mounted thereon. The measuring unit includes an optical system having a target assembly operably associated therewith and mounted in optical alignment with the optical axis of the optical system. Means included to maintain the optic in stationary, aligned relation with the optical axis. The target assembly includes a target member adapted to be illuminated by a source of light to produce an illuminated image on the reflective surface of the optic. The target member is mounted for selective telescopic movement along the optical axis of the optical system for increasing or decreasing the size of the image produced on the reflected surface of the optic to enable measurement of the curvature of relatively larger or smaller areas of the surface thereof.

3,640,611

CONTROL FOR MOTION PICTURE PROJECTORS

Angelo Boudouris, Sylvania; Stanley J. Kulish, Jr., Holland, and Harold M. Plumadore, Toledo, all of Ohio, assignors to Eprad Incorporated, Toledo, Ohio

Filed Nov. 21, 1969, Ser. No. 878,611
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **8 Claims**



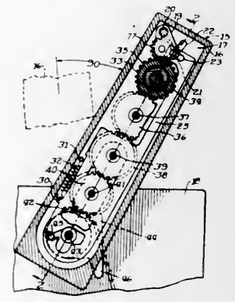
Controls for motion picture projectors are designed to automatically change over the operation from one projector to the other to provide continuous showing of sequential reels of film. The controls embody a pickoff device in each projector having two contact shoes, one of which is effective to initiate changeover and the other of which is effective to operate auxiliary controls or circuits. The controls further prevent changeover from one projector to the other in the event of a film break which would cause circuits to be completed through both shoes. An alarm system is also provided which is effective to signal the operator in the event of a film break or lamp failure and also to signal the beginning of a show and the end of the last reel thereof.

3,640,612

AUTOMATIC REWIND FOR MOTION PICTURE PROJECTORS

Arthur E. Nupnau, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 6, 1969, Ser. No. 863,867
Int. Cl. G03b *23/00, 1/00*
U.S. Cl. 352—124 **8 Claims**



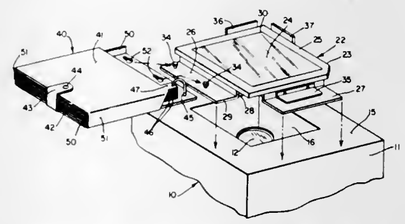
A mechanism in a sprocketless motion picture projector for rewinding film on a supply reel including a friction drive for taking up film on the supply reel during a reverse projection mode, a positive drive for winding film on the supply reel during a rewind mode and a control means operable by a film tension sensing means to automatically cause the positive drive to bypass the friction drive when changing from a projection mode to the rewind mode.

3,640,613

TRANSPARENCY DISPLAY APPARATUS

Paul E. Kitch, West Springfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Original application Mar. 24, 1967, Ser. No. 625,841, now Patent No. 3,536,393. Divided and this application Jan. 9, 1970, Ser. No. 10,117
Int. Cl. G03b *21/00*
U.S. Cl. 353—23 **4 Claims**



Transparency display apparatus is disclosed including a transparency storage device for protecting transparencies during transport and for facilitating display of transparencies

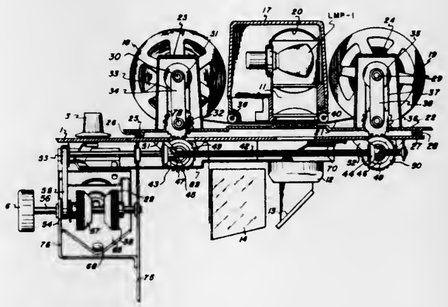
upon an overhead projector and a staging assembly mountable on the stage of an overhead projector and cooperating with the storage device for transparency display. The storage device is separable from the staging assembly during transport of the transparencies and is constructed in a manner which fully protects the transparencies by providing covers and sides which form a package for holding the transparencies. When utilized for displaying transparencies, the storage device may be opened up and the covers pivoted out of place into a position where they support transparencies before and after display. The staging assembly includes fastener means which cooperate with fasteners on the storage device so that the storage device is supported while the transparencies are being displayed. The staging assembly has a transparent panel positioned above a light source and relative to the storage device so that transparencies carried in the storage device can be pivoted about their point of attachment to the storage device for selective display over the transparent panel on the overhead projector. The staging assembly also includes supports adjacent the transparent panel for supporting the covers of the storage device in a position where transparencies can be collected and disposed upon one of them before and after display. Individual transparencies retained in the apparatus may be moved about an axis lying in the plane of the transparency as well as about an axis intersecting the plane of the transparency, generally one perpendicular thereto.

3,640,614

FILM SUPPORT AND TRANSPORT APPARATUS

James R. Cassano, Penfield; Charles E. Smith, Webster, and Robert E. Kalvitis, Fairport, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,401
Int. Cl. G03b *23/12*
U.S. Cl. 353—26 **4 Claims**



Apparatus for supporting an elongated web of film transparency material in a reel-to-reel arrangement at a projection station in a film viewing device. Film material is selectively transported from one reel to the other past the projection station by both a manual and a powered drive arrangement. The film material is supported for selective positioning at the projection station in a direction transverse to the direction of film travel without interrupting the drive arrangement.

3,640,615

XEROGRAPHIC REPRODUCING APPARATUS

Robert A. Schaeffer, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1967, Ser. No. 682,830
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **12 Claims**

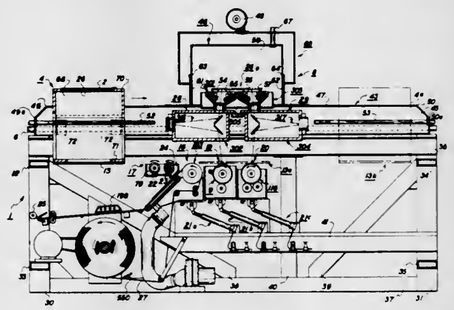
An automatic xerographic reproducing apparatus for reproducing and standardizing computer printout including an optical scanning system adapted to selectively vary the length and speed of scan in response to the size of the original document to create a standardized output format by reproducing an original document or creating a facsimile thereof.

3,640,616

OPAQUE ILLUMINATION AND SCANNING SYSTEM

Raymond K. Egnaczak, Williamson, and Gino F. Squassoni, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,713
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **14 Claims**

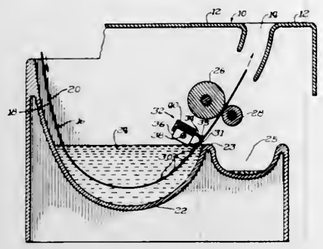


An optical system is used to scan an opaque original in a line-by-line manner. The original is carried on the top deck of a carriage that travels past a stationary optical assembly. The carriage also has a bottom deck substantially parallel to and spaced from the top deck. The optical assembly fits between the two decks as the carriage travels thereby. Lamps within the optical assembly illuminate a generally linear area of the original and a light image of the original is projected through the optical assembly to the bottom deck of the carriage by a lens and three mirrors. One mirror is positioned at the nodal point of the lens to pass rays through the same lens twice. The light image projected to the bottom deck is used to expose a photoelectrophoretic ink for the formation of an image from the ink.

3,640,617
TONER DOCTOR MEANS

Donald M. Fredrickson, Deerfield, and Johannes H. Bungener, Glenview, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 29, 1968, Ser. No. 780,026
Int. Cl. G03g 15/10
U.S. Cl. 355—10 8 Claims

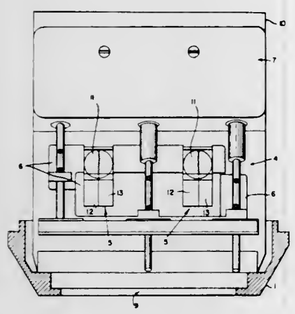


Doctoring apparatus for use in the developing station of an electrostatic copying machine for removing excess liquid toner from the developed image surface of the sheet prior to squeegeeing of the sheet. Removal of excess toner eliminates image trailing, haloing and offsetting.

3,640,618
METHOD AND APPARATUS FOR PHOTOGRAPHIC COLOR PRINTING

Keith Aston, Cheam, Surrey, England, assignor to The Pavelle Corporation, New York, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,529
Claims priority, application Great Britain, Mar. 11, 1968, 11,748/68
Int. Cl. G03l 27/32
U.S. Cl. 355—35 7 Claims

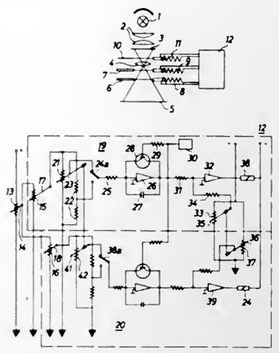


Apparatus for printing a photographic color print from a color transparency or negative includes a compound color filter consisting of two additive color filters to provide a device having the speed of operation of a conventional subtractive printer apparatus when printing color negatives of good color balance. The apparatus automatically introduces the accuracy of an additive printer system when unbalanced color negatives are being printed.

3,640,619
CONTROL ARRANGEMENT FOR COPYING APPARATUS

Hans-Peter Huber, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 27, 1970, Ser. No. 6,198
Claims priority, application Germany, Jan. 29, 1969, P 19 04 253.6
Int. Cl. G03b 27/76
U.S. Cl. 355—36 9 Claims

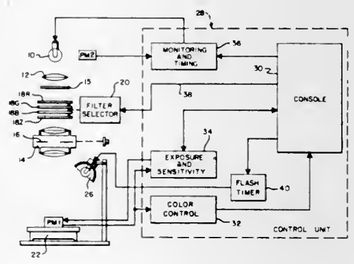


An arrangement for controlling and shortening the exposure times of copying apparatus adapted to two colors on an original or master to be copied. The light source in the copier transmits light of the two colors along a path into which blocking filters may be selectively inserted. One blocking filter is provided for each one of the colors. Two adjustable timing generators control the insertion of the blocking filters into the light path so that the blocking filter for the one color requiring shorter exposure is inserted into the light path at either the beginning or the end of the exposure. Operational amplifiers with capacitor feedback operate in conjunction with potentiometers for generating the appropriate time intervals for the exposure.

3,640,620
PHOTOGRAPHIC CONTROL APPARATUS

Abram Shatz, Pomona, and Ben Eisenberg, Larchmont, both of N.Y., assignors to Kriser Corporation, College Point, N.Y.

Filed Aug. 27, 1969, Ser. No. 853,285
Int. Cl. G03b 27/76; H01j 39/12; H05b 37/02
U.S. Cl. 355—38 12 Claims

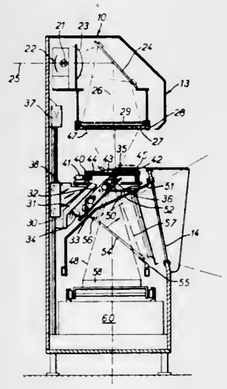


Photographic apparatus is disclosed capable of controlling all known photographic processes for exposing photosensitive material, including processes for producing color separation films and plates of the type used in various photomechanical reproduction processes. Photometric measurements are made in the plane of the material which is to be exposed and these measurements are used to program a control unit to establish required exposure time intervals. A set of color-balancing controls for each of the primary colors is provided to establish the relative exposures required for the respective color films or plates. A special timing circuit ensures that the exact amount of light required for proper exposure will be provided regardless of any fluctuation in luminous flux as measured at the enlarger or at the camera copy board. Additionally, the timing circuit permits selection of desired exposure intervals (separate from the main exposure interval) as required for various known photographic operations.

3,640,621
VIEWER-PROJECTOR-COPIER APPARATUS FOR MICROFORMS

Raymond Frerson, St. Germain-les-Arpajon; Claude Gravier, Verrieres-le-Buisson; Pierre Ravenel, Clamart, and Pierre Soupene, Chatillon-s/-Bagneux, all of France, assignors to Electricite de France (Service National), Paris, France

Filed Mar. 23, 1970, Ser. No. 21,716
Claims priority, application France, Mar. 24, 1969, 6908520
Int. Cl. G03b 27/70
U.S. Cl. 355—45 10 Claims



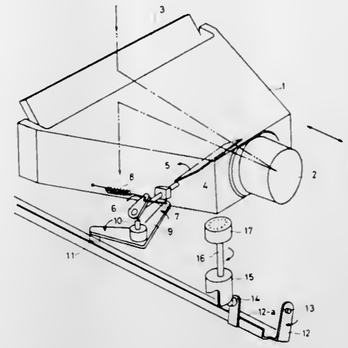
A microform viewer-projector-copier is provided with a light source providing a conical beam of light, a diffusion plate and a double Fresnel lens system to homogenize and concentrate the beam on a nodal plane. The microform, preferably of the type which includes at least one and up to 128 microimages, is mounted in a holder which is movable along the axis of the light beam and provided with means for positioning the microimages to be illuminated by the light beam. A plurality of lens systems are mounted on a turret for positioning in the nodal plane any one of them to focus the image of the illuminated portion of the microform onto either a viewing screen or the copier plane of a copier. A servomechanism is provided for each of the movements of the microform holder as well as the positioning of any one of the lens systems in the nodal plane.

3,640,622
EXPOSURE-CONTROL DEVICE IN COPYING MACHINES

Akira Shinozaki, Tokyo, Japan, assignor to Konishiroku Photo-Industry Co., Ltd.

Filed May 7, 1970, Ser. No. 35,477
Claims priority, application Japan, May 10, 1969, 44/42,382
Int. Cl. G03b 27/76
U.S. Cl. 355—65 6 Claims

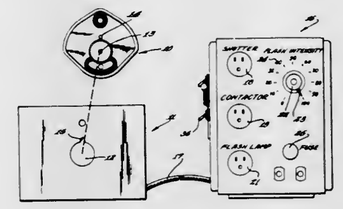
An improved exposure control device for a copying apparatus of the type having a movable optical system in said apparatus for scanning an original to be reproduced, the improved exposure control device having a pivotal shield movable with said optical system for varying the degree of exposure; a bar mounted in said copying apparatus and positioned substantially parallel to the direction of the movement of said optical system, said bar being mounted on said means for operating the exposure control device; and means movably mounted on said bar and mounted on said shield for transmitting motion of said bar to said shield whereby movement of said operating means will change the position of said shield.



3,640,623
AUTOMATIC DENSITY SETTING APPARATUS

Leonard S. Florsheim, Jr., Lake Forest; David A. Lieberman, Wilmette, both of Ill.; Harold B. Archer, Pittsford, N.Y., and Gerhard A. Nothmann, Winnetka, Ill., assignors to Enivar Enterprises Inc., Chicago, Ill.

Filed Oct. 24, 1969, Ser. No. 869,013
Int. Cl. G03b 27/54
U.S. Cl. 355—67 21 Claims

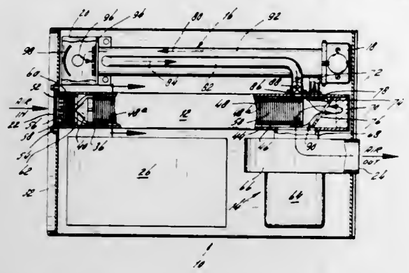


A device that converts copy densities into exposure times for main, flash and bump exposures required in halftone reproduction. Two separately movable scales of an evaluator are set to store intelligence mechanically corresponding to highlight and shadow densities of material to be copied. The evaluator is then placed into a receptor which is connected electrically to a master control unit to convert the evaluator mechanical settings into appropriate electrical signals for automatically regulating the camera lights, the auxiliary flash lamp and the shutter of the camera in order to automatically and instantaneously provide properly exposed main, flash and bump exposures.

3,640,624
AIR POLLUTION DETERMINATION BY MERCURY AIR SAMPLING

Howard H. Anderson, Covina; Rudolph H. Moyer, West Covina; Donald J. Sibbett, Cucamonga, and David C. Sutherland, El Monte, all of Calif., assignors to Geomet, Incorporated, Rockville, Md.

Filed Apr. 29, 1970, Ser. No. 32,917
Int. Cl. G01n *1/00, 33/28, 21/12*
U.S. Cl. 356—36 8 Claims



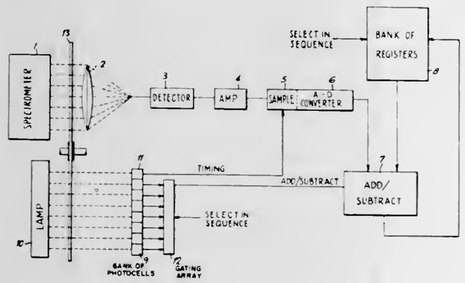
Apparatus and system for detecting and sampling mercury vapor in the atmosphere, particularly for air pollution determination, utilizing sensitized absorption of the vapor on surfaces of noble metal wire grids. The wire grids operate to concrete encountered low levels of vapors. Release of mercury from the grids into a photometer for quantitation is achieved by direct passage of electrical current through the grid wire. The grids are designed to allow for ohmic heating of the absorbent wire to render possible a portable monitoring device.

The apparatus and system incorporates means for volitilizing or decomposing mercury-bearing particulates for direct absorption of the vapor on the grids or in conjunction with a heated prefilter.

3,640,625
MULTIPLEX SPECTROMETER

Roland Norman Ibbett, Cheadle, and David Aspinall, St. Anne's-on-Sea, both of England, assignors to National Research Development Corporation, London, England

Filed June 7, 1968, Ser. No. 735,336
Claims priority, application Great Britain, June 8, 1967, 26,601/67
Int. Cl. G01j *3/00, 3/02*
U.S. Cl. 356—97 5 Claims

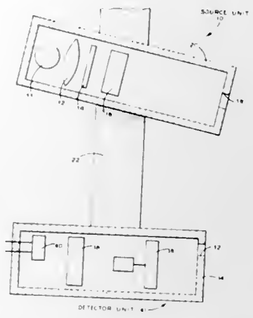


A multiplex spectrometer has its spectral line information ncoded by transmitting the line through rows of apertures resented in sequence. The apertures occur in a pattern erived from a matrix of binary numbers. Decoding is chieved by adding or subtracting the output in a store conuining addresses equal to the number of columns in the iatrix.

3,640,626
MEASURING OF THE CONCENTRATION OF SOLID PARTICLES SUSPENDED IN VARIOUS REGIONS IN A FLUID USING POLARIZED LIGHT

John W. Liskowitz, Belle Meade, N.J., assignor to American Standard, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 629,568, Apr. 10, 1967, now abandoned. This application Nov. 12, 1968, Ser. No. 774,892
Int. Cl. G01n *21/00, 21/40*
U.S. Cl. 356—103 8 Claims

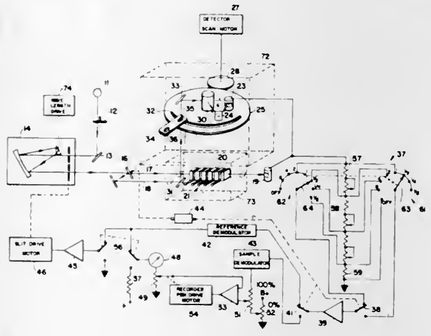


The concentration of particles suspended in a fluid, having a refractive index which differs from that of the fluid, is accomplished using polarized light. The degree of depolarization of the incident light indicates the concentration of the particles in the fluid. While maintaining a constant observation angle, the distance between the light source unit and the detector unit is varied thus changing the focal point of the system. In this manner, suspended particle concentrations at varying distances from the light source and detector unit are obtained.

3,640,627
APPARATUS FOR MEASURING SCATTERED LIGHT

Willard H. Beattie, Long Beach, and William S. Gallaway, Fullerton, both of Calif., assignors to Beckman Instruments, Inc.

Filed Mar. 1, 1965, Ser. No. 435,792
Int. Cl. G01n *21/00, 1/10*
U.S. Cl. 356—104 9 Claims



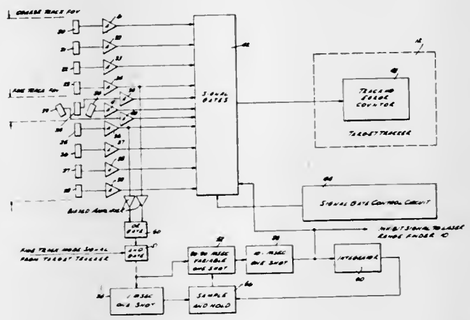
A light-scattering accessory for double-beam spectrophotometers and an improved double-beam, ratio-recording light-scattering spectrophotometer are disclosed. The at-

tachment may be utilized to convert a standard double-beam spectrophotometer into a scattered light-measuring device and consists of an attachment having housed therein a means for directing the sample beam to a sample cell and a detector located on a goniometer rotatable about the cell. The reference beam is passed through an optical attenuator to the detector of the spectrophotometer. Electrical attenuation devices are provided and may comprise either a single attenuating potentiometer connected to each of the detectors or separate attenuators connected to the separate detectors. The attenuators allow measurement of signals over a wide dynamic range by attenuating either the reference or the sample signal and when utilized in combination with the optical attenuator located in the reference beam provide an extremely wide dynamic range for the instrument. Also disclosed is a novel sample cell and beam trap, the beam trap consisting of a piece of black glass having at least one optically flat surface and a black glass rod attached thereto to suspend the glass plate in the beam. The sample cell may be provided with a single optically transmitting window and the beam trap located within the cell for improved results.

3,640,628
ELECTRO-OPTICAL TARGET ACQUISITION BLANKING SYSTEM

Sheldon Jones, Palos Verdes Estates, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 18, 1969, Ser. No. 886,333
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 11 Claims



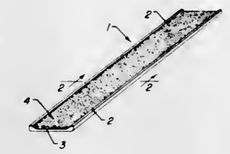
When an electro-optical tracking and ranging system is placed in proximity with the guns being controlled thereby, such as on the turret of a tank, there are a range of azimuth and elevation angles of the gun within which the flame present when the guns are being fired serves to temporarily disrupt the tracking process. Means are provided for sensing and/or anticipating the firing of the gun within the critical fields of azimuth and elevation angles and blanking the electro-optical detector over the interval of the occurrence of the gun flame. This prevents saturation of the detector by the gun flame and the disruption of the circuitry included therein which occurs otherwise.

3,640,629
SHEET MATERIAL

Edward M. Geiser, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 5, 1970, Ser. No. 8,784
Int. Cl. B32b *1/00*
U.S. Cl. 401—132 11 Claims

A perfumed dispenser which comprises a tape or strip of narrow sheet material having a raised portion at each edge and pressure-rupturable microcapsules containing aroma

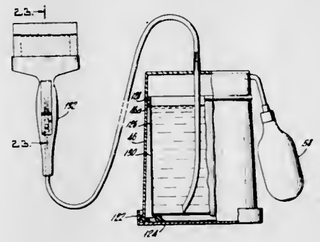


chemical entrapped in the trough formed between the raised edges.

3,640,630
PRESSURIZED CONTINUOUS FLOW LIQUID APPLICATOR WITH SHUTOFF VALVE

Harold L. Walker, Whitestone, N.Y., assignor to Applications Unlimited, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 794,175, Jan. 27, 1969, now abandoned. This application June 26, 1970, Ser. No. 50,263
Int. Cl. A46b *11/02*
U.S. Cl. 401—188 8 Claims



A system for the application of liquid to a surface, such as by painting, washing and waxing, in which the liquid source is maintained under a constant superatmospheric pressure and a flexible cable is connected between the pressurized liquid source and the liquid applicator. A shutoff valve can selectively pinch-off the cable in order to cut off the liquid supply to the applicator. The liquid applicator can be fixed or movable to selected positions and may be in the form of a roller.

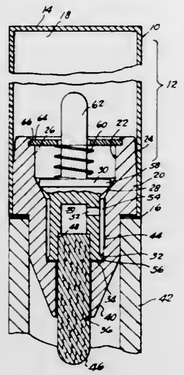
3,640,631
MARKING PEN

Piro Sotir, 47 Montana Drive, Holden, Mass.

Filed Sept. 26, 1969, Ser. No. 861,294
Int. Cl. B43k *5/08*
U.S. Cl. 401—206 4 Claims

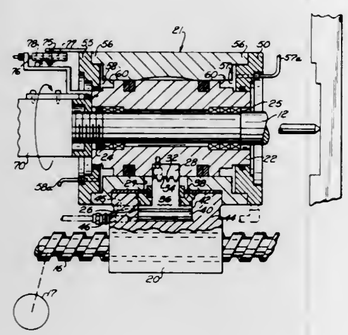
A marking applicator comprising a container having a fluid reservoir therein and a marking nib extending out of the other end of the container for applying fluid or ink to a surface, said nib being disposed in a cylindrical holder having a central bore therein with at least two shoulders therein with one forming a valve seat, a valve plunger secured to said nib and disposed within said bore, said valve plunger having two sealing surfaces thereon with one adapted to seat against one of said shoulders and spring biasing means normally maintaining said valve plunger in a closed position seated upon said shoulder. A secondary reservoir disposed within said

valve plunger and in communication with said nib and with an annular channel provided between said valve plunger and



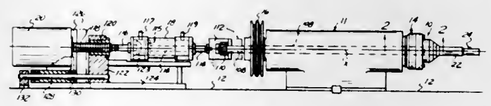
said central bore and a bypass passage disposed in said holder adjacent said central bore for supplying fluid to the exterior of said nib when said valve plunger is unseated.

3,640,632
MACHINE TOOL SPINDLE AND CONTROL THEREFOR
Ralph H. Schuman, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 29, 1969, Ser. No. 861,590
Int. Cl. B23b *47/24*
U.S. Cl. 408—11 **17 Claims**



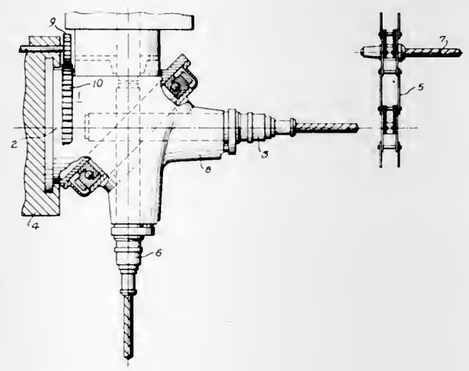
A machine tool having a rotatable machine tool spindle for performing drilling and tapping operations. The spindle has limited axial movement relative to the spindle carrier. Fluid pressure means may be operated to displace the spindle in opposite directions from a predetermined position in the spindle carrier and to apply a force yieldably opposing return of the spindle to the predetermined position. The position of the spindle in its carrier is sensed by control means and the spindle carrier is translatable toward or away from the workpiece in response to the direction of displacement of the spindle from its predetermined position. The spindle is displaced forwardly to effect translation of the spindle carrier and spindle to engage a tool with a workpiece and the return of the spindle to the predetermined position upon the engagement of the tool with the workpiece is utilized to initiate control means for automatically controlling the depth of drilling or tapping as measured from the surface of the workpiece and the return of the spindle to an automatic repeat position or to a home position. The spindle is allowed to float while a tapping tool is in engagement with the workpiece and the feed and return of the spindle carrier is controlled during this period by sensing the position of the spindle in the carrier. During drilling the spindle is locked against axial movement relative to the carrier while the tool is in engagement with the workpiece. The locking means is engageable over the range of axial movement of the spindle relative to the carrier to locate the spindle in a predetermined position relative to the carrier.

3,640,633
ADJUSTABLE BORING QUILL ASSEMBLY
Richard C. Gersch, 27401 Red Leaf Lane, Southfield, Mich., and Roland Bruce Reynolds, 1628 Haynes, Birmingham, Mich.
Filed Aug. 28, 1969, Ser. No. 853,696
Int. Cl. B23b *47/22*
U.S. Cl. 408—12 **10 Claims**



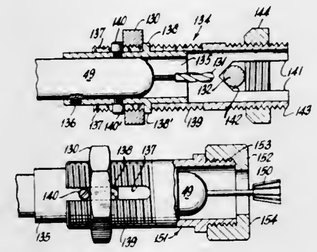
An automatically adjustable boring and turning quill assembly for a boring machine and including an adjustable eccentric sleeve member for moving or turning the boring bar radially toward and away from the workpiece and a piston which upon axial movement produces adjustment of the sleeve member. Fine adjustment to compensate for wear of the boring bar is provided by a stepping motor which actuates an adjustable stop for the piston.

3,640,634
TOOL CHANGER FOR MACHINE TOOLS
Otto Oeckl, Tizianstrasse 60, 8000 Munich 19, Germany
Filed Oct. 14, 1969, Ser. No. 866,269
Claims priority, application Germany, Oct. 25, 1968, P 18 05 343.5
Int. Cl. B23b *39/20*
U.S. Cl. 408—35 **1 Claim**



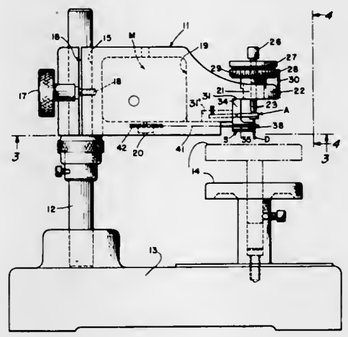
The headstock of a machine tool carries two spindles alternately turnable from a tool-working to a tool-changing position. In addition, the headstock is turnably mounted on the machine tool body so that the spindle in tool-changing position is always aligned with a tool magazine even when the spindle in working position is inclined to the vertical.

3,640,635
HAND DRILL AND DRILL PRESS
John Von Hollen, P.O. Box 185, Cedar Grove, N.J.
Filed Feb. 24, 1970, Ser. No. 13,472
Int. Cl. B23b *45/14*
U.S. Cl. 408—101 **8 Claims**



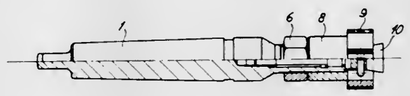
The invention contemplates a miniature drill which is hand-held at a quill or sleeve on the drill axis, in the manner of a pencil or pen. The tool includes mass eccentric to the drill axis for absorbing reaction torque occasioned by drill operation. In one employment, the fingers of the hand which holds the sleeve also steady the drill against the workpiece, and in another employment a work-supporting jig fastened to the sleeve converts the tool into a portable miniature drill press, assuring accurate tool alignment upon entering and through a drill-feeding stroke into the work.

3,640,636
INTERCHANGEABLE DRILL SUPPORT AND ACTUATING MEANS FOR MICRODRILL
Heinz Reich, 15076 Dickens Avenue, San Jose, Calif.
Filed May 25, 1970, Ser. No. 39,981
Int. Cl. B23b *41/14, 47/16, 47/18*
U.S. Cl. 408—128 **10 Claims**



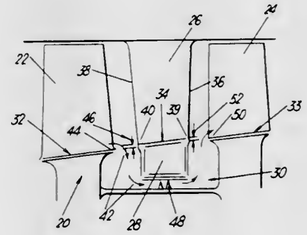
For a Pick-feed-type drilling apparatus having a belt and pulley drive for maintaining a drill shaft in raised condition and on open bearings for axial movement, an interchangeable drill support for spaced hardened bearings and a spring-loaded actuating means between the drill shaft and a micrometer stroke-controlled plunger for maintaining the latter in raised condition relative to the drill shaft.

3,640,637
ADJUSTABLE MACHINE REAMER
Adolf Merz, Olten, Switzerland, assignor to Merz AG Dulliken, Dulliken, Switzerland
Filed Dec. 24, 1969, Ser. No. 887,830
Claims priority, application Austria, Dec. 27, 1968, A 12 589/68
Int. Cl. B23d *77/04*
U.S. Cl. 408—197 **5 Claims**



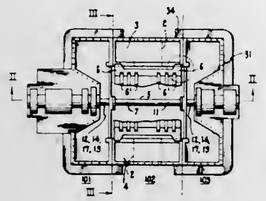
An adjustable machine reamer in which a screw connection is provided between the expansion member and the reamer shank, a threaded projection or attachment arranged on an extension at the rear end of the expansion member and a tapped bore formed in the reamer shank and having an internal screw thread adapted to the external screw thread on the threaded projection on the expansion member. The extension at the rear end of the expansion member and the reamer shank each have one annular, face ground bearing face thereon for aligning the longitudinal axes of the expansion member and of the shank relatively to each other. There are also provided an axial centering means having a ground centering bore in the reamer shank and a centering cylinder fitting into the centering bore on the extension at the rear end of the expansion member.

3,640,638
AXIAL FLOW COMPRESSOR
Jack Britt, Ambergate, and Alfred John Honey, Allestree, both of England, assignors to Rolls-Royce Limited, Derby, Derbyshire, England
Filed June 26, 1970, Ser. No. 50,100
Claims priority, application Great Britain, July 2, 1969, 33,367/69
Int. Cl. F01d *11/08*; **F04d** *29/00*
U.S. Cl. 415—172 **5 Claims**



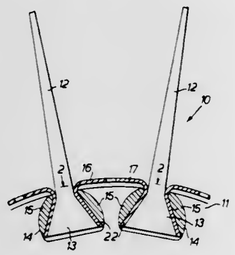
An axial flow compressor comprises a rotor having a plurality of axially spaced rings of rotor blades, a respective ring of stator blades being disposed immediately downstream of each ring of rotor blades, respective shroud surfaces being provided at the radially inner ends of the working surfaces of the stator blades by respective shroud rings carried by the rings of stator blades, running clearances being provided between the shroud rings and the rotor, and means whereby in operation a static pressure gradient is maintained in the clearance between at least one shroud ring and the rotor so that gas flow through the clearance is in a downstream direction.

3,640,639
UNIT CONSTRUCTION FOR TURBINE HOUSING BOTTOMS
Rudolf Ruhl, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany
Filed Oct. 10, 1969, Ser. No. 865,440
Claims priority, application Germany, Oct. 11, 1968, P 18 02 482.3
Int. Cl. F04d *29/40, 29/00, 1/06*
U.S. Cl. 415—219 **7 Claims**



A low-pressure turbine housing has a bottom portion composed of two separate end units joined to at least one middle unit. The units are prefabricated small enough for ease of shipment and are field assembled.

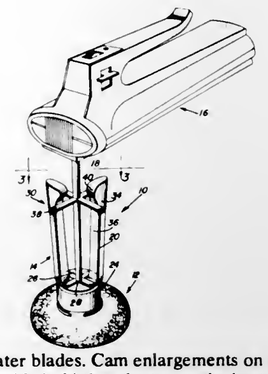
3,640,640
FLUID FLOW MACHINE
Jack Palfreyman, Tansley, near Matlock, and Henry Edward Middleton, Derby, both of England, assignors to Rolls-Royce Limited, Derby, England
Filed Dec. 4, 1970, Ser. No. 95,993
Int. Cl. F01d *5/32*
U.S. Cl. 416—2 **9 Claims**



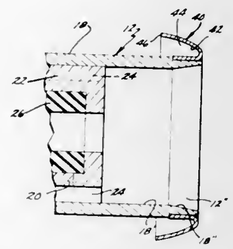
The invention concerns a fluid flow machine having a support member, a plurality of angularly spaced-apart blades each of which is mounted in the support member for limited pivotal movement, and frangible force-transmitting means which interconnect adjacent blades so as normally to restrain the blades against such pivotal movement, the frangible force-transmitting means breaking when subjected to a force exceeding a predetermined value.

3,640,641
ADAPTER FOR WORKING IMPLEMENTS
Guy D. Fitzhugh, P.O. Box 6053, Pine Bluff, Ark.
Continuation-in-part of application Ser. No. 660,797, Aug. 15, 1967, now Patent No. 3,472,490. This application Oct. 10, 1969, Ser. No. 865,427
Int. Cl. B01f *7/18*
U.S. Cl. 416—62 **6 Claims**

An adapter removably attaching working or cleaning implements to a portable, power-driven beater or to a tubular grip handle for alternative powered rotation and manual manipulation. The mounting body of the adapter is held in abutment with the end of the beater shank and is provided with torque transmitting prongs that extend between and axially beyond the beater blades. Cam enlargements on the ends of the prongs releasably hold the adapter on the beater.

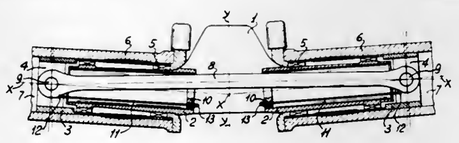


3,640,642
MARINE FLOW THROUGH PROPELLER
Robert F. Kress, and Eldon L. Lorenz, both of Grand Rapids, Mich., assignors to Michigan Wheel Corporation, Grand Rapids, Mich.
Continuation-in-part of application Ser. No. 836,093, June 24, 1969, now Patent No. 3,554,665. This application Jan. 15, 1971, Ser. No. 106,689
Int. Cl. B63h *1/16, 11/14*
U.S. Cl. 416—93 **7 Claims**



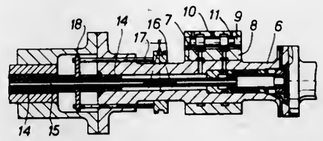
A flow through marine propeller unit with exhaust creepage barrier structure at the rear of the hub formed of an middle unit. protrusion projecting radially outwardly to define a forwardly oriented dead end pocket.

3,640,643
HELICOPTER ROTOR CONSTRUCTION
Giancarlo Monti, Varese, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy
Filed Dec. 23, 1969, Ser. No. 887,798
Claims priority, application Italy, Dec. 24, 1968, 25561/68
Int. Cl. B64c *27/48*
U.S. Cl. 416—136 **7 Claims**



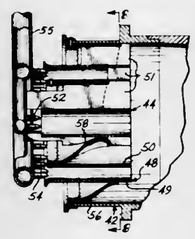
A paired blade helicopter rotor having a strut connecting the blades and a tie rod connecting each blade with the rotor hub, provision being made to pretension the tie rods.

3,640,644
CONTROLLABLE PITCH PROPELLER SYSTEM
Anders M. Liaaen, Alesund, Norway, assignor to A. M. Liaaen A/S, Alesund, Norway
Filed Mar. 27, 1970, Ser. No. 23,172
Claims priority, application Norway, Mar. 28, 1969, 1311/69
Int. Cl. B63h *3/08*
U.S. Cl. 416—157 **5 Claims**



A controllable pitch propeller assembly wherein the pitch of the blades is controlled by an hydraulically actuated piston and cylinder assembly. Auxiliary hydraulic supply means are provided for actuating the piston and cylinder assembly in the event the primary hydraulic supply fails.

3,640,645
METHOD AND APPARATUS FOR ASPIRATING FLUIDS
Alan K. Forsythe, Seattle, Wash., assignor to Rocket Research Corporation, Redmond, Wash.
Filed Aug. 28, 1969, Ser. No. 853,647
Int. Cl. F04f *5/50, 5/18*
U.S. Cl. 417—174 **20 Claims**

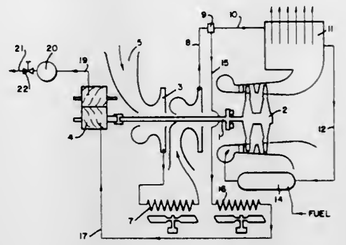


An aspirator check valve in the form of a cylindrical sleeve which is restrained at its front end and along circumferentially spaced lines extending axially rearwardly from said front end, and is unrestrained in the remainder of its extent. The sleeve lies tight against an outer wall of the aspirator when open and when closed by back pressure buckles inwardly where unrestrained, to place rearward portions thereof tight against an inner wall. The upstream end restraining means includes a resilient band designed to flex radially inwardly in response to an over pressure, so that such sleeve also functions as an over pressure relief valve.

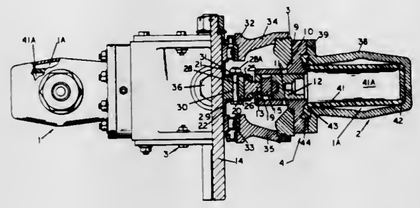
A shortened aspirator comprising a plurality of concentrically arranged primary and secondary flow passageways, and such an aspirator combined with the sleeve-type check valve.

3,640,646
AIR COMPRESSOR SYSTEM
Hanns Hornschuch, Easton, Pa., and William T. Alderson, Brookside, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Mar. 26, 1970, Ser. No. 22,982
Int. Cl. F04b *23/14, 23/00, 17/00*
U.S. Cl. 417—203 **3 Claims**

A gas turbine driven air compressor system including a first compressor feeding a portion of its compressed air to the turbine for combustion purposes and a second positive displacement compressor receiving the remaining compressed air from the first compressor and boosting its pressure for use as compressed air.



3,640,647
DIAPHRAGM PUMP
Bernard Eaton Hart, Staford, England, assignor to Flexian Hydraulics Ltd., Salisbury, Wilts, England
Filed Jan. 29, 1970, Ser. No. 6,849
Int. Cl. F04b *35/02, 43/10, 45/00*
U.S. Cl. 417—389 **13 Claims**

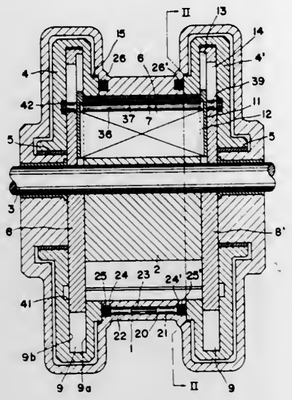


This disclosure is directed to a diaphragm pump having a crankcase housing to which there is connected a pump casing and a cooperating piston assembly. A flexible, cup-shaped diaphragm is interposed between the pump casing and the piston assembly so that a pumping chamber is formed with the pump casing on one side of the diaphragm and a pressure fluid chamber is formed on the other side of the diaphragm. A means defining a working fluid inlet and outlet is disposed in communication with the pumping chamber, and a means is provided for venting the pressure fluid chamber. In operation the action of the piston assembly on the fluid-filled pressure chamber effects the actuation of the diaphragm member to produce a pumping action on the working fluid.

3,640,648
ROTARY MACHINE OF THE BLADE TYPE
Daisaku Odawara, 520, Ueno Shi ba-cho, 5 chome, Sakai-shi, Japan
Filed Apr. 18, 1969, Ser. No. 817,374
Claims priority, application Japan, Apr. 22, 1968, 43/26583; June 28, 1968, 43/44500
Int. Cl. F01c *19/08*
U.S. Cl. 418—133 **8 Claims**

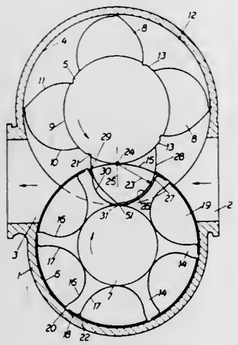
A rotary machine of the blade type including a plurality of blades movably disposed in radial grooves formed in a rotor rotatably mounted in a casing eccentrically thereof and pail-shaped airtight rotors mounted in a casing concentrically

thereof on opposite sides of the rotor in enclosing relationship with the rotor and the blades, which rotor has discal members fixed to opposite sides thereof and being each



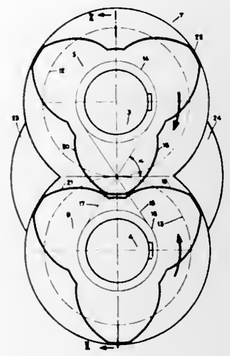
formed with radial grooves for guiding and supporting the blades, and a high-pressure gas producing apparatus comprising a rotary air compressor of the blade type described.

3,640,649
SCREW ROTORS
Jan Edvard Persson, 2 Edinsvagen, Ektorp, Sweden
Filed Sept. 23, 1969, Ser. No. 860,257
Int. Cl. F03c *11/00, 3/00*
U.S. Cl. 418—191 **7 Claims**



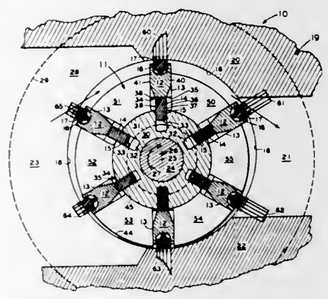
A gate screw rotor forming one part of a set of screw rotors for a screw rotor machine which has a helical sealing ridge at the intersection between a first concavely curved flank of a helical thread and an arcuate crest portion of the profile whereas the said crest portion merges in a second concavely curved flank of the thread with a rounded profile portion. The gate rotor is cut by means of a cutter having blades each one of which cut the entire profile of the threads from the leading side of said ridge through the bottom of the groove to the trailing side of the ridge. The main rotor of a screw rotor set for such a machine may be manufactured in similar way.

3,640,650
GEAR TOOTH SYSTEM FOR GEAR PUMPS
Robert Wydler, Zurich, Switzerland, assignor to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland
Filed July 15, 1969, Ser. No. 841,866
Claims priority, application Germany, July 18, 1968, P 17 03 849.2
Int. Cl. F01c *1/18*
U.S. Cl. 418—206 **1 Claim**



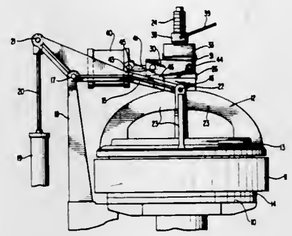
In a gear tooth system for the pumping wheels of a gear pump, having an auxiliary driving transmission, the tooth profiles of the pumping gearwheels are of involute shape, the operational or working pressure angle is greater than 40°, and the transverse contact ratio is approximately 0.5.

3,640,651
INNER VANE FOR ROTARY DEVICES
Harry T. Johnson, Westerville, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Filed Aug. 31, 1970, Ser. No. 68,398
Int. Cl. F04c *1/00, 17/00*
U.S. Cl. 418—269 **11 Claims**



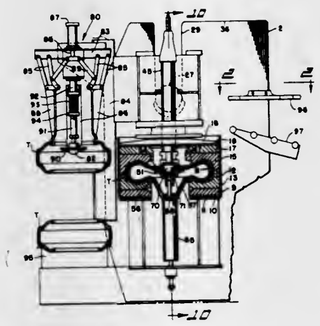
A sliding-vane rotary moving-fluid device. Radially slidable in each rotor slot are an outer vane and a thinner contiguous inner vane. Selected outward pressures on the inner vane and on leading and trailing portions of the outer vane provide proper net pressure distributions for tracking of the outer vane on a cam ring while traversing sealing spaces and port spaces alternately during rotation.

3,640,652
LOCKING DEVICE FOR TIRE RETREADING MOLD
John R. Mattox, Route 3, Box 208-A, Charlotte, N.C., and Thomas W. Mattox, 7205 Morley Circle, Charlotte, N.C.
Continuation-in-part of application Ser. No. 736,783, June 13, 1968, now Patent No. 3,516,121. This application Dec. 4, 1969, Ser. No. 882,058
Int. Cl. B29h *5/04*
U.S. Cl. 425—20 **5 Claims**



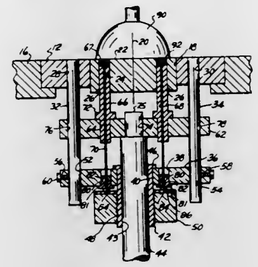
A single trunnion mounted power cylinder operates a low-friction wedge horizontally to exert a heavy clamping force along the true axis of the coupling shaft which connects the tire stand and overhead clamping ring or turret. The clamping ring or turret is pressed tightly against the mold matrix resting on the stand. The trunnions for the cylinder are supported on a lower bearing block beneath the wedge.

3,640,653
TIRE CURING PRESS
Nicholas M. Laenen, Columbiana, and James M. Cooper, Tallmadge, both of Ohio, assignors to NRM Corporation, Akron, Ohio
Filed June 29, 1970, Ser. No. 50,833
Int. Cl. B29h *5/02*
U.S. Cl. 425—33 **8 Claims**



Upstanding bladder-type tire curing press having a fluid pressure actuated post engaged with the closed upper end of the bladder and having post and bladder pressure controls to facilitate the tire carcass loading, shaping, curing, and unloading operations. The press also has a stationarily mounted stripper with respect to which the cured tire is raised thus to strip the tire from the movable toe ring of the top mold section for discharge onto an unloading conveyor beneath the stripper.

3,640,654
DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER AND METHOD OF ASSEMBLY
Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.
Filed June 25, 1970, Ser. No. 49,800
Int. Cl. B30b *11/02, 11/06*
U.S. Cl. 425—78 **37 Claims**



A die and punch assembly for use on a powder compacting press for making articles compacted from a powder and a method of assembly. The assembly comprises a die plate appropriately mounted to the press and includes an aperture in which a die bushing is adhesively bonded, the die bushing having one or more cavities, each of which has a punch slidably and snugly disposed therein. The punches are collectively actuated by a common punch support which is in turn carried by a pair of posts extending below the die plate to permit reciprocal movement of the punches within their respective die cavities. A plurality of core rods are provided, with each punch having one end of at least one core rod disposed within a longitudinal bore formed in each punch, while the other end of said core rod is fixedly mounted on a core rod support, which in turn is fixedly mounted to the posts below the punch support. Means disposed below the core rod support and extending therethrough are operatively connected to the punch support to selectively cause reciprocation thereof.

ERRATUM

For Class 425—83 see:
Patent No. 3,640,793

3,640,655
APPARATUS FOR UTILIZING HOT AND COOL GAS FOR THRUST EMBEDDING A METAL INSERT IN A BODY OF HEAT SOFTENABLE MATERIAL
Robert P. Wallace, Somers, N.Y., assignor to Mite Corporation, Danbury, Conn.
Filed Feb. 25, 1970, Ser. No. 14,144
Int. Cl. B29d *3/00*
U.S. Cl. 425—109 **7 Claims**

Apparatus for installing by thrust embodiment a metallic insert into a receiving body of thermoplastic material which is relatively rigid at ambient temperature by softening the thermoplastic where the insert is to be forced in as thrust is applied to the insert. The thermoplastic body is softened at this site by continuously and rapidly flowing of pressurized hot gas or air against this locality of the plastic body and the insert as the latter is progressively thrust forward. The elevated temperature of the gas or air is kept below that which will cause appreciable heat damage of the plastic. When the insert has been inserted to the desired depth it and the adjacent plastic are rapidly cooled to ambient tempera-

ture by pressurized cool gas or air which is flowed rapidly against the embedded insert and the adjacent plastic.

A tool for performing this action includes a housing that is supported in a relatively fixed position. A thrust motor, which may be of the single action spring return pneumatic type, is mounted in the housing, and the piston thereof transmits thrust to the back end of the insert by a tube which has an insert-engaging hollow tip. The tube guides flow therethrough into the hollow tip of pressurized gas or air which is heated by flowing over an electrical heating coil that is coaxially mounted in this tube, as thrust is applied by the



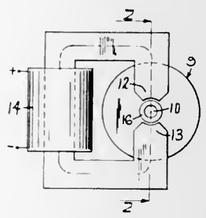
latter to the insert. The hot pressurized gas or air raises the temperature of the insert and adjacent thermoplastic of the receiving body to that which softens the plastic for permitting thrust entry of the insert. The insert is guided during thrust by the tool, and preferably also by a pilot hole formed in the plastic body into which the nose of the insert initially is dropped. After the insert has been thrust into the softened plastic to the desired depth the softened plastic adjacent the insert is rapidly cooled by a blast of pressurized gas or air at ambient temperature which is flow guided into the hollow tip by a duct that is carried alongside of the tube so as to bypass the heating element.

3,640,656
APPARATUS FOR CONTINUOUS MANUFACTURE OF REINFORCED HOSE
Jan J. Boguslawski, New York, N.Y., assignor to Fabric Fire Hose Company, Sandy Hook, Conn.
Filed May 5, 1970, Ser. No. 34,719
Int. Cl. B29d *23/05*
U.S. Cl. 425—113 **19 Claims**

1A	1B

Automatic apparatus for continuously coating a tubular or sleeve-shaped reinforcing carcass for a reinforced hose product with a polymeric material by passing the sleeve uniformly through an extruder, is disclosed. A mandrel extends rearwardly from the extruder to the supply station of the sleeve and is adapted to support the latter internally for longitudinal advancing movement toward the extruder. Two stationary clamping members are located between the supply station and the extruder and are adapted to be closed alternatingly into engagement with the mandrel for selectively inhibiting movement of the sleeve along the mandrel at those locations. Two traveling sleeve accumulators, one arranged for reciprocal linear movement intermediate the two stationary clamping members and one for like movement intermediate the second such member and the extruder, are adapted alternatingly to contact respectively juxtaposed portions of the sleeve and push the same along the mandrel, the first accumulator when the first stationary clamping member is opened and the second one closed, and the second accumulator when the second stationary clamping member is open and the first one closed. Two reciprocally traveling clamping members are located between the extruder and the hose takeup station and are adapted alternatingly to contact respective juxtaposed portions of the reinforced hose product, so that the same is at all times being pulled uniformly from the extruder and toward the takeup station. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,640,657
APPARATUS FOR EXTRUDING CYLINDRICAL MAGNETS
Robert L. Rowe, Sea Gull Hill Road, North Haven, Sag Harbor, N.Y., and Donald Peccerill, 37 Susquehanna Avenue, West Haven, Conn.
Filed Nov. 21, 1967, Ser. No. 684,800
Int. Cl. B29f *3/00*
U.S. Cl. 425—114 **11 Claims**

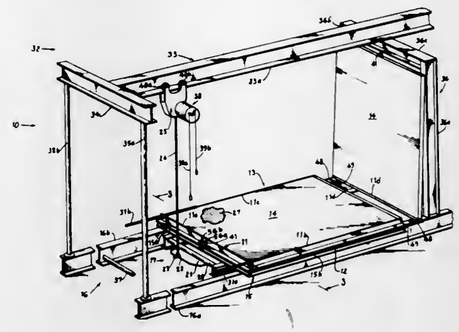


An apparatus for aligning magnetic particles in a base material formed into a substantially cylindrical member, comprising a soft magnetic core adapted to be positioned within the confines of the member, and means positioned to apply an orienting magnetic field through the walls of the member while it is positioned about said core.

3,640,658
JOBSITE APPARATUS FOR HORIZONTALLY POURING AND VERTICAL STACKING OF THIN SLABS
James H. Price, 6649 Merry Lane, Houston, Tex.
Filed June 12, 1969, Ser. No. 832,722
Int. Cl. B28b *7/08, 7/22*
U.S. Cl. 425—117 **7 Claims**

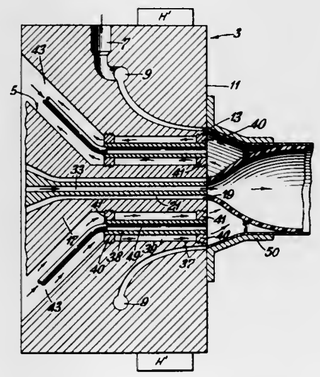
Apparatus for pouring preferably thin slabs or reenforced concrete of substantial area with a form therearound and light bottom therebelow completing a pan with the pan bottom being supported by a lift frame initially resting upon stationary support runners. The concrete is poured upon reenforcing means in the pan, including an extending bail, and the lift frame is engaged centrally from the outer end together with pan-encased poured slab to dispose such slab leaning against an upright. The upper end and side forms and

the pan bottom may then be recovered, the slab curing in raised position above a lowest form member left thereunder to rest upon the support runners. The bail extending from the



slab upper portion may then be engaged to handle the slab into permanent, predetermined position in a structure, the lowest form member at this time being removed.

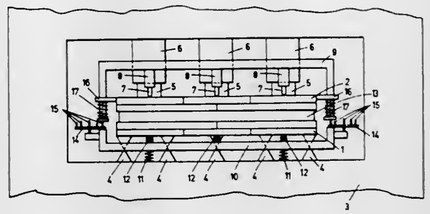
3,640,659
SPLIT DIE FOR EXTRUDING LAMINATED TUBING
Dimiter V. Dimitroff, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Aug. 1, 1968, Ser. No. 749,431
Int. Cl. B29d *23/04*
U.S. Cl. 425—133 **6 Claims**



A split die with inner and outer dies having concentrically arranged extrusion orifices. The inner and outer dies being spaced from each other to provide an insulating space whereby a temperature gradient may be maintained between said inner and outer dies during the extrusion process.

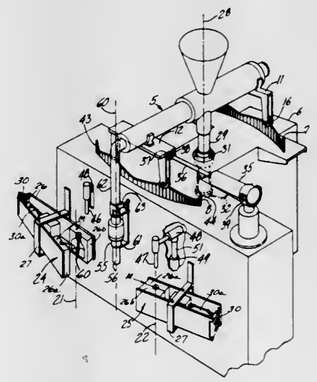
3,640,660
PRESS, PARTICULARLY FOR FORMING FIBER PLATES
Albert De Mets, Hogestraat 105, Kachtem-Izegem, Belgium
Filed Oct. 8, 1968, Ser. No. 765,772
Claims priority, application Belgium, Oct. 10, 1967, 704.898
Int. Cl. B30b *15/24*
U.S. Cl. 425—141 **4 Claims**

A press utilizing two pressure platens provides means for measuring the relative distance between the two pressure platens when the platens are in a closed operative position. A signal is generated indicative of the relative distance between the platens and means for varying the flow of pressurized fluid to one or more cylinder piston assemblies connected to



a pressure platen is provided. In addition an adjustable rotatable disc carrying spacing pins is provided which permits the adjustment of the relative position of the upper and lower pressure platens.

3,640,661
CONTINUOUS-PARISON BLOW-MOLDING APPARATUS
Joseph Gasior, Bloomfield, and Lloyd Kovacs, Somerset, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Oct. 13, 1969, Ser. No. 870,441
Int. Cl. B29d *23/03*
U.S. Cl. 425—159 **13 Claims**

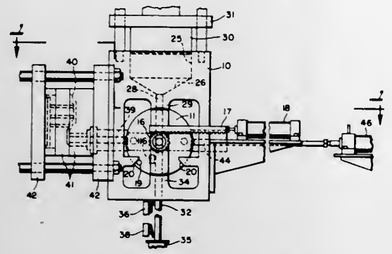


Apparatus utilizing an extruder capable of moving in such a manner as to dispose a parison momentarily, selectively, and concurrently with a cutting operation, within each of a plurality of molding stations. Each station is occupied by a blow mold having halves which part and close during a cycle in which a section of the parison is received, severed, and blow molded therewithin. Essential to processing the parison is the movement of the extruder die along a sinuous path along which the die is rapidly withdrawn in a direction opposite to that of parison travel during and after severance of the parison section received in a mold.

3,640,662
INJECTION MOLDING MACHINE WITH HIGH-FREQUENCY DIELECTRIC HEATER

William H. Schwartz, University Heights, Ohio, assignor to Lester Engineering Company, Cleveland, Ohio

Filed Dec. 23, 1969, Ser. No. 868,726
Int. Cl. B29f 1/08
U.S. Cl. 425—174 4 Claims

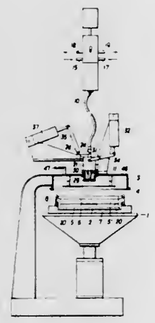


A system for dielectrically heating primarily glass fiber filled polyester materials in an indexing-type injection molding machine. The machine is indexable between a shot-receiving and shot-ejecting position and several forms of dielectric apparatus are shown for heating the shot to achieve a partial cure in one or more of these positions, or in an advance-receiving arrangement. In at least one species of the invention correlation between position of the shot in the molding machine and operation of the dielectric heater is automatically effected to achieve a high efficiency of operation. A system for controlling the operational steps of the molding machine is disclosed, a portion of the sequencing being dependent upon a predetermined level of heating of the shot material.

3,640,663
DEVICE FOR FILLING CASTING MOLDS WITH HARDENABLE CASTING RESIN

Gerald Hampel, and Hansgeorg Gruss, both of Vienna, Austria, assignors to Optipatent AG, Zug, Switzerland

Filed Nov. 25, 1969, Ser. No. 879,793
Claims priority, application Austria, Feb. 18, 1969, 1640/69
Int. Cl. B29c 5/00; B29f 1/00
U.S. Cl. 425—233 4 Claims

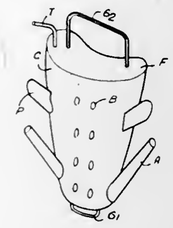


A device and means for supplying high clamping pressure to split molds. The molds are mounted in side cover plates on elastic mountings. The cover plates can be clamped closed by simple clamping devices such as hooks. This elastic mounting eliminates the more complex clamping systems used when the split molds are directly clamped.

3,640,664
SHAPING MOLDS FOR PRODUCING FILMLIKE ARTICLES

Louis Giffard, rue Houvenagle, Saint Brieuc, Cote du Nord 5, and Jean Fougeray, rue Charles Floquet, rueil Malmaison, Hauts de Seine 21, both of France

Filed Oct. 15, 1969, Ser. No. 866,466
Claims priority, application France, Nov. 4, 1968, 172389
Int. Cl. B29c 13/00
U.S. Cl. 425—275 2 Claims

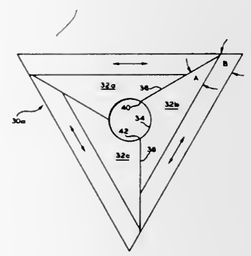


A shaping mold for producing filmlike articles by the fluidization process, this mold consisting of a completely closed enclosure formed in a metallic material having good heat-conducting properties but a reduced thickness. The enclosure communicates with the surrounding free atmosphere, during the heating thereof, via at least one tube carried by an opening into a portion of the enclosure which does not partake in the shaping of any portion of the filmlike article.

3,640,665
TANGENTIALLY SLIDING NECK SWAGING MECHANISM

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 19, 1969, Ser. No. 886,722
Int. Cl. B29d 23/04, 23/03
U.S. Cl. 425—297 3 Claims

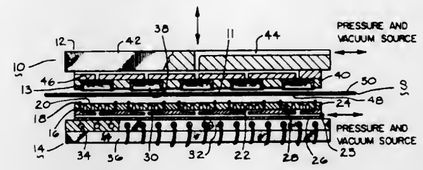


Apparatus for forming a large diameter parison or the like into a smaller diameter neck area of the like comprises at least three swaging jaws adapted to slide in a generally tangential relationship to the material being formed, adjacent jaws being in sliding contact with each other.

3,640,666
TRIM IN PLACE THERMOFORMING APPARATUS

Bruce T. Jope, South Glastonbury, Conn., and Alan R. Phillips, Monson, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 25, 1969, Ser. No. 860,888
Int. Cl. B29c 17/04, 17/08
U.S. Cl. 425—302 1 Claim

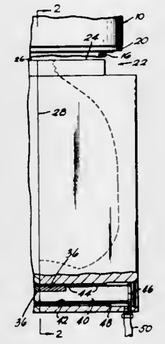


Apparatus for trim in place thermoforming of flanged containers from successive portions of a continuous sheet. The blade in the forming press for sealing each sheet portion during forming and for substantially severing each container from the sheet is integral with and on the same side of the sheet as the means for heating the sheet, and therefore is itself in a heated condition. This reduces the sharpness of and positions a troublesome edge at the lower surface of the container flange. Each mold may have a rounded nose portion for shaping a downturned flange as the container body is formed.

3,640,667
APPARATUS FOR BLOW MOLDING HOLLOW ARTICLES

Samuel J. Rupert, and William E. Ziegler, both of Ann Arbor, Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Original application Apr. 22, 1968, Ser. No. 722,978, now abandoned, for continuation of Ser. No. 22,211. Divided and this application Feb. 24, 1970, Ser. No. 13,275
Int. Cl. B29d 23/03
U.S. Cl. 425—326 5 Claims

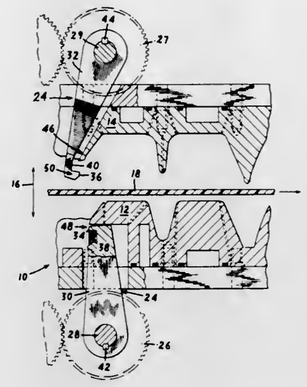


Blow molding apparatus for forming hollow plastic articles from blanks in which the articles are of shapes which make it desirable to partially inflate the blanks prior to blowing to final form in order to realize best blow molding results. Mold apparatus to provide wherein the blanks are partially inflated as an incident to their formation in the enclosing mold sections.

3,640,668
REENTRANT FORMING APPARATUS

Fred P. Brown, Jr., Centerville, and Howard A. Rohdin, Waquoit, both of Mass., assignors to Packaging Industries, Inc., Hyannis, Mass.

Filed July 24, 1969, Ser. No. 844,305
Int. Cl. B29c 17/00; B29d 27/00
U.S. Cl. 425—346 4 Claims

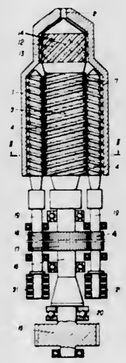


A pair of dies engage a sheet of heat-softened foamed polystyrene plastic at a forming station and form it into a desired shape such as a carton. At the same station, and while the plastic is held between the dies, a portion of the plastic protruding from the dies is engaged on opposite sides by cooperating punches to impart a reentrant formation to the plastic that the dies alone could not impart. The reentrant formation facilitates releasably latching the top and bottom portions of the completed carton in a closed position.

3,640,669
MULTIPLE-SCREW EXTRUDER

Wilhelm Hanslik, Vienna, Austria, assignor to Dorplastex A.G., Zug, Switzerland

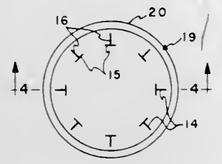
Filed Nov. 5, 1969, Ser. No. 874,236
Claims priority, application Austria, Nov. 18, 1968, A 11202/68
Int. Cl. B29f 3/02
U.S. Cl. 425—376 10 Claims



A multiple-screw extruder which has a central feed screw meshing with two or more outer screws uniformly spaced

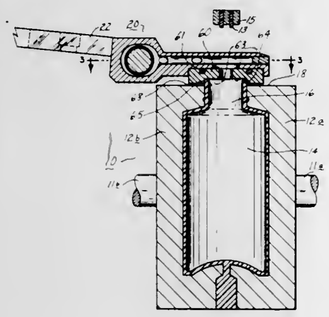
around the circumference of the central screw, its outer screws having a mean thread diameter equal to a mean thread diameter of the central screw divided by the number of outer screws.

3,640,670
SPINNERETTE FOR EXTRUDING T-SHAPED FILAMENTS
Paul Paliyenko, Charlotte, and Werner E. Beier, Matthews, both of N.C., assignors to Fiber Industries, Inc.
Filed June 20, 1968, Ser. No. 745,652
Int. Cl. D01d *3/00*
U.S. Cl. 425—382 **8 Claims**



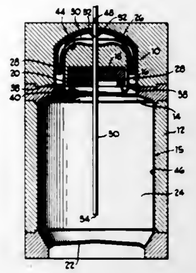
Spinnerette for extruding filament-forming material having a plurality of T-shaped orifices wherein the orifices are arranged annularly with respect to the center of the spinnerette. Each of the T-shaped orifices comprises a crossbar and a stem extending perpendicularly from the crossbar at its midpoint with the stem facing away from the center of the spinnerette. Further embodiments of the spinnerette include a split T-configuration and the method of spinning T-cross-section filaments.

3,640,671
APPARATUS FOR VENTING AND RELEASING PLASTIC ARTICLES FROM A BLOW MOLD
Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 26, 1969, Ser. No. 802,539
Int. Cl. B29c *17/07*; **B29d** *23/03*
U.S. Cl. 425—387 **5 Claims**



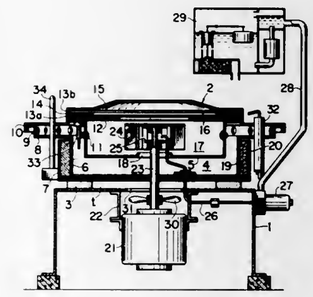
In a blow-molding machine, a blow head assembly which includes a housing having valve means therein for rapidly exhausting the blowing gas from the mold cavity after formation of the article without withdrawing the assembly from registry with the mold opening. The assembly also may include a recessed blow head to facilitate removing the blown article from the mold. Use of the blow head involves establishing a seal therein with an end portion of the parison during blowing which is broken by the opening movement of the mold sections to permit the article to fall cleanly away from the mold.

3,640,672
APPARATUS FOR FORMING A CONTAINER WITH AN INTEGRALLY FORMED HOLLOW HINGED HANDLE
Anthony J. Starr, 1412 Lovering Avenue, Wilmington, Del.
Filed Aug. 25, 1969, Ser. No. 871,511
Int. Cl. B29c *17/07*; **B29d** *23/03*
U.S. Cl. 425—387 **1 Claim**



Apparatus for forming a container from a blow-moldable plastic, and characterized by a hollow handle hingedly connected to a container body. The apparatus includes a tube having a pair of openings, one for blowing the container body, and the other for blowing the handle in a simultaneous operation. This is achieved by introducing the mold parison between the mold halves, part of the parison forming the container body and the other part forming the handle.

3,640,673
LIQUID FUEL BURNER
Kenya Okamoto, and Hajime Satoda, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 20, 1970, Ser. No. 56,257
Claims priority, application Japan, July 22, 1969, 44/59581; 44/59582; 44/71657; 44/71659
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 **9 Claims**

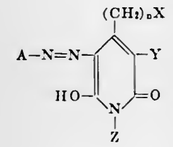


A liquid fuel burner so constructed that a Silocco fan is disposed in a gasification chamber of the burner and an atomizer utilizing the effect of centrifugal force is provided in the center or air-sucking portion of said Silocco fan, whereby a liquid fuel supplied to the atomizer is dispersed radially outwardly under the influence of centrifugal force in the form of particles and further divided into fine particles by the stirring and dispersing actions of the blades of said Silocco fan, said fine particles of liquid fuel being gasified by heated air.

CHEMICAL

3,640,674
PROCESS FOR COLORING SYNTHETIC TEXTILE MATERIALS WITH MONOAZO DYESTUFF DISPERSION
Alistair Howard Berrie, and Nigel Hughes, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 23, 1969, Ser. No. 835,776
Claims priority, application Great Britain, June 27, 1968, 30,759/68
Int. Cl. C09b *29/22*
U.S. Cl. 8—41 **4 Claims**

Process for coloring synthetic textile materials with an aqueous dispersion of a water-insoluble monoazo dyestuff, of the formula:



wherein A is an unsubstituted or substituted aryl radical; *n* is 0 or 1; Z is an unsubstituted or substituted alkyl or aryl radical; X and Y are each independently hydrogen, unsubstituted or substituted alkyl or aryl or —CN, —COOR, —COR and —CONR^{1}R^2 wherein R is unsubstituted or substituted alkyl or aryl and R^1 and R^2 each independently represent hydrogen or unsubstituted or substituted alkyl or aryl.

3,640,675
PREPARING PERMANENT PRESS GARMENTS BY TREATING WITH COMPOSITION THEREFOR
Manuel A. Thomas, 716 Palmetto St., Spartanburg, S.C.
Filed Feb. 19, 1968, Ser. No. 706,605
Int. Cl. D06m *15/28*, *15/50*
U.S. Cl. 8—115.6 **10 Claims**

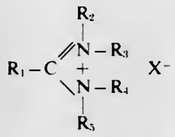
A fabric having been impregnated with a composition comprising a neoprene elastomer, a polyisocyanate, polyisothiocyanate, blocked derivatives and mixtures thereof, and a metal oxide are found to have a propensity for subsequent durable dry setting in a preselected configuration. Fabrics which have been prepared and set in this manner exhibit improved crease retention, flat dry stability and resistance to shrinkage even when subjected to home laundering operation.

3,640,676
PROCESS FOR SHRINKPROOFING WOOL
William J. McKillip, Minneapolis; Billy M. Culbertson, Burnsville, and Clarence N. Impola, Prior Lake, all of Minn., assignors to Ashland Oil, Inc., Houston, Tex.
Filed Oct. 10, 1969, Ser. No. 865,494
Int. Cl. D06m *3/02*
U.S. Cl. 8—127.6 **10 Claims**

Linear addition polymers having multiple N, N-ethylene ureido functionality are employed to impregnate a wool or wool-containing substrate to provide a treated substrate exhibiting excellent dimensional stability characteristics.

3,640,677
PROCESS FOR DYEING FIBRE MATERIALS OF POLYACRYLONITRILE OF ACRYLONITRILE-CONTAINING COPOLYMERS
Klaus Walz, Leverkusen-Wiesdorf; Walter Hees, Koeln-Hoehenhaus, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 28, 1969, Ser. No. 794,804
Claims priority, application Germany, Feb. 9, 1968, F 54782
Int. Cl. D06p *3/70*
U.S. Cl. 8—172 **2 Claims**

Process for dyeing textile fiber materials of polyacrylonitrile or copolymers of acrylonitrile with cationic dyestuffs which comprises carrying out the dyeing in the presence of amidinium compounds of the formula



wherein R_1, R_2, R_3, R_4 and R_5 are, independently of one another, hydrogen, an optionally substituted alkyl, cycloakyl, aralkyl or aryl group; R_3 may form with R_1 or R_2 and/or R_4 with R_5 a heterocyclic ring, and X^- is an anion.

3,640,678
YTTRIUM PURIFICATION PROCESS
Carter H. Trimble, and David B. Strott, both of Lakewood, Colo., assignors to Molybdenum Corporation of America, New York, N.Y.
Filed June 1, 1970, Ser. No. 42,045
Int. Cl. C22b *59/00*
U.S. Cl. 23—22 **17 Claims**

Pure yttrium values are isolated continuously from aqueous solutions of yttrium and rare earth values in a two or three circuit liquid—liquid extraction system using an amine extractant in one circuit to remove lower atomic number rare earth values and a (halodi- or trialkyl)alkanoic acid extractant in the other circuit or circuits to remove higher atomic number rare earth values. Efficiency is enhanced by using a salting out agent in the amine extractant circuit and separating the yttrium values from the salting out agent by extraction in an intermediate carboxylic acid extractant circuit.

3,640,679
PROCESS FOR RECOVERY OF COLUMBIUM
Albert E. Erhard, Denver, and Jack B. Allison, Lakewood, both of Colo., assignors to Molybdenum Corporation of America, New York, N.Y.
Continuation-in-part of application Ser. No. 797,265, Feb., 1969, now abandoned. This application Dec. 17, 1969, Ser. No. 885,965
Int. Cl. C22b *59/00*
U.S. Cl. 23—15 R **13 Claims**

An improved process for recovery and purification of columbium values from columbium concentrates or ores comprises either (1) baking a concentrate with sulfuric acid; aqueously leaching the acid-baked concentrate; and fixing or conditioning the leached concentrate with ammonia or an al-

kali metal hydroxide; or (II) heating and fixing the concentrate with an excess of an alkali metal hydroxide; aqueously leaching the products of Steps (I) or (II) to produce an aqueous solution containing fixed columbium values and recovering the columbium values from the solution.

3,640,680

METHOD OF DECREASING THE POTASSIUM CONTENT OF POTASSIUM-CONTAINING ZEOLITES

George T. Kokotailo, Woodbury, and Stephen L. Lawton, Sewell, both of N.J., assignors to Mobil Oil Corporation

Filed Oct. 28, 1968, Ser. No. 771,701
Int. Cl. C01b *33/28*
U.S. Cl. 23—111 **3 Claims**

A method of decreasing the potassium content of a potassium zeolite containing calcium, such as erionite, which comprises calcining said zeolite and thereafter ion exchanging said zeolite with cations other than potassium. Potassium zeolites, such as zeolite-T, which do not contain calcium are ion exchanged with calcium cation prior to said calcining and ion exchanging. Catalytically active forms of the zeolite product are used in hydrocarbon conversion processes.

3,640,681

PROCESS FOR PREPARING SUPERSILICEOUS ZEOLITES

Paul Eugene Pickert, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,981
Int. Cl. C01b *33/28*
U.S. Cl. 23—111 **8 Claims**

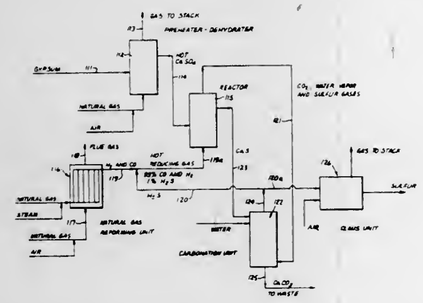
Framework aluminum is extracted from crystalline zeolitic molecular sieves, using acetylacetone as the extracting agent. Prior to contact with the acetylacetone, the zeolite must be rendered substantially cation-deficient and be at least partially dehydroxylated. Other metal values can be substituted for the framework aluminum by contacting the zeolite either before or after acetylacetone extraction with a metal acetylacetonate. The products are useful hydrocarbon conversion catalysts.

3,640,682

INCREASING THE RATE OF REACTION IN REDUCING CALCIUM SULFATE TO CALCIUM SULFIDE

Jay Charles Smith, Gretna, and James R. Reinhardt, New Orleans, both of La., assignors to Freeport Sulphur Company, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,521
Int. Cl. C01b *17/44, 17/42*
U.S. Cl. 23—137 **16 Claims**



Method for increasing the rate of reduction of calcium sulfate to calcium sulfide in which calcium sulfate is reduced to calcium sulfide by a reductant such as hydrogen, carbon monoxide, coke, or hydrocarbons; the rate of reaction being increased by the addition of a small amount of an accelerator agent, comprising sulfur, sulfur dioxide, a sulfur compound which will generate sulfur vapor, or a gaseous sulfur such as sulfur dioxide which will react or decompose to generate sulfur vapor or gaseous sulfide.

3,640,683

METHOD OF PREPARING MANGANESE DIOXIDE FOR DRY CELL

Kazuhide Miyazaki, and Selichi Tozawa, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1969, Ser. No. 847,947
Claims priority, application Japan, Jan. 28, 1969, 44/5692
Int. Cl. C01g *45/02;* **H01m** *15/00*
U.S. Cl. 23—145 **5 Claims**

This invention relates to a method of preparing manganese dioxide with excellent battery performances, wherein naturally occuring manganese dioxide ores are employed as starting material and partially converted in air or oxygen at an elevated temperature and subsequently re-oxidized with a mixed solution of sulfuric acid and sodium or potassium chlorate.

3,640,684

PREPARATION OF CUPROUS OXIDE

Lawrence C. Klein, Hubbell, Mich., and Laurence G. Stevens, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 13, 1970, Ser. No. 2,671
Int. Cl. C01g *3/02;* **C22b** *3/00*
U.S. Cl. 23—147 **6 Claims**

Preparing cuprous oxide from an aqueous cuproammonium solution containing cuprous and cupric ions by contacting the solution with an ion exchange resin in which cupric ions are retained and cuprous ions are not. The raffinate passing through the ion exchange resin is withdrawn and heated to evolve ammonium ions and to form cuprous oxide. The cuprous oxide then is recovered by filtering and drying.

3,640,685

METHOD OF PRODUCING FLUOSILICIC ACID OF LOW PHOSPHORUS CONTENT FROM WASTE GASES

Heinz Goller, Linz am Danube, Austria, assignor to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz am Danube, Austria

Filed Apr. 6, 1970, Ser. No. 26,165
Claims priority, application Austria, Apr. 8, 1969, A 3370/69
Int. Cl. C01b *7/00, 33/08, 7/22*
U.S. Cl. 23—153 **2 Claims**

The hot waste gases obtained from crude phosphate digestion in the manufacture of superphosphate were diluted with eight to 12 times their volume of air and the sludge droplets and the crude phosphate dust were then separated in a cyclon with a limiting particle size of at most 0.01 mm. before eluting the H_2SiF_6 with water.

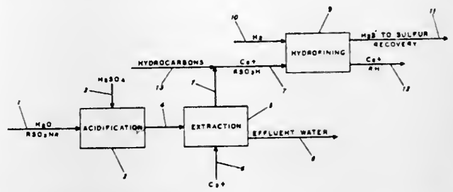
3,640,686

WASTE WATER PURIFICATION

Robert A. Farnham, 21 Valleystone Drive, San Rafael, Calif.

Filed Nov. 2, 1970, Ser. No. 86,163
Int. Cl. C01b *17/16;* **C01g** *23/02*
U.S. Cl. 23—181 **3 Claims**

A process for purifying an aqueous stream contaminated with organic sulfonate salts having a carbon number of at least four and for producing purified oil and H_2S which process comprises contacting the aqueous stream with an acid to convert the organic sulfonate salt to an organic sulfonic acid, extracting the organic sulfonic acid from the aqueous stream by contacting the aqueous stream with a C_6+ hydrocarbon to obtain a contaminated C_6+ hydrocarbon stream containing the organic sulfonic acid, and hydrofining the contaminated C_6+ stream by contacting the stream, at a temperature between 450° and 900° F. and in the presence of added hydrogen gas, with a hydrofining catalyst. The process can also be applied to aqueous streams containing naphthenate salts.



ERRATUM

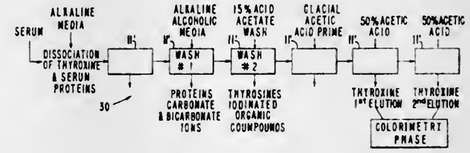
For Class 23—209 see:
Patent No. 3,639,953

3,640,687

CHROMATOGRAPHY METHOD AND APPARATUS

Ronald B. Smernoff, Belmont, Calif., assignor to Oxford Laboratories, San Mateo, Calif.

Filed July 23, 1969, Ser. No. 844,116
Int. Cl. G01n *31/04, 33/16*
U.S. Cl. 23—230 B **10 Claims**



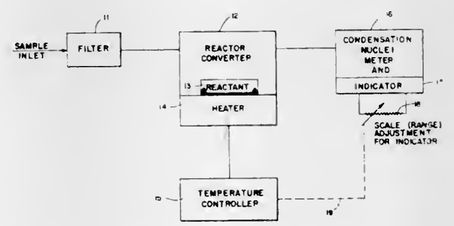
A chromatographic method and apparatus for serum thyroxine iodine determination including sealed ion exchanged resin column structures which are opened and press fit and sealed to funnel members for use and a method in which serum protein is removed from resin bound thyroxine in alkaline solution, with a pH of substantially 8.

3,640,688

CARBON MONOXIDE MEASURING METHOD AND DEVICE

Eric G. Walther, Jonesville, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,741
Int. Cl. G01n *1/00, 31/02*
U.S. Cl. 23—232 R **16 Claims**



A method and apparatus for measuring trace amounts of carbon monoxide in a sample gas. The technique comprises filtering a specimen portion of a sample gas to free it of condensation nuclei. The filtered, carbon monoxide-bearing gas specimen is then reacted with a polymer to induce thermoparticulate production of consideration nuclei from the polymer. To enhance the thermoparticulate production of the condensation nuclei, the polymer is heated to a temperature value just below that required for appreciable thermoparticulate production due to thermal agitation alone. In the presence of carbon monoxide, thermoparticulate production of condensation nuclei is enhanced and proves a measure of quantity of carbon monoxide present in the gaseous specimen. By suitably controlling the temperature to which the polymer is heated the CO-measuring device can be made sensitive to a wide range of carbon monoxide concentration. A preferred apparatus in accordance with the invention includes a scale range changing arrangement for adapting the indicator of the condensation nuclei meter to operate over a wide range of particle concentrations together with means for simultaneously operating the scale range changing function with changes in temperature of the reactant polymer whereby for increasing CO concentrations the reactant temperature is lowered and the scale of the indicator is adjusted to read higher CO concentrations. The polymeric material which may be employed as a reactant is from the group consisting of styrene divinyl benzene copolymer, polyethylene, chlorinated polystyrene and copolymer of styrene. The polymeric material preferably is in the form of finely divided, globular beads and the filtered, CO-bearing gas specimen to be reacted is passed over the surface of the beads in a manner to maximize surface exposure of the polymeric material to the gas specimen.

3,640,689

COMPOSITE HARD METAL PRODUCT

Frederick A. Glaski; Robert A. Holzl, and Richard B. Kaplan, all of Pacoima, Calif., assignors to Fansteel Inc., North Chicago, Ill.

Filed Mar. 4, 1970, Ser. No. 16,349
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 **6 Claims**

A method of chemical vapor deposition (CVD) of a hard layer on a substrate such as cemented tungsten carbide and the product resulting from such method; the method involves a more rapid and more easily controlled CVD of a hard metal such as titanium carbide, by providing an intermediate layer of a refractory interface barrier such as refractory metal on the cemented carbide materials to prevent deleterious interaction between the substrate and the hard metal layer and to obtain a hard wear surface with good composite strength characteristics and bond to the substrate; the product is the resulting composite substrate with the interface metal and the face metal.

3,640,690

WELDED STEEL ARTICLES BONDED BY A STEEL ALLOY

Gerald D. Ries, Barberton, and Sidney W. Poole, Broadview Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 525,348, Feb. 7, 1966, now abandoned. This application Nov. 21, 1968, Ser. No. 777,880
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.1 **2 Claims**

Alloy steel welding wire is disclosed as being suitable for welding steels having the composition 0.18 to 0.30 percent carbon, 7.0 to 9 percent nickel, 3.5 to 4.5 percent cobalt, 0.35 to 1.10 percent each of the chromium and molybdenum, 0.10 to 0.35 percent manganese, 0.6 to 0.12 percent vanadium, up to 0.1 percent silicon, up to 0.010 percent each of sulfur and phosphorus, balance iron except for extraneous impurities within commercial tolerances. The alloy steel welding wire has the composition of 0.15 to 0.20 per-

cent carbon, 7.0 to 8.0 percent nickel, 3.0 to 5.0 percent cobalt, 0.5 to 1.0 percent chromium, 0.8 to 1.1 percent molybdenum, 0.4 to 1.25 percent manganese, 0.10 to 0.50 percent silicon, up to 0.1 percent vanadium, up to 0.015 percent each of phosphorus and sulfur, up to 0.05 percent aluminum, up to 0.05 percent of metal of the group titanium and zirconium, balance iron except for impurities within commercial tolerances.

ERRATUM

For Class 41—1 see:
Patent No. 3,640,016

3,640,691
ENHANCING LOW-TEMPERATURE FLOW PROPERTIES OF FUEL OIL

Stephan Ilnyckyj, Islington, Ontario; John Charles O. Cole, Sarnia, Ontario, both of Canada; Nicholas Feldman, Woodbridge, and Barney R. Strickland, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Filed Sept. 17, 1968, Ser. No. 760,347
Int. Cl. C10l *1/16, 1/18, 1/22*
U.S. Cl. 44—62 **7 Claims**

The response of a middle distillate petroleum fuel oil, boiling within the range of about 250° to about 670° F. at atmospheric pressure and containing normal paraffinic hydrocarbons within the range of about n-decane and n-hexacosane to the addition of a flow-improving additive such as a copolymer of ethylene, is improved by adding to the fuel oil a paraffinic distillate fraction, obtained from a crude petroleum, the said fraction boiling at atmospheric pressure within the range of about 450° to about 950° F. and containing normal paraffins higher than n-hexacosane and as high as n-tetracontane, $C_{40}H_{82}$.

3,640,692
STABILIZED DISTILLATE HYDROCARBON FUEL OIL COMPOSITIONS AND ADDITIVES THEREFOR

Marvin S. Rakow, and Robert J. Konig, both of East Brunswick, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 29, 1969, Ser. No. 872,374
Int. Cl. C01l *1/18, 1/22*
U.S. Cl. 44—63 **5 Claims**

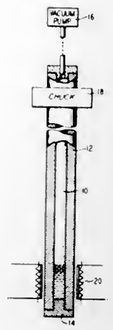
A stabilized distillate hydrocarbon fuel oil composition comprising a major proportion of a distillate hydrocarbon fuel and a minor proportion of a stabilizer comprising (a) an additive selected from the group consisting of (1) an amide plus a Schiff base; (2) an amide containing a Schiff base group; and (3) an amide containing a Schiff base group in combination with either an amide or a Schiff base; and (b) a cyclohexylamine. The additives of the invention are useful in stabilizing distillate hydrocarbon fuels such as No. 2 fuel oils, diesel fuels, and jet fuels.

3,640,693
METHOD OF FORMING SILICON COMPOUND FIBERS

Francis S. Galasso, Manchester, and Richard D. Veltri, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 3, 1969, Ser. No. 795,783
Int. Cl. C03b *37/00*
U.S. Cl. 65—2 **8 Claims**

A process for producing low-density high-modulus fibers including the steps of inserting silicon metal, preferably in powdered form, in a glass tube to form a composite, vacuum casting to melt the silicon metal in the tube, drawing the resulting glass-silicon composite rod into a fiber having a filamentary silicon core and an outer glass sheath, removing the



glass sheath and contacting the exposed silicon core with a suitable reactant to form a silicon compound fiber.

3,640,694
METHOD OF TOUGHENING GLASS IN AN OIL BATH

David George Giddings, Stourbridge, and Douglas Twist, Hollywood, near Birmingham, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Dec. 30, 1969, Ser. No. 889,341
Claims priority, application Great Britain, Jan. 8, 1969, 1,263/69; June 24, 1969, 3,195/69
Int. Cl. C03b *27/00*
U.S. Cl. 65—116 **10 Claims**

Glass of thickness in the range 0.5 mm. to 2.5 mm. is toughened by heating the glass to a temperature near to its softening point and then quenched with a selected oil whose viscosity is in the range 300 to 1,000 centistokes at 38° C. and whose flash point is in the range 220° to 310° C., whilst maintaining the temperature of the oil in the range 150° to 240° C. There is thereby induced in the glass a ratio of surface compressive stress to central tensile stress in the range 1.5:1 to 3.5:1.

ERRATUM

For Class 65—134 see:
Patent No. 3,640,093

3,640,695
METHOD OF TREATING MINERALIZED WATER

Boris Iosifovich Minkevich, ulitsa Musy Dzhalya, 3, Tashkent, U.S.S.R.

Continuation-in-part of application Ser. No. 607,651, Jan. 6, 1967, now abandoned. This application Nov. 18, 1969, Ser. No. 877,837
Int. Cl. A01n *7/02*
U.S. Cl. 71—1 **2 Claims**

A method of treating natural mineralized water, e.g., ground water, as well as sea water, to be used subsequently for irrigation, according to which lead nitrate is introduced into mineralized water, the precipitated lead sulfates, lead chlorides and lead carbonates are removed, and potassium salts e.g., potassium silicate, are introduced into the water for binding the small amounts of lead salts which remain dissolved in the water. All the precipitated lead salts are collected and regenerated for obtaining lead nitrate.

3,640,696
SOIL CONDITIONER AND GARDEN MOLD ON THE BASIS OF COFFEE EXTRACTION RESIDUE

Gerhard Goldmann, Buchschlag, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 9, 1969, Ser. No. 865,146
Claims priority, application Germany, Oct. 15, 1968, P 18 03 103.3; June 9, 1969, P 19 29 195.3
Int. Cl. C05f *11/08*
U.S. Cl. 71—9 **18 Claims**

The soil conditioner comprises a decomposed organic waste product, preferably coffee grounds, in the form of the extraction residue arising in the industrial production of powdered coffee, together with finely divided natural or synthetic activated silicon dioxide or a material containing the same.

The material is made by subjecting the coffee ground extraction residue to fermentation in a closed tank and then adding the silicon dioxide followed by storage upon access to the open air. The silicon dioxide may also be added prior to placing the material in the fermentation tank.

3,640,697
NONCAKING, GRAINED AMMONIUM NITRATE

Emory Earl Toops, Jr., Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

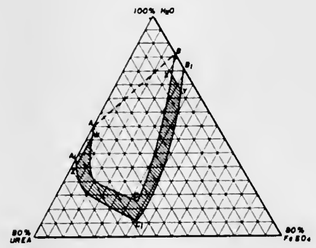
Filed Apr. 16, 1969, Ser. No. 816,815
Int. Cl. C05c *1/02*
U.S. Cl. 71—27 **1 Claim**

A process for the preparation of noncaking, grained ammonium nitrate by effecting the graining of molten ammonium nitrate in the presence of moisture and sodium alkyl naphthalene sulfonate in a ratio of about 0.01 to 0.1 percent by weight at a temperature from about 230° to over 300° F.

3,640,698
FERTILIZER UREA SOLUTIONS CONTAINING MICRONUTRIENTS

Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 19, 1970, Ser. No. 20,995
Int. Cl. C05c *9/00;* **C05b** *17/00*
U.S. Cl. 71—29 **14 Claims**



A fertilizer solution for treatment of plants and soils to correct micronutrient deficiencies is disclosed and comprises an aqueous urea solution having an acidic pH value, less than 4, and containing the sulfate salts of iron, zinc or manganese. An aqueous urea-micronutrient solution containing potassium and phosphorous is also disclosed.

3,640,699
3,5-DISUBSTITUTED BENZAMIDES

Bruce W. Horrom, Waukegan; Aldo J. Crovetti, Lake Forest, both of Ill., and Kenneth L. Viste, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

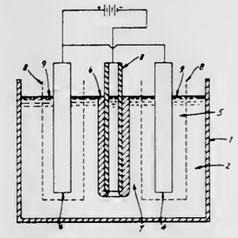
Original application Oct. 2, 1967, Ser. No. 671,946, now Patent No. 3,534,098, Continuation-in-part of application Ser. No. 608,271, Jan. 10, 1967, now abandoned. Divided and this application Mar. 3, 1970, Ser. No. 16,249
Int. Cl. A01n *9/20*
U.S. Cl. 71—118 **11 Claims**

Herbicidal compositions containing as the active ingredient a member of the class of N-(1,1-dimethylpropynyl)-3,5-disubstituted benzamides and a method for controlling undesirable plant growth with them.

3,640,700
PROCESS FOR PRODUCING AN INGOT OF CHROMIUM METAL OR CHROMIUM-BASE ALLOY

Kenzo Suzuki, Kumagaya, and Seiya Sasaki, Yamagata, both of Japan, assignors to Riken Piston Ring Ind. Co., Ltd. and Tekkosha Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1970, Ser. No. 68,363
Int. Cl. C23b *7/02, 7/00, 5/52*
U.S. Cl. 75—10 C **22 Claims**



A process for producing an ingot of chromium metal or chromium-base alloy having a low content of impurities, such as hydrogen, nitrogen, oxygen, carbon, phosphorus, sulfur, and the like, in which an aqueous solution containing chromium salt is electrolyzed using as the cathode a metal material formed in a predetermined shape, such as circular, elliptical, rectangular or the like in horizontal cross section, to electrodeposit chromium on said metal material. The metal material, if desired, may be removed by chemical dissolution or heat melting after the electrolysis. The thus obtained chromium metal of the predetermined shape may be used as a consumable electrode. Additional materials are filled into the electrodeposited chromium metal which can be either free of the metal material used as the cathode or not free of the same. The chromium metal filled with the additional material is heated to sinter same under a reduced (vacuum) pressure or in a hydrogen atmosphere. A consumable electrode of chromium metal or chromium base alloy is thereby obtained. A high purity chromium metal ingot or chromium base alloy ingot is produced using the thus obtained consumable electrode by consumable-electrode-melting in a water-cooled metal crucible.

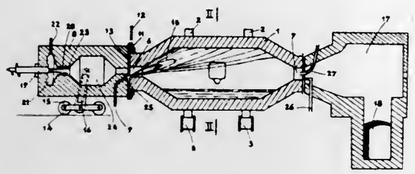
3,640,701
DIRECT REDUCTION OF OXIDES

Jean Bouchet, Clery-Saint-Andre, France, assignor to Creusot-Loire, Paris, France

Continuation of application Ser. No. 454,079, May 7, 1965, now abandoned. This application July 7, 1969, Ser. No. 852,142
Claims priority, application France, Apr. 30, 1964, 973121; July 16, 1964, 981930; July 21, 1964, 982484; Feb. 25, 1965, 6991
Int. Cl. C21b *11/06*
U.S. Cl. 75—40 **3 Claims**

Metal oxides difficult to reduce are reduced in a rotating furnace heated by a short flame having a temperature of at

least 1,900° C. produced by converting a gaseous hydrocarbon into carbon monoxide and hydrogen by partial combustion with oxygen at about 1,250° C. The carbon monoxide



and hydrogen are burned in a furnace in a jet of oxygen directed toward the top of the furnace at about 1,900° C. producing carbon dioxide and water with release of heat.

3,640,702

METHOD OF IMPROVING THE PROPERTIES OF A FERROUS METAL IN THE MOLTEN STATE

Pierre Karinthi, Champigny-sur-Marne, France, and Etienne Spire, Montreal, Canada, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of application Ser. No. 581,920, Sept. 22, 1966, now Patent No. 3,484,232, dated Dec. 16, 1969. This application Sept. 23, 1969, Ser. No. 860,307

The portion of the term of this patent subsequent to Dec. 16, 1986, has been disclaimed.

Int. Cl. C21c *7/04*

U.S. Cl. 75—59 **3 Claims**

A halogenated compound is brought in liquid phase into contact with a porous device which on its opposite side contacts molten ferrous metal. The halogenated liquid is forced by gas pressure through the porous device and into the molten metal. The halogen may be used to remove unwanted elements from the metal. The nonhalogen part of the compound may combine with elements dissolved in the metal or may itself dissolve in the metal.

ERRATUM

For Class 75—101 see:
Patent No. 3,639,925

3,640,703

CYCLIC INTEGRATED COPPER PROCESS

James R. Cooper, Douglas, Ariz., assignor to Chemical Refiners, Inc.

Filed July 9, 1970, Ser. No. 53,561

Int. Cl. C22b *15/08*

U.S. Cl. 75—101 **3 Claims**

A cyclic integrated process for the production of copper metal is provided. In this process, copper ores or copper ore concentrates or, optionally, cement copper is converted to copper metal without the necessity for pyrometallurgical operations, thus entirely eliminating any air pollution problems. The source of copper values is taken into solution by leaching with a mineral acid such as sulfuric acid, converting the copper values to soluble copper salts. The pregnant liquor containing the soluble copper salts is treated with a precipitating gas such as hydrogen sulfide to precipitate the copper values as solid copper sulfide. The copper sulfide is dried and treated in a finely divided state with a reductant gas such as hydrogen, methane (either pure or contained in natural gas) or a reformed natural gas containing hydrogen and carbon monoxide. The byproduct gaseous hydrogen sulfide of the copper sulfide reduction step is recycled to precipitate more copper sulfide from the pregnant liquor. The mother liquor is treated to recover sulfuric acid which is optionally recycled to the pregnant liquor preparation step to dissolve more copper values.

3,640,704

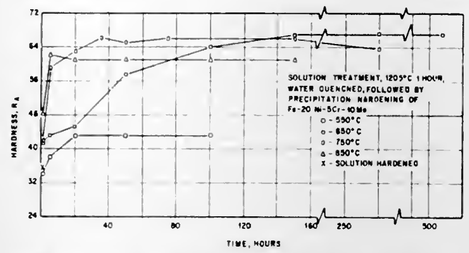
HIGH-TEMPERATURE-STRENGTH, PRECIPITATION-HARDENABLE, AUSTENITIC, IRON-BASE ALLOYS

Fred C. Robertshaw, Cincinnati; Jon L. Bartos, Loveland; James J. Hurst, Clarksville, and James August McGurty, Cincinnati, all of Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 20, 1970, Ser. No. 4,374

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 W **3 Claims**



This invention is for an iron-base alloy system characterized in that (a) it consists of an iron-nickel-chromium matrix which maintains substantially complete austenitic stability at temperatures from room temperature to the melting point; (b) it is susceptible to treatment to effect a precipitation-hardening resulting in a molybdenum-containing precipitated phase; (c) said alloy consists essentially of, in atom percent, 20 to 30 percent nickel, 5 to 10 percent chromium, a strength-inducing additive selected from either molybdenum or tungsten in an amount not exceeding 10 percent, and the balance iron.

3,640,705

TREATMENT OF PLATINUM GROUP METALS AND ALLOYS

Gordon Leslie Selman, and Peter James Ellison, both of London, England, assignors to Johnson, Matthey & Co. Limited, London, England

Continuation-in-part of application Ser. No. 520,361, Jan. 13, 1966, now abandoned. This application Jan. 30, 1969, Ser. No. 795,513

Claims priority, application Great Britain, Jan. 15, 1965, 1,882/65

Int. Cl. C22c *5/00*

U.S. Cl. 75—172 **10 Claims**

An alloy and method for making the same including alloying with platinum, rhodium, iridium and their mixtures, alone or alloyed with palladium a stable base metal capable of forming a refractory compound. The resulting alloy is heated in the presence of a molecular oxygen containing gas such as air or oxygen at a temperature ranging from 900° to at least 1,200° C. whereby the stable refractory compound is formed internally of said alloy and is dispersed uniformly therethrough.

3,640,706

METHOD FOR RECOVERING SUBSTANTIALLY PURE NICKEL FROM AMMONIACAL NICKEL AMMONIUM CARBONATE LEACH SOLUTIONS

Nicolas Zubryckyj, Praca Roamos de Azewedo 254, Sao Paulo, Brazil; Vladimir Nicolaus Mackiw, 9 Blair Athol Crescent, Islington, Ontario, and Donald Robert Weir, 10228 109th Street, Fort Saskatchewan, Alberta, both of Canada

Filed Feb. 20, 1970, Ser. No. 13,191

Int. Cl. C22b *23/04*

U.S. Cl. 75—103 **5 Claims**

Nickel is recovered in pure elemental form from ammoniacal nickel ammonium carbonate leach liquors containing sulphur and other impurities including magnesium and silica. The liquor is first heated to precipitate nickel as impure basic nickel carbonate. The precipitate is redissolved in two stages in pure ammoniacal ammonium carbonate solution and undissolved solids, which contain the magnesium, silica and other impurities, are separated from the solution. The solution is then heated to reprecipitate nickel as basic nickel carbonate. Sulphur contaminants are converted to sulphate form by reacting the system, either before or after the reprecipitation step, with oxygen gas. The slurry from the reprecipitation step is then reacted directly with hydrogen at elevated temperature and pressure to produce pure nickel powder.

3,640,707

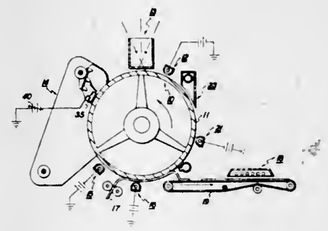
IMAGING SYSTEM

John P. Caldwell, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,106

Int. Cl. G03g *13/14, 13/00*

U.S. Cl. 96—1.4 **1 Claim**



An improved method for removing residual toner images from an electrostatic recording surface adapted for continuous automatic operation comprising charging residual toner images supported on an electrostatic recording surface to a first polarity, then cascading a two-component developer material including carrier beads and toner particles in triboelectric relationship over the residual toner images and recording surface and concurrently biasing said residual toner images with a potential at a second polarity when commencing a pass through the development zone, whereby the residual toner images are released from said recording surface and intermixed with said developer material for development of said recording surface while in the development zone.

3,640,708

BARRIER LAYERS FOR ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING A BLEND OF CELLULOSE NITRATE WITH A TETRAPOLYMER HAVING VINYLIDENE CHLORIDE AS THE MAJOR CONSTITUENT

Wesley D. Humphriss, Cupertino, Calif., and Lawrence C. Bartlett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,914

Int. Cl. G03g *5/02;* **C08f** *15/40*

U.S. Cl. 96—1.5 **14 Claims**

An electrophotographic element comprised of a support, an electrically conductive layer and an insulating photoconductive layer is provided with a barrier layer composed of a blend of cellulose nitrate with a tetrapolymer of methyl acrylate, acrylonitrile, acrylic acid and vinylidene chloride interposed between the electrically conductive layer and the insulating photoconductive layer. Barrier layers of this composition provide good adhesion to the contiguous layers, so as to permit flexing of the element without damage, as well as excellent electrophotographic properties.

3,640,709

ELECTROPHOTOGRAPHIC COPYING MATERIAL AND PROCESS OF PRODUCING THEREOF

Kishichiro Kondo; Hiroo Iwata, both of Aichi-ken; Nario Yamaguchi; Sakae Shimizu, and Kazuo Tubuko, all of Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh and Toa Gosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1968, Ser. No. 786,417

Claims priority, application Japan, Dec. 27, 1967, 42/83738

Int. Cl. G03g *5/00, 7/00;* **H01c** *13/00*

U.S. Cl. 96—1.5 **3 Claims**

An electrophotographic copying material comprising a support and a light-sensitive or photoconductive layer formed on one surface of said support and comprising a resinous binder. The photoconductive layer contains a photoconductive substance and is formed by dispersing said photoconductive substance in a water-emulsified resinous binder. The resinous binder is prepared by emulsion polymerization, in water, of at least one vinyl monomer in the presence of at least one acidic compound selected from the group consisting of an aliphatic carboxylic acid, an aromatic carboxylic acid, an acid anhydride of said carboxylic acids, an alicyclic compound having a carboxyl radical, a natural resin containing a resin acid and having a high electric resistance and a vinyl polymer having a carboxyl radical. The resultant photoconductive layer-forming solution is coated on said support and then the coated support is dried.

3,640,710

PHTHALOCYANINE PHOTOCONDUCTIVE ELEMENTS CONTAINING MULTIPLE BINDER MATERIALS

Joseph Mammino, and Robert M. Ferguson, both of Penfield, N.Y., assignors to Zerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,718

Int. Cl. G03g *13/22, 5/06*

U.S. Cl. 96—1.5 **19 Claims**

Improved electrophotographic elements comprising specific phthalocyanine pigments dispersed in specific binder materials in specific proportions are disclosed. Electrophotographic processes employing said elements are also disclosed.

3,640,711

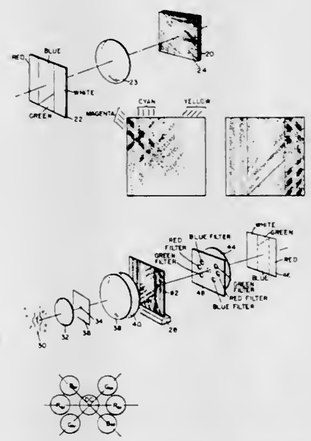
DIFFRACTION PROCESS PHOTOGRAPHY AND RECONSTRUCTION: FIDELITY ENHANCEMENT BY MINIMIZATION OF CROSSTALK AND MOIRE PATTERNS

Edmund L. Bouche, Lexington, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed July 22, 1969, Ser. No. 843,312

Int. Cl. G03b *33/00*

U.S. Cl. 96—27 H **34 Claims**



This disclosure depicts methods and structures for multiplex information photorecording and retrieval with

minimization of interference between information channels. More particularly, this disclosure concerns diffraction process methods and structures for recording a plurality of images in superposition on a common recording medium each modulating an azimuthally distinct spatial carrier, and selectively retrieving the component images in a coherent projection system. Stress is placed upon predetermining the spatial frequency and azimuthal orientation of each of the carriers such that interchannel interference during projection is minimized.

3,640,712

HYDROPHILIC-HYDROPHOBIC PHOTON-SENSITIVE MEDIUM

Lester M. Field, Sherman Oaks; Richard A. Walker, and William E. McKee, both of Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 8, 1969, Ser. No. 882,951
Int. Cl. G03c *5/09, 1/00*
U.S. Cl. 96—27 **10 Claims**

A medium which is hydrophobic when unexposed, and hydrophilic when photon exposed is employed to produce discrete photon-developed areas. The medium comprises a solid dispersion in a film-forming binder of a photoconductive sensitive material such as zinc oxide, a sensitization enhancing material such as a copper salt and a hydrophobicity inducing agent such as a water repellent silicone, fluorocarbon material or a higher molecular weight organic acid such as stearic acid or linoleic acid. Exemplary processes of developing the photon exposed medium include application of aqueous liquids to form visible and/or transferable or relief images.

3,640,713

PHOTOGRAPHIC PROCESSES AND COMPOSITIONS THEREFOR

Sheldon A. Buckler, Lincoln, and Ronald F. Lambert, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 30, 1968, Ser. No. 772,017
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **11 Claims**

Tertiary organic phosphines containing a hydroxyl and/or an amino-substituted phenyl group are used as silver halide developing agents in photographic processing compositions which find particular utility in diffusion transfer photographic techniques.

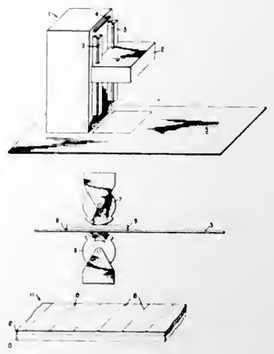
3,640,714

METHOD FOR POSTING INTELLIGENCE ON DIAZO SENSITIVE MICROFICHE

Robert B. Champ, San Jose, Calif.; Henry A. Jurgens, Boca Raton, Fla., and James O. Thompson, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1969, Ser. No. 806,965
Int. Cl. G03c *5/18, 5/34*
U.S. Cl. 96—49 **28 Claims**

A method for preparing fiche cards wherein a sensitized diazo coating containing a thermoplastic resin is adhered to a portion of the fiche of the card through pressure and at temperatures substantially above room temperature, exposed to actinic radiation and developed, and wherein additional pieces of information are posted onto the fiche by adhering additional sensitized diazo coatings to different portions of the fiche and exposing and developing said additional coatings without affecting the earlier developed coatings. Also, a method for preparing fiche cards wherein the fiche is a photosensitive film which is partially imaged and developed such that the remaining portion of the fiche is simultaneously desensitized and wherein additional pieces of information can be posted by adhering coatings of a photosensitive



material to portions of the desensitized film and thereafter imaging and developing.

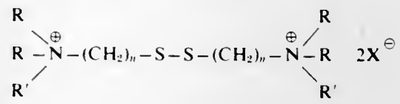
3,640,715

PHOTOGRAPHIC SILVER HALIDE EMULSION CONTAINING AS A SENSITIZER BIO-QUARTERNARY SALTS OF BIS-AMINOALKYL-DISULFIDES

Harald Huckstadt, Cologne; Wilhelm Salack, Schildgen/Berg. Gladbach; August Randolph, Leverkusen; Franz Moll, Cologne, and Erwin Ranz, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 17, 1969, Ser. No. 886,039
Claims priority, application Germany, Dec. 23, 1968, P 18 16 572.5
Int. Cl. G03c *7/00, 5/30, 1/28*
U.S. Cl. 96—55 **9 Claims**

The sensitivity of photographic silver halide emulsions can be increased and the fogging of those emulsions can be decreased by using bis-quaternary salts of bis-aminoalkyl-disulfides of the following formula:



wherein

R is alkyl, two R radicals at the same N may form together with the N a heterocyclic ring;
R′ is alkyl or aralkyl;
n is 1–6, and
X is any anion;
the compounds can be used as ripening agents or as additives to the casting solution or to the developer.

3,640,716

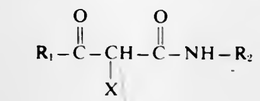
METHOD OF PREVENTING COLOR MIXING IN MULTILAYER-TYPE REVERSAL COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Tadashi Nagae; Yasushi Oishi, and Jun Hayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1969, Ser. No. 826,283
Claims priority, application Japan, May 20, 1968, 43/33874
Int. Cl. G03c *7/00*
U.S. Cl. 96—56 **17 Claims**

The invention is directed to a method for preventing color mixing in multilayer-type color photographic light-sensitive materials developed by the coupler-in-developer process. The multilayer light-sensitive materials used herein comprise

a film base coated with a red-sensitive emulsion layer, a green-sensitive emulsion layer, and a blue-sensitive emulsion layer respectively. Cyan and magenta dye formation is prevented in the blue emulsion layer by addition thereto of a ballasted yellow coupler having the general formula



wherein R_1 represents a tertiary alkyl group, an unsubstituted cycloalkyl group, a substituted cycloalkyl group, an unsubstituted dicycloalkyl group, a substituted dicycloalkyl group, an unsubstituted aryl group or a substituted aryl group; R_2 represents an unsubstituted aryl group, a substituted aryl group, an unsubstituted heterocyclic group, or a substituted heterocyclic group; and X represents a hydrogen atom or a group capable of being split off during the coupling reaction.

3,640,717

PHOTOGRAPHIC REVERSAL PROCESS EMPLOYING ORGANIC MERCAPTAN COMPOUNDS

Jacques Henri Gallet, Arlington, and Robert Francis Gracia, Scituate, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed June 5, 1969, Ser. No. 830,867
Int. Cl. G03c *5/50*
U.S. Cl. 96—59 **47 Claims**

This disclosure relates to a rapid reversal photographic process. The process comprises the steps of (1) contacting a copy medium comprising a metal image pattern and a metal ion image pattern with an organic mercaptan compound to form insoluble metal mercaptide salts in the areas corresponding to the metal ion image pattern, and (2) contacting the copy medium with a photographic bleaching agent to oxidize the metallic image to soluble salts. The soluble salts may then be dissolved out or fixed by contacting with a suitable solvent or photographic fixing or stabilizing solution.

The process in a preferred embodiment comprises the steps of (1) exposing a photosensitive copy medium imagewise to a source of radiation to provide a negative latent image, (2) developing the copy medium to provide a negative metallic image in the exposed portions of the copy medium, (3) contacting the copy medium with an organic mercaptan compound to form insoluble metal mercaptide salts in the nonexposed areas of the copy medium, (4) contacting the copy medium with a photographic bleaching solution to reoxidize the metallic image in the exposed portions of the copy medium to soluble salts and (5) contacting the copy medium with a photographic fixing solution to dissolve the soluble salts from the exposed portions of the medium. The photosensitive medium may, for example, be a photographic silver halide emulsion or a photoconductor such as titanium dioxide dispersed in a binder.

3,640,718

SPECTRAL SENTIZATION OF PHOTOSENSITIVE COMPOSITIONS

George H. Smith, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1968, Ser. No. 720,377
Int. Cl. G03c *1/72*
U.S. Cl. 96—89 **9 Claims**

As a spectral sensitizer for photosensitive compositions containing a photolyzable organic halogen compound, at least one aromatic polycyclic compound having an ionization potential below about 7.4 is used. Preferred are colored, linear fused-ring polynuclear carbocyclic compounds (acenes) which are essentially unreactive with the organic halogen in the dark under room conditions.

3,640,719

SILVER HALIDE EMULSIONS CONTAINING BIS-HETEROCYCLIC N-CONTAINING COMPOUNDS AS ANTIFOGGANTS

Anita Von Konig, Leverkusen; Franz Moll, Koeln-Stammhein; Wolfgang Muller-Bardorff, Koeln, and Wilhelm Saleck, Schildgen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 22, 1969, Ser. No. 843,742
Claims priority, application Germany, Aug. 6, 1968, P 17 97 027.3
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **2 Claims**

The stability of photographic silver halide emulsions against the formation of fog is improved by the addition of bis-heterocyclic triazole, oxazole, thiazole, imidazole, thiadiazole or thiadiazolidine type compounds.

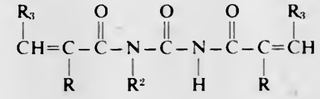
3,640,720

NONWANDERING HARDENING COMPOUNDS AND THEIR USE

Hyman L. Cohen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 682,530, Nov. 13, 1967. This application Aug. 27, 1970, Ser. No. 67,577
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **6 Claims**

Low molecular weight, nonwandering compounds for hardening natural and synthetic colloids without afterhardening. These comprise compounds having the structural formula:



wherein each R is hydrogen, an aliphatic or aromatic radical, and R^2 and each R_3 are hydrogen or lower alkyl.

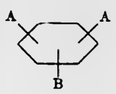
3,640,721

GELATINOUS PHOTOGRAPHIC COATING COMPOSITION

Masao Ishihara; Osakazu Sugino; Yoshio Nishina; Isao Kohno, and Yuzuru Satoh, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1969, Ser. No. 851,447
Int. Cl. G03c *1/38*
U.S. Cl. 96—114.4 **4 Claims**

Light-sensitive photographic materials coated with a dried gelatin emulsion are stabilized against curling and decrease in flexibility under conditions of low relative humidity by incorporating in the gelatin emulsion prior to drying at least 2 percent by weight based on the amount of gelatin of a cyclohexane compound of the general formula



wherein the two A groups may be the same or different and are selected from the group consisting of —OH and $—CH_2OH$ and B is selected from the group consisting of H and $—CH_3$.

3,640,722
LIGHT-SENSITIVE POLYSULFONATES REACTION PRODUCT OF AROMATIC DISULFONYL CHLORIDE AND BISPHENOL CONTAINING STYRYL KETONE GROUP

Joseph A. Arcesi, and Frederick J. Rauner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 22, 1969, Ser. No. 860,081
Int. Cl. C08g *17/13*
U.S. Cl. 96—115 P 20 Claims

A light-sensitive polysulfonate contains units derived from an aromatic disulfonyl chloride, units derived from a light-sensitive bisphenol containing the styryl ketone group, and, optionally, units derived from a non-light-sensitive bisphenol. The polysulfonate is useful in preparing photomechanical images such as photoresists and lithographic plates.

3,640,723
ENZYMATIC TREATMENT OF SOYA MEAL

Helmut Uhlig, Rossdorf Bei Darmstadt, and Ekkehard Grampp, Ober-Ramstadt, both of Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

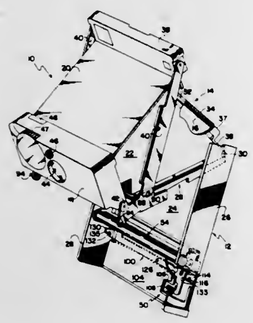
Filed July 8, 1969, Ser. No. 840,065
Claims priority, application Germany, July 26, 1968, P 17 92 142.5
Int. Cl. A23l *1/20*
U.S. Cl. 99—9 6 Claims

Soya meal is treated with a pectolytic enzyme alone or in combination with a cellulase or a cellulase and hemicellulase to give a soya product having a content of soluble reducible sugar increased to 10—25 percent by weight. An animal fodder combines 5–25 parts by weight of the treated product with 95–75 parts of powdered milk.

3,640,724
CAMERA FRAME MEMBER

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 13, 1969, Ser. No. 824,097
Int. Cl. G03b *17/04*
U.S. Cl. 95—11 R 10 Claims

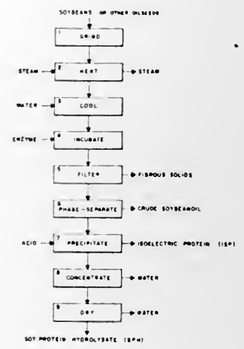


A compact folding camera including a plurality of housing sections, including at least a portion of one which provides for access to the interior of the housing, coupled together for movement between an extended, operative position and a folded, inoperative position. A support member, enclosed by the housing sections, is provided for locating a photosensitive element in position for exposure and for pivotally supporting a plurality of housing sections, a bellows, and an erecting system during movement of the housing sections, erecting system and bellows between the extended and folded position.

3,640,725
SOYBEAN FRACTIONATION EMPLOYING A PROTEASE

Samuel E. Sherba, Willingboro, N.J.; Ronald B. Steigerwalt, Levittown; William T. Faith, Jr., Warminster, both of Pa., and Carl V. Smythe, Moorestown, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 2, 1969, Ser. No. 838,534
Int. Cl. A23j *1/14*; A23l *1/20*
U.S. Cl. 99—17 13 Claims



Process of separating nutritional components from soybeans or other oilseeds, employing enzymatic hydrolysis of protein. Clean, whole soybeans are comminuted, heated at about 90°–140° C., and then cooled by adding more water. A proteolytic enzyme, preferably derived from an Aspergillus or Bacillus sp., is added to the slurry, which is then maintained at an incubation temperature of 25°–75° C. until the protein is sufficiently hydrolyzed. The fibrous solids portion is then removed from the slurry, being useful as a livestock feed supplement. The oil phase may then be removed from the fluid portion of the slurry, as by separating an aqueous phase from an oil-containing phase in a cream separator. The aqueous phase is then acidified to about pH 4.5, to precipitate isoelectric protein, which may be recovered, e.g., by centrifugation. To obtain the main product of this process, soy protein hydrolysate, the remaining aqueous phase is desirably concentrated by conventional evaporation techniques, adjusted to substantially neutral pH, and then dried, e.g., by spray drying or lyophilization. Alternatively, the aqueous phase containing protein and/or protein hydrolysate may be employed as the basis of a nutritious beverage.

3,640,726
FLAVOR ROBUSTA COFFEE

Gregory L. Bolt, Springfield Township, Hamilton County; Charles H. Brandt, Cincinnati; Aubrey R. McLain, Wyoming, and Jayantilal M. Patel, Reading, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of application Ser. No. 762,157, Sept. 24, 1968, now abandoned. This application Nov. 25, 1970, Ser. No. 92,880
Int. Cl. A23f *1/02*
U.S. Cl. 99—68 10 Claims

Improved flavor Robusta coffee for use in a roast and ground coffee blend is produced by separately steam roasting, then postroasting Robusta coffee beans under particular conditions.

3,640,727
COFFEE BREWING PACKET

Merlyn R. Heusinkveld, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 849,169, Aug. 11, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 763,411, Sept. 27, 1968, now abandoned. This application June 26, 1970, Ser. No. 50,365
Int. Cl. A23f *1/08*; B65d *29/02*
U.S. Cl. 99—77.1 12 Claims

A coffee packet, containing flaked coffee particles in a water-permeable pouch, for brewing coffee is disclosed.

3,640,728
INSTANT OAT CEREAL PRODUCT

Kenneth S. Ronai, Ridgewood, and Henry C. Spanier, Dumont, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed June 11, 1969, Ser. No. 832,486
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R 10 Claims

An instant oat cereal product, requiring no cooking, comprising processed oats and a special oat fraction having a protein content greater than about 20 percent and a process for its preparation.

3,640,729
INSTANT OAT CEREAL PRODUCT

Kenneth S. Ronai, Ridgewood, and Henry C. Spanier, Dumont, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed May 8, 1969, Ser. No. 823,156
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 10 Claims

An instant oat cereal product, requiring no cooking comprising processed oats and an edible cereal hydrolysate texturizing agent with a Dextrose Equivalent or from about 6 to about 12 and a process for its preparation.

3,640,730
PROCESS FOR PREPARING DOUGH AND BATTERS, AND THE FLOUR AND FLOUR-BASED PRODUCTS

Jacques R. Rolland, Longueuil, Quebec, and John Holme, Preville, Quebec, both of Canada, assignors to The Ogilvie Flow Mills Company, Limited, Montreal, Quebec, Canada

Filed July 7, 1969, Ser. No. 839,475
Int. Cl. A21d *2/28, 2/22, 2/04*
U.S. Cl. 99—91 25 Claims

The adverse effects of chlorine upon the bread making properties of flour are ameliorated by incorporating therein a definite, selected amount of a sulfhydryl-containing-or-producing reducing substance, preferably cysteine hydrochloride. The flours so obtained, at chlorine levels of between about 150 p.p.m. and about 900 p.p.m. and a reducing substance content of between about 20 p.p.m. and 100 p.p.m., provide improved all-purpose flours which give good results in the contrasting applications of bread and cake making. Further advantageous effects on the quality of the baked product can be obtained by including defined amounts of ascorbic acid type additives and/or oxidizing agents such as bromate or iodate salts.

3,640,731
SHELF STABLE EGG PRODUCTS

Milton Kaplow, White Plains, and Robert E. Klose, Bronx, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,279
Int. Cl. A23l *1/32*
U.S. Cl. 99—113 3 Claims

Preparation of shelf stable egg products wherein dried egg whites, whole egg solids, or egg yolks are blended with 20 percent to 40 percent by product weight edible polyhydric alcohol to form a homogeneous mixture, combining the mixture with starch hydrolyzate solids and an antimycotic to form an emulsion containing about 9.7 percent to 35 percent starch hydrolyzate solids and about 14 percent to 32 percent moisture, and heat setting the emulsion.

3,640,732
SIMULATED COOKED EGG

Ernest W. Johnson, Minnetonka, Minn., assignor to General Mills, Inc.

Filed Oct. 9, 1969, Ser. No. 865,180
Int. Cl. A23j *3/02*
U.S. Cl. 99—114 13 Claims

The simulated egg approximates a boiled, poached or fried hen's egg. The simulated egg may be used together with other materials in a salad or eaten as is, for example, for breakfast. The simulated egg includes a white portion and a yolk portion. The white portion may be made from water, vegetable oil, a gel forming material such as low methoxyl pectin and a gel setting agent such as dicalcium phosphate. The yolk portion may be made from water, vegetable oil, protein, a gel forming material such as low methoxyl pectin, a gel setting agent such as dicalcium phosphate and coloring matter. The egg may be formed in the appropriate shape by molding.

3,640,733
EDIBLE SUBSTRATES COLORED WITH MONOAZO DYESTUFFS

Gustav E. Rast, Hamburg, and Russell I. Steiner, Williamsville, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

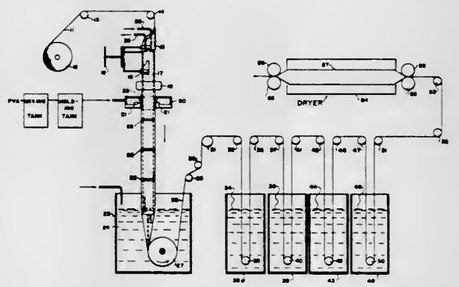
Original application May 18, 1967, Ser. No. 639,264, now abandoned. Divided and this application Dec. 10, 1969, Ser. No. 880,516
Int. Cl. A23l *1/26*
U.S. Cl. 99—148 10 Claims

Monoazo compounds of this invention, which may be termed 1-([2-alkoxy-5-alkyl-4-sulfophenyl]azo)-2-naphthol-6-sulfonic acids and physiologically acceptable salts thereof are used as dyestuffs for various substrates and especially for edible substrates, such as maraschino cherries.

3,640,734
PREPARATION OF FIBROUS REINFORCED CASING FROM ALKALI SOLUBLE POLYVINYL ALCOHOL COPOLYMERS

Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,026
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 14 Claims



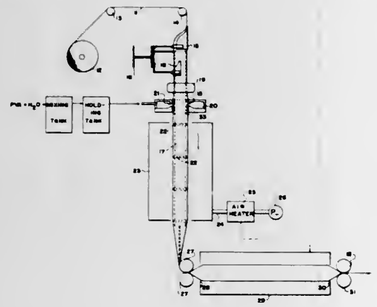
A novel fibrous casing for packaging sausages and other meat and food products comprises a saturating tissue, preferably a long fiber hemp paper, coated or impregnated

with an insolubilized polyvinyl alcohol/polyvinyl ester copolymer. The casing is preferably prepared by coating or impregnating a saturating tissue with an aqueous alkaline solution of a polyvinyl alcohol/polyvinyl ester copolymer which is then insolubilized by treatment with acid and optionally by further treatment with a suitable cross-linking agent, viz formaldehyde, etc. The saturating tissue may be coated or impregnated with the polyvinyl alcohol copolymer solution and immediately formed into a tubular casing and the polyvinyl alcohol copolymer regenerated therein by acid treatment or may be coated or impregnated in sheet form, neutralized and dried and subsequently slit to size and formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp paper as the saturating tissue and using polyvinyl alcohol copolymers having a D.S. of OH groups in the range from about 25–80 percent.

3,640,735
FIBROUS REINFORCED POLYVINYL ALCOHOL CASINGS

Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Oct. 18, 1968, Ser. No. 768,625
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **13 Claims**



A novel fibrous casing for packaging sausages and other meat and food products comprises a saturating tissue, preferably a long fiber hemp paper, coated or impregnated with an insolublized polyvinyl alcohol. The casing is preferably prepared by coating and impregnating a saturating tissue with an aqueous solution of polyvinyl alcohol which is then insolublized, preferably by cross-linking with a suitable cross-linking agent, viz formaldehyde, etc. The saturating tissue may be coated and impregnated with the polyvinyl alcohol solution and immediately formed into a tubular casing or may be coated and impregnated in sheet form and dried and subsequently slit to size and formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp paper as the saturating tissue and using polyvinyl alcohol having a D.S. of OH groups of at least 95 percent.

3,640,736
TARNISH-PREVENTIVE COMPOSITION COMPRISING HYDROXY-CONTAINING THIOL SULFIDES

Paul F. Warner, Phillips, and Edward E. Huxley, Borger, both of Tex., assignors to Phillips Petroleum Company

Original application Aug. 8, 1968, Ser. No. 751,060, now Patent No. 3,567,782. Divided and this application Sept. 1, 1970, Ser. No. 68,759
Int. Cl. C08h ; C09d ; C09q
U.S. Cl. 106—3 **2 Claims**

A tarnish-preventive composition for silver and copper surfaces comprising:

a. hydroxy-substituted mercapto sulfides having the formula

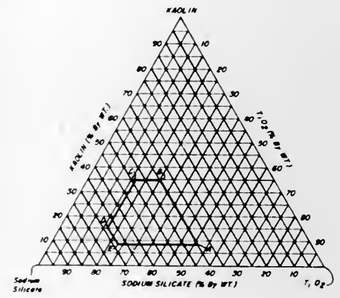
$$HS-R-S-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-R',$$

b. an abrasive, and
c. the balance a diluent.

3,640,737
COMPOSITION FOR MARKING HOT METAL

David R. Lankard, Grandview Heights, and Herbert D. Sheets, Jr., Columbus, both of Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 612,783, Jan. 31, 1967, now abandoned. This application July 9, 1969, Ser. No. 840,225
Int. Cl. C09d *11/00, 13/00, 1/02*
U.S. Cl. 106—19 **5 Claims**



A liquid composition for marking metal products while at high temperature, by jet-spray application, comprises a pigment of metal oxide, such as titanium dioxide, in a vehicle of sodium-silicate solution containing kaolin as a suspending agent.

3,640,738
BOROSILICATE GLASS COMPOSITION

John R. Detweiler, Jr., and Rao R. Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,599
Int. Cl. C03c *3/04*
U.S. Cl. 106—54 **4 Claims**

A glass composition particularly adapted for use with ceramic materials in electronic module applications having a thermal coefficient of expansion substantially matching the thermal coefficient of expansion of ceramic material, and a low dielectric constant less than 4.5. The composition is a borosilicate glass consisting essentially of SiO_2, B_2O_3, CaO, Al_2O_3, Na_2O, K_2O, BaO, ZrO_2, and MgO in relatively precise amounts.

3,640,739
HIGH ALUMINA REFRACTORIES

Wate T. Bakker, Severna Park, Md., assignor to General Refractories Company, Philadelphia, Pa.

Filed May 29, 1969, Ser. No. 829,132
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **8 Claims**

Disclosed herein is a refractory brick batch mix which consists essentially of, by weight, about 85 to 96 percent alumina, about 3.99 to 13.99 percent silica, about 0.01 to 0.5 percent of a lithium compound capable of oxidizing to lithium oxide, and about 1 to 5 percent bentonite. Refractories

prepared from these mixtures exhibit increased strength, higher density, lower porosity and higher refractoriness compared to those previously available.

3,640,740
PROTEIN ADHESIVE COMPOSITIONS

John T. Stephan, Longview, and Alex James Golick, Seattle, both of Wash., assignors to Commerical Solvents Corporation, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,197
Int. Cl. C08h *7/00*
U.S. Cl. 106—138 **5 Claims**

An adhesive composition having particular utility for the manufacture of laminated cellulosic products wherein one component is an aqueous alkali-dispersed protein and the other component is an oxazolidine, e.g. (5-hydroxymethyl-1-aza-3,7-dioxabicyclo[3,3,0]octane).

3,640,741
COMPOSITION CONTAINING GEL

Donald E. Etes, Crystal Lake, Ill., assignor to Hollister Incorporated

Filed Feb. 24, 1970, Ser. No. 13,608
Int. Cl. C08b *19/10, 21/30, 21/32*
U.S. Cl. 106—170 **14 Claims**

A new plastic composition which is slow dissolving in aqueous media and can be used to slowly release medication or other additive ingredients in an aqueous environment, which plastic composition is prepared by cross-linking a hydrophilic colloid such as carboxymethyl cellulose gum or alginate gum with a cross-linking agent, usually a polyol such as propylene glycol, in a relatively nonreactive water soluble carrier such as glycerol. The total composition, including the carrier, sets up into a plastic gel, the consistency of which can be varied by varying proportions of ingredients. The reaction can be speeded or driven to a more completely cross-linked state by using a catalysts such as aluminum or calcium salts. Complexing agents can be included for complexing the catalysts and releasing it slowly throughout the reaction to slow the reaction down where desired. Generally, the reaction proceeds faster in a close to neutral or basic medium at pH's ranging up to 10 or 11 and slower in an acid medium at pH of 5 and below so the rate of reaction can be controlled by adjusting the pH. Usually the composition will contain medication or cosmetic additives or ingredients and it can be molded by extrusion or the like into any predetermined form, e.g., in the form of a ring. In a preferred form, the composition has excellent pressure sensitive adhesive properties and these properties are very pronounced where the hydrophilic colloid used is carboxymethyl cellulose.

3,640,742
PLASTICIZER BLEND FOR CELLULOSE ESTERS

George P. Touey, and Cephas H. Sloan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 3, 1967, Ser. No. 650,658
Int. Cl. C08h *17/42*
U.S. Cl. 106—179 **6 Claims**

A cellulose ester plasticizer blend made from about 40 to 60 percent by weight of glyceryl triacetate with the remainder being primarily a poly(ethylene glycol) diacetate.

3,640,743
TITANIUM DIOXIDE PIGMENT

Gerard Martin Sheehan, Lynchburg, Va., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 636,628, May 8, 1967, now Patent No. 3,528,837. This application July 30, 1970, Ser. No. 59,672
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **3 Claims**

This invention relates to titanium dioxide pigment of improved photochemical resistance which contain alumina and has a surface coating of a mixture of hydrous oxides of aluminum, silicon and zinc. The resulting pigment possesses improved resistance to discoloration and chalking upon exposure to ultraviolet light and is particularly useful as a pigmenting material for coating compositions and for opacifying resinous materials including laminates which are conventionally used in wall coverings, counter tops and cabinet facings.

3,640,744
TITANIUM DIOXIDE OF IMPROVED CHALK RESISTANCE

Albert Dietz, New Martinsville, W. Va.; Neil C. Goodspeed, and Russell R. May, Jr., both of Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 28, 1969, Ser. No. 803,448
Int. Cl. C09c *3/02*
U.S. Cl. 106—300 **7 Claims**

Pigmentary titanium dioxide, especially titanium dioxide containing coreacted aluminum and silicon, is heat treated and then given a hydrous metal oxide coating, e.g., an alumina and silica coating. The resulting pigment has good chalk resistance and good retention of optical properties, such as gloss, color and tint efficiency.

3,640,745
METHOD OF PREPARING PIGMENTARY TITANIUM DIOXIDE

Donald E. Darr, Wadsworth, Ohio; G. Byron Edwards, Moundsville, W. Va.; Clifford E. Loehr, Akron, and Elgin E. Young, Doylestown, both of Ohio, assignors to P.P.G. Industries, Inc., Pittsburgh, Pa.

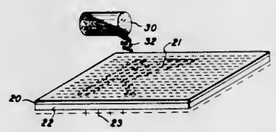
Filed July 25, 1969, Ser. No. 844,970
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **21 Claims**

Agglomerated pigmentary titanium dioxide is prepared by vapor phase oxidation of titanium halide in a reaction chamber at elevated temperatures in the presence of controlled amounts of alkali metal cation and auxiliary gas.

3,640,746
ADHESIVE CONTACT ELECTRIFICATION IMAGING

Werner E. L. Haas, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 18, 1968, Ser. No. 760,552
Int. Cl. G03g *13/22*
U.S. Cl. 117—17.5 **8 Claims**



A method of imaging wherein an imaging member including an adhesive coating is placed in contact with an image bearing original and, when stripped therefrom, retains a latent electrostatic charge pattern corresponding to image and background areas of said image bearing original. The latent image is then developed to produce a visible image.

3,640,747
METHOD OF REDUCING SANDINESS IN VINYL COATINGS

Douglas Steven Richart, Berks County, Pa., assignor to The Polymer Corporation, Reading, Pa.

Continuation of application Ser. No. 528,366, July 18, 1966, now abandoned. This application Sept. 12, 1968, Ser. No. 759,507
Int. Cl. B44d *1/094, 1/46*
U.S. Cl. 117—21 **3 Claims**

A method of reducing sandiness in a vinyl coating produced by a heat fusion coating process. A soluble organic

tin compound is included as a component of the vinyl coating composition.

3,640,748
ANTIHALATION PHOTOGRAPHIC MEDIA AND METHOD OF PREPARATION

E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 835,890, June 12, 1969, now abandoned, which is a continuation of application Ser. No. 480,140, Aug. 16, 1965, now abandoned. This application Aug. 13, 1970, Ser. No. 63,627
Int. Cl. G03c *1/84*
U.S. Cl. 117—33.3 5 Claims

Preparation of antihalation layers by applying a gelatin coating containing a small amount of a manganous salt to a film base, and applying thereto an aqueous permanganate rinse containing an anionic surfactant which is nonreactive with the permanganate and is selected from the group consisting of the alkali metal salts of alkyl benzene sulfonic acids, and the alkali metal salts of polyfluoro- and perfluoro-aliphatic surfactants, having a sulfonic or carboxylic acid group.

3,640,749
METHOD OF FIXING IMAGES CONSISTING OF DRY POWDERS ON PAPER

Rainer Lorenz, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

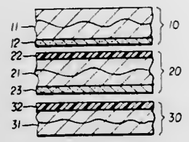
Filed Mar. 11, 1969, Ser. No. 806,271
Claims priority, application Germany, Mar. 14, 1968, P 16 71 644.2
Int. Cl. B44d *1/094*; G03g *13/20*; B44d *1/11*
U.S. Cl. 117—28 5 Claims

Dry powder images are fixed on paper by treating the powder image coated paper with an aqueous dispersion of a film forming synthetic resin.

3,640,750
TRANSFER COPY PROCESS AND MATERIAL

Walter Schutzner, Vienna, Austria, assignor to W. Koreska, Vienna, Austria

Filed Oct. 17, 1968, Ser. No. 768,346
Claims priority, application Australia, Nov. 13, 1967, A 10,191/67
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 2 Claims

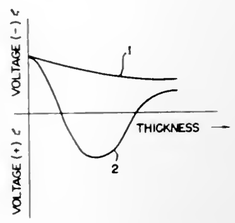


An upper sheet and a lower sheet are provided, adapted to be superimposed to form an interface between said sheets, and are coated on said interface with all ingredients required for a heat-induced, color-producing chemical reaction. The upper sheet has on a side adapted to form said interface a coating which contains at least one of said ingredients and which is locally transferable to said lower sheet under the action of writing pressure applied to said upper sheet. When the two sheets are superimposed to form said interface, writing pressure is applied to said upper sheet to transfer parts of said coating to said lower sheet, which is subsequently heated to induce said color-producing chemical reaction.

3,640,751
METHOD FOR LIQUID-DEVELOPING AN ELECTROSTATIC IMAGE

Kazuhiko Kasuya, Kawasaki-shi; Wasaburo Ohta, and Zenjiro Okuno, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 31, 1968, Ser. No. 772,242
Claims priority, application Japan, , 42170991
Int. Cl. G03g *13/10, 9/04*
U.S. Cl. 117—37 LE 14 Claims

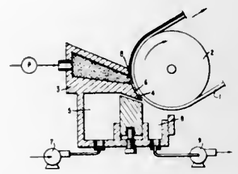


An electrophotographic liquid-developing method comprising controlling the polarity of the toner by varying the mixing proportion of the dispersion media and/or the temperature of the developer solution. An electrostatic charge-substrate having an electrostatically charged latent image is immersed in the developer solution to convert such latent image into a visible image. Said developer solution comprises a toner consisting of pigment particles and at least one resin selected from the group consisting of alkyd resin, phenol resin and vinyl resin, and a carrier liquid in which said toner is dispersed. The carrier liquid comprises a mixture of two dispersion media having different affinities to said resin. Dispersion media having a larger affinity to the resin include halogenated hydrocarbons, aromatic hydrocarbons and petroleum hydrocarbons containing aromatic ingredients. Dispersion media having a smaller affinity to the resin include isoparaffinic and paraffinic hydrocarbons.

3,640,752
COATING METHOD

Mamoru Ishiwata, and Huruya Akio, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Original application May 2, 1967, Ser. No. 635,540, now Patent No. 3,503,370. Divided and this application June 24, 1969, Ser. No. 869,407
Int. Cl. B44d *1/02*
U.S. Cl. 117—47 2 Claims



In coating a coating composition on a web by a bridge of the coating composition between a coating applicator and the web, a gas blowing slot is formed at the side of the coating applicator into which the web enters to remove air or dust carried on the surface of the entering support and to provide a reduced pressure space at the back side of the bridge so that the bridge is maintained stable when the coating speed is increased.

3,640,753
MANUFACTURE OF POROMERIC MATERIALS

Carl Heinrich Krauch, Heidelberg, and Axel Sanner, Ludwigshafen, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Oct. 31, 1969, Ser. No. 873,117
Claims priority, application Germany, Nov. 2, 1968, P 18 06 652.9
Int. Cl. B44d *1/44*; D06n *3/04*
U.S. Cl. 117—62.2 9 Claims

The process of making poromeric materials which comprises impregnating webs of fibrous material with aqueous liquids containing olefinically unsaturated monomers which can be polymerized using redox catalysts, and, if desired, high polymeric plastics in dissolved, emulsified or dispersed form, freezing the webs of fibrous materials impregnated with the aqueous liquids, polymerizing the monomers using redox catalysts and thawing out and separating out the water and any residual monomer from the resulting poromeric materials. These poromeric materials are suitable as floor coverings, insulating materials, leather substitutes and coating materials.

3,640,754
GLAZING CONCRETE

Elisha Tauber, and Maxwell John Murray, both of Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Corporation, East Melbourne, Victoria, Australia

Filed Dec. 12, 1968, Ser. No. 783,350
Claims priority, application Australia, Dec. 12, 1967, 31060/67
Int. Cl. B44d *1/20*; C03c *5/00*
U.S. Cl. 117—70 B 12 Claims

This invention relates to a precess for glazing the surface of an article made of concrete. A glaze composition is applied to the surface and fired onto the surface at 550°–620° C. Glaze compositions of the invention comprise, proportionately,

A: – 1.4 to 2.6 moles SiO_2
B: – 0.1 to 0.2 mole TiO_2
C: – 0.4 to 0.9 mole PbO
0.1 to 0.6 mole Na_2O
0.0 to 0.2 mole Li_2O
0.0 to 0.3 mole ZnO

(the sum of amounts of PbO, Na_2O, Li_2O and ZnO, expressed in moles, is 1).

In a preferred aspect, after the concrete is fired it is recured to regain a substantial proportion of the strength lost in firing. Recuring is done by exposing to moisture such as by weathering, immersion in water to autoclaving.

3,640,755
COATINGS FOR AUTOMOTIVE EXHAUST GAS REACTORS

Walter J. Barth, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1969, Ser. No. 798,872
Int. Cl. C23c *7/00*
U.S. Cl. 117—71 M 7 Claims

Process for producing sheet metal substrates having high corrosion and erosion resistance to hot exhaust gases of internal combustion engines by

A. melt spraying a coating about 125–250 microns thick of a mixture of about 70–90 weight percent nickel and about 10–30 weight percent aluminum on sheet metal substrates of a chromium-iron alloy having, by weight, 10–40 percent chromium, 0–40 percent nickel, o–10 percent manganese, 0–6 percent aluminum and 35–80 percent iron, the chromium, nickel, manganese, aluminum and iron content totaling at least 95 percent, and

B. diffusion coating the nickel-aluminum coating with aluminum to a thickness of at least 25 microns; and

Exhaust manifold reactor inner chambers having at least the surfaces which deflect the initial exhaust gas impingement from internal combustion engines treated by the above coating process.

3,640,756
REMOISTENABLE PREGUMMED PRODUCTS

Pieter Johannes Adrianus Beersma, Haren (Gr.), and Albert Hendrik Veening, Sappemeer, both of Netherlands, assignors to Scholten Research N.V., Groningen, Netherlands

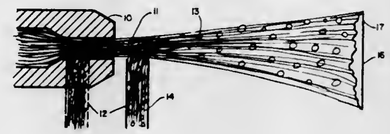
Filed Oct. 28, 1968, Ser. No. 771,307
Claims priority, application Great Britain, Oct. 31, 1967, 49,312/67
Int. Cl. C09j *7/04*; A61l *15/00*
U.S. Cl. 117—76 A 8 Claims

The object of the invention is a remoistenable product comprising a substrate, e.g. paper or paperboard, an adhesive consisting of a high molecular weight polymeric binding agent and a remoistenable amylaceous adhesive said product being characterized in that the amylaceous adhesive is a dry, cold water swelling, cross-linked, granular starch ester or starch ether containing hydrophilic substituents, the granules of said starch product being in discrete, nonagglomerated form.

3,640,757
FLAME DEPOSITED OXIDE COATING AND METHOD OF MAKING SAME

Donald C. Grubba, Westboro, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Aug. 9, 1968, Ser. No. 751,547
Int. Cl. B05b *7/22*
U.S. Cl. 117—93.1 PF 2 Claims



Very dense flame spraying deposited coatings containing an unusually high proportion of metal oxides are described and discussed. A preferred method for producing these coatings is described in detail. The coatings are produced by using usually corrosive oxidizing media in contact with the spray deposited particles.

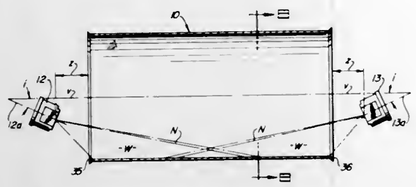
3,640,758
METHOD FOR COATING THE INTERIORS OF HOLLOW BODIES

Edwin F. Hogstrom, North Olmstead; William C. Stumphauzer, Sheffield Lake, and Eric T. Nord, Oberlin, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 5, 1970, Ser. No. 16,733
Int. Cl. B44d *1/08*; B05b *13/06*
U.S. Cl. 117—96 21 Claims

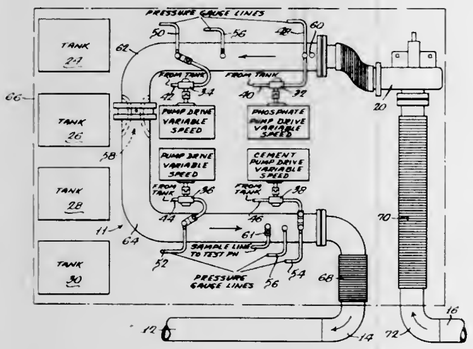
Method and means for coating the interior cylindrical surface of objects such as metal cans for food, beverages and other substances which need protection against injurious reaction with or pollution from contact with the material of the can. Airless spray coating of such surfaces revolving at

high speed by stationary spray nozzles external of the can. The nozzles project impinging airless sprays having desirable



patterns through respective ends of open ended can cylinders into longitudinally elongated contact with the interior surface.

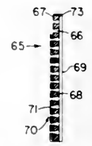
3,640,759
METHOD FOR LINING PIPES WITH CALCITE
Norman S. Primus, East Orange, N.J., and Raymond Hunhoff, Oak Lawn, Ill., assignors to National Water Main Cleaning Co.
Filed Apr. 29, 1969, Ser. No. 820,101
Int. Cl. B44d *1/02;* **B05b** *13/06*
U.S. Cl. 117—97 **3 Claims**



A device is provided for lining pipes and the like with calcite. The device includes a reaction and mixing chamber in a U-shaped tube through which a supersaturated solution of calcium carbonate is circulated and delivered through the pipe to be lined. The solution is recycled from the pipe through the reaction chamber where calcium chloride and sodium carbonate are added to maintain the supersaturated conditions. Portions of municipal water main systems can be closed off, lined quickly and put back in service.

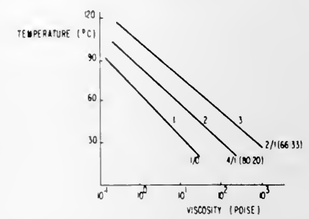
3,640,760
COATED SCREENS
George E. Nichols, Jr., Norfolk, Mass., assignor to Bird Machine Company, South Walpole, Mass.
Continuation-in-part of application Ser. No. 873,334, Nov. 3, 1969, now abandoned. This application Dec. 18, 1970, Ser. No. 99,535
Int. Cl. B44d *5/08, 5/00*
U.S. Cl. 117—99 **4 Claims**

Hard-surfacing a screen with a detonation-deposited coating of bonded refractory particles adhered to the surface of the screen and to one another, the coating overlying substantially only the imperforate area of the screen surface, and

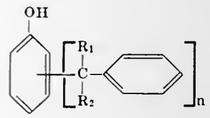


having a Vickers Hardness of at least 1,000 VPN (with a 300 gm. load) and a thickness at least on the order of 0.003 inch.

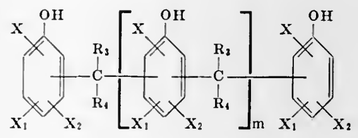
3,640,761
METHOD FOR ATTACHING ADDITIVE TO POLYAMIDE PELLETS
Yasushi Hamanaka; Hiromi Tajiri, both of Tsuruga; Kuniomi Etoh; Kaoru Furukawa, and Yukito Masai, all of Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan
Filed Feb. 6, 1970, Ser. No. 9,175
Claims priority, application Japan, Feb. 6, 1969, 44/9150
Int. Cl. B44d *5/00*
U.S. Cl. 117—100 C **7 Claims**



A method for fixation of an additive on pellets of polyamides which comprises coating a phenol derivative of the formula:

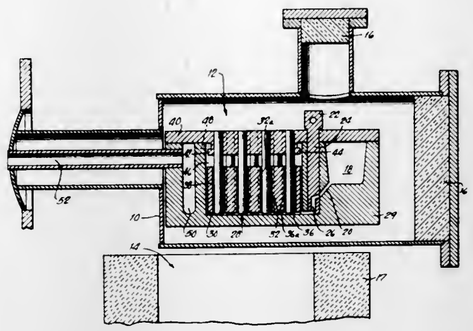


wherein R_1 and R_2 are each hydrogen or alkyl having not more than four carbon atoms and n is an integer of 1 to 3 with or without a polyphenol derivative of the formula:



wherein X, X_1 and X_2 are each hydrogen, hydroxyl, alkyl having not more than 12 carbon atoms or alkoxy having not more than 12 carbon atoms, at least one of them being not hydrogen, R_3 and R_4 are each hydrogen, alkyl having not more than four carbon atoms or alkenyl having not more than four carbon atoms and m is an integer of 2 to 6 on the pellets and then attaching the additive thereto.

3,640,762
METHOD FOR VAPORIZING MOLTEN METAL
William A. Reed, West Richfield, and Frank J. Cole, Parma, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed May 26, 1970, Ser. No. 40,500
Int. Cl. C23c *13/00, 13/02, 11/00*
U.S. Cl. 117—107.1 **10 Claims**



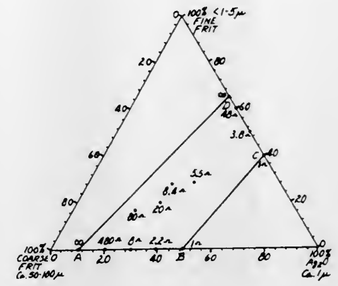
Apparatus and method for vaporizing molten metal without entrainment of liquid droplets includes charging a pool of molten metal into a chamber in which there is a block having a plurality of passages. A finger is disposed in each passage of the block, a space being left between the inner surface of the passage and the outer surface of the finger to create a shell of fluid metal within the passage. Heating the shells of fluid metal generates metal vapor. The metal vapor is passed through a tortuous path and then directed by a nozzle toward a moving substrate to be coated.

3,640,763
METHOD OF PRODUCING NONBURNING PAPER
Edwin W. Lard, 12703 Beaverdale Lane, Bowie, Md.
Filed Aug. 12, 1969, Ser. No. 849,525
Int. Cl. C03c *25/02;* **B44d** *1/14*
U.S. Cl. 117—126 GF **5 Claims**

A nonburning paper which is suitable for printing, writing, etc., is disclosed. The basic ingredients of the nonburning paper are: fiber glass, alkali metal silicates and halogenated elastomers. The method of producing this nonburning paper, which will extinguish itself in pure oxygen, is as follows: impregnating a sheet of fiber glass with a solution of an alkali metal silicate; evaporating the volatile solvent from the impregnated material; impregnating the treated fiber glass with a solution of a halogenated elastomer; and evaporating the volatile solvent from the impregnated material. The resultant sheet of paper is nonburning and, in those cases where its preparation is so tailored, it can be used as writing paper or can be used in conventional printing press, such as, offset lithographic printing press.

3,640,764
INTEGRAL HEATING ELEMENT
Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Sept. 26, 1968, Ser. No. 762,912
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **10 Claims**

Combinations are provided of organic binder, metallic particles, or powder converting to a metal under mild reducing conditions, and porcelain enamel frit, preferably in a range of sizes, at least a part of which has average particle diameters



which are at least 5 times the diameters of ultimate metal particles. These combinations are used to apply integral heating elements to various utensils.

3,640,765
SELECTIVE DEPOSITION OF METAL
Ralph David DiStefano, Mercerville, and Edward Anthony James, Skillman, both of N.J., assignors to RCA Corporation
Filed Aug. 6, 1969, Ser. No. 848,088
Int. Cl. G03c *5/00*
U.S. Cl. 117—212 **4 Claims**

Method of selectively electrolessly depositing a metal of the type that can be deposited on a catalyst-treated substrate, on exposed substrate areas, only, of an insulating substrate which also has areas covered with a synthetic resin-type photoresist, comprising successively treating the entire surface with a sensitizing solution and with an activating solution each of which contains a small amount of an octyl phenol ethylene ethanol containing five to 13 ethylene oxide groups, and then treating the entire surface with a solution for electrolessly depositing the metal, whereby the metal deposits only on the exposed substrate areas and not on the photoresist.

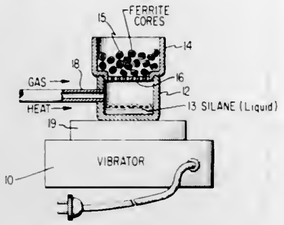
3,640,766
ELECTROPHOTOGRAPHIC-RECORDING MEMBER AND PROCESS OF PRODUCING THE SAME
Myron J. Jursich, Chicago, and Stanley F. Ciesla, Brookfield, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed Jan. 7, 1970, Ser. No. 1,279
Int. Cl. G03g *5/02;* **D21h** *1/28;* **B32h** *27/10*
U.S. Cl. 117—218 **12 Claims**

Polyepihalohydrin is quaternized with a trialkyl amine to produce an electroconductive polymer. The quaternized polyepihalohydrin is applied to paper to produce a recording element having an electroconductive surface adapted for electrographic printing.

3,640,767
ENCAPSULATED MAGNETIC MEMORY ELEMENT
Thomas Philip Fulton, Brookline, and Henry Di Luca, Waltham, both of Mass., assignors to RCA Corporation
Filed May 16, 1969, Ser. No. 825,297
Int. Cl. H01f *1/22*
U.S. Cl. 117—234 **2 Claims**

Encapsulated ferrite magnetic memory cores are disclosed which have a very thin coating of polymerized gamma-aminopropyltriethoxysilane, whereby the cores are organophilic for adhesion to an uncured silicone rubber-coated substrate, are lubricated to minimize friction with wires passed

through the holes in the cores, and are hydrophobic to provide moisture-repellence of the cores in use in a memory. The cores are encapsulated by shaking a substantial bulk

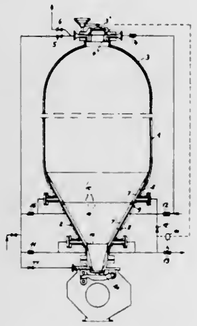


quantity of sintered ferrite memory cores in silane vapor at a temperature of about 220° C. in an inert gaseous environment having a known moisture content.

3,640,768
PROCESS FOR HYDROLYTIC DEGRADATION OF CELLULOSIC MATERIALS TO SUGARS

Rudolf Eickemeyer, Torwangerstr. 10, 8 Munich 8, Germany

Filed Oct. 15, 1968, Ser. No. 767,669
Claims priority, application Germany, Oct. 17, 1967, P 15 67 335.5
Int. Cl. C13k *1/02, 1/04, 9/00*
U.S. Cl. 127—37 11 Claims



Cellulosic materials are chemically degraded in a percolator vessel by introducing a liquid agent from below into the cellulosic materials placed above the filter area of the vessel while the vessel is at about atmospheric pressure and introducing steam at a higher pressure than atmospheric from below the cellulosic material to raise the temperature in the vessel to at least 100° C., the displaced air being permitted to escape and then introducing steam at a pressure of about 1 atmosphere above atmospheric pressure from the top of the vessel to expel the liquid which is in excess of the absorptive power of the cellulosic material through the bottom of the vessel and then introducing further steam from the bottom of the vessel to bring up the temperature to the reaction temperature and recovering the reaction product.

The invention also embraces a vessel for practising the above process which is provided with a filter subdivided in at least two sections, one over the other, and provided with multilevel horizontal rows of perforations having a minimum diameter of 2–5 mm., increasing towards the periphery of the filter, and having a cross section of 0.2 to 4 percent of the cylindrical cross section of the percolator vessel, measured at the narrowest point of the conical holes, the rows of perforations preferably having a downwardly decreasing distance from each other.

ERRATUM

For Class 134—9 see:
Patent No. 3,640,293

3,640,769
METHOD OF RETARDING FOULING OF A SUBSTRATE SURFACE

Larry H. Watters, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company

Continuation-in-part of application Ser. No. 673,964, Oct. 9, 1967, now Patent No. 3,475,217, dated Oct. 28, 1969, and a continuation-in-part of 827,885, May 26, 1969. This application Aug. 1, 1969, Ser. No. 846,919
Int. Cl. B08b *3/00*; C23g *1/02*
U.S. Cl. 134—42 13 Claims

A method of retarding the fouling of a substrate surface and resulting deposits thereon, where the said fouling and deposits are formed by contacting the substrate surface in the presence of water and carbon dioxide with at least one of the amine compounds consisting of amine compounds having primary amino groups, secondary amino groups and primary and secondary amino groups, the method being characterized by treating the said surface and any resulting deposits thereon with at least one organic acid selected from aliphatic dicarboxylic acids having from two to 10 carbon atoms, tricarboxylic acids having six to 10 carbon atoms, alkanoic acids having from four to eight carbon atoms, unsaturated organic acids having three to eight carbon atoms and phenol. The method has particular utility in treating mold surfaces used for preparing polyurethane articles.

3,640,770
RECHARGEABLE METAL HALIDE BATTERY

Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.

Filed Oct. 20, 1969, Ser. No. 867,799
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 30 Claims

A rechargeable metal halide battery, in which a salt of an electroplatable metal and a halogen selected from the class consisting of chlorine, bromine and iodine is electrolyzed from solution in a liquid medium during the charging cycle and reformed during the discharging cycle, the battery comprising at least one electrode comprising an electrically conductive corrodible element and a barrier layer along one side of the corrodible element, the barrier layer being substantially inert and impermeable to halogen in concentrations present in the battery, substantially impermeable to the liquid medium, and having a volume resistivity, ρ, such that ρd is not greater than about 0.1 ohm-in.^{2}, where d is the thickness of the barrier layer, the electrode having a total interface resistance, per square inch of electrolyte-contacting surface, not greater than about 0.05 ohms.

3,640,771
METAL BROMIDE BATTERY

Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.

Filed Oct. 20, 1969, Ser. No. 867,609
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 4 Claims

A secondary battery comprising an anode, a cathode including a bromine-adsorbent layer capable of adsorbing at least half its weight of molecular bromine when the battery is charged, and an electrolyte comprising a divalent electroplatable metal bromide salt dissolved in an aqueous medium, the amount of said salt being such that, when the battery is in the charged state, the electrolyte comprises less than about 0.0005 moles/ml. of dissolved metal bromide salt and less than about 0.02 gms/ml. of molecular bromine.

3,640,772
METHOD OF PRODUCING AN ELECTRODE FOR ALKALINE BATTERIES

Sven Uno Falk, and Lars-Goran Alfelt, both of Oskarshamn, Sweden, assignors to Svenska Ackumulator Aktiebolaget Jungner, Oskarshamn, Sweden

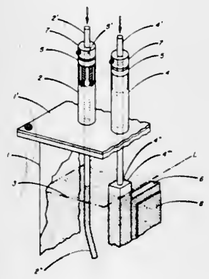
Filed June 3, 1969, Ser. No. 15,445
Claims priority, application Sweden, Aug. 21, 1968, 11265/68
Int. Cl. H01m *35/26*
U.S. Cl. 136—67 10 Claims

A method for producing electrodes for alkaline batteries, the steps of which comprise pressing a dry pulverized mixture of an electrochemically active material, a conductive inert material and an organic bonding agent onto an electrically conductive base, said electrochemically active material having been first treated with a solution of an electrolyte-resistant polymer in the solvent, removing the solvent from the polymer-treated active material, grinding the polymer-treated active material into a suitable particle size, mixing said ground polymer-treated active material with an inert conductive material of the same composition in a larger quantity by weight than the aforesaid conductive material, and pressing the resulting mixture onto an electrically conductive base and into a continuous accumulator grid.

3,640,773
METHOD OF OPERATING FUEL CELL AND PREVENTING CORROSION

Robert J. Allen, Saugus, and Robert Lee Novack, Hanover, both of Mass., assignors to Prototech Company, Division of Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed May 16, 1967, Ser. No. 638,937
Int. Cl. H01m *21/06, 27/22*
U.S. Cl. 136—86 3 Claims



The present invention relates in an important aspect to the prevention of electrolyte creeping out of fuel and/or oxidant inlets and the like in closed fuel cell housings, through the use of high temperature substantially nonwetting plugs disposed at appropriate locations along the inlets.

3,640,774
METHOD OF INCREASING FUEL CELL CURRENT DENSITY

Walter Juda, Lexington; Robert J. Allen, Saugus, and Henry G. Petrow, Cambridge, all of Mass., assignors to Prototech Co., Division of Bolt Beranek and Newman Inc., Cambridge, Mass.

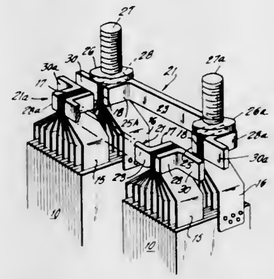
Filed Oct. 9, 1967, Ser. No. 673,951
Int. Cl. H01m *27/22*
U.S. Cl. 136—86 4 Claims

The disclosure involves a method of increasing the current density (for a given voltage) in an electrochemical cell having a hydrogen-permeable anode layer, that comprises preactivating the layer before operating the same in the electrolytic medium while insuring sufficient cathode performance or activity during such operation.

3,640,775
CELL TERMINAL

Arthur E. Fitchman, Yonkers, and Raymond J. Nathe, Pleasantville, both of N.Y., assignors to Marathon Manufacturing Company, Houston, Tex.

Filed Apr. 13, 1970, Ser. No. 27,948
Int. Cl. H01m *5/00*
U.S. Cl. 136—134 9 Claims



A battery core pole connector and brace for a pair of battery cores in which a comb connects like electrodes of each of the core. The connector is a U-shaped strap interconnecting like poles of two cores, rigidly bracing the cores with respect to each other. Each connector has extensions which brace the opposite sidewalls of the battery casing and space and secure the cores in place. The main run of each connector may also brace the adjacent wall on each side. The connector carries a terminal which may extend outside the casing. The connector resists rotative and other stresses which may be applied to the exterior terminals and prevents the transmission of such stresses to the cores.

3,640,776
COATED WIRE FOR USE IN PRESTRESSED CONCRETE STRUCTURES AND METHOD OF PRODUCING SAME

Eugene E. Haney, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 10, 1969, Ser. No. 856,836
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.16 7 Claims

Wire for prestressed concrete structures. The wire is initially produced by cold reduction from a high-carbon material whereby to produce a high-strength wire having a tensile strength of about 250 K s.i. (1,725MN/m.^{2}). The surface of such wire may have a drawing compound embedded in it. This wire is first coated with a chromic acid, phosphoric acid solution which is then dried on the wire. A very thin organic coating, such as an organic phosphate, is then applied to the wire having the chromic acid, phosphoric acid coating dried thereon. The wire, now having the organic coating applied thereto, is then cured.

3,640,777
HEAT TREATMENT OF HIGH-CHROMIUM ALLOYS TO IMPROVE DUCTILITY

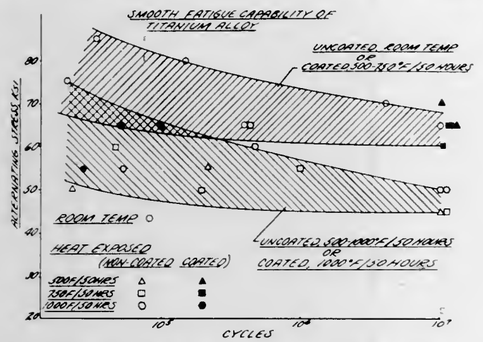
Brian Taylor, and Philip James Parry, Solihull, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,679
Claims priority, application Great Britain, Feb. 18, 1968, 6,290/68
Int. Cl. C22f *1/10, 1/11*
U.S. Cl. 148—13 6 Claims

Tensile ductility of high chromium-nickel (e.g., 50 percent chromium) and chromium-nickel-iron alloys improved when

the alloys are subjected to an annealing treatment at a temperature of from about 600° C. to about 1,000° C. Incorporation of zirconium is quite beneficial in improving ductility, particularly at high chromium levels.

3,640,778
COATING OF TITANIUM ALLOYS
Jules P. Winfree, Jupiter, Fla.; Herbert E. Todd, West Hartford, Conn., and Charles C. McComas, Palm Beach Gardens, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 27, 1969, Ser. No. 811,071
Int. Cl. C23f 7/00
U.S. Cl. 148—6 7 Claims



Titanium and its alloys are provided with a chemically bonded coating derived from a reaction at high temperature of certain aluminum-pigmented silicone resins with the titanium substrate to form in situ by decomposition a quasi-organic complex coating which not only provides improved oxidation and corrosion resistance together with improved physical properties associated with surface-oriented characteristics, such as fatigue and creep stability, but which extends the useful operating range of a number of these alloys to temperatures of 650°–900° F. or higher.

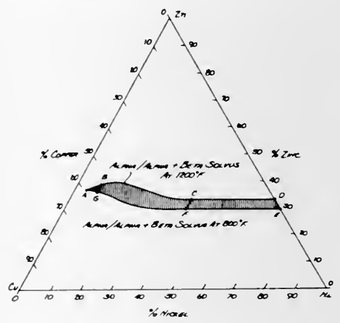
3,640,779
HIGH-CONDUCTIVITY COPPER ALLOYS
Elmars Ence, Hamden, Conn., assignor to Olin Corporation
Continuation-in-part of application Ser. No. 729,502, May 16, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 581,714, Sept. 26, 1966, now abandoned. This application Sept. 30, 1969, Ser. No. 862,529
Int. Cl. C22c 9/06
U.S. Cl. 148—32.5 10 Claims

New and improved copper base alloys combining high conductivity with good strength, with the composition consisting essentially of from 0.5 to 4.0 percent iron, from 0.2 to 2.5 percent cobalt, a material selected from the group consisting of phosphorus from 0.01 to 0.5 percent, boron from 0.001 to 0.25 percent and mixtures thereof, and the balance essentially copper, said alloy being characterized by the copper matrix having a fine, uniform dispersion of said iron, cobalt, phosphorus and boron precipitated throughout as complex intermetallic compounds.

3,640,780
METHOD OF PRODUCING ELECTRICAL SHEET STEEL WITH CUBE TEXTURE
Edward B. Stanley, Washington Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed June 25, 1970, Ser. No. 49,977
Int. Cl. H01f 1/16
U.S. Cl. 148—111 3 Claims

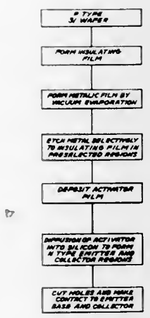
A method for producing double-oriented silicon-iron electrical sheet steel whereby conventional cube-on-edge oriented sheet steel is cross-rolled to about 0.010 inch with at least a 15 percent cold reduction and thereafter annealing the cross-rolled sheet at a temperature within the range 1,950° to 2,250° F. in a hydrogen containing atmosphere having a dew point of −30° F. or less for at least about 5 hours, or for a time sufficient to develop the cube texture.

3,640,781
TWO-PHASE NICKEL-ZINC ALLOY
Frank Joseph Ansuini, 176 Wayne Ave., Suffern, N.Y.; Jacob Schramm, 156 Edgecomb Road, Calhoun Lakes, Spartenburg, S.C., and Frank Arthur Badia, 41 Kingsley Road, Ringwood, N.J.
Filed Oct. 14, 1969, Ser. No. 13,913
Int. Cl. C22f 1/08
This application filed under Rule 47.
U.S. Cl. 148—12.7 8 Claims



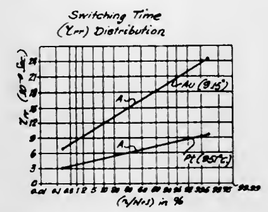
Process of heat treating and mechanically working nickel-zinc alloys or copper-nickel-zinc alloys produces products having special alpha-beta microstructure characterized by high strength at room temperature and high deformability at elevated temperatures.

3,640,782
DIFFUSION MASKING IN SEMICONDUCTOR PREPARATION
Dale M. Brown, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric Company
Continuation-in-part of application Ser. No. 675,227, Oct. 13, 1967, now abandoned. This application Aug. 16, 1968, Ser. No. 761,389
Int. Cl. H01l 7/44
U.S. Cl. 148—187 9 Claims



Discloses, in the fabrication of semiconductor devices, the use of a nonreactive metallic layer such as molybdenum, which forms an adherent bond with dielectric insulating films, as a diffusion mask. The metallic layer may also be used as an etching mask to permit selective removal of portions of passivation layers.

3,640,783
SEMICONDUCTOR DEVICES WITH DIFFUSED PLATINUM
Robert F. Bailey, Los Alamitos, Calif., assignor to TRW Semiconductors Inc., Lawndale, Calif.
Filed Aug. 11, 1969, Ser. No. 848,928
Int. Cl. H01l 7/34
U.S. Cl. 148—186 4 Claims



A semiconductor device having platinum dispersed throughout said device. The dispersion of platinum within a semiconductor device results in improved electrical characteristics of the device. In a silicon diode, the improved characteristics include the reduction of reverse recovery time and an increase in the breakdown voltage. In a silicon transistor, the improved characteristics include the achievement of high switching speeds while maintaining high forward current gain.

3,640,784
BLASTING AGENTS CONTAINING GUAR GUM
Joseph J. Yancik, Creve Coeur; Roy E. Schulze, and Paul H. Rydlund, both of St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 5, 1969, Ser. No. 804,682
Int. Cl. C06b 1/04, 11/00, 19/04
U.S. Cl. 149—43 3 Claims

Granular water-resistant blasting compositions containing a water-soluble inorganic oxidizing agent, fuels, densifiers and guar gum.

3,640,785
CASTABLE FLUOROCARBON BINDERS FOR PROPELLANTS
John D. O'Drobinak, and Martin H. Kaufman, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 28, 1964, Ser. No. 394,379
Int. Cl. C06b 3/00
U.S. Cl. 149—88 19 Claims

1. A castable binder composition comprising the following constituents:

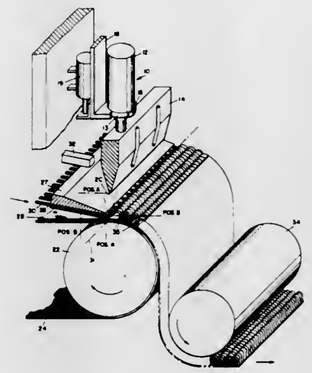
a fluorocarbon monomer selected from the group consisting of 1H, 1H, 9H-hexadecafluoro-1-monomethacrylate, 1H, 1H, 9H-heradecafluoro-1-nonanoacrylate, 1H, 1H, 7H-dodecafluoro-1-heptanoacrylate, 1H, 1H, 5H-octafluoro-1-pentanoacrylate and mixtures thereof;

a plasticizer selected from the group consisting of triethylene glycol dinitrate, pentaerythritol trinitrate, trimethylol ethane trinitrate, diethylene glycol dinitrate, butanediol dinitrate, a copolymer of vinylidene fluoride and perfluoropropylene, bis(2-fluoro-2,2-dinitroethyl) formal and mixtures thereof;

a cross-linking agent selected from the group consisting of triallycyanurate and divinyl benzene; and

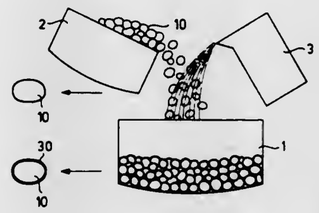
a catalyst selected from the group consisting of azobisisobutyronitrile, benzoyl peroxide, dichlorobenzoyl peroxide and methylethylketone peroxide.

3,640,786
PILE FABRIC AND METHOD OF MAKING THE SAME
Charles W. Carpenter, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of application Ser. No. 731,221, May 22, 1968, now abandoned. This application Nov. 29, 1968, Ser. No. 780,038
Int. Cl. B32b 5/08
U.S. Cl. 156—73 7 Claims



This invention relates to a method of making pile fabrics wherein thermoplastic pole yarn is fusion-bonded to a thermoplastic backing by means of sonic energy, thereby effecting localized heating of the pile yarn and backing at the points of contact without loss of orientation in either the pile yarn or the backing, if an oriented backing is used, between the bond points.

3,640,787
METHOD OF PRODUCING SHAPED BODIES OF LOW SPECIFIC GRAVITY
Rudolf Heller, Mattackerstrasse 43, Zurich, Switzerland
Filed Mar. 17, 1967, Ser. No. 623,882
Claims priority, application Switzerland, Mar. 23, 1966, 4201/66; July 1, 1966, 9601/66
Int. Cl. F16l 59/00; C04b 43/00; B32b 19/00
U.S. Cl. 156—77 19 Claims

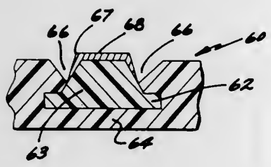


Bodies of low specific gravity produced by coating a mass of roundish hollow granules, such as expanded or swelled polystyrene granules, with a hardenable liquid binder material, mixing the mass of thus coated granules with a pulverulent solid material so as to adhere particles of the solid material to the coating, and hardening the hardenable binder coating, and shaped cellular structures formed by compressing the mass of hardenable binder coated hollow granules having pulverulent material adhering to the coating during or prior to the hardening of the hardenable liquid binder material.

3,640,788
METHOD OF MAKING POLYOLEFIN-PAPER LAMINATE WITH FLAME TREATMENT OF THE PAPER
John Harold Flynn, 234 Elk Ave., New Rochelle, N.Y.
Continuation-in-part of application Ser. No. 643,147, June 2, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 325,055, Nov. 20, 1963, now abandoned. This application Dec. 29, 1969, Ser. No. 888,954
Int. Cl. B29c *25/00*
U.S. Cl. 156—82 3 Claims

The disclosure relates to a method of priming paper web for its firm and even bond with subsequently applied molten polyolefin as a coating. The method provides for continuously feeding a paper web at relatively high speed to and past a station at which there is directed against the face to-be-coated of the passing web stiff flame which is fed by a combustible mixture of gas and air at a ratio to obtain substantially complete combustion of the mixture at the flame tip, thereby to cause a decrease in the polarity of the cellulose structure of the web face for enhanced adhesion of the subsequently applied molten polyolefin to this web face.

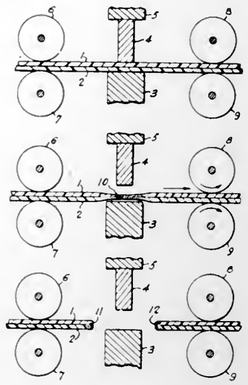
3,640,789
METHOD OF MAKING METAL-PLATED PLASTIC ARTICLES
Ivan C. Hepfer, Caledonia, Mich., assignor to Furniture City Manufacturing Corp., Grand Rapids, Mich.
Filed Apr. 1, 1969, Ser. No. 811,706
Int. Cl. C23b *5/02*
U.S. Cl. 156—92 9 Claims



A platable plastic component and a nonplatable plastic component are joined together into a multicomponent article. The entire multicomponent article is then processed in an operation for plating plastics having the steps of introducing the multicomponent article into a strong oxidizing acid solution, followed by introducing the article into a noble metal solution, then introducing the article into an electroless nickel or copper bath, and finally further processing the article in conventional plating baths.

3,640,790
SEALING PLASTIC FILM
Edward Kenneth Rowley, Beloeil Station, Quebec, and Clayton Thomas Waugh, Montreal, Quebec, both of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada
Filed Apr. 23, 1970, Ser. No. 31,229
Claims priority, application Canada, May 21, 1969, 052,161
Int. Cl. B32b *31/18*
U.S. Cl. 156—251 4 Claims

A method of heat sealing layers of plastic film wherein the film layers are heated in contact until the plastic attains a flowable state, and the area of flowable plastic is then extended until the plastic separates. The molten plastic then retracts towards the unheated flank of the seal area to form



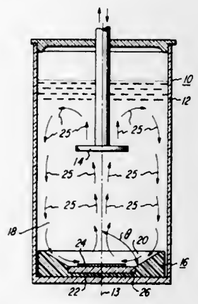
matching bead seals. The method is applicable to automatic bagmaking machines.

3,640,791
PROCESS OF PREPARING AND APPLYING AN IMPROVED PAINTING DEVICE
Richard Rosenheim, 7637 Yates Blvd., Chicago, Ill.
Filed Feb. 19, 1969, Ser. No. 800,487
Int. Cl. B44c *1/10*; B44d *1/12*
U.S. Cl. 156—230 4 Claims



Painting devices and processes especially suitable for patching painted surfaces. The device comprises a releasable paint-coated paper, amenable to gluing onto surfaces requiring the patch.

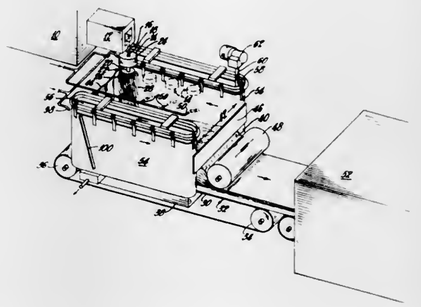
3,640,792
APPARATUS FOR CHEMICALLY ETCHING SURFACES
Raymond Arthur Alleman, and William Nelson Henry, both of Lancaster, Pa., assignors to RCA Corporation
Filed Aug. 7, 1970, Ser. No. 61,976
Int. Cl. C23g *3/00*; H01l *7/50*
U.S. Cl. 156—345 4 Claims



An apparatus for chemically etching a substantially flat surface of a workpiece such as a semiconductor wafer comprises a vessel containing a fluid etchant, means for producing a toroidal turbulence in the etchant, and a substantially

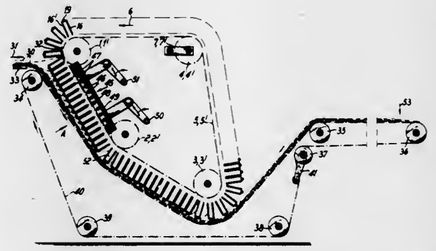
circular, inverted, conical deflecting surface around the workpiece for deflecting falling fluid from the peripheral region of the toroidal turbulence toward the workpiece surface. The central axes of the toroidal turbulence, and the deflecting surface coincide.

3,640,793
SELF-CLEANING HOOD STRUCTURE
James W. Scott, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Feb. 9, 1970, Ser. No. 9,761
Int. Cl. B29j *5/02*
U.S. Cl. 425—83 17 Claims



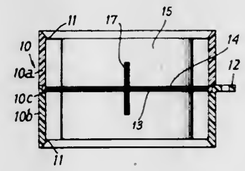
A forming hood having an endless belt as a sidewall thereof. The endless belt is supported from a trolley at the top, so that it is free to oscillate laterally, and preferably includes at least one head or tail pulley having longitudinal projections which flex the belt as it traverses the pulley. The endless belt preferably has a critical surface tension of wetting that is less than the surface tension of the binder used in the forming hood, and may also include a seal between the bottom edge of the belt and the forming conveyor on which the pack is made. The seal preferably includes passage means for communicating reduced pressure to the back side of the belt to keep the edge adjacent the forming conveyor from moving laterally.

3,640,794
APPARATUS FOR FORMING HEAT-SEALED END SEAMS IN TUBE SECTIONS OF PLASTICS MATERIAL
Kurt Rochla, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Original application June 15, 1967, Ser. No. 646,384, now Patent No. 3,544,407. Divided and this application Oct. 21, 1969, Ser. No. 871,212
Int. Cl. B32b *31/20*; B30b *15/34*; B29c *27/02*
U.S. Cl. 156—583 7 Claims



The open end of each tube section is continuously moved by retaining tools past a stationary source of radiant heat. The fused bead is then consolidated by the application of pressure. In this process, those end portions where the tube sections are to be closed by heat sealing are arranged one behind the other in planes which are at right angles to the direction of movement of said ends past the source of radiant heat. The tube sections are held in such a manner by the platelike holding tools that said end portions protrude from the holding tools toward the source of radiant heat. The tube sections are subsequently pulled to move the fused bead between the holding plates, which are slightly spaced apart. The holding plates are then pressed against the heat-sealed seams to consolidate the same.

3,640,795
A DECORATIVE ARTICLE FOR REFLECTING LIGHT FROM A METALLIZED STRIP ONTO A FLUORESCENT MATERIAL
Robert Stuart Burgess, Farnham, England, assignor to Panaura Limited, London, England
Filed July 1, 1968, Ser. No. 741,365
Int. Cl. B44f *1/00, 7/00*
U.S. Cl. 161—3 7 Claims



An article of decoration comprises a member having a surface which is preferably coated with a fluorescent material, and metallized strip material secured in front of the surface so that at least part of the strip material is disposed edge-on to the surface whereby light, whether sunlight or point source artificial light, is reflected from the metallized strip material and projected on to the fluorescent material which acts as a screen thereby intensifying the fluorescence in various patterns according to the focus and/or angle of incidence of the light, the fluorescence being reflected to the observer in the metallized strip material. The strip material is preferably colored on one side, the color being different from that of the fluorescent coating, and preferably extends in a regular curved pattern over said surface. The member and strip material may be disposed in a colored transparent or opaque or metallized casing.

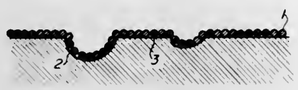
3,640,796
A DECORATIVE BUILDING ELEMENT
Marie-Josephe Cotelle, 73 rue Victor Hugo Puteaux, Haute-de-Seine, France
Filed Oct. 17, 1969, Ser. No. 867,407
Claims priority, application France, Oct. 18, 1968, 170438
Int. Cl. B37b *5/18*
U.S. Cl. 161—43 5 Claims



A decorative building element comprised of at least one support layer of a foamed, cellular plastic material and a colored layer of an elastomeric organosilic material which adheres to the cellular material. The method comprises forming a paste of a self-vulcanizable material, mixing a color additive into the paste to disperse color into the paste, spread-

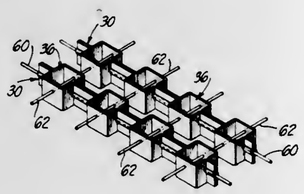
ing the paste into a thin layer on a cellular foam plastic material to which the paste can adhere and vulcanizing the paste to form a decorative building element.

3,640,797
FACING PLYWOOD HAVING PRINTED GRAIN
Youichi Taguchi, Nagoya, and Shinji Asano, Tsushima, both of Japan, assignors to Toyo Plywood Co., Ltd., Nagoya, Japan
Filed Oct. 20, 1970, Ser. No. 82,293
Claims priority, application Japan, Feb. 10, 1970, 45/11904
Int. Cl. B32b *5/12, 21/10*
U.S. Cl. 161—60 **1 Claim**



A facing plywood having a printed grain on the surface and so constructed that the fibers of a lauan face veneer and numerous fibers of a sheet glued onto the face ply and also the fibers of a grain patten printed on the surface of the sheet are all arranged in substantially the same direction, whereby the natural contour of the face ply with all its tiny grooves formed of vessels and vascular tracheids exposed on the surface can be finely reproduced on the uppermost surface for enhanced ornamental wood-graining effect.

3,640,798
COMPOSITE STRUCTURAL CORE ASSEMBLY
Douglas Deeds, 1706 West Arbor Drive, San Diego, Calif.
Filed Apr. 16, 1969, Ser. No. 816,524
Int. Cl. B32b *3/24, 3/18, 3/12*
U.S. Cl. 161—68 **8 Claims**

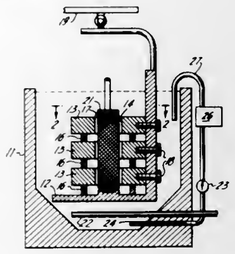


A curved laminated structure comprising a series of generally longitudinally extending stringers are assembled generally transversely adjacent, each stringer being composed of upright webs extending alternately solely longitudinally and transversely defining a longitudinal series of stringer web enclosures opening at opposite web edges. The webs have elongated members such as rods extending through them. The enclosures or cells are preferably filled with polymer foam.

ERRATA

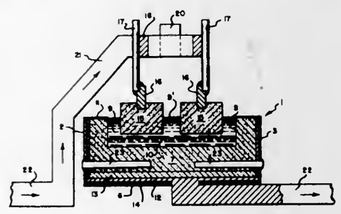
For Classes 161—159 thru 204—28 see:
Patent Nos. 3,640,829 thru 3,640,854

3,640,799
PROCESS FOR PRODUCING A WEAR-RESISTANT SURFACE ON A WORKPIECE
Gerhard Stephan, Heilbronn/N.; Heinz Harst, Neckarsulm; Gunter Laux, Heilbronn/N., and Alfred Kappes, Neckarsulm, all of Germany, assignors to NSU Motorenwerke Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau Bodensee, Germany
Original application Sept. 6, 1968, Ser. No. 758,017, now Patent No. 3,514,389. Divided and this application Sept. 30, 1969, Ser. No. 871,038
Int. Cl. C23f *17/00;* **C23b** *13/00, 5/50*
U.S. Cl. 204—38 B **5 Claims**



A process and apparatus for galvanic deposition on a workpiece, particularly the inner surface of trochoidal engine housings, of a metal matrix containing dispersed particles, for the purpose of improving wear resistance of highly stressed surfaces.

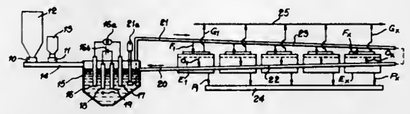
3,640,800
ELECTROLYTIC CELL
Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J.
Filed July 14, 1970, Ser. No. 54,829
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **29 Claims**



An improved electrolytic cell having collector elements arranged horizontally in the cell and extending to the sides thereof, and a slab of aluminum disposed horizontally at the bottom of the cell to which the collector elements are connected.

3,640,801
CONTINUOUS PROCESS AND APPARATUS FOR ELECTROLYTIC PRODUCTION OF SODIUM METAL FROM SODIUM SALTS
Frank E. Love, Tulsa, Okla., assignor to National Lead Company, New York, N.Y.
Filed Feb. 25, 1969, Ser. No. 801,937
Int. Cl. C22d *3/08;* **B01k** *3/00*
U.S. Cl. 204—68 **9 Claims**

Method and apparatus for continuous electrolytic production of sodium metal from sodium salts including a charging cell having feeder launders extending thence to and from a series of electrolysis cells for circulating a feed of molten sodium and other salts from the charging cell through the electrolysis cells for electrolyzing said salts to produce sodium metal collected as such, the electrolysis cells being provided with overflow means for maintaining a constant level of molten electrolyte in each, the electrolyzed sodium and other salts being replenished in said charging cell, the latter including means for maintaining the salt feed in a molten state.



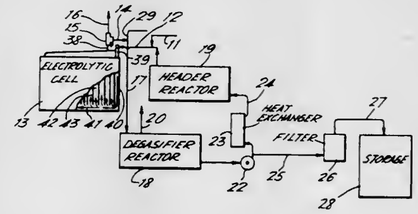
3,640,802
CATHODIC PROCESS FOR THE PREPARATION OF TETRAALKYL LEAD COMPOUNDS
Edward Harvey McDonald, 1308 De Sota, and William P. Banks, 1412 Holbrook, both of Ponca City, Okla.
Filed Aug. 31, 1970, Ser. No. 68,550
Int. Cl. C07b *29/06;* **C07f** *7/26*
U.S. Cl. 204—72 **4 Claims**

The present invention relates to a process for the preparation of tetraalkyl lead compounds wherein the anolyte comprises a solution of tetrabutyl ammonium bromide or tetrabutyl phosphonium bromide in water. In this process bromine is produced at the anode and forms a precipitate with the tetrabutyl ammonium or phosphonium bromide present. This bromine can be recovered by treating the anolyte solution with hydrogen sulfide to convert the bromide present to hydrogen bromide, sulfur and the tetrabutyl ammonium or phosphonium bromide. The sulfur is removed from the solution and the solution is then treated with ethanol to form ethyl bromide by reaction with the hydrogen bromide present in the solution. The ethyl bromide is separated from the solution and returned to the cathode compartment of the electrolytic cell whereby it is subsequently converted to tetraethyl lead. The quaternary bromide salt such as tetrabutyl ammonium or phosphonium bromide is recovered from the solution as an aqueous salt and is returned to the anode compartment of the electrolytic cell where it then becomes part of the anolyte.

3,640,803
PROCESS FOR THE PRODUCTION OF REDUCED SULFUR DYES
Horst Frind; Christian Heid, and Horst Aman, all of Frankfurt (Main)-Fechenheim, Germany, assignors to Casella Farbwerke Mainkur Aktiengesellschaft, Frankfurt (Main), Fechenheim, Germany
Filed Feb. 4, 1970, Ser. No. 8,733
Claims priority, application Germany, Feb. 7, 1969, P 19 06 083.4
Int. Cl. C07b *29/06;* **C09b** *49/00*
U.S. Cl. 204—73 **12 Claims**

The dyeing behavior of a sulfur dyestuff, whether water soluble or water insoluble, is improved by electrolytic reduction. This reduction is performed in a cell in which the dyestuff is used as the catholyte. An ionic agent, such as salt or lye may be used to improve the conductivity of the catholyte. The dyestuff concentration in the cell ranges from about 5 to 50 percent by weight and 10 to 20 percent by weight is particularly effective. A porous clay diaphragm separates the anolyte and catholyte. The anolyte is for example, an aqueous lye or salt solution. The cathode is a material having relatively high hydrogen overvoltage, such as lead and alloy steels. The anode is a noble metal such as platinum or graphite. The catholyte is agitated during the reduction and its temperature is maintained from about 25° to 200° C. and preferably from 50° to 80° C. A current density of about 0.005 to 0.05 A./cm.^{2} is employed and preferably maintained from 0.01 to 0.04 A./cm.^{2}. The reduction has an energy demand from about 0.5 to 1 kWh./kg. The termination of the reduction of water-insoluble sulfur dyestuff is determined by a spot analysis test. The end of the reduction of water-soluble sulfur dyestuffs is determined relative to hydrogen formation. After the electrolytic reduction has been terminated, the catholyte is stabilized by adding any of a number of suitable reducing agents.

3,640,804
METHOD FOR CONDUCTING ELECTROLYTE TO, FROM AND THROUGH AN ELECTROLYTIC CELL
Gothe O. Westerlund, Vancouver, Canada, assignor to Chemech Engineering Ltd., Vancouver, British Columbia, Canada
Original application Apr. 18, 1966, Ser. No. 543,261, now Patent No. 3,463,722, dated Aug. 26, 1969. Divided and this application July 17, 1969, Ser. No. 842,623
Int. Cl. C01b *11/26, 11/14*
U.S. Cl. 204—95 **7 Claims**



A novel procedure is provided for conducting electrolyte to, from and through an electrolytic cell. This procedure depends on maintaining the cell in a fully flooded state and using the natural pumping action due to rising entrained and/or occluded gaseous products of electrolysis to aid the passage of the electrolyte through the cell at a velocity sufficient to prevent such gaseous products of electrolysis from separating into a free gaseous phase within the cell.

3,640,805
REMOVAL OF NITRATE CONTAMINATION FROM NICKEL-PLATING SOLUTIONS
James T. Knight, Ontario, Oreg., and Parley L. Lee, Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed June 13, 1969, Ser. No. 833,142
Int. Cl. C01d *7/34;* **C23b** *5/08*
U.S. Cl. 204—130 **1 Claim**

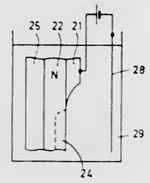
A nitrate-contaminated nickel-plating bath is purified by heating the bath to between 65° and 70° C., agitating the bath and electrolyzing the bath while providing a 10 to 20 fold greater cathode area than anode area.

3,640,806
SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING THE SAME
Yoshio Watanabe, and Tetsushi Sakai, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Jan. 5, 1970, Ser. No. 597
Int. Cl. C23g *3/00;* **B23p** *1/00*
U.S. Cl. 204—143 GE **4 Claims**

A semiconductor device and a method of producing the same. The semiconductor device comprises a silicon single crystal including a porous substance formed so as to advance from surface area toward inside area of said silicon single crystal. The porous substance is produced on the silicon sin-

gle crystal by utilizing said crystal and a conductive metal material which is not soluble to hydrofluoric acid as electrodes, applying a positive direct current voltage to the silicon single crystal and a negative direct current voltage to the other metal electrode, and carrying out an electrolysis in an aqueous solution of the hydrofluoric acid.

3,640,807
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED BY SAID METHOD
Hendrikus Josephus Antonius Van Dijk, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,575
Claims priority, application Netherlands, July 4, 1969, 6910274
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 GE **8 Claims**



The invention relates to a method of manufacturing semiconductor devices having thin layers of a semiconductor material.

These thin layers are obtained, for example, by forming on a low-ohmic substrate a high-ohmic thin layer and then selectively removing the substrate electrolytically. Difficulties can arise during this removal when a readily conductive layer has been formed on the high-ohmic layer. The difficulties are prevented when the thickness of the high-ohmic layer is at least as large as the thickness of the depletion layer which is formed in the high-ohmic layer during the electrolytic removal of the substrate.

3,640,808
RADIOLYTIC DESTRUCTION OF NONBIODEGRADABLE ORGANIC PESTICIDES
Forrest N. Case, Oak Ridge, Tenn.; Arthur W. Garrison, Watkinsville, Ga.; Donald L. Kau, Rockwood, and David E. Smiley, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 7, 1969, Ser. No. 864,521
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 HE **1 Claim**

This invention relates to a method for treating industrial waste solutions containing nonbiodegradable organic pesticides which comprises saturating the solution with oxygen and then irradiating the pressurized solution until the pesticide has been decomposed into nontoxic constituents to that degree required for safe disposal.

3,640,809
CHEMICALLY HARDENED GELATIN-SEPARATING MEDIUM FOR CHROMATOGRAPHY AND ION EXCHANGE AND METHOD OF MAKING THE SAME
Alfred Polson, and Woolf Katz, both of Claremont Cape Town, Republic of South Africa, assignors to South African Inventions Development Corporation, Pretoria, Republic of South Africa
Filed Dec. 10, 1968, Ser. No. 782,652
Claims priority, application Republic of South Africa, Dec. 18, 1967, 67/7563
U.S. Cl. 204—180 G **34 Claims**

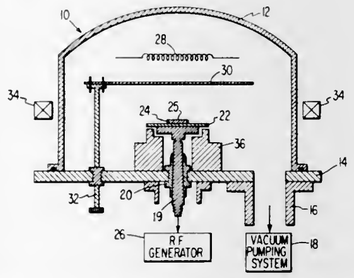


Selected gelatin, in particular the high molecular weight fraction obtained by fractionation with PEG is chemically hardened e.g. with tanning agents and used in a form of beads for exclusion chromatography and/or ion exchange or as a continuous body for electrophoresis. Ion exchange properties may be suppressed or enhanced as required by chemical treatment of the gelatin or by the choice of conditions during separation (pH, salt content). Ion-exchange properties are calibrated by electro-osmosis.

3,640,810
STEAM RINSING OF ELECTROCOATED ARTICLES
Joseph E. Plasynski, Arnold, and Robert D. Jerabek, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 10, 1969, Ser. No. 884,029
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 **16 Claims**

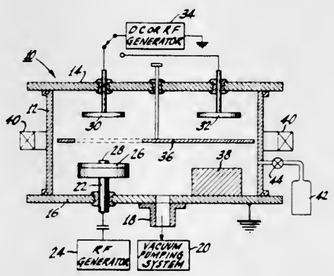
Method of removing dragout from an article which has been electrocoated, utilizing steam as a rinsing agent to remove the dragout. The use of steam produces a rinse water of appreciably higher solids than is achieved by the use of water.

3,640,811
METHOD OF METALIZING SEMICONDUCTOR DEVICES
John Louis Vossen, Jr., Bedminster, N.J., assignor to RCA Corporation
Filed Nov. 3, 1969, Ser. No. 873,299
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **3 Claims**



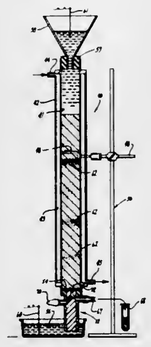
A semiconductor device is placed in a vacuum system and is sputter-etched by a radiofrequency glow discharge for a period of time sufficient to remove impurities and residual oxide layers from the contact surfaces of the device. A quantity of metal is then evaporated onto the purified surface while maintaining the glow discharge so that the metal is partially ionized and accelerated towards the purified surface, and thereby forms a solid solution with the semiconductor to provide a direct ohmic contact therewith without having to subsequently sinter the metal deposit.

3,640,812
METHOD OF MAKING ELECTRICAL CONTACTS ON THE SURFACE OF A SEMICONDUCTOR DEVICE
John Louis Vossen, Jr., Bedminster, and Joseph Henry Banfield, Plainfield, both of N.J., assignors to RCA Corporation
Filed Sept. 2, 1970, Ser. No. 68,909
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **12 Claims**



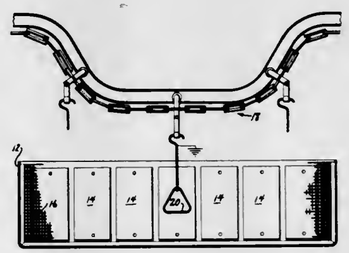
The semiconductor device and a metal backing plate are simultaneously sputter etched so that some of the backing plate metal is back scattered onto the device and forms a thin metal-semiconductor alloy region in the semiconductor contact openings. At least one layer of electrode metal is then deposited on the device surface and the alloy regions. Part of the metal layer is then removed to define the desired electrode leads.

3,640,813
ADAPTER FOR A MACROMOLECULE SEPARATION DEVICE
Samuel T. Nerenberg, 21 Hayward Ct., Burlingame, Calif.
Filed June 9, 1969, Ser. No. 831,509
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **10 Claims**



A device for adapting an upstanding column to separate macromolecules in preparative amounts by means of electrophoresis, chromatography and electrochromatography carried out in a granular or nongranular gel medium disposed in the column. One device contains an electrically conductive, self-supporting gel disposed within a tubular housing adapted to sealingly engage the lower portion of the column. Channels may be provided in the adapter gel for fluid ingress to the upper gel surface and egress therefrom. A method for forming the adapter including electrophoresis and electrochromatography performed in a single column.

3,640,814
ELECTROCOATING APPARATUS
Robert L. Koch, II, and Gilman Tredwell, both of Evansville, Ind., assignors to Ashdee Corp., Evansville, Ind.
Filed Mar. 17, 1965, Ser. No. 440,410
Int. Cl. B01k *5/02*
U.S. Cl. 204—300 **6 Claims**



An electrocoating arrangement employing at least two tank baths for improved coating quality, each tank bath containing a resinous water-soluble paint, and a specific tank-article arrangement which provides a high safety factor in that the tank and the article have the same electrical polarity.

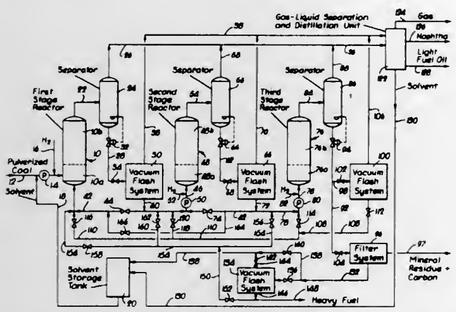
3,640,815
METHOD FOR SURFACE TREATMENT OF NICKEL AND COBALT BASE ALLOYS
Charles W. Schwartz, Whitehall, Mich., and Richard W. Martini, Scotia, N.Y., assignors to Howmet Corporation, New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 856,188
Int. Cl. C23f *17/00*; C23c *9/00*
U.S. Cl. 204—38 S **14 Claims**

The treatment of high nickel and cobalt base alloy to improve the corrosion resistance of parts formed thereof by first applying a coating of nickel and then subjecting the part to diffusion coating to aluminize the surface.

3,640,816
MULTIPLE STAGE PROCESS FOR PRODUCING LIGHT LIQUIDS FROM COAL
Willard C. Bull, Prairie Village, and Bruce K. Schmid, Shawnee Mission, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Dec. 8, 1969, Ser. No. 883,182
Int. Cl. C10g *1/00*
U.S. Cl. 208—10 **10 Claims**

A multiple stage process for producing light liquids from coal wherein a slurry of pulverized coal, a solvent therefor and hydrogen is charged under pressure into a first reaction zone where the temperature thereof is elevated and maintained at such level until substantially all of the coal is dissolved. Gases and light liquids produced by partial hydrogenation of the reaction products are separated from the heavy bottoms and the latter are charged to another reaction zone under pressure where the charge along with an added quantity of hydrogen are heated to a higher tempera-

ture than present in the first zone so as to hydrocrack the constituents and produce additional quantities of gases and light liquids which are then separated from the heavy bottoms. The gases and light liquids from each stage are selectively segregated in a separation and distillation unit. Two or more reaction zones in series relationship may be employed



with the charges thereto being subjected to treatment conditions of successively increasing severity accomplished by successively higher temperatures, pressures or residence times or combinations thereof. The heavy bottoms from one or more of the stages may be recycled back to preceding stages if desired.

3,640,817

HYDROCARBONACEOUS BLACK OIL CONVERSION PROCESS

Mark J. O'Hara, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 13, 1970, Ser. No. 37,023
Int. Cl. B01j *11/82*; C10g *13/02*, *23/02*
U.S. Cl. 208—59 7 Claims

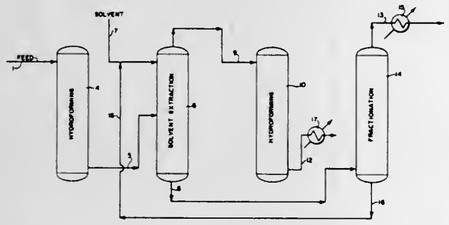
Asphaltene-containing hydrocarbonaceous black oils are subjected to conversion conditions in a two-stage process. The physical characteristics of the catalytic composite disposed within the individual stages, or reaction zones, are different. This difference in physical characteristics is directed toward macropore volume, and is maintained whether the chemical composition is the same, or varies.

3,640,818

HYDROFORMING NAPHTHAS

Glen P. Hamner, Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Oct. 31, 1969, Ser. No. 872,843
Int. Cl. C10g *39/00*
U.S. Cl. 208—65 5 Claims



Virgin or cracked naphtha is hydroformed under mild conditions to mainly convert naphthenes to aromatics, the aromatics are extracted and the paraffinic raffinate is hydroformed under still moderate but more severe conditions. If desired the raffinate and extract can be separately fractionated to yield a selected fraction from the raffinate for hydroforming and a heavy fraction from the extract for hydrocracking.

3,640,819

INHIBITING LPG PRODUCTION IN A HYDROCRACKING PROCESS

Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 12, 1969, Ser. No. 832,839
Int. Cl. C10g *13/02*; B01j *11/40*
U.S. Cl. 208—111 5 Claims

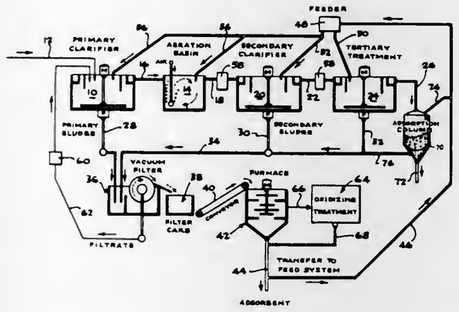
A catalystic composite of a porous carrier material, a nickel component and a metal component selected from Groups I, II or V of the Periodic Table. When utilized in a hydrocracking process, to produce lower-boiling hydrocarbon products, for example gasoline boiling range hydrocarbons, the catalyst effectively inhibits excessive formation of liquefied petroleum gas of the propane/butane type, as well as lighter gaseous hydrocarbons. A preferred catalytic composite comprises a crystalline aluminosilicate, from about 0.1 percent to about 10.0 percent by weight of nickel and from about 0.01 percent to about 2.0 percent by weight of a metallic component selected from vanadium, lithium, beryllium or barium.

3,640,820

SEWAGE TREATMENT PROCESS

Frank N. Kemmer, La Grange; Reid S. Robertson, Glen Ellyn, and Rodney D. Mattix, Lemont, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 852,421, Aug. 22, 1969. This application Jan. 11, 1971, Ser. No. 77,047
Int. Cl. C02c *1/06*
U.S. Cl. 210—6 2 Claims



A continuous sewage treatment process for upgrading the quality of sewage plant effluent by converting sewage sludges to active substances and returning these active substances to the sewage system whereby removal of dissolved contaminants occurs by the addition of the active substances.

3,640,821

REDUCTIVE DEGRADATION OF HALOGENATED PESTICIDES

Keith H. Sweeny, West Covina, and James R. Fischer, Claremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior

Filed Dec. 23, 1970, Ser. No. 101,201
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 6 Claims

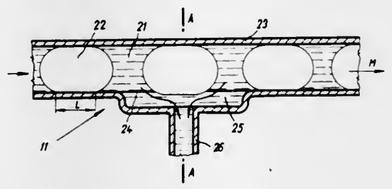
Halogenated organic pesticides, typified by DDT, chlordane, lindane and the like, are reacted with metallic zinc under mildly acid conditions to produce less highly halogenated degradation products of lower toxicity.

3,640,822

METHOD AND AN APPARATUS FOR SEPARATING A SEGMENTATION MEDIUM FROM A STREAM OF A SEGMENTED MAIN FLUID

Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie, Prague, Czechoslovakia

Filed Sept. 15, 1969, Ser. No. 857,956
Claims priority, application Czechoslovakia, Sept. 19, 1968, 6571/68
Int. Cl. B01d *19/00*
U.S. Cl. 210—65 8 Claims



Segmented main fluid in a capillary stream is allowed to flow through a main tubing equipped with a capillary slot communicating with an offtake pipe. Conditions within the apparatus are maintained such that capillary forces and surface tension inherent in the elements of the segmentation medium and other parts of the system prevent their passage through the capillary slot, through which the main fluid only is taken off in a continuous stream. The length of the capillary slot in the direction of the main capillary tubing axis exceeds the maximum contact length of a segmentation medium element; the main fluid may be taken off substantially from a single one only, or from not more than two neighboring segments of the main medium, so that contamination by the contents of other segments is negligible.

3,640,823

FLAME-RETARDANT COMPOSITION

Roger C. Linderman, and Charles D. Cline, both of Charlotte, N.C., assignors to CPC International, Inc.

Filed Mar. 9, 1970, Ser. No. 17,894
Int. Cl. C09k *3/28*
U.S. Cl. 252—8.1 10 Claims

A composition which when applied to textile fabrics imparts flame retardancy. The composition is a combination of an aziridinyl phosphine oxide or sulfide and a phosphoric amide.

3,640,824

PARAFFIN INHIBITOR IN CRUDE OIL WITH HIGH-MOLECULAR WEIGHT HIGHLY BRANCHED POLYETHYLENE

Salim M. Bucaram, and Lawrence V. Collings, both of Tulsa, Okla., assignors to Sinclair Oil & Gas Company, Tulsa, Okla.

Filed Nov. 19, 1965, Ser. No. 508,834
Int. Cl. E21b *43/00*; C09k *3/00*
U.S. Cl. 252—8.3 8 Claims

A paraffin inhibitor for use in treating crude oil which contains as the essential ingredient in an amount effective to inhibit paraffin deposition, polyethylene having a molecular weight in excess of about 6,000 and a structure having at least 10 percent branching. The inhibitor may additionally contain naphthalene, microcrystalline wax having a melting point in excess of about 160° F. and/or asphaltenes.

3,640,825

DRILLING FLUID

Jack H. Kolaian, Wappingers Falls, N.Y., assignor to Texaco, Inc., New York, N.Y.

Original application Apr. 25, 1967, Ser. No. 633,434. Divided and this application Apr. 27, 1970, Ser. No. 32,354
Int. Cl. C10m *3/26*, *3/24*, *3/14*
U.S. Cl. 252—8.5 C 14 Claims

An aqueous drilling fluid dispersant and a method of drilling wells using said drilling fluid which contains a substituted dihydroxybenzene compound as the dispersant, namely, a dihydroxybenzene compound selected from the group consisting of a 1,2-dihydroxybenzene containing as a substituent in the 4 position a nitro-, a chloro-, a formyl-, or a (2'-carboxyethenyl)-group and mixtures of said compounds.

3,640,826

GRAFT COPOLYMERS OF ACRYLIC ACID AND POLYHYDROXY POLYMERIC COMPOUNDS FOR TREATING CLAYS

William J. Lang, Libertyville, and John J. Krajewski, Wheeling, both of Ill., assignors to International Minerals & Chemical Corporation

Filed Sept. 4, 1968, Ser. No. 757,399
Int. Cl. C10m *3/22*; C08b *21/24*; C08f *29/100*
U.S. Cl. 252—8.5 A 20 Claims

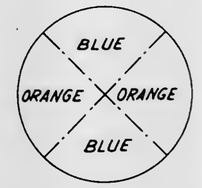
Water-soluble graft copolymers of acrylic acid with polyhydroxy polymeric compounds containing up to about 10.0 percent by weight, based on the weight of acrylic acid, of the polyhydroxy polymeric compound and water-soluble salts thereof are useful for treating clays, such as to render them especially useful in well drilling.

3,640,827

PHOSPHATE GLASS BODIES

Charles William Lutz, Clark, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Oct. 9, 1968, Ser. No. 766,257
Int. Cl. C09k *1/36*; E21b *37/00*
U.S. Cl. 252—8.55 10 Claims



Molded internally stressed bodies of phosphate glass of controlled solubility, such as small spheres of sodium phosphate glass containing one or more multivalent metal oxides and having moderate internal stress.

3,640,828

LUBRICANT COMPOSITIONS FOR MASSES OF POLYVINYL CHLORIDE AND PROCESS FOR MAKING SAME

Walter Brotz, Gersthofen, and Bruno Dallmann, Augsburg, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Oct. 17, 1968, Ser. No. 768,384
Claims priority, application Germany, Oct. 21, 1967, F 53 864
Int. Cl. C10m *7/24*, *7/22*
U.S. Cl. 252—17 2 Claims

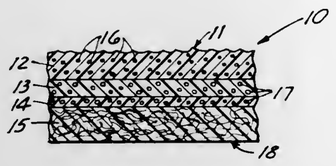
For the processing of masses of polyvinyl chloride lubricant compositions are proposed which consist of 20 to 80

percent by weight of a metal soap or synthetic ester wax containing metal soap and 80 to 20 percent by weight of a hydrocarbon wax and which enable a particularly high output of plastics material and consequently an increased speed of processing to be obtained, for example, in injection-moulding processes.

3,640,829
MICROPOROUS PRODUCTS

Robert L. Elton, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 20, 1969, Ser. No. 867,538
Int. Cl. B32b *3/26*; **C08g** *22/44*; **D06n** *3/14*
U.S. Cl. 161—159 **9 Claims**

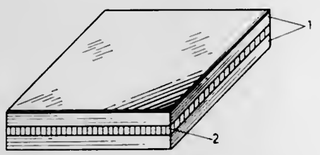


In the disclosed method of making a microporous sheet material a heat-formed (extruded, calendered, or pressed) film comprising (1) a polyurethane (preferably combined with an epoxidized soybean oil processing aid—a water insoluble plasticizer can also be included) capable of forming a nonporous film having a storage shear modulus (G') of about 0.4 to 5×10^8 dynes/cm.^{2} and a loss tangent at 0.2 cycle/sec. less than 0.5, both measured at 23° C., and (2) distributed throughout the film, a plurality of <30 micron salt (e.g. NaCl) particles, is annealed prior to leaching of the salt from the film with an aqueous medium. The resulting microporous film is useful in making leatherlike sheet materials. Preferably, the film is embossed prior to leaching but after annealing.

3,640,830
VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF VINYL ACETATE-ETHYLENE-ETHYLACRYLATE COPOLYMERS

Hermann Oberst; Leonhard Reihs, both of Hofheim/Taunus; Joachim Ebigt, Mainz; Gunther Duve, Frankfurt/Main, and Alfred Schommer, Bad Soden/Taunus, all of Germany, assignors to Farbwerke Hoeschst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of application Ser. No. 630,964, Apr. 14, 1967, now abandoned. This application Oct. 19, 1970, Ser. No. 82,111
Claims priority, application Germany, Apr. 23, 1966, F 49 030
Int. Cl. B32b *15/08*; **C08f** *15/20*; **E04b** *1/86*
U.S. Cl. 161—165 **3 Claims**

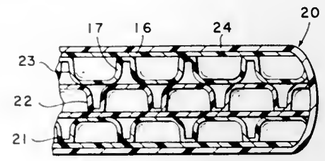


Vibration damped sandwich systems having an improved damping effect within a broad range of temperature and consisting of hard plates and a vibration damping interlayer, said interlayer comprising a copolymer of ethylene, vinyl acetate, ethyl-acrylate and acrylic and/or methacrylic acid.

3,640,831
PROTECTIVE BODY PAD

Lawrence J. Gardner, Dallas, and Donald R. Cochren, Richardson, both of Tex., assignors to Protective Pads, Inc., Dallas, Tex.

Filed Dec. 15, 1969, Ser. No. 884,840
Int. Cl. B32b *3/12*
U.S. Cl. 161—92 **5 Claims**



A protective pad made up of lamination-shaped sheets of cushioning material, each sheet having adjacent trapped air pockets with the lamination being enclosed in a moisture impervious envelope of latex or closely woven polyester fiber.

3,640,832
HEAT-INSULATING MATERIAL

Otmar J. G. Kurz, Eltville, Germany, assignor to Verolme Vacuumtechnik Aktiengesellschaft, Eltville, Germany

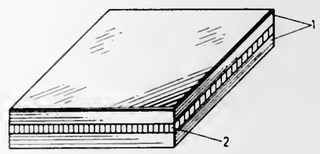
Filed Feb. 6, 1969, Ser. No. 797,025
Int. Cl. B32b *3/26, 7/02, 15/02*
U.S. Cl. 161—160 **17 Claims**

A carrier sheet of heat-resisting plastics material is permanently secured to a heat-insulating backing. A vapor-deposited, reflecting metal layer is carried by said carrier sheet on the side thereof which is remote from said backing. A wear-resisting coating, which is permeable to radiant heat, covers said metal layer on the side thereof which is remote from said carrier sheet.

3,640,833
VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF VINYL ACETATE-ETHYLENE-N-BUTYLACRYLATE COPOLYMERS

Hermann Oberst; Leonhard Reihs, both of Hofheim/Taunus; Joachim Ebigt, Mainz; Gunther Duve, Frankfurt/Main, and Alfred Schommer, Bad Soden/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of application Ser. No. 631,080, Apr. 14, 1967, now abandoned. This application Oct. 19, 1970, Ser. No. 82,112
Claims priority, application Germany, Apr. 23, 1966, F 49 031
Int. Cl. B32b *15/08*; **C08f** *15/20*; **E04b** *1/86*
U.S. Cl. 161—165 **3 Claims**



Vibration damped sandwich systems having an improved damping effect within a broad range of temperature and consisting of hard plates and a vibration damping interlayer, said interlayer comprising a copolymer of ethylene, vinyl acetate, n-butyl-acrylate and acrylic and/or methacrylic acid.

3,640,834
VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF COPOLYMERS OF VINYL ACETATE, ETHYLENE AND MIXTURES OF ISONONANE-, ISODECANE- AND ISOUNDECANE-CARBOXYLIC ACID VINYL ESTERS

Hermann Oberst; Leonard Reihs, both of Hofheim, Taunus; Joachim Ebigt, Mainz; Gunther Duve, Frankfurt, Main, and Alfred Schommer, Bad Soden, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Continuation-in-part of application Ser. No. 630,962, Apr. 14, 1967, now abandoned. This application Oct. 19, 1970, Ser. No. 82,174
Int. Cl. B32b *7/02, 15/08*; **E04b** *1/99*
U.S. Cl. 161—165 **3 Claims**

Vibration damped sandwich systems having an improved damping effect within a broad range of temperature and consisting of hard plates and a vibration damping interlayer, said interlayer comprising a copolymer of vinyl acetate, ethylene and a mixture of isononane-, isodecane- and isoundecane-carboxylic acid vinyl esters and acrylic and/or methacrylic acid.

3,640,835
VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF COPOLYMERS OF ETHYLENE AND MIXTURES OF ISONONANE-, ISODECANE AND ISOUNDECANE-CARBOXYLIC ACID VINYLESTERS

Hermann Oberst; Leonhard Reihs, both of Hofheim, Taunus; Joachim Ebigt, Mainz; Gunther Duve, Frankfurt, Main, and Alfred Schommer, Bad Soden, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Continuation-in-part of application Ser. No. 630,963, Apr. 14, 1967, now abandoned. This application Oct. 19, 1970, Ser. No. 82,177
Int. Cl. B32b *7/02, 15/08*; **E04b** *1/99*
U.S. Cl. 161—165 **3 Claims**

Vibration damped sandwich systems having an improved damping effect within a broad range of temperature and consisting of hard plates and a vibration damping interlayer, said interlayer comprising a copolymer of ethylene with a mixture of isononane-, isodecane- and isoundecane-carboxylic acid vinyl esters and acrylic and/or methacrylic acid.

3,640,836
VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF VINYL ACETATE-ETHYLENE COPOLYMERS

Hermann Oberst; Leonhard Reihs, both of Hofheim, Taunus; Joachim Ebigt, Mainz; Gunther Duve, Frankfurt, Main, and Alfred Schommer, Bad Soden, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Continuation-in-part of application Ser. No. 631,081, Apr. 14, 1967, now abandoned. This application Oct. 19, 1970, Ser. No. 82,179
Int. Cl. B32b *7/02, 15/08*; **E04b** *1/99*
U.S. Cl. 161—165 **3 Claims**

Vibration damped sandwich systems having an improved damping effect within a broad range of temperature and consisting of hard plates and a vibration damping interlayer, said interlayer comprising a copolymer of ethylene, vinyl acetate and acrylic and/or methacrylic acid.

3,640,837
THERMALLY INSULATING TRANSPARENT LAMINATED GLASS WITH ALKALI METAL SILICATE INTERLAYER

Rudolf Gaeth, Limburgerhof; Fritz Stastny, Ludwigshafen; Rudolf Breu, Lambsheim, and Friedhelm Gaertner, Frankenthal, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 30, 1969, Ser. No. 889,299
Claims priority, application Germany, Jan. 2, 1969, P 19 00 054.5
Int. Cl. B32b *17/06*
U.S. Cl. 161—165 **4 Claims**

Thermally insulating and transparent laminated glass consisting of at least two superimposed sheets of glass with an interlayer of a solid aqueous alkali metal silicate between each two sheets of glass.

3,640,838
IONICALLY INTERACTING POLYMERS

Sui-Wu Chow, and Walter H. Smarook, both of Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 669,291, Sept. 20, 1967, now abandoned. This application June 24, 1970, Ser. No. 49,568
Int. Cl. C08f *29/34*; **B32b** *9/00*
U.S. Cl. 161—190 **14 Claims**

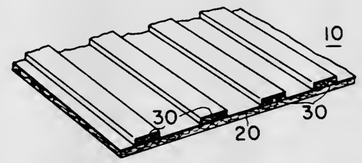
Reversibly cross-linked, thermoplastic, normally solid polymer salt compositions have been prepared by copolymerizing a prepolymer of a carboxyl containing polyolefin, having 2 to 50 mole percent carboxylic acid groups, and about 10 to 100 mole percent of its carboxyl groups neutralized with an amino vinyl monomer such as an alkylaminoalkyl acrylate, an alkylaminoalkyl methacrylate, or an amino substituted styrene with a vinyl monomer such as an alkyl acrylate, an alkyl methacrylate, acrylamide, methacrylamide, styrene, alkyl substituted styrenes, vinyl chloride, vinyl esters containing from three to 20 carbon atoms or vinyl alkyl ethers containing from three to 20 carbon atoms.

These polymer salt compositions are particularly useful in that they exhibit a high degree of adhesion to plasticized vinyl chloride resins, unlike most other commonly known adhesives, as well as other substrates.

3,640,839
FILTER PAPER FOR OIL FILTERS

Tuguo Ochiai, Kanagawa, Japan, assignor to Tokyo Roki Kabushiki Kaisha, Kanagawa, Japan

Filed Sept. 5, 1968, Ser. No. 767,547
Claims priority, application Japan, July 13, 1968, 43/49204
Int. Cl. B07b *11/04*; **D21f** *11/08*
U.S. Cl. 162—129 **2 Claims**



A filter paper for oil filters has a coarse web capable of passing particles of granular size of about 40 μ maximum diameter and a plurality of dense web strips superposed in parallel upon the coarse web and combined therewith at fixed intervals, the dense web being capable of passing particles of granular size of about 15 μ maximum diameter.

3,640,840
COMPONENT REACTION PRODUCT AND PROCESS FOR INCREASING THE WET STRENGTH OF PAPER

Heinz Zieman, Leichlingen; Wolfgang Lehmann, Leverkusen, and Gerhard Troemel, Pesch, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 18, 1969, Ser. No. 808,326
Claims priority, application Germany, Feb. 10, 1969, P 19 06 450.7; Mar. 27, 1968, P 17 71 043.9
Int. Cl. D21h *3/36*
U.S. Cl. 162—164 **19 Claims**

A reaction product and process for increasing the wet strength of paper which comprises adding to a slurry of paper fibers self-cross-linking water soluble reaction products prepared from a) epihalohydrins and/or α-dihalo-hydrins such as epichlorohydrin, b) water soluble basic polyamides such as that formed by the reaction of diethylene-triamine and adipic acid, and c) water soluble polyamines such as bis-(3-amino-propyl)-amine which contain at least two nitrogen atoms separated from one another by at least three carbon atoms and optionally also by oxygen or sulfur atoms, and contain at least two hydrogen atoms attached to different nitrogen atoms wherein the components b) and c) are used in a proportion of 1–10:1 and component a) is used in an amount of 0.5 to 1.5 mole per basic amino group.

3,640,841
METHOD FOR CONTROLLING ADHESION OF PAPER ON YANKEE DRIER WITH POLYAMIDES AND RESULTANT PRODUCTS

Alfred Edwards Winslow, Unadilla, and John Calvin Spicer, Sidney, both of N.Y., assignors to The Borden Company, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,306
Int. Cl. D21d *3/00*; D21h *3/36*
U.S. Cl. 162—164 **9 Claims**

This invention relates to a paper manufacturing process which comprises drying the formed web against a heated surface, such as present on a Yankee drier, and in particular to the improvement which comprises incorporating in said web before said drying, in an amount sufficient to achieve uniform adhesion to and release from said heated surface, a water-dispersible repulpable polyamide polyamine resin containing at least two primary amine groups and at least one secondary or tertiary amine group such as the polyamide which results from the reaction of diethylene triamine with isopthalic acid.

3,640,842
PROCESS FOR MAKING PAPER USING STARCH HAVING AN INCREASED GEL STRENGTH

Clifford H. Hullinger, Chicago, Ill.; Lawrence Cohen, Hammond, Ind., and Naoyuki Henry Yui, Chicago, Ill., assignors to American Maize Products Company

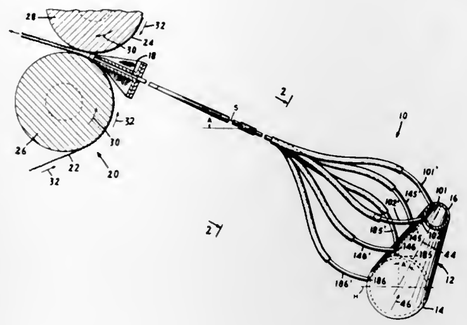
Filed May 14, 1969, Ser. No. 824,681
Int. Cl. D21h *3/28*
U.S. Cl. 162—175 **3 Claims**

Starch is prepared especially for use in the manufacture of paper products by cooking the starch in the presence of aluminum salts at a pH of about 4.0 to 7.0. The treatment is of advantage for lowering the gelatinization temperature of the starch and for increasing the gel strength of the resulting paste. When the treated starch is added to paper pulp it increases the retention of additives and it improves the physical characteristics of the paper product.

3,640,843
TAPERED HEADER FLOW SYSTEM FOR PAPER MACHINE

John A. Means, South Norwalk, Conn., assignor to Time, Incorporated, Rockefeller Center, New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 816,894
Int. Cl. D21f *1/06*
U.S. Cl. 162—343 **7 Claims**

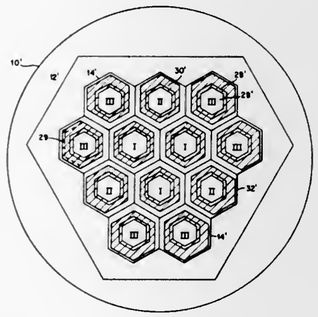


Paper stock enters a tapered header at the large end and, except for a small percentage that is recirculated, is delivered to a papermaking machine through a large number of flow channels or hoses divided into two groups. The hoses of one group are connected to the header along a first row of openings, and the hoses of the second group are connected to the header along a second row of openings. The openings are spaced apart from each other both circumferentially and longitudinally of the header. The downstream ends of all the hoses lie in a single plane, and the hoses of the two groups lie respectively in surfaces curved concavely towards each other.

3,640,844
POWER-FLATTENED SEED-BLANKET REACTOR CORE

Richard C. Shank, Clairton; Carl E. Zucker; David H. Jones; Harry F. Raab, Jr., all of Pittsburgh, and Robert T. Bayard, Bethel Park, all of Pa., assignors to The United States of America as represented by the U.S. Atomic Energy Commission

Filed Nov. 7, 1969, Ser. No. 874,735
Int. Cl. G21c *1/06*
U.S. Cl. 176—18 **4 Claims**



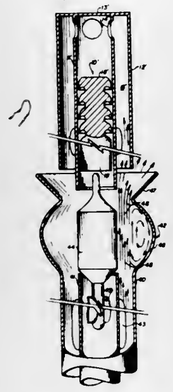
A seed-blanket breeder reactor core having a flattened power density distribution resulting from selective loading of fissile material in the reactor core to achieve a desired radial reactivity distribution. The seed geometry of fuel modules

near the periphery of the core is altered so that their reactivity worth is greater than centrally located fuel modules. The increased reactivity of the peripheral modules causes the gross power distribution in the core to flatten.

3,640,845
DYNAMIC SEAL

Charles C. Ripley, San Jose, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 9, 1968, Ser. No. 743,382
Int. Cl. G21c *7/16*
U.S. Cl. 176—36 **3 Claims**



A control rod drive system comprising basically a neutron absorbing control rod means defining a free floating piston, actuated by liquid sodium or other reactor coolant, a dynamic seal means and fluid valve means for moving said control rod. Said dynamic seal means constructed to prevent bypass of liquid metal, such as sodium, around the piston, and including a plurality of serially disposed skirts circumferentially arranged about the piston an sleeve and having lips directed toward the high-pressure end of the piston or sleeve, and also including circumferentially disposed toroidal grooves in the piston or sleeve between each of said skirts, whereby liquid metal from said high-pressure end is deflected by said lips of said skirts to circulate in said grooves and thus prevented from passing freely around said lips. In addition, any solid particles in the liquid metal are entrapped by the circulation in the grooves of the seal means.

3,640,846
PRODUCTION OF METHANE BY BACTERIAL ACTION

Glenn E. Johnson, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior

Filed Apr. 29, 1969, Ser. No. 820,328
Int. Cl. C12d *3/10*; C02c *1/14*
U.S. Cl. 195—27 **1 Claim**

A mixture of coal and sewage solids is digested by anaerobic bacteria to produce methane.

3,640,847
PROCEDURE FOR PRODUCTION OF ALPHA-CYCLODEXTRIN

Frederick Carl Armbruster, La Grange, and William Arthur Jacaway, Jr., Downers Grove, both of Ill., assignors to CPC International Inc.

Filed Feb. 19, 1969, Ser. No. 800,766
Int. Cl. C12d *13/04*
U.S. Cl. 195—31 R **11 Claims**

A process for producing alpha-cyclodextrin which comprises subjecting a gelatinized solution of starch to the action of a cyclodextrin transglycosylase enzyme in the presence of an alpha-cyclodextrin complexant and recovering an alpha-cyclodextrin product. A specific class of suitable alpha-cyclodextrin complexants usable in practicing the invention is that class of compounds which contain a saturated or unsaturated aliphatic radical with a longest straight chain carbon skeleton at least eight carbon atoms in length bonded at one end of said longest straight chain to an electronegative atom at least as electronegative as sulfur.

3,640,848
MICROBIAL REDUCTION OF Δ STEROIDS

Hendrik Eyssen, Holsbeek, Belgium, assignor to Recherche et Industrie Therapeutiques, R.I.T., Genval, Belgium

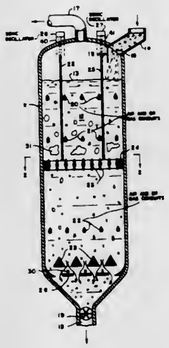
Filed Nov. 26, 1969, Ser. No. 880,400
Claims priority, application Great Britain, Sept. 12, 1969, 45,217/69
Int. Cl. C07c *167/12*
U.S. Cl. 195—51 R **8 Claims**

Δ^5-Steroids are reduced to the corresponding 5,6-dihydro-5β compounds in very high yield by using the organism Eubacterium nova. Among the products are coprosterol, 24-methyl-5β-cholestan-3β-ol, and 24-ethyl-5β-cholestan-3β ol.

3,640,849
SPENT SHALE RETORT WITH SONIC OSCILLATOR CLINKER CUTTER

Richard P. Trainer, Babylon, N.Y., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,634
Int. Cl. C10b *1/04*
U.S. Cl. 196—124 **3 Claims**



Vibrating grates are placed in the path of oil shale in the chamber of a retort vessel to breakup clinkers formed in the retorting process.

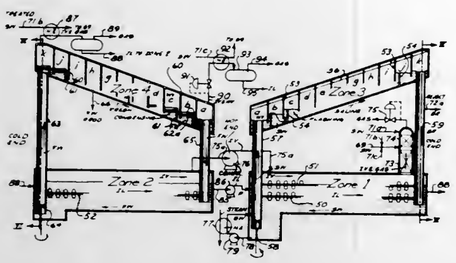
3,640,850
MULTISTAGE VAPOR-LIQUID CONTACT PROCESS FOR PRODUCING FRESH WATER FROM SALT WATER

Calvin S. Smith, Jr., El Cerrito, Calif., assignor to Harrison W. Sigworth, Orinda and Thomas N. Finical, Jr., San Carlos, Calif., part interest to each

Filed Mar. 16, 1970, Ser. No. 19,592
Int. Cl. B01d *3/00, 3/02*
U.S. Cl. 203—11 **12 Claims**

The invention is an improvement in distillation process for producing fresh water from salt water. The primary heat exchange is obtained by vaporizing a water immiscible fluid (such as a hydrocarbon) which boils at a temperature lower than water which is then recondensed by direct contact. Sub-

stantial simplification of plant, maintenance, etc. results. The invention is applicable generally to aqueous solutions of non-



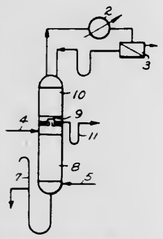
volatile solutes, and to nonaqueous solutions of nonvolatile solutes.

3,640,851

PURIFICATION OF DEHYDROLINALOOL BY FRACTIONAL DISTILLATION AND WATER WASHING

Emile Mourier, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Original application Jan. 30, 1969, Ser. No. 795,256. Divided and this application Apr. 25, 1969, Ser. No. 835,847
Claims priority, application France, Jan. 31, 1968, 138158
Int. Cl. B01d *3/38;* **C07c**
U.S. Cl. 203—42 **3 Claims**



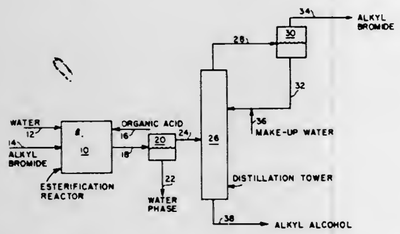
Acetylenic alcohols especially dehydrolinalool are produced by reaction of a ketone with acetylene in N-methylpyrrolidone in the presence of sodium hydroxide. The resulting mixture of dehydrolinalool and N-methylpyrrolidone is preferably separated by distillation through a column and washing the vapors with water.

3,640,852

SEPARATION OF ALKYL BROMIDES FROM THE CORRESPONDING CARBON NUMBER ALCOHOL BY DISTILLATION WITH WATER

Barrett L. Cupples, Plum Boro, and Clarence R. Murphy, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 23, 1970, Ser. No. 21,829
Int. Cl. B01d *3/34;* **C07c** *19/00*
U.S. Cl. 203—96 **9 Claims**



An alkyl bromide having from six to 12 carbon atoms per molecule is separated from an alkyl alcohol having the same number of carbon atoms per molecule by distillation in the presence of water.

3,640,853

ADHESION OF NONCONDUCTING AND CONDUCTING MATERIALS

Robert J. Ryan, Trenton, N.J., assignor to RCA Corporation

Filed Dec. 27, 1968, Ser. No. 787,342
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **10 Claims**

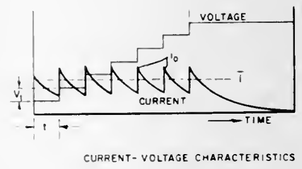
An improved metal-to-substrate bond is attained by applying a resinous adhesive mixture to the surface of a nonconducting substrate, the mixture having finely divided particles dispersed therethrough. The particles are thereafter removed from the mixture to provide a microporous tortuous structure upon the substrates. Subsequently deposited metals are keyed into and upon the microporous structural layer to result in greatly improved peel strengths.

3,640,854

CONTINUOUS FORMING OF METAL OXIDES

Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Dec. 10, 1969, Ser. No. 883,887
Int. Cl. C23b *9/00;* **B01k** *3/00*
U.S. Cl. 204—28 **9 Claims**



CURRENT- VOLTAGE CHARACTERISTICS

A method is disclosed for the continuous forming of metal oxides, for example, film forming (i.e. tantalum) strip, by passing the metal through electrolyte jets in contact with counterelectrodes which provide for stepwise increases in the formation voltage.

3,640,855

C-ALKYLOXY SUBSTITUTED TERT.-BUTYL AMINE AS LUBRICATING OIL DETERGENT

Nicolaas Bakker, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 6, 1968, Ser. No. 758,123
Int. Cl. C10m *1/38, 1/32, 1/20*
U.S. Cl. 252—32.7 **5 Claims**

Tert.-butyl amines having an alkyl group of at least 10 carbon atoms bonded through a heteroatom to carbon find use as detergents in lubricating oils.

3,640,856

POLYBUTENE CONTAINING SOLUBLE OILS

Sven A. Olund, San Rafael, Calif., assignor to Cheveron Research Company, San Francisco, Calif.

Filed Jan. 27, 1969, Ser. No. 794,368
Int. Cl. C10m *1/40, 3/18*
U.S. Cl. 252—33.2 **7 Claims**

Soluble oils are disclosed which contain, as the principal component, polybutene of 200–500 molecular weight. Also present are an organic dispersant and a C_{18} straight-chain carboxylic acid salt.

3,640,857

EXTREME PRESSURE LUBRICANTS CONTAINING DIALKYL 1,2,2,2-TETRAHALOETHYL PHOSPHATES

John A. Schneider, and John B. Moran, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 24, 1969, Ser. No. 844,661
Int. Cl. C10m *1/46*
U.S. Cl. 252—49.9 **5 Claims**

Lubricating oils containing a small but effective amount of a dialkyl 1,2,2,2-tetrahaloethyl phosphate have been discovered to have excellent extreme pressure characteristics.

3,640,858

DUAL PURPOSE LUBRICATING COMPOSITIONS

Stephen J. Harr, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 14, 1968, Ser. No. 775,917
Int. Cl. C10m *7/44*
U.S. Cl. 252—49.8 **12 Claims**

This invention concerns dual-purpose packing compositions compatible with synthetic and natural lubricating oils comprising from about 30 to 50 parts by weight of a microcrystalline wax having a melting point about 50°–75° C. admixed with about 70 to 50 parts by weight of an aliphatic ester component derived from the esterification of aliphatic alcohols, diols and polyols or their ethers by aliphatic mono- or dicarboxylic acids. The packing compositions can contain from about 0.5 to 5 parts by weight of one or more extreme pressure or load bearing additives.

3,640,859

GREASE COMPOSITIONS

Joseph F. Messina, Delaware, and Henry Gisser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 24, 1969, Ser. No. 860,801
Int. Cl. C10m *7/28*
U.S. Cl. 252—54 **4 Claims**

Stable grease compositions having excellent extreme pressure properties, among other, the grease consisting of about 68–73.5 weight percent bis(m-phenoxyphenyl) ether having a pour point of +4.5° C., balance being tetrafluoroethylene polymer having a molecular weight 10,000–50,000, softening point 321.1° C., particle size less than 30 microns in diameter, and supplied as a 7.5 percent suspension is trichlorotrifluoroethane.

3,640,860

LUBRICATNG COMPOSITION AND METHOD FOR TREATING METAL-MOLD INTERFACE IN CONTINUOUS CASTING OPERATION

Virgil A. Miller, Park Forest, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed June 2, 1969, Ser. No. 829,715
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 **16 Claims**

A lubricating composition is prepared suitable for lubricating the interface of liquid metal and mold during the continuous casting of metals. This lubricating composition contains both the dimer and trimer of an unsaturated fatty acid, a glyceride oil, e.g., triglyceride, as a solubilizing agent, and a mineral lubricating oil having a low-carbon residue and low-aromatic carbon content which can be prepared by a two-stage catalytic hydrogenation process.

3,640,861

PROCESS OF MAKING TONER

Shwang Hsia, New City, N.Y., assignor to Frye Industries Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,374
Int. Cl. G03g *9/24*
U.S. Cl. 252—62.1 **5 Claims**

A process for producing solid electrostatic toner wherein pigment is milled into a molten resin while the resin contains a gas dispersed therethrough, cooling the resin to form a friable solid and comminuting said solid to toner particle size.

3,640,862

LIQUID CATIONIC FLOTATION COMPOSITION

Elmer William Gieseke, Latrobe, Pa., and Frank Peterson Howald, Salt Lake City, Utah, assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1968, Ser. No. 751,024
Int. Cl. B03d *1/02*
U.S. Cl. 252—61 **3 Claims**

A liquid, temperature-stable, cationic ore concentration flotation composition prepared from an aliphatic alcohol and the reaction product of a fatty acid, diethylene triamine, and glacial acetic acid.

3,640,863

LIQUID ELECTROSTATIC HAVING PIGMENT PARTICLES COATED WITH A CYCLIZED RUBBER

Zenjiro Okuno; Akinori Mizuno, and Ikuyo Kondoh, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 28, 1969, Ser. No. 828,784
Claims priority, application Japan, June 5, 1968, 43/38516
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **5 Claims**

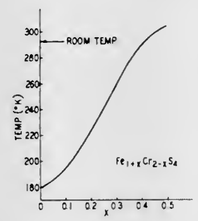
A liquid developer for use in developing an electrostatic latent image formed on an electrostatic recording material or an electrophotographic copying material which is prepared by dispersing, in a suitable carrier liquid, a toner consisting substantially of pigment particles whose surfaces are coated with a coating agent selected from the group consisting of cyclized rubber, a resin containing cyclized rubber, and a resin combining a resin having a high solubility for said carrier liquid and a resin having a low solubility for said carrier liquid.

3,640,864

FERRIMAGNETIC SEMICONDUCTING MATERIAL AND DEVICES MADE THEREFROM

Murray Robbins, Berkeley Heights, and Raymond Wolfe, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 18, 1969, Ser. No. 877,748
Int. Cl. C04b *35/00;* **H01b** *1/06*
U.S. Cl. 252—62.3 V **3 Claims**



This discovery of a system of materials exhibiting ferrimagnetic and semiconducting properties at room temperature,

makes possible the development of classes of devices not previously realizable in the absence of refrigeration. These materials in polycrystalline and single-crystal form find application in such devices as optically modulated magnetic devices, microwave amplifiers with built-in isolation and memory elements with built-in gain.

3,640,865
NEW FERROELECTRIC MATERIALS AND PROCESS OF PREPARATION
Gerald Burns, Yorktown Heights; Edward A. Giess, Somers, and Daniel F. O'Kane, Katonah, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of application Ser. No. 821,779, May 5, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 753,823, July 15, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 694,916, Jan. 2, 1968, now abandoned. This application Apr. 9, 1970, Ser. No. 27,111
Int. Cl. C04b *35/00, 35/60*
U.S. Cl. 252—62.9 27 Claims

New transparent ferroelectric compositions have been prepared having a tetragonal tungsten-bronze-type crystallographic structure and having the formula $x(ANbO_3) \cdot (1\text{-}x)MNb_2O_6$ where A is at least one alkali metal ion and M is an alkaline earth metal ion and where x can be from 0.12 to 0.50. These materials have large dielectric constants, (ϵ), and linear electro-optic coefficients (r), at room temperature. The value of r is significantly larger than that of $LiNbO_3$. These materials have great potential as light modulators and deflectors.

3,640,866
PIEZOELECTRIC CERAMIC COMPOSITIONS
Masamitsu Nishida, Osaka-shi, and Hiromu Ouchi, Toyonaka-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Aug. 21, 1967, Ser. No. 662,037
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 2 Claims

Piezoelectric ceramic compositions are provided which are characterized by high stability with temperature and time in resonant frequency and by high electromechanical coupling coefficients and high dielectric constants or by high electromechanical coupling coefficients and high mechanical quality factors. These ceramic compositions are ternary systems, in solid solution form, of the type formula

$$Pb(Mn_{1/3}Nb_{2/3})O_3 - PbTiO_3 - PbZrO_3.$$

Optimal ternary compounds are within the area ABCD of FIG. 2 of the accompanying drawings; very best compounds are defined by ABE. An especially good material consists of the solid solution of the formula

$$Pb(Mn_{1/3}Nb_{2/3})_{0.250}Ti_{0.430}Zr_{0.320}O_3.$$

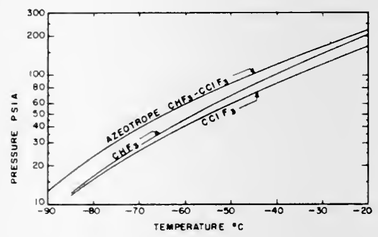
3,640,867
LITHIUM-ZINC FERRITE COMPOSITION WITH ARSENIC OXIDE OR BISMUTH OXIDE ADDITIVE
Tsutomu Iimura, Hachioji-shi; Susumu Kurokawa, Mobara-shi, and Masayuki Emoto, Kodaira-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 7, 1969, Ser. No. 822,366
Claims priority, application Japan, May 10, 1968, 43/30903
Int. Cl. C04b *35/26*
U.S. Cl. 252—62.61 8 Claims

A lithium-zinc ferrite composition most suitable for use as magnetic memory cores in high-speed electronic computer, which consists of 10 to 30 mol percent of Li_20, 3.5 to 20 mol percent of Zn0 and 70 to 85 mol percent of Fe_20_3 as the main components; and in addition at least one metal oxide selected from the group consisting of vanadium oxide, arsenic oxide and bismuth oxide as subcomponents, the content of the metal oxide being 0.01 to 1 percent by weight with respect to the main components.

3,640,868
ELECTRICAL INSULATING OIL
Albert G. Rocchini, Oakmont, and Charles E. Trautman, Cheswick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Apr. 1, 1970, Ser. No. 24,838
Int. Cl. H01b *3/22*
U.S. Cl. 252—63 10 Claims

The invention relates to an electrical insulating oil, resistant to oxidation and sludging, which consists essentially of a blend of about 1 to about 25 percent by volume of a solvent-extracted residue of a naphthenic petroleum distillate oil and about 75 to about 99 percent by volume of a hydrogenated naphthenic petroleum distillate oil. The solvent-extracted residue is obtained by contacting a naphthenic petroleum distillate oil with a solvent such as furfural or nitrobenzene. The hydrogenated naphthenic petroleum distillate oil is obtained by contacting a naphthenic petroleum distillate oil with hydrogen in the presence of a catalyst such as, for example, sulfides or oxides of molybdenum and at least two iron group metals.

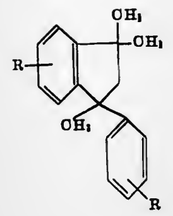
3,640,869
FLUOROCARBON COMPOSITIONS
Sabatino R. Orfeo, Morris Plains, and Kevin P. Murphy, Bernardsville, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 18, 1964, Ser. No. 397,407
Int. Cl. C09k *3/02*
U.S. Cl. 252—67 4 Claims



1. The process of producing refrigeration which comprises condensing a mixture consisting of trifluoromethane and monochlorotrifluoromethane, in which mixture the mole percent of trifluoromethane is in the range of about 20–75, and thereafter evaporating said mixture in the vicinity of a body to be cooled.

3,640,870
LUBRICANT COMPOSITIONS COMPRISING SUBSTITUTED INDANS
Robert M. Gemmill, Jr., Woodbury, and John W. Schick, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation
Filed June 24, 1969, Ser. No. 836,161
Int. Cl. C10m *1/16, 1/38, 1/20*
U.S. Cl. 252—59 5 Claims

Lubricant compositions are provided comprising a substituted indan having the structure:



in which R is at least one member of the group consisting of hydrogen, alkyl, phenyl, carboxy alkyl, carboxy phenyl, phenoxy and their thiosubstituted derivatives. The method for the preparation of these substituted indans is also provided.

3,640,871
TELLURIUM-IRON MODIFIED CHROMIUM DIOXIDES
Tadashi Kawamata; Eiichi Hirota; Toshihiro Mihara, and Yukio Terada, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 22, 1970, Ser. No. 83,167
Claims priority, application Japan, Oct. 27, 1969, 44/86295; Oct. 29, 1969, 44/87042
Int. Cl. C04b *35/12*
U.S. Cl. 252—62.51 4 Claims

Tellurium-iron modified chromium dioxide having a higher magnetic coercive force is obtained by a combined addition of tellurium and iron.

When said magnetic recording powder consists essentially of 20 to 99.98 atomic percent of chromium, 0.01 to 20 atomic percent of tellurium and 0.01 to 60 atomic percent of iron, the intrinsic coercive force is higher than 400 Oersteds. The coercive force of tellurium-iron modified chromium dioxide is increased by further addition of 0.1 to 15 atomic percent of tin.

These ferromagnetic chromium dioxide powders have high coercive force and saturation magnetization. Each particle of the powders is in a uniform acicular shape and is useful in magnetic recording media.

3,640,872
AUTOMATIC TRANSMISSION FLUID
Morris A. Wiley, Fishkill; Roger G. Lacoste, Hopewell Junction; Clemence J. Henry, Newburgh, and James O. Waldbillig, Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Oct. 25, 1968, Ser. No. 770,803
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 7 Claims

Automatic transmission fluid comprising a mineral lubricating oil, a zinc di-(alkylphenoxyalkoxyalkyl) dithiophosphate, a nitrogen-containing methacrylate polymer, a polyethylene polyamine-alkenyl succinic anhydride reaction product, an aryl-substituted naphthylamine and an N-acyl sarcosine, and a method of operating an automatic transmission.

3,640,873
CORROSION INHIBITOR SYSTEM FOR FUNCTIONAL FLUIDS
Lowell R. Avery, and Wayne A. Conklin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 22, 1969, Ser. No. 793,177
Int. Cl. C09k *3/00*; C23f *11/16*
U.S. Cl. 252—78 6 Claims

The SAE corrosion specifications and other SAE specifications for functional fluids are met by the use of an effective amount of an inhibitor system consisting essentially of:

0—81.4%	n-Dodecyldimethylamine
0—81.4%	t-Butylamine
16.6—98%	Phosphite ester of an alkylated phenol
1.8—83%	Polymerized trimethyl dihydroquinoline
0.2—9.4%	Benzotriazole

by weight.

3,640,874
BLEACHING AND DETERGENT COMPOSITIONS
Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed May 28, 1969, Ser. No. 828,782
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 15 Claims

Bleaching and detergent compositions comprising a water-soluble peroxide compound and an activator comprising an N-benzoylimidazole.

3,640,875
PROCESS FOR PREPARING A LIGHT DENSITY BLEACH COMPOSITION
Fred K. Rubin, Bronx, N.Y., and Carl J. Carmack, Ridgewood, N.J., assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,457
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 8 Claims

This disclosure is concerned with a light density bleach composition in which a chlorinating agent is distributed uniformly throughout a spray-dried base. This disclosure is also concerned with a process for preparing this composition.

3,640,876
PEROXYGEN COMPOSITION CONTAINING AN ALKALI METAL SILICATE AND AN ORGANIC ACID ANHYDRIDE
Faye J. Donaghu, Buena Park, Calif., assignor to Kerr McGee Chemical Corp.
Filed Sept. 23, 1968, Ser. No. 761,708
Int. Cl. C01b *15/00*; C11d *7/14, 7/54*
U.S. Cl. 252—99 14 Claims

A method of increasing the oxidation potential of a water-soluble inorganic peroxy compound which is capable of forming hydrogen peroxide in an aqueous medium which comprises incorporating with said peroxy compound in said aqueous medium a water-soluble alkali metal silicate and an organic acid anhydride which is capable of reacting with said peroxy compound in said aqueous medium to form a peroxyacid of said acid anhydride. The combination of at least one alkali metal silicate and at least one organic acid anhydride with at least one inorganic peroxy compound provides a composition which interacts synergistically in an aqueous medium to provide active oxidative species of unexpectedly high oxidation potential. The oxidizing solution thus produced is an effective oxidative bleaching solution even at relatively mild temperatures.

3,640,877
DETERGENT
Michael R. R. Gobert, 1 bis, Rue de la Sabliere, 92 Courbevole, France
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,196
Int. Cl. C11d *7/18*
U.S. Cl. 252—99 10 Claims

Detergent preparation containing system of glucose and glucose oxidase or starch, amyloglucosidase and glucose oxidase as precursor of hydrogen peroxide and a hydroxylamine which stabilizes the hydrogen peroxide formed during use of the detergent.

3,640,878
ALKALINE DETERGENT COMPOSITION
William Chirash, New Providence, and Richard Lerda Burke, Madison, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed May 29, 1969, Ser. No. 829,115
Int. Cl. C11d 7/56
U.S. Cl. 252—99 8 Claims

A dishwashing detergent composition containing sodium silicate, pentasodium tripolyphosphate and sodium fluosilicate. The latter acts to protect the overglaze patterns of fine china. Other alkali metal silicates, phosphates, carbonates, fluosilicates and chelates may be used. An antispotting agent, active oxygen, or chlorine bleaching agent (yielding hypochlorite chlorine) and an organic detergent may also be present.

3,640,879
CLEANING COMPOSITION AND METHOD OF USING SAME
Walter P. Fitzgerald, Jr., San Diego, Calif., assignor to LRC Research and Development Company, Wilmington, Del.
No Drawing. Filed May 28, 1969, Ser. No. 828,710
Int. Cl. C11d 7/54
U.S. Cl. 252—103 12 Claims

A cleaning composition especially suited for use in cleaning dental prosthetic devices comprising a mixture of lithium hypochlorite, a member selected from the group consisting of alkali metal pyrosulfate, alkali metal bisulfate and mixtures thereof, an alkali metal hydroxide and, preferably, a surface active agent.

3,640,880
HARD SURFACE CLEANER
John Robert Martin, Bebington, England, assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Nov. 8, 1968, Ser. No. 774,537
Claims priority, application Great Britain, Dec. 6, 1967, 55,415/67
Int. Cl. C11d 1/12
U.S. Cl. 252—55 9 Claims

A hard surface cleaning composition consisting essentially of a mixture of two olefin sulphonates, predominantly of 12 and 20 carbon chain length respectively, said mixture being the sole active or formulated in combination with anionic or nonionic surface active agents.

3,640,881
PROCEDURE FOR DRY CLEANING
Francis Selim Moussalli, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed July 24, 1968, Ser. No. 747,074
Int. Cl. C09d 9/04; C11d 7/52; C23g 5/02
U.S. Cl. 252—171 11 Claims

Dry cleaning compositions containing hydrophilic optical brightener and detergent material compatible therewith can be used in conventional coin-operated, professional and, preferably, industrial dry cleaning systems to simultaneously clean and brighten textile structures and particularly white garments containing a significant man-made fiber content.

3,640,882
SULFOSUCCINATE HALF ESTER LIME SOAP DISPERSING AGENTS
William L. Groves, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed May 1, 1969, Ser. No. 821,074
Int. Cl. C11d 1/12, 1/14, 9/46
U.S. Cl. 252—121 1 Claim

A soap bar having improved lime soap dispersing characteristics is provided which consists essentially of a water-soluble soap normally having poor lime soap dispersing characteristics and a lime soap curd dispersant. The lime soap curd dispersants are sulfosuccinate half esters prepared from ethoxylated alcohols. The amount of the lime soap dispersant being incorporated into the soap bar is between 10 and 50 percent by weight based on the total weight of solids present in the soap bar.

3,640,883
SKIN PROTECTIVE WASHING AND CLEANSING COMPOSITIONS
Ernst Gotte, Ratingen-Tiefenbroich, Germany, assignor to Henkel & Cie GmbH. Dusseldorf-Holthausen, Germany
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,921
Claims priority, application Germany, Dec. 14, 1967, H 64,776
Int. Cl. C11d 1/18, 1/38, 1/50
U.S. Cl. 252—545 4 Claims

Washing and cleansing compositions having a content of anionic surface-active agents and an effective amount of a skin protective polyamide having free amino groups, said polyamide being present in a form selected from the group consisting of the water-dispersible free amino group containing polyamides and water-soluble acid addition salts thereof and being the condensation product of 1 mol of an organic dicarboxylic acid having from 2 to 10 carbon atoms and free of other amine reacting substituents, and from 1 to 2 mols of a polyalkyleneamine of the formula

$$NH_2—(C_nH_{2n}—NH)_m—C_nH_{2n}—NH_2$$

wherein n represents an integer from 2 to 6 and m represents an integer from 1 to 10.

3,640,884
AZEOTROPIC CLEANING SOLVENTS BASED ON 1,1,2,2-TETRACHLORO-1,2-DIFLUOROETHANE
John Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,334
Int. Cl. C09d 9/00; C11d 7/52; C23g 5/02
U.S. Cl. 252—171 2 Claims

The disclosure relates to binary and ternary azeotropic mixtures of tetrachlorodifluoroethane. The binary azeotropes contain tetrachlorodifluoroethane as one component and either acetic acid, propionic acid, dioxane, monomethyl ether of ethylene glycol, ethyl acetate, isopropyl acetate or n-propyl acetate as the second components. The ternary azeotropes contain tetrachlorodifluoroethane as the first component, 1,2-dichloroethane as the second component and either methanol, ethanol or isopropanol as the third component. It has been discovered that these azeotropes may be used in solvent vapor cleaning and degreasing applications.

3,640,885
DRY, FREE FLOWING PEROXYGEN COMPOSITION WITH AN ORGANIC ACID ANHYDRIDE AND ALKALI METAL HYDRATE
Raymond C. Rhees, Whittier, Calif., assignor to Ken McGee Chemical Corporation
No Drawing. Filed Sept. 24, 1968, Ser. No. 762,151
Int. Cl. C01b 15/00
U.S. Cl. 252—186 34 Claims

A dry, stable non-segregating bleaching composition having a controllable, moderately low bulk density which comprises a mass of expanded, porous, water-soluble inorganic hydrate salt particles having at least one peroxygen compound bonded thereto. The peroxygen compound is bonded to the expanded, porous salt particles at moderately low temperatures under controlled moisture conditions.

3,640,886
TOLUENE DIISOCYANATE COMPOSITIONS
Moses Cenker, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Sept. 25, 1968, Ser. No. 762,629
Int. Cl. C07c 119/04
U.S. Cl. 252—182 6 Claims

A method of increasing the reactivity of organic isocyanates containing hydrolyzable chlorides which comprises mixing with the organic isocyanate a small amount of N,N-disubstituted carbamyl chloride.

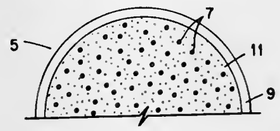
ERRATUM

For Class 252—301 see:
Patent No. 3,639,932

3,640,887
TRANSPARENT ZIRCONIA-, HAFNIA-, AND THORIA-RARE EARTH CERAMICS
Richard C. Anderson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
No Drawing. Continuation of application Ser. No. 582,519, Sept. 28, 1966. This application Apr. 6, 1970, Ser. No. 26,075
Int. Cl. C09k 3/00; C04b 33/00
U.S. Cl. 252—301.1 11 Claims

The manufacture of transparent polycrystalline ceramic bodies composed of oxides of thorium, zirconium, and hafnium and mixtures thereof with oxides of the rare earth elements 58 through 71 of the Periodic Table and mixtures thereof with or without yttria, wherein the ceramic body is in the cubic crystal system, the average ionic radius of the rare earth oxide with or without the yttria is no greater than about 0.93 A., and the difference in ionic sizes of the oxides is no greater than about 0.22 A. is disclosed.

3,640,888
CALIFORNIUM-252 NEUTRON SOURCE AND METHOD OF MAKING SAME
Russell D. Baybarz and Joseph R. Peterson, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 11, 1969, Ser. No. 884,089
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 R 3 Claims



A radiation source has been provided which is free of radioactive surface contamination comprising a solid quartz bead containing a spontaneously fissionable element distributed substantially evenly within the confines of an outer glass shell. A method has been provided for preparing the source comprising sorbing a spontaneously fissionable element on quartz powder in a quartz capillary and subsequently fusing the powder and capillary to contain the neutron-emitting material.

3,640,889
FLUORESCENT SKIN-MARKING COMPOSITION
Dair J. Stewart, Madison, Wis., assignor to Mautz Paint & Varnish Company, Madison, Wis.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,989
Int. Cl. C09d 5/22; F21k 2/00
U.S. Cl. 252—301.2 R 10 Claims

A normally liquid, ultraviolet light-sensitive skin marking composition is disclosed as being useful for marking the skin of animals or humans, for instance to indicate areas on a patient's skin which are to be subjected to radiation therapy, for example for the treatment of cancer. The mark left by the composition is invisible in visible light but fluoresces under ultraviolet light. The composition consists essentially of polyvinyl acetate, a water-immiscible fluorescent brightening agent of the aminocoumarin type, organic solvent, and, optionally, water.

3,640,890
LITHIA SILICA GLASS LASER CONTAINING VARIOUS OTHER ALKALI OXIDES
Haynes A. Lee, Jr., Sylvania, and Charles F. Rapp, Toledo, Ohio, assignors to Owens-Illinois, Inc.
No Drawing. Continuation-in-part of application Ser. No. 595,000, Nov. 15, 1966. This application June 6, 1969, Ser. No. 831,256
The portion of the term of the patent subsequent to Oct. 7, 1986, has been disclaimed
Int. Cl. C09k 1/54; H01s 3/16
U.S. Cl. 252—301.4 12 Claims

Glass lasers made from glasses containing the following ingredients in mole percent:

Ingredient:	Mole percent
SiO_2	45 to 75
Al_2O_3	0 to 10
Li_2O	18 to 35

and wherein at least one additional alkali metal oxide selected from the group consisting of Na_2O, K_2O, Rb_2O, Cs_2O and mixtures is present in an amount of from 0.5 to 10 mole percent. Alkaline earth oxides such as BeO, MgO, SrO, BaO, CaO and mixtures thereof may also be present. Neodymium oxide is the laseable substance incorporated into the glasses. The glass lasers exhibit improved efficiency and have longer decay times and accommodate larger concentrations of neodymium than were present heretofore.

3,640,891
LITHIA-SILICA GLASS LASER CONTAINING VARIOUS ALKALINE EARTH OXIDES
Haynes A. Lee, Jr., Sylvania, and Charles F. Rapp, Toledo, Ohio, assignors to Owens-Illinois, Inc.
No Drawing. Continuation-in-part of application Ser. No. 595,000, Nov. 17, 1966. This application June 6, 1969, Ser. No. 831,257
The portion of the term of the patent subsequent to Oct. 7, 1986, has been disclaimed
Int. Cl. C09k 1/54; H01s 3/16
U.S. Cl. 252—301.4 21 Claims

Glass laser compositions based on the lithia-silica glass system containing as selected alkaline earths MgO, BeO, SrO, BaO, mixtures thereof, and mixtures containing CaO. These glasses are employed as hosts for neodymium oxide, Nd_2O_3, as the laseable substance. Good efficiencies can be obtained thereby.

3,640,892
ENCAPSULATION PROCESS AND ITS PRODUCT
Antoinette M. Purcell, Cranbury, N.J., assignor to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed June 24, 1969, Ser. No. 836,148
Int. Cl. B01j 13/02; B44d 1/02
U.S. Cl. 252—316 9 Claims

A process is provided for manufacturing minute capsules, en masse, in a liquid manufacturing vehicle, which capsules have walls of a substantially homogeneous solid solution of at least two polymeric materials. The novel process includes a liquid-liquid phase separation which is accomplished by heating a solution of two polymeric materials in an organic solvent. The polymeric materials comprise polymeric capsule wall material, viz,

halogenated rubber, and polymeric liquid-liquid phase-separation-inducing material, viz, poly(ethylene-co-vinyl acetate) or poly(vinylmethyl ether), which dissolve together as a single phase in the manufacturing vehicle below a certain phase separation temperature and which exist, above the phase separation temperature, as separated components of two liquid phases.

3,640,893
ANTI-FOAM OIL
Alan David Forbes, Woking, and Neville John Hunter, Walton-on-Thames, England, assignors to The British Petroleum Company Limited, London, England
Filed Oct. 28, 1969, Ser. No. 871,886
Claims priority, application Great Britain, Nov. 12, 1968, 53,568/68
Int. Cl. B01d *17/00*
U.S. Cl. 252—321 **5 Claims**

Disclosed is a composition for use in combating foam formation in aqueous systems comprised of a mineral base oil and 0.1 to 25% by weight of a fatty acid product resulting from the hydrolysis of a lipid extract obtained by solvent extraction of micro-organism culture grown on a hydrocarbon substrate.

3,640,894
COMPOSITIONS AND PROCESSES FOR BREAKING PETROLEUM EMULSIONS
Ronald G. Sampson, Huntington Beach, Calif., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed July 9, 1970, Ser. No. 53,709
Int. Cl. B01d *17/04*
U.S. Cl. 252—344 **10 Claims**

Compositions of matter and a process breaking water-in-oil petroleum emulsions therewith, which compositions comprise a substantially water-insoluble at least partially oil-soluble product formed by the combination of (a) a diisocyanate and a polyoxyalkylated compound and (b) polyoxyalkylated alkyl phenolformaldehyde polycondensates is disclosed.

3,640,895
INHIBITION OF CORROSION USING ALKYL ARYL KETONES
Zisis Andrew Foroulis, East Orange, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed July 2, 1968, Ser. No. 741,869
Int. Cl. C23f *11/04, 11/12*
U.S. Cl. 252—396 **15 Claims**

Corrosion of metals by aqueous acidic solutions in a non-oxidizing atmosphere is markedly inhibited by the presence of a lower alkyl aryl ketone. A particularly effective inhibitor of this type is methyl beta-naphthyl ketone. Corrosion of chemical and petroleum process equipment handling hydrocarbon streams containing acidic gases and water vapor is minimized by the presence of the corrosion inhibitor of this invention.

3,640,896
PROCESS FOR STABILIZING FOWL RED BLOOD CELLS
Anthony J. De Casperis, Elmhurst, N.Y., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 802,263, Feb. 25, 1969. This application Apr. 13, 1970, Ser. No. 28,058
Int. Cl. A61k *27/10;* **G01n** *33/16*
U.S. Cl. 252—408 **1 Claim**

A diagnostic composition serving as a multiple-analysis hematology reference control for red blood cell and white blood cell counting, hemoglobin content and hematocrit determination.

3,640,897
ACRYLAMIDE POLYMERS AS FLOCCULANTS IN RECOVERY OF NICKEL CATALYSTS
Alfred J. Restaino, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,495
Int. Cl. B01j *11/02, 11/30*
U.S. Cl. 252—412 **1 Claim**

An improved process for the recovery and production of supported nickel hydrogenation catalyst is disclosed. The improvement being in the washing and filtration step of the recovery of the nickel and precipitation of same on the support; namely silica or carbon, to form the unactivated "green catalyst" of the process.

3,640,898
RHODIUM BASED CATALYSTS FOR THE SYNTHESIS OF 1,4-DIENES
Aaron Chung Liong Su, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 11, 1969, Ser. No. 815,486
Int. Cl. C07c *11/12*
U.S. Cl. 252—429 **12 Claims**

Improved catalysts are provided for the synthesis of 1,4-dienes from α-monoolefins and conjugated dienes. The catalysts are rhodium (III) salts in combination with amides, phosphoramides, phosphine oxides or water. The improved catalyst allow control of the trans-cis ratio of the 1,4-diene formed and are operable at useful rates in a wide range of solvent systems, both protonic and aprotic.

3,640,899
REACTION PRODUCT OF HYDROCARBYLMONOLITHIUM AND 1,3-BUTADIENE AS POLYMERIZATION INITIATOR
Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Jan. 30, 1969, Ser. No. 795,365
Int. Cl. C08d *3/06*
U.S. Cl. 252—431 R **3 Claims**

Sec- or tert-organomonolithium compounds are reacted with 1,3-butadiene in the absence of added polar material to produce a multifunctional polymerization initiator.

3,640,900
HEAT TREATED BISMUTH MOLYBDATE AND PHOSPHOMOLYBDATE-ON-TITANIA CATALYSTS
William McClellan, Kennett Square, Pa., and Alvin B. Stiles, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 6, 1969, Ser. No. 805,016
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **4 Claims**

A bismuth molybdate- or bismuth phosphomolybdate-on-titania catalyst is made by mixing a titania sol with compounds to give an aqueous slurry which produces, after drying and calcining, bismuth oxide, molybdenum oxide and optionally, silicon oxide and phosphorus oxide, in the desired proportions. A preferred method of preparing the catalyst is to add, prior to drying, ammonium carbonate, or aqueous ammonia, to the slurry until the pH is in the range of 5–7.5. Subsequently, the catalyst is dried and calcined at temperatures above 600° but below 700° C. The resulting catalyst has the formula:

$$Bi_aP_bMo_{12}(Ti_{1-x}Si_x)_cO_d$$

where a is equal to or greater than 4, b is 0 to 2, c is 6 to 80, d is $1.5a+2.5b+36+2c$ and x is 0 to 0.5.

The catalyst produced is useful in various oxidation reactions, e.g. methanol to formaldehyde.

3,640,901
OXIDATIVE CONVERSION CATALYST
Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,372
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **5 Claims**

A catalyst for oxidative conversion comprising a tin oxide-phosphate complex in combination with a non-porous silica catalyst support having an average ultimate particle diameter of less than 1 micron, a surface area within the range of about 1 to 1500 square meters per gram and a density of less than about 0.2 gram per cubic centimeter, the complex being prepared by impregnating the carrier with stannous sulfate, drying, contacting the impregnated carrier with phosphoric acid and calcining.

3,640,902
CATALYST FOR THE VAPOR-PHASE OXIDATION OF LOWER OLEFINS AND A PROCESS FOR PREPARING THE SAME
Hiroo Ito, Seiichi Nakamura, and Hidemu Inoue, Minato-ku, Japan, assignors to Toa Gosei Chemical Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,710
Claims priority, application Japan, Dec. 19, 1967, 42/80,940
Int. Cl. C07c *45/02*
U.S. Cl. 252—439 **26 Claims**

A catalyst for the vapor-phase oxidation of lower olefins is described and a process for preparing it by calcining the depositions from an aqueous solution of a water-soluble compound of tri-valent chrominum, a water-soluble compound of molybdenum, and a water-soluble compound of hexa-valent tellurium. Furthermore, the activity of the catalyst can be increased by the addition of cadmium, calcium, aluminum, cobalt, iron, or nickel. Special use is found in the oxidation of propylene to acrolein.

3,640,903
HYDROCARBON CONVERSION CATALYST AND METHOD OF MANUFACTURE
Lee Hilfman, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,932
Int. Cl. B01j *11/36, 11/40*
U.S. Cl. 252—451 **9 Claims**

A crystalline aluminosilicate is prepared dispersed in a silica matrix. The crystalline aluminosilicate-mother liquor slurry is admixed with an aqueous solution of a salt of a strong acid to precipitate substantially all of the residual alkali metal silicate contained therein as silica.

ERRATA

For Classes 252—455 and 252—456 see:
Patent Nos. 3,641,095 and 3,641,096

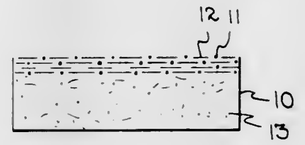
3,640.904
CATALYST COMPRISING LAYERED CRYSTALLINE CLAY-TYPE ALUMINOSILICATE COMPONENT, AND METHOD OF ACTIVATING SAID CATALYST
Sigmund M. Csicsery, Lafayette, Donald A. Hickson, Richmond, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,676
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R **4 Claims**

A hydrocarbon conversion catalyst comprising a layered crystalline clay-type aluminosilicate component and a hydrogenating component, said hydrogenating component preferably being selected from rhenium and compounds thereof and Group VIII metals and compounds thereof, said catalyst having an activity as developed therein by heating said catalyst in an oxygen-containing gas stream at 900° to 1150° F. for 0.5 to 20 hours, and the method of activating a catalyst having the indicated composition which comprises heating in the indicated manner.

3,640,905
CLINOPTILOLITE BLENDS WITH SHAPE-SELECTIVE CATALYST
Robert C. Wilson, Jr., Woodbury, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,827
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **5 Claims**

A method for the preparation of selective catalysts is disclosed which involves the blending of a crystalline aluminosilicate of the heulandite group with an aluminosilicate having an effective pore size of about 5 A. when the latter aluminosilicate is ion exchanged with cations to give it both an acidic function and a hydrogenation/dehydrogenation function. For reasons not completely understood, aluminosilicates of the heulandite group have a synergistic effect upon the 5 angstrom pore size aluminosilicate so that the resulting catalyst is more shape selective. Heulandite group aluminosilicates, i.e., heulandite, stilbite, epistilbite and clinoptilolite are bended with the 5 A. aluminosilicate in amounts ranging from about 20–80% by weight.

3,640,906
ELECTROCONDUCTIVE SINTERED GLASS
Gerald E. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 16, 1969, Ser. No. 833,593
Int. Cl. C03b *23/20;* **C03c** *15/00, 29/00*
U.S. Cl. 252—519 **5 Claims**



Novel, low expansion, electroconductive sintered glass article, suitable for making electronic components and the like.

3,640,907
SHAPED BODIES RESISTANT TO OXIDATION, PARTICULARLY ELECTRIC RESISTANCE ELEMENTS
Venanzio Bizzarri, Hallstahammar, Sweden, assignor to Aktiebolaget Kanthal, Hallstahammar, Sweden
No Drawing. Filed Feb. 27, 1969, Ser. No. 803,095
Int. Cl. C04b *35/50;* **H01b** *1/06*
U.S. Cl. 252—521 **7 Claims**

A dense shaped body which is resistant to oxidation and to temperatures in excess of 1700° C. is disclosed, consisting essentially of molybdenum silicide and having an oxide component of from about 1% to 12% based upon weight of the silicide, the oxide component containing about 1% to 10% thorium oxide by weight of the silicide, and a bonding means which is formed by sintering an alkali

clay of the montmorillonite group, the clay containing less than about 0.7% sodium by weight of the oxide component.

3,640,908
POLYMERIZATION OF EPOXIDES WITH DIHYDROCARBON ZINC PREREACTED WITH WATER
Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Original application Mar. 31, 1960, Ser. No. 18,862, now Patent No. 3,536,634, dated Oct. 27, 1970. Divided and this application Mar. 25, 1970, Ser. No. 22,691
Int. Cl. C08g *23/06, 23/14*
U.S. Cl. 260—2 A **6 Claims**

Oxiranes are polymerized using as the catalyst the product obtained by reacting a dihydrocarbon zinc compound, such as diethylzinc, with water in a molar ratio of water to zinc compound of from about 0.2:1 to about 1.2:1. Higher molecular weight polymers and/or higher yields of polymer are obtained than when the dihydrocarbon zinc compound is used without prereacting it with water.

3,640,909
SUBSTITUTED ACYLATED POLYIMINE RESINS
Giffin D. Jones, Midland, and Harold H. Roth, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 17, 1969, Ser. No. 799,987
Int. Cl. C08g *33/08*
U.S. Cl. 260—2 BP **9 Claims**

High molecular weight branched polyimine resins useful in paper manufacture are made by partially deacylating a linear N-acylated ethylenimine polymer by acid hydrolysis and reacting the product with a polyfunctional crosslinking agent such as an epihalohydrin or a diepoxide. Preferably, the acylated polymer is produced by polymerizing a 2-substituted oxazoline in the presence of a cationic catalyst.

3,640,910
ADVANCED ADDITION PRODUCTS CONTAINING TERMINAL EPOXIDE GROUPS
Daniel Porret, Binningen, Juergen Habermeier, Allschwil, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,868
Claims priority, application Switzerland, Apr. 10, 1968, 5,379/68; Aug. 2, 1968, 11,638/68
Int. Cl. C08g *30/00*
U.S. Cl. 260—2 EP **23 Claims**

New, so-called "advanced" adducts containing epoxide groups, from polyepoxide compounds containing on an average more than one epoxide group in the molecule and mononuclear, five- or six-membered, unsubstituted or substituted N-heterocyclic compounds whose molecule contains two endocyclic NH groups, and less than one equivalent NH group for every epoxide group equivalent of the polyepoxide compound, obtained by reaction of for example 2 mols of diomethanediglycidyl ether and 1 mol of 5,5-dimethylhydantoin. The epoxide resins "advanced" with the aid of such nitrogen compounds have a good storage stability in addition to excellent electrical properties.

3,640,911
PHENOLIC FOAM PROCESS
Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,726
Int. Cl. C08g *53/10*
U.S. Cl. 260—2.5 F **13 Claims**

Phenolic foams are produced containing a minor amount of an olefin epoxide as a catalyst promoter. The epoxides contain an oxirane group and are free of etheric oxygen. Illustrative thereof are isobutylene oxide, vinylcyclohexene dioxide, glycidol or 3,4-epoxycyclohexylmethyl 3,4-epoxycyclohexanecarboxylate.

3,640,912
MOLDING MATERIALS BASED ON ELASTOMERIC POLYMERS AND ORGANIC BINDERS WITH OR WITHOUT MINERAL FILLERS
Hans Reinhard, Limburgerhof, Rolf Petri, Frankenthal, and Wilhelm-Friedrich Beckerle, Worms, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,677
Claims priority, application Germany, Mar. 16, 1968, P 17 20 063.4
Int. Cl. C08d *9/04, 13/38*
U.S. Cl. 260—2.3 **14 Claims**

Molding materials based on 20 to 90% of elastomeric polymers, 5 to 30% of binder copolymers prepared from 20 to 80% of butadiene, 80 to 20% of styrene and/or acrylonitrile and 0 to 20% of other monomers and finely dispersed in water, 5 to 200% (with reference to the binder copolymers) of cement and/or slaked lime, 0.5 to 10% of air-drying oil and 0 to 50% of mineral fillers are particularly suitable for the production of playground and sportsground surfacings which are easy to look after.

3,640,913
PROCESS FOR HEATING POLYMERS WITH DIELECTRIC HEATING
Peter A. Cerra, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,203
Int. Cl. C08f *47/10*
U.S. Cl. 260—2.5 R **8 Claims**

Polymers are rapidly heated by an improved process wherein (1) a composition containing an organic polymer is blended with a zinc halide and (2) the resultant blend is heated by applying to it a high frequency alternating electric field. The improved process is particularly useful in preparing foamed polymers wherein a conventional blowing agent is incorporated into a blend of organic polymer and zinc halide and the blend is then dielectrically heated.

3,640,914
FLAME-RESISTANT FOAMED RESIN COMPOSITION
Masao Ogawa, Tokyo, Teruyuki Enjoji, Oita-ken, and Humio Arai, Kanagawa-ken, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,286
Int. Cl. C08f *29/22, 47/10*
U.S. Cl. 260—2.5 FP **5 Claims**

A foamed resin composition of a high flame resistance, which comprises a three-component resin of acrylonitrile/chlorinated polyethylene/styrene, and a small amount of diantimony trioxide.

3,640,915
PRODUCTION OF FOAMED POLYETHYLENE
Alfred Cooper, Sanderstead, England, assignor to Expanded Rubber & Plastics Ltd., Croydon, England
Continuation-in-part of application Ser. No. 476,679, Aug. 2, 1965. This application Oct. 17, 1968, Ser. No. 768,521
Int. Cl. C08f *27/00, 29/04, 47/10*
U.S. Cl. 260—2.5 R **10 Claims**

The present invention relates to a process for producing expanded polyethylene having a density of from 1 to 5 lbs./ft.³ comprising raising the melting point of ethylene polymer by subjecting the polymer to a cross-linking treatment equivalent to that produced by an irradiation dose of between 2 and 6 megarads and thereafter heating the cross-linked polymer to a temperature above the softening temperature in atmosphere of nitrogen at a pressure of 2,000 to 12,000 lbs. per square inch to impregnate the polymer with nitrogen and expanding the nitrogen-impregnated polymer by releasing the pressure thereon.

3,640,916
FOAM PRODUCING COMPOSITIONS
Douglas W. Dill, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,205
Int. Cl. C08f *15/40, 47/10, 47/16*
U.S. Cl. 260—2.5 L **11 Claims**

The disclosure relates to compositions and processes for forming cellular structures. The compositions comprise an emulsion of a synthetic organic polymer having a minimum film-forming temperature of less than about 25° C. and, dispersed in the emulsion, a volatile organic liquid which has a vapor pressure of at least about 2 p.s.i.a. at about 20° C.

3,640,917
CELLULAR PLASTICS OF EPOXY RESINS AND PROCESS FOR THEIR MANUFACTURE
Ernst Nölken, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,593
Claims priority, application Germany, Jan. 25, 1968, P 17 20 776.0
Int. Cl. C08g *53/10*
U.S. Cl. 260—2.5 **10 Claims**

A process for foaming and hardening an epoxy resin or mixtures thereof with a lactone or a cyclic ether under the action of inert readily volatile organic solvents as foaming agents and fluophosphoric acid or mixtures of fluophosphoric acid with other phosphorus compounds as hardeners.

3,640,918
PROCESS FOR THE MANUFACTURE OF FOAM MATERIALS CONTAINING PLASTICIZERS AND MADE OF POLYVINYL CHLORIDE AND COPOLYMERS OF VINYL CHLORIDE
Otto Fuchs, Oberlar, uber Troisdorf, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany
No Drawing. Filed Apr. 7, 1969, Ser. No. 815,263
Claims priority, application Germany, Apr. 8, 1968, P 17 69 127.9
Int. Cl. C08f *45/40, 47/08*
U.S. Cl. 260—2.5 P **9 Claims**

Improvements in forming plasticized vinyl chloride polymer foams by admixing vinyl chloride polymer plastisols with a substantially moisture-free wetting or dispersing agent at least partially dissolved in a fatty alcohol and then foaming such admixture with a substantially inert gas.

3,640,919
FOAMED POLY-1-BUTENE
Alfred Michels, Marl, and Josef Bittscheidt, Datteln, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed May 12, 1969, Ser. No. 823,541
Claims priority, application Germany, May 30, 1968, P 17 69 486.9
Int. Cl. C08f *29/02, 47/10*
U.S. Cl. 260—2.5 HA **4 Claims**

An improvement in the process of a foaming poly-1-butene by mixing it with a nitrogen liberating foaming agent, an organic peroxide with a decomposition temperature of at least 170° C., elementary sulfur and an organic compound containing a plurality of allyl groups.

3,640,920
RIGID, LOW-DENSITY, FILLED CELLULAR POLYURETHANES
Stanley Cear, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed May 21, 1969, Ser. No. 826,726
Int. Cl. C08g *22/44, 51/04*
U.S. Cl. 260—2.5 AK **9 Claims**

Rigid, low density polyurethane foam compositions are provided which have excellent freezer stability while retaining the insulative value, compression strength and other desirable physical properties characteristic of rigid polyurethane foams. The polyurethane foams contain from about 0.05% to about 0.5% by weight of a finely divided, solid, particulate, insoluble and non-reactive additive material such as is commonly used in foams as filler material.

3,640,921
FILAMENTARY POLYOLEFIN FOAM PRODUCT AND PROCESS OF MAKING THE SAME
Hans Eberle, Limburgerhof, and Gerhard Wuttke, Neuhofen, Germany, assignors to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Continuation-in-part of application Ser. No. 793,914, Jan. 24, 1969. This application Aug. 1, 1969, Ser. No. 847,536
Claims priority, application Germany, Jan. 27, 1968, P 16 94 357.0; Aug. 3, 1968, P 17 69 909.1
Int. Cl. C08f *29/12, 47/10;* **B29d** *27/00*
U.S. Cl. 260—2.5 E **18 Claims**

A filamentary product consists of a foamed polypropylene comprising (a) a major portion of a stereoregular propylene polymerizate having a relatively high molecular weight and (b) a minor portion of a heptane-soluble polymerizate of relatively low molecular weight.

The product is made by foaming and extruding a mixture of propylene polymers having a molecular weight above 600,000 and a liquid hydrocarbon having from 5 to 10 carbon atoms at a temperature between 170 and 220° C. whereupon the extruded body is immediately subjected to stretching without intermediate heating or compressing.

3,640,922
STABLE AQUEOUS DISPERSIONS
David P. Sheetz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 3, 1969, Ser. No. 813,333
Int. Cl. C08d *7/18;* **C08f** *47/16*
U.S. Cl. 260—4 R **16 Claims**

Aqueous colloidal dispersions having improved stability are prepared by adsorbing a polymerizable surfactant, such as sodium allyl α-sulfopalmitate, on the surface of particles dispersed in aqueous media, such as in a preformed latex, and polymerizing in place the adsorbed surfactant. Ordinarily an amount of polymerizable surfactant to provide from about 50 percent to about 100 percent coverage of the particles is used.

3,640,923
POLYENES CURED WITH POLYTHIOLS WITH IRON COMPOUNDS AND OXIME ESTERS AS ACCELERATORS
James L. Guthrie, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Nov. 12, 1968, Ser. No. 775,198
Int. Cl. C08b *21/08;* **C08f** *27/06*
U.S. Cl. 260—13 **22 Claims**

This invention relates to accelerated curing under ambient conditions of a liquid composition comprising a

polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than four, in the presence of a curing rate accelerator comprising a catalytic amount of iron and its compounds. The addition of a minor amount of an oxime ester to the system allows one to cure in an inert atmosphere. The polythioethers formed can be used as adhesives.

3,640,924

TEXTILE ADHESIVE FROM POLYURETHANE CONTAINING CARBOXYLATE GROUPS

David Trimble Hermann, Flemington, and Kenneth Herald Remley, Warren Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,779
Int. Cl. C08g *22/16, 41/00*
U.S. Cl. 260—13 **3 Claims**

Aqueous adhesive compositions containing a dispersed polyurethane polymer, the method of using the adhesive composition in textile applications, and the textile materials thus obtained.

The adhesive composition is an aqueous dispersion of a particular class of self-dispersible or emulsifiable polyurethane polymers. The aqueous dispersions are obtained by adding a particular class of isocyanate-terminated polyurethane prepolymers having pendant carboxyl groups to water containing a tertiary aliphatic amine and allowing chain extension with water to proceed until all of the isocyanate groups have been reacted. The resulting polyurethane latex is thickened to the desirable viscosity with suitable thickening agents.

3,640,925

PROCESS FOR THE SIMULTANEOUS GELATINIZATION AND GRAFT COPOLYMERIZATION OF MONOMERS ONTO STARCH

Gerald F. Touzinsky, Laurel, and Hans W. Maurer, Ellicott City, Md., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,880
Int. Cl. C08f *25/00*
U.S. Cl. 260—17.4 GC **16 Claims**

Process for simultaneously gelatinizing starch and initiating graft copolymerization between a polymerizable ethylenically unsaturated monomer and starch which includes forming an aqueous dispersion of starch, monomer, and a peroxidic free-radical initiator, and heating the dispersion to substantially instantaneously gelatinize the starch and initiate a graft copolymerization reaction between the monomer and starch.

3,640,926

AQUEOUS DISPERSIONS OF EPOXY RESIN ESTERS AND METHOD OF PREPARING SAME

William W. Slater, Little Silver, N.J., and Lawrence E. Thow, Louisville, Ky., assignors to Celanese Coatings Company, New York, N.Y.

No Drawing. Original application Mar. 19, 1965, Ser. No. 441,365, now Patent No. 3,468,779. Divided and this application Apr. 16, 1969, Ser. No. 818,468
Int. Cl. C08g *53/18*
U.S. Cl. 260—18 EP **8 Claims**

An aqueous dispersion of a coating-forming epoxy resin ester and a salted amine, suitable for use in electro-coating, said salted amine being the reaction product of a carboxylic acid having 1 to 8 carbon atoms and a tertiary amine in which the fatty carbon chain has from 12 to 24 carbon atoms.

3,640,927

POLYMERIZATION PRODUCTS OF VINYL MONOMERS AND ACRYLATE OR VINYL ESTER TERMINATED POLYESTERS

Carl S. Marvel and Roberta C. L. Chow, Tucson, Ariz., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,189
Int. Cl. C08f *15/26, 15/28, 21/04*
U.S. Cl. 260—23 CP **12 Claims**

There are disclosed herein addition copolymers of (a) a vinyl monomer and (b) a polymerizable polyester, for example, an acrylate or a vinyl ester of a polyester of an aliphatic hydroxycarboxylic acid. A typical example is the copolymer of (a) vinyl chloride and (b) a vinyl ester of a polyester of 10-hydroxydecanoic acid. This copolymer is useful for preparing flexible films.

3,640,928

STABILIZATION OF SYNTHETIC POLYMERS

Keisuke Murayama, Syoji Morimura, Takao Yoshioka, Katsuaki Matsui, Tomoyuki Kurumada, Ichiro Watanabe, and Noriyuki Ohta, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed June 5, 1969, Ser. No. 830,842
Claims priority, application Japan, June 12, 1968, 43/40,377; Mar. 8, 1969, 44/17,841
Int. Cl. C08f *45/60, 51/60*
U.S. Cl. 260—23 XA **8 Claims**

This invention discloses the stabilization of synthetic polymers including a polyolefin, a polyvinyl chloride, a polyvinylidene chloride, a polyurethane and a polyamide against photo- and thermo-deteriorations thereof by incorporating therein a piperidine derivative in a sufficient amount to prevent such deteriorations thereof, usually in an amount of 0.01 to 5.0% by weight based on the amount of the synthetic polymer.

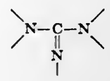
3,640,929

CHRYSOTILE ASBESTOS FIBER REINFORCED POLYMERS OF PROPYLENE

Thomas W. Darling, Rochdale, England, assignor to Turner Brothers Asbestos Company Limited, Manchester, England

No Drawing. Filed Oct. 10, 1968, Ser. No. 766,621
Claims priority, application Great Britain, Oct. 12, 1967, 46,668/67
Int. Cl. C08f *29/02, 45/60*
U.S. Cl. 260—23 H **8 Claims**

Polypropylene or copolymers of propylene reinforced with chrysotile asbestos and containing an antioxidant system comprising one or more compounds containing the group



and a phenolic compound show greatly improved oxidation resistance. Oxidation resistance may be further increased by the addition of certain sulphur compounds, and by suitable pretreatment of the asbestos fiber prior to compounding.

3,640,930

PRODUCTION OF POLYVINYL CHLORIDE SHAPED ARTICLES

Robert Buning, Oberlar, and Hans Raalf and Wolfgang Pungs, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Bezirk-Cologne, Germany

No Drawing. Continuation of application Ser. No. 544,114, Apr. 21, 1966. This application Sept. 23, 1968, Ser. No. 772,445
Claims priority, application Germany, Apr. 24, 1965, D 47,108
Int. Cl. C08f *21/04, 29/18*
U.S. Cl. 260—23 XA **2 Claims**

A shaped article of post-chlorinated eutactic polyvinyl chloride which may or may not be admixed with a suitable plasticizer.

3,640,931

CROSS-LINKABLE DERIVATIVES OF AN ADDITION POLYMER IN A SUBSTANTIALLY NON-POLAR ORGANIC LIQUID

Michael Raymond Clarke, Frankston, Victoria, and Leon Filipowicz, East St. Kilda, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Filed Oct. 15, 1968, Ser. No. 767,825
Claims priority, application Australia, Oct. 27, 1967, 29,086/67
Int. Cl. C08f *47/18*
U.S. Cl. 260—23 EM **14 Claims**

A process of preparing a stable dispersion of a cross-linkable derivative of an addition polymer in a substantially non-polar organic liquid. A dispersion of a suitably chemically reactive addition polymer is first prepared in the liquid and then an unsaturated derivative formed. The derivative is cross-linkable by an autoxidative or free radical initiated mechanism or both.

3,640,932

COMPOSITIONS FOR SAND CORE MOLD ELEMENTS

Joel M. Schnur, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,384
Int. Cl. C08g *51/04, 51/24*
U.S. Cl. 260—29.3 **10 Claims**

Foundry sand core mold elements having improved structural characteristics are made by compositing sand with a water soluble sulfonated resole resin composition.

3,640,933

PREPARATION OF POLYACROLEIN-SODIUM BISULFITE ADDUCT

George T. Kekish, Chicago, William G. James, Joliet, and Duane J. Simons, Chicago, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,026
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 R **7 Claims**

In the process of producing an aqueous bisulfite adduct useful as a paper mill additive from a wet cake of polyacrolein containing about 40–50% solids, water and at least one C_5–C_8 alkane as a non-solvent diluent produced by homopolymerizing the acrolein monomer by an invert emulsion technique, the improvements consisting in forming a reaction mix utilizing a bisulfite reactant in a weight ratio of about 1.5–2.5 parts per part of polyacrolein based upon theoretical monomer, stripping the C_5–C_8 alkane diluent from the reaction mix by azeotropic vacuum distillation for a short time period and subsequently heating and reacting the polyacrolein and bisulfite for about 1–3 hours at 195–205° F. at atmospheric pressure and at an acid pH of 3.5–4.5 to produce an aqueous polyacrolein-bisulfite adduct and terminally heating the reaction mix by vacuum distillation for a short period of time to remove residium C_5–C_8 alkane diluent and SO_2 and adjusting the water content so that the now dissolved polyacrolein (PAC) bisulfite adduct solids equal about 35% of the total.

3,640,934

2-PYRROLIDONYL POLYACROLEIN BISULFITE

Nathan D. Field, Allentown, and David I. Randall, Easton, Pa., and Jimmie D. Fitzpatrick, Lafayette, La., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Feb. 13, 1969, Ser. No. 799,108
Int. Cl. C08g *9/28*
U.S. Cl. 260—29.4 U **4 Claims**

A new composition of matter comprising 2-pyrrolidonyl polyacrolein bisulfite.

3,640,935

METHOD FOR STABILIZING LATICES

Murray S. Abriss, 503 Maple Hill Road, Havertown, Pa. 19083

No Drawing. Continuation-in-part of application Ser. No. 575,253, Aug. 26, 1966. This application Mar. 12, 1969, Ser. No. 806,685
Int. Cl. C08f *37/00*
U.S. Cl. 260—29.6 TA **6 Claims**

The method of improving the stability of a vinyl polymer latex by adding to the latex a non-ionic surface active agent in the form of a solution in a water-soluble glycol.

3,640,936

WET STRENGTH RESINS

Laurence Lyman Williams, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 5, 1969, Ser. No. 821,949
Int. Cl. C08f *27/14, 29/00*
U.S. Cl. 260—29.6 HN **7 Claims**

A water-soluble thermosetting polymer of high cationic density and a decreased number of ethylene cross-linkages is prepared by reacting polyacrylonitrile with ethylenediamine to form polyvinylimidazoline, hydrating the polyvinylimidazoline, and reacting the hydration product with epichlorohydrin.

The polymer at low molecular weight is a wet-strength resin for paper and at high molecular weight is a flocculating agent for solids suspended in water and a drainage aid in the manufacture of paper.

3,640,937

LINEAR, SEGMENTED POLYURETHANE ELASTOMERS

Wilhelm Thoma, Bergisch Neukirchen, Harald Oertel, Odenthal-Gloebusch, Heinrich Rinke, Leverkusen-Schlebusch, and Ulrich Bahr, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 3, 1969, Ser. No. 830,128
Claims priority, application Germany, June 7, 1968, P 17 70 591.8
Int. Cl. C08g *22/04, 51/44*; **C07c** *133/02*
U.S. Cl. 260—30.8 **16 Claims**

This invention relates to highly elastic linear segmented polyurethanes comprising segments obtained from certain semi-carbazide hydrazides chain extending agents, highly elastic fibres thereof and to a process for the preparation of said linear, segmented polyurethane elastomers.

3,640,938

POLYURETHANE COMPOSITION AND ITS USE TO FORM POLYSTYRENE LAMINATES

Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,692
Int. Cl. C08g *22/04*
U.S. Cl. 260—32.8 N **3 Claims**

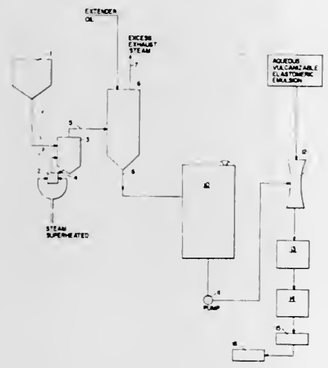
This invention relates to polyurethane compositions and to a method of applying polyurethane coatings to poly-

styrene to produce laminates. The polyurethane compositions are the reaction product of a reactive hydrogen containing material of 400 to about 12,000 molecular weight, an organic polyisocyanate and a curative which has been dispersed in a solvent which does not affect the surface of the polystyrene, the solvent being diacetone alcohol.

3,640,939
STABILIZED HIGHLY AROMATIC OIL MASTERBATCHES OF COUPLED SOLUTION POLYMERS
Antonio A. Geraldo, Borger, Tex., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 7, 1969, Ser. No. 805,356
Int. Cl. C08f *45/52*
U.S. Cl. 260—33.6 **13 Claims**

Mooney viscosity stability of highly aromatic oil extended masterbatches of coupled solution polymerized polymers is improved.

3,640,940
USING GROUND CARBON IN OIL PHASE MASTERBATCHING
William W. Gotshall, 3081 Walma Drive, Orchard Lake, Mich. 48034
Filed Mar. 25, 1970, Ser. No. 22,646
Int. Cl. C08c *11/18, 11/22;* **C08d** *7/04*
U.S. Cl. 260—33.6 AQ **7 Claims**



Ground carbons from coke or coal ground in non-oxidizing atmosphere and coated with oil can be dispersed and protected from oxidation by mixing them directly into oil phase masterbatches.

3,640,941
ADHESIVE COMPOSITION
Harold J. Findley and James L. Meier, Eaton, Ohio, assignors to Whittaker Corporation
No Drawing. Filed May 8, 1970, Ser. No. 35,915
Int. Cl. C08f *45/28, 45/30*
U.S. Cl. 260—33.6 A **17 Claims**

An adhesive composition which is particularly useful for bonding vulcanizable rubber to metal surfaces comprises (a) a graft polymer formed from the combination of polybutadiene or halogenated polybutadiene and substituted cyclopentadiene monomer, (b) dibasic lead phosphite, (c) resorcinol, and (d) a volatile organic solvent for the graft polymer. The polybutadiene and substituted cyclopentadiene reactants are reacted at an elevated temperature between about 110° C. and about 165° C. until substantially all of the substituted cyclopentadiene is grafted onto the polybutadiene.

After this adhesive composition is coated on a metal surface, vulcanizable rubber is placed in contact with the coated metal surface and the resulting structure is cured.

3,640,942
MANUFACTURE OF DELUSTRED NYLON FILAMENTS
Edward Crampsey, Chaddesden, Derby, England, assignor to Courtaulds Limited, London, England
No Drawing. Filed May 2, 1969, Ser. No. 821,464
Claims priority, application Great Britain, May 24, 1968, 24,831/68
Int. Cl. C08g *41/04, 51/04*
U.S. Cl. 260—37 N **5 Claims**

Polyamide filaments which are both delustred and resistant to acid dyes, comprising an intimate blend of a substituted co-polyamide having covalently bound anionic sulphonate groups and a polyamide, in which is dispersed titanium dioxide particles.

3,640,943
POLYMER-FILLER COMPOSITION
Edgar E. Bostick and George L. Gaines, Jr., Scotia, and Donald G. Le Grand, Burnt Hills, N.Y., assignors to General Electric Company
No Drawing. Filed July 7, 1969, Ser. No. 839,616
Int. Cl. C08g *51/04*
U.S. Cl. 260—375 B **21 Claims**

A polymer-filler composition having improved properties comprised of a base polymer, a filler and a surface-active additive which is a block copolymer. The block copolymer additive contains at least two polymerized comonomers, one of which is compatible with the base polymer thereby imparting stability to the composition, and the second of which is surface-active in the composition so that the block copolymer is concentrated at the interface between the filler and base polymer to provide a bond therebetween.

3,640,944
MODIFIED POLYESTER FILM FOR PUNCHED TAPES
Harold J. Seppala, Woodbury Township, Washington County, and Gerhard Benz, Cottage Grove Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,741
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 **11 Claims**

A durable, relatively non-abrasive film having utility as a program tape is prepared by physically blending major amounts of polyethylene terephthalate with minor effective amounts of high melting polymers such as polysulfone or poly (4-methyl, 1-pentene) and a light absorbing material, extruding the blend as a film and thereafter biaxially orienting it. The film allows as little as 1% light transmission and has a surface which can be written on with pencil or pen.

3,640,945
THERMAL STABILITY OF COPOLYMERS OF TRIOXANE
Ernst Ricker, Frankenthal, and Franz Schmidt and Erich Schwartz, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Oct. 1, 1968, Ser. No. 764,335
Claims priority, application Germany, Oct. 10, 1967, P 17 20 309.7, P 17 20 311.1
The portion of the term of the patent subsequent to Nov. 1, 1983, has been disclaimed
Int. Cl. C08g *1/22*
U.S. Cl. 260—45.7 **10 Claims**

A process for improving the thermal stability of copolymers of trioxane which contain at least 80% by

weight of —O—CH_2— groups and distributed in the polymer chain in amounts of less than 20% by weight (with reference to the copolymer) of



groupings by eliminating unstable portions of the chain by heating with aqueous solutions of alkali metal or alkaline earth metal fluorides.

3,640,946
FLAME RETARDANT POLYMERS OF PROPYLENE
James C. W. Chien and Robert J. Schwarz, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,330
Int. Cl. C08f *45/04*
U.S. Cl. 260—41 B **4 Claims**

Flame retardant compositions of polymers of propylene are described. The polymers are rendered flame retardant by addition of 4–10% of a chlorinated polyisobutylene and 0 to 5% of antimony trioxide, the amount of the chlorinated polyisobutylene and antimony trioxide together being 5–15% by weight of the composition.

3,640,947
NON-TOXIC STABILIZED POLYVINYL CHLORIDE PRODUCTS AND STABILIZER COMPOSITIONS
Carl Robert Gloskey, Sterling, N.J., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Continuation of application Ser. No. 694,829, Jan. 2, 1968. This application June 25, 1970, Ser. No. 49,961
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K **11 Claims**

The present invention provides a novel non-toxic organotin stabilizer composition containing about 95 percent of di(n - octyl)-Sn, S,S′ - bis(isooctylmercaptoacetate). The stabilizer composition also contains specified amounts of other organic tin compounds. The invention also provides non-toxic polyvinyl chloride containing resins suitable for food packaging use.

3,640,948
STABILIZED POLYAMIDES
John Ernest Jackson, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,787
Claims priority, application Great Britain, May 14, 1968, 22,886/68
Int. Cl. C08g *51/56, 51/62*
U.S. Cl. 260—45.75 R **9 Claims**

A high molecular weight fiber-forming stabilized polyamide contains 5–100 p.p.m. by weight on the polyamide of phosphorus in the form of a phosphorous acid or a salt thereof and 100–10,000 p.p.m. by weight on the polyamide of a sulfur-containing phenol having the formula OH—ϕ—S—R where ϕ represents a benzene ring. The hydroxyl group is positioned para or ortho to the sulfur atom and R is alkyl, aryl and preferably an identical ϕ—OH structure as above, located symmetrically about the sulfur atom.

3,640,949
PRODUCTION OF FLAME RETARDANT POLYPROPYLENE COMPOSITIONS
Darwin Allen Dalzell, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,286
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.75 R **8 Claims**

Polypropylene is rendered flame retardant without impairing its physical properties by incorporating in it an additive comprised of tetrabromophthalic anhydride, a fumed silica, and antimony trioxide or an equivalent antimony compound.

3,640,950
HALOGENATED RESINS STABILIZED WITH NOVEL COMPOSITIONS
Lewis B. Weisfeld, Highland Park, N.J., assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio
No Drawing. Continuation-in-part of application Ser. No. 577,844, Sept. 8, 1966. This application Feb. 27, 1969, Ser. No. 803,084
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K **13 Claims**

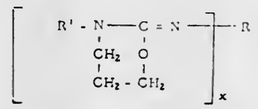
The early color stability of halogenated resins stabilized with diorganotin mercapto compounds is improved by including a minor amount of monohydrocarbyltin derivatives therewith. This combination also frequently reduces processing and finish odors associated with mercapto stabilizers.

3,640,951
STABILIZED POLYCARBONATES
Herbert L. Rawlings, New Martinsville, W. Va., assignor to Baychem Corporation, New York, N.Y.
No Drawing. Filed Aug. 30, 1968, Ser. No. 756,415
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 **7 Claims**

Polycarbonates stabilized against thermal degradation with a stabilizing amount of 2-(stilbyl-4″)-(4,5-arylo)-1,2,3,-triazole.

3,640,952
POLYESTERURETHANES STABILIZED WITH IMINO-OXAZINES
Sidney H. Metzger, Jr., Leverkusen-Neuenhof, Germany, assignor to Mobay Chemical Company, Pittsburgh, Pa.
No Drawing. Original application Mar. 2, 1966, Ser. No. 531,093, now Patent No. 3,479,351, dated Nov. 18, 1969. Divided and this application June 11, 1969, Ser. No. 832,421
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 NZ **6 Claims**

Polyester based polymeric compositions are stabilized against hydrolysis by adding to said polyester based polymeric compositions a stabilizing amount of a tetrahydro-1,3-oxazine. The preferred tetrahydro-1,3-oxazines have the formula



wherein R and R′ are selected from the group consisting of aliphatic, cycloaliphatic or aromatic radicals and x is 1 or 2.

3,640,953
STABILIZATION OF POLYVINYL CHLORIDE RESINS
Lawrence R. Brecker, Brooklyn, and Alfred Thee, Long Beach, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.
Filed Jan. 23, 1969, Ser. No. 793,503
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K **24 Claims**

A polyvinyl chloride resin stabilizer combination having a readily controlled tin content is provided which lessens the development of early discoloration of the resin when heated at elevated temperatures, for example, 350° F., comprising a diorganotin mercaptocarboxylic acid ester and a diorganotin oxide-ester complex which

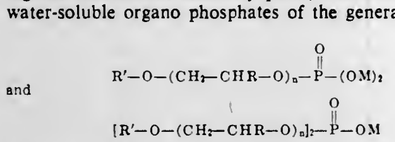
is a reaction product of a diorganotin oxide and an ester of an oxygen-containing acid. The above stabilizer components can be liquids or solids. However, where the stabilizer components are liquid, a homogeneous stable liquid mixture is formed.

Polyvinyl chloride resin compositions and a process for stabilizing such resins are also provided, using the above stabilizer combination, the resins having as a result increased resistance to the development of early discoloration when heated at elevated temperatures.

A process also is provided for preparing organotin stabilizer compositions having a low to high tin content controllable over a wide range without limitations due to stoichiometric considerations.

3,640,954
TREATMENT OF POLYVINYL HALIDES
Paul Kraft, Spring Valley, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 657,006, July 31, 1967. This application June 5, 1969, Ser. No. 830,872
Int. Cl. C08f *1/11, 1/13, 1/88*
U.S. Cl. 260—45.95 **5 Claims**

Polyvinyl halides, particularly PVC, are made resistant to thermal degradation and plasticizer absorption by treating the latices with relatively polar, water-dispersible or water-soluble organo phosphates of the general formulae



and

in which M is a metal cation or ammonium and particularly an alkali metal, *n* is an integer from 1 to 30, R is hydrogen or lower alkyl of 1 to 2 carbons, and R′ is alkyl or alkyl-substituted phenyl wherein the alkyl groups contain about 1 to 20 carbons. Preferably R′ is either a straight chain alkyl group or a tertiary alkyl-substituted phenyl group wherein the alkyls total about 1 to 12 carbons. The polymers thus treated are especially useful in plastisols. Addition of the phosphate is made during or after the occurrence of the pressure drop in the polymerization of the polyvinyl chloride polymer.

ERRATUM

For Class 260—47 see:
Patent No. 3,639,928

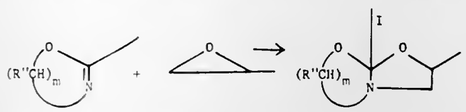
3,640,955
LINEAR POLYURETHANE OF DI- OR TRI-NUCLEAR N,N′-DIALKYLDIAMINES AND DI- OR TRI-NUCLEAR DIHYDROXYL COMPOUNDS
Heinrich Krimm, Krefeld-Bochum, Hermann Schnell, Krefeld-Urdingen, and Gunther Lenz, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of applications Ser. No. 752,136, Aug. 13, 1968, and Ser. No. 780,895, Dec. 3, 1968. This application July 22, 1970, Ser. No. 57,309
Claims priority, application Germany, Aug. 26, 1967, F 53,340; Dec. 8, 1967, F 54,265
Int. Cl. C08g *22/26*
U.S. Cl. 260—47 CZ **3 Claims**

High molecular weight polyurethanes having excellent thermal stability based on condensing di- or trinuclear N,N′-dialkyldiamines in which the nitrogen is aromatically linked with di- or tri-nuclear dihydroxyl compounds and bifunctional carbonic acid derivatives, or by condensing bis-monocarbonic acid derivatives of di- or tri-nuclear N,N′-dialkyldiamines with di- or tri-nuclear aromatic dihydroxyl compounds or by condensing bis-monocarbonic acid derivatives of di- or tri-nuclear aromatic dihydroxyl compounds with di- or tri-nuclear N,N′-dialkyldiamines.

3,640,956
POLYBENZIMIDAZOLECARBOXAMIDES AND PROCESS
James Guilbert Colson, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,072
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **5 Claims**

Polybenzimidazolecarboxamide polymers are provided; these are prepared by treating a polymer containing imidazopyrrolone ring systems with ammonia; the polymers are useful as adhesives, especially for high temperature applications.

3,640,957
MONOOXAZOLINE AND OXAZINE CURED EPOXY RESINS
Donald A. Tomalia and Robert J. Thomas, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 16, 1969, Ser. No. 833,663
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **4 Claims**



wherein R″ is hydrogen or loweralkyl C_{1-4}, *m* is 2 or 3, and each heterocycle is part of an entire molecule. It is a highly effective curing agent, by both reaction and catalysis, for polyepoxides to obtain epoxy resins.

3,640,958
PHENOLIC RESIN COMPOSITIONS MODIFIED WITH GROUP II METAL HYDROXIDES OR OXIDES AND A CAPROLACTONE
Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No drawing. Filed Apr. 1, 1969, Ser. No. 812,344
Int. Cl. C08g *5/18*
U.S. Cl. 260—59 **16 Claims**

This invention relates to phenolic resin compositions modified with Group II metal hydroxides or oxides and an ϵ-caprolactone, which are characterized by relatively low viscosity and can be molded into shaped articles of desired configuration having excellent chemical and physical properties.

3,640,959
CURED POLYFERROCENYLENES AND PROCESS FOR CURING
Norman Bilow, Los Angeles, Calif., and Harold Rosenberg, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed Mar. 6, 1969, Ser. No. 805,008
Int. Cl. C08g *3/00, 13/00*
U.S. Cl. 260—64 **11 Claims**

Cured polyferrocenylenes and the process for curing them are disclosed. Low molecular weight thermoplastic polyferrocenylenes are reacted with aromatic dicarboxaldehydes. The resulting copolymers cross-link and cure to hard, heat-resistant, radiation-resistant structures upon treatment with heat and pressure.

3,640,960
STABILIZED POLYIMIDAZOPYRROLONES COMPOSITIONS AND METHOD OF PREPARATION
George M. Bower, 2301 Sonny St., Pittsburgh, Pa. 15221
No Drawing. Filed May 27, 1969, Ser. No. 828,334
Int. Cl. C08g *20/32, 33/06*
U.S. Cl. 260—65 **12 Claims**

By adding a tertiary amine to a reaction mixture used for the preparation of polyimidazopyrrolone compositions, there is made possible the preparation of such compositions with higher solids content and without premature gelation.

3,640,961
FERROCENE-PHTHALALDEHYDE COPOLYMERS
Norman Bilow, 6118 S. Condon Ave., Los Angeles, Calif. 90056
Filed Mar. 6, 1969, Ser. No. 804,870
Int. Cl. C08g *1/10*
U.S. Cl. 260—67 R **1 Claim**

Thermosetting ferrocene-containing copolymers and process for preparation of same are disclosed. The copolymers are prepared by the reaction of ferrocene or ferrocene derivatives with aromatic dicarboxaldehydes in the presence of a suitable catalyst. The copolymers cure, from low molecular weight soluble resins to insoluble resins of extremely high molecular weight upon treatment with heat and pressure. The products of this invention are useful in the fabrication of composite reinforced plastic structures.

3,640,962
POLYESTER POLYCONDENSATION PROCESS UNDER DECREASING TEMPERATURES
Albrecht Moschel, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Apr. 28, 1969, Ser. No. 819,842
Claims priority, application Germany, May 8, 1968, P 17 70 350.3
Int. Cl. C08g *17/01*
U.S. Cl. 260—75 M **7 Claims**

Process for the manufacture of polyesters containing free hydroxyl groups and having an acid number below 0.4 by condensing at least one dicarboxylic acid with at least one diol in a molar ratio of from 1:1.14 to 1:1.35 in the presence of a condensation catalyst, removing the main quantity of the water of condensation in a current of an inert gas under a pressure of 1,000 to 700 mm. of mercury and after-condensing under reduced pressure, which comprises reducing in stages or continuously during after-condensation the temperature in the range of from 210° C. to 165° C., and the pressure of from 800 to 1 mm. of mercury.

3,640,963
PROCESS FOR CURING POLYFERROCENYLENES
Norman Bilow, Los Angeles, Calif., and Harold Rosenberg, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed Mar. 6, 1969, Ser. No. 805,009
Int. Cl. C08g *1/10*
U.S. Cl. 260—67 R **7 Claims**

A method of curing low molecular weight polyferrocenylenes. Low molecular weight polyferrocyenylenes are reacted with 1,1′-ferrocenedicarboxaldehyde or a substituted ferrocenedicarboxaldehyde in the presence of a suitable catalyst. This reaction produces a low molecular weight copolymer which, when subjected to heat and pressure, thermosets or cures to a hard, heat-resistant, radiation-resistant resin. The cured products of this invention are useful as resins in the formation of laminated structures.

3,640,964
DIBROMONEOPENTYL GLYCOL MODIFIED POLYESTERS
Mary J. Stewart, Media, and John A. Price, Swarthmore, Pa., assignors to FMC Corporation, Philadelphia, Pa.
No Drawing. Filed June 26, 1969, Ser. No. 836,980
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 H **5 Claims**

A linear polyester resin comprising the polycondensation product of (1) a glycol dicarboxylate or a precondensate of said dicarboxylate, prepared by a condensation reaction between an aliphatic glycol and a saturated aromatic dicarboxylic acid or lower alkyl diester thereof, and (2) a minor amount of dibromoneopentyl glycol.

3,640,965
THERMOPLASTIC SULFUR-CONTAINING POLYMERS
George Lewis Brode, Summerville, and Timothy Lee Pickering, Kendall Park, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,598
Int. Cl. C08g *22/00, 22/18*
U.S. Cl. 260—77.5 AP **20 Claims**

Polymers are disclosed that contain a plurality of units of the formula —SRS— which are derived from a dimercaptan of the formula HSRSH in which the R represents a divalent, aliphatic, polycyclic radical, as defined hereinafter. The polymers may be homopolymeric, i.e., $—SRS—_x$ or copolymeric $—SRSY—_x$ in which *x* is the number of repeating units and Y is the divalent residue of a monomer which is copolymerizable with the dimercaptan.

3,640,966
PROCESS FOR THE PREPARATION OF POLYISOCYANATES WHICH CONTAIN A CARBODIIMIDE-ISOCYANATE ADDUCT
Hans Joachim Hennig, Cologne-Stammheim, and Peter Fischer, Cologne-Flittard, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,547
Claims priority, application Germany, Jan. 25, 1968, P 16 68 083.4
Int. Cl. C08g *22/00, 22/18*
U.S. Cl. 260—77.5 R **9 Claims**

Polyisocyanates containing a carbodiimide-isocyanate adduct are prepared by heating an organic polyisocyanate containing nitrogen atoms only in the isocyanato groups in the presence of a catalytic amount of a catalyst to a temperature above 150° C. and cooling the reaction product to about room temperature, wherein said catalyst is an organic isocyanate compound containing biuret, urea, amido, urethane, allophanate, isocyanurate, uretdione or uretonimine groups in the compound.

3,640,967
PROCESS FOR THE PREPARATION OF POLYURETHANES
Klaus König and Erwin Müller, Leverkusen, Wilhelm Kallert, Cologne-Stammheim, and Cornelius Mühlhausen, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,104
Claims priority, application Germany, Apr. 23, 1968, P 17 70 245.3
Int. Cl. C08g *22/10*
U.S. Cl. 260—77.5 **6 Claims**

A process for the preparation of polyurethanes, which may or may not be cross-linked, from higher molecular weight, linear dihydroxy compounds, diisocyanates and low molecular weight chain lengthening agents which contain at least two hydrogen atoms that are reactive with isocyanates, characterized in that the higher mo-

lecular weight dihydroxy compounds used are reaction products of ϵ-caprolactone and/or ϵ-hydroxycaproic acid, hexane-1,6-diol and diaryl carbonates.

3,640,968
CURABLE DIVINYL ACETAL COPOLYMERS
Maurice A. Raymond, Northford, Conn., assignor to Olin Corporation
No Drawing. Filed Feb. 11, 1970, Ser. No. 10,590
Int. Cl. C08f *15/40;* **C08g** *22/00*
U.S. Cl. 260—77.5 R **11 Claims**

This invention relates to new copolymers of selected divinyl acetals and selected comonomers containing both a vinyl type unsaturation and an oxirane group. These copolymers have high tensile strength, high elongation and good adhesive properties and have utility as primers, adhesive and coatings for glass, plastics and metal.

3,640,969
PROCESS FOR PREPARING SOLUBLE POLYIMIDE BY THE POLYCONDENSATION OF MELLOPHANIC DIANHYDRIDE, PYROMELLITIC DIANHYDRIDE, AND AN AROMATIC DIAMINE, FOLLOWED BY IMIDATION OF THE POLYCONDENSATION PRODUCT
Shigeyuki Suzuki, Kanagawa, and Isamu Kaneda, Masaaki Takahashi, and Hiroshi Nagai, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,174
Claims priority, application Japan, Feb. 1, 1968, 43/6,141
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **17 Claims**

A process for producing a soluble polyimide by the polycondensation of mellophanic and pyromellitic dianhydride and an aromatic diamine, followed by the imidation of the polycondensation product. A polyimide solution thus prepared is also claimed.

3,640,970
PROCESS FOR PREPARATION OF POLYAMIDES
Shuji Ozawa and Hiroshi Fujie, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Feb. 14, 1969, Ser. No. 799,510
Claims priority, application Japan, Feb. 19, 1968, 43/10,414; Sept. 5, 1968, 43/63,860
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **8 Claims**

A process for preparation of polyamides which comprises reacting substantially equimolar amounts of at least one diamine and a dihalide of at least one dicarboxylic acid and in an inert, non-basic organic medium to form a pre-condensate, and thereafter contacting said pre-condensate in said medium with an aqueous solution of a water-soluble acid acceptor. Thus high molecular-weight aromatic polyamides suitable for high temperature uses including co-polyamides having either random or block structure can be obtained with practical easiness even in large scale operations.

3,640,971
END-BLOCKED COPOLYMERS OF VINYL MONOMERS WITH CYCLIC MONOMERS AND METHOD FOR PREPARING THE SAME
Shitomi Katayama and Hideichi Horikawa, Akita, Japan, assignors to Denki Onkyo Co. Ltd., Tokyo, Japan
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,162
Claims priority, application Japan, June 4, 1968, 43/38,169
Int. Cl. C08f *27/08, 27/00*
U.S. Cl. 260—78.3 R **13 Claims**

End-blocked copolymers consisting of molecular chains of vinyl polymers connected at least at one chain terminal to the chain terminal of a ring-opened unit of two or more of the cyclic compounds of the group of β-lactones, ϵ-caprolactone and ethylene oxide, the connection between the vinyl chain and the chain of the cyclic compound being by way of amide or nitrogen. The invention also comprises a method for making the end-blocked copolymers in a three-step process, wherein the first step consists of polymerization of a vinyl-type monomer in the presence of a halogen compound yielding a polymer having a halogen at one or both chain ends, which is converted in a second step into an ω-aminopolymer by reaction with ammonia or an amide, and wherein the addition of one or more cyclic compounds of the group comprising a β-lactone, ϵ-caprolactone, and ethylene oxide is effected in a third step.

3,640,972
ADHESIVE COMPOSITIONS COMPRISING 2-CYANOACRYLATES AND HETEROCYCLIC COMPOUNDS
Bernard Joseph Bolger, 47 Kilterogh Road, Foxrocks, and Denis Joseph O'Sullivan, 130 St. Finton's Road, Sutton, both of Dublin, Ireland
No Drawing. Filed June 6, 1969, Ser. No. 831,254
Claims priority, application Ireland, Aug. 18, 1968, 1,006/68
Int. Cl. C08f *3/50, 3/74, 15/16*
U.S. Cl. 260—78.4 N **20 Claims**

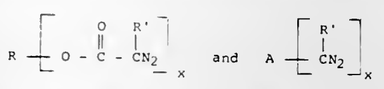
Improvements are made in the cure speed and bond performance of cyanoacrylate adhesives by using in conjunction therewith an imino- or unsaturated aliphatically substituted derivative of s-triazine, hexahydro-s-triazine or pyrimido [5,4-d] pyrimidine.

3,640,973
TIN SALTS OF PARTIALLY ESTERIFIED VINYL MONOMER-MALEIC ANHYDRIDE COPOLYMERS
Robert R. Chambers, Scarsdale, N.Y., Henry V. Isaacson, Minneapolis, Minn., and David W. Young, Homewood, Ill. (all % Sinclair Research, Inc., 400 E. Sibley Blvd., Harvey, Ill. 60426)
No Drawing. Application June 4, 1968, Ser. No. 734,202, which is a continuation-in-part of application Ser. No. 607,150, Jan. 4, 1967, now Patent No. 3,472,772, dated Oct. 14, 1969. Divided and this application May 25, 1970, Ser. No. 48,687
Int. Cl. C08f *27/06*
U.S. Cl. 260—78.5 T **5 Claims**

Novel tin salts of partial esters of vinyl monomer-maleic anhydride polymers (e.g. styrene-maleic anhydride polymers), esterified with a thioalcohol or a hydroxythioether are formed by combination of the ammonium salt of said thioester and stannous chloride. Vinyl halide polymers are stabilized by incorporation of small amounts of these tin salts.

3,640,974
MODIFYING POLYMERS
David S. Breslow, Madelyn Gardens, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed May 5, 1969, Ser. No. 822,037
Int. Cl. C08f *3/20, 27/08*
U.S. Cl. 260—78.5 **10 Claims**

Vinyl chloride and vinylidene chloride polymers can be cross-linked or otherwise modified by reaction with a poly(diazo) compound selected from the group of



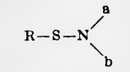
where x is an integer greater than 1, R is an organic radical inert to modification reactions, A is an aromatic radical inert to modification reactions, and R′ is a hydrogen, aryl or —COOZ radical where Z is an alkyl or aryl radical. The reaction between the poly(diazo) compound and polymer can be initiated either by heating or by exposing to ultraviolet radiation.

3,640,975
METHOD OF PROCESSING POWDERY ACCELERATORS PREPARED IN AN AQUEOUS MEDIUM
John W. Bilderback, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,170
Int. Cl. C08c *11/54;* **C08f** *27/06*
U.S. Cl. 260—79.5 **5 Claims**

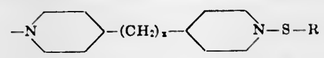
Coagulating a polymer latex during the preparation of a powdery accelerator so as to improve the processibility of the accelerator.

3,640,976
CERTAIN CYCLOALKYLSULFENAMIDES AS PREVULCANIZATION INHIBITORS
Kamel Boustany, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,866
Int. Cl. C08c *11/54, 11/62;* **C08f** *27/06*
U.S. Cl. 260—79.5 B **22 Claims**

Inhibiting premature vulcanization with cycloalkylsulfenamides of the formula



wherein a and b together with the nitrogen atom is piperidinyl, lower alkyl piperidinyl, aryl piperidinyl, 2,5-dilower alkyl pyrrolidinyl, hexamethyleniminyl, or



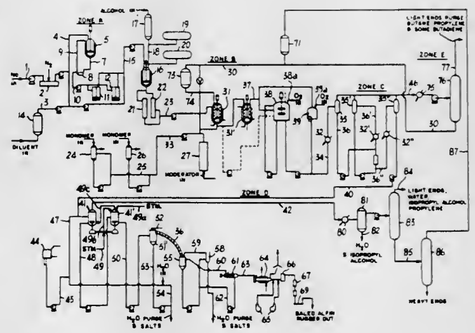
where x is one, two or three, and wherein R is cycloalkyl of 5 to 12 carbon atoms.

3,640,977
INTERPOLYMERS PREPARED FROM VINYL TOLUENE, ALPHA METHYL STYRENE DICYCLOPENTADIENE AND OPTIONALLY AN ACRYLIC COMPOUND
Carlos T. Gonzenbach, Scotia, and Manuel A. Jordan, Schenectady, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.
No Drawing. Filed May 6, 1969, Ser. No. 822,294
Int. Cl. C08f *15/40, 1/58, 17/00*
U.S. Cl. 260—80.78 **9 Claims**

Terpolymers are made from vinyl toluene, alpha methyl styrene and dicyclopentadiene and tetrapolymers from these materials and acrylic acid or methacrylic acid or an alkyl ester of such acids. The preferred polymers are tetrapolymers including butyl acrylate. The polymers are useful as hot melt adhesives and hot melt coatings.

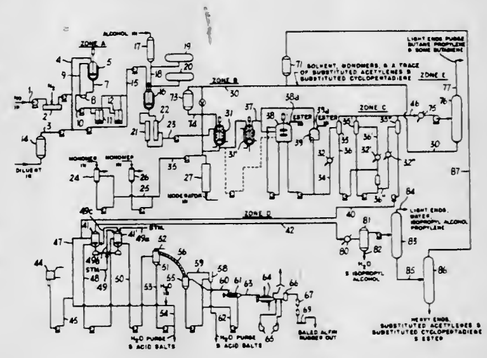
3,640,978
CONTINUOUS PROCESS FOR THE PRODUCTION OF ALFIN POLYMERS BY POLYMERIZATION OF ALFIN MONOMERS IN AN ORGANIC SOLVENT AND FOR RECOVERING AND RECYCLING SOLVENT
Theodore B. Baba, 32 Standish Road, Hilldale, N.J. 07642
Continuation-in-part of application Ser. No. 740,205, June 26, 1968. This application Mar. 6, 1970, Ser. No. 17,286
Int. Cl. C08d *3/02*
U.S. Cl. 260—82.1 **22 Claims**

A continuous process for the preparation of alfin polymers is provided, effecting the polymerization of the monomers by an alfin catalyst in the presence of a molecular weight moderator, treating the alfin polymer reaction mixture with oxygen to prevent conversion of organometallic acetylides and cyclopentadiene compounds into the corresponding acetylenes and cyclopentadiene, and separating unreacted monomer, volatile low polymer and solvent, and thereafter purifying solvent and recycling it and optionally the monomer for reuse, and washing and drying the alfin polymer.



In the process of the invention, molecular weight of the polymer is controlled by adjustment of the proportion of molecular weight moderator. No other modification of reaction conditions, proportions of catalyst, and other process variables is necessary.

3,640,979
CONTINUOUS PROCESS FOR THE PRODUCTION OF ALFIN POLYMERS BY POLYMERIZATION OF ALFIN MONOMERS IN AN ORGANIC SOLVENT AND FOR RECOVERING AND RECYCLING SOLVENT
Theodore B. Baba, 32 Standish Road, Hillsdale, N.J. 07642
Continuation-in-part of application Ser. No. 740,158, June 26, 1968. This application Mar. 6, 1970, Ser. No. 17,287
Int. Cl. C08d *3/02*
U.S. Cl. 260—82.1 **26 Claims**



A continuous process for the preparation of alfin polymers is provided, effecting the polymerization of the monomer by an alfin catalyst in the presence of a molecular

weight moderator, treating the alfin polymer reaction mixture with an organic ester to convert sodium acetylides and sodium cyclopentadienes to acetylenic cyclopentadienic alcohols separating unreacted monomer, volatile low polymer, alcohols and solvent, thereafter purifying solvent and recycling it and optionally the monomer for reuse, and washing and drying the alfin polymer.

In the process of the invention, molecular weight of the polymer is controlled by adjustment of the proportion of molecular weight moderator. No other modification of reaction conditions, proportions of catalyst, and other process variables is necessary.

3,640,980

CONTINUOUS PROCESS FOR THE PRODUCTION OF ALFIN POLYMERS BY POLYMERIZATION OF ALFIN MONOMERS IN AN ORGANIC SOLVENT AND FOR RECOVERING AND RECYCLING SOLVENT

Theodore B. Baba, Hillsdale, N.J., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Oct. 4, 1967, Ser. No. 672,895
Int. Cl. C08d *5/00*
U.S. Cl. 260—82.1 **22 Claims**

A continuous process for the preparation of alfin polymers is provided, effecting the polymerization of the monomer by an alfin catalyst in the presence of a molecular weight moderator, treating the alfin polymer reaction mixture with a small amount carbon dioxide to convert organometallic compounds to organic acid salts, extracting the acid salts with water and separating unreacted monomer, volatiie low polymer and solvent, and thereafter purifying solvent and recycling it and optionally the monomer for reuse, and washing and drying the alfin polymer.

3,640,981

VINYL TOLUENE-ALPHA METHYL STYRENE COPOLYMERS AND METHOD OF PREPARING THE SAME

Bernard J. Davis, Pass Christian, Miss., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,792
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 C **10 Claims**

Copolymers of alpha methyl styrene and vinyl toluene are prepared by polymerizing said monomers in presence of phosphorus pentafluoride as a catalyst in an aromatic diluent or in a blend of aromatic and aliphatic diluents. In addition triphenyl phosphite is employed to protect the copolymer during stripping. Said method results in clear resins giving water white solutions in mineral spirits, which are odorless and substantially free from aromatics.

3,640,982

PROCESS FOR THE ELIMINATING OF COMPOUNDS WITH ACID FUNCTION DISSOLVED IN A LIQUID MEDIUM

Claude Giuntz, Ste. Adresse, and Pierre Meyer and Jean Peyrot, Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Aug. 19, 1969, Ser. No. 852,154
Claims priority, application France, Aug. 20, 1968, 163,483
Int. Cl. C08f *15/04, 47/24*
U.S. Cl. 260—88.2 R **7 Claims**

A process for purifying polymeric substances produced by using Ziegler type of catalysts wherein metallic impurities are removed from a solution of the polymeric substance by contacting same with a basic graft polymer grafted onto an inert support. A representative support is poly(tetrafluoroethylene) and a precursor graft monomer is vinylpyridine.

3,640,983

METHOD OF MAKING COUPLER-BONDED-POLYMERS AND CHROMOGEN-BONDED-POLYMERS, AND POLYMERS MADE THEREBY

Shojiro Horiguchi, 965 Shimohoya, Hoyamachi, Kitatamagun, Tokyo, Japan, and Michiei Nakamura, 156, 5-chome, Motobuto-cho, Urama-shi, Saitama-ken, Japan

No Drawing. Filed Nov. 9, 1966, Ser. No. 593,002
Int. Cl. C08f *3/50, 3/64, 3/90*
U.S. Cl. 260—89.7 **7 Claims**

A method of making a coupler-bonded-polymer capable of being coupled with a diazonium compound, which comprises the steps of diazotizing a coupler containing a primary amino radical to produce a diazotized product stabilizing such diazotized product with a stabilizer to produce a stabilized diazonium compound, mixing the stabilized diazonium compound with an ethylenically unsaturated polymerizable monomer and polymerizing the monomer by utilizing the stabilized diazonium compound as a polymerization initiator to produce a coupler-bonded-polymer. A method of coloring articles with the use of the coupler-bonded-polymer thus produced is also provided.

3,640,984

POLYTETRAFLUOROETHYLENE

William A. Miller, Flemington, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1963, Ser. No. 321,353
Int. Cl. C08f *3/24*
U.S. Cl. 260—92.1 **17 Claims**

1. A method for preparing polytetrafluoroethylene adapted for molding precision parts and thin sheeting, comprising the sequential steps of (a) subjecting particles of polytetrafluoroethylene, which particles are at least 100 microns in their smallest dimension, to milling effected substantially solely by interparticulate collision, at a temperature of less than about 200° F.; (b) classifying the milled particles to separate therefrom particles having a maximum dimension of up to and including about 50 microns, wet-sieve size; and (c) subjecting the unseparated particles of larger than about 50 microns, wet-sieve size, repeatedly to the milling effected substantially solely by interparticulate collision, at a temperature of less than about 200° F.

3,640,985

POLYMERIZATION OF FLUORINE-CONTAINING ETHYLENICALLY UNSATURATED MONOMERS IN THE PRESENCE OF A BETA-HYDROXY-ALKYL TERTIARY-BUTYL PEROXIDE

Henry C. Stevens, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed May 16, 1969, Ser. No. 825,424
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 **5 Claims**

Fluorine-containing ethylenically unsaturated monomers, e.g., vinylidene fluoride, are polymerized in an aqueous medium with an initiating amount of beta-hydroxyalkyl tertiary butyl peroxide.

3,640,986

POLYMERIZATION OF CYCLIC MONOOLEFINS

John E. Burleigh and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,061
Int. Cl. C08f *7/02*
U.S. Cl. 260—93.1 **10 Claims**

Amines are employed as promoters in a process for the polymerization of cyclic monoolefins with a catalyst of a metal complex and an organo-metallic compound.

3,640,987

PROCESS FOR MANUFACTURING TITANIUM TRICHLORIDE, THE CATALYSTS OBTAINED THEREFROM AND THEIR USES IN THE POLYMERIZATION OF POLYMERIZABLE MONOMERS

Nhu Hung Phung, Antony, and Gilles Le Febvre, La Celle St. Cloud, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Hauts-de-Seine, France

No Drawing. Filed June 3, 1968, Ser. No. 804,722
Claims priority, application France, June 1, 1967, 108,822
Int. Cl. C08f *1/42, 3/10*
U.S. Cl. 260—93.7 **11 Claims**

The present disclosure is directed to a process for manufacturing titanium trichloride by reducing titanium tetrachloride utilizing at least one reducing compound of a metal of Groups I to III, in an inert solvent. The process is carried out in two steps, the first step being conducted at a temperature lower than about 50° C. and the second step being conducted at a temperature higher than about 75° C. In the first step, the solvent has a normal boiling point lower than 140° C. and in the second step the solvent has a normal boiling point higher than 140° C.

3,640,988

PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES WITH HALOARYLLITHIUM INITIATORS

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 31, 1969, Ser. No. 889,747
Int. Cl. C08d *3/04, 3/08, 3/12*
U.S. Cl. 260—94.2 M **5 Claims**

1,3,5-tribromobenzene is employed as a polymerization modifier for the polymerization of conjugated dienes with haloaryllithium initiators wherein the use of the polymerization modifier reduces the molecular weight of the conjugated diene polymer while the high percentage of cis-configuration of the conjugated diene polymer is maintained.

3,640,989

NOVEL BINARY CATALYST SYSTEM FOR THE POLYMERIZATION OF DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed May 2, 1969, Ser. No. 821,499
Int. Cl. C08d *3/06*
U.S. Cl. 260—94.3 **8 Claims**

There is disclosed a process for the polymerization of butadiene and butadiene in mixture with other conjugated diolefins to form polymers containing a high portion of the butadiene units in the cis-1,4 configuration comprising contacting at least one diolefin under polymerization conditions with a binary catalyst system comprising (A) at least one compound selected from a group consisting of organonickel and organocobalt compounds of fluorine containing (1) carboxylic acids, (2) aldehydes, (3) ketones and (4) phenols, and (B) at least one organometallic compound wherein the metal is selected from Groups I, II and III of the Periodic Table.

3,640,990

TERMINATION OF DIENE POLYMERIZATION

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 29, 1970, Ser. No. 50,935
Int. Cl. C08d *1/38, 3/04, 3/08*
U.S. Cl. 260—94.7 **5 Claims**

A method for terminating the polymerization of monomers, in which polymerization there is formed a metal-terminated polymer, which involves introducing into the reaction mixture a system comprised of a polyisocyanate and a lactone.

3,640,991

MIXED ANHYDRIDE METHOD OF PREPARING PEPTIDES

Francis Marc Callahan, Stony Point, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 622,049, Mar. 10, 1967. This application Oct. 29, 1968, Ser. No. 771,604
Int. Cl. C07c *101/00, 103/52*
U.S. Cl. 260—112.5 **4 Claims**

An improved process is described for preparing peptides by the mixed anhydride method. The improvement consists in using certain special amines which have at least one methyl group attached to nitrogen, and an electronegative group Beta to the nitrogen. The amines may be used in excess up to 150% and the peptide is synthesized with negligible racemization of the stereo isomers of the constituents which are joined to form the peptide.

3,640,992

NAPHTHOQUINONE DIAZIDE SULFONIC ACID ESTER

Oskar Sus and Fritz Uhlig, Wiesbaden-Beibrich, and Heinz Schafer, Wiesbaden-Sonnenberg, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed June 5, 1967, Ser. No. 643,378
Claims priority, application Germany, July 27, 1966, K 59,885
Int. Cl. C07c *113/00;* **G03c** *1/52*
U.S. Cl. 260—141 **1 Claim**

This invention relates to a light-sensitive ester of a naphthoquinone diazide sulfonic acid and to a process for making the ester. The ester has enhanced solubility and is useful in photomechanical reproduction processes.

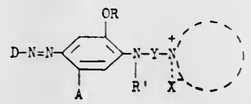
3,640,993

BASIC AZO DYESTUFFS CONTAINING AN N-ACYL-AMINO-N'-PYRIDINIUM LOWER ALKYL-ENEAMINOPHENYL GROUP

Gert Hegar, Schoenenbuch, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,255
Claims priority, application Switzerland, Dec. 6, 1967, 17,110/67; Oct. 15, 1968, 15,402/68
Int. Cl. C09b *29/36, 43/00*
U.S. Cl. 260—146 R **11 Claims**

Basic azo deystuffs, which are free from acidic groups imparting solubility in water of the formula



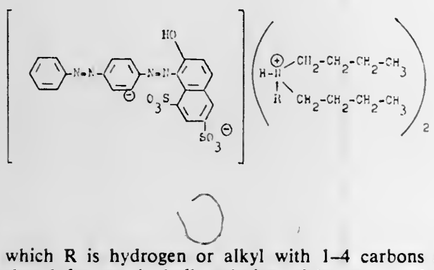
in which D represents the residue of a diazo component, A an acylamino group, Y a linear or branched aliphatic carbon chain, R' represents hydrogen or an alkyl, aralkyl or cycloalkyl residue, R an alkyl, aralkyl, cycloalkyl or aryl residue and X an anion. The dyestuffs are suitable for use in dyeing and printing; are suitable for the bulk coloration of polyacrylonitrile polymers and are fast to light and washings.

3,640,994
DISAZO DYE SALTS

Horst Harnisch, Cologne, Buchheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,671
Claims priority, application Germany, May 9, 1968, P 17 69 328.6
Int. Cl. C09b *31/06*
U.S. Cl 260—191 3 Claims

Dye salts of the formula



in which R is hydrogen or alkyl with 1–4 carbons are produced for use in bulk coloring of lacquers and organic synthetic materials especially polypropylene.

3,640,995
MONOAZO COMPOUNDS CONTAINING AN AROYL-AMINO - N - ALKOXYCARBONYL BENZYLANILINE COUPLING COMPONENT

Max A. Weaver, Herman S. Pridgen, and Clarence A. Coates, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,780
Int. Cl. C09b *29/06;* D06p *1/02*
U.S. Cl. 260—207.1 7 Claims

Azo compounds containing a phenyl, thiazolyl, benzothiazolyl, or thienyl diazo component and m-aroylamino-N-alkoxycarbonylbenzylaniline coupling component are useful as dyes for hydrophobic textile materials.

3,640,996
DISPERSE WATER-INSOLUBLE BENZENEAZO-3-ACETYL- OR 3-PROPIONYL-AMINODIPHENYLAMINE DYESTUFFS

Hans-Juergen Sturm, Gruenstadt, and Kurt Mayer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,929
Claims priority, application Germany, Feb. 23, 1968, P 17 19 060.2
Int. Cl. C09b *29/08;* D06p *1/08, 3/52*
U.S. Cl. 260—207.1 4 Claims

Disperse water-insoluble azo dyes in which a diazo component, e.g. of the benzene series, is coupled to 3-acetylamino or 3-propionylamino-diphenylamine as the coupling component; these dyes wherein the nitrogen atom of the diphenylamine is substituted by methyl, ethyl, β-hydroxy-ethyl or -propyl, β-hydroxy-γ-propyl, or β-acetoxy-ethyl or -propyl, when used alone or in mixtures with the corresponding compounds having the unsubstituted nitrogen atom are especially useful for the dispersion dyeing of synthetic linear polyester fibrous materials.

3,640,997
SUCROSE-ETHYLENE DIAMINE POLYOLS AND PROCESS FOR PREPARING SAME

Walter R. Fijal, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 605,178, Dec. 28, 1966. This application May 7, 1969, Ser. No. 822,702
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R 10 Claims

A sucrose-ethylene diamine polyol is prepared by reacting a mixture of sucrose and ethylene diamine with an alkylene oxide in the presence of a caustic catalyst. The polyol is used to prepare polyurethane foam products having excellent dimensional stability and physical properties. The polyurethane foams are used in preparing molded articles and as insulation for refrigerators, freezers, and the like.

3,640,998
ALKYLENE OXIDE ADDUCTS OF ALKYL OLIGOSACCHARIDES AND THEIR MIXTURES WITH ALKYLENE OXIDE ADDUCTS OF BOTH ALKYL GLUCOSIDES AND ALKANOLS

Richard C. Mansfield, Dersher, and James L. Rainey, Abington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed June 18, 1969, Ser. No. 834,558
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 10 Claims

Surface active alkylene oxide adducts of alkyl oligosaccharides, and alkylene oxide adducts of mixtures of alkyl oligosaccharides, alkyl glucosides and alkanols, are prepared from an alkanol and glucose via a transacetalation reaction, followed by oxyalkylation. Preparation of these compositions may be carried out by reacting glucose and a lower alkanol in the presence of an acid catalyst to form a mixture of lower alkyl glycosides and alkyl oligosaccharides which are then reacted with higher alkanols to form the desired intermediates, followed by incorporation of ethylene and/or propylene oxides into the components of the mixture.

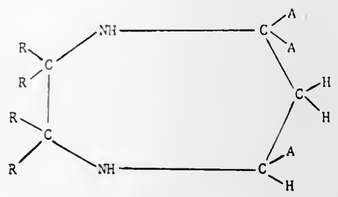
3,640,999
PROCESS FOR PREPARING SUBSTITUTED 1,4-DIAZACYCLOHEPTANES

Alberto Bonvicini and Giuseppe Cantatore, Terni, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Oct. 10, 1967, Ser. No. 674,114
Claims priority, application Italy, Oct. 14, 1966, 28,858/66
Int. Cl. C07d *53/02*
U.S. Cl. 260—239 BC 5 Claims

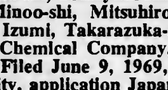
Process for preparation of alkyl-substituted 1,4-diazacycloheptanes of the general Formula 1

(1)



wherein R may be the same or different and is a hydrogen or an alkyl group having from about 1 to 12 carbon atoms and A may be the same or different and is selected from the group consisting of hydrogen and an alkyl group having from about 1 to 12 carbon atoms, this process comprising reacting, in the presence of an acid catalyst, an ethylenediamine of the general Formula 2

(2)



wherein R is as previously defined, with a saturated aliphatic ketone of the formula R'—CO—R', where the R' may be the same or different and is an alkyl group having from about 1 to 12 carbon atoms, and thereafter subjecting the resulting material to catalytic hydrogenation.

3,641,000
N-SULFONYLCARBOXAMIDE PENICILLINS

John H. Sellstedt, St. Davids, and Scott J. Childress, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 3, 1969, Ser. No. 830,123
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 4 Claims

This invention concerns N-sulfonylcarboxamide penicillins having potent activity against gram-positive and gram-negative microorganisms.

3,641,001
PROCESS FOR PREPARING α-CARBOXY-BENZYLPENICILLIN

Dennis Anthony Love, Redhill, David Patrick John Neal, Reigate, and Eric Pidgeon, Worthing, England, assignors to Beecham Group Limited, Brentford, England

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,182
Claims priority, application Great Britain, Oct. 23, 1968, 50,204/68
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 4 Claims

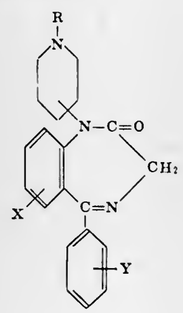
α-Carboxybenzylpenicillin and non-toxic salts are prepared by reacting 6-aminopenicillanic acid or a salt with a β-oxo-α-phenylacryloyl halide, preferably the chloride. An acid binding agent is present during the reaction. The β-oxo-α-phenylacryloyl halides are prepared from phenylmalonic acid and a halogenating agent such as PCl_3, PCl_5 or $POCl_3$.

3,641,002
BENZODIAZEPINE DERIVATIVES AND SALTS THEREOF

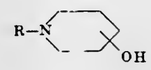
Hisao Yamamoto, Nishinomiya-shi, Sumio Kitagawa, Moriguchi-shi, Shigeho Inaba, Takarazuka-shi, Shigeru Sakai, Toyonaka-shi, Toshiyuki Hirohashi, Kobe, Isamu Maruyama, Minoo-shi, Mitsuhiro Akatsu, Ikeda-shi, and Takahiro Izumi, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed June 9, 1969, Ser. No. 831,732
Claims priority, application Japan, June 13, 1968, 43/41,109; July 1, 1968, 43/46,042
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 5 Claims

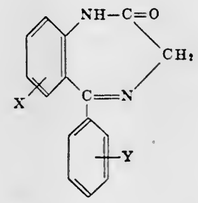
Novel 1-substituted 1,4-benzodiazepin-2-one derivatives represented by the formula,



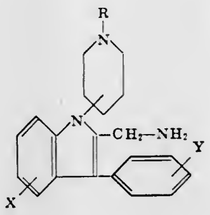
wherein R signifies a lower alkyl group, and X and Y signify respectively a hydrogen atom, a halogen atom, a nitro group or a trifluoromethyl group, which are effective as tranquilizers, muscle-relaxants and hypnotics, are produced by reacting with a reactive ester of a piperidinol derivative of the formula,



wherein R is as defined above, a 1,4-benzodiazepin-2-one derivative represented by the formula,



wherein X and Y are as defined above, or contacting, with an oxidizing agent, a 2-aminomethyl-indole derivative represented by the formula,



wherein R, X and Y are as defined above.

3,641,003
METHOD OF PREPARING AN α-AMINO-ω-LACTAM

Tomiyasu Ito, Kanagawa-ken, Koichiro Nagata, Tokyo, and Takehiko Ichikawa and Tetsuya Kato, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,066
Claims priority, application Japan, Nov. 18, 1968, 43/84,361
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 9 Claims

α-Amino-ε-caprolactam and its homologs having carbon chains of 5 to 12 members are prepared in high yield from the α-aminocycloalkanone oximes having the same number of carbon atoms by Beckmann rearrangement in the presence of chlorosulfonic acid or sulfur trioxide. The lactams are useful intermediates in the synthesis of the corresponding diamino acids.

3,641,004
ALKYL ESTERS OF 6-(BENZENESULFONYL)-TRIHALO-2-PICOLINIC ACID

R. Garth Pews and Fred P. Corson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,185
Int. Cl. A61k *27/00*; C07d *31/48*
U.S. Cl. 260—239.8 7 Claims

Disclosed are alkyl esters of 6-(benzenesulfonyl)-trihalo-2-picolinic acid and their preparation. These compounds are useful as pesticides.

3,641,005
PROCESS FOR THE PREPARATION OF Δ^4-6,6-DIFLUORO - 3,20 - DIKETO - 17α,21-DIHYDROXY-PREGNENES

George Albert Boswell, Jr., and William Charles Ripka, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 22, 1970, Ser. No. 31,004
Int. Cl. C07c *169/32, 173/00*
U.S. Cl. 260—239.55 D 11 Claims

Title compounds are prepared from Δ^5-3-alkanoyl-17α,20; 20,21-bismethylenedioxypregnenes by a process involving the addition of NOF; hydrolysis of the resulting 5α-fluoro-6-nitriminosteroid to the 5α-fluoro-6-ketosteroid; hydrolysis of the 3-alkanoyl and bismethylenedioxy groups with 48% hydrofluoric acid; acetylation of the 3-, 17α-, and 21-hydroxyls, fluorination with sulfur tetrafluoride to the corresponding 5α,6,6-trifluorosteroid; hydrolysis of all acetyl groups; re-formation of the 17α,20; 20,21-bismethylenedioxy group; oxidation of the 3-hydroxyl to the 3-ketone; dehydrofluorination in the C_4–C_5 positions; and removal of the bismethylenedioxy group. An alternative route also is proposed. Title steroids having an oxygenated function in the 11β-position are useful antiinflammatory and glucocortical agents.

3,641,006
PROCESS FOR THE PREPARATION OF STEROID α-FLUORONITRIMINES

William Charles Ripka, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 1, 1970, Ser. No. 42,558
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 C 6 Claims

Nitrosyl tetrafluoroborate reacts with certain steroids having carbon-carbon double bonds to give the corresponding steroid α-fluoronitrimines. Use of a mixture of nitrosyl fluoride with nitrosyl tetrafluoroborate considerably improved the yield of α-fluoronitrimines over that obtained with either nitrosyl fluoride or nitrosyl tetrafluoroborate alone. The steroid α-fluoronitrimines, produced by this process, are intermediates to biologically active products, which have a broad range of hormonal activities.

3,641,007
UNSATURATED PREGNA-3,20-DIONE-[17α,16α-d]-OXAZALINES

Giangiacomo Nathansohn, Milan, Gianfranco Odasso, Cusano Milanino, and Pietro de Ruggieri and Umberto Guzzi, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed May 1, 1969, Ser. No. 821,150
Claims priority, application Italy, May 3, 1968, 16,028/68
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.55 13 Claims

The invention relates to pregn-4-ene-3,20-dione-[17α, 16α-d]-oxazolines, substituted or unsubstituted at positions 6 and 2', and wherein additional double bonds Δ^1 and/or Δ^6 may be present. Said compounds possess progestinic activity.

3,641,008
PROCESS FOR THE PREPARATION OF PREGN-5-ENE-4,20-DIONES AND INTERMEDIATES IN THE PRODUCTION THEREOF

Bernard Ellis, Graham St., City Road, London, England; Vladimir Petrow, 7612 Miami Ave., Cincinnati, Ohio 45245; and David Neil Stanway, 65 Wicks Crescent, Formby, England

No Drawing. Continuation-in-part of applications Ser. No. 612,363, Jan. 30, 1967, and Ser. No. 612,833, Jan. 31, 1967, now Patent No. 3,478,069. This application May 7, 1969, Ser. No. 822,684
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 12 Claims

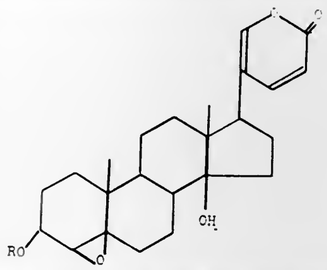
Novel 4-oxo-Δ^5-steroids having utility as intermediates for preparation of hormonally active steroids, are prepared by sulfonylating 3β-hydroxy - 4β - hydroxy or acetoxy-Δ^5-steroids to provide novel 3β-sulfonyloxy steroid intermediates, followed by reacting the 3β-sulfonyloxy steroid intermediates with an alkaline reagent.

3,641,009
CARDIO-ACTIVE OXIDO-BUFADIENOLIDES

Kurt Radschelt, Kelkheim, Taunus, Ulrich Stache and Werner Haede, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,582
Claims priority, application Germany, Dec. 5, 1968, P 18 12 943.6
Int. Cl. C07c *173/04*
U.S. Cl. 260—239.57 2 Claims

Cardio-active oxido-bufadienolides of the formula



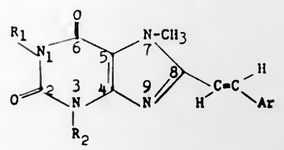
wherein R is hydrogen or lower acyl, and a method for making them.

3,641,010
NOVEL XANTHINE COMPOUNDS AND MEANS FOR OBTAINING THE SAME

Dieter Schweiss and Loren M. Long, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 846,594, July 30, 1969. This application June 11, 1970, Ser. No. 45,594
Int. Cl. C09b *23/14*; C07d *57/40*
U.S. Cl. 260—240 D 6 Claims

1,3-dialkyl-7-methyl-8-styrylxanthines (I)



I

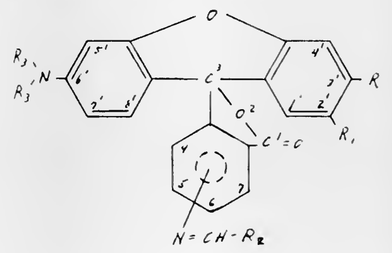
are provided by N-alkylation of corresponding compounds at either the 1-position or the 7-position; where R_1 and R_2 are methyl or ethyl and Ar is phenyl or 3,4,5-trimethoxyphenyl. The compounds are cerebral stimulants of the caffeine type.

3,641,011
5- AND 6-DIALKYLAMINOBENZYLIDENE-AMINOFLUORANS

Chao-Han Lin, Dayton, and Arthur J. Wright, Cincinnati, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Jan. 21, 1969, Ser. No. 792,277
Int. Cl. C07d *21/00*
U.S. Cl. 260—240 G 5 Claims

A novel chromogenic material of normally colorless form is disclosed, having a structural formula:



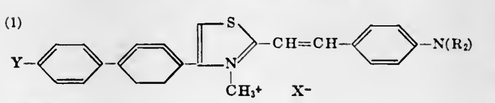
wherein R_2 represents a dialkylaminophenyl radical, R and R_1 comprise hydrogen, halogen, and alkyl radicals and R_3 represents alkyl radicals having less than five carbon atoms—said materials assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include 6'-diethylamino-5-(p-dimethylaminobenzylidene) amino - 2',3' - dimethylfluoran and 2'-chloro-6'-diethylamino - 6-(p-dimethylaminobenzylidene)amino-3'-methylfluoran.

3,641,012
STYRYL THIAZOLIUM SALTS

Arthur P. Phillips, East Chester, and Robert B. Burrows, Ardsley, N.Y., assignors to Burroughs Wellcome Co.

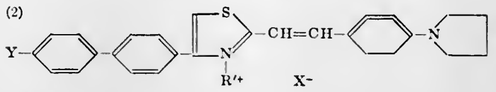
No Drawing. Filed Sept. 19, 1968, Ser. No. 760,966
Claims priority, application England, Sept. 22, 1967, 43,366/67
Int. Cl. C09b *23/14*
U.S. Cl. 260—240.9 6 Claims

Styryl thiazolium salts of the following structures:



where

Y is hydrogen or lower alkoxy
X^- is an anion of a pharmaceutically acceptable acid
R is lower alkyl (i.e. methyl, ethyl, propyl etc.)



where

Y is hydrogen or lower alkoxy
R' is lower alkyl
X^- is an anion of a pharmaceutically acceptable acid.

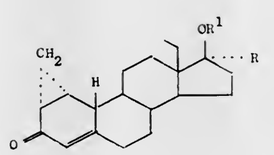
The compounds are useful in eliminating nematodes (i.e. hookworms, pinworms, etc.) inhabiting the intestinal track of mammals such as dogs, cats etc.

3,641,013
17β-HYDROXY-18-METHYL-4-ESTRENE-3-ONE AND DERIVATIVES THEREOF

Otto Engelfried, Friedmund Neumann, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed Sept. 9, 1968, Ser. No. 759,535
Int. Cl. C07c *169/22*
U.S. Cl. 424—243 9 Claims

Racemic and optically active 17β-hydroxy-18-methyl-4-estrene-3-one derivatives characterized by anabolic activity having the formula:



wherein R is hydrogen or saturated or unsaturated hydrocarbyl and R^1 is hydrogen or acyl.

The process of preparing the above compounds comprises introducing into the 4,5-position of the saturated A-ring of the 1α,2α-methylene-3-ketosteroid a double bond and thereafter if desired the free 17-hydroxy group in the resulting product is acylated or saponified to a 17-acyloxy group.

3,641,014
REDUCTION OF Δ^3-CEPHALOSPORIN SULFOXIDES

Charles F. Murphy, J. Alan Webber, Gary V. Kaiser, Earle M. Van Heyningen, Ian G. Wright, and Robin D. G. Cooper, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,925
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 13 Claims

Process for reducing cephalosporin sulfoxides with certain reducing agents in the presence or absence of acid halide activators to produce cephalosporins useful in an overall process for the manufacture of cephalosporin antibiotics, e.g., cephalothin, cephaloglycin, and the like, from penicillins.

3,641,015
7 - (PHENYLACETYLAMINO)CEPHALOSPORIN CARBOXAMIDES AND 7 - (THIOPHENE : 2-ACETYLAMINO) CEPHALOSPORIN CARBOXAMIDES

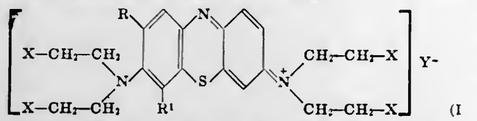
Benjamin Arthur Lewis, Suffern, Martin Leon Sassiver, Monsey, and Robert Gordon Shepherd, South Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,151
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 8 Claims

This disclosure describes compounds of the class of 7-(phenylacetylamino)cephalosporin carboxamides and 7-(thiophene-2-acetylamino)cephalosporin carboxamides, useful as anti-bacterial agents.

3,641,016
THIONINE DERIVATIVES
Jeno Korosi and Gyorgy Csaba, Budapest, Hungary, assignors to Egyesult Gyogyszer es Tapszergyar, Budapest, Hungary
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,216
Claims priority, application Hungary, Feb. 16, 1968, EE–1,491
Int. Cl. C07d *93/12*
U.S. Cl. 260—243 **1 Claim**

New compounds having the formula



(I

wherein R is H, Cl or methoxy, R^1 is H or Cl, X is Cl, and Y is Cl, perchlorate, HSO_4, tartrate or Br. The compounds show a better inhibitory activity on mice and rats against the transplantable Ehrlich ascites tumor, the C_3H-tumor, the Yoshida-tumor, the Benevolenskaja-tumor and the Guerin-tumor than the known cytostatica.

3,641,017
THIENO[1,2,4]THIADIAZINES
John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.
No Drawing. Filed May 20, 1969, Ser. No. 826,293
Int. Cl. C07d *93/22*
U.S. Cl. 260—243 D **10 Claims**

This invention relates to novel substituted thieno [1,2,4] thiadiazine-1,1-dioxides, to methods for preparing and to methods for using the same as anti-hypertensive agents.

3,641,018
PROCESS FOR PREPARING 7-AMINO CEPHALOSPORANIC ACID
Harold B. Hayes and Gerald L. Huff, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed June 26, 1969, Ser. No. 836,953
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 **10 Claims**

The preparation of 7-aminocephalosporanic acid (7–ACA) from cephalosporin C by treatment with a halogenating agent to obtain the imino chloride, conversion of the imino chloride to an imino ether, and hydrolysis of the imino ether is improved if the amino group in the adipamyl side chain is protected by a halo lower alkanoyl group. A further improvement is realized by using an amine salt of the N-haloalkanoylcephalosporin C.

3,641,019
THIAZOLO-as-TRIAZINES
Donald L. Trepanier and Paul E. Krieger, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 30, 1968, Ser. No. 756,411
Int. Cl. C07d *91/42*
U.S. Cl. 260—248 AS **6 Claims**

Substituted thiazolo[3,2-b] or [2,3-c]-as-triazines and their methohalides and pharmaceutically-acceptable salts such as 3,4-dihydro-6-phenyl-2,4-dimethyl-2H-thiazolo-[2,3-c]-as-triazine hydrobromide are prepared by the reaction of a substituted tetrahydro-as-triazine-3(2H)-thione with a 1,2-disubstituted ethane such as 1,2-dibromoethane or a 1-nitriol-2-phenyl-2-toluenesulfonyloxyethane. The novel compounds have pharmacological activity, notably as antidepressants as indicated by their antagonism of reserpine and their potentiation of amphetamine, and they are also useful in potentiation of barbiturates.

3,641,020
SYNTHESIS OF CYANURIC FLUORIDE
Richard W. Anderson and Hughie R. Frick, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,596
Int. Cl. C07d *55/42*
U.S. Cl. 260—248 CS **6 Claims**

A process for the efficient synthesis of cyanuric fluoride is provided. The process comprises contacting certain cyanuric halides with selected alkali metal fluorides in the presence of a perhalocarbonyl compound. The process of the present invention provides for the production of cyanuric fluoride at considerably reduced temperatures, than those used in known processes.

3,641,021
3,7-(RING-SUBSTITUTED) CEPHALOSPORIN COMPOUNDS
Charles W. Ryan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Apr. 18, 1969, Ser. No. 817,556
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **9 Claims**

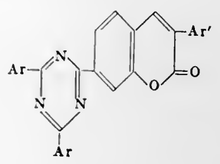
Cephalosporins substituted in the 3-position with a mercaptothiazole or mercaptotetrazole and in the 7-position with a phenyl- or thienylacetyl group bearing an alpha amino or hydroxy group are highly-active antibiotics yet are unusually stable toward cephalosporinases and metabolizing liver enzymes.

3,641,022
LIQUID PHASE PROCESS FOR THE PRODUCTION OF N-ALKYL MORPHOLINES
Daniel R. Chisholm, Mount Vernon, N.Y., and Jack M. Solomon, West Caldwell, and Bernard Isbitsky, Paramus, N.J., assignors to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 12, 1969, Ser. No. 798,761
Int. Cl. C07d *87/24*
U.S. Cl. 260—247 **6 Claims**

Long chain N-alkyl morpholines are prepared by a liquid phase process at atmospheric pressure by cyclodehydration of the corresponding N-substituted dialkanolamine in the presence of an activated alumina catalyst.

3,641,023
7-TRIAZINYL-COUMARINS
Klaus-Dieter Bode, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,707
Claims priority, application Germany, Apr. 11, 1968, P 17 70 182.5
Int. Cl. C07d *7/28*
U.S. Cl. 260—248 CS **6 Claims**

7-triazinyl-coumarin of the formula



in which Ar and Ar′ are identical or different, optionally substituted aromatic or hetero-aromatic radicals, and

the coumarin ring may be further substituted, useful as brightening agents are disclosed. These compounds are prepared by reacting the corresponding coumarin-7-carboxylic acid chloride with Ar–CN in the presence of aluminum and ammonium chloride.

3,641,024
LOW MOLECULAR WEIGHT POLYISOCYANATES
Perry A. Argabright, Littleton, Colo., and Harold D. Rider, Barrington, Ill., assignors to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,860
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 **21 Claims**

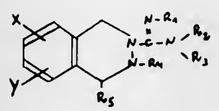
Polyisocyanate product mixture compounds are separated into a relatively low molecular weight phase and a relatively high molecular weight phase by contacting the product mixture with carbon tetrachloride. The solvent is readily removed for final isolation of the two polyisocyanate components. The polyisocyanate compositions are useful as starting materials in the production of urethane polymers as coatings, films, foams, adhesives, etc. The higher molecular weight products are especially useful in these areas because of their inherent thermostability and flame retardancy provided by the high concentration of isocyanurate rings in the molecule.

3,641,025
STOICHIOMETRIC REGULATION IN CHEMICAL REACTIONS INVOLVING A HIGHLY REACTIVE ACID CHLORIDE, ANHYDRIDE OR A DERIVATIVE THEREOF
Harris E. Petree, Spanish Fort, Ala., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Oct. 30, 1968, Ser. No. 771,971
Int. Cl. C07d *55/18*
U.S. Cl. 260—249.5 **5 Claims**

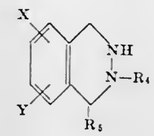
A method for maintaining the stoichiometry in a reaction between a highly reactive acid chloride or anhydride including derivatives thereof having moieties of differing reactivities and a co-reactant by addng to the reaction medium a fluorescent amine so as to determine the amount of unreacted acid chloride (or anhydride or derivative thereof) present in the reaction medium and adjusting the flow of said reactive acid chloride (or anhydride or derivative thereof) or the co-reactant to the reaction medium so as to maintain the desired stoichiometric ratio.

3,641,026
PHTHALAZINE DERIVATIVES
Harm Jan Panneman, Vijversingel, Netherlands, assignor to Organon Inc., West Orange, N.J.
No Drawing. Filed June 9, 1969, Ser. No. 831,715
Claims priority, application Netherlands, July 23, 1968, 6810452
Int. Cl. C07d *51/06*
U.S. Cl. 260—250 **4 Claims**

Novel 1,2,3,4-tetrahydro-phthalazine-2-carboxamidines of the general formula:



in which R_1, R_2, R_3, R_4 being H or a C_{1-4} alkylgroup, R_5 is H, lower alkyl, aryl, aralkyl and X and Y are H, OH, SH, lower alkyl or alkoxy, HI, NH_2, CF_3, sulfamyl and acid addition salts of these compounds. They can be prepared from



by appropriate substitution of the hydrogen carrying nitrogen atom.

3,641,027
5,6,7,8-TETRAHYDRO - 5 - OXO-PYRIDO[2,3-d]-PYRIMIDINE - 6 - CARBONITRILES AND RELATED COMPOUNDS
Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,485
Int. Cl. C07d *57/20*
U.S. Cl. 260—256.4 F **5 Claims**

The disclosure is directed to 5,6,7,8-tetrahydro-5-oxopyrido[2,3-d]pyrimidine-6-carbonitriles and to 4-[(2-cyanoethyl)alkylamino]-5-primidine carboxylic acid esters which are intermediates in their preparation. Both the final products and the intermediates have central nervous system activity as depressants.

3,641,028
5-HYDROXY - 7H - PYRROLO[2,3-d]PYRIMIDINE-6-CARBOXYLIC ACID ESTERS AND RELATED COMPOUNDS
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,487
Int. Cl. C07d *57/14*
U.S. Cl. 260—256.4 F **2 Claims**

The disclosure is directed to 5-hydroxy-7H-pyrrolo [2,3-d]pyrimidine-6-carboxylic acid esters and to 4-[carboxyalkyl)amino]5-pyrimidinecarboxylic acid esters. All these compounds have central nervous system activity as depressants while the latter compounds may also be used in the preparation of the former compounds.

3,641,029
SUBSTITUTED BENZOXAZOLECARBOXAMIDES AND BENZOTHIAZOLECARBOXAMIDES
William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Feb. 2, 1970, Ser. No. 8,088
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC **6 Claims**

The preparation of N-(tert-aminoalkyl) substituted benzoxazolecarboxamides and benzothiazolecarboxamides, are described. One method is by reacting benzoxazol or benzothiazole carboxylic acids with N,N′-carbonyldiimidazole and subsequently with a substituted alkylene amine. Other methods are also described for the preparation of the desired compounds. The compounds are useful for their (CNS) activity in the field of tranquilizers, and (CNS) depressants.

3,641,030
4,5-DIHYDRO-N-(4-PHENYL-1-PIPERAZINYLCARBONYL-1H[1,4]-DIAZEPINO[1,2-a]INDOLE
Meier E. Freed, Philadelphia, and Elisabeth Hertz, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Oct. 21, 1968, Ser. No. 769,388
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **1 Claim**

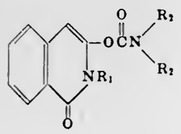
This invention concerns tetrahydropyrazinoindole-2-carboxamides and dihydrodiazepinoindole-2-carboxamides which are pharmacologically active as central nervous depressants.

3,641,031
10-(PIPERAZINYL OR HEXAHYDRODIAZEPINE)-THIENO[3,2-b][1,5]BENZOTHIAZEPINE
Walter Schindler, Riehen, and Armin Zust, Birsfelden, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Filed Nov. 15, 1968, Ser. No. 776,246
Claims priority, application Switzerland, Nov. 30, 1967, 16,874/67; Dec. 29, 1967, 18,372/67
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **7 Claims**

10-(piperazinyl)-and 10-(hexahydrodiazepinyl)-thieno-[3,2-b][1,5]benzothiazepine derivatives and their pharmaceutically acceptable acid addition salts are prepared; these compounds have a depressant effect on the central nervous system; they are the active ingredients of pharmaceutical compositions; an illustrative embodiment is 10-(4-methyl - 1 - piperazinyl) -thieno[3,2-b][1,5]benzothiazepine.

3,641,032
N,N-DISUBSTITUTED 2-ALKYL-3-HYDROXY-1(2H)-ISOQUINOLONECARBAMATES
Harold Zinnes, Rockaway, John Shavel, Jr., Mendham, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed June 5, 1969, Ser. No. 830,882
Int. Cl. C07d *35/32*
U.S. Cl. 260—287 **2 Claims**

Immunosuppressive compositions containing compounds of the formula:



(I)

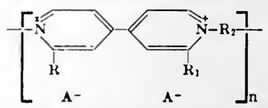
wherein R_1 is alkyl and R_2 is alkyl or aryl. Generally speaking, they are administered at a dose of about 1 mg./kg. to 100 mg./kg. of the animal body weight in order to suppress immuno responses.

3,641,033
4,4' - (LOWER-ALKYLENEDITHIO OR DISULFONYL)-BIS-TETRAHALO PYRIDINES AND DERIVATIVES THEREOF
Leonard Levine, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,147
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **10 Claims**

Substituted bis(halogenated azine) compounds such as 4,4' - (tetramethylenedithio)bis(2,3,5,6 - tetrachloropyridine) or 2,2'-[sulfonylbis(ethylenesulfinyl)]bis(2,3,5,6-tetrachloropyridine) are prepared from haloazines and alkanedithiols. The compounds are useful as pesticides, particularly for the control of plants, including bacteria, fungi and higher plants.

3,641,034
POLYMERS OF DIPYRIDYL
Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,781
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **6 Claims**

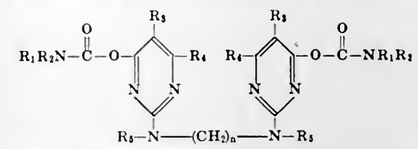
A new class of polymers is described in which the essential recurring structural unit corresponds to the formula



in which R and R_1 each are hydrogen or methyl, R_2 is either alkylene or R_3-phenylene-R_4 wherein R_3 and R_4 each are alkylene, *n* is at least 2, and A^- is anion.

3,641,035
PESTICIDAL COMPOUNDS AND COMPOSITIONS CONTAINING THEM
Nigel Douglas Bishop, Winnersh, and Joan Irene Masters, Crowthorne, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 18, 1970, Ser. No. 38,541
Claims priority, application Great Britain, May 28, 1969, 26,922/69
Int. Cl. C07d *51/38*
U.S. Cl. 260—256.4 C **2 Claims**

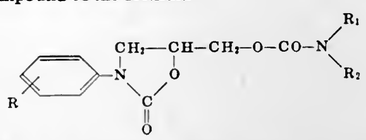
Bis pyrimidine derivatives having the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are lower alkyl groups, or R_3 and R_4 are hydrogen atoms and *n* is an integer having a value of from 1 to 6, and compositions containing said derivatives to combat pests.

3,641,036
DERIVATIVES OF 5-CARBAMOYLOXYMETHYL-3-SUBSTITUTED - 2-OXAZOLIDINONES, PROCESS OF PREPARATION THEREOF AND THEIR THERAPEUTIC APPLICATION
Claude P. Fauran and Guy M. Raynaud, Paris, René A. Oliver, Vincennes, and Colette A. Douzon, Paris, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,401
Claims priority, application Great Britain, Mar. 18, 1969, 14,260/69
Int. Cl. C07d *85/28*
U.S. Cl. 260—268 C **2 Claims**

A compound of the formula



in which R is H, halogen, alkyl having 1 to 4 carbon atoms or trifluoromethyl, and R_1 and R_2 each is H or dialkylaminoalkyl or together with N comprise methylpiperazino.

The compound is prepared by treating the corresponding 5-hydroxymethyl compound with ammonia or an amine in the presence of phosgene.

The compounds possess anti-depressive, myorelaxing, tranquilizing, sedative, analgesic, anti-convulsive, anti-pyretic, anti-inflammatory and uricosuric activities.

3,641,037
CYCLIC SUBSTITUTED DERIVATIVES OF TRICYCLOHEXYLTIN
Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,309
Int. Cl. C07f *7/22*
U.S. Cl. 260—270 **7 Claims**

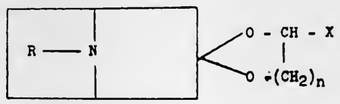
Cyclic substituted derivatives of tricyclohexyltin wherein the cyclic substituent is selected from furyl, pyridyl, indenyl and pyridylethyl, said derivatives being useful as pesticides.

3,641,038
10,11-DIHYDRO - 10,5 - (IMINOMETHANO)-5H-DIBENZO[a,d]CYCLOHEPTEN - 10,01; ACID ADDITION SALTS THEREOF; AND PROCESS
Martin A. Davis, Montreal, Quebec, and Thomas A. Dobson, Dollard Ormeaux, Quebec, Canada, assignors to Ayerst, McKenna & Harrison Limited, St. Laurent, Montreal, Quebec, Canada
No Drawing. Filed Oct. 29, 1968, Ser. No. 771,602
Int. Cl. C07d *39/00*
U.S. Cl. 260—289 R **3 Claims**

There is disclosed herein 10,11 - dihydro-10,5-(iminomethano) - 5H-dibenzo[a,d]cyclohepten-10-ol and salts thereof with pharmacologically acceptable acids, a process for preparing said compound, and intermediates used in said process. The compound possesses anti-convulsant activities, and methods for its use are also disclosed.

3,641,039
CYCLIC KETAL DERIVATIVES OF CERTAIN TROPINONES AND NORTROPINONES
Jozsef Rakoczi, Gyula Mikite, Lujza Petocz, Janos Fischer, Katalin Grasser, and Ibolya Kosoczky, Budapest, Hungary, assignors to Egyesult Gyogyszer es Tapszergyar, Budapest, Hungary
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,318
Claims priority, application Hungary, Dec. 29, 1968, EE–1,613
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 **7 Claims**

New cyclic ketal derivatives of the Formula I



(I)

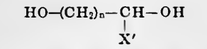
wherein

R represents an alkylene group of 5 to 6 carbon atoms or the residue of an N-substituted nortropane skeleton, wherein the substituent is methyl or ethoxycarbonyl group,

X represents hydrogen, hydroxymethyl, alkoxymethyl, acyloxymethyl, halomethyl, benzoyloxymethyl, carbamoyloxymethyl or piperidino methyl group,

n is an integer between 1 and 4, but if R represents pentamethylene and X is a hydrogen atom, then *n* is 3 or 4, and if R is hexamethylene and X represents a hydroxymethyl group, so is *n* an integer between 2 and 4,

as well as their acid addition salts and the quaternary onium derivatives of the nitrogen-containing compounds have been prepared by reacting a tropinone with a compound of the Formula II

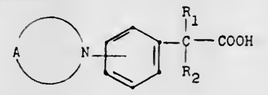


(II)

(wherein *n* has the same meanings as stated above and X' represents a hydrogen, halomethyl or hydroxymethyl group) or with a ketal derivative of the compound of the general Formula II formed with acetone; if a carbamoyl, ether, ester or halo derivative is wanted by carbamoylating, etherifying, esterifying or halogenating the compounds of the Formula I wherein X represents hydroxymethyl group; if a piperidine derivative is wanted, by reacting the compound of the Formula I, wherein X represents halomethyl group, with piperidine or a salt thereof; if a nor-derivative is wanted by reacting the tropinone ketal derivatives with chlorocarbonic acid ethyl ester; and if a salt is wanted, converting the nitrogen-containing compounds of the Formula I into their acid addition salts or quaternary onium derivatives.

3,641,040
TERTIARY AMINO PHENYL ACETIC ACIDS
Richard William James Carney, New Providence, and George de Stevens, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.
No Drawing. Continuation-in-part of application Ser. No. 808,343, Mar. 18, 1969, which is a continuation-in-part of application Ser. No. 790,863, Jan. 13, 1969, which is a continuation-in-part of application Ser. No. 757,136, Sept. 3, 1968, which in turn is a continuation-in-part of application Ser. No. 716,347, Mar. 27, 1968. This application July 18, 1969, Ser. No. 843,244
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.72 **4 Claims**

New α-(cyclic tert. aminophenyl)-aliphatic acids, e.g. those of the formula



R_1=H or alkyl

R_2=H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl

A=alk(en)ylene, aza-, oxa, or thiaalkylene

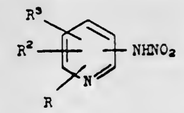
and functional derivatives thereof, are anti-inflammatory agents.

3,641,041
DIPYRIDYLIUM QUATERNARY DIHALIDE HALOGEN COMPLEXES
Robert M. Thomas, Fred R. Gerns, and John L. Sands, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.
No Drawing. Filed Oct. 23, 1968, Ser. No. 770,082
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 T **2 Claims**

Halogen complexes of dipyridylium quaternary dihalide are bacteriocidal and herbicidal agents and are useful as defoliants, particularly as cotton defoliants.

3,641,042
NITRAMINO PYRIDINE DERIVATIVES
Karl Ayad, Wrexham, Wales, assignor to Monsanto Chemicals Limited, London, England
No Drawing. Filed Jan. 28, 1969, Ser. No. 794,783
Claims priority, application Great Britain, Jan. 29, 1968, 4,546/68
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **4 Claims**

Herbicidal active nitraminopyridines of the formula



or an N-oxide or salt of such a nitraminopyridine base, wherein R is hydrogen or alkyl having from 1 to 6 carbon atoms; R^2 is chlorine, bromine, nitro or alkyl having from 1 to 6 carbon atoms; and R^3 is chlorine, bromine or nitro but different from R^2.

3,641,043
N-(1,3-THIAZOL-2-YL)-DITHIOCARBAMIC ACID DERIVATIVES
Erich Däbritz and Werner Schäfer, Leverkusen, Ferdinand Grewe, Burscheid, and Hans Scheinpflug, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 14, 1969, Ser. No. 799,517
Claims priority, application Germany, Mar. 2, 1968, P 16 70 993.6
Int. Cl. C07d *91/34*
U.S. Cl. 260—306.8 **2 Claims**

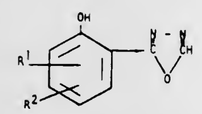
N-(1,3-thiazol-2-yl)-dithiocarbamic acid derivatives, i.e. N-(1,3-thiazol-2-yl)-dithiocarbamic acid -alkyl, -alkali metal carboxy-methyl, -carboxy-methyl, -carboalkoxy-methyl, -N'-aminocarbonyl-methyl and -N'-alkylaminocarbonyl-methyl, esters, which possess fungicidal properties and which may be produced by conventional methods.

3,641,044
PROCESS FOR THE MANUFACTURE OF ARYLOXAZOLES
Erich Matter, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Aug. 20, 1968, Ser. No. 753,893
Claims priority, application Switzerland, Aug. 25, 1967, 11,936/67
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 D **6 Claims**

A process for the manufacture of aryloxazoles, starting from ortho-hydroxyaminoaryl compounds and carboxylic acids. The reaction is carried out at elevated temperatures in a diluent, and a tertiary nitrogenous base is initially added to the mixture containing the ortho-hydroxyaminoaryl compound.

3,641,045
HYDROXY-PHENYL OXADIAZOLES
William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
No Drawing. Filed June 11, 1969, Ser. No. 832,429
Int. Cl. C07d *85/54*
U.S. Cl. 260—307 **2 Claims**

Oxadiazoles of the formula:



wherein R^1 and R^2 are hydrogen, halogen or hydrocarbyl providing that both R's are not hydrogen, and novel hydrazide and formylhydrazide intermediates. The oxadiazoles are useful as bacteria growth inhibitors.

3,641,046
DERIVATIVES OF THIOURAZOLES
John W. Gates, Jr., Albert W. Wise, Dorothy J. Beavers, and Paul E. Miller, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,715
Int. Cl. C07d *55/06, 93/08*
U.S. Cl. 260—308 R **14 Claims**

This invention relates to thiourazole adducts formed by reacting an α,β-unsaturated compound with a thiourazole. In one aspect, this invention relates to mono- and di-adducts of thiourazoles and dithiourazoles. In another aspect, this invention relates to thiourazole adducts which have been further reacted through the functional groups on the adduct.

3,641,047
2-NITROIMIDAZOLE DERIVATIVES SUBSTITUTED IN THE 1-POSITION WITH A 2-OXO-PROPYL OR SEMICARBAZONE GROUP
Alden Gamaliel Beaman, North Caldwell, N.J., Robert Duschinsky, Pully-Lausanne, Switzerland, and William Paul Tautz, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Division of application Ser. No. 840,077, Apr. 23, 1969, now Patent No. 3,549,653, which is a division of application Ser. No. 556,585, June 10, 1966, now Patent No. 3,468,902, dated Sept. 23, 1969, which in turn is a continuation-in-part of application Ser. No. 447,087, Apr. 9, 1965. This application Aug. 5, 1970, Ser. No. 61,516
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **10 Claims**

Antimicrobial 2-nitroimidazole derivatives substituted in the 1-position with a 2-oxo-propyl or semicarbazone group, a 2-propanol group, a 2,3-epoxypropyl group, or derivatives thereof.

3,641,048
ALKYL 1 - (SUBSTITUTED ALKYLIDENEAMINO-OXYCARBONYL) - 2 - BENZIMIDAZOLECARBAMATES
Bruce I. Dittmar, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 29, 1969, Ser. No. 845,869
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **4 Claims**

A group of alkyl 1 - (substituted alkyldeneaminooxycarbonyl) - 2 - benzimidazolecarbamates are useful as fungicides and mite ovicides. These compounds can be prepared by reacting alkyl 2 - benzimidazolecarbamates with a chloroformate derived from an oxime and phosgene in the presence of an acid acceptor, e.g. triethylamine.

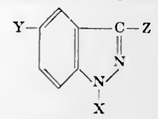
A compound exemplary of the group is methyl 1-[1-methylthio)ethyleneaminooxycarbonyl] - 2 - benzimidazolecarbamate.

3,641,049
IMIDAZOLINE-2-THIONES
Jan Olof Sandstrom, Mataregranden 5, Lund, Sweden, and Per Gunnar Kjellin, Lund, Sweden; said Kjellin assignor to said Sandstrom
No Drawing. Filed Oct. 29, 1968, Ser. No. 771,610
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **4 Claims**

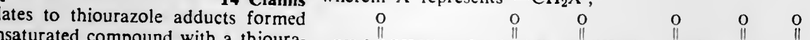
N,N' - dialkyl - 4 - phenylimidazoline - 2 - thiones, particularly 1,3 - dimethyl - 4 - phenylimidazoline - 2-thione, is disclosed as a useful antidepressant agent. The dimethyl compound also exhibits antiviral properties against herpes simplex and vaccinia viruses.

3,641,050
1,5-SUBSTITUTED INDAZOLES
Pasquale Paul Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.
No Drawing. Filed Dec. 12, 1967, Ser. No. 689,812
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **5 Claims**

1,5-substituted indazoles having the structural formula

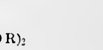


wherein X represents $-CH_2X'$,



$-CH_2SC(=NH)NH_3{+}Cl{-}$, $-CH_2CH_2X'$

$-SCX'_3$, or



X' represents —OH, —OR, —SCN, halogen, or piperidino; R represents an alkyl, haloalkyl, phenyl, or substituted phenyl group; Y represents chlorine, nitro, or amino; and Z represents hydrogen or halogen, are used to control the growth of undesirable fungi, plants, and insects. Among the most active of these compounds as pesticides are N'-hydroxymethyl-5-chloroindazole, 2-(5-chloroindazolylmethyl) thiourea hydrochloride, N'-thiocyanatomethyl-5-nitroindazole, and N' - trichloromethylmercapto-3,5-dichloroindazole.

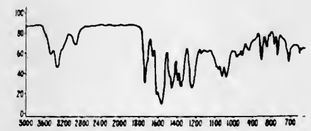
3,641,051
NAPHTHYLENE-BIS-2-BENZIMIDAZOLES
Hans Frischkorn, Hofheim, Taunus, Ulrich Pintschovius, Kelkheim, Taunus, Erich Schinzel, Hofheim, Taunus, and Otto Smerz, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed July 9, 1968, Ser. No. 743,337
Claims priority, application Germany, July 12, 1967. F 52,933
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **14 Claims**

Naphthalene-bis-2-benzimidazoles, especially 1,4-naphthalene-bis-2'-benzimidazoles, are excellent optical brighteners, particularly for fibrous materials, especially for those made of polyacrylonitrile. The new compounds are useful for brightening in combination with oxidative bleaching agents in acid baths.

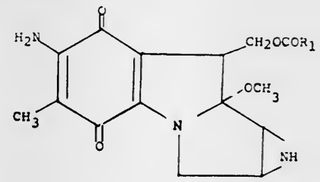
3,641,052
MONO- AND DI-HALO-1-N-HETEROCYCLOVINYL PHOSPHATES
Robert T. Kemp, Richmond, Va., assignor to Mobil Oil Corporation
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,819
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **6 Claims**

Mono- and di-halovinyl phosphate esters substituted in the 1-position with pyrazolyl or benzopyrazolyl groups and ring-substituted derivatives form a new class of insecticides. They are highly effective against Lepidoptera, particularly the Noctuidae.

3,641,053
O-ACYL DECARBAMOYL MITOMYCINS
Keizo Uzu, Kinichi Nakano, and Toshinaka Takahashi, Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed July 8, 1969, Ser. No. 839,923
Claims priority, application Japan, July 23, 1968, 43/51,645
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.3 **7 Claims**



Compounds of the formula



and a process for their preparation are provided wherein R_1 is lower alkyl or substituted lower alkyl. These compounds are antibiotics.

3,641,054
METHOD OF PREPARING 1,4-OXATHIANES AND DERIVATIVES THEREOF
Donald J. Martin, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Feb. 4, 1969, Ser. No. 796,569
Int. Cl. C07d *89/14*
U.S. Cl. 260—327 P **10 Claims**

1,4-oxathianes are prepared by reacting a bis(2-haloalkyl) ether with an alkali metal hydrosulfide in an aqueous solution saturated with hydrogen sulfide. The 4-oxide derivatives of 1,4-oxathiane can be prepared by reacting the 1,4-oxathiane with a nitrogen oxide compound at a temperature of from about —20° C. to about 100° C. The 4-oxide can be further reacted with an organic acid anhydride to form dihydro p-oxathiins.

3,641,055
SULFONIUM YLIDS OF ACTIVE METHYLENE COMPOUNDS
John G. Moffatt, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama
No Drawing. Continuation-in-part of application Ser. No. 621,761, Mar. 9, 1967. This application Feb. 10, 1969, Ser. No. 798,190
Int. Cl. C07d *63/14, 63/16*
U.S. Cl. 260—332.3 R **10 Claims**

Sulfonium ylids, prepared from sulfoxides and compounds possessing an active methylene group, are anti-fungal agents. Their prepaartion is carried out in the presence of an N,N'-disubstituted carbodiimide and an acid.

3,641,056
10-(AMINOMETHYL)- AND (AMINOETHYL)-DIBENZ [b,f]OXEPINS
Walter Schindler, Riehen, and Hans Blattner, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 466,840, June 24, 1965. This application Jan. 6, 1970, Ser. No. 1,063
Int. Cl. C07d *9/00*
U.S. Cl. 260—333 **8 Claims**

10-(aminomethyl)- and 10 - (aminoethyl)dibenz[b,f] oxepins such as 10-(dimethylaminomethyl)dibenz[b,f] oxepin, and pharmaceutically acceptable acid addition salts thereof have depressant effects on the central nervous system and are thus useful as sedatives, anticonvulsives and anesthesia potentiators.

3,641,057
4,5-DICHLORO-1,3-DIOXACYCLOPENTENONE
Hans-Dieter Scharf, Wilhelm Droste, and Rita Liebig, Bonn, Germany, assignors to E. Merck Aktiengesellschaft, Darmstadt, Germany
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,200
Claims priority, application Germany, July 2, 1968, P 17 68 801.6
Int. Cl. C07d *13/04, 13/06*
U.S. Cl. 260—340.2 **1 Claim**

The novel compound 4,5-dichloro-1,3-dioxacyclopentenone (dichlorovinylene-carbonate), useful as a stabilizer, a cross linking agent or an intermediate, is produced by reacting tetrachloroethylene carbonate with zinc, copper or copper plated zinc in the presence of catalytic amounts of dimethyl-formamide.

3,641,058
OXIDATION PROCESS EMPLOYING DIPYRIDINIUM DICHROMATE

John R. Corrigan and William M. Coates, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed July 2, 1969, Ser. No. 838,705
Int. Cl. C07c *47/48, 49/44;* C07d *13/00*
U.S. Cl. 260—340.5 16 Claims

The present invention provides an improved process for the oxidation of primary and secondary alcohols with dipyridinium dichromate to their respective aldehydes and ketones. An improved process for the preparation of the dipyridinium dichromate oxidizing reagent is also provided.

3,641,059
CYCLIC HYDROXYACETALS

Georg Blumenfeld, Sieglar, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Bezirk Cologne, Germany

Continuation of application Ser. No. 461,557, June 4, 1965. This application Jan. 10, 1969, Ser. No. 802,711
Claims priority, application Germany, June 10, 1964, D 44,647; Jan. 23, 1965, D 46,341
Int. Cl. C07d *15/04, 15/10*
U.S. Cl. 260—340.6 6 Claims

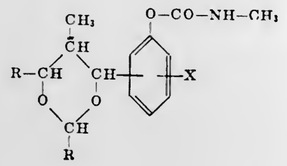
Bis-(hydroxymethylalkyl)dioxanyls are produced by reaction of glyoxalacetals and a trimethanol compound. The dioxanyls can be used in the production of polyesters.

3,641,060
CARBAMATE INSECTICIDE

Michio Nakanishi, Nakatsu-shi, Obita, Ryosuke Kobayashi and Kozo Abe, Fukuoka, and Toshihiko Mukai, Nakatsu-shi, Obita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,146
Claims priority, application Japan, Sept. 28, 1968, 43/70,678
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.7 6 Claims

Carbamates of the formula



wherein R is H or methyl and X is H, Cl, methyl or methoxy and insecticidal compositions containing same.

3,641,061
SUBSTITUTED MERCURI CYCLOHEXYL COMPOUNDS

Roger P. Napier, Bridgewater, N.J., and Michael P. Pirnik, Boston, Mass., assignors to Mobil Oil Corporation

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,077
Int. Cl. C07d *13/00;* C07f *3/10*
U.S. Cl. 260—340.9 6 Claims

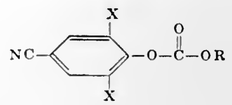
Cyclohexanones and ketals thereof having mercuri substituents in the 2-position and hydroxy, alkoxy, or acetoxy in the 3-position are effective fungicides and bactericides.

3,641,062
CARBONATE ESTERS OF 3,5-DIHALO-4-HYDROXY-BENZONITRILES

Walter Ost, Klaus Thomas, Dietrich Jerchel, and Gerbert Linden, Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,159
Claims priority, application Austria, Apr. 17, 1968, A 3,744/68
Int. Cl. C07c *121/52;* C07d *5/04;* A01n *9/20*
U.S. Cl. 260—347.4 5 Claims

Herbicidal 4-cyano-2,6-dihalo-phenyl carbonates of the formula



wherein

X is bromine or iodine, and

R is allyl, tetrahydrofurfuryl, phenyl, halophenyl, benzyl, 2,2,2-trichloroethyl or 2-methoxyethyl.

3,641,063
ANTIBIOTIC PURIFICATION PROCESS

Thomas W. Miller, Carteret, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Jan. 22, 1968, Ser. No. 699,376
Int. Cl. C07f *9/38, 9/40*
U.S. Cl. 260—348 R 2 Claims

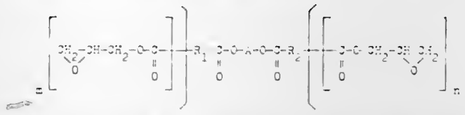
Method for recovering Antibiotic 833A, chemically known as (−)(cis-1,2-epoxypropyl)phosphonic acid, from impure aqueous solutions containing said antibiotic, via adsorption on ion exchange resins with subsequent elution with water, aqueous salt solutions, or aqueous alcoholic salt solutions. Antibiotic 833A is active against both gram-positive and gram-negative bacteria.

3,641,064
POLYGLYCIDYL ESTERS

Alfred Heer, Birsfelden, and Karl Metzger, Aesch, Basel-Land, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,748
Claims priority, application Switzerland, Jan. 29, 1968, 1,311/68
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 A 7 Claims

New polyglycidyl esters of formula



wherein R_1 and R_2 independently of each other denotes a residue, obtained by removing the carboxyl groups, of an aromatic polycarboxylic acid having 2 to 6 carboxyl groups, A represents the residue, obtained by removing the two hydroxyl groups, of a polyalkylene glycol or average molecular weight of at least 200 and wherein *m* and *n* denote integers having a value of at least 1 and at most 3, preferably 1 or 2.

3,641,065
METHOD FOR THE PREPARATION OF (CIS-1,2 - EPOXYPROPYL)PHOSPHONIC ACID DERIVATIVES

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,177
Int. Cl. C07f *9/38*
U.S. Cl. 260—348 R 8 Claims

Method for preparing (cis-1,2-epoxypropyl)phosphonic di-halides, (cis-1,2-epoxypropyl)phosphonic acid esters and (cis-1,2-epoxypropyl)phosphonic acid salts which comprises treating a [2-hydroxyvinyl]onium halide, methylcarbonate (or methylsulfite) ester with a reagent capable of effecting ring closure wherein the term "onium" includes a radical selected from sulfonium, ammonium, sulfoxonium or phosphonium. The (cis-1,2-epoxypropyl) phosphonic di-halides, (cis-1,2-epoxypropyl)phosphonic acid esters and (cis-1,2-epoxypropyl)phosphonic acid salts thus obtained have utility as intermediates which may be converted to (cis-1,2-epoxypropyl)phosphonic acid. The (cis-1,2-epoxypropyl)phosphonic acid and its salt derivatives are useful as antimicrobial agents and inhibit the growth of gram-positive and gram-negative pathogenic bacteria.

3,641,066
CATALYTIC PROCESS FOR EPOXIDATION OF OLEFINIC COMPOUNDS IN THE PRESENCE OF MOLECULAR OXYGEN

Jean Rouchaud, Brussels, Belgium, and Irénée Seree de Roch, Rueil-Malmaison, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed Sept. 11, 1969, Ser. No. 857,202
Claims priority, application France, Sept. 16, 1968, 166,397
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 V 3 Claims

In the liquid phase catalytic epoxidation of olefins, such as propylene, a novel catalyst is provided, composed of molybdenum, tungsten, or vanadium, or a compound thereof, deposited on a zeolite, such as a molecular sieve of the X type, the pores of the zeolite having a diameter of 6–10 angstroms, the molybdenum, tungsten or vanadium content of said catalyst being between 0.02 and 20% by weight with respect of the weight of the carrier, the catalyst being used in an amount of from 10^{-1} to 10^{-5} gram-atoms of metal per kilogram of feedstock.

3,641,067
EPOXIDATION OF OLEFINS WITH THALLIC CARBOXYLATES

Walter M. Kruse, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,671
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 L 6 Claims

The process disclosed is one of oxidizing propylene or isobutylene to the corresponding epoxide. The oxidizing agent is a thallic carboxylate, such as thallic acetate, and the epoxide is obtained as principal product by continuously removing the volatile oxidation reaction products from the reaction mixture as the oxidation proceeds. The oxidation may be carried out at a temperature from about 0° C. to about 170° C.

3,641,068
17α-(2 - ALKYNYL)-7α - METHYLESTRA-1,3,5(10)-TRIENE - 3,17β - DIOLS AND ESTERS CORRESPONDING

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,702
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 6 Claims

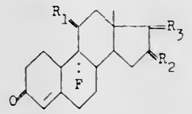
The conversion of 3-hydroxy-7α-methylestra-1,3,5(10)-trien-17-one to a suitable derivative, wherein the 3-hydroxy group is protected, followed by reaction of that derivative with a 2-alkynyl magnesium halide and cleavage of the protecting group affords 17α-(2-alkynyl)-7α-methylestra-1,3,5(10)-triene-3,17β-diols. The corresponding esters are produced by reaction with a lower alkanoic acid anhydride or halide. These novel compounds are valuable pharmacological agents, e.g. deciduogenic, anti-estrogenic, anti-fertility and pepsin-inhibitory.

3,641,069
6-FLUORO STEROIDS OF THE ANDROSTANE SERIES

Georg Anner, Basel, and Charles Meystre, Reinach, Basel-Land, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,332
Claims priority, application Switzerland, May 6, 1968, 6,669/68
Int. Cl. C07c *169/20, 169/22*
U.S. Cl. 260—397.45 9 Claims

New 6-fluoro steroids of the androstane series having the Formula I



(I)

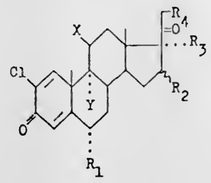
in which R_1 represents a free β-positioned hydroxyl group together with hydrogen, or an oxo group, R_2 represents an α- or β-positioned methyl group together with hydrogen, or a methylene group and R_3 a free, esterified or etherified hydroxyl group together with hydrogen, or an oxo group, and their 1-dehydro-derivatives have antiinflammatory activity. They are prepared by methods known in the art.

3,641,070
HALOGEN-PREGNADIENES

Georg Anner and Ludwig Ehmann, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed June 25, 1969, Ser. No. 836,601
Claims priority, application Switzerland, June 28, 1968, 9,707/68
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 17 Claims

The invention concerns compounds of the general formula



wherein

R_1 is H, CH_3 or a halogen atom

R_2 is H or CH_3

R_3 is a free or esterified hydroxyl group

R_4 is a free, esterified or etherified hydroxy group, and

X and Y each represent a halogen atom.

Use: as antiphlogistics.

3,641,071
HYDROCARBOXYLATION REACTION TO FORM STRAIGHT-CHAIN ANHYDRIDES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 11, 1969, Ser. No. 832,414
Int. Cl. C07c *51/14*
U.S. Cl. 260—398 11 Claims

A process for the formation of straight-chain carboxylic acid anhydrides comprising contacting an ethylenically

unsaturated hydrocarbon, carbon monoxide and a carboxylic acid with a Group VIII noble metal in complex association with a biphyllic ligand wherein the reaction is performed in a reaction medium containing 10 volume percent of a carboxylic acid anhydride for the entire or, at least, a substantial portion of the reaction period and at a temperature between 100° and 300° C. The presence of the anhydride has been found to increase the yield of straight-chain anhydrides.

3,641,072
PRODUCTION OF SULFITOBETAINES
Harry Distler, Ludwigshafen, and Rudi Widder, Eppelheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed May 8, 1969, Ser. No. 823,160
Claims priority, application Germany, May 10, 1968, P 17 68 407.0; Aug. 14, 1968, P 17 93 191.8
Int. Cl. C07c *143/90;* **C11d** *1/28*
U.S. Cl. 260—401 **9 Claims**

Production of sulfitobetaines by reaction of amines with 1,2-glycol sulfites and the new sulfitobetaines themselves. The new products are valuable starting materials for the production of dyes, detergents, wetting agents, finishes and auxiliaries in the textile dyeing and printing fields, and for the production of pesticides.

3,641,073
TEXTILE TREATING COMPOSITION AND PROCESS OF MAKING SAME
Herman T. Buckley, Columbus, Ga., assignor to Dixie Size and Chemical Co.
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,723
Int. Cl. C07c *69/30;* **C10m** *3/20;* **D06m** *13/20*
U.S. Cl. 260—410.6 **1 Claim**

Liquid textile treating composition and process produced by reacting trimethylolpropane with mixture of fatty acids of 10 to 18 carbon atoms and having average molecular weight from 220 to 285. The mole ratio of trimethylolpropane to the fatty acids ranges from 1:2 to 1:3 and reaction takes place at temperature ranging from 140° C. to 200° C. until acid value is from 5 to 15. The reaction product is made water dispersible and textile material is treated therewith.

3,641,074
CARBONYLATION OF OLEFINS
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation-in-part of application Ser. No. 715,169, Mar. 22, 1968. This application Feb. 25, 1969, Ser. No. 802,218
Int. Cl. C11c *3/02*
U.S. Cl. 260—410.9 **13 Claims**

A process for preparation of carboxylic acids, esters or anhydrides having a high ratio of normal to iso compounds comprising contacting an olefin and carbon monoxide with water, an organic acid or an alcohol under liquid phase conditions in the presence of a Group VIII noble metal in complex association with a biphyllic ligand at temperatures between 30° and 300° C. and at pressures sufficient to maintain liquid phase conditions. The catalyst is maintained in a form selective for the formation of normal or straight chained products by performing the reaction in the presence of hydrogen and/or by limiting the mineral acid content of the reaction medium, preferably to an equal molar ratio with the Group VIII noble metal.

3,641,075
PRODUCTION OF ESTERS BY CATALYTIC CONVERSION OF α-ORGANOOXY HYDROPEROXIDES
Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed June 16, 1969, Ser. No. 833,795
Int. Cl. C07c *67/00, 73/06*
U.S. Cl. 260—410 **7 Claims**

A process of producing an ester from an ozonized olefin by contacting the ozonized olefin with hydrogen in a liquid medium in the presence of Raney nickel-chromium catalyst.

3,641,076
CATALYST RECOVERY
Frank B. Booth, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation of application Ser. No. 729,886, May 17, 1968. This application Aug. 24, 1970, Ser. No. 66,562
Int. Cl. C07f *15/00, 15/02, 15/04*
U.S. Cl. 260—429 R **21 Claims**

A method for the recovery of complexes of Group VIII metals and biphyllic ligands from hydrocarbons or high boiling residues formed in hydrocarbonylation of olefins. The Group VIII catalyst metal is recovered in accordance by treatment of the high boiling fraction of a hydroformylation reaction medium with a solution of sulfuric, perchloric or low molecular weight alkyl or aryl sulfonic acids at a temperature from about 5° to 125° C. and a pressure from about 1 to 1000 atmospheres, sufficient to maintain liquid phase conditions during the contacting. The presence of a hydrocarbon olefin having from 2 to about 25 carbons in the extraction step enhances the extraction of the Group VIII metal catalyst complex. The Group VIII metal complex can be precipitated from the acid extract phase by dilution with water to lower the acid strength of the extract.

3,641,077
METHOD FOR PREPARING ALKOXY DERIVATIVES OF SILICON, GERMANIUM, TIN, THALLIUM AND ARSENIC
Eugene G. Rochow, Winchester, Mass.
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,763
Int. Cl. C07f *7/00, 7/02, 7/22*
U.S. Cl. 260—429 R **15 Claims**

The invention provides a method for preparing organic metal compounds of the metals germanium, tin, thallium, arsenic and more particularly of silicon and comprises introducing an alcohol, such as methanol, ethanol, n-propanol, and iso-butanol, slowly below the surface of a suspension in silicone oil of a finely divided mixture of one of the above metals and catalyst, such as copper, containing about 9 parts by weight of the selected metal and about 1 part by weight of catalyst while heating the suspension at a temperature between about 250° C. and about 300° C. to cause the alcohol to react with the selected metal to form an organic metal compound in vapor form which is condensed and collected, the desired organic metal compound being isolated by fractional distillation of the condensate.

3,641,078
METHOD FOR PREPARING BIS(ALKYLDIPHENYL TIN) SULFIDE
Gerrit Johann Meine van der Kerk, Utrecht, and Albert Tempel, Van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,777
Claims priority, application Netherlands, Apr. 25, 1968, 6805920
Int. Cl. C07f *7/22;* **A01n** *9/12*
U.S. Cl. 260—429.7 **4 Claims**

Bis(alkyldiphenyl tin) sulfides, method of preparing same, fungicidal compositions which contain these compounds as the active constituent and method of preparing the said compositions.

3,641,079
PROCESS FOR THE MANUFACTURE OF TITANIC ESTERS
Eric Termin, Niederkassel, and Roshdy Ismail, Spich, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Filed Mar. 25, 1969, Ser. No. 810,269
Claims priority, application Germany, Mar. 28, 1968, P 17 68 066.9
Int. Cl. C07f *7/28*
U.S. Cl. 260—429.5 **16 Claims**

Manufacture of titanic esters from titanic halides and unsubstituted or aryl-substituted aliphatic hydroxy compounds, cycloaliphatic hydroxy compounds, or unsubstituted or alkyl-substituted aromatic hydroxy compounds performed in the presence of catalytic quantities of tertiary amines, whose amino group may or may not be a component of an aromatic ring system, and/or in the presence of unsubstituted or N-monosubstituted or N-disubstituted acid amides, with the use of solvents if desired, at temperatures of 50 to 250° C., preferably 50 to 200° C.

3,641,080
PROCESS FOR PREPARING DIALKYLIZINC COMPOUNDS FROM ALKYLBROMIDE AND ALKYLIODIDE
Schrade F. Radtke, New Canaan, Conn., assignor to International Lead Zinc Research Organization Inc., New York, N.Y.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,845
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **13 Claims**

A direct process for preparing dialkylzinc compounds, wherein zinc alloyed with sodium, potassium or lithium is reacted with a mixture of alkylbromide and alkyliodide in the absence of moisture to produce a dialkylzinc compound.

3,641,081
PROCESS FOR PREPARING DIALKYLZINC COMPOUNDS FROM ALKYLBROMIDE
Schrade F. Radtke, New Canaan, Conn., assignor to International Lead Zinc Research Organization Inc., New York, N.Y.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,852
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **12 Claims**

A direct process for preparing dialkylzinc compounds, wherein zinc alloyed with sodium, potassium or lithium is reacted with alkylbromide in the absence of moisture to produce a dialkylzinc compound.

3,641,082
PROCESS FOR THE ALKYLATION, ALKENYLATION OR ARYLATION OF HEAVY-METAL SALTS BY MEANS OF ORGANO-TRIPTYCH-SILOXAZOLIDINES
Richard Müller, Radebeul, Hans Frey, Dresden, and Christian Dathe, Radebeul, Germany, assignors to Institut fur Silikon- und Fluorkarbon-Chemie, Radebeul, Germany
No Drawing. Filed Feb. 17, 1969, Ser. No. 799,959
Int. Cl. C07f *3/10, 72/24, 7/94*
U.S. Cl. 260—431 **13 Claims**

Process for the alkylation, alkenylation or arylation of salts or hydroxides of heavy metals, such as mercury, bismuth, antimony and lead, comprising reacting them with organo-triptych-siloxazolidines in the presence of fluorine. The products according to this invention are useful as pharmaceuticals and pesticides, and may also serve in the synthesis of other useful products.

3,641,083
CHROMIUM COMPLEXES OF FLUOROISOALKOXYALKYL CARBOXYLIC ACIDS
Louis G. Anello, Basking Ridge, Edward Michael Boghosian, Fort Lee, Edward S. Jones, Whippany, Pritam S. Minhas, Morris Plains, Alson K. Price, Morristown, and Richard F. Sweeney, Randolph Township, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,831
Int. Cl. C11c *3/00;* **C07f** *11/00*
U.S. Cl. 260—438.5 C **14 Claims**

Chromium complexes of fluorocarbon carboxylic acids characterized by having a polyfluoroisoalkoxyalkyl tail wherein an ether oxygen links a fluorinated carbon atom connected to two fluoroalkyl groups and a $—CF_2CF_2—$ group. These chromium complexes are useful to impart oil and water resistance to various substrates including paper, leather, and the like.

3,641,084
VINYLIC ALUMINACYCLOALKANE COMPOUNDS AND THEIR PREPARATION
Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed May 5, 1969, Ser. No. 821,954
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **46 Claims**

Organoluminum compounds possessing a vinylic alumina-cycloalkane moiety are described. These are prepared by reacting a nonionic organoaluminum compound possessing an aluminacyclo-alkene moiety with an olefinic reactant in the presence of a stable Lewis base. The compound possessing the aluminacycloalkene moiety may be used in preformed condition or it may be formed in situ during the course of a one-step reaction. The compounds possessing the vinylic aluminacycloalkane moiety yield alpha-olefinic compounds on hydrolysis.

3,641,085
OXIDATION OF ALUMINUM ALKYLS
Allan J. Lundeen and James E. Yates, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed May 1, 1969, Ser. No. 821,073
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 AD **5 Claims**

In the oxidation of aluminum alkyls in the preparation of alcohols via aluminum chemistry, higher quality and yields of desired alcohol are obtained if the rate of oxidation is materially reduced when the oxygen in the oxidation reactor approaches the maximum allowable and continuing the oxidation to substantial completion at the lower rate of oxygen flow.

3,641,086
PROCESS FOR CONVERTING TRIALKYL ALUMINUMS TO ALUMINUM ALKOXIDES
Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Nov. 17, 1969, Ser. No. 877,422
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 AD **10 Claims**

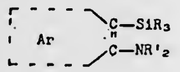
A process for converting a trialkylaluminum compound to an aluminum alkoxide while inhibiting the formation of hydrocarbons which involves oxidizing the trialkylaluminum compound and adding a secondary alcohol to the reaction mixture during the latter stages of oxidation.

3,641,087
PREPARATION OF BROMINATED SILANE DERIVATIVES
Donald John Holman, Wedhey, Harlow, England, assignor to Berk Limited
No Drawing. Filed Oct. 4, 1968, Ser. No. 765,005
Claims priority, application Great Britain, Oct. 18, 1967, 47,455/67
Int. Cl. C07f *7/06, 7/18*
U.S. Cl. 260—448.8 R **6 Claims**

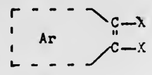
This invention is concerned with the preparation of certain brominated silane derivatives which have a variety of useful properties including, in particular, the ability to impart fire retardant properties to synthetic polymer compositions in which they are incorporated.

3,641,088
AROMATIC o-TRIORGANOSILYL-DIORGANOAMINO COMPOUNDS AND PROCESS
Walter Fink, Ruschlikon/ZH, Nidelbadstr. 99, Zurich, Switzerland
No Drawing. Filed Feb. 20, 1969, Ser. No. 801,178
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N **7 Claims**

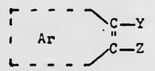
Aromatic o-triorganosilyl-diorganoamino compounds of the formula



where Ar is aromatic and process for making by reacting a compound of the formula



where X is halogen and a lithium alkyl, or a compound of the formula



where Y and Z are cleavable atoms or groups, in an inert solvent and in an inert atmosphere with a compound of the formula $R_3SiNR'_2$. The novel compounds are useful for the preparation of dyes of the triphenylmethane series.

3,641,089
SILOXAZANES COMPOSITIONS AND PROCESSES THEREOF
Richard P. Bush, Penarth, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, England
No Drawing. Filed Mar. 24, 1969, Ser. No. 809,950
Claims priority, application United Kingdom, Mar. 29, 1968, 15,282/68
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 N **12 Claims**

This disclosure relates to various cyclic siloxazane compounds and to processes thereof. These cyclic siloxazane compounds are prepared by reacting certain siloxazanes with hydrocarbon lithium compounds; useful cyclic materials are obtained containing one or two lithium atoms attached to nitrogen atoms in the cyclic structure.

3,641,090
SILANOLATE-COMPLEXES AND USE THEREOF
Edgar E. Bostick, Scotia, and Joseph J. Zdaniewski, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Filed Oct. 13, 1969, Ser. No. 866,003
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 N **3 Claims**

Hexamethylphosphoramide-complexes of alkali metal silanolates are provided, and a method for making these materials. These alkali metal silanolate-complexes can be used as polymerization initiators for the preparation of organopolysiloxanes and organopolysiloxane block polymers.

3,641,091
METHOD OF PREPARING DISUBSTITUTED DI(p-ARYLAMINOPHENOXY) SILANES
Leonid Alexandrovich Skripko, Ulitsa Michurinskaya 143, kv. 97, Tambov, U.S.S.R.; Eduard Grigorievich Rozantsev, 2 Baltysky pereulok 2, kv. 10, Moscow, U.S.S.R.; and Lidia Grigorievna Polotovskaya, Poselok khimin-stituta 10, kv. 15, Kalinin, U.S.S.R.
No Drawing. Filed Nov. 18, 1970, Ser. No. 90,868
Int. Cl. C07f *7/04, 7/18*
U.S. Cl. 260—448.8 R **9 Claims**

A method of preparing disubstituted di(p-arylaminophenoxy)silanes by the reaction of p-hydroxyarylamines with disubstituted dichlorosilanes in an inert organic solvent medium and subsequent reaction with ammonia which acts as an acceptor of hydrogen chloride which is given off during the reaction.

Disubstituted di(p-arylaminophenoxy)silanes are effective stabilizers for polypropylene, impact resistant polystyrene, polyamides, homopolymers and copolymers of formaldehyde, polyolefines, a copolymer of tetrahydrofurane and propylene oxide and pentaplast.

3,641,092
ISOCYANATE SYNTHESIS FROM AMINES AND CARBON MONOXIDE CATALYZED BY $PdCl_2$
Patrick M. Henry, McDaniel Crest, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Nov. 25, 1966, Ser. No. 596,799
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC **6 Claims**

The $—NH_2$ group in an organic amine is converted into a —NCO group by reacting the organic amine with CO in contact with palladium chloride.

3,641,093
STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES
Martin Frederick Brooks and Vincent Kerrigan, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,338
Claims priority, application Great Britain, Dec. 12, 1967, 56,498/67
Int. Cl. C07c *119/04;* **C08g** *22/26*
U.S. Cl. 260—453 AR **2 Claims**

Polyisocyanate compositions comprising a diphenylmethane diisocyanate in which from 1% to 50% of the isocyanate groups have been reacted with a non-sterically hindered aromatic carbodiimide other than a carbodiimide derived from diphenylmethane diisocyanate.

3,641,094
PREPARATION OF ISOCYANATES
Dieter Arlt, Cologne-Buchheim, and Volkmar Handschuh, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,276
Claims priority, application Germany, Mar. 12, 1968, P 16 68 109.7; Nov. 15, 1968, P 18 09 173.1
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PH **8 Claims**

Isocyanates are prepared by a process in which the primary amine is reacted with phosgene in the presence of an aqueous solution of an inorganic base and a hydrophobic

inert organic solvent, preferably where the reaction of the primary amine and phosgene takes place in a time of less than one minute.

3,641,095
BONDED LOW-ALUMINA MORDENITE
Joseph R. Kiovsky, Kent, Ohio, and Ronald K. Bart, Sterling Junction, Mass., assignors to Norton Company, Worcester, Mass.
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,408
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **1 Claim**

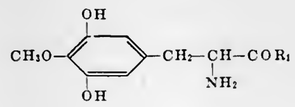
Natural or synthetic mordenite from which alumina has been removed to give silica to alumina ratio of 20/1 and higher is bonded into agglomerates for catalytic purposes by employing attapulgite type clays to which colloidal silica, in water dispersion stabilized with ammonium ions, is added.

3,641,096
THERMACTIVATION OF CATALYSTS COMPRISING RHENIUM AND CRYSTALLINE ZEOLITIC MOLECULAR SIEVE PARTICLES DISPERSED IN A GEL MATRIX, AND CATALYSTS SO THERMACTIVATED
Joseph Jaffe, Berkeley, and James R. Kittrell, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 753,222, Aug. 16, 1968. This application Sept. 20, 1968, Ser. No. 761,308
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **5 Claims**

Method of activating a catalyst composite comprising a crystalline zeolitic molecular sieve, a gel matrix comprising silica-alumina, and a rhenium or rhenium compound hydrogenating component, said molecular sieve being in particulate form and being dispersed in said gel matrix, which method comprises heating said catalyst composite in an oxygen-containing gas stream at 1200° to 1600° F. for 0.25 to 48 hours, and the catalyst composite so activated.

3,641,097
PREPARATION OF PHENYLALANINE DERIVATIVES AND NOVEL INTERMEDIATES
Balthasar Hegedüs, Binningen, and Paul Zeller, Allschwil, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Continuation-in-part of application Ser. No. 684,623, Nov. 21, 1967. This application Oct. 30, 1968, Ser. No. 772,048
Claims priority, application Switzerland, Feb. 9, 1968, 1,971/68
Int. Cl. C07c *137/00*
U.S. Cl. 260—456 A **3 Claims**

The present disclosure relates to methods for the preparation of compounds of the formula



in which R_1 is hydroxyl, alkoxy, or a substituted or unsubstituted amino group, optical isomers (preferably the L-antipodes) thereof and pharmaceutically acceptable salts thereof. Such compounds are useful as hypotensive agents. The instant disclosure also includes certain novel intermediates which are useful in the preparation of the pharmaceutically useful compounds of Formula I.

3,641,098
CYANO SUBSTITUTED PHENYLHYDRAZONES OF 1,2-DICARBONYL COMPOUNDS
Karl-Heinz Buchel and Wilfried Draber, Leverkusen, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 24, 1968, Ser. No. 762,155
Claims priority, application Germany, Sept. 26, 1967, P 16 68 225.4
Int. Cl. C07c *133/00*
U.S. Cl. 260—465 **6 Claims**

α-(Halo, cyano, nitro and azido)-α-(alkanoyl, carboalkoxy [i.e. alkoxy carbonyl], amino and mono- and dialkyl amino)-carbonyl-(unsubstituted and mono to penta alkyl and/or electronegative substituent [e.g. halo, nitro, cyano, trifluoromethyl, trifluoromethyl-, -mercapto, -sulfonyl and -sulfoxyl, alkoxy, alkyl sulfonyl and/or dimethylmino sulfonyl]-substituted) phenyl hydrazones and their corresponding alkali metal, alkaline earth metal and amine salts, which possess pesticidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

3,641,099
3-HYDROCARBYLOXYNITRILE SYNTHESIS
Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 6, 1968, Ser. No. 771,375
Int. Cl. C07c *121/14, 121/46*
U.S. Cl. 260—465.6 **3 Claims**

Novel 3-hydrocarbyloxyalkanenitriles are produced by contacting, under anhydrous reaction conditions, a 2-(dihydrocarbyloxyphosphinyl)alkanenitrile, a ketone or aldehyde, and hydrocarbyloxy alkali metal compound, which products are useful as insecticides.

3,641,100
PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE
Keisho Yamada, Shigeki Nagai, Kyoji Odan, Yasuo Nakamura, and Mikio Hidaka, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,656
Claims priority, application Japan, July 2, 1968, 43/45,614; July 12, 1968, 43/48,414
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **1 Claim**

In the process of manufacturing acrylonitrile wherein propylene, ammonia and oxygen are contacted with a solid oxidizing catalyst in the vapor phase at a temperature in the range of 400–600° C., the improved method which comprises using as said solid catalyst a catalyst which consists essentially of

(A) a bismuth antimonate in which the atomic ratio of bismuth to antimony is 1:1, and

(B) a salt of bismuth selected from the group consisting of a bismuth molybdate in which the atomic ratio of bismuth to molybdenum is 2:3, and a bismuth tungstate in which the atomic ratio of bismuth to tungsten is 2:3;

the weight ratio of said bismuth antimonate to said bismuth molybdate or bismuth tungstate being in the range of 95:5–50:50.

3,641,101

PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE BY AMMOXIDATION OF PROPYLENE

Keisho Yamada, Shigeki Nagai, Kyoji Odan Yasutaka, Arima, and Mikio Hidaka, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,191
Claims priority, application Japan, Sept. 3, 1968, 43/62,785
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **1 Claim**

In the process of manufacturing acrylonitrile by contacting propylene, ammonia and oxygen with a solid oxidizing catalyst in the vapor phase at a temperature of 350–500° C., the improvement wherein said solid oxidizing catalyst consists essentially of

(A) a solid solution of antimony oxide and stannic oxide wherein the atomic ratio expressed in percentage of the antimony and tin is within the range of Sb=70–30% and Sn=30–70%, and

(B) an oxide of a metal selected from the group consisting if indium, iridium and ruthenium;

the weight ratio of solid solution (A) to said metal oxide (B) being within the range 98:2–80:20.

3,641,102

CATALYTIC PROCESS FOR THE AMMONOXYDATION OF OLEFINS

Philippe Reulet, Morenx, and Alain Pfister, Jacques Tellier, and Jean-Henry Blanc, Pau, France, and Kirsten Borre Jorgensen, Holte, and Hans Bohlbro, Lingby, Denmark, assignors to Société Nationale des Petroles d'Aquitaine Tour Aquitaine, Courbevoie, France

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,286
Claims priority, application France, Mar. 5, 1968, 142,447
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **10 Claims**

The known method of preparing olefinic nitriles by oxidizing a gaseous mixture of olefin with ammonia, over a catalyst containing Mo and Te oxides, has been improved by selecting a catalytically active material which consists of a combination of 1 mole MoO_3 with 10 to 0.1 moles TeO_3 and 0.1 to 1 mole Fe_2O_3, and preferably with 0.35 to 0.14 mole TeO_3 and 0.14 to 0.2 mole Fe_2O_3. The improved method is particularly suitable for the production of acrylonitrile by the ammonoxidation of propylene, and allows one to reach yields of more than 70% with respect to the olefin used, when the temperature, normally of 300° to 600° C., is kept within the narrower limits of 380° to 450°, the duration of contact between reacting gases and catalyst is 3 to 10 seconds, and the gaseous mixture contains by volume 1 to 15% of propylene, 1 to 15% of ammonia and 2 to 14% of oxygen, the balance being nitrogen and/or steam.

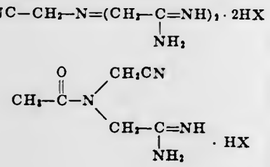
3,641,103

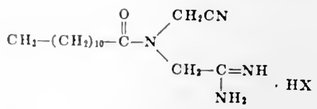
PROCESS FOR PREPARING AMIDINE SALTS

Patricia M. Scanlon, Arlington, Mass., and Elwyn Richard Young, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

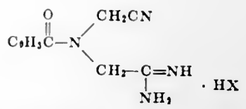
No Drawing. Filed June 3, 1969, Ser. No. 830,091
Int. Cl. C07c *121/00*
U.S. Cl. 260—465.4 **5 Claims**

An amidine salt having a formula selected from the group consisting of



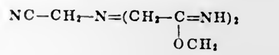


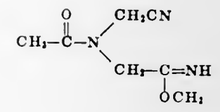
and

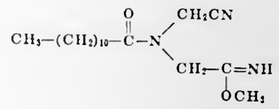


in which X is a bromide or chloride ion and to a method for preparing such salt, all as recited hereinafter.

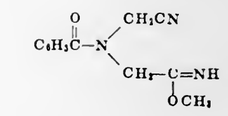
In abstract, this invention is also directed to an imidoether having a formula selected from the group consisting of







and



and to a method for preparing such ether; the amidine salts are useful stabilizers for polyesters.

3,641,104

CYANO SUBSTITUTED PERFLUOROVINYL ETHERS

Daniel Gustav Anderson, Parkersburg, W. Va., Edward Karcher Gladding, Wilmington, Del., and Raymond Sullivan, Altadena, Calif., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 527,725, Feb. 16, 1966. This application Sept. 30, 1968, Ser. No. 763,954
Int. Cl. C07c *121/30*
U.S. Cl. 260—465.6 **2 Claims**

Substituted perfluorovinyl ethers having the formula $CF_2{=}CF{-}O{-}(CF_2)_n{-}CN$ where n is from 2 to 12, preferably 2 to 4. Specific utilities include employment as cure-site comonomers in copolymers with other ethylenically unsaturated monomers.

3,641,105

PROCESS FOR PRODUCTION OF ADIPONITRILE

Yasuhisa Hashiguchi and Sueo Kamada, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Feb. 13, 1969, Ser. No. 799,096
Claims priority, application Japan, Mar. 26, 1968, 43/19,184
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 A **6 Claims**

A process of producing adiponitrile with excellent yield by using a reacting liquid containing organic halides in order to oppress the side reaction in cyanoethylation

when the acrylonitrile is going to be reduced and dimerized by the amalgam of alkaline metal or amalgam of alkaline earth metal in a water soluble organic solvent.

3,641,106

PROCESS FOR THE CATALYTIC DIMERIZATION OF ACRYLONITRILE

David Arthur Cornforth, Dhafir Yusuf Waddan, and Derek Williams, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 627,680, Apr. 3, 1967. This application Mar. 3, 1969, Ser. No. 803,963
Int. Cl. C07c *121/20, 121/26, 121/30*
U.S. Cl. 260—465.8 **5 Claims**

A process for the dimerization of acrylonitrile which comprises contacting acrylonitrile with a catalyst consisting essentially of (a) a salt or complex of a metal selected from copper, cobalt, nickel, chromium, iron, titanium and vanadium and (b) an aluminum compound having at least one alkyl group of 1–4 carbon atoms directly attached to the aluminum atom, said aluminum atom carrying in addition two other atoms or groups selected from alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, hydrogen, chlorine and bromine.

3,641,107

PURIFICATION PROCESS FOR UNSATURATED ORGANIC NITRILES

Ernest J. Breda, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,416
Int. Cl. C07c *121/30, 121/32*
U.S. Cl. 260—465.9 **10 Claims**

Unsaturated organic nitriles containing ionizable cyanide impurities are freed from the cyanide impurities by intimately contacting the nitrile with nitrogen base selected from the group consisting of tertiary amines, quaternary ammonium hydroxides and mixtures thereof and distilling off the purified nitrile.

3,641,108

PROPARGYL ESTERS OF BICYCLO[2.2.1]HEPT-5-ENE-2-CARBOXYLIC ACID AND BICYCLO[2.2.1] HEPTANE-2-CARBOXYLIC ACID

Robert L. Roudabush and Linwood E. Drummond, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 26, 1969, Ser. No. 836,955
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 B **9 Claims**

Propargyl esters of bicyclo[2.2.1]hept-5-ene-2-carboxylic acid or bicyclo[2.2.1]heptane-2-carboxylic acid are obtained by esterification of the acid with propargyl alcohol. The esters are useful as bactericides and fungicides.

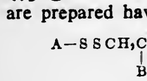
3,641,109

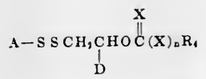
ALKYL AND ARYL ESTERS OF POLYHALODITHIO ALCOHOLS

Carl D. Emerson, 4940 W. Winchester, Kansas City, Mo. 64129, and Paul C. Aichenegg, 4232 W. 73rd Terrace, Prairie Village, Kans. 66208

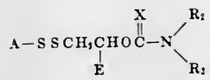
No Drawing. Continuation-in-part of application Ser. No. 560,125, June 24, 1966. This application Sept. 4, 1968, Ser. No. 757,487
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 G **8 Claims**

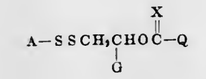
Compounds are prepared having one of the formulae

(1) 

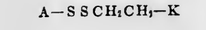
(2) 

(3) 

(4) 

(5) 

and

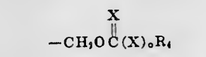
(6) 

where:

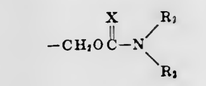
A is selected from the group consisting of di to tetrahaloethyl and di to trihalovinyl;

B is selected from the group consisting of hydrogen and $-CH_2OH$;

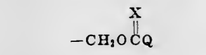
D is selected from the group consisting of hydrogen and



E is selected from the group consisting of hydrogen and



G is selected from the group consisting of hydrogen and



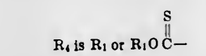
n is 0 or 1,

X is selected from the group consisting of oxygen and sulfur except that when n is 0 in Formula 2 X must be oxygen;

Q is halogen;

R_1 is selected from the group consisting of alkyl, phenyl, lower alkyl phenyl, halo lower alkyl, halophenyl, naphthyl, lower alkyl naphthyl and lower alkyl halophenyl;

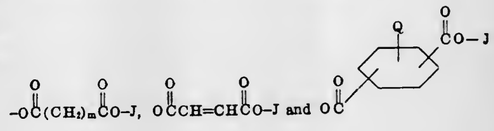
R_2 and R_3 individually are the same as R_1 or hydrogen with the proviso that not more than one of R_2 and R_3 is hydrogen and collectively together with the adjacent nitrogen atom form a 5 to 6 membered heterocyclic ring having up to 1 oxygen therein;



R_4 is R_1 or R_1OC—

or phenyl ethylene or halophenoxymethyl having up to 3 halogens and up to 1 methyl group on the aromatic ring;

K is selected from the group consisting of

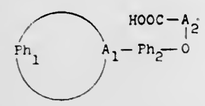


J is selected from the group consisting of hydrogen and $ASSCH_2CH_2$—;

m is an integer from 0 to 2 inclusive, and all halogen atoms in the compounds have an atomic weight of 35 to 80.

3,641,110
PHENOXY-ALIPHATIC ACIDS
William Laszlo Bencze, New Providence, N.J., assignor to Ciba Corporation, Summit, N.J.
No Drawing. Continuation-in-part of application Ser. No. 728,871, May 14, 1968, which is a continuation-in-part of application Ser. No. 558,251, June 17, 1966, which in turn is a continuation-in-part of application Ser. No. 323,868, Nov. 15, 1963. This application Jan. 29, 1969, Ser. No. 795,029
Int. Cl. C07c *65/114, 69/76, 103/22*
U.S. Cl. 260—473 G **33 Claims**

Phenoxy-aliphatic acids, e.g. those of the formula



Ph_1=a 1,2-phenylene
Ph_2=a 1,2-, 1,3- or 1,4-phenylene
A_1=alkylene forming 5–7 membered ring
A_2=aliphatic hydrocarbon radical

and functional derivates thereof are hypocholesterolemic agents.

3,641,111
PROCESS FOR DIRECT ESTERIFICATION OF TEREPHTHALIC ACID WITH AN ALKYLENE GLYCOL
Stanley D. Lazarus, Petersburg, Pa., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,742
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P **19 Claims**

Direct esterification of terephthalic acid and an alkylene glycol is expedited by forming a fine dispersion of the ingredients aided by a dispersing and wetting agent. The esterification reaction can be carried out in the presence of a small quantity of a solvent which causes successive quantities of acid to enter the liquid phase and to react to form molten esters which then increase the total quantity of liquid phase present in the mixture. This process enables the esterification reaction to be carried out practically at atmospheric pressure or to be carried out at super atmospheric pressure in a shorter time span than is the case in esterification processes heretofore available.

3,641,112
PROCESS FOR THE PREPARATION OF BIS-(β-HYDROXYALKYL) ESTERS OF AROMATIC DICARBOXYLIC ACIDS
Yataro Ichikawa and Yoshiyuki Yamanaka, Yamaguchi-ken, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed May 26, 1969, Ser. No. 827,963
Claims priority, application Japan, May 30, 1968, 43/37,024
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P **8 Claims**

It has already been known to prepare bis-(β-hydroxyethyl) terephthalate by the reaction of terephthalic acid with ethylene oxide in the presence of a catalyst comprising an organic amine or its salt. In this invention, the process is carried out in the co-presence of at least one iron compound as a promotor. Thus, a catalyst system of very high activity is provided, and the reaction can be performed at a relatively low temperature with a high conversion of terephthalic acid.

3,641,113
PROCESS FOR THE MANUFACTURE OF VINYL ACETATE
Hans Fernholz, Fischbach, Taunus, and Gunter Jacobsen, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Jan. 29, 1968, Ser. No. 701,111
Claims priority, application Germany, Feb. 4, 1967, F 51,441
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **6 Claims**

Preparation of vinyl acetate from ethylene, acetic acid and oxygen in the presence of palladium acetate in the liquid phase at 60 to 180° C. and 5 to 100 atmospheres pressure in the presence of 1 to 20 moles, calculated on 1 gram atom of palladium, of a pyridine base.

3,641,114
2-LOWER ALKANOYLOXY-N-SULFONYL-BENZAMIDES
Scott J. Childress, Philadelphia, and J Lester Szabo, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed June 3, 1969, Ser. No. 830,119
Int. Cl. C07c *143/06, 143/28, 143/40*
U.S. Cl. 260—479 R **3 Claims**

This invention concerns 2-carb(lower)acyloxy-N-sulfonylbenzamide derivatives thereof which have demonstrated pharmacological activity as central nervous system depressants and are also substantially non-irritating to the gastrointestinal tract upon oral administration.

3,641,115
METHOD FOR PRODUCING ESTERS OF POLYCYCLIC COMPOUNDS
David W. Peck, Charleston, and Robert R. Gentry, St. Albans, W. Va., assignors to Union Carbide Corporation
No Drawing. Filed Aug. 22, 1968, Ser. No. 754,735
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 SC **9 Claims**

A method for producing esters of carboxyalkylfluorenes, carboxylalkylcarbazoles, carboxyalkylindenes and carboxyalkylindoles by the rapid catalytic reaction of an acrylate ester and a fluorene, carbazole, indene or indole is described. The catalysts are basic catalysts and the reaction proceeds only when the reactants are in contact with a catalytic amount of the basic catalyst and the reactants are rapidly admixed together.

3,641,116
HARDENERS FOR WATER-SOLUBLE POLYMERS
Alfred Froehlich, Marly-le-Grand, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Sept. 6, 1968, Ser. No. 758,135
Claims priority, application Switzerland, Sept. 27, 1967, 13,484/67
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 B **6 Claims**

Compounds containing at least three carboxylic acid amide groups that may be used as hardening agents for water-soluble polymers, especially gelatine.

3,641,117
PRODUCTION OF 2,2-DIMETHYL-1,3-PROPANEDIOLMONO(HYDROXYPIVALATE)
Rolf Platz, Mannheim, and Franz Merger, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Aug. 21, 1968, Ser. No. 754,484
Claims priority, application Germany, Aug. 25, 1967, P 16 43 650.3
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R **4 Claims**

Production of 2,2-dimethyl-1,3-propanediolmono(hydroxypivalate) by disproportionation of hydroxypivalaldehyde. The product is a valuable starting material for the production of synthetic resins and plasticizers.

3,641,118
PURIFICATION OF 2,2-DIMETHYL-1,3-PROPANEDIOLMONO(HYDROXYPIVALATE)
Rolf Platz, Mannheim, and Franz Merger, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Oct. 4, 1968, Ser. No. 764,994
Claims priority, application Germany, Oct. 6, 1967, P 16 43 671.8
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R **9 Claims**

Purification of 2,2-dimethyl-1,3-propanediol mono(hydroxypivalate) by means of acid ion exchangers.

3,641,119
PROCESS OF PREPARING CHLOROMETHYL ESTERS OF α,β-UNSATURATED CARBOXYLIC ACIDS
Gerhard Ballé, Cologne-Flittard, and Günter Kolb, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,890
Claims priority, application Germany, Feb. 28, 1969, P 19 10 105.4
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H **1 Claim**

Chloromethyl esters of α,β-unsaturated carboxylic acids are produced by reacting α,β-unsaturated carboxylic acid chloride with formaldehyde or with a formaldehyde donor in the presence of a catalytic quantity of ferric chloride or stannic chloride.

3,641,120
PROCESS FOR THE PRODUCTION OF LONG CHAIN ESTERS
Edward J. Broderick, Edison, and Burton M. Rein, East Brunswick, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,228
Int. Cl. C07c *67/00*
U.S. Cl. 260—491 **8 Claims**

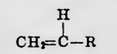
This specification discloses a process for the production of long chain esters. In this process, an ester of an acid having at least two carbon atoms and at least one hydrogen atom on the alpha carbon atom of the acid moiety is reacted with an olefin. This reaction is carried out in the presence, along with a manganic carboxylic acid salt or oxide, a zirconyl carboxylic acid salt or zirconium oxide.

3,641,121
PREPARATION OF VINYL ACETATE
Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Jan. 12, 1968, Ser. No. 697,305
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **8 Claims**

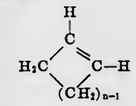
A process for the preparation of vinyl acetate from acetic acid, ethylene and oxygen in the presence of a noble metal on an inert, high surface area support with at least about 80 percent of its pores having a diameter between about 10 and 35 angstroms.

3,641,122
PROCESS FOR THE PREPARATION OF ALKENYL ESTERS
Gustave B. Bachman, West Lafayette, Ind., and Gerald M. Tullman, Creve Coeur, Mo., assignors to Purdue Research Foundation, Lafayette, Ind.
No Drawing. Filed Oct. 25, 1968, Ser. No. 770,838
Int. Cl. C07c *69/02*
U.S. Cl. 260—497 R **4 Claims**

A process for preparing alkenyl esters by reacting an aliphatic carboxylic acid anhydride, such as propionic anhydride, and an olefin represented by the formula



wherein R is hydrogen or an alkyl radical, for example, 1-octene, or by the formula



wherein *n* is an integer ranging from 1 to about 10, for example, cyclohexene, in the presence of mercuric iodate.

3,641,123
SUBSTITUTED AMIDES OF 4-ARYL-3-HYDROXY BUTYRIC ACIDS
David Frank Hayman and Anthony Musgrave Wild, London, England, assignors B.D.H. Chemicals Limited
No Drawing. Filed Nov. 15, 1968, Ser. No. 776,264
Claims priority, application Great Britain, Nov. 15, 1967, 51,987/67
Int. Cl. C07c *103/30;* **A61k** *27/00*
U.S. Cl. 260—500.5 H **1 Claim**

Substituted amides of 4-aryl-3-hydroxybutyric acids having utility as anti-inflammatory agents are provided. The amides are prepared by reacting a lower alkyl ester of a 4-aryl-3-hydroxybutyric acid with an excess of an appropriate amine. In the case of hydroxamic acids the product is isolated as a potassium or sodium salt which is converted into the free hydroxamic acid by acidification.

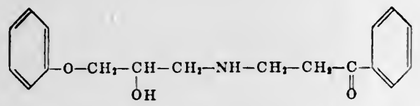
3,641,124
HEPTAMINOL TRANS-CINNAMATE
Bernard Pourrias, Meudon, Yves Huet, La Celle Saint-Cloud, and Carlos Pomaret, Paris, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,324
Claims priority, application France, Sept. 25, 1967, 122,143
Int. Cl. C07c *91/04*
U.S. Cl. 260—501.17 **1 Claim**

Heptaminol cinnamate, useful as a myocardiotonic, coronary dilatator and uricosuric having diuretic activity

and a process for making same which comprises reacting cinnamic acid with heptaminol.

3,641,125
3-N-(2 - HYDROXY-3-PHENOXYPROPYL)-AMINO-1-PHENYLPROPANON-(1) AND THE SALTS THEREOF
Wolfgang Milkowski, Burgdorf, Werner Stuhmer, Eldagsen, and Klaus-Wolf von Eickstedt, Hannover-Bemerode, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,309
Claims priority, application Germany, Dec. 6, 1968, P 18 13 061.5
Int. Cl. C07c *93/06*
U.S. Cl. 260—501.18 **4 Claims**

3 - N - (2 - hydroxy-3-phenoxypropyl)-amino-1-phenylpropanone-(1) having the following formula



(I)

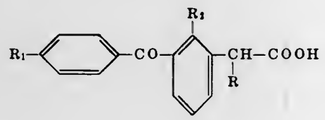
and the salts thereof, the said compounds being characterized by marked central inhibiting activity as well as having an effect on the circulatory and central nervous systems.

3,641,126
PROCESS FOR PREPARATION OF ETHANE-1-HYDROXY - 1,1,2-TRIPHOSPHONATES FROM ETHANECARBONYL-1,2-DIPHOSPHONATES
James B. Prentice, Batesville, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,370
Int. Cl. C07f *9/38;* **C11d** *3/36*
U.S. Cl. 260—502.4 A **7 Claims**

Process for preparing ethane-1-hydroxy-1,1,2-triphosphonates which comprises reacting ethanecarbonyl-1,2-diphosphonic acid with at least one inorganic phosphorus-containing compound which is a phosphorous acid precursor alone or in admixture with phosphorous acid and hydrolyzing the reaction product obtained.

3,641,127
(3-BENZOYLPHENYL) ALKANOIC ACIDS
Daniel Farge, Val-de-Marne, Mayer Naoum Messer, Essonne, and Claude Moutonnier, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Jan. 25, 1968, Ser. No. 700,375
Claims priority, application France, Jan. 27, 1967, 92,828
Int. Cl. C07c *65/20, 149/40*
U.S. Cl. 260—516 **7 Claims**

(3-benzoylphenyl)alkanoic acids of the formula:



wherein R represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, R_1 represents a hydrogen atom or an alkylthio group containing 1 to 4 carbon atoms, and R_2 represents a hydrogen atom or a hydroxy or methoxy group, and salts thereof, for example 3-benzoylphenylacetic acid, have been found to possess pharmacodynamic properties and are especially useful as anti-inflammation agents.

3,641,128
ANTIFIBRINOLYTIC COMPOUNDS
Larry J. Loeffler, Bethesda, Md., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed June 17, 1969, Ser. No. 834,138
Int. Cl. C07c *101/04*
U.S. Cl. 260—514 B **4 Claims**

The compound 4 - (α - amino lower alkyl)bicyclo-[2.2.2]-octane-1-carboxylic acid and the pharmaceutically acceptable salts thereof are useful as antifibrinolytic compounds.

3,641,129
ANTIFIBRINOLYTIC COMPOUNDS
Larry J. Loeffler, Bethesda, Md., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed June 17, 1969, Ser. No. 834,139
Int. Cl. C07c *110/04*
U.S. Cl. 260—514 B **3 Claims**

The compound 4-aminomethylbicyclo-[2,2,2]-octane-1-acetic acid and the pharmaceutically acceptable salts thereof are useful as antifibrinolytic compounds.

3,641,130
PROCESS FOR THE PRODUCTION OF AROMATIC POLYCARBOXYLATES
Donald G. Kuper, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,855
Int. Cl. C07c *51/00, 51/52*
U.S. Cl. 260—515 P **9 Claims**

Improved catalytic disproportionation of aromatic carboxylates to aromatic polycarboxylates containing at least one additional carboxyl group is achieved by utilizing at least one compound of the formula R—X—M wherein R is an alkyl, aryl, or alkyl-substituted aryl radical, X is oxygen or sulfur and M is hydrogen or an alkali metal as a catalyst adjuvant in combination with a conventional disproportionation catalyst system.

3,641,131
HYDROLYSIS OF OLEFIN-SULFUR TRIOXIDE REACTION PRODUCT MIXTURES
David M. Marquis, Orinda, and William A. Sweeney, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 528,074, Feb. 17, 1966, and a continuation of application Ser. No. 591,712, Nov. 3, 1966. This application Mar. 19, 1969, Ser. No. 809,485
Int. Cl. C07c *143/16*
U.S. Cl. 260—513 R **5 Claims**

Improved and novel n-α-olefin sulfonate detergents are obtained when a crude α-olefin-sulfur trioxide reaction product is hydrolyzed substantially completely at a temperature above about 145° C.

3,641,132
PROCESS FOR OBTAINING NITRO BENZOPHENONES
Johann G. D. Schulz and Richard Seekircher, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,597
Int. Cl. C07c *79/36, 79/46*
U.S. Cl. 260—517 **8 Claims**

A process for preparing nitro benzophenones which involves adding nitric acid to a diarylalkane and maintaining the resulting mixture at the reaction temperature for a time sufficient to convert the diarylalkane to the corresponding nitro benzophenone.

3,641,133
INTERMEDIATES IN THE PREPARATION OF 4-AMINODIBENZO[a,d]-CYCLOALKEN-5-ONES
Eugene E. Galantay, Morristown, and Hans Ott, Convent Station, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 444,023, Mar. 30, 1965, now Patent No. 3,424,796. This application Sept. 30, 1968, Ser. No. 763,940
Int. Cl. C07c *101/54*
U.S. Cl. 260—518 R **7 Claims**

A 4-chloro-7-amino-3-substituted phthalide, e.g., 3-β-phenethyl-4-chloro-7-methylaminophthalide, is saponified and the saponification product reduced to obtain the corresponding 6-phen(alkyl)-anthranilic acid, e.g., 6-β-phenethyl-N-methyl-anthranilic acid, which is then cyclized to the corresponding pharmaceutically useful 4-amino-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-one or 4-amino-5,10,11,12-tetrahydrodibenzo[a,d]cycloocten-5-one.

3,641,134
OXY SUBSTITUTED BIPHENYLENE CARBOXYLIC ACIDS
Tsung-Ying Shen, Bruce E. Witzel, and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Continuation-in-part of application Ser. No. 836,659, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,293
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 **7 Claims**

New substituted biphenylene carboxylic acids and non-toxic pharmaceutically aceptable salts, esters, anhydrides, and amides derived therefrom. The substituted biphenylene carboxylic acids described herein have anti-inflammatory, anti-pyretic, and analygesic activity. Also included is a method of preparing said carboxylic acids.

3,641,135
PROCESS FOR OXIDIZING A 1,1-BIS(ALKYL-PHENYL) ALKANE
Anatoli Onopchenko, Monroeville, Johann G. D. Schulz, Pittsburgh, and Richard Seekircher, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed May 8, 1970, Ser. No. 35,891
Int. Cl. C07c *63/02, 65/20*
U.S. Cl. 260—524 R **20 Claims**

A process for oxidizing a 1,1-bis(alkylphenyl)alkane, wherein the alkane bridge has at least two carbon atoms, to convert alkyl substituents to carboxylic acid substituents which involves contacting the 1,1-bis-(alkylphenyl) alkane with oxygen in a lower carboxylic acid containing cobalt and an aliphatic hydrocarbon having from three to six carbon atoms.

3,641,136
PROCESS FOR OXIDIZING A 1,1-BIS(ALKYL-PHENYL) ALKANE
Anatoli Onopchenko, Monroeville, Johann G. D. Schulz, Pittsburgh, and Richard Seekircher, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed May 8, 1970, Ser. No. 35,892
Int. Cl. C07c *63/02, 65/20*
U.S. Cl. 260—524 R **16 Claims**

A process of oxidizing a 1,1-bis(alkylphenyl)alkane to convert alkyl substituents to carboxylic acid substituents which involves contacting the 1,1-bis(alkylphenyl)alkane with oxygen in a lower carboxylic acid containing cobalt and a methylenic ketone.

3,641,137
PREPARATION OF METHACRYLIC ACID
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Feb. 19, 1969, Ser. No. 800,744
Int. Cl. C07c *53/28, 57/04*
U.S. Cl. 260—526 N **12 Claims**

Acetylenic hydrocarbons are hydrocarboxylated by contact with carbon monoxide and a carboxylic acid in the presence of a catalyst comprising a complex of a Group VIII noble metal and a biphyllic ligand under liquid phase reaction conditions at temperatures between 50° C. and 400° C. and at pressures sufficient to maintain liquid phase. The product anhydrides are readily hydrolyzed to unsaturated acids which are useful as polymerizable monomers.

3,641,138
METHOD FOR PRODUCING UNSATURATED ALDEHYDES AND ACIDS
John A. Ondrey, Springdale, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed May 31, 1968, Ser. No. 733,312
Int. Cl. C07c *47/22, 57/04*
U.S. Cl. 260—530 N **11 Claims**

A method of oxidizing propylene and isobutene to the corresponding unsaturated aldehydes and acids and for oxidizing the unsaturated aldehydes of propylene and isobutene to the corresponding unsaturated acids by the vapor phase reaction with molecular oxygen in the presence of a catalyst of cobalt molybdate promoted with a composition of molybdenum, tellurium and oxygen. Propylene is converted to acrolein and acrylic acid and acrolein in converted to acrylic acid.

3,641,139
ETHYLENE OXIDATION IN THE PRESENCE OF IRIDIUM METAL
Noel W. Cant and William K. Hall, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Nov. 25, 1968, Ser. No. 778,806
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 R **8 Claims**

Ethylene is oxidized with oxygen to acetic acid which is substantially free of other oxygenated organic products by oxidation of the ethylene in the presence of iridium metal.

3,641,140
PROCESS FOR THE PREPARATION OF CHLORO-ALKANE SULPHONYL CHLORIDES
Wolfgang Keberle, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 14, 1968, Ser. No. 767,513
Claims priority, application Germany, Nov. 9, 1967, F 53,993
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R **2 Claims**

Chloroalkane sulphonyl chlorides are prepared by reacting a cyclicthioether also known as a sultone, with the chloride of an inorganic acid at a temperature from about 40 to about 150° C. in the presence of an acid amide.

3,641,141
PROCESS FOR THE PREPARATION OF ALKYL-THIONO-PHOSPHONIC ACID DICHLORIDES
Hanshelmut Schlör, Wuppertal-Elberfeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,818
Claims priority, application Germany, Nov. 21, 1967, P 16 68 043.6
Int. Cl. C07f *9/42*
U.S. Cl. 260—543 P **14 Claims**

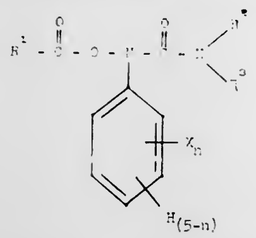
Reacting dialkyl disulfide as sulfur donor in the presence of alkali metal- or ammonium-chloride with the Clay-Kinnear-Perren complex $[alkyl\text{-}PCl_3]^+[AlCl_3X]^-$, in which X is chlorine or bromine, formed from alkyl-chloride or alkylbromide, phosphorus trichloride and aluminium trichloride to produce alkyl-thiono-phosphonic acid dichloride, in which the alkyl radical is based upon the corresponding starting alkyl-chloride, said produced dichloride being recoverable from the reaction mixture by distillation, e.g. at about 190–220° C.; such alkyl-thiono-phosphonic acid dichlorides being known intermediates for the preparation of insecticidal thionophosphonic acid esters.

3,641,142
PYROGENIC SYNTHESIS OF PERFLUORO-ACRYLYL FLUORIDE
David C. England, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 577,143, Sept. 6, 1966. This application Oct. 30, 1968, Ser. No. 771,995
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 F **4 Claims**

Process for preparing perfluoroacrylyl fluoride by the pyrolysis, e.g., at 350°–800° C., of α-hydrotetrafluoropropionic acid anhydride or α-hydrotetrafluoropropionyl fluoride preferably with a two-component catalyst system, e.g., quartz and an alkali metal fluoride.

3,641,143
N-CARBAMOYL-O-ALKENOYL-N-PHENYL-HYDROXYL-AMINES AS HERBICIDES
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,796
Int. Cl. C07c *127/22*; A01n *9/20*
U.S. Cl. 260—545 R **6 Claims**

This invention discloses new chemical compounds of the formula



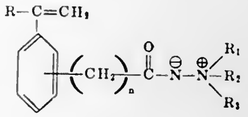
wherein R^1 is alkenyl; R^2 and R^3 are independently selected from the group consisting of hydrogen and alkyl; X is selected from the group consisting of alkyl, alkenyl, halogen, haloalkyl, alkoxy, nitro and dialkylamino; and *n* is an integer from 0 to 5. This invention further discloses new herbicidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, a compound of the above description.

3,641,144
CYCLOALIPHATIC CARBOXYLIC ANHYDRIDE REACTION AND REACTION PRODUCTS
Robert C. Kuder, Excelsior, Minn., assignor to General Mills, Inc.
No Drawing. Continuation-in-part of application Ser. No. 570,736, Aug. 8, 1966. This application Mar. 13, 1969, Ser. No. 807,112
Int. Cl. C07c *61/12, 61/28*
U.S. Cl. 260—546 **1 Claim**

A cycloaliphatic C_6–C_{15} olefin having ethylenic unsaturation at an exocyclic carbon position is reacted with an anhydride of a C_2–C_{18} carboxylic acid having an available alpha-hydrogen atom in the presence of a free radical initiator thereby forming a novel cycloaliphatic organic acid anhydride adduct. This new class of compounds can be used to make perfumes by conversion to the esters, or to corresponding acids, salts, nitriles or other derivatives.

3,641,145
VINYL AROMATIC AMINIMIDES
Billy M. Culbertson, Savage, William J. McKillip, Minneapolis, and Edward A. Sedor, Bloomington, Minn., assignors to Ashland Oil, Inc.
No Drawing. Filed Aug. 23, 1967, Ser. No. 662,571
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 H **7 Claims**

Vinyl aromatic aminimides are prepared from vinyl aromatic acids or derivatives thereof. The vinyl aromatic aminimide can be homopolymerized and copolymerized to result in functional group-containing polymeric products capable of thermosetting. The vinyl aromatic aminimides have the general formula

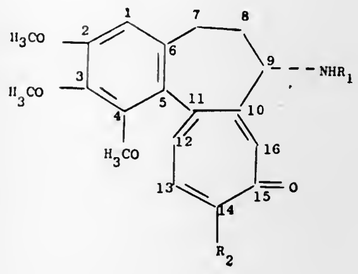


(I)

wherein R is a hydrogen, methyl, or halogen; *n* is zero or one and R_1, R_2, and R_3 are hydrocarbon radicals and R_1 and R_2 can be combined to form a heterocyclic ring with the nitrogen.

3,641,146
HALOCOLCHICINE DERIVATIVES
Hans Lettre, Heidelberg, Germany, and Thomas J. Fitzgerald, Minneapolis, Minn., assignors to E. Merck AG, Darmstadt, Germany
No Drawing. Filed Feb. 24, 1969, Ser. No. 802,329
Claims priority, application Germany, Feb. 23, 1968, P 16 95 547.8
Int. Cl. C07c *103/38*
U.S. Cl. 260—562 CL **11 Claims**

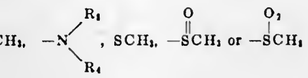
Novel antimitotically effective halocolchicine compounds of the formula



wherein

R_1 represents a mono-, di- or trihaloacyl residue of 2–4 carbon atoms;

R_2 represents



R_3 is CH_3 or C_2H_5; and

R_4 is H, CH_3 or C_2H_5.

3,641,147
2-POLYFLUOROLOWERALKYL BENZOPHENONES
John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.
No Drawing. Continuation-in-part of application Ser. No. 703,245, Feb. 6, 1968, which is a continuation-in-part of application Ser. No. 650,581, July 3, 1967, now Patent No. 3,429,874, which is a continuation-in-part of application Ser. No. 603,737, Dec. 22, 1966, which in turn is a continuation-in-part of application Ser. No. 520,658, Jan. 14, 1966. This application Mar. 28, 1969, Ser. No. 811,637
Int. Cl. C07c *103/33*
U.S. Cl. 260—562 **5 Claims**

This invention relates to novel chemical composition of matter useful as intermediates in the preparation of 2-oxo - 1,3 - dihydro-2H-1,4-benzodiazepines, and the 4-N-oxides thereof, having a polyfluoroloweralkyl radical attached at the 1-position thereof and to the methods for making and using such novel chemical intermediates.

3,641,148
AMINOPOLYCYCLODECANES
Robert John Stedman, Paoli, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
No Drawing. Original application Oct. 11, 1965, Ser. No. 494,881, now Patent No. 3,456,008, dated July 15, 1969. Divided and this application Mar. 5, 1969, Ser. No. 813,390
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 P **2 Claims**

1-amino and aminomethylpentacyclo

$[6.2.4.0^{2,7}.0^{4,10}.0^{5,9}]$

decanes, 3-amino and aminomethyltetracyclo

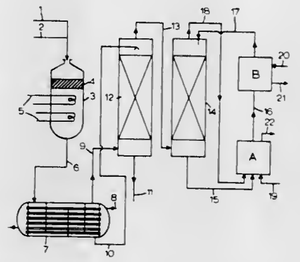
$[5.3.0.0^{2,6}.0^{4,9}]$

decanes, and 1-amino and aminomethyltetracyclo-$[5.2.0.0^{2,6}.0^{4,9}]$-nonanes are prepared starting from tetrachlorocyclopentadienone cyclic ethylene ketal and 1,4-cyclohexadiene and proceeding with ring-closure, hydrolysis and Favorskii reactions. The products are antivirals.

3,641,149
POLY(AMINOMETHYL)CYCLOPENTANES
William H. Edgerton, Strafford-Wayne, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,393
Int. Cl. C07c *87/32*
U.S. Cl. 260—563 R **6 Claims**

Poly(aminomethyl)cyclopentanes and mixed poly(aminomethyl)poly(hydroxymethyl)cyclopentanes are prepared by reducing the corresponding polyamido and polyamidopolyester derivatives of ciscyclopentanetetracarboxylic acid. The compounds are useful as organic intermediates and in the polymer art.

3,641,150
CYCLIC PROCESS FOR THE PREPARATION OF AN OXIME FROM A HYDROXYLAMMONIUM SALT SOLUTION
Abraham H. de Rooij, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
Filed Nov. 12, 1969, Ser. No. 875,725
Claims priority, application Netherlands, Nov. 12, 1968, 6816076
Int. Cl. C07c *131/00*; C01b *21/20*; C01c *1/00*
U.S. Cl. 260—566 A **2 Claims**



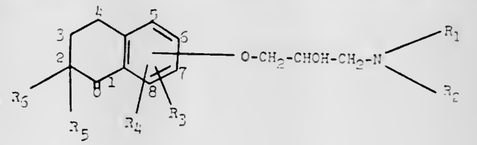
A cyclic process in which an aqueous acid reaction medium is kept in circulation between a zone for the synthesis of hydroxylamine and a zone for the synthesis of oxime. A gas flow containing NO and some NO_2 is continuously added to the circulating liquid, the greater part of the NO is being catalytically reduced with H_2 to form NH_2OH and some NH_3 as byproduct. The NH_2OH is consumed in the oxime synthesis zone and the NH_3 byproduct is continuously removed by contacting the circulating liquid with NO and NO_2 under such conditions that N_2 and H_2O result.

3,641,151
LIQUID CHLORINATED POLYARYL-POLYAMINE COMPOSITIONS
Michael Kokorudz, Grosse Ile, Mich., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.
No Drawing. Filed May 21, 1969, Ser. No. 826,717
Int. Cl. C07c *87/28, 91/42*
U.S. Cl. 260—570 D **2 Claims**

Liquid chlorinated polyaryl-polyamine compositions are prepared by condensing, in the presence of water and sulfuric and/or hydrochloric acid, formaldehyde with o-chloroaniline in a mole ratio of o-chloroaniline to formaldehyde of from 2:1.05 to 2:1.5. The compositions are useful as curing agents for polyurethane prepolymers.

3,641,152
3,4-DIHYDRONAPHTHALENONEOXY-2-HYDROXY-PROPYLAMINES
John Shavel, Jr., Mendham, and Sheldon Farber, Livingston, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.
No Drawing. Filed Sept. 23, 1968, Ser. No. 761,857
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.7 **9 Claims**

The present invention relates to compounds of the formula:



wherein R_1 stands for hydrogen or an alkyl group and R_2 stands for an alkyl group of not more than 6 carbon atoms, preferably branched such as isopropyl, isobutyl, sec-butyl, tert-butyl, and the like; cycloalkyl groups of not more than 7 carbon atoms, such as cyclopropyl, cyclopropylmethyl, cyclopentyl, cyclopentylmethyl, cyclohexyl, cyclohexylmethyl; lower alkenyl or aralkyl groups, any of which may be optionally substituted; R_3 and R_4 each stand for hydrogen, or hydroxy; R_5 and R_6 each stand for hydrogen, alkyl, or aralkyl; OR_7, in which R_7 is lower alkyl or lower alkenyl, aralkyl such as benzyl in which aryl may be optionally substituted by halogen, nitro, etc.; halogens such as F, Cl, Br or I; nitro, amino or acylamino, or sulfonamido; alkyl such as methyl and containing not more than 6 carbons.

3,641,153
N-OXIDES OF AMINOALKYLENE-DIBENZO[a,d] CYCLOHEPTENES AND THE SALTS THEREOF
Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,701
Claims priority, application Switzerland, Mar. 20, 1968, 4,201/68
Int. Cl. C07c *87/02*
U.S. Cl. 260—570.8 TC **14 Claims**

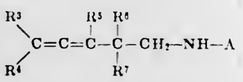
1 - halo-5-(3-dimethylaminopropyl or propylidene)-5H-dibenzo[a,d]cycloheptene N-oxides, prepared, inter alia, from the corresponding 1-halo-5-(3-dimethylaminopropyl or propylidene) - 5H - dibenzo[a,d]cycloheptenes, are described. The end products are useful antidepressants.

3,641,154
PROCESS OF SYNTHESIZING N-MONOALKYL PICRAMIC ACIDS
John Frank Corbett and Geoffrey Wilfred Amery, Reading, England, assignors to The Gillette Company, Boston, Mass.
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,585
Claims priority, application Great Britain, July 10, 1968, 32,963/68
Int. Cl. C07c *91/44*
U.S. Cl. 260—571 **5 Claims**

A process for the preparation of N-monoalkyl-isopicramic acids in which the N-alkyl group contains up to 6 carbon atoms, which comprises nitrating an N-monoalkyl-p-aminophenol, in which the N-alkyl group contains up to 6 carbon atoms and in which the amino group remains free from acetylation with nitric acid in the presence of sulfuric acid at a temperature from −20° to +30° C. to introduce two nitro groups into said aminophenol.

3,641,155
ALLENE POLYAMINES
Charles H. Tilford, Atlanta, Ga., and Thomas R. Blohm and Robert D. MacKenzie, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,408
Int. Cl. C07c *87/24, 87/32, 87/50*
U.S. Cl. 260—583 H **20 Claims**

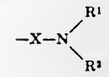
Compounds which have activity in inhibiting the clotting of blood are selected from bases of the formula



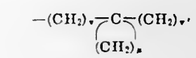
Formula I

wherein:

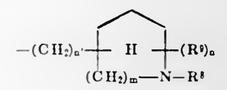
(A) R^3 is hydrogen, (lower)alkyl or (lower)alkenyl;
(B) R^4 is (lower)alkyl or (lower)alkenyl;
(C) R^3 and R^4 taken together with the carbon atom to which they are attached is cycloalkyl of 5 to 7 ring carbon atoms;
(D) R^5 is hydrogen or (lower)alkyl;
(E) each of R^6 and R^7 is (lower)alkyl, (lower)alkenyl, or R^6 and R^7 together with the carbon atom to which they are attached is (i) cycloalkyl of 5 to 7 ring carbon atoms; (ii) cycloalkenyl of 5 to 7 ring carbon atoms; or (iii) bicycloalkyl selected from bornyl, norbornyl or norbornenyl;
(F) A is the group (i)



wherein X is alkylene of 2 to about 8 carbon atoms and separates the adjacent nitrogen atoms by an alkylene chain of at least 2 carbon atoms, monohydroxy alkylene of 3 to about 8 carbon atoms, and separates the adjacent nitrogen atoms by an alkylene chain of at least 3 carbon atoms, or a cycloalkyl-substituted alkylene group of the formula



wherein each of (ν) and (ν') is an integer of 0 to 4, (μ) is an integer of 3 to 5 provided that at least one of (ν) and (ν') is 1, and the total of (ν), (ν') and (μ) is not greater than 8, R^1 is hydrogen, (lower)alkyl, phenyl, hydroxy(lower)alkyl, cycloalkyl of 4 to 6 ring carbon atoms, di(lower)alkylamino(lower)alkyl, pyridyl(lower)alkyl, piperidyl(lower)alkylamino(lower)alkyl, or piperidyl(loweralkyl, R^2 is hydrogen, (lower)alkyl or hydroxy (lower)alkyl, or R^1 and R^2 taken together with the nitrogen to which they are attached is piperazino, N-(lower) alkylpiperazino, morpholino, pyrrolidino, aziridino, piperidino, (lower)alkylpiperidino, (lower)alkylimidazolidino, or (ii) A is



wherein (n') is an integer of 0 to 3, (m) is an integer of 1 or 2, R^8 is hydrogen, (lower)alkyl, (lower)alkenyl, hydroxy(lower)alkyl, phenyl(lower)alkyl, cyano(lower)alkyl, piperidino(lower)alkyl, R^9 is (lower)alkyl; and (n) is an integer of 0 to 4; or pharmacologically acceptable acid addition salts of said bases.

3,641,156
JUVABIONE AND DERIVATIVES THEREOF
Beverly Ann Pawson, Montclair, and Gabriel Saucy, Essex Falls, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Continuation-in-part of application Ser. No. 725,208, Apr. 29, 1968. This application Mar. 3, 1969, Ser. No. 803,964
Int. Cl. C07c *49/61*
U.S. Cl. 260—586 **6 Claims**

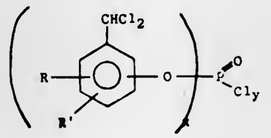
This invention is directed to a method of synthesizing Juvaboine and novel derivatives thereof which are useful in killing and preventing proliferation of insects by upsetting their hormone balance including itermediates in this process.

3,641,157
HYDROCARBON OXIDATION
Herbert Riegel, Palisades, N.J., Harvey D. Schindler, New York, N.Y., and Morgan C. Sze, Upper Montclair, N.J., assignors to The Lummus Company, Bloomfield, N.J.
Filed Oct. 23, 1968, Ser. No. 769,792
Int. Cl. C07c *45/02*
U.S. Cl. 260—599 **17 Claims**

Process for producing a carbonyl compound or acid wherein a feed containing a hydrocarbon is contacted with an oxygen-containing gas a melt containing a multivalent metal halide in both its higher and lower valence state. The preferred melt contains a mixture of copper chlorides.

3,641,158
PROCESS FOR THE PRODUCTION OF AROMATIC HYDROXYALDEHYDES
Adolph J. Deinet, Woodcliff Lake, and David X. Klein, Upper Montclair, N.J., assignors to Tenneco Chemicals, Inc.
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,820
Int. Cl. C07c *47/56*
U.S. Cl. 260—600 **4 Claims**

Salicylaldehyde and other hydroxybenzaldehydes are prepared by heating an ester having the structural formula



wherein R and R′ are each hydrogen, chlorine, bromine, lower alkyl, or lower alkoxy; x and y are each 1 or 2; and the sum of x and y is 3 with water at a temperature at which the ester is hydrolyzed and the aldehyde is simultaneously steam-distilled from the reaction mixture.

3,641,159
PROCESS FOR THE PREPARATION OF ORGANIC HALIDES AND ORGANIC ETHERS
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,695
Int. Cl. C07c *41/10, 17/16*
U.S. Cl. 260—611 R **7 Claims**

Organic halides and organic ethers are prepared by treating the corresponding alcohol with a mixture of two metal halide catalysts at conditions which include a temperature of from about 100° to about 250° C. and a pressure ranging from atmospheric to about 100 atmospheres.

3,641,160
ADDUCTS OF TETRABROMODIALKOXY CYCLOPENTADIENES AND ALLYL ALCOHOL
Richard Garth Pews, Midland, Clare R. Hand, Sanford, and Carleton W. Roberts, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Original application Apr. 12, 1968, Ser. No. 721,106, now Patent No. 3,489,814, dated Jan. 13, 1970. Divided and this application June 16, 1969, Ser. No. 833,692
Int. Cl. C07c *43/18*
U.S. Cl. 260—611 F **1 Claim**

The invention concerns new compositions of matter that are the Diels-Alder adducts of tetrabromodialkoxy cyclopentadienes having the general formula $C_5Br_4(OR)_2$ wherein R is an alkyl radical having from 1 to 8 carbon atoms and allyl alcohol which compounds are useful for the control of pigweed, as flame-proofing agents and as fire retardants.

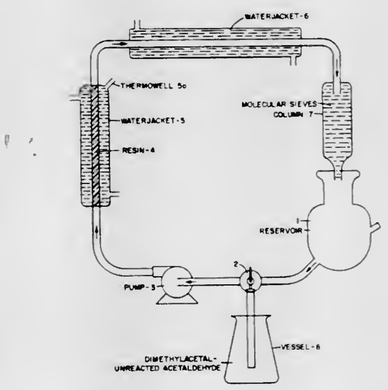
3,641,161
NAPHTHYL ALKANOLS
John H. Fried and Ian T. Harrison, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama
No Drawing. Filed July 2, 1968, Ser. No. 741,904
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 D **15 Claims**

β-[2-naphthyl] ethanols optionally substituted at the β-position and/or position C–1, 4, 5, 7 or 8; and/or position C–6 possess anti-inflammatory, analgesic, anti-pyretic and anti-pruritic activity.

3,641,162
PRODUCTION OF ETHERS
Duncan Clark and Percy Hayden, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation-in-part of application Ser. No. 402,937, Oct. 9, 1964. This application Apr. 3, 1969, Ser. No. 813,295
Claims priority, application Great Britain, Oct. 14, 1963, 40,420/63
Int. Cl. C07c *41/06, 41/10*
U.S. Cl. 260—614 AA **8 Claims**

A process for the production of alkyl-alkenyl ethers comprising passing a terminal alkene containing two to four carbon atoms through a solution consisting essentially of a salt or co-ordination compound of palladium, a polar solvent, an alkanol having one to four carbon atoms, an alkali metal halide other than a fluoride and up to 10% by weight of water, at a temperature not exceeding 150° C. and at a partial pressure of the alkene of up to 100 atmospheres, and removing the alkyl-alkenyl ether formed in the gas stream of alkene.

3,641,163
PROCESS FOR PREPARING DIMETHYLACETAL
Owen Portwood, Jr., Charles M. Starks, and Paul H. Washecheck, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Aug. 14, 1969, Ser. No. 850,152
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A **4 Claims**



Dimethylacetal is prepared by passing a mixture of acetaldehyde and methanol over an acidic catalyst. The water of reaction is removed by a dehydrating agent (e.g. molecular sieves), thereby driving the reaction to completion. Use of an excess of acetaldehyde results in a product mixture, after removal of water, comprising dimethylacetal and unreacted acetaldehyde. The dimethylacetal is recovered by distillation of the product mixture.

3,641,164
PROCESS FOR THE MANUFACTURE OF ORTHOFORMIC ACID ALKYLESTERS
Kurt Sennewald, Knapsack, near Cologne, Alexander Ohorodnik, Liblar, and Hubert Neumaier, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
Filed Dec. 2, 1969, Ser. No. 881,536
Claims priority, application Germany, Dec. 3, 1968, P 18 12 371.2
Int. Cl. C07c *43/32*
U.S. Cl. 260—615 A **2 Claims**

Production of orthoformic acid alkylesters by reacting hydrocyanic acid with a monohydric alcohol and hydrogen chloride at low temperatures to obtain the corresponding formimidoalkylester (formiminoalkylether)-hydrochloride in an anhydrous, inert organic solvent and by reacting the formimidoalkylester-hydrochloride with a further quantity of the alkyl alcohol to obtain the orthoformic acid alkylester. The formation of the formimidoalkylester-hydrochloride is effected in two steps. The first step comprises conveying a substantially equimolar mixture of hydrocyanic acid and an alkyl alcohol having from 1 to 4 carbon atoms through a cooler having a large inner surface and a high heat transmission coefficient, and introducing gaseous hydrogen chloride in a molar ratio of HCl:HCN between 1:1 and 1.1:1 into the mixture travelling through the cooler and cooled down to a temperature between −8° C. and −18° C. The second step comprises pouring the mixture coming from the cooler into cooled, organic solvent, the solvent being used at a rate of between about 1000 bis 1500 cubic centimeters per 1000 grams of theoretically expected formimidoalkylester-hydrochloride and at a temperature of between −20° C. and +8° C. Following crystallization of the formimidoalkylester-hydrochloride, further alkyl alcohol is added, without neutralization of hydrogen chloride in excess, to the said formimidoalkylester-hydrochloride in a quantity corresponding to 80 to 90% of the alcohol quantity theoretically needed, the mixture is maintained at temperatures between 0 and 50° C., crystallized ammonium chloride is isolated, and the orthoformic acid alkylester is purified by subjecting it to distillative treatment.

3,641,165
PREPARATION OF ALCOHOLS
Louis Schmerling, Riverside, and Robert A. Dombro, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 668,693, Sept. 18 1967. This application May 4, 1970, Ser. No. 34,538
Int. Cl. C07c *29/00*
U.S. Cl. 260—618 R **9 Claims**

A primary, secondary, or tertiary alcohol may be prepared by the hydrolysis of an aralkanesulfonic acid or salt thereof at elevated temperatures using an alcoholic alkali medium.

3,641,166
PROCESS FOR PREPARING 3,5-DIMETHYLPHENOL FROM ISOPHORONE
Karl Rühl, Duisburg-Meiderich, Heinz-Gerhard Franck, Sudring, and Johannes Turowski, Castrop-Rauxel, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany
No Drawing. Filed June 26, 1969, Ser. No. 836,984
Claims priority, application Germany, July 10, 1968, P 17 68 875.4
Int. Cl. C07c *37/06*
U.S. Cl. 260—621 R **3 Claims**

According to the invention 3,5-dimethylphenol is prepared by catalytic conversion of isophorone in the gaseous phase at temperatures in the range of 450–600° C., in the presence of a catalyst consisting of a chromium-nickel-steel alloy of the 18/8 type which contains about 74% of iron, 18% of chromium and 8% of nickel. The 3,5-dimethylphenol is obtained e.g. in a yield of 65–68% by weight. No deposits of carbon are formed on the catalyst and the activity of the catalyst remains constant for a practically unlimited period of time.

3,641,167
HIGHLY FLUORINATED ALKYLADAMANTANES
Robert E. Moore, Wilmington, Del., and Edward J. Janoski, Havertown, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 314,529, Oct. 7, 1963. This application Mar. 17, 1965, Ser. No. 440,614
Int. Cl. C07c *23/38*
U.S. Cl. 260—648 F **12 Claims**

This invention relates to highly fluorinated alkyladamantanes having 12–14 carbon atoms per molecule. More specifically the alkyladamantanes from which the fluorinated products are derived are 1,3-dimethyladamantane, 1,3,5-trimethyladamantane, 1-ethyladamantane, 1-ethyl-3-methyladamantane and 1-ethyl-3,5-dimethyladamantane. The fluorinated products of the invention are liquids at room temperature and are characterized by a high degree of stability and an unusually wide temperature range in which they remain in liquid state.

3,641,168
1,3,5-HALOXYLENE EXTRACTION
John D. Bacha, Monroeville, and Charles M. Selwitz, Pitcairn, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 785,798, Dec. 20, 1968. This application Dec. 3, 1969, Ser. No. 881,851
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 R **4 Claims**

Selective extraction of 1,3,5-chloroxylene from other chloroxylene isomers initially present in a heterogeneous mixture comprising an HF layer relatively rich in 1,3,5-chloroxylene and a contacting organic layer relatively poor in 1,3,5-chloroxylene is effected by heating the heterogeneous mixture to a sufficiently high temperature to ensure that the HF layer is uppermost in the extraction vessel.

In a preferred embodiment, the extraction is conducted in the absence of a diluent.

3,641,169
STABILIZATION OF CHLORINATED SOLVENTS
Clarence R. Crabb, Elk Grove, Ill., and Leighton S. McDonald, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 608,748, Jan. 12, 1967. This application Oct. 30, 1968, Ser. No. 771,976
Int. Cl. C07c *17/42*
U.S. Cl. 260—652.5 R **13 Claims**

Organic mercaptans and disulfides inhibit the metal-catalyzed reaction of an epoxide wth a carboxylic acid. Consequently, these sulfur compounds are useful as secondary inhibitors in epoxide-stabilized chlorinated solvents which may become contaminated with organic acids and metals, for example, degreasing and metal cleaning solvents.

3,641,170
ETHYLENE TELOMERIZATION
Kay L. Nakamaye, Moraga, Lynn H. Slaugh, Lafayette, William W. Spooncer, Walnut Creek, and Hendrik C. Volger, Richmond, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 11, 1969, Ser. No. 832,465
Int. Cl. C07c *17/28, 67/00*
U.S. Cl. 260—658 C **7 Claims**

Ethylene and organic iodides are telomerized to higher-molecular-weight organic iodide products in the presence of iron, nickel, copper, zinc or cadmium metal as catalyst.

3,641,171
ETHYLENE TELOMERIZATION
William W. Spooncer, Richmond, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 11, 1969, Ser. No. 832,431
Int. Cl. C07c *17/00*
U.S. Cl. 260—658 C **5 Claims**

Ethylene and organic iodides are telomerized to higher-molecular-weight organic iodide products in the presence of a copper chelate of a β-diketone monoenolate.

3,641,172
PROCESS FOR PREPARING 1,2-DICHLOROETHANE
Morris A. Johnson and Kang Yang, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,147
Int. Cl. C07c *17/20*
U.S. Cl. 260—658 R **6 Claims**

Quaternary ammonium salts and quaternary phosphonium salts are disclosed as catalyzing agents for improving the reaction between 1,2-dibromoethane and an alkali metal chloride or ammonium chloride for producing 1,2-dichloroethane and an alkali metal bromide or ammonium bromide.

3,641,173
PRODUCTION OF POLYCYCLIC HYDROCARBONS
Richard Gregory Foster, Macclesfield, David Richard Joy, Stockton-on-Tees, and Paul Hepworth and Edward Charles Dart, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,613
Claims priority, application Great Britain, Aug. 12, 1969, 40,312/69
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY **14 Claims**

Polycyclic hydrocarbons are produced by a three stage process in which a cyclopentadiene is condensed with an acyclic substituted olefine, the substituents removed from the intermediate to form a double bond and the product in turn reacted with an acyclic conjugated di-olefine. For example, vinyl chloride may be reacted with cyclopentadiene to form nortricyclyl chloride, the latter dehydrohalogenated with a sodium alcoholate, and the norbornadiene produced condensed with isoprene to form 1,4-endomethylene-6-methyl - 1,4,5,8,9,10 - hexahydronaphthalene. By varying the cyclopentadiene to vinyl chloride ratio in the first stage polycyclic ring structures containing an increasing number of rings may be obtained.

3,641,174
DIOLEFIN DISPROPORTIONATION REACTIONS
James E. Lyons, Wallingford, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Mar. 7, 1969, Ser. No. 805,343
Int. Cl. C07c *1/00*
U.S. Cl. 260—666 A **6 Claims**

Cyclic, semicyclic or acyclic diolefins can be disproportionated to simultaneously form one hydrogenated and one dehydrogenated product through the use of a ligand-stabilized Group VIII transition metal complex in homogeneous solution. These catalyst complexes, which are hydrocarbon-soluble, uniquely provide a homogeneous rather than a heterogeneous catalyst system for this type of reaction.

3,641,175
PROCESS FOR THE PRODUCTION OF DIMERS AND TRIMERS OF CONJUGATED DIENES
Gunther Wilke and Ernst Willi Muller, both of Kaiser-Wilhelm-Platz 1, Mulheim (Ruhr), Germany
No Drawing. Division of application Ser. No. 532,900, Mar. 9, 1966, which is a continuation-in-part of application Ser. No. 76,520, Dec. 19, 1960, and a continuation of application Ser. No. 555,203, June 3, 1966, which in turn is a continuation of application Ser. No. 203,753, June 20, 1962. This application Oct. 17, 1969, Ser. No. 867,394
Claims priority, application Germany, Dec. 22, 1959, St 15,930; Apr. 28, 1960, St 16,427; June 30, 1961, St 18,017
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 B **39 Claims**

Production of dimers and trimers of 1,3-diolefins with a carbonyl moiety-free complex of a transition metal of Group VIII of the Periodic Table and an electron donor.

3,641,176
OLEFIN OLIGOMERISATION PROCESS
Derek Keith Jenkins, Southampton, and Christopher George Piers Dixon, Leeds, England, assignors to The International Synthetic Rubber Company Limited, Southampton, England
No Drawing. Filed Sept. 19, 1968, Ser. No. 761,000
Claims priority, application Great Britain, Sept. 20, 1967, 42,862/67; Mar. 7, 1968, 11,270/68
Int. Cl. C07c *3/10, 15/02*
U.S. Cl. 260—668 B **6 Claims**

A catalyst system and process for the polymerisation of ethylene and cyclic hydrocarbons having at least one vinyl group to form oligomers and co-oligomers (polymers of two or three monomer units), the catalyst comprises a zerovalent nickel complex of formula

$$Ni(PA_xB_{3-x})_4$$

where A is hydrogen, substituted or unsubstituted alkyl, cycloalkyl, aryl, aralkyl alkoxy or aryloxy. B is halogen and x is 0–3 inclusive, provided that x is less than 3 in at least one branch of the complex.

3,641,177
ALKYLATION OF AROMATIC HYDROCARBONS
Paul E. Eberly, Jr., and Charles N. Kimberlin, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,367
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 C **9 Claims**

Process for alkylation of aromatic hydrocarbons with olefins by liquid phase reaction in the presence of a crystalline aluminosilicate zeolite catalyst activated in a particular manner.

3,641,178
PROCESS FOR ALKYLATING AROMATIC COMPOUNDS
Henricus Gerardus Josef Overmars, Zeist, Aris van Elven, Utrecht, and Jan Gerrit Noltes, Bunnik, Netherlands, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.
No Drawing. Filed Nov. 13, 1969, Ser. No. 876,584
Claims priority, application Netherlands, Dec. 6, 1968, 6817580
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 P **10 Claims**

This disclosure is concerned with a process for alkylating aromatic compounds in the presence of an unsup-

ported catalyst having at least 2 mols of a titanium tetrahalide per mol of a diorganozinc compound.

3,641,179
TRIMERIC HYDROCARBON
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba Corporation, Summit, N.J.
No Drawing. Filed Nov. 7, 1969, Ser. No. 874,959
Int. Cl. C07c *15/20, 15/28*
U.S. Cl. 260—668 F **3 Claims**

Trimesanthracenobenzenes, e.g. those of the formula



$R_{1,2}$=H or alkyl
are high melting and thermally stable compounds.

3,641,180
METHOD OF DEHYDROGENATING COMPOUNDS
Robert A. Stowe, Midland, and Irvin J. Martin, Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,967
Int. Cl. C07c *5/18, 11/02, 11/12*
U.S. Cl. 260—669 **11 Claims**

Strontium nickel phosphate catalysts are useful for oxydehydrating monoolefin hydrocarbons of 4 to 8 C atoms to the corresponding dienes and alkyl aromatic hydrocarbons having at least 2 C atoms in at least one alkyl group on the ring and ring halogenated derivatives of such aromatic hydrocarbons to the corresponding vinyl benzene aromatic compound. The reaction can be effected in the presence of steam in vapor phase, with 5–150 volume percent of oxygen, based on the hydrocarbon at a reactor inlet temperature of 400–700° C. The reaction can be run cyclically or continuously.

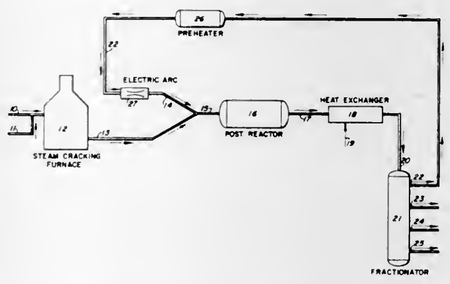
3,641,181
MICROEMULSION SEPARATION OF ORGANIC COMPOUNDS IN LIQUID STATE
Max L. Robbins, South Orange, and Darrell W. Brownawell, Scotch Plains, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed Sept. 10, 1969, Ser. No. 856,829
Int. Cl. C07c *7/10, 7/02;* **C10g**
U.S. Cl. 260—674 **7 Claims**

A process for separating a mixture containing liquid organic compounds, having different interfacial tensions when measured against substantially hydrocarbon-insoluble polar liquids, into its component parts comprises the steps of combining said mixture of organic liquids with surfactants and with a polar liquid substantially immiscible with any of the components of the mixture being separated thereby selectively forming two phases, one being a microemulsion rich in the organic components having the lower interfacial tension, wherein said polar liquid is the continuous phase, and the other being an oil phase rich in the components having the higher interfacial tension with respect to the polar liquid. The two phases are then separated.

3,641,182
HIGHLY CALCINED SUPPORT FOR CATALYTIC DEHYDROGENATION
E. O. Box, Jr., and David A. Uhrick, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed May 28, 1969, Ser. No. 828,777
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 R **15 Claims**

Alkanes, cycloalkanes, arylalkanes, and particularly n-butane diluted with steam, are dehydrogenated in the absence of free O_2 at high conversion and selectivity to less saturated compounds with a novel highly calcined catalyst support such as alumina, silica, or a Group II aluminate spinel impregnated with a material selected from the group consisting of one or more Group VIII metals, a Group I*a* metal, and a tin group metal and mixtures thereof.

3,641,183
INJECTION OF AN ELECTRICALLY HEATED STREAM INTO A STEAM CRACKED PRODUCT
Robert P. Cahn, Millburn, and Derek J. Angier, Somerville, N.J., assignors to Esso Research and Engineering Company
Filed July 9, 1968, Ser. No. 743,484
Int. Cl. C07c *3/00, 11/24*
U.S. Cl. 260—683 **15 Claims**



A steam cracking feed mixture containing steam and hydrocarbon is conventionally cracked in the tubes of a steam cracking furnace. The conversion of hydrocarbon to cracked product can be increased by injecting a high temperature gaseous stream such as can be produced by electrical heating, into the mixture in the cracking furnace or into the mixture as it emerges from the cracking furnace, thus subjecting the furnace effluent to short residence time, high temperature cracking conditions. In one method, methane is electrically heated and cracked to a mixture comprising acetylene and hydrogen, which is then injected into the product from the steam cracker, thereby causing additional cracking of the steam cracker feed and quenching of the electrically cracked product to preserve the acetylene content thereof. The electrically heated stream may, however, contain hydrogen, steam, hydrocarbons, e.g. acetylene, or mixtures thereof as the components of greatest concentration.

3,641,184
OLEFIN ISOMERIZATION
Clifford E. Smith and Bobby J. White, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Dec. 16, 1969, Ser. No. 885,629
Int. Cl. C07c *5/22*
U.S. Cl. 260—683.2 **12 Claims**

An olefin is isomerized by contact with a catalyst formed from a supported nickel complex associated with an aluminum compound.

3,641,185
ETHER PROMOTERS FOR LEWIS ACID CATALYZED ISOMERIZATION PROCESS
George M. Kramer, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed June 16, 1969, Ser. No. 833,694
Int. Cl. C07c *5/30*
U.S. Cl. 260—683.76 **12 Claims**

Addition of ethers as promoters for Lewis acid catalyzed isomerization, preferably taking place within a halo-aromatic solvent, results in the suppression of cracking and a corresponding maximization of the desired isomerization products. The ethers contain at least one secondary or tertiary alkyl radicals or cycloalkyl radicals.

3,641,186
PREPARATION OF BIS-ALKENYL MAGNESIUM COMPOUNDS
Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 802,272, Feb. 25, 1969. This application Dec. 24, 1970, Ser. No. 101,422
Int. Cl. C07f *3/02*
U.S. Cl. 260—665 R **7 Claims**

Alpha-olefins undergo an addition reaction in the absence of a catalyst with bis(2-alkenyl)magnesium compounds. By conducting this reaction in an ether reaction medium having a basicity equal to or greater than that of diethyl ether the intermolecular addition does not proceed to any appreciable extent beyond the addition of one unit of the olefinic hydrocarbon per hydrocarbyl group in the initial organomagnesium reactant. Thus, the process proceeds quite cleanly to essentially pure higher molecular alkenyl magnesium compounds. The compounds have utility as components of catalyst systems and as intermediates for the preparation of various organic compounds.

3,641,187
PRODUCTION OF CYCLIC TRIMERS OF DIENES
Junji Furukawa, Kyoto-shi, Kyoto-fu, and Hiroyuki Morikawa, Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,499
Claims priority, application Japan, Sept. 13, 1968, 43/65,945; Apr. 5, 1969, 44/26,503; June 4, 1969, 44/43,864
Int. Cl. C07c *3/10, 3/16*
U.S. Cl. 260—666 B **18 Claims**

Cyclododecatrienes (i.e., cyclic trimers of 1,3-dienes) are produced by causing at least one 1,3-diene to undergo cyclotrimerization by contacting a catalyst resulting from the combining of a titanium compound (e.g., titanium tetrachloride), an organo-aluminum compound (e.g., diethyl aluminum chloride), and an electron-donor component (e.g., a phosphite, phosphine, a pyridine derivative, or a thiophene derivative).

3,641,188
PROCESS FOR POLYMERIZING OLEFINS
Jin Sun Yoo, Riverdale, and Robert Koncos, Park Forest, Ill., assignors to Atlantic Richfield Company
No Drawing. Filed May 8, 1968, Ser. No. 727,735
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **19 Claims**

A catalyst composition consisting essentially of:
(A) a lanthanide series metal compound, e.g., cerous acetylacetonate,
(B) a reducing agent, e.g., ethylaluminum sesquichloride,
(C) a non-protonic Lewis acid, e.g., ethylaluminum sesquichloride, and, as optional, preferred ingredients,
(D) a trihydrocarbylphosphine, e.g., triphenylphosphine, and
(E) an inert, organic solvent, e.g., chlorobenzene, is disclosed as being useful for catalyzing the polymerization of olefins or phenyl-substituted olefins to normally liquid polymers or oligomers, e.g., for catalyzing the dimerization of propylene.

3,641,189
DISPROPORTIONATION OF OLEFINES
Leonard Turner, Woking, Eric James Howman, Crowthorne, and Christopher Patrick Cadman Bradshaw, Sunbury-on-Thames, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed Aug. 26, 1965, Ser. No. 482,911
Claims priority, application Great Britain, Sept. 8, 1964, 36,722/64; Dec. 15, 1964, 50,985/64, Patent 1,054,864
Int. Cl. C07c *3/62, 11/02*
U.S. Cl. 260—683 D **14 Claims**

Acyclic mono olefins are disproportionated, i.e., converted into acyclic mono olefins of higher and lower carbon numbers than the feedstock olefin, in the presence of rhenium heptoxide on alumina.

3,641,190
DECOKING OF ONSTREAM THERMAL CRACKING TUBES
John A. Kivlen, Sparta, and Bert W. Struth, Plainfield, N.J., and Clifford P. Weiss, Henderson, Ky., assignors to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 554,239, Apr. 29, 1966, which is a continuation-in-part of application Ser. No. 407,569, Oct. 29, 1964. This application Jan. 22, 1969, Ser. No. 801,910
Int. Cl. C07c *3/30;* **C10g** *9/16*
U.S. Cl. 260—683 **27 Claims**

Thermal cracking of hydrocarbons in admixture with steam in tubes arranged in a cracking furnace leads to the deposition of coke on the interior walls of the tubes, which coke must be periodically removed in order to maintain cracking efficiency; the coke can be removed, without the necessity of shutting down the furnace, by cutting out the coking hydrocarbon feed to at least one tube and passing through such tube or tubes a decoking feed of steam and a hydrocarbon which when cracked will produce hydrogen as a by-product, the decoking feed being substantially sulfur free, while maintaining the furnace onstream and continuing the thermal cracking process in the tubes that are not being decoked.

3,641,191
METHOD FOR REDUCTION OF POLYMER FORMATION IN A PROCESS FOR CONVERTING ETHYLENE TO ALPHA OLEFINS
Herbert B. Fernald and William Gall, Glenshaw, and Russell G. Hay, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Feb. 27, 1970, Ser. No. 15,197
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **6 Claims**

Solid polymer formation in the trialkylaluminum conversion of ethylene to higher alpha olefins is inhibited by the addition of various unsaturated hydrocarbon inhibitors. The presence of butadiene, for example, inhibits solid polymer formation without any substantial adverse effect on the efficiency of the process.

3,641,192
PROCESS FOR THE PRODUCTION OF OXYMETHYLENE COPOLYMERS

France B. McAndrew, Summit, N.J., George W. Polly, Corpus Christi, Tex., and Walter E. Heinz, Greenville, S.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 624,630, Mar. 27, 1967, which is a continuation-in-part of application Ser. No. 190,001, Apr. 25, 1962, both now abandoned. This application Sept. 13, 1968, Ser. No. 759,790

Int. Cl. C08g *1/16, 23/00*

U.S. Cl. 260—823 **4 Claims**

Moldable oxymethylene copolymers are produced by a novel method in which trioxane is reacted with a preformed oxymethylene copolymer, containing a larger portion of comonomer than is desired in the final product. Trioxane polymerization catalysts are employed and the product is of a higher molecular weight and contains lower comonomer content than the preformed copolymer.

3,641,193
BURN-RESISTANT PLASTIC COMPOSITIONS

Victor S. Frank, Silver Spring, Edwin W. Lard, Bowie, and Eldon E. Stahly, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,144

Int. Cl. C08g *45/06*

U.S. Cl. 260—830 **10 Claims**

Solid burn-resistant polymeric compositions are formed by reacting substances such as $Cl(PNCl_2)_9PCl_4$ and $(PNCl_2)_{3-4}$ with epoxy resins to form $PNCl_2$-epoxy prepolymers. These prepolymers are blended with organic liquid prepolymers such as phenolics, epoxies, polyurethanes and polyesters and the blends are cured to form fire resistant plastics, wherein initial P, N, and Cl contents are wholly retained. Those two components, i.e., $PNCl_2$ component and epoxy resin are admixed with liquid organic prepolymers (and polymerization catalysts therefor) and the system is then cured, usually by heating, whereby the $PNCl_2$-epoxy polymer is formed in situ along with the matrix polymer, or in some cases chemically bonded to the organic polymeric cross-linked plastic.

3,641,194
THERMOCURABLE POLYESTER-DIEPOXIDE COMPOSITIONS

Rolf Schmid, Reinach, Basel-Land, Ingrid Bucher, Basel, Willy Fisch, Binningen, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,583

Claims priority, application Switzerland, Feb. 19, 1968, 2,361/68

Int. Cl. C08g *30/12, 45/14*

U.S. Cl. 260—835 **6 Claims**

Crystalline polymers are prepared by the formation of adducts from diepoxides, preferably diglycidyl ethers of diphenols, such as bisphenol A and acid polyesters of succinic acid and 1,4-butanediol (the recurrent structural unit of the formula $—O—(CH_2)_4—OCO(CH_2)_2—CO—$ must occur at least six times in the chain). The ratio of epoxide groups of the diepoxide to carboxyl groups of the polyester is 1:07 to 1.2, preferably about 1:1. Advantageously, a portion of the dicarboxylic anhydrides (for example a dodecenylsuccinic anhydride) is concomitantly used as chain cross-linking agent. Of advantage is for example an equivalent ratio of 1.3 epoxide group: 1.0 carboxyl group +0.2 anhydride group. After stretching, the polymers have a tensile strength of 700–1000 kg./cm.^{2} and an elongation at break of 50–150%. Above the crystallization transition temperature, they are rubber-elastic. They are used, for example, as potting and sealing compounds or for the manufacture of fibers, ribbons, foils.

3,641,195
CURABLE COMPOSITIONS CONTAINING AN EPOXIDE RESIN AND A COPOLYMER OF AN OLEFINE HYDROCARBON WITH AN OLEFINE ESTER

Alan Ball, Duxford, Barry James Hayes, Little Eversden, and Albert John Matthews, Duxford, England, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed July 11, 1969, Ser. No. 841,141

Claims priority, application Great Britain, July 18, 1968, 34,397/68

Int. Cl. C08g *45/04*

U.S. Cl. 260—837 R **16 Claims**

This application concerns curable compositions comprising:

(a) an epoxide resin,
(b) dispersed in particulate from in (a), a thermoplastic copolymer of an α-olefine hydrocarbon with an α-olefine which is an ether or is an ester of a carboxylic acid, and
(c) a curing agent for epoxide resins.

The copolymer (b) is preferably an ethylene-vinyl acetate copolymer, and the preferred curing agent is dicyandiamide. The compositions may also contain a latent accelerator, and a second thermoplast, suitably a phenoxy resin or a polysulphone.

Film adhesives prepared from these compositions form bonds with excellent peel strengths.

In an example, film adhesives were employed prepared from bisphenol A polyglycidyl ethers having an epoxide content of 5.7 and 0.25–0.42 equiv./kg., dicyandiamide, imidazole (accelerator), an ethylene-vinyl acetate copolymer, and a phenoxy resin.

3,641,196
STABILIZING POLYACETALS

Bruno Sander, Ludwigshafen (Rhine), Franz Schmidt, Mannheim, and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,116

Claims priority, application Germany, Apr. 25, 1968, P 17 69 243.2

Int. Cl. C08g *37/32*

U.S. Cl. 260—849 **13 Claims**

A process for heat stabilizing polyacetals by adding polycondensates of dicarboxylic diamides, polycarboxylic polyamides containing basic nitrogen, alkylenureas and formaldehyde.

3,641,197
POLYMER COMPOSITIONS AND METHOD FOR THE PRODUCTION THEREOF

William Dean Holland, Woodbridge, Joseph Michael Schmitt, Ridgefield, and Richard McDonald Griffith, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,154

Int. Cl. C08g *37/32*

U.S. Cl. 260—854 **10 Claims**

A method for the production of compositions comprising a polymer of methyl methacrylate, a copolymer of ethylene, and a polyalkylated polymethylolmelamine and the products produced thereby, are disclosed.

3,641,198
POLYAMIDES CONTAINING ANTISTATIC POLYOLEFINS HAVING PENDANT POLYOXYALKYLENE CHAINS

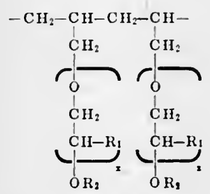
Pierre Grosjean, Le Brevent, France, assignor to Societe Rhodiaceta, Paris, France

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,600

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 **5 Claims**

An antistatic composition and a shaped article produced therefrom in the form of yarns, fabric, knitted fabric, etc., comprising a base thermoplastic synthetic polymer selected from polyamides and polyesters containing dispersed therein a polyolefin having an average molecular weight of greater than 1000 in an amount of about 1 to about 10 percent by weight, said polyolefin comprising a polymer with the recurring structural unit of the formula:



wherein R_1 is selected from hydrogen and methyl; R_2 is selected from hydrogen, alkyl or aryl; and x is an integer of 1 to 600.

3,641,199
URETHANE ELASTOMER WITH ACTIVE HYDROGEN CONTAINING MONOETHYLENICALLY UNSATURATED MONOMER

Warren Dexter Niederhauser, Meadowbrook, Pa., Hector Belmares-Sarabia, Moorestown, N.J., and William Bauer, Jr., Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 7, 1969, Ser. No. 839,655

Int. Cl. C08g *41/04, 22/00*

U.S. Cl. 260—859 R **28 Claims**

A urethane elastomeric impact modifier is provided for rigid thermoplastic polymers. Polyester and polyether urethane elastomers are grafted to the acrylic polymers. Preferred is a polyester, diisocyanate and glycol urethane elastomer terminated with a functional monomer capable of ethylenic polymerization grafting with the acrylic polymer. The modified polymers offer an improved balance of physical properties including higher impact strength, clarity, and weather resistance.

3,641,200
BLOCK COPOLYCARBONATES CONTAINING POLYLACTONE BLOCKS AND DIHYDRIC PHENOL POLYCARBONATE BLOCKS

Markus Matzner, Edison, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,125

Int. Cl. C08f *45/32;* **C08g** *17/13, 39/10*

U.S. Cl. 260—860 **13 Claims**

This invention relates to improved block copolycarbonates containing an amorphous, soft, rubbery segment or block composed of lactone units and another crystalline, hard, thermoplastic segment or block composed of dihydric phenol carbonate units.

3,641,201
ACID RESISTANT POLYESTER RESINS

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,572

Int. Cl. C08f *21/00, 21/02*

U.S. Cl. 260—867 **3 Claims**

The acid resistance and flexural strength of cross-linked polyester resins is increased by using small amounts of glycidyl methacrylate or glycidyl acrylate in their preparation.

3,641,202
UNSATURATED POLYESTER COMPOSITIONS CONTAINING VINYL POLYPHOSPHONATE COMPOUNDS

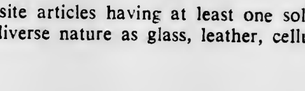
Jerome B. Biranowski, New York, and Edward D. Weil, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed May 28, 1969, Ser. No. 828,781

Int. Cl. C08f *21/00, 21/02*

U.S. Cl. 260—869 **12 Claims**

Flame retardant resinous compositions and polymerizable compositions comprising an ethylenically unsaturated polymerizable polyester and cross-linking compounds containing $CH_2{=}C<$ groups. A portion of the $CH_2{=}C<$ groups are derived from vinyl polyphosphonate compounds of the formula:



wherein n is a number of at least 2.

3,641,203
POLYESTER MIXTURES SUITABLE AS FOUNDATION MATERIALS

Erich Eimers, Krefeld, and Wolfgang Deninger and Bernhard Alt, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 3, 1969, Ser. No. 830,107

Claims priority, application Germany, June 29, 1968, P 17 69 701.7

Int. Cl. C08f *21/02*

U.S. Cl. 260—870 **5 Claims**

The invention relates to polyester mixtures suitable as foundation materials which contain the following components:

(a) a polyester which contains the radicals of an α,β-ethylene-dicarboxylic acid, of a completely or partly hydrogenated o-phthalic acid and of 1,2-propylene glycol;
(b) a N,N - bis - (hydroxyalkyl) - arylamine incorporated with a saturated or unsaturated polyester; and
(c) a copolymerisable vinyl compound.

3,641,204
ADHESIVE COMPOSITION POLY(VINYL ALKYL ETHER) AND A CYCLIC ESTER POLYMER

Robert Dean Lundberg, Somerville, N.J., Joseph Victor Koleske and Dale Flavian Pollart, Charleston, W. Va., and Walter Henry Smarook, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,320

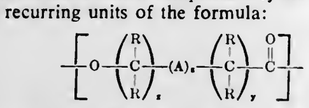
Int. Cl. C08g *43/02*

U.S. Cl. 260—874 **5 Claims**

Composite articles having at least one solid substrate of such diverse nature as glass, leather, cellulosic solids

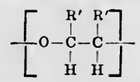
(including wood, paper, cotton and cellulose derivatives), polyamide solids, polyurethane solids, natural rubber solids, synthetic rubber solids, phenolic resin solids, epoxy resin solids, styrene polymer and copolymer solids and the like, bonded to an adhesive body which is anti-blocking (non-tacky) at ambient temperature but is heat activatable at relatively moderate temperature as low as 60° C. to provide excellent bonding upon cooling to ambient temperatures, and which comprises a cyclic ester polymer having recurring units of the formula:

(I)



wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy; A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; which the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R variables which are substituents other than hydrogen does not exceed 3, with or without recurring units of the formula:

(II)



wherein each R' is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl, and chloroalkyl, and, together with the ethylene moiety of the oxyethylene chain of unit II, a saturated cycloaliphatic hydrocarbon ring having 4 to 8 carbon atoms. Also, novel adhesive compositions containing the above-described cyclic ester polymer and vinyl alkyl ethers in the form of solutions, dispersions, powders, films, coatings and granules or pellets. The invention is applicable to adhering a broad range of diverse types of substrates without the necessity of using high temperatures or long setting times or toxic materials. It is also applicable to the production of heat activatable coatings or seals for diverse packaging materials, laminating uses, construction uses, investment molding type castings, and repair uses.

3,641,205
RUBBERY POLYMERIC BLENDS
Ronald Turner La Flair and John Frederick Henderson, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada
Filed Mar. 25, 1968, Ser. No. 715,630
Claims priority, application Canada, Apr. 1, 1967, 986,798, 986,799
Int. Cl. C08f *33/08, 41/12*
U.S. Cl. 260—876 B **6 Claims**

The physical properties of thermoplastic rubbery block copolymers, especially at elevated temperatures, are improved by adding minor amounts of a partially compatible synthetic resin having a softening point higher than that of the thermoplastic blocks of the block copolymer, e.g. polyacenaphthylene or polyalphamethylstyrene.

3,641,206
THERMOPLAST MOULDING COMPOSITIONS
Hans Weitzel, Leverkusen, Karl Dinges, Cologne-Stammheim, Wilhelm Göbel, Cologne-Flittard, and Dietrich Hardt, Bonn, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation of application Ser. No. 541,067, Apr. 8, 1966. This application Mar. 5, 1969, Ser. No. 806,028
Claims priority, application Germany, Apr. 21, 1965, F 45,864
Int. Cl. C08f *29/24, 33/08, 41/12*
U.S. Cl. 260—876 R **4 Claims**

Mixture comprising 30 to 95% by weight of a brittle and hard polymer such as a homopolymer or copolymer of styrene and 70 to 5% by weight of an elasticizing graft polymer of vinyl chloride on ethylene/vinyl acetate, said mixture being useful as a thermoplastic-elastic moulding composition distinguished by high notched impact and impact strengths and excellent resistance to aging and non-inflammability.

3,641,207
THERMOPLASTIC RESIN BLEND OF POLYSULFONE RESIN AND AN ETHYLENE-PROPYLENE TERPOLYMER OR GRAFT DERIVATIVE THEREOF
Robert G. Lauchlan, Granger, Ind., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed July 15, 1969, Ser. No. 842,009
Int. Cl. C08f *29/12, 41/12*
U.S. Cl. 260—876 R **10 Claims**

Blends of thermoplastic polysulfone resin and ethylene-propylene terpolymers and graft derivatives thereof are characterized by an unusually useful combination of properties, particularly low temperature melt processability in combination with high impact strength and flexural strength.

3,641,208
TRANSPARENT COMPOSITIONS OF VINYL HALIDE POLYMERS AND TERTIARY ALKYL STYRENE - ACRYLONITRILE - BUTADIENE RUBBER POLYMERS AND METHOD OF MAKING THE SAME
Richard H. Hall and Carleton W. Roberts, Midland, Andrew J. Sikkema, Farwell, and Junior J. Lamson, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 611,822, Jan. 26, 1967. This application Nov. 17, 1969, Ser. No. 877,518
Int. Cl. C08f *41/12, 19/08*
U.S. Cl. 260—876 R **17 Claims**

Transparent compositions of matter comprising fusion blends of vinyl chloride polymers and resinous copolymers of a tertiary alkyl styrene, acrylonitrile and a butadiene polymer, e.g., polybutadiene.

3,641,209
EMULSION POLYMERIZATION EMPLOYING AZOACYL CATALYSTS
Karl-Heinz Ott, Leverkusen, Herbert Schuster, Cologne-Stammheim, Walter Meckel, Dusseldorf, Karl Dinges, Odenthal, and Erwin Müller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 7, 1969, Ser. No. 805,348
Claims priority, application Germany, Mar. 26, 1968, P 17 70 059.3
Int. Cl. C08f *15/04, 19/18, 1/13*
U.S. Cl. 260—880 **3 Claims**

Process for producing graft copolymers from styrene, substituted styrenes and methyl methacrylate and from acrylonitrile, methacrylonitrile, methacrylates or mixtures thereof by polymerisation in the presence of an azoacyl compound as a catalyst.

3,641,210
RADIATION-CURABLE VINYL PAINT CONTAINING PENDANT UNSATURATION WITH INTERVENING ETHER FUNCTIONALITY
John F. Fellers and James E. Hinsch, Livonia, and Ernest O. McLaughlin, Garden City, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,345
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—885 **15 Claims**

A film-forming, radiation-polymerizable, paint binder solution of vinyl monomers and an olefinically unsaturated vinyl monomer-comprising polymeric binder is applied as a liquid coating to an external surface of an article of manufacture and cured thereon with ionizing radiation. The binder polymer is characterized by having olefinic unsaturation between the terminal carbons of the side chains, i.e. alpha-beta unsaturation, with said unsaturation being separated from the principal carbon-to-carbon chain by two ether linkages. The binder polymer is formed by reacting an allylic glycidyl ether with a polymer formed by reacting an allylic alcohol with at least two different vinyl monomers at least one of which is an ester of acrylic or methacrylic acid.

3,641,211
SULFUR-CURABLE OLEFIN POLYMER COMPOSITIONS
Carl P. Strange and Gordon Y. T. Liu, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 17, 1968, Ser. No. 768,512
Int. Cl. C08f *29/12*
U.S. Cl. 260—889 **6 Claims**

Sulfur-curable compositions of normally solid olefin polymers, such as polyethylene, and organic polymers having terminal ethylenic unsaturation, such as 1,2-polybutadiene are prepared by a method comprising the steps of (1) intimately admixing the polymeric components of the composition, (2) cracking the polymeric components of the resulting mixture using heating and shearing means, such as a screw-type extruder, and (3) introducing a sulfur curing agent into the cracked mixture.

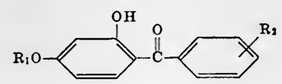
3,641,212
HIGH IMPACT STRENGTH STYRENE-MALEIC ANHYDRIDE COMPOSITIONS
Munisamappa Narayana and Henno Keskkula, Midland, and Jerry E. Mason, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,671
Int. Cl. C08d *9/08;* **C08f** *29/56*
U.S. Cl. 260—893 **6 Claims**

High impact compositions having high heat deformation characteristics are prepared by intimately admixing certain styrene-maleic anhydride and like thermoplastic copolymers with nitrile rubber containing from about 18 to 42 weight percent of a nitrile monomer.

3,641,213
SYNERGISTIC UV ABSORBER COMBINATION FOR POLYPROPYLENE-POLYVINYLPYRIDINE BLEND
John Leo Rodgers, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Feb. 27, 1969, Ser. No. 803,087
Int. Cl. C08f *33/08, 45/60*
U.S. Cl. 260—895 **7 Claims**

An oxidation and light stable composition of matter comprising a polymer blend of a major proportion of a polypropylene and a minor proportion of polyvinylpyridine, and from about 0.1% to about 5%, based on the weight of the polymer blend, of a stabilizing combination of:

(a) a 2-hydroxybenzophenone ultraviolet absorber of the formula:



wherein R_1 is alkyl having 8 to 18 carbon atoms, and R_2 is a member selected from the group consisting of hydrogen, methyl, carbomethoxy, carbethoxy, and halogen; and

(b) an ultraviolet light absorber selected from the group consisting of (2-hydroxyaryl)-s-triazines, 2-(2-hydroxyaryl)benzotriazoles and mixtures thereof;

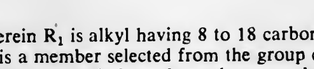
the weight ratio of (a) and (b) being in the range of from about 5:1 to about 1:5.

3,641,214
METHOD OF STABILIZING POLYETHYLENE WITH ANION EXCHANGE RESINS
Cesare Reni, Milan, Italy, assignor to Societá Italiana Resine S.p.A., Milan, Italy
No Drawing. Continuation-in-part of application Ser. No. 563,377, July 7, 1966. This application Feb. 28, 1969, Ser. No. 803,435
Claims priority, application Italy, July 10, 1965, 15,564/65
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B **8 Claims**

An oxygen stable polyethylene comprising:

(a) polyethylene, and

(b) from 0.01 to 0.5% by weight, based on the polyethylene employed, of an anion exchanger selected from the group consisting of mono-vinyl aromatic/divinyl aromatic copolymers and liquid amine resins, said copolymers having substituted thereon, a group of the formula:



wherein R_1, R_2 and R_3 are members selected from the group consisting of alkyl and alkylol groups of from 1 to 4 carbon atoms, said n being an integer of from 1 to 4 and said n' being 0 to 1, and said liquid amine resins being N-dodecenyl (trialkyl methyl) amines of a molecular weight ranging from 351 to 393.

3,641,215
CO-CURABLE COMPOSITION USING PEROXIDES AND MALEIMIDES AS CROSSLINKING AGENTS
Teruyoshi Usamoto, Higashiosaka, and Taisuke Okita, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,153
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 A **18 Claims**

A co-curable composition is provided having excellent tensile strength, oil resistance, heat resistance, etc. comprising

(A) an ethylene-propylene copolymer or ethylene-propylene-unconjugated diene terpolymer;

(B) a propylene polymer and

(C) a crosslinking agent comprising an organic peroxide and a maleimide compound.

3,641,216
THERMOPLASTIC COMPOSITIONS FOR THE PREPARATION OF INHERENTLY FLEXIBLE, DIMENSIONALLY-STABLE, SOLVENT-WELDABLE SHEET MATERIALS
David F. Schnebelen, Plaquemine, and Robert B. Cramer, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 659,555, July 24, 1967. This application Apr. 23, 1969, Ser. No. 818,810
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 **3 Claims**

This invention relates to specified thermoplastic compositions based on intimate fusion blends of certain chlorinated olefin polymers with minor amounts of essentially linear, non-chlorinated olefin polymers. These compositions are particularly useful for the preparation of sheet material for use as flashing or membrane in various construction assemblies such material having unexpectedly

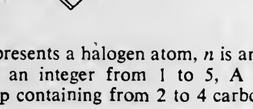
enhanced dimensional stability while retaining a necessary level of inherent flexibility and the ability to be easily solvent welded into unitary structures.

3,641,217
POLYMERIC PHENONE PHOTOSENSITIZERS AND BLENDS THEREOF WITH OTHER POLYMERS
Franco Agolini, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed June 23, 1969, Ser. No. 835,791
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B **5 Claims**

Improved polymeric photosensitizers based on acrylamido substituted phenones, useful for crosslinking polymers.

3,641,218
HYDROGENATED BIS PHENOL DIPHOSPHITES
Lester Friedman, Beachwood, Ohio, Kenneth H. Rattenbury, Morgantown, W. Va., and Alvin Guttag, Bethesda, Md., assignors to Weston Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 29, 1968, Ser. No. 756,289
Int. Cl. C07f *9/08;* **C08f** *45/581*
U.S. Cl. 260—928 **12 Claims**

Compounds are prepared having the formula

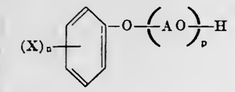


where R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, aryl, alkenyl, haloalkyl haloaryl or the monovalent residue of a hydrogenated dihydric phenol, Z is the divalent residue of a dihydric alcohol or a hydrogenated dihydric phenol, at least one of R_1, R_2, R_3 and R_4 is a residue of a hydrogenated dihydric phenol. Preferably at least 3 of R_1, R_2, R_3 and R_4 are such a hydrogenated dihydric phenol residue.

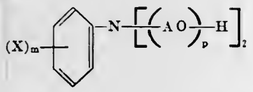
The compounds are useful as stabilizers for halogen containing polymers, hydrocarbon polymers, hydrocarbon oils, polyurethanes and polyesters.

3,641,219
POLYHYDROXY PHOSPHATE ESTERS OF HALOGENATED PHENOL AND HALOGENATED ANILINE
George J. Stockburger, Wilmington, Del., assignor to Atlas Chemical Industries Inc., Wilmington, Del.
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,456
Int. Cl. C07f *9/08;* **C08g** *22/44*
U.S. Cl. 260—929 **10 Claims**

Polyhydroxy phosphate esters may be prepared by sequentially reacting polyphosphoric acid and alkylene oxide with an alcohol of the formula



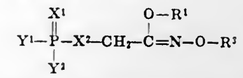
or of the formula



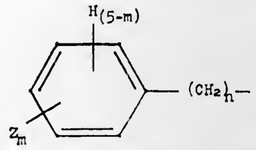
wherein X represents a halogen atom, n is an integer from 1 to 5, m is an integer from 1 to 5, A represents an alkylene group containing from 2 to 4 carbon atoms, and p is from 1 to 5. The polyhydroxy phosphate esters are useful as intermediates in the production of flame-resistant products.

3,641,220
O(S)-(2-ALKOXYIMINO-2-ALKOXYETHYL) (MONO OR DITHIO) PHOSPHINATES
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,666
Int. Cl. C07f *9/32;* **A01n** *9/36*
U.S. Cl. 260—944 **6 Claims**

Compounds of the formula



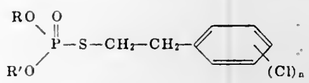
wherein Y^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, m is an integer from 0 to 5, and n is an integer from 0 to 3; R^1 and R^2 are alkyl; and X^1 and X^2 are independently selected from the group consisting of oxygen and sulfur. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,641,221
O-ALKYL-O-ARYL-THIOLPHOSPHORIC ACID ESTERS
Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 9, 1969, Ser. No. 814,809
Claims priority, application Germany, May 9, 1968, P 17 68 399.7
Int. Cl. A01n *9/36;* **C07f** *9/16, 9/18*
U.S. Cl. 260—949 **10 Claims**

O-alkyl-O-aryl-thiolphosphoric acid esters, of the formula



(I)

in which

R is lower alkyl of 1–4 carbon atoms;

R′ is phenyl, chloro-substituted phenyl, alkylmercaptophenyl having 1–4 carbon atoms in the alkyl mercapto moiety, (alkyl)-(alkylmercapto)-phenyl having 1–4 carbon atoms in the alkyl moiety and 1–4 carbon atoms in the alkylmercapto moiety, alkoxyphenyl having 1–4 carbon atoms in the alkoxy moiety, (alkyl)-(chloro)-phenyl having 1–4 carbon atoms in the alkyl moiety, or naphthyl; and

n is a whole number from 0 to 2,

which posses arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

3,641,222
S,S-DIALKYL-AMIDO-DITHIOPHOSPHATES
Marion F. Botts, Independence, Mo., and Erik K. Regel, Oberkohlfurth, Germany, assignors to Chemagro Corporation, Kansas City, Mo.
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,631
Int. Cl. A01n *9/36;* **C07f** *9/22, 9/24*
U.S. Cl. 260—959 **10 Claims**

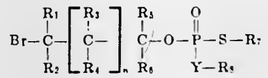
S,S-dialkyl-amido-dithiophosphates, i.e., S,S-dialkyl-(N-unsubstituted amido, N-mono and N,N-di alkyl, phenyl and/or chlorophenyl-substituted amido, as well as N-heterocyclic) - dithiol-phosphates, which possess defoliant and/or desiccant properties coupled with insecticidal and acaricidal properties.

3,641,223
S-(2-CHLORO-2-BROMO-ETHYL-(DI)THIO-PHOSPHORIC AND PHOSPHONIC ACID ESTERS
Hanshelmut Schlor, Wuppertal-Barmen, Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Aug. 28, 1968, Ser. No. 755,800
Claims priority, application Germany, Sept. 1, 1967, P 16 68 012.9
Int. Cl. C07f *9/08, 9/40;* **A01n** *9/36*
U.S. Cl. 260—961 **5 Claims**

(Alkyl and O-alkyl)-O-alkyl-S-(2-chloro-2-bromo-ethyl)-thiol- and -thionothiol-phosphoric and phosphonic acid esters which possess insecticidal, acaricidal and nematicidal properties.

3,641,224
BROMOALKYL-(DI)-THIOLPHOSPHORIC ACID ESTERS
Hellmut Hoffmann, Wuppertal-Elbersfeld, and Hans Scheinpflug, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 13, 1969, Ser. No. 807,106
Claims priority, application Germany, Mar. 25, 1968, P 17 68 040.9
Int. Cl. A01n *9/36;* **C07f** *9/16, 9/18*
U.S. Cl. 260—964 **15 Claims**

Bromoalkyl-(di)-thiolphosphoric acid esters, i.e. O-[(2-bromo-optionally 1 and/or 2-alkyl and/or chloroalkyl)-ethyl and (3-bromo-optionally 1,2 and/or 3-alkyl and/or chloroalkyl)-propyl]-S-[akyl, chloroalkyl, phenyl, chlorophenyl and alkylphenyl]-[S-(alkyl, alkylmercaptoalkyl, phenyl, chlorophenyl and alkylphenyl) and O-(alkyl and cycloalkyl)]-thiol- and -dithiol-phosphoric acid esters of the formula



(I)

in which

R_1 to R_6, each individually, is hydrogen, alkyl of 1–2 carbon atoms, or chloroalkyl of 1–2 carbon atoms,

R_7 is alkyl of 1–4 carbon atoms, chloro atoms, chloro-substituted alkyl of 1–2 carbon atoms, phenyl, chlorophenyl, or alkylphenyl having 1–4 carbon atoms in the corresponding alkyl moiety,

Y is oxygen or sulfur,

R_8 is, when Y is sulfur, alkyl of 1–4 carbon atoms, alkylmercapto-alkyl having 1–4 carbon atoms in the alkylmercapto moiety and 1–4 carbon atoms in the alkyl moiety, phenyl, chlorophenyl, or alkylphenyl having 1–4 carbon atoms in the corresponding alkyl moiety whereas R_8 is, when Y is oxygen, alkyl of 1–4 carbon atoms or cycloalkyl of 5–6 ring carbon atoms, and

n is 0 or 1,

which possess fungicidal, bactericidal, and arthropodicidal, especially acaricidal and insecticidal, properties.

3,641,225
PROCESS FOR PREPARING CYCLIC PHOSPHOROHALIDITES
James L. Dever, Lewiston, and James J. Hodan, Williamsville, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Original application June 29, 1966, Ser. No. 561,329. Divided and this application Jan. 3, 1969, Ser. No. 801,902
Int. Cl. C07d *105/04;* **C08f** *45/58*
U.S. Cl. 260—976 **10 Claims**

A process is described for the preparation of a cyclic phosphorohalidite by reacting a glycol with a phosphorus trichloride or tribromide in the presence of a solvent such as dioxane and tetrahydrofuran. The resulting product is an intermediate in the preparation of fire retardant additives for plastics and resins.

3,641,226
METHOD FOR PURIFICATION OF DI-(2-ETHYLHEXYL) PHOSPHORIC ACID
Jerry A. Partridge, Richland, Wash., and Reilly C. Jensen, San Diego, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,628
Int. Cl. C07f *1/08, 9/02*
U.S. Cl. 260—990 **8 Claims**

Purification of di-(2-ethylhexyl) phosphoric acid (D2EHPA) in an organic solvent is accomplished by adding freshly precipitated copper hydroxide to the solution to form the copper salt of D2EHPA. The addition of acetone precipitates the copper salt which is separated from the solvent containing the impurities and washed. Treatment of the salt with a dilute mineral acid removes the metal ion, leaving the purified D2EHPA.

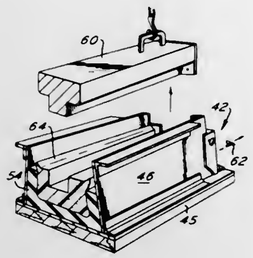
3,641,227
MANUFACTURE OF CERAMIC ARTEFACTS HAVING PORES
Geoffrey Winton Horsley, Wantage, and Ronald-Cyril Burnett, Dorchester, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Mar. 28, 1968, Ser. No. 716,729
Claims priority, application Great Britain, Apr. 20, 1967, 18,309/67
Int. Cl. G21c *21/00*
U.S. Cl. 264—.5 **13 Claims**

In order to produce porous fuel of controlled voidage. green artefacts, e.g. spheres, are made of U_3O_8 or UC_2 and sintered until they are dense. They are then heated in a reducing atmosphere to remove oxygen or carbon, as the case may be, and give a porous final artefact of UO_2 or UC.

3,641,228
METHOD OF PRODUCING A MOLDED SIMULATED WOODEN ARTICLE
Paul H. Fleck, Melrose Park, Pa., assignor to Urethane Fabricators, Inc., Camden, N.J.
Filed Sept. 18, 1968, Ser. No. 760,414
Int. Cl. B29d *27/04*
U.S. Cl. 264—53 **1 Claim**

A molded article formed of a synthetic polymeric material which identically simulates the appearance of a

wooden master in every detail including graining, knotholes, splits, and the like. This article is formed from polyurethane or a similar plastic material which can be cured under pressure in a mold, with or without the application of heat. The mold itself is formed as a reverse image of the master and is formed of silicone rubber or similar material which is adapted to be impressed with every textural feature of the master.



3,641,229

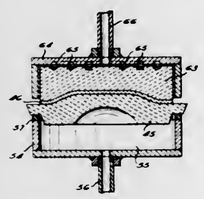
METHOD OF MAKING A PERMEABLE CERAMIC MOLD USED AS A SUBSTITUTE FOR PLASTER OF PARIS MOLDS

Willis G. Lawrence, Alfred, and Leon B. Coffin, Andover, N.Y., assignors to Research Corporation, New York, N.Y.

Continuation of application Ser. No. 735,161, Feb. 23, 1968, which is a continuation-in-part of application Ser. No. 511,407, Dec. 3, 1965, which in turn is a continuation of application Ser. No. 194,048, May 11, 1962, all now abandoned. This application July 1, 1970, Ser. No. 56,104

Int. Cl. C04b *21/06, 21/00, 21/04*

U.S. Cl. 264—43 **1 Claim**



A permeable ceramic structure having controlled pore size and useful as substitutes for plaster of paris molds is prepared by forming a uniform admixture of refractory material such as wollastonite or mullite, a fluxing material such as borax or glass frit, a hydrolyzed ethyl silicate, and optionally an alkalizing agent such as magnesia. After molding the hydrolyzed ethyl silicate is completely decomposed to ethyl alcohol and hydrated silica gel by action of heat or the alkalizing agent which causes the mixture to set or harden. The ethyl alcohol is then removed in a controlled rate at 35–40° F. and a high humidity atmosphere to avoid cracking. The dried shape is then fired at a temperature above the melting point of the fluxing material, but below the melting point of the refractory material to form a ceramic bond.

3,641,230

METHOD FOR MAKING PRESTRESSED LAMINATED FIBER GLASS STRUCTURES

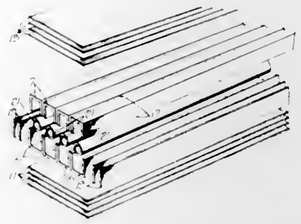
Herbert R. Jenks, Santa Ana, Calif., assignor to Dura Fiber, Inc., Costa Mesa, Calif.

Continuation-in-part of applications Ser. No. 643,926, June 6, 1967, Ser. No. 674,958, Oct. 12, 1967, and Ser. No. 696,458, June 8, 1968. This application Jan. 21, 1969, Ser. No. 792,587

The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed

Int. Cl. B29c *27/14*

U.S. Cl. 264—152 **20 Claims**



A method of molding fiber glass for structural applications to provide a unitary structure having outer skins separated by a plurality of ribs or trusses, whereby the skins and the ribs are prestressed. The outer dimensions can be made in virtually any shape dependent upon the shape of the mold in which the structure is fabricated, and the interior of the structure between the ribs is hollow. The method also makes possible the fabrication of tubular or semitubular members having a prestressed skin but no interior ribs. The method involves the use of a plurality of elastomeric bags or tubular members which are pressurized during a heating and molding cycle and which contribute to the prestressing of the fiber glass elements. In addition, the invention involves the method by which the various laminates are laid up and the manner in which the elastomeric bags interact with the laminates, so laid up, during the molding cycle.

3,641,231

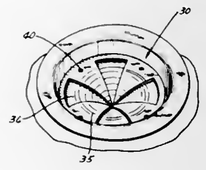
METHOD FOR MOLDING WASTE DISPOSER SPLASH SHIELD

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Original application Oct. 23, 1968, Ser. No. 769,920, now Patent No. 3,524,596, dated Aug. 18, 1970. Divided and this application Mar. 9, 1970, Ser. No. 17,697

Int. Cl. B29c *25/00;* **B29h** *3/06*

U.S. Cl. 264—155 **2 Claims**



A splash shield is molded so that a plurality of inwardly extending segmental members are connected by flash lines along corner portions of their top and bottom surfaces. The shield is then pierced either with a blunt instrument or manually to break the connecting flash lines.

3,641,232

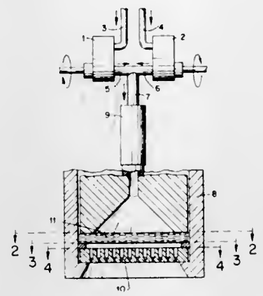
PROCESS FOR MAKING MULTIFILAMENT YARNS

Wilhelmus J. Fontijn and Korstiaan J. M. van Drunen, Dieren, Netherlands, assignors to American Enka Corporation, Enka, N.C.

Original application Aug. 28, 1967, Ser. No. 663,812, now Patent No. 3,447,308, dated June 3, 1969. Divided and this application Sept. 27, 1968, Ser. No. 794,438

Int. Cl. B29f *3/10*

U.S. Cl. 264—171 **3 Claims**



A process for the manufacture of yarn consisting of a plurality of composite filaments which comprises passing two incompatible polymers side-by-side to a common mixing zone, forming a laminated stream and splitting up the laminated stream in a plane transverse to the direction of the flow of the laminated stream at least once into separate substreams to form a single stream containing one polymer as a matrix and the other as a multiplicity of continuous ultrafine cores within the zone, passing the single stream to spinneret orifices and extruding a plurality of composite filaments containing the ultrafine cores extending longitudinally through the matrix.

3,641,233

PROCESS FOR REGENERATING SPINNING BATHS

Cesare Reni and Luigi Lugo, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,155

Claims priority, application Italy, Jan. 27, 1968, 12,064/68; Oct. 15, 1968, 827,220

Int. Cl. B29h *19/00*

U.S. Cl. 264—179 **7 Claims**

Baths used for coagulating threads spun from a dimethylformamide solution and for stretching the spun threads are regenerated by a process which includes the steps of mixing together the coagulating and spinning baths, extracting the mixture with dimethylformamide, recycling the residual paraffinic phase to the stretching and coagulating baths, treating the extract phase with water to separate it into an organic phase containing cumene which is recycled to the coagulating bath and an aqueous phase from which dimethylformamide is separated by distillation free from impurities.

3,641,234

MECHANICAL TREATMENT OF MATERIAL

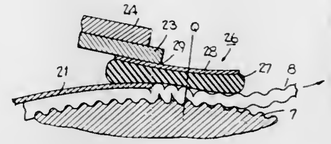
Alexander L. Trifunovic, James R. Hodges, and Richard L. Shick, Wilmington, Del., assignors to Joseph Bancroft & Sons Co., Rockford, Wilmington, Del.

Division of application Ser. No. 525,039, Feb. 4, 1966. Continuation-in-part of application Ser. No. 810,424, Jan. 13, 1969. This application Apr. 15, 1970, Ser. No. 28,217

Int. Cl. B29c *15/00;* **B29d** *7/22*

U.S. Cl. 264—282 **13 Claims**

The width of the advancing material is longitudinally compressed by being passed between a rotating roll and an overlying cover member. The cover member has a first plate which serves to define a first passage with the rotating roll and a second plate with a higher coefficient friction which serves to define a second passage with the rotating roll. A cavity is formed between the plates of the cover member and the rotating roll wherein the textile material is subjected to an abrupt reduction in the driving force on the material while being simultaneously confined to a thickness slightly greater than the thickness in the first passage such that the material is longitudinally compressed within the cavity.



3,641,235

IMMUNOLOGICAL REAGENT AND PROCESS FOR MAKING SAME

Margaret Rozman Weiss, Florissant, Mo., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,852

Int. Cl. G01n *31/22*

U.S. Cl. 424—8 **6 Claims**

Immunologically specific reagents are prepared by chemically linking the immunological counterpart of the material to be detected to a cellulosic derivative in particulate form and then physically adsorbing onto the immunological counterpart an acidic indicator material. Hematoxylin, fluorescein, and titan yellow are usable as indicator materials. When a fluid sample containing the immunological material to be detected comes in contact with the immunologically specific reagent, the indicator material shows one of two visible effects, separation from the particles or fixation to the particles. The specific type of visible effect is determined by the particular immunologic counterpart employed. For each reaction a control fluid sample which does not contain the immunological material under test shows an opposite reaction. A chromatographic technique can be used to display the visible effects.

3,641,236

DOSAGE UNIT SUSTAINED RELEASE ORAL POWDERED LITHIUM SALT COMPOSITION FOR MANIC DEPRESSIVE OR DEPRESSIVE ILLNESS PROPHYLACTIC THERAPY

Alec James Coppen, Epsom, Surrey, England, and Jean-Pierre Metral, Paris, France, assignors to Delandale Laboratories Limited, Canterbury, Kent, England

No Drawing. Filed July 15, 1969, Ser. No. 841,964

Claims priority, application Great Britain, July 16, 1968, 33,845/68

Int. Cl. A61k *27/12*

U.S. Cl. 424—19 **7 Claims**

This invention is concerned with pharmaceutical compositions and methods of making them. In particular, the composition contains principally a lithium salt as medicament and a sustained release agent comprising a mixture of glyceryl mono-, di- and triesters of one or more C_{16}–C_{18} straight chain saturated fatty acids. The composition is primarily intended for oral administration in the treatment of manic-depressive or depressive illness and provides a sustained and consistant release of the medicament into the blood stream during the period between successive doses. The method of the present invention consists in making tablets of the composition for oral

administration. With a mixture of the dry powdered medicament and a filler is mixed a solution of the sustained release agent. A binding agent is then added, and after drying and granulating a lubricant may be added before finally compressing into tablets.

3,641,237
ZERO ORDER RELEASE CONSTANT ELUTION RATE DRUG DOSAGE

Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 766,840, Oct. 11, 1968, which is a continuation-in-part of application Ser. No. 654,044, July 5, 1967, which is a continuation-in-part of application Ser. No. 650,259, June 30, 1967, which in turn is a continuation-in-part of application Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949. This application is also a continuation-in-part of application Ser. No. 833,182, July 13, 1969. This application Sept. 30, 1970, Ser. No. 76,738

Int. Cl. A61k *27/12*

U.S. Cl. 424—16 **8 Claims**

Zero order release of water soluble pharmaceutically active organic compounds alone or absorbed or incapsulated in hydrophilic polymers is obtained by providing a film diffusion barrier of an alkoxyethyl acrylate or methacrylate polymer. To reduce irritation: an outer coating of a non-irritating water swellable film can be also incorporated.

3,641,238
STABLE DENTAL CREAM COMPOSITION

Joseph Paul Januszewski, Somerville, and Tayseer George Bahouth, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,084

Int. Cl. A61r *7/16*

U.S. Cl. 424—49 **6 Claims**

Dental cream containing polishing agent, benzyl alcohol, and oil of cloves flavor. Ethyl alcohol is present to stabilize the cream and to prevent separation of the cream.

3,641,239
COSMETIC WAX COMPOSITION

Sharon R. Mohrlok, Lansing, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 443,697, Mar. 29, 1965. This application Nov. 6, 1968, Ser. No. 773,939

Int. Cl. A61k *7/02*

U.S. Cl. 424—64 **18 Claims**

A cosmetic composition useful for lipsticks, lip rouge, mascara, styptic crayon and the like comprising cosmetic solvent, coloring agent and wax. The wax is at least 15 percent by weight silicone wax.

3,641,240
METHOD FOR THE TREATMENT OF AN EMBOLUS OR THROMBUS

Alan C. Hymes, Hopkins, Minn., and Rajko R. Margulis and Robert M. Nalbandian, Bloomfield Hills, Mich., assignors to Wyandotte Chemicals Corporation

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,371

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 **8 Claims**

Prevention of thrombosis in a blood vessel and reestablishment of the microcirculation through a thrombosed blood vessel are accomplished by introducing into the blood stream of a body an effective amount of solutions of polyoxyethylene polyoxypropylene block copolymers.

3,641,241
TYLOSIN - POLYOXYETHYLENE COMPOSITIONS FOR CONTROLLING MYCOPLASMA INFECTIONS

William W. Davis and Earl E. Ose, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 624,146, Mar. 20, 1967. This application Nov. 24, 1969, Ser. No. 879,577

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **12 Claims**

Compositions having enhanced activity against mycoplasma infections in poultry comprising a polyoxyethylene ether of the formula $H(OCH_2CH_2)_nOR$, wherein n is 10 to 35 and R is cholesteryl or C_{12}–C_{20} alkyl or alkenyl and tylosin or a nontoxic acid addition salt thereof and methods for employing such compositions.

3,641,242
USE OF CESIUM AS A STIMULANT IN MAMMALS

Howard L. Masco, Glen Mills, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,070

Int. Cl. A61k *27/00*

U.S. Cl. 424—153 **8 Claims**

The use of the cesium ion as a stimulant in mammals is disclosed where the cesium is administered as an organic or inorganic salt at a level sufficient to obtain a dose of from 0.1 to 5.0 milliequivalents of cesium per kilogram of body weight of the mammal and to establish a blood serum level of about 0.05 milliequivalent of cesium per liter.

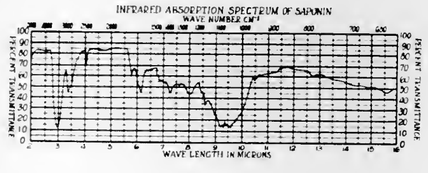
3,641,243
ACTIVE MATERIAL OF *ENTADA PHASEOLOIDES*

Wen Chih Liu, Paramus, N.J., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 824,216, May 13, 1969. This application Dec. 9, 1969, Ser. No. 883,575

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **2 Claims**



A saponin powder, obtainable by the evaporation of the methanol-water extract of the ground seeds of the plant, *Entada phaseoloides*, and the purified material as a crystalline solid with the empirical formula, $C_{45}H_{82}O_{27}$, melting at 223–225° C., inhibit Walker 256 tumor in rats.

3,641,244
METHODS AND COMPOSITIONS FOR TREATING BACTERIAL AND PROTOZOAN INFECTIONS

Alexander D. Argoudelis, Portage, and John H. Coats, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

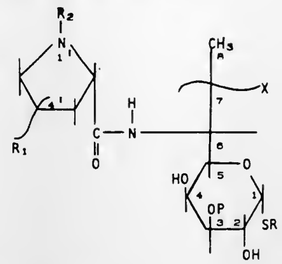
No Drawing. Continuation-in-part of application Ser. No. 768,879, Oct. 18, 1968, now Patent No. 3,544,582. This application May 22, 1970, Ser. No. 39,893

Int. Cl. A61k *21/00*

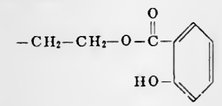
U.S. Cl. 424—181 **8 Claims**

This invention relates to a novel process for preparing antibacterial compounds and to novel compositions and methods for using them. It is particularly directed to a novel process for preparing 3-phosphate esters of lincomycin, of analogs thereof, and of celesticetins. The

compounds produced by the process of the invention can be shown by the following formula:



wherein R is CH_3, C_2H_5 or



R_1 is H, or cis or trans lower-alkyl of from 1 to 8 carbon atoms, inclusive; R_2 is H, CH_3, or C_2H_5; X is OH, chlorine, or bromine, each in the (R) or (S) configuration, or $—OCH_3$; and P is



and salts thereof.

Examples of alkyl of from 1 to 8 carbon atoms are methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl, and octyl and isomers thereof.

3,641,245
SYNERGISTIC INSECTICIDAL MIXTURE CONTAINING BENZOTHIAZOLINES AND INSECTICIDAL USE OF THE MIXTURE

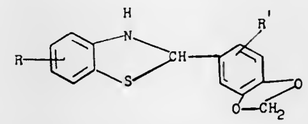
Peter F. Epstein, Prairie Village, Kans., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,576

Int. Cl. A01n *9/12*

U.S. Cl. 424—188 **4 Claims**

Synergistic mixture of compounds of the formula



in which R and R′ are independently hydrogen, halogen, lower alkyl, lower alkenyl, or lower alkoxy with aryl N-methyl carbamates, pyrethrum, or allethrin, and the use thereof for controlling insects.

3,641,246
COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 709,870, Mar. 4, 1968. This application Jan. 14, 1970, Ser. No. 2,960

Int. Cl. A61k *27/00*

U.S. Cl. 424—204 **12 Claims**

Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of certain perfluorodiphosphonocycloalkenes and a pharmaceutical carrier; and a method for treating conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,641,247
METHODS OF TREATING BACTERIAL INFECTIONS

Elton S. Cook, Cincinnati, Ohio, and Norbert J. Berberich, Jr., Burlington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

No Drawing. Original application Mar. 4, 1968, Ser. No. 709,937. Divided and this application Dec. 14, 1970, Ser. No. 98,138

Int. Cl. A61k *27/00*

U.S. Cl. 424—211 **5 Claims**

A variety of substances are reported which alter host resistance to cocci bacterial infections. Nevertheless drugs which induce a high degree of resistance to these infections when administered prophylactically are not in wide use. Drugs which confer immunity to these infections for more than a week after administration are virtually unknown. Antimicrobials have been found which are effective in inducing resistance to infections due to cocci when administered prophylactically.

3,641,248
IMIDAZOLE SYNERGIST-ENHANCED PHOSPHORIC ESTER INSECTICIDE COMPOSITIONS AND INSECT CONTROL THEREWITH

Heinrich Adolphi, Limburgerhoff, Pfalz, Anna Steimmig, Ludwigshafen (Rhine), and Hermann Spaenig, Limburgerhof, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application July 11, 1966, Ser. No. 563,964, now Patent No. 3,531,494, dated Sept. 29, 1970. Divided and this application Oct. 14, 1969, Ser. No. 866,362

Claims priority, application Germany, July 22, 1965, P 15 42 690.1

Int. Cl. A01n *9/36;* **A61k** *27/00;* **A61l** *13/00*

U.S. Cl. 424—212 **8 Claims**

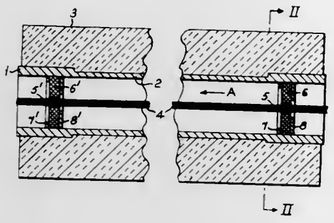
Insecticides containing (a) pyrethrins, carbamates or phosphoric esters and (b) an imidazole or imidazole salt in the weight ratio of 1:10 to 1:1 and processes of insect control therewith.

ELECTRICAL

ERRATUM

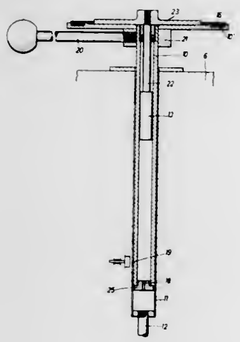
For Class 424—243 see:
Patent No. 3,641,013

3,641,249
TUBE FURNACE
Francis J. Higgins, Kenilworth, England, assignor to Courtaulds Limited, London, England
Filed Jan. 14, 1970, Ser. No. 2,692
Int. Cl. H05b *3/66*
U.S. Cl. 13—22 **7 Claims**



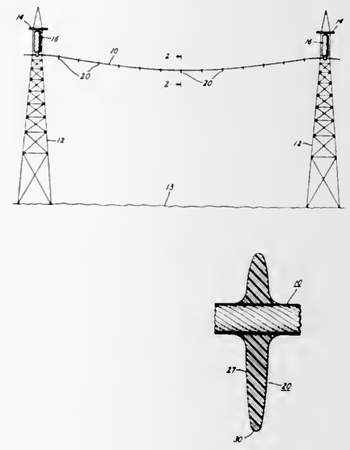
A tube furnace for the treatment of a continuously moving band of material which comprises a carbon or graphite furnace tube provided with radiation shields at each end of the hot zone thereof, which radiation shields comprise baffles of flexible carbon or graphite material, perforated to allow passage of the continuously moving band, and resiliently deformable in the direction of movement of that band. The furnace is particularly useful in the carbonization or graphitization of organic filamentary material.

3,641,250
VACUUM FURNACE
Karl Hintenberger, Hochstrasse 39, 6 Frankfurt am Main, Germany
Filed May 19, 1970, Ser. No. 38,721
Claims priority, application Germany, May 27, 1969, P 19 26 874.7
Int. Cl. H05b *1/00*
U.S. Cl. 13—31 **3 Claims**



The downwardly open chamber of an electrically heated vacuum furnace for dental ceramics and the like may be sealed by a plate mounted on a hollow plunger. The plunger is axially movably received in a stationary cylinder, and a driving plug axially movable in the plunger is connected to a carrier for the object to be fired. A heating element in the top portion of the furnace chamber bounds a firing zone much hotter than the lower portion of the chamber so that a green body freshly introduced into the chamber may be protected from the highest furnace temperature while the furnace is being evacuated, and moved into the firing zone after the furnace is fully evacuated. The moving mechanism is pneumatically operated.

3,641,251
SCHEME FOR REDUCING AUDIBLE NOISE DEVELOPED BY AN EXTRA-HIGH VOLTAGE TRANSMISSION LINE
Tseng W. Liao, Media, Pa., assignor to General Electric Company
Filed Oct. 16, 1970, Ser. No. 81,362
Int. Cl. H02g *7/00*
U.S. Cl. 174—40 R **4 Claims**

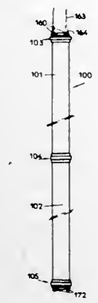


A scheme for reducing the audible noise developed by an extra-high voltage transmission line during a rainstorm. The scheme involves a plurality of disklike members of electrical insulating material mounted on the line conductor at spaced locations sufficiently close together that most of the rain water dropping off the conductor during a heavy rainstorm does so via drop-releasing regions on the disklike members which are spaced a substantial distance from the conductor.

3,641,252
DEVICE FOR CARRYING A FLAT ELECTRONIC APPARATUS BY AN AIRCRAFT
Germain Fourpillon, Paris, France, assignor to Electronique Marcel Dassault, Paris, France
Filed Apr. 10, 1970, Ser. No. 27,360
Claims priority, application France, Apr. 28, 1969, 6913425
Int. Cl. H05k *5/02*
U.S. Cl. 174—52 R **4 Claims**

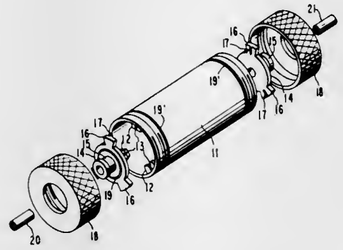
A device for carrying a flat electronic apparatus by an aircraft comprises a cylindrical housing of lightweight material having a metallized external surface and containing in its

inner space slide-type holding and guide means for printed electronic circuit cards or the like. Two or more housings



connected by coupling collars can be disposed in axial alignment.

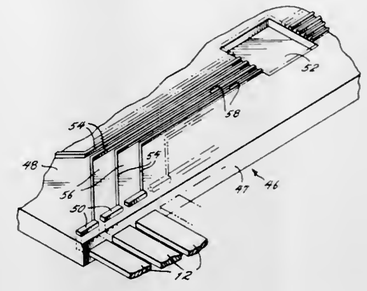
3,641,253
CABLE SPLICE COVER
William D. Weagant, Fremont, Calif., assignor to Sigman Industries Inc., Menlo Park, Calif.
Filed July 3, 1969, Ser. No. 838,854
Int. Cl. H02g *15/08*
U.S. Cl. 174—93 **7 Claims**



An in-line reenterable cable splice box with two end plates that can be sealed to the cable and a hollow cylinder that can be rigidly and removably supported and sealed between end plates by end caps. To hold the end plates apart a plurality of rigid members extend between the end plates or the cylinder can have radially inwardly directed spaced-apart lugs to cooperate with radially outwardly directed, spaced-apart lugs on the end plates.

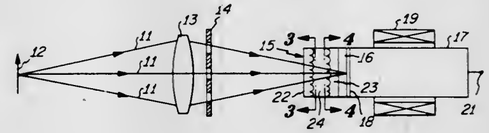
3,641,254
MICROCIRCUIT PACKAGE AND METHOD OF MAKING SAME
Henry E. Bunting, Folcroft, and Paul E. Smith, Bala Cynwyd, both of Pa., assignors to W. S. Electronic Services Corporation, Clifton Heights, Pa.
Continuation-in-part of application Ser. No. 836,489, June 25, 1969, Continuation-in-part of application Ser. No. 656,749, July 28, 1967. This application June 27, 1969, Ser. No. 837,244
Int. Cl. H05k *1/18, 5/02*
U.S. Cl. 174—68.5 **27 Claims**

A microcircuit package formed of a dielectric substrate having a central area for mounting a circuit network device therein, such as a chip or wafer, metallic leads embedded in the substrate, grooves formed in one surface of the substrate providing between them raised portions or lands interconnecting the free ends of the leads with the recess and a conductive material on the lands thereby forming a raised conductive path from the leads to the recess. The invention also



includes a method of making the microcircuit package accurately and economically.

3,641,255
NONINTERACTING LENS SYSTEM FOR A COLOR ENCODING CAMERA
Albert Macovski, Palo Alto, Calif., assignor to RCA Corporation
Filed Apr. 17, 1970, Ser. No. 29,448
Int. Cl. H04n *9/06*; **G02b** *27/12*
U.S. Cl. 178—5.4 ST **11 Claims**

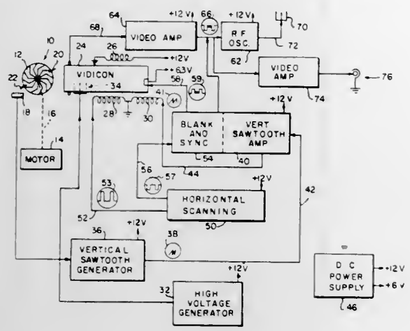


In a color camera utilizing a color encoding strip filter arrangement in the optical path to separate light from an object into its component colors, an imaging system includes a noninteracting cylindrical lens array to image the encoding filter strips onto a photosensitive medium without the use of a relay lens.

3,641,256
BLACK AND WHITE TELEVISION CAMERA EXPANDABLE TO A COLOR TELEVISION CAMERA
Gary F. Davis, Jr., R.R. #3, Columbus, Ind.
Filed Sept. 17, 1970, Ser. No. 72,968
Int. Cl. H04r *9/06, 9/34*
U.S. Cl. 178—5.4 ST **22 Claims**

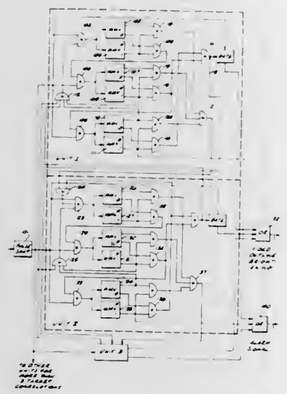
In a television camera comprising a vidicon tube having a cathode and grid, a vertical yoke, and a horizontal yoke, the improvement comprising a color wheel assembly including a color wheel having a plurality of peripherally spaced-apart transparent color filter segments, the wheel being positioned and arranged relative to the vidicon tube to change the spectral response of its image pickup into an ordered sequence of colors, means for driving the wheel at a predetermined constant speed, and switch means responsive to movement of the wheel to provide a predetermined number of pulses per revolution of the wheel. First circuit means is provided for processing the pulses as well as color synch pulses. The camera includes blank and synch circuitry, and the improvement also comprises a multivibrator including alternately saturated collector circuits, one of the collector circuits being connected to the horizontal yoke to provide horizontal pulses thereto, the other of the collector circuits being con-

nected to the blank and synch circuitry to provide blanking pulses thereto. The blank and synch circuitry includes two NPN transistor stages, the first stage of which produces positive-going blanking pulses for application to the cathode of



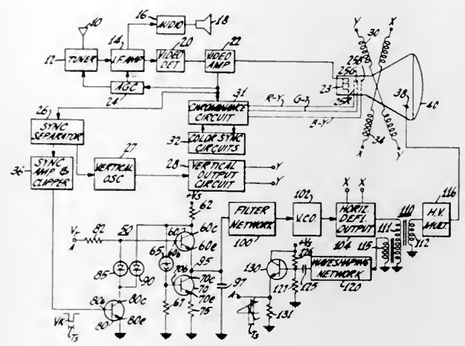
the vidicon tube and the second stage of which produces negative-going pulses for application to the grid of the vidicon tube, whereby the tube is blank during retrace by composite positive and negative pulses.

3,641,257
NOISE SUPPRESSOR FOR SURVEILLANCE AND INTRUSION-DETECTING SYSTEM
Elmer N. Taylor, Escondido, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 16, 1970, Ser. No. 3,407
Int. Cl. H04n *7/02*
U.S. Cl. 178—6.8 **9 Claims**



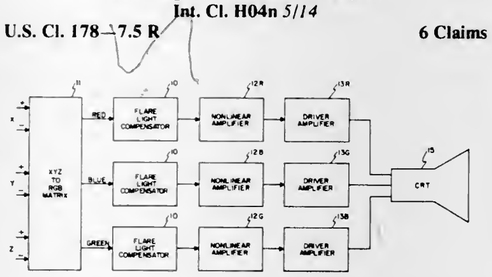
A surveillance and intrusion detection system is provided using a scanning-type sensor to monitor a field of view and transmit a video signal to a moving target indicator (MTI) the output of which is applied to an alarm system through a threshold level detector having a relatively low-threshold level for higher system sensitivity. A correlation unit minimizes false alarms which could occur from high-level noise by transmitting pulses to the alarm system only when they occur at approximately the same place in three successive scanning lines. Other units are provided for correlation of other possible moving targets in the same line. When transmitted pulses are added to the video signal from the sensor for display, the outline of a moving target is brightened.

3,641,258
SAMPLE-AND-HOLD CIRCUIT
Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation
Filed June 29, 1970, Ser. No. 50,592
Int. Cl. H03k *5/20*; **H03b** *3/06*; **H04n** *1/36*
U.S. Cl. 178—73 R **10 Claims**



A sample-and-hold circuit employs first and second transistors having serially coupled collector-to-emitter current paths and including a negative feedback path coupling the collector of the first transistor to the base of the second transistor to provide a high-input impedance and a relatively low-output impedance circuit suitable for driving, for example, a capacitive load. The detector is keyed by means of a single keying transistor which provides a conduction path from the collector and the base of the first transistor to ground. Diodes coupled in series with the keying transistor and both the base and the collector of the first transistor insure that the first and second transistors are switched in and out of conduction simultaneously. The circuit may be employed as a phase comparator.

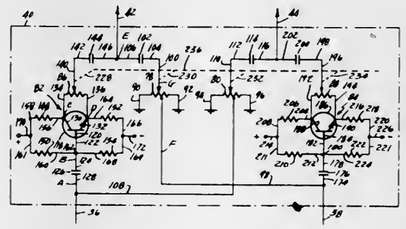
3,641,259
FLARELIGHT COMPENSATOR
Bernard D. Loughlin, Centerport, N.Y., assignor to Hazeltine Corporation
Filed Aug. 3, 1970, Ser. No. 60,443
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.5 R **6 Claims**



Disclosed is apparatus which compensates for the undesirable effect of flarelight in a graphic arts process simulator containing an image display device actuated by an image representative video signal. The effect of such flarelight is most perceptible when displaying high key images containing small dark areas, since in these images flarelight from the brighter parts of the image will illuminate the dark areas making them appear somewhat lighter than is indicated by the corresponding amplitude of the video signal. To compensate for this effect in one embodiment of the invention, signals are supplied to the display through a circuit which has less effective DC coupling than AC coupling in other words it

has a DC to AC transmission ratio less than unity. Thus the reference level for each signal, as applied to the display, is modified in relation to its average amplitude and therefore in relation to its average brightness. Signals representing high average brightness images (i.e., high key images) are established at a somewhat darker reference level than normal in order to tend to make the dark areas in the resulting displayed image darker than originally indicated, by an amount which offsets the effect of flarelight which tends to brighten these areas.

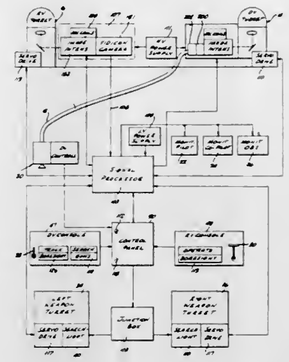
3,641,260
ELECTRONIC RASTER ROTATION SYSTEM FOR TELEVISION
John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 21, 1970, Ser. No. 65,835
Int. Cl. H04n *3/22*
U.S. Cl. 178—7.7 **5 Claims**



An electronic circuit used in a television system in conjunction with a television camera tube having electronic beam deflection means wherein the electronic circuit comprises a pair of mixing circuits actuated from the normal output signals of horizontal and vertical ramp generators and develops through adjustable zero centered potentiometer means, phase inverter means and capacitive coupling means composite output signals for application to the beam deflection means of the camera tube, each composite signal being variable in amplitude and phase by adjustment of said potentiometer means to achieve raster rotation and thereby simulate roll attitudes of an object being viewed by the camera tube, a further aspect of the invention residing in the utilization of two camera tubes and a video mixing circuit for providing a combined output signal for simulating relative motion of two pictures taken by the respective camera tubes.

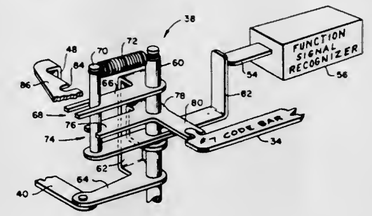
3,641,261
NIGHT VISION SYSTEM
Richard W. Chaplin, Los Angeles; Donald J. Holscher, Playa Del Rey; Albert Wasney, Jr., Canoga Park, and Bryce A. Wheeler, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 4, 1969, Ser. No. 831,274
Int. Cl. H01j *29/89*
U.S. Cl. 178—7.8 **12 Claims**

Night-viewing apparatus for installation on a helicopter comprising two camera heads mounted on the front of the helicopter, and a pair of pivotally mounted mirrors or prisms for each camera head to enable it to view any portion of the terrain within a wide range of look-angles. One camera head includes an image intensifier cascaded with a television camera tube whose output is displayed on a television monitor, while the other camera head includes a set of image intensifiers whose output is coupled through a fiber optic bundle to an eyepiece. A control stick moved by the pilot can control the mirror positions for one camera system, while another control stick moved by the copilot can control the mirror positions for the other camera system. Both systems are inertially stabilized, with low-frequency disturbances being corrected by signals delivered to the mirror-pivoting motors and high-frequency components of disturbances being corrected by electron beam deflection coils at the image intensifiers. A pair of weapon turrets is mounted on



the helicopter, each carrying a gun and an infrared searchlight for use under very dark night conditions, and the weapon turrets can be slaved to point in the same direction being viewed at the monitor or eyepiece.

3,641,262
SHIFT CONTROL
Egon S. Babler, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 29, 1969, Ser. No. 888,732
Int. Cl. H04l *15/24*, *15/34*, *17/16*
U.S. Cl. 178—25 **10 Claims**

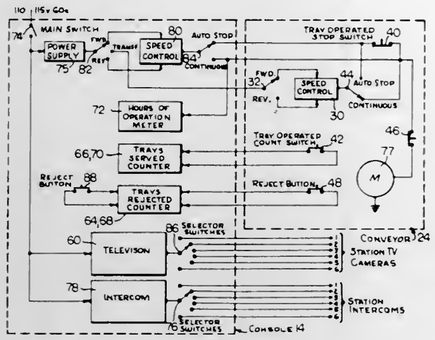


A teleprinter for printing indicia on a record medium in response to receipt of permutation signals of coded binary bits and having type elements in a type box with mechanism for two-dimensional positioning of the type box to bring selected-type elements into position for printing. Type box locations that are normally devoid of type elements and corresponding to nonprinting function code combinations are supplied with an additional font of type elements. A portion of the positioning mechanism is code responsively disconnected from received signals to print the additional font in response to received signals corresponding to other printing code combinations.

3,641,263
SUPERVISORY AND CONTROL SYSTEM FOR FOOD-HANDLING INSTITUTIONS
Delmar D. Rhoads, and Robert H. MacKay, both of Fort Wayne, Ind., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.
Filed Aug. 24, 1967, Ser. No. 663,088
Int. Cl. H04n *7/18*
U.S. Cl. 178—6 **8 Claims**

A system is provided for supervising and controlling the preparation of foods and related activities in a food-handling institution. The system includes a console that provides visual

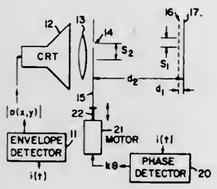
and audible communication with selected remote points in the food-handling institution. The system also includes a conveyor for transporting food and other articles under the control of the console or an operator at the conveyor.



3,641,264
HOLOGRAM REPRODUCTION SYSTEM USING AN OPTICAL GRATING

Albert Macovski, Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed Dec. 31, 1969, Ser. No. 889,392
Int. Cl. H04n *9/54, 9/60*
U.S. Cl. 178—6.5 **21 Claims**



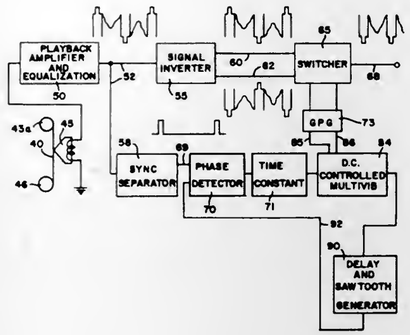
A holographic image reconstruction system in which holographic light amplitude and phase information are resolved separately for reconstruction of the original hologram. The amplitude component is separately detected and reproduced on a cathode-ray tube or other electronically addressable optical display. The image of the amplitude component is projected through an external optical grating onto a film for recording or onto a real time imaging system. Phase information from the holographic data is separately detected and superimposed on the amplitude data by varying the phase of the shadow image of the optical grating on the amplitude image. Phase modulation of the image of the grating is accomplished by modulating the aperture or angle of the lens which images the amplitude pattern through the grating onto the film, or by modulating the grating itself.

3,641,265
TELEVISION RECORDING SYSTEM WITH ALTERNATE PERIOD INVERSION AND AUTOMATIC FREQUENCY CONTROL

Kingston E. Ganske, Rough and Ready, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Oct. 27, 1969, Ser. No. 869,662
Int. Cl. H04n *5/12, 5/78, 7/12*
U.S. Cl. 178—6.6 A **15 Claims**

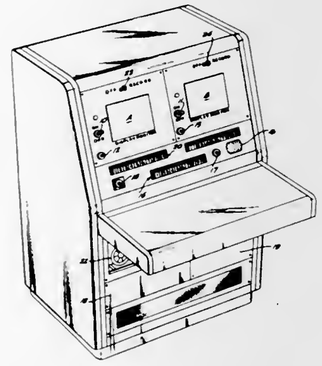
The signal for every other line in a television signal is inverted, and the resultant signal is magnetically recorded and reproduced. Reinversion (or demodulation) switching, to restore the played back signal to its original form for reproduction, is controlled by an automatic frequency control circuit to maintain switching synchronization through the vertical intervals and periods of drop outs and noise.



3,641,266
SURVEILLANCE AND INTRUSION DETECTING SYSTEM

Richard L. Stults, Carlsbad, and Robert W. Curry, Encinitas, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 29, 1969, Ser. No. 888,690
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **17 Claims**

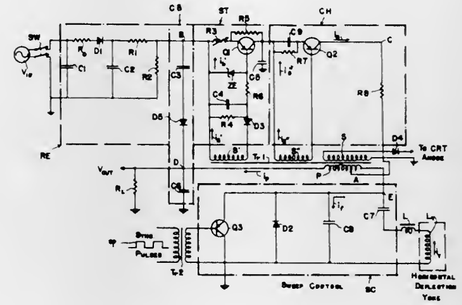


A surveillance and intrusion detection system is provided which embodies within a single electro-optical device located at one of many sites, surveillance motion detection and pictorial information with enhancement of the outline of a moving object once its presence is detected and an alarm signal is transmitted to a control station. Two lockout circuits receive alarm signals from the first two sites to detect a moving object and route composite video signals to display monitors. One full frame is stored for display by the monitor until an operator actuates an override switch for continuous monitoring of the site having the alarm condition, or any other site the operator may select for monitoring. Magnetic tape units are connected to the display monitors for storing pictorially the events at a site being monitored.

3,641,267
STABILIZED VOLTAGE-STEP-DOWN CIRCUIT ARRANGEMENT

Eugenio Cavallari, Milan, Italy, assignor to Ates Componenti Elettronici S.p.A., Milan, Italy

Filed July 29, 1969, Ser. No. 845,709
Claims priority, application Italy, Aug. 1, 1968, 19702
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 R **9 Claims**

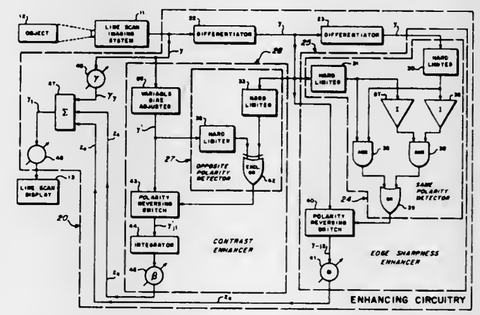


A rectified supply voltage from an AC utility outlet is chopped under the control of a recurrent pulse in the load circuit, specifically the flyback pulse of the horizontal sweep circuit of a television receiver, with the aid of a normally blocked chopping transistor connected to be unblocked by an intermittent biasing current from a secondary winding of a transformer whose primary winding acts as an inductance of a smoothing network for the chopped supply voltage. The resultant reduced output voltage is stabilized by the provision of a Zener diode in the input of either the chopping transistor or an ancillary transistor in series therewith.

3,641,268
REAL-TIME IMAGE CONTRAST AND EDGE SHARPNESS ENHANCING APPARATUS

Cyrus Beck, Abington, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 24, 1969, Ser. No. 844,540
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.3 R **16 Claims**

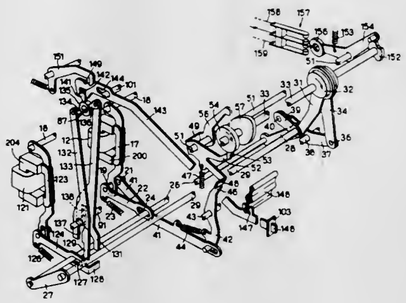


Apparatus for enhancing contrast and edge sharpness of images visually displayed by a line scan imaging and display system wherein an electrical analog output signal of a line scan imaging system which may be degraded is processed in real time by enhancing circuitry producing corrective signals of adjustable magnitude for addition to the degraded signal to provide an enhanced brightness intensity modulating signal for a video display. The enhancing circuitry includes differentiating circuitry for obtaining the first and second derivatives of the degraded signal in turn applied to enhancer circuitry for causing the polarity of the first derivative to be always opposite to that of the second derivative so that the relative amplitudes of higher frequencies are emphasized. The polarity adjusted first derivative is added to the degraded signal to make the displayed image more crisp by reason of enhanced edge sharpness. A second polarity adjusted signal is developed by causing the polarity of the degraded signal to follow that of the first derivative. An integration of the second polarity adjusted signal wherein the relative amplitude of low frequencies are emphasized is added to the degraded signal to enable a visual display of greater contrast.

3,641,269
ELECTROMECHANICAL TRANSDUCER FOR SELECTING PRINTING ELEMENTS

Alessandro Cortona, Banchette Turin, and Giuseppe Calano, Mercenasco Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Nov. 6, 1968, Ser. No. 773,872
Claims priority, application Italy, Nov. 8, 1967, 53633 A/67
Int. Cl. H04l *15/24*
U.S. Cl. 178—27 **18 Claims**



An electromechanical transducer for use as a printout device in an accounting machine. The transducer includes a plurality of electromagnet devices, each of which comprises an armature. The devices are selectively energizable to hold the armatures in a first position. A control member is shiftable cyclically in a first direction for moving the armatures into their first positions at the instant when the devices are selectively energized by a preset code store. Thereafter, the member is moveable in a second direction to signal the conditions of the devices (energized or deenergized as determined by the positions of the armatures) and thereby set a number of corresponding code bars which determine the character to be printed.

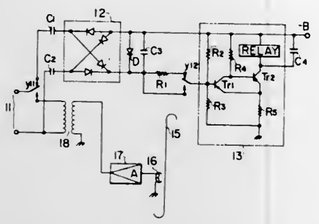
3,641,270
TIMER CIRCUIT OF AN AUTOMATIC TELEPHONE-ANSWERING APPARATUS

Haruhiko Ohshima, Kawasaki; Hiroshi Mizuno, Nagareyama; Akira Konno, Tokyo, and Tomoaki Kosaka, Yachiyo, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed June 11, 1970, Ser. No. 45,533
Claims priority, application Japan, June 11, 1969, 44/54902
Int. Cl. H04m *11/10*
U.S. Cl. 179—2 A **3 Claims**

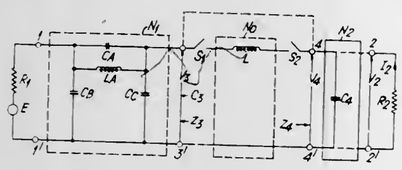
A timer circuit for controlling the operation of an automatic telephone-answering apparatus, in which a condenser of a RC timer circuit is not charged with the current of a DC source but is charged with a rectified ringing current and

then gradually discharged. During the discharging period, a switching circuit is continuously kept in the ON state thereby



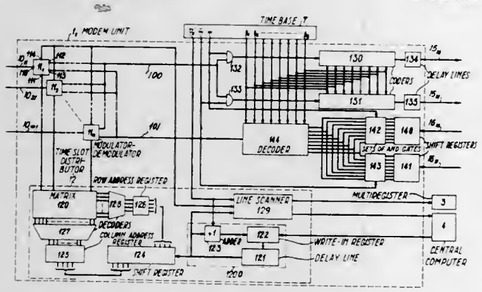
causing the automatic telephone-answering apparatus to operate.

3,641,271
RESONANT TRANSFER CIRCUITS
Alfred Leo Maria Fettweis, Mol, Belgium, assignor to International Standard Electric Corporation
Filed June 22, 1970, Ser. No. 48,956
Claims priority, application Netherlands, Mar. 25, 1966, 6603926
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AA **5 Claims**



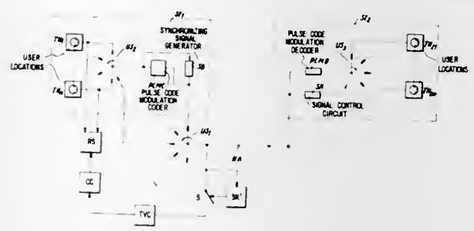
A generalized time invariant filter for use in resonant transfer circuits.

3,641,272
TIME DIVISION AUTOMATIC TELEPHONE SWITCHING EQUIPMENT
Andre E. Pinet, 22, Rue Emile Le Gac, and Raymond P. Gouttebel, 10, Ruedes Freres Lumiere, both of 22 Perros-Guirec, France
Continuation-in-part of application Ser. No. 701,247, Jan. 29, 1968, now abandoned. This application Oct. 6, 1970, Ser. No. 90,185
Claims priority, application France, Feb. 21, 1967, 95799
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AT **2 Claims**



Time division, pulse code modulation switching system comprising a plurality of modulation-demodulation units or concentrator units, each including first converter means connected to subscribers for converting analog signals to pulse amplitude modulation signals and ensuring the inverse conversion, a pair of second converter means for converting said pulse amplitude modulation signals to pulse code modulation signals and ensuring the inverse conversion, two pairs of group highways connected to said pair of second converter means and each including a send group highway and a receive group highway, means for selectively connecting together the send group highway of a pair to the receive group highway of the other pair and means for selectively activating during a full time slot the second converter means and the connecting means and during a half time slot and in phase opposition the first converter means of two subscribers to be connected.

3,641,273
MULTIPLE DATA TRANSMISSION SYSTEM WITH VARIABLE BANDWIDTH ALLOCATION AMONG THE TRANSMITTING STATIONS
Wolf Herold, Ay, Iller, and Horst Ohnsorge, Erstetten, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm, Danube, Germany
Filed Sept. 22, 1969, Ser. No. 859,887
Claims priority, application Germany, Sept. 20, 1968, P 17 91 135.2
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BA **5 Claims**

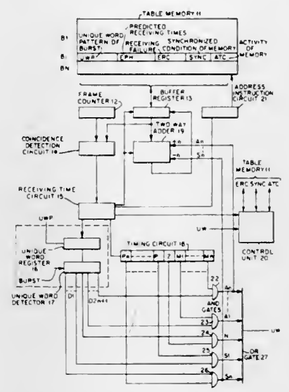


In a multiplex data transmission system including several stations connected to a common transmission path and each serving a plurality of independent users, with each user being assigned an individual channel and each station being assigned a portion of the total transmission path capacity, means are provided for varying the size of the portion available to each station in accordance with the number of its users actually desiring to use the transmission path.

3,641,274
SYNCHRONIZATION SYSTEM FOR COMMUNICATION INFORMATION IN PCM TIME DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM
Hiroshi Sasaki, Chiba; Tatsuo Maruyama; Hisao Kanzaki, both of Tokyo, and Yasuhiko Sakamoto, Kawasaki-shi, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo and Fujitsu Limited, Kawasaki, Japan
Filed Oct. 13, 1969, Ser. No. 865,922
Claims priority, application Japan, Oct. 11, 1968, 43/74042
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **7 Claims**

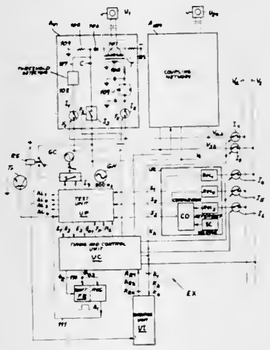
A memory stores a unique word pattern and a predicted receiving time for each burst in a frame in a communication synchronization system of a time division multiple access communication system. A counter counts the timing of a frame. A coincidence detection circuit couples the counter to a receiving time circuit and determines coincidence between the count of the counter and the predicted receiving time stored in the memory and actuates the receiving time circuit when coincidence is detected. A unique word register stores the unique word pattern. A unique word detector having outputs and an input is coupled to the receiving time circuit via the unique word register and determines coincidence

between the unique word pattern and the unique word pattern of a received burst. The unique word detector is initiated in operation by a signal from the receiving time circuit. A correcting circuit coupled to the outputs of the



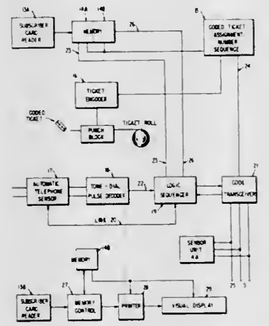
unique word detector determines a deviation between the time of reception of the burst and the predicted receiving time and corrects the predicted receiving time in accordance with the deviation.

3,641,275
AUTOMATIC CIRCUIT-TESTING MEANS FOR TIME-SHARING TELECOMMUNICATION SYSTEM
Aldo Perna, and Giorgio De Varda, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy
Filed Dec. 15, 1969, Ser. No. 884,920
Claims priority, application Italy, Dec. 14, 1968, 25065 A/68
Int. Cl. H04m *3/08*
U.S. Cl. 179—15 BF **14 Claims**



A telephone exchange serving a plurality of subscriber groups on a time-sharing basis has an address memory (N) for the code numbers of called (or calling) subscribers and a monitoring memory (P) operating in step therewith to register operational code words in corresponding time slots, there being 100 such time slots of 1 μsec. duration in each memory for the establishment of several service phases (0_{00}, 0_{01}, 0_{02}, 0_{0*}) and a multiplicity of communication phases (0_{04}–0_9) allowing for up to 96 simultaneous conversations over a communication path including a voice lead (V_a) and a signal lead (V_s) from which respective branches (V_{aA}, V_{sA}) extend to each of the several subscriber groups. During a service phase (0_{01}) of a cycle in which no caller requests the transmission of ringing current to any called subscriber associated with the exchange, a ringing circuit (V_r) common to all subscriber groups is energized from an audiofrequency generator (GH) for the testing of the voice and signaling circuits of an idle subscriber identified by a code entered in the corresponding time slot of the address memory, the tests proceeding under the control of code words in the same time slot of the monitoring memory which is stepped upon the successful completion of any test. If the subscriber line is found intact, the counter represented by the service phase (0_{01}) of the address memory is stepped to register the next higher (or next lower) code number for the testing of another idle subscriber; if a defect is ascertained, an alarm signal is generated which in certain cases inhibits the establishment of any connection between the communication path and the group containing the affected subscriber.

3,641,276
AUTOMATIC ELECTRONIC PAGING SYSTEM
Michael I. Keller, 4112 South 36th St., Arlington County, Va., and Dayne G. Gardner, Springfield, Va., assignors to said Keller by said Gardner
Filed Sept. 29, 1969, Ser. No. 861,964
Int. Cl. H04m *11/00*
U.S. Cl. 179—18 BF **8 Claims**

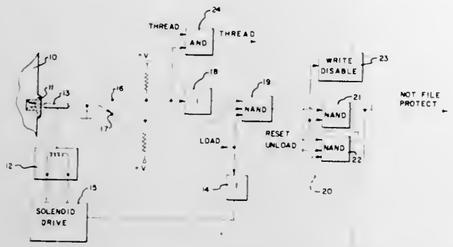


Disclosed herein is an automatic electronic paging system. Each subscriber is identified by a unique identification code which is selectively converted to a supplemental identification code upon a subscriber entering a paging area. The supplemental identification codes are unique within each paging area but not unique within the overall paging system. A plurality of sensor units are located within each paging area, each of the sensor units having temporarily and selectively stored therein a supplemental code corresponding to one of the unique identification codes identifying a subscriber within the paging area. The paging signal, in the form of a unique identification code is sent to the paging area where it is converted to a corresponding assigned supplemental identification code. The supplemental code is transmitted to all sensors in the area with a paging signal being generated at the one sensor containing the transmitted supplemental code. In response to the receipt of a paging signal, a subscriber can send an acknowledgment code to the pager.

3,641,277
FILE PROTECT SYSTEM FOR MAGNETIC TAPE UNIT WITH SOLENOID FOR SENSING PRESENCE OR ABSENCE OR REEL RING
Ronald R. Campbell, Boulder, and Roger A. Monroe, Longmont, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.
Filed Apr. 27, 1970, Ser. No. 32,001
Int. Cl. G11b *15/04*
U.S. Cl. 179—100.2D **4 Claims**

In a magnetic recording and reproducing unit the magnetic heads are enabled to write or erase a magnetic tape only if a

reel ring is inserted in the reel of magnetic tape. The file protect system includes a solenoid which is momentarily energized after a reel is placed in the unit. The solenoid moves a plunger into a position which senses the presence or absence of a reel ring. The plunger momentarily actuates switch contacts if the plunger contacts a reel ring. The switch contacts

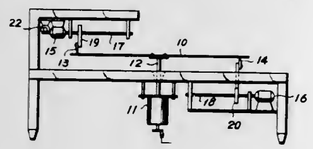


set a latch having an output which enables the write and erase heads only if the latch is set. The file protect system is fail-safe because the latch is always reset when power is turned on or when a reel is removed. If there is failure of the file protect system the latch will remain reset insuring that the magnetic tape cannot be erased or written upon.

3,641,278
MAGNETIC DISC RECORDING AND REPRODUCING TIME INDICATOR

Hisao Kinjo; Yoshitaka Iwabuchi, both of Yokohama; Seiichi Takashima, Kamakura; Takatoshi Kato, and Keigo Okano, both of Tokyo, all of Japan, assignors to Victor Company of Japan Limited, Kanagawa-ku, Yokohama, Japan

Filed May 27, 1969, Ser. No. 828,222
Claims priority, application Japan, May 29, 1968, 43/36029
Int. Cl. H04n *5/78*; G11b *21/04*, *27/36*
U.S. Cl. 179—100.2 M 3 Claims



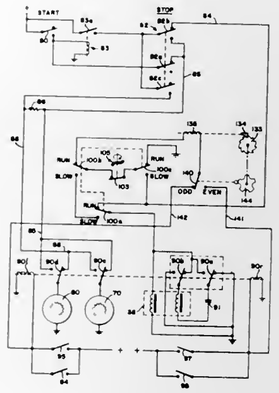
A recording and reproducing time indicator in a magnetic recording and reproducing apparatus which makes magnetic recording and reproduction by linear movement of magnetic heads in contact with a rotary magnetic medium. The indicator comprises a time indication part having a scale showing the position of magnetic heads into time, a pointer for indicating a scale on said time indication part, and a pointer driving means for moving said pointer in response to the position of magnetic heads moved by the head moving means.

3,641,279
REVERSIBLE TAPE TRANSPORT WITH INTERLOCKED HEAD POSITION AND TAPE DIRECTION CONTROL

Kingston E. Ganske, Rough and Ready, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Oct. 24, 1969, Ser. No. 869,085
Int. Cl. G11b *21/08*
U.S. Cl. 179—100.2MD 5 Claims

A reversible tape transport moves a record tape, such as magnetic recording tape, between two rolls which function alternately as supply and takeup Rolls. One or more magnetic recording and/or reading transducers scan longitudinally independent parallel tracks on the tape. Mechanism for locating the heads in alignment with desired tracks is interlocked with the drive for the transport such that the transducers will follow even numbered tracks in one direction,

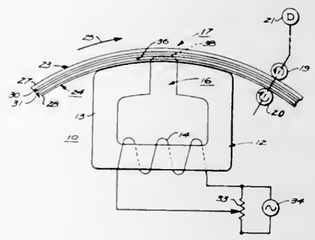


and odd numbered tracks in the other direction of movement of the tape, and the positioning mechanism is self-correcting in the event that it should get out of phase with this desired relationship.

3,641,280
APPARATUS FOR CONTACT COPYING MAGNETIC RECORDS INCLUDING SHIELD FOR PREVENTING ERASURE OF THE MASTER RECORD

Lewis B. Browder, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,659
Int. Cl. G11b *5/86*
U.S. Cl. 179—100.2 E 7 Claims

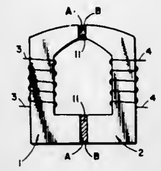


An apparatus for copying a magnetic record from a magnetic master with the assistance of anhysteretic magnetic fields includes a medium for setting up countermagnetic fields which oppose the anhysteretic magnetic fields and prevent erasure of the magnetic record.

3,641,281
MAGNETIC TRANSDUCER HAVING A CONDUCTIVE METAL POWDER GAP SPACER

Peter F. Varadi, 10500 Rockville Pike, Rockville, Md., and Laslo G. Sebestyen, 41 Ash Bourne Road, Esling, London W.5, England

Original application Aug. 18, 1964, Ser. No. 390,435, now Patent No. 3,495,045. Divided and this application Nov. 28, 1969, Ser. No. 870,293
Int. Cl. G11b *5/24*, *5/42*
U.S. Cl. 179—100.2 C 1 Claim

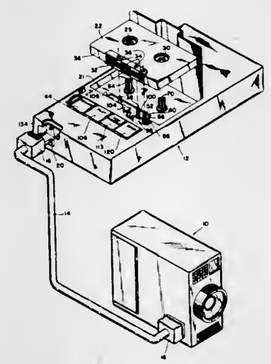


A magnetic transducer with a conductive gap spacer of metal powder intermixed with a suitable flux for bonding the pole faces together.

3,641,282
CONTROL APPARATUS FOR A TAPE DRIVE

William A. Martin, Fairport, and Marvin S. Bielicki, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,922
Int. Cl. G11b *23/44*; G03b *31/00*
U.S. Cl. 179—100.2 S 6 Claims

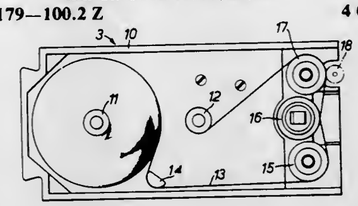


An override control in a tape recorder includes a motor, tape drive means driven by the motor and engageable with the tape to advance it past a transducer station, a transducer engageable with the tape at the station, and an actuating member for positioning the transducer and the tape drive means in engagement with the tape to enable operation of the recorder by turning on the motor. The override control is provided for selectively enabling and disabling the tape drive when the motor is operating and the actuating member has positioned the transducer in engagement with the tape to adapt the recorder to fast start/stop operation which is useful in the recording of synchronized sound motion pictures. Preferably, the override control is actuated in response to insertion of a plug into a jack provided on the recorder. In a recorder of the type in which a spring-loaded pressure roller presses the tape against a capstan to advance the tape, the override control may comprise means for selectively disabling the spring biasing the pressure roller to permit a solenoid to selectively control the engagement and disengagement of the pressure roller against the tape and capstan.

3,641,283
SHIM ADJUSTABLE PRESSURE MEMBERS FOR MAGNETIC TAPE TRANSDUCING DEVICES

Edric Raymond Brooke, Bishops Stortford, England, assignor to English Numbering Machines Limited, Enfield, England

Filed Oct. 17, 1969, Ser. No. 867,280
Claims priority, application Great Britain, Oct. 23, 1968, 50,339/68
Int. Cl. G11b *15/28*, *23/04*
U.S. Cl. 179—100.2 Z 4 Claims



A pressure member for pressing a magnetic tape against the tape head of a magnetic tape transducing device is disclosed. The pressure member comprises a rotatable ring of resilient material which is urged towards the tape head so as to compress the resilient material.

Preferably, the ring of resilient material is supported around the circumference of a hollow cylinder of rigid material which is rotatably mounted on an inner stationary cylinder which, in turn, is nonrotatably mounted on a fixed shaft having a noncircular cross section. The inner stationary cylinder is provided with a noncircular, preferably rectangular, axial bore which is complementary to the noncircular cross section of the fixed shaft.

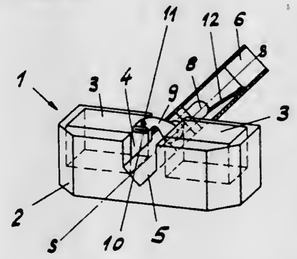
The rectangular complementary cross sections of the fixed shaft and the axial bore of the inner stationary cylinder are so arranged that gaps are formed between walls of the shaft and walls of the complementary rectangular bore. The spacing between the ring of resilient material and the tape head is adjusted by placing shims in the gaps so as to vary the position of the ring of resilient material in a direction or directions perpendicular to the longitudinal axis of the shaft.

The invention is especially applicable to magnetic tape transducing devices of the kind in which a cassette is operatively engageable in a receptacle in which the tape head is mounted, the pressure member being mounted on the cassette and the resilient ring being urged towards the tape head when the cassette is operatively engaged in the receptacle.

3,641,284
MAGNETIC PHONOGRAPH PICKUP HAVING PLURAL INDUCING MAGNETS

Hugo Westerkamp, Prechtal, Germany, and Robert Dubois, Colombier, Switzerland, assignors to Huber & Co., Hauterve, Switzerland

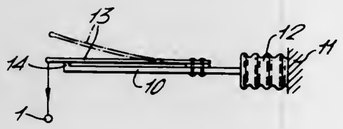
Filed Dec. 15, 1969, Ser. No. 885,391
Claims priority, application Switzerland, Dec. 16, 1968, 18718/68; Nov. 13, 1969, 16922/69
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41K 10 Claims



A magnetic phonograph pickup comprises interfitting stylus and sensing assemblies. The stylus is connected to a fer-

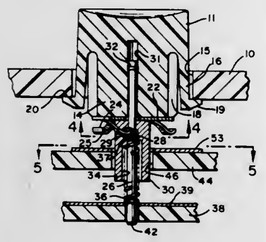
romagnetic element which is magnetically saturated by at least a pair of permanent magnets which are arranged, in a common plane at right angles to the plane of symmetry through the stylus assembly, adjacent this element with similar poles directed toward it. The sensing arrangement comprises coils adjacent the element which sense its movement and produce an output signal. The entire pickup is symmetrical about a central plane of symmetry, and the magnets are inclined to this plane.

3,641,285
TROLLEY WIRE OVERHEAD ELECTRIC SUPPLY SYSTEMS FOR ELECTRICALLY POWERED VEHICLES
Arnold Tustin, Tring, and Richard Geoffrey Sell, Rugby, both of England, assignors to British Railways Board, London, England
Filed Nov. 10, 1969, Ser. No. 875,167
Claims priority, application Great Britain, Nov. 12, 1968, 53,628/68
Int. Cl. B60m *1/20*
U.S. Cl. 191—40 **3 Claims**



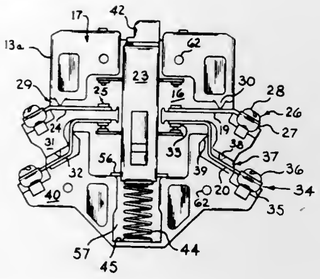
A trolley wire overhead electric supply system, for supplying power for the propulsion of electric vehicles, comprises a contact wire which is directly supported at each supporting mast through a spring. The spring is associated with an abutment so arranged that for an upward force below a predetermined value acting on the spring through the contact wire, the contact wire is relatively stiffly connected to the mast and, for an upward force above said predetermined value acting on said spring through said contact wire, the contact wire is relatively softly connected to said mast.

3,641,286
ELECTROMECHANICAL KEYBOARD INDEPENDENTLY OPERATED SWITCH MECHANISM WITH IMPROVED CONDUCTIVE RESILIENT ACTUATING MEANS
Jaroslaw Berezowski, Greenwich, Conn., assignor to Selectro Corporation, Mamaroneck, N.Y.
Filed Oct. 5, 1970, Ser. No. 77,900
Int. Cl. H01h
U.S. Cl. 200—5 A **4 Claims**



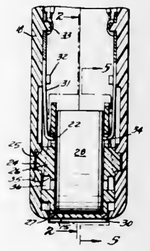
This invention relates to a multicontact switch in its form of a keyboard for converting digital information into a code, suitable for a particular data processing method. Information to be usable in such equipment, must first be converted into a code, suitable for use with the particular processing method. There are various codes in common use, such as numeric code, alphanumeric, binary, decimal-binary which is coded with or without auxiliary functions, duodecimal, hexidecimal binary code, etc. Although an apparatus having keys is used for this purpose, the actual coding is generally done by complex electronic devices resembling a code generator.

3,641,287
SWITCHING DEVICE FOR ELECTROMAGNETIC MOTOR STARTERS
Philip G. Hughes, Bloomington, Ill., assignor to General Electric Company
Filed Apr. 16, 1970, Ser. No. 29,062
Int. Cl. H01h *13/52*
U.S. Cl. 200—16 A **8 Claims**



A switching device for motor starters comprising a basic block and as required one or more adder blocks, the basic block being mountable on the side of a contactor and having two electrically separate circuits, one NO and one NC, the basic block including two pairs of stationary contact tips and two pairs of movable contact tips cooperable therewith, the latter being mounted for movement relative to a plunger which itself is supported for movement relative to the housing of the basic block, the adder block being mountable to an end wall of the basic block, the adder block including both NO and NC stationary contact tips and a movable plunger which supports a convertible contact tip for movement relative thereto, the position of the convertible contact tip relative to the movable plunger being arrangeable such that the former may be made to cooperate with either the NO or NC stationary contact tips of the adder block to provide the latter with either a NO or NC mode of operation, and the movable plunger of the adder block including means formed integrally therewith engageable with corresponding means suitably provided on the movable plunger of the basic block when the adder block is mounted to the basic block.

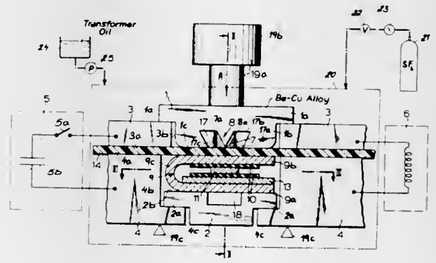
3,641,288
HEARING AID SWITCH
Paul F. Lamp, Casselberry, Fla., assignor to Electone, Inc., Winter Park, Orange County, Fla.
Filed June 1, 1970, Ser. No. 42,339
Int. Cl. H01h *21/00*
U.S. Cl. 200—52 **5 Claims**



A hearing aid apparatus is provided having a case with a rotatably mounted battery compartment for holding a battery

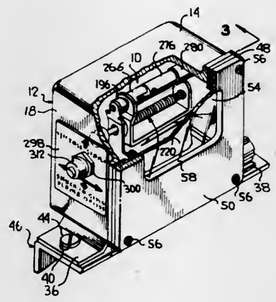
and having spring contacts for making electrical contacts with a battery held in the battery compartment. The battery compartment includes means for disengaging electrical contacts when the battery compartment is not fully closed thereby operating an on-off switch.

3,641,289
HIGH-CURRENT HIGH-VOLTAGE SWITCH WITH INCISOR ELECTRODE
Petros Dokopoulos, Juelich, Germany, assignor to Kernforschungsanlage Juelich Gesellschaft mit beschrankter Haftung, Juelich, Germany
Filed Oct. 21, 1969, Ser. No. 868,192
Claims priority, application Germany, Oct. 23, 1968, P 18 04 609.8
Int. Cl. H01h *39/00*
U.S. Cl. 200—61.08 **14 Claims**



A rapid-action switch, especially for the switching of high voltages and currents in plasma physics, magnetohydrodynamics and like technologies in which an explosive force is produced by discharge through a consumable electrode within a U-shaped aluminum body separated from a switching electrode bearing a sharp edge and sandwiched between this electrode and a counterelectrode constituting an anvil. An insulating layer between the proximal leg of the aluminum U and the sharp edge is pierced as this leg is deformed by the exposure to bring the edge into contact with the U and thereby close the circuit.

3,641,290
VIBRATION-RESPONSIVE SWITCH
Frank W. Murphy, and Frank W. Murphy, Jr., both of 3131 S. Sheridan, Box 45248, Tulsa, Okla.
Filed Aug. 10, 1970, Ser. No. 62,336
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 **14 Claims**



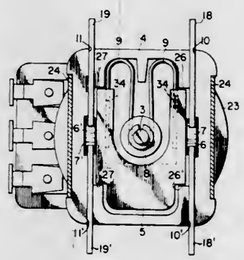
A switch for opening and closing electric circuits, the switch comprising a pivotally mounted switch arm normally disposed in switch closed position, magnet coupling means for holding said switch arm in its closed position, means exerting a biasing force on said switch arm constantly tending to urge said switch arm for movement to an open position, the coupling force exceeding the biasing force, said switch arm forming a first moment of inertia arm, and a weighted lever assembly forming a second moment of inertia arm, said weighted lever assembly being connected with the switch arm, and the switch arm being assembled in such a manner that when an inertial force from any direction added to the biasing force exceeds the coupling force, the switch arm will be caused to move from its normally closed position to its open position.

3,641,291
TOGGLE ACTUATOR ASSEMBLY FOR ELECTRIC SWITCH
Conrad I. Carling, W. Hartford, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.
Filed Apr. 7, 1971, Ser. No. 131,911
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 G **9 Claims**



A novel toggle handle actuator structure for an electrical switch wherein means are provided to prevent relative axial rotation between the toggle handle and the actuator while they perform their pivoting function in switching electrical circuits.

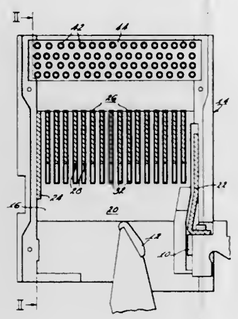
3,641,292
PULL-PUSH-TYPE SWITCH
Heiroku Tanaka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 27, 1970, Ser. No. 93,376
Claims priority, application Japan, Nov. 28, 1969, 44/114138; June 5, 1970, 45/55893; 45/55894; 45/55895; 45/55896; 45/55897; 45/55898; 45/55899
Int. Cl. H01h *15/18*
U.S. Cl. 200—76 **9 Claims**



A pull-push-type switch having a movable contact coupled by hairpinlike spring means to a pull-push switch shaft and a

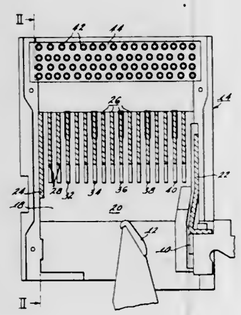
plurality of pairs of fixed contact strips, which permits the switching of many circuits and is mainly used in association with a variable resistor unit.

3,641,293
ARC CHUTE PLATES FOR AIR CURCUIT BREAKER
Charles H. Armitage, Wauwatosa, Wis.; Henry L. Peek, Wellesley, and Herbert M. Pflanz, Westwood, both of Mass., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 8, 1970, Ser. No. 1,443
Int. Cl. H01h *33/08*
U.S. Cl. 200—144 R **2 Claims**



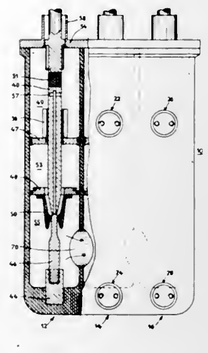
The arc chute of a low-voltage air magnetic-type electric circuit breaker comprising a stack of spaced-apart porous metal plates made of fiber metal. All of the plates are impregnated or coated with ceramic insulating material at least on their lower regions.

3,641,294
ARC CHUTE FOR AIR CIRCUIT BREAKER
Charles H. Armitage, Wauwatosa, Wis.; Henry L. Peek, Wellesley, and Herbert M. Pflanz, Westwood, both of Mass., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 8, 1970, Ser. No. 1,373
Int. Cl. H01h *33/08*
U.S. Cl. 200—144 R **2 Claims**



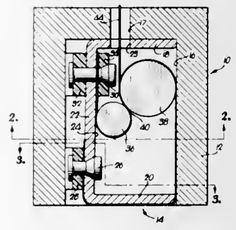
The arc chute of low-voltage air magnetic type electric circuit breaker comprises a stack of spaced-apart steel plates. Some of the plates are coated with ceramic insulating material on their uppermost regions and are located between groups of the uncoated plates to increase the electrical breakdown path and inhibit flashover at the upper end of the arc chute where exhaust gases are hottest.

3,641,295
POLYPHASE CIRCUIT INTERRUPTER OF THE FLUID BLAST PUFFER-TYPE
Jean-Yves Ferton; Jacques Hennebert, and Francois Strippoli, all of Grenoble, France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed June 30, 1970, Ser. No. 51,313
Int. Cl. H01h *33/88*
U.S. Cl. 200—148 A **14 Claims**



A polyphase puffer-type circuit interrupter with a plurality of pole units in which a blast of gas is generated within a puffer mechanism to extinguish the established arc. The gas under pressure flows out of a blast orifice and escapes in a downstream compartment. All downstream compartments of the different pole units communicate with each other so as to increase the flow of the blast gas.

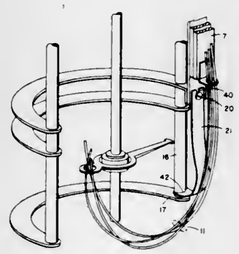
3,641,296
ROLLER-BAND DEVICE WITH DIVERGING WALLS BIASING MEANS
Karl H. Schwarz, Fairway, Kans., assignor to Puritan-Bennett Corporation, Kansas City, Mo.
Filed July 2, 1970, Ser. No. 51,836
Int. Cl. H01h *3/32*
U.S. Cl. 200—153 R **13 Claims**



A roller-band device of the type wherein a pair of rotatable members are disposed within a housing and a flexible, resilient band is convoluted around the members in S-shaped configuration to maintain their axes parallel as they move within the housing. The housing is comprised of two non-parallel planar sections which diverge as one end of the housing is approached. Since the inherent tendency of the flexible band to return to a linear position decreases with divergence of the planar sections, the two rotatable members are always biased in the direction of divergence of the wall sections. An end wall, which is spaced from the point of closest proximity

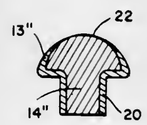
of the planar sections, is bendable about a fulcrum point and the flexible band is trained around this wall, under tension, when the rotatable members are disposed adjacent thereto. A control band element is coupled to the flexible band for shifting the rollers toward the end of the housing where the opposed planar sections converge. As the members are moved away from the pivotal end wall, tension on the flexible band increases as the end wall is biased about its fulcrum point in the direction of movement of the members. Return movement of the members in the direction of divergence of the planar sections decreases the tension on the flexible band but movement of the end wall assures that the flexible band remains taut.

3,641,297
SWITCH APPARATUS
Daniel G. Bowers, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,809
Int. Cl. H01h *9/00*
U.S. Cl. 200—166 A **4 Claims**



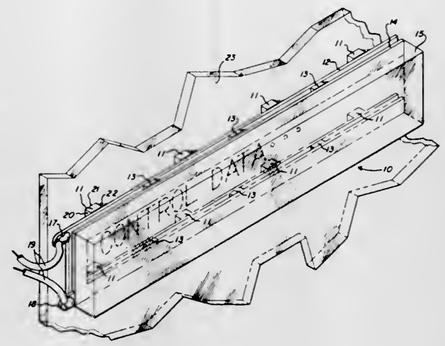
A simple solution to a longstanding, vexing problem of telephone switches is disclosed. By flexing a smooth, flat member between spaced-apart points on a switch frame, the member bows into a fender that prevents rubbing and chafing of movable wires within such frame. Attendantly, crosstalk and maintenance problems are (virtually) eliminated.

3,641,298
ELECTRICALLY CONDUCTIVE MATERIAL AND ELECTRICAL CONTACT
Irwin Broverman, Chicago, Ill., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed July 19, 1967, Ser. No. 654,604
Int. Cl. H01b *1/00*
U.S. Cl. 200—166 C **16 Claims**



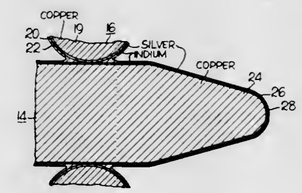
An electrically conductive material consisting of a metal that forms a nonprotective surface film in an air atmosphere, and a metal compound capable of providing a reducing atmosphere at the working face of the material when operating in the atmosphere.

3,641,299
DISPLAY FACEPLATE SWITCH
William N. Mayer, White Bear Lake, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Feb. 10, 1971, Ser. No. 114,283
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 R **13 Claims**



A switch having a transparent area and suitable for placing over a video display without obscuring the information displayed beneath the switch. The switch comprises an elastically bendable conducting strip which, when a top transparent member of the switch is pushed, is forced into contact with a conducting area on the top transparent member. The natural elasticity in the bendable strip serves to break the contact between the conducting area and the bendable strip when the switch is released.

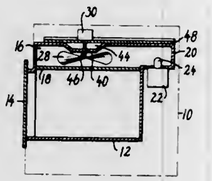
3,641,300
ELECTRICAL CONTACT
Allen R. Nitz, Wauwatosa, Wis., assignor to Allis Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 15, 1969, Ser. No. 850,580
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **3 Claims**



In an electrical contact arrangement wherein a disconnect assembly having one or more spring loaded electrically conductive contact fingers which slidably engage and disengage from an electrically conductive stud. The fingers and stud are made of copper and the engaging surfaces are provided with a layer of silver and a layer of indium on the silver. The indi-

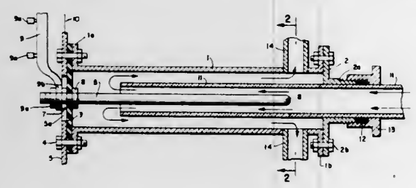
um layer being on the order of 0.1–1.5 mils thick and diffused along its boundary layer to the silver by heat treatment (160° C. for 2 hours).

3,641,301
MICROWAVE OVEN
Hiroshi Ikeda, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,293
Claims priority, application Japan, Sept. 10, 1969, 44/86079
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **6 Claims**



In an electronic cooking device including a stirrer, a stirring compartment above a heating compartment is provided on its top with a truncated cone-shaped protrusion for reflecting a microwave to the heating compartment. The stirrer is disposed adjacent the end of the protrusion to direct the microwave toward the heating compartment.

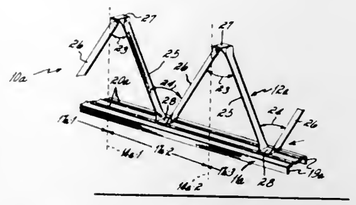
3,641,302
APPARATUS FOR TREATING LIQUIDS WITH HIGH-FREQUENCY ELECTRICAL ENERGY
Ralph G. Sargeant, 408 West Windsor St., Lakeland, Fla.
Filed Mar. 18, 1970, Ser. No. 20,754
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.65 **5 Claims**



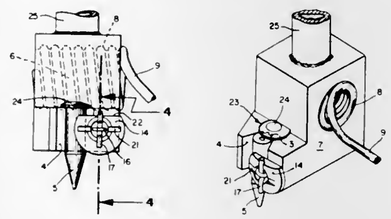
An apparatus for heating liquids by high-frequency energy composed of an outer casing, an inner longitudinally disposed central electrode, and a cylinder separating the inner electrode from the outer casing thereby forming two concentric annular zones. The liquid flows first through the inner zone, and then through the outer zone in series.

3,641,303
METHOD AND APPARATUS FOR CONTINUOUSLY MAKING TRUSS ELEMENTS
Howard W. Collins, Middletown, Ohio, assignor to Integrated Building Industry, Inc., Middletown, Ohio
Filed Jan. 26, 1970, Ser. No. 5,732
Int. Cl. B23k *1/00*
U.S. Cl. 219—56 **40 Claims**

A method and apparatus for continuously making truss elements in successively formed unit lengths from supplies of web forming and chord-forming strip. A unit length of supporting web is shaped at a die station while in position overlying a longitudinal portion of chord member formed of the chord forming strip. The web is joined at a welding station by resistance welding to the chord. The shaping of the unit length of web imparts to the web a pair of alternate opposite bends separated by straight portions. The bends include flat portions for joining to chord members and the straight portions between the bends are shaped to a curved cross section to provide rigidity. The chord member is provided with outwardly projecting ribs which melt to form the weld when pressed between resistance welding electrodes. The forming dies and welding heads move from the path of the truss element as the truss element is intermittently advanced by a three-latch advancing mechanism.



3,641,304
HEATED SEMICONDUCTOR BONDING TOOL
Thomas L. Angelucci, Cherry Hill, N.J., assignor to Kulicke and Soffa Industries, Inc., Industrial Park, Fort Washington, Pa.
Filed June 16, 1969, Ser. No. 833,408
Int. Cl. H05b *1/00*; **B23k** *21/00, 3/00*
U.S. Cl. 219—85 **9 Claims**

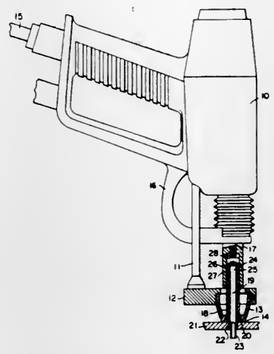


A high-efficiency heated bonding tool having a heat sink with a plurality of recesses therein for receiving a replacable heating element and a bonding nib, at least one recess comprising a helical thread into which is fitted a helical coil heating element wound as a spring having a diameter which would cause an interference fit with the helical thread, but when flexed to fit the helical thread provides a radial force for tight surface-to-surface engagement with the helical thread.

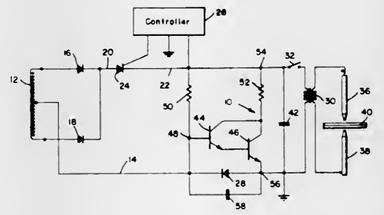
3,641,305
SPUD WELDING METHOD
Ralph Kenneth Ritter, Moorestown; Charles C. Pease, Pennsauken, and Elliott J. Fay, Willingboro, all of N.J., assignors to Omark Industries, Inc., Portland, Oreg.
Original application Mar. 3, 1969, Ser. No. 803,851, now Patent No. 3,508,028, dated Apr. 21, 1970, which is a continuation-in-part of application Ser. No. 633,844, Apr. 26, 1967, now Patent No. 3,555,238, dated Jan. 12, 1971. Divided and this application Apr. 20, 1970, Ser. No. 30,186
Int. Cl. B23k *9/20*
U.S. Cl. 219—99 **1 Claim**

Apparatus and method for welding hollow studs (spuds) over a hole in a workpiece which includes the use of a hollow arc shield disposed within the hollow spud and having one end thereof projecting into the hole in the workpiece to provide alignment for the spud over the hole and to maintain the

hole free of molten metal during the welding operation. The spud preferably includes a chamfer in the weldable end thereof. The chuck for retaining the spud includes a second chuck therein for retaining one end of the internal arc shield and serves both as a retainer for the arc shield and as a stop member for the spud.



3,641,306
WELDING SUPPLY CIRCUIT INCLUDING CAPACITOR BLEED
Malcolm M. Oakes, Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Original application Jan. 8, 1969, Ser. No. 789,732, now Patent No. 3,586,882, dated June 22, 1971. Divided and this application Nov. 3, 1970, Ser. No. 86,448
Int. Cl. B23k *11/26*
U.S. Cl. 219—113 **9 Claims**

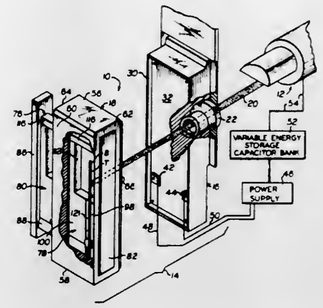


Detecting means detects current flow to a capacitor. When capacitor charging current stops, cessation of charging current is detected, and a quick dump bleed path is connected in parallel to the capacitor.

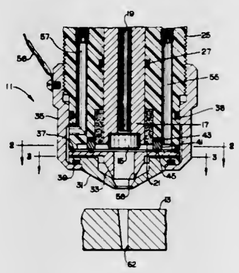
3,641,307
THERMOMETER TRIMMING METHOD AND APPARATUS
Joseph J. Duffy, Northport, and Stuart Donald Sims, Huntington, both of N.Y., assignors to Hadron, Inc., Westbury, N.Y.
Filed Nov. 26, 1968, Ser. No. 779,197
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 **17 Claims**

Apparatus for trimming a thermometer to remove excess mercury including a fixture mounted on a laser device in energy-receiving relationship therewith. The fixture includes a housing having an open end through which a thermometer-holding device is adapted to move between a thermometer-inserting position and a thermometer-aligned position wherein the thermometer is aligned with the laser beam. A light trap is provided for sealing the open end of the housing when the thermometer holding device is in the thermometer-aligned position to prevent the leakage of energy from the laser device through the open end of the housing.

A method for trimming a thermometer also is disclosed.



3,641,308
PLASMA ARC TORCH HAVING LIQUID LAMINAR FLOW JET FOR ARC CONSTRICTION
Richard W. Couch, Jr., Hanover, N.H., and Robert C. Dean, Jr., Norwich, Vt., assignors to Chemetron Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 814,288, Apr. 8, 1969, now abandoned. This application June 29, 1970, Ser. No. 50,674
Int. Cl. B23r *9/00*
U.S. Cl. 219—121 P **7 Claims**

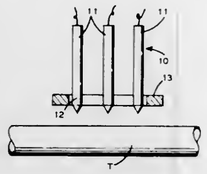


In the plasma arc torch disclosed herein, the flow of plasma toward a workpiece is constricted and accelerated by a radially inward, laminar jet of liquid which forcefully impinges upon the plasma flow. As the liquid is relatively dense in relation to the gases comprising the plasma, the plasma flow is apparently mechanically pinched to reduce its cross section thereby concentrating the application of heat on the workpiece.

3,641,309
APPARATUS FOR WELDING THIN METAL SHEETS
Wolfram Klebel, Isernhagen HB, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Aug. 19, 1970, Ser. No. 65,106
Claims priority, application Germany, Aug. 27, 1969, P 19 43 443.6
Int. Cl. B23k *9/08*
U.S. Cl. 219—123 **3 Claims**

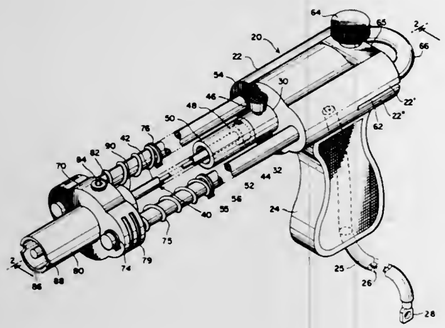
Apparatus for welding a longitudinal seam in thin metal sheets, including a plurality of welding electrodes arranged in a row and in alignment with the seaming portions of the

metal sheets, the electrodes being adapted to be singly and collectively adjusted in directions vertically and transversely related to the seam, together with means for stabilizing the



operation of the individual electrodes by providing an endless magnetic field disposed about the arcing end portions of the electrodes.

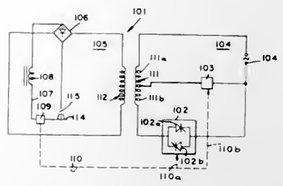
3,641,310
ELECTRODE HOLDER FOR ARC WELDING
Phillip M. Wilson, 133 Whitelaw Ave., Wood River, Ill.
Filed July 17, 1970, Ser. No. 55,790
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **9 Claims**



A device for welding with contact electrodes comprising a core having a metallic coating, includes an electrically insulative body with an outwardly extending handle. A metal chuck extends axially of the body and holds the electrode. A U-shaped frame has arms slidably inserted in the body and held by an adjustable clamp. A block slidable on the free ends of the arms is urged by springs toward the free ends of the arms. The block carries a removable cylindrical shroud for the electrode which extends through the shroud. An electric cable extends into the body and connects with the chuck. Interchangeable shrouds have differently shaped ends to conform with differently shaped surfaces of work to be welded.

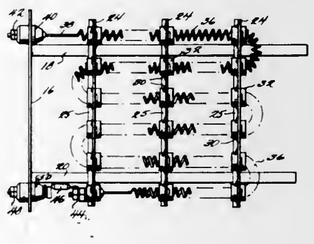
3,641,311
APPARATUS FOR THE IGNITION OF DIRECT CURRENT WELDING AND CUTTING ARCS
Peter Hildebrandt, Ismaning, and Walter Ruckdeschel, Munich, both of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Germany
Filed July 9, 1968, Ser. No. 743,347
Claims priority, application Germany, July 11, 1967, P 16 15 364.3
Int. Cl. B23k *9/10*
U.S. Cl. 219—135 **4 Claims**

A system for igniting direct current arcs for welding or cutting of metals, especially plasma welding, cutting and metal treatment and T.I.G. welding, wherein an elevated DC potential of 150 to 2,000 volts is temporarily superposed upon the welding potential of up to 100 volts during the ignition stage and is terminated upon detection of current flow between the electrode and the workpiece via an electronic switch adapted to cut out a primary winding or cut in a



secondary winding of a transformer interposed between the line current source and the rectifier. The system is used primarily for the closed chamber welding of metallic cases or shells of fuel elements for a nuclear reactor core under a blanket of helium.

3,641,312
OPEN COIL HEATING ELEMENT ASSEMBLY
George Edward Ammerman, and William McFarlane, both of Murfreesboro, Tenn., assignors to Heatcraft, Inc., Murfreesboro, Tenn.
Filed June 23, 1970, Ser. No. 49,095
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 **2 Claims**

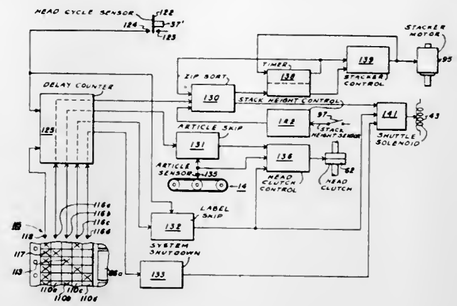


An arrangement for supporting open coil heater elements including a baseplate and a pair of spaced arms projecting from the plate. Each arm is rigidly affixed to the baseplate at one of its ends. A plurality of spaced cross supports are attached to the arms. The cross supports comprise plates having apertures therein to receive insulators through which the heater elements pass. The ends of the heater elements are appropriately connected to circuit terminals mounted to the baseplate.

3,641,313
COMBINATION CONTROLLER-LABEL FORM FOR ARTICLE-LABELING SYSTEMS
Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Rochester, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,007
Int. Cl. G06r *19/00*
U.S. Cl. 235—61.6 R **2 Claims**

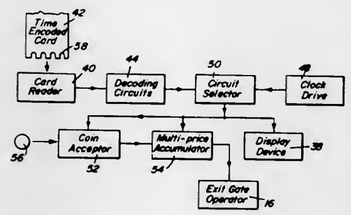
An article-labeling system including article supply means; an addressing machine with article-labeling head, said labels being in the form of an endless sheetlike piece having at least

one label row with a control tape portion-bearing control data for individual labels extending therealong; and means



for operating and labeling system in accordance with the control data on the label form control tape.

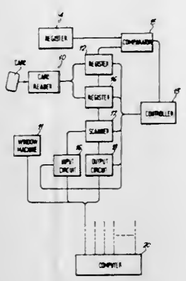
3,641,314
TIME CODED, COIN CONTROL GATE SYSTEM
Aaron L. Abramson, 1611 Audubon St., New Orleans, La.
Filed Apr. 10, 1970, Ser. No. 27,347
Int. Cl. G06k *15/18*; **G08g** *1/14*
U.S. Cl. 235—61.8 A **10 Claims**



The exit gate of a vehicle parking facility is opened in response to deposit of the proper coinage in a multiprice, coin mechanism. The coinage value is set and read out in suitable form when a time encoded card is inserted into a card receiving unit. The card is withdrawn by the vehicle operator from a ticket dispenser when entering the parking facility.

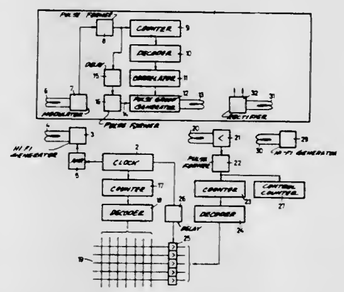
3,641,315
SYSTEM FOR AUTOMATICALLY CONDUCTING OFFICE WORK REQUIRED FOR TRANSACTIONS AT A BANK AND THE LIKE
Masanori Nagata, Kyoto, and Masato Mori, Osaka, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Feb. 27, 1970, Ser. No. 14,919
Claims priority, application Japan, Mar. 4, 1969, 44/17029
Int. Cl. H04q *5/02*; **G07f** *1/06*; **G06k** *15/18*
U.S. Cl. 235—61.7 B **2 Claims**

A system for automatically conducting office work required for transactions at a bank and the like establishments. In accordance with the system, the bank previously issues to each customer a card on which a predetermined information including a secret number is recorded, and at the same time gives to each said customer a memory number which has a predetermined relation to said secret number. The system comprises means for reading the information of a card presented by a customer for a transaction with the bank; means for storing a memory number presented by said customer; means for comparing said secret number and memory number to produce a control signal when said predetermined relation exists between said two numbers; means for providing a new information resulting from said transaction; and a computer controlled by said control signal



to store said information read from said card and at the same time select from the contents already stored therein an information required for said transaction with said customer, said last-named information to be exchanged for said new information.

3,641,316
IDENTIFICATION SYSTEM
Jurgen Dethloff, Elbchaussee 239, Hamburg, and Helmut Grottrup, Faustleste 5, Munich, both of Germany
Continuation-in-part of application Ser. No. 857,957, Sept. 15, 1969. This application Aug. 17, 1970, Ser. No. 64,548; Oct. 7, 1969, A 9413/69; June 30, 1969, 6199/69
Int. Cl. G06k *7/01*
U.S. Cl. 235—61.7 B **35 Claims**



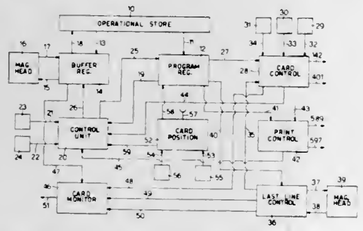
An identification system comprises a number of freely transportable identificands carrying data to be identified arranged at plural correlation positions, and an identifier cooperable with the identificands, when inserted into the identifier, to check the identity of a user of an identificand. A transmitter in the identifier transmits, to the identificand, a number of data, corresponding to the number of correlation positions of the identificand, in succession from the correlation positions. An interpretor is included in the identificand and has input and output terminals, and a selector device in the identificand supplies the transmitted data to the input terminals of the interpreter. A transmitter in the identificand is modulated from the output terminals of the interpreter and transmits the resultant modulated signals to the identifier for processing and evaluation. The identificands may be in the form of flat cards carrying one or more rotatable wheels having numbers around their periphery. The numbers are normally concealed, but the user may, when ready to use the identificand, set one or more wheels to the desired number. When the identificand is inserted into the identifier, the

identifier rotates the wheel or wheels back to the zero position to provide a number of pulses corresponding to the preset number on the wheel or wheels. Each card contains integrated circuits providing safety against falsification, and the identifier has means to detect any tampering with the integrated circuits.

3,641,317
MACHINE FOR PROCESSING MAGNETIC LEDGER CARDS

Alessandro Cortona; Pietro Musso, both of Turin; Fabrizio Saltini, Modena, and Giorgio Fiorenza, Milan, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Sept. 9, 1969, Ser. No. 856,392
Claims priority, application Italy, Sept. 14, 1968, 53150 A/68
Int. Cl. G06r *17/00*
U.S. Cl. 235—61.11 D 12 Claims

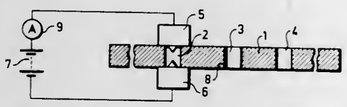


Machine for processing magnetic ledger cards comprising a hopper for receiving a ledger card with the magnetic strip parallel to the direction of the movement of insertion and a processing station formed by a substantially cylindrical path having means for circulating the card along said path, a magnetic head for reading and recording information on said magnetic strip and selectively operable means for ejecting the card from said cylindrical path.

3,641,318
RECORD MEDIUM AND A METHOD FOR STORAGE OF INFORMATION

Gunnar Tollet, Akerbyvagen 264, Taby, Sweden

Filed Apr. 23, 1969, Ser. No. 818,760
Claims priority, application Sweden, Apr. 29, 1968, 5808
Int. Cl. G06k *1/12*
U.S. Cl. 235—61.12 C 3 Claims



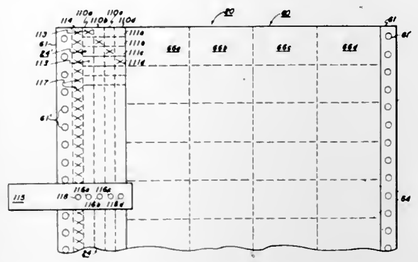
A storage medium consisting of a dielectric with preformed holes. Electrode pairs are inserted into selected ones of the holes and an electric discharge renders the walls of these holes conductive, either by deposition of carbon from the dielectric or by metal deposition from the electrodes. Sensing of information is by similar electrodes having a voltage not large enough to cause discharge.

3,641,319
COMBINATION CONTROLLER-LABEL FORM FOR ARTICLE LABELING SYSTEMS

John V. McGuire, Deerfield, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,002
Int. Cl. G06r *19/00*
U.S. Cl. 235—61.12 R 2 Claims

An article labeling system including article supply means; an addressing machine with article labeling head, said labels being in the form of an endless sheetlike piece having at least one label row with a control tape portion bearing control data for individual labels extending therealong; and means

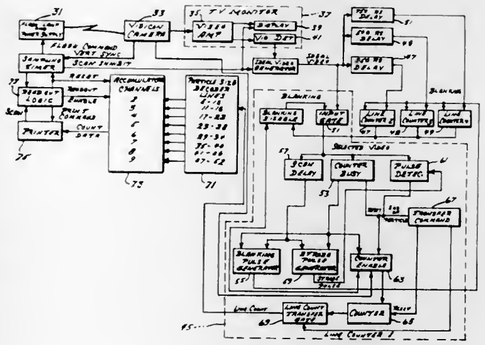


for operating the labeling system in accordance with the control data on the label form control tape.

3,641,320
RAINDROP COUNTER

John D. Stockham, Highland, Ind.; Lawrence B. Townsend, Downers Grove; Ronald L. Ohlhaber, Evanston, and Thomas M. Scopelite, Flossmoor, all of Ill., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 23, 1970, Ser. No. 100,977
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC 3 Claims



A flashing light freezes raindrops with respect to time, the shadows are focused on a vidicon which detects the shadows and converts them to ideal video pulses. The number of scan lines intersecting the drops is determined by a series of line counters and the count is decoded into channels and printed.

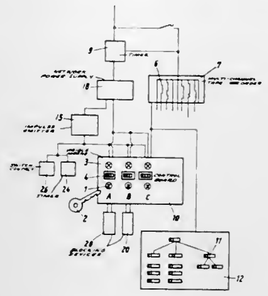
3,641,321
CHECKING DEVICE FOR CHECKING THE PRESENCE OF PERSONNEL

Friedrich Tonne, Uhlandstrasse 4, 7301 Scharnhausen, Germany

Filed Oct. 24, 1969, Ser. No. 869,275
Claims priority, application Germany, Nov. 16, 1968, P 18 09 306.6
Int. Cl. G06f *7/46*
U.S. Cl. 235—92 T 22 Claims

A control device for checking the time during which several persons belonging to an office or factory are present, which comprises a plurality of switches respectively allotted to the persons whose presence is to be checked and also

comprises a plurality of counting means respectively associated with said switches while the circuit means comprising said switches and said counting means comprise for each

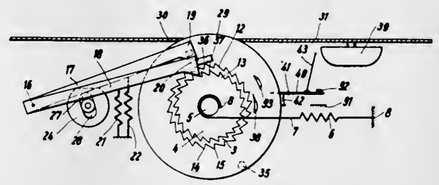


switch a blocking device adapted in response to the failure of the person whose presence is to be checked to switch off the switch during a work break to block the pertaining counting means from resetting.

3,641,322
PRESETTABLE COUNTER FOR COPYING APPARATUS

Jurgen Limberger, Hamburg-Poppenbuttel, Germany, assignor to Firma Lumoprint Zindler KG, Hamburg, Germany

Filed Mar. 27, 1970, Ser. No. 23,287
Claims priority, application Germany, Apr. 3, 1969, P 19 17 187.0
Int. Cl. G04b *17/12*
U.S. Cl. 235—132 R 17 Claims



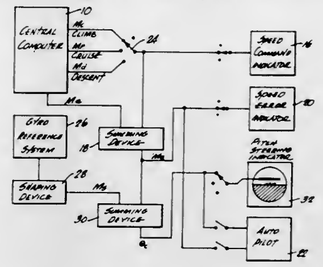
A presettable counting device such as is usable in a copying apparatus includes a rotating element set to rotate through a certain angle for each cyclic operation of the device. A presettable counting wheel is spaced from the rotating elements and their axis are disposed in parallel relationship. Number panels in a numbered sequence are provided on the circumferential periphery of the counting wheel commencing from a zero position. A spring drive member biases the counting wheel toward the zero position. A toothed locking wheel is connected to the counting wheel and locking levers extend between the toothed locking wheel and a multiple cam on the rotating element for holding the counting wheel and effecting its stepwise return to the zero position. A signalling device can be incorporated into the counting device to indicate when the counting wheel has returned to the zero position.

3,641,323
SPEED ALTITUDE COMMAND SYSTEM FOR AERIAL VEHICLES

Roland O. Hughes, Inglewood, and Joseph H. Allen, San Pedro, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 31, 1969, Ser. No. 889,448
Int. Cl. G06g *7/70, 7/78*
U.S. Cl. 235—150.2 11 Claims

An electronic system which senses a plurality of variables during flight of an aerial vehicle and computes therefrom control parameters, presenting the computed parameters from continuous comparison with a predetermined maximum

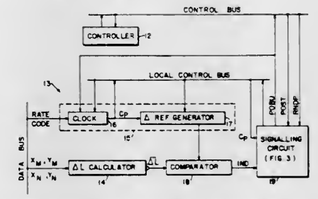


efficiency profile, displaying the error to the pilot or transmitting the error to an aircraft autopilot.

3,641,324
POSITION BUSY SIGNALING APPARATUS

John R. Longland; Roy M. Williams, Jr., both of Nashua, N.H., and Howard D. Sutton, Millington, N.J., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 21, 1969, Ser. No. 817,828
Int. Cl. G06f *15/20*
U.S. Cl. 235—151 6 Claims

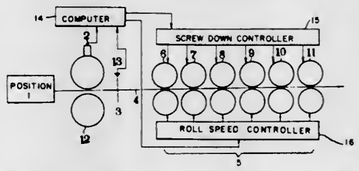


The Position Busy Signaling Apparatus is an open loop position busy generator for signaling the duration or completion of a position move for an imaging device in a display system. A display surface is divided into a grid of equal distance units along X and Y axial directions. The position distance Δ L is calculated for the larger of the X and Y axial distance to be travelled. A clock source increments a counter at a rate corresponding to the travel rate of the imaging device so as to provide incremental reference distances as the imaging device traverses the position distance. A comparator compares the position distance with successive incremental reference distances. When a less than or equal comparison is obtained, a signaling circuit signals that the position move has been completed.

3,641,325
METHOD OF COMPUTER CONTROL OF ROLLING MILLS

Tohru Arimura; Masamoto Kamata; Masaru Okado, and Takarokuro Ichimaru, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

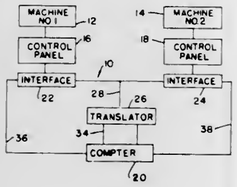
Filed Feb. 19, 1970, Ser. No. 12,775
Claims priority, application Japan, Feb. 21, 1969, 44/12571
Int. Cl. G05d *5/02*; B21b *37/12*
U.S. Cl. 235—151.1 8 Claims



In a method of computer control of a rolling mill, various operating parameters thereof are divided into a number of

groups, the mean value of each group is determined and deviations of the parameters from the respective mean value are corrected in accordance with linear equations.

3,641,326
CIRCUIT FOR AND METHOD OF MULTIPLEXING FOR MONITORING A PLURALITY OF SEPARATE MACHINE TOOLS
Robert B. Harte, Taylor, Mich., assignor to Buhr Machine Tool Company, Ann Arbor, Mich.
Filed Nov. 22, 1968, Ser. No. 778,263
Int. Cl. G08c *15/00*
U.S. Cl. 235—151.11 **10 Claims**

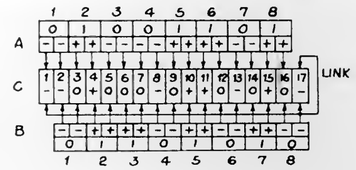


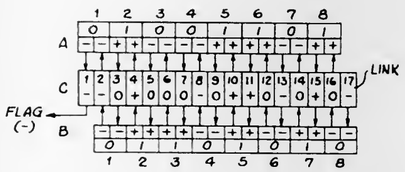
The multiplexing circuit disclosed includes a translator and a plurality of separate interface circuits adapted to be alternatively connected to the translator over a single buss. Each of the interface circuits is connected to a plurality of specific points at which electrical conditions are to be monitored in a corresponding one of a plurality of machine tool control panels. Monitoring of all the control panels is accomplished in conjunction with one translator multiplexed to the separate interface circuits under sequencing control of a computer connected to the translator and interface panels. The translator converts the usual 115-volt alternating current signals from the control circuits into signals usable by the computer.

In operation the computer at a desired speed and in a desired sequence will provide control signals to the separate interface circuits to connect the control panels of individual machine tools to the translator for translation of monitored signals to the computer. Thus each of a plurality of separate machine tools is monitored with a single computer without the necessity of separate conversion circuits at each control panel. Only the standard 115-volt 60-cycle alternating current electric energy of the control panels pass between the interface panels and the translator.

3,641,327
UNAMBIGUOUS DIGITAL PROCESSING OF DUAL BINARY THREE-VALUED CODES
Carl W. Nelson, Jr., 2606 N. Brandywine St., Arlington, Va.
Filed Aug. 13, 1969, Ser. No. 849,820
Int. Cl. G06f *5/02*
U.S. Cl. 235—155 **4 Claims**

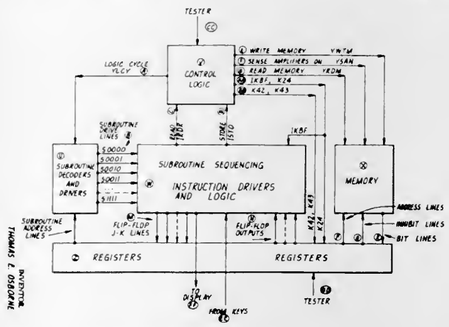
This invention contemplates means for digital resolution of three-valued code ambiguities resulting from the combination in parallel of two signed binary sequences (O=−, 1=+, or vice versa) offset from one another by one-half code element, their combination relating elements of the second to adjacent elements of the first and resulting in three-valued code elements+, 0 or −, the first three-valued code sequence element being ambiguous due to the signed binary sequences' offset, said first element three-valued ambiguity being resolved by combining the signed value of the final element in the second signed binary sequence with the signed value of the first element in the first binary sequence; and, the last three-valued code sequence also being ambiguous due to the signed binary sequences' offset, said last element three-valued ambiguity being resolved by repeating the signed value of the final element in the second signed binary sequence as an appended final signed value in the resulting three-valued sequence, said appended final three-valued sequence element being called the LINK; the inherent non-redundant error detection feature of this class of three-valued codes being preserved; the LINK providing information and means for unambiguous decoding of the said three-valued sequence, zero value elements of which are ambiguous and all-zero value three-valued sequences being totally ambiguous in decode to the two component signed binary sequences, the said decode ambiguities being resolved





by circuit means to place the signed value of the three-valued LINK element into the last element of the second signed binary sequence, in turn the last element of the second signed binary sequence being combined with the next to the last three-valued sequence thus defining the signed value of the last element in the first signed binary sequence, circuit operations being carried on sequentially to finally produce the first elements of the signed binary sequences and a FLAG signal element useful in clocking the signed bnary binary into their related circuit registers.

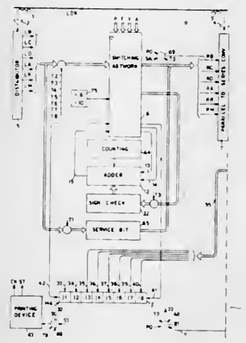
3,641,328
KEYBOARD ENTRY MEANS AND POWER CONTROL MEANS FOR CALCULATOR
Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Original application June 23, 1966, Ser. No. 559,887, now Patent No. 3,566,160, dated Feb. 23, 1971. Divided and this application May 21, 1969, Ser. No. 826,528
Int. Cl. G06f *15/02*
U.S. Cl. 235—156 **21 Claims**



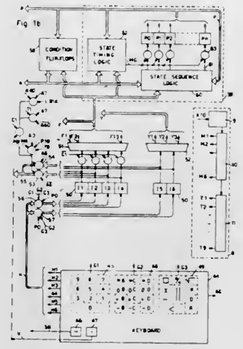
Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a

plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode-ray tube output display. Power switching is employed in the internal control and subroutine logic so that the subroutines and the instructions of the calculator are supplied with power only when they are to be executed. When a random access memory cycle is required, it is automatically interposed between the otherwise regularly recurring logic cycles by the internal control and subroutine logic. Encoded transfer vectors are stored and decoded by the subroutine logic to permit unrestricted subroutine returns. In the keyboard input two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in an address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J-K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J-K inputs. In the cathode-ray tube output display, a recurring pattern generated by integration in only two directions is selectively blanked to display the results of the operations performed by the calculator. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

3,641,329
IMPROVEMENTS IN ELECTRONIC COMPUTER KEYBOARD CONTROL
Giovanni De Sandre, and Gastone Garziera, both of Milano, Italy, assignors to Ing. C. Olivetti & C. S. p. A., Ivrea (Torino), Italy
Filed Oct. 24, 1969, Ser. No. 869,219
Claims priority, application Italy, Oct. 28, 1968, 53652 A/68
Int. Cl. G06f *7/48*
U.S. Cl. 235—156 **10 Claims**

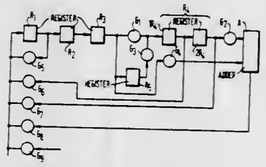


A control keyboard for an electronic digital machine (computer or calculator) has function keys and number keys. The number keys enter data into a first working register. The activation of any one particular function key of a group of such keys causes an answer corresponding to the ordered function to be placed in the first working register and the contents of the first working register to be transferred to a second working register. A plurality of totalizing registers are operatively connected to the first working register and, in response to the activation of any one of a second group of particular function keys, the number in the first working register is accumulated in one of the totalizing registers associated therewith. A further group of keys is provided which provide a combination of the functions of the first and



second keys, and specific functions such a data printout and data exchange.

3,641,330
MICROPROGRAMMED DIGITAL COMPUTER PROVIDING VARIOUS OPERATIONS BY WORD CIRCULATION
Isao Hatano; Kenichi Kitajima, and Katsumi Iwatani, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyo-Ku, Kysto, Japan
Filed May 7, 1969, Ser. No. 822,394
Claims priority, application Japan, May 14, 1968, 43/32341
Int. Cl. G06f *7/48*
U.S. Cl. 235—159 **9 Claims**

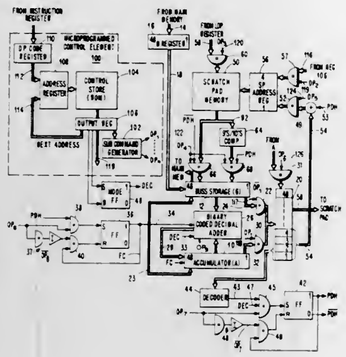


A plurality of shift registers are interconnected serially by a plurality of gates. To perform computer micro-operations, the words contained within the registers are circulated therethrough in steps, each step being divided into a plurality of separate time periods. The particular operation that is being performed is controlled by microprogrammed matrices which provide appropriate control signals during each time period to determine which gates are to be opened therein. Specific configurations are described for the operations of word addition, word transfer between registers, word transfer back to a register, shifting out of a register the greatest or the least significant digit of a word, and so forth. In addition, a configuration is shown including a single register and a decoding matrix for serially transferring the word in one register to a numeric display device, as is a configuration allowing retention of other words in the remaining registers during such a transfer. Finally, various embodiments of the microprogrammed matrices are shown.

3,641,331
APPARATUS FOR PERFORMING ARITHMETIC OPERATIONS ON NUMBERS USING A MULTIPLE GENERATING AND STORAGE TECHNIQUE

Leonard L. Kreidermacher, Acton, and David M. Hudson, Holliston, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 12, 1969, Ser. No. 875,909
Int. Cl. G06f *7/39, 7/38*
U.S. Cl. 235—159 13 Claims

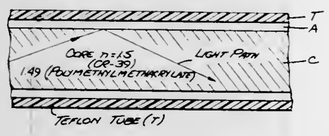


Apparatus for performing arithmetical operations with operands in binary coded decimal form includes means for initially generating and storing at least the first half of the multiples of an operand and during the arithmetic operation, generating a result by performing a selectable operation of either directly transferring or complementing selected prestored multiples.

3,641,332
FIBER OPTICS ILLUMINATION SYSTEM

Franklin G. Reick, 228 West Pl., Westwood, N.J., and Joseph R. Wilder, 151 West 86th St., New York, N.Y., assignors to Michael Ebert; Frederick R. Picut; Franklin G. Reick and Joseph R. Wilder, part interest to each

Filed Oct. 30, 1969, Ser. No. 872,519
Int. Cl. F21v *29/00*; G02b *5/14*
U.S. Cl. 240—1 EI 13 Claims

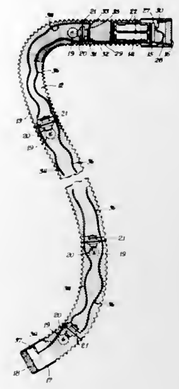


A fiber optics illumination system provided with a light source whose output is distributed among a plurality of flexible light pipes, the light transmitted by the pipes being applied to light tips or other instruments. The source includes a tungsten-halogen lamp submerged in water to effect filtration of infrared radiation, whereby cold light is supplied to the pipes, each pipe being constituted by a core of resinous material of large diameter contained within a cladding tube and separated therefrom by an air or other film having a relatively low-refractive index compared to that of the core.

3,641,333
ILLUMINATED BELT

Everett W. Gendron, 104 Andover Ct., Lemont, Ill.

Filed Dec. 5, 1968, Ser. No. 781,381
Int. Cl. F21v *21/00*
U.S. Cl. 240—6.4 W 8 Claims

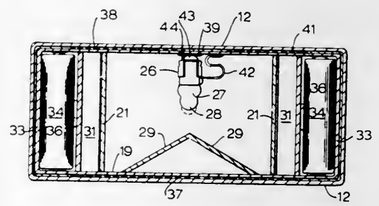


A flexible tubular belt of a generally translucent material adapted to carry an electromotive force power pack for connection to a plurality of light bulbs within the belt and the belt having a magnetic coupling which performs the dual function of holding the ends of the belt together and completing the electrical circuit to cause illumination of the bulbs within the belt.

3,641,334
ILLUMINATED MIRROR FOR COSMETIC CASE

Vernon L. Kipping, San Francisco, Calif., assignor to Roger J. Jobson and John P. Costello, San Francisco, Calif., part interest to each

Continuation-in-part of application Ser. No. 718,390, Apr. 3, 1968. This application Aug. 29, 1969, Ser. No. 854,249
Int. Cl. A45c *15/06*
U.S. Cl. 240—6.45 R 5 Claims

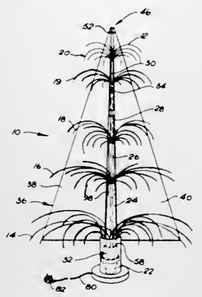


A mirror, preferably handheld, has a light bulb disposed behind the mirror and a source of current within a casing. The bulb is located relative to a light reflective surface to direct light onto a beam dividing reflector, so that the light is reflected around the side edges of the mirror to shine onto the face of the user thereby providing sufficient illumination to permit use independent of other light. The light produced has a field sufficient in size to illuminate the entire face of the user and is characterized by softness. The system employs reflective optics to converge and distribute light uniformly over the illuminated object.

3,641,335
DECORATIVE STRUCTURE FOR FLARED FIBERS

Lamar J. Wall, Seal Beach, Calif., assignor to Poly-Optics, Inc.

Filed Sept. 2, 1969, Ser. No. 854,632
Int. Cl. A47g *33/16*; F21p *1/02*
U.S. Cl. 240—10 P 1 Claim

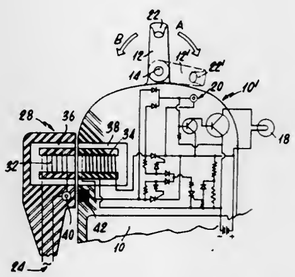


A decorative structure in which tiers of flared optical fibers or the like extend vertically from a base therefor, and a backstop is secured adjacent the flared portions of the fibers.

3,641,336
ELECTRIC LAMPS FOR EMERGENCY AND/OR FOR DUTY UNDER PARTICULAR ENVIRONMENT CONDITIONS, AND RELATIVE IMPROVED LAMPS

Giovanni Boin, Via Luosi 9, Milan, Italy

Continuation of application Ser. No. 725,872, May 1, 1968, now abandoned. This application Apr. 5, 1971, Ser. No. 130,826
Int. Cl. F21l *7/00, 9/00, 11/00*
U.S. Cl. 240—10.6 R 4 Claims

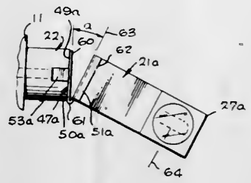


An electric emergency lamp includes a self-contained power supply, comprising a rechargeable accumulator or battery, a first electric circuit connectable to an external power supply for battery recharge and a second electric circuit controllable from the outside to switch on the light source of the lamp. The lamp is designed to operate in environments and/or conditions requiring the observance of tight seals, the lack of connections capable of giving rise to sparking and the like, for which purpose the electric battery circuits are incorporated within a waterproof lamp casing and can be connected to an external AC supply by an electric magnetoinductively operating power transducer, the secondary winding of which is incorporated within the waterproof casing, whereas the primary winding can be brought close to the waterproof casing, so as to ensure the closure of the magnetic circuit between said primary and secondary windings.

3,641,337
MAGNETIC FLASHGUN MOUNT

Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif.

Filed Apr. 2, 1970, Ser. No. 25,008
Int. Cl. F21l *15/16*
U.S. Cl. 240—52.15 11 Claims

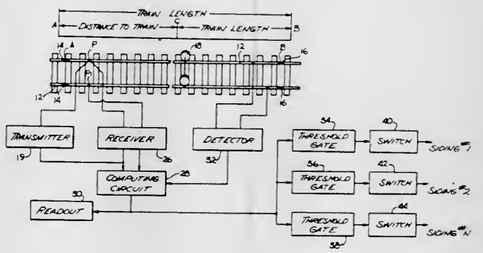


A mount for holding a photographic flashgun in a predetermined position relative to a camera, and including two structures to be carried by the flashgun and a support element respectively, with one of the structures taking the form of a magnet and the other being an element attracted to the magnet to hold the flashgun in place, and with the two structures being shaped to interfit in a relation positively holding the flashgun in a certain orientation in which its light is aimed directly toward a subject to be photographed.

3,641,338
TRAIN LENGTH MEASUREMENT SYSTEM

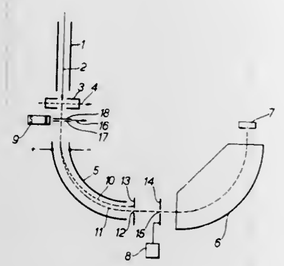
Richard V. Peel, Diamond Bar, and Billie W. Phillips, Upland, both of Calif., assignors to Marquardt Industrial Products Co., Cucamonga, Calif.

Filed Feb. 26, 1970, Ser. No. 14,391
Int. Cl. B61l *1/02*
U.S. Cl. 246—1 R 16 Claims



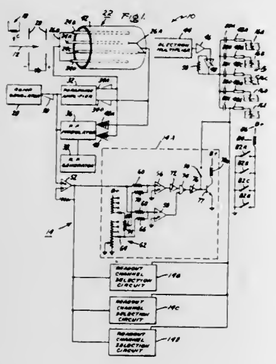
A system for measuring the length of a train is disclosed and includes a transmitter for applying a current to an isolated area of a pair of railroad tracks. The area of the track is generally longer than the longest expected train. A fixed voltage is provided to the computer which is indicative of the distance from one end of the measurement area to the other. A detector is positioned at the furthest end of the track measurement area. As a train appears within the two points, the wheels from the train short out the tracks causing the received voltage therein to change. When the train is detected by the detector, a voltage reading is taken which is then indicative of the distance from the transmitter to the rear of the train. This distance voltage is then combined (subtracted) with the overall fixed voltage to supply a voltage which is indicative of the length of the train.

3,641,339
GAS CHROMATOGRAPHY—MASS SPECTROMETRY
Andrew McCormick, Basingstoke, Hampshire, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed June 23, 1969, Ser. No. 835,706
Claims priority, application Great Britain, July 5, 1968, 32,335/68
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 G **7 Claims**



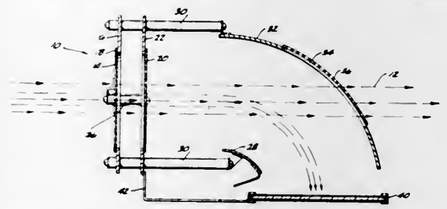
A small magnetic field is applied to the ion beam from the mass spectrometer ion source to deflect a substantial proportion of the relatively light carrier gas (e.g., helium) ions in the beam from impinging on the beam monitor electrode of the mass spectrometer, while leaving the relatively heavy sample (e.g., hydrocarbon) ions substantially undeflected. This increases the detection sensitivity and alleviates the need for ion source retuning between recording and standby conditions.

3,641,340
MULTICHANNEL READOUT MASS SPECTROMETER
Willem J. Van Der Grinten, Scotia, and George Jernakoff, Loudonville, both of N.Y., assignors to General Electric Company
Filed Sept. 22, 1969, Ser. No. 859,866
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 G **4 Claims**



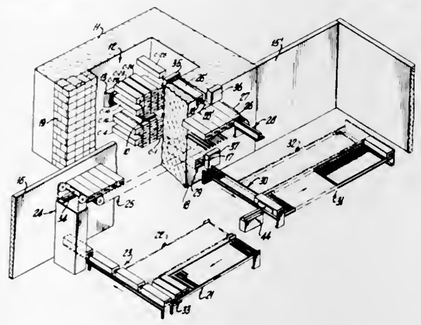
A multichannel readout mass spectrometer is described wherein the amplitude of the control voltage governing the passage of an ionized stream of a gas mixture through a quadrupole mass filter is employed to supervise the selection of readout channels individually recording various constituents of the ionized stream. For each readout channel, the control voltage is compared with a first preselected voltage to activate logic circuitry initiating recordation of a constituent of selected mass upon the readout channel and readout of the constituent is continued until a signal is generated from a second control voltage comparator circuit. Switching circuitry also is provided for recording the mass spectra of all constituents on a common channel simultaneously with a signal indicative of the recording interval for any one of the individual readout channels. The recording interval then is correlated with a single constituent forming the mass spectra whereupon readout of only the single constituent can be switched to the individual readout channel.

3,641,341
ION BEAM IMAGE CONVERTER
Douglas M. Jamba, Woodland Hills, and Robert M. Ennis, Jr., Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 23, 1969, Ser. No. 887,690
Int. Cl. H01j *37/26;* **G01n** *23/00*
U.S. Cl. 250—49.5 E **3 Claims**



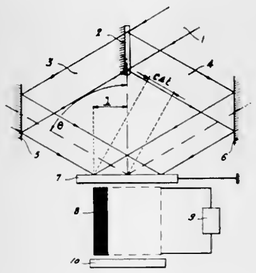
The ion beam image converter comprises a secondary emission screen in the ion beam path so that, when ions impinge upon the secondary emission screen, secondary electrons are emitted. An accelerator screen is positioned downstream from the secondary emission screen to accelerate the secondary electrons. Deflecting means is positioned downstream of the accelerator screen to deflect the electron beam onto a path away from the ion beam path. A phosphor image screen is placed on the deflected secondary electron path to convert the electron beam to visible image. Electron beam deflection can be either electrostatic or magnetic.

3,641,342
CONVEYOR SYSTEM FOR THE UNIFORM EXPOSURE OF ARTICLES OR MATERIALS TO A SOURCE OF GAMMA OR THE LIKE RADIATION
Jack Armel, New York; Mark Kogan, Brooklyn, and Howard S. Cohen, Howard Beach, all of N.Y., assignors to TSO Nuclear Corp., Ballston Spa, N.Y.
Continuation-in-part of application Ser. No. 772,111, Oct. 31, 1968, now abandoned. This application Nov. 3, 1969, Ser. No. 873,477
Int. Cl. G01n *21/00*
U.S. Cl. 250—52 **34 Claims**



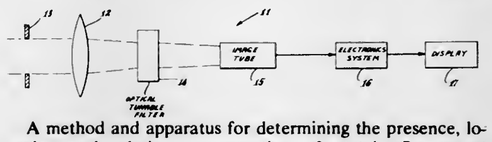
In conjunction with a known or fixed source of radiation, such as gamma radiation, the invention contemplates an automatic conveyor system for plurallike unitary containers laden with articles or materials to be subjected to desired exposure dosage of the radiation. The system accommodates a number of containers at all times, and uniform exposure is achieved for the contents of each container by having all containers follow precisely the same pattern or locus of movement through the system, and with respect to the source. Container movement is accomplished by indexing operations, performed simultaneously on all containers; the desired exposure time is governed by selection of dwell time between indexes, so that a single indexing cycle may serve the system regardless of the selected exposure time.

3,641,343
METHOD AND APPARATUS FOR THE MEASUREMENT OF DURATION OF ULTRASHORT PULSES OF MONOCHROMATIC LIGHT
Philippe Langer, 91 bis, avenue de Clamart, 92 Issy-les-Moulineaux, France
Filed Sept. 8, 1970, Ser. No. 70,037
Claims priority, application France, Sept. 12, 1969, 6931107
Int. Cl. G01n *21/16, 23/00*
U.S. Cl. 250—71 R **10 Claims**



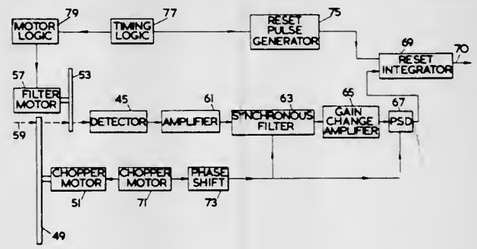
A method of and apparatus for the measurement of duration of ultrashort pulses of monochromatic polarized light, such as laser pulses. The method comprises splitting the polarized light beam into two identical beams; causing the two split beams to travel through the same optical path and to interfere on a photocathode comprising a thin metal layer disposed in vacuo, the energy required to detach the electrons from the layer being greater than the energy of the incident light photons; producing an image of the multiphotonic interaction zone obtained on the photocathode by means of electrons detached from the photocathode by a multiphotonic process in response to photons in coincidence from the two split light pulse therefrom. The apparatus is appropriate for carrying out the method.

3,641,344
SOLAR-STIMULATED FLUORESCENT RADIATION DETECTION METHOD AND APPARATUS
David A. Markle, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Apr. 1, 1969, Ser. No. 811,738
Int. Cl. G01n *21/34*
U.S. Cl. 250—71 **9 Claims**



A method and apparatus for determining the presence, location and relative concentration of certain fluorescent materials in a scene that is illuminated by sunlight. The particular fluorescent materials are characterized in that they fluoresce at wavelengths coincident with one or more Fraunhofer absorption bands. Two images are formed from light collected from the scene. One of the images consists mainly of light from the scene having a spectral band-pass inside a Fraunhofer absorption band and the other image consists mainly of light from the scene having a spectral band-pass in the continuum near the same Fraunhofer absorption band. The two images are normalized so that intensities on corresponding portions of each image due to reflected solar radiation are equal. The "continuum" image is then subtracted from the "Fraunhofer" image. The resulting difference image consists primarily of fluorescent radiation derived from the fluorescent materials or objects in the scene and provides a direct visual indication of their presence, location and relative concentration.

3,641,345
INFRARED RADIOMETER APPARATUS FOR DETECTING CLEAR-AIR TURBULENCE FROM AN AIRCRAFT
Robert Coackley; Michael Leslie Reynolds, both of Camberley, and Clive Douglas Rodgers, Oxford, all of England, assignors to National Research Development Corporation, London, England
Filed Mar. 5, 1970, Ser. No. 16,922
Claims priority, application Great Britain, Mar. 6, 1969, 11,868/69
Int. Cl. G01j *5/06;* **B01k** *11/00*
U.S. Cl. 250—83.3 H **23 Claims**

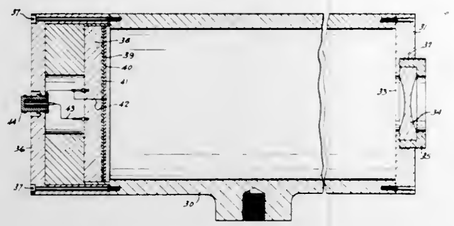


A radiometer apparatus suitable for use on a supersonic aircraft for clear-air turbulence detection includes means for operating at four selected wavelengths within an atmospheric absorption band, for example the 15μ band of carbon dioxide. At any particular height of the aircraft each of a set of filters used to select the four selected wavelengths has a weighting function which depends on the effective absorption coefficient of the atmosphere at that wavelength and each indicates which part of the atmosphere ahead provides a significant contribution to the radiation measured by the apparatus. At longer wavelengths the atmosphere is opaque and the radiometer apparatus receives radiation from immediately in front of the aircraft. By generating suitable functions from the outputs of radiation passed by two or more of the filters it is possible to detect turbulence of the type looked for.

3,641,346
PYROELECTRIC JOULEMETER USING A DIVERGENT LENS
Jean L. Lachambre, Charlesbourg, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government
Filed Mar. 20, 1970, Ser. No. 65,591
Claims priority, application Canada, Aug. 29, 1969, 060798
Int. Cl. G01j *1/42*
U.S. Cl. 250—83 R **3 Claims**

A pyroelectric pulse energy measuring device is disclosed in which a pyroelectric element is mounted adjacent a heat

sink and within a reflective container. A lens is provided at one end of the container so that incident radiation impinges



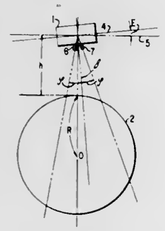
on substantially the entire surface of the pyroelectric element, the amount of incident radiation being measured by the pyroelectric voltage output.

3,641,347

APPARATUS FOR DETECTING THE ATTITUDE OF AN ARTIFICIAL SATELLITE

Moritada Kubo, Tokyo; Masamichi Shigehara, and Yasuo Nogiwa, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Horikawa-cho, Kawashaki-shi, Japan

Filed July 23, 1970, Ser. No. 57,448
Claims priority, application Japan, July 25, 1969, 44/58383
Int. Cl. G01j *1/20*
U.S. Cl. 250—83.3 H **4 Claims**



An artificial satellite includes a pair of sensors for detecting ultraviolet rays from the horizon of the earth. The pair of sensors are mounted on the satellite with a predetermined angle therebetween. When the angle of inclination of the spin axis of the satellite to the horizon thereof is relatively small both of the sensors will simultaneously detect rays from the horizon of the earth. The difference in the outputs of the two sensors will provide a measurement of the inclination angle of the spin axis and hence the attitude of the satellite. On the other hand, when the angle of inclination of the spin axis of the satellite to the horizon thereof is relatively large, one of the pair of sensors will be out of sight of the earth and the output of the other sensor will detect rays from the horizon of the earth to provide a measurement of the inclination angle of the spin axis of the satellite.

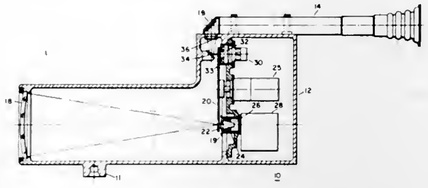
3,641,348

THERMAL IMAGING SYSTEM WITH THERMAL IMAGE SUPERIMPOSED ON A TARGET SCENE

Frank Schwarz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed July 24, 1969, Ser. No. 844,248
Int. Cl. G01j *1/02, 1/10*
U.S. Cl. 250—83.3 HP **5 Claims**

A field of view which is sighted through a telescope is simultaneously scanned by a rotating reticle and applied to an infrared detector to derive thermal information from the field of view. A light source is modulated by the infrared channel and the intensity-modulated light source is imaged through the same reticle and superimposed on the sight of the telescope. The operator will thus see in the telescope the



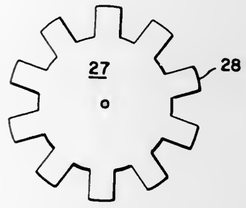
view of the target scene with a red tinge in those regions in which the target is warm or overheated.

3,641,349

METHOD FOR MEASURING THE AMOUNT OF SUBSTANCE ASSOCIATED WITH A BASE MATERIAL

Erick B. Dahlin, Saratoga, Calif., assignor to Measurex Corporation, Santa Clara, Calif.

Filed Sept. 29, 1969, Ser. No. 861,588
Int. Cl. G01j *3/42*
U.S. Cl. 250—83.3 H **2 Claims**



Apparatus and method of measuring the amount of water absorbed in paper being made by a papermaking machine in which the paper is scanned by a radiation source emitting 1.94 micron radiation which is strongly sensitive to the moisture in the paper and 1.8 micron radiation which is much less sensitive. This radiation is passed through the paper sheet and split into two beams by filters. The two wavelengths are detected by lead sulfide cells. A light chopper interrupts the total beam to cause the AC signal output of the cell to reflect the received intensity of the particular wavelength with the actual impedances of both cells being nullified. The ratio of the peak values of the AC signals from the cells is proportional to moisture content.

3,641,350

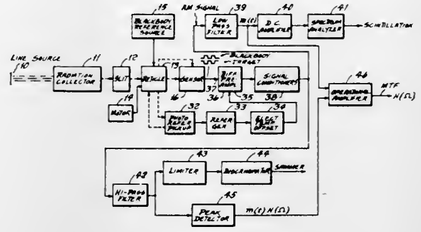
INFRARED ANALYZER FOR INDICATING THE SCINTILLATION SPECTRUM, SHIMMER AND MODULATION TRANSFER FUNCTION OF THE RADIATION PATH

Spyros K. Petropoulas, Brookeville; Robert E. Jehle, Wheaton, both of Md., and Mendel M. Halberstam, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 8, 1970, Ser. No. 70,061
Int. Cl. G01j *3/34*
U.S. Cl. 250—83.3 H **6 Claims**

The radiant energy from a known live source impinges on a radiation collector which in turn directs the energy through a movable slit on to a rotating reticle having alternate reflecting and transmitting segments. A reference source also directs energy on to the reticle and the reticle output is directed toward a sensor whose output is processed by a differential amplifier and a signal amplifier. A reference phase generator circuit controls the gain of the differential amplifi-

er. The output of the signal amplifier is further processed to provide only the low frequencies, which are then amplified and analyzed to provide a scintillation spectrum. A shimmer output is obtained by eliminating the low frequencies and ap-



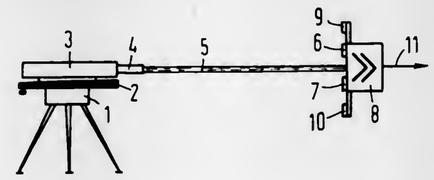
plying the resultant to a limiter and a discriminator. The modulation transfer function is derived by combining, in an operational amplifier, the low-passed frequencies from the signal amplifiers and the peak detected high frequencies.

3,641,351

LASER DEVICE FOR CONTROLLED GUIDANCE OF FABRICATING MACHINE

Otmar Hintringer, Neubiberg; Walter Koniger, Munich, and Jurgen Thorn, Haar, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 15, 1969, Ser. No. 866,568
Claims priority, application Germany, Oct. 31, 1968, P 18 06 450.1
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 **8 Claims**



A receiver stably affixed to a fabricating machine comprises at least two spaced photosensitive units, positioned transversely to a reference plane formed by a flared modulated laser guide beam, one on each side of the reference plane. A difference amplifier is connected to the photosensitive units in a manner whereby deviation of the fabricating machine from the reference plane produces an output control signal of the difference amplifier for guiding the fabricating machine back into the reference plane.

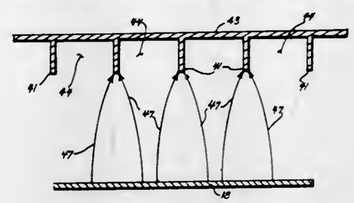
3,641,352

ELECTRONIC LENS FOR A PHOTOELECTRON MULTIPLIER

Mahlon B. Fisher, Skaneateles, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 16, 1969, Ser. No. 885,577
Int. Cl. H01j *39/12, 39/50*
U.S. Cl. 250—207 **2 Claims**

An improvement in a crossfield photoelectron multiplier that has a plurality of electron emitting dynodes parallel and longitudinally extended with respect to the anode. The improvement anode has a series of parallel fins forming chan-



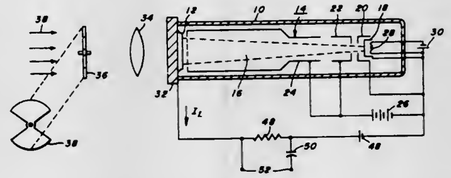
nels and controlling the electron field between the anode and the dynodes and between the anode and the cathode.

3,641,353

ELECTRON BEAM BOLOMETER

Francis X. McNally, Baltimore, and Louis Chiosi, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,444
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **6 Claims**



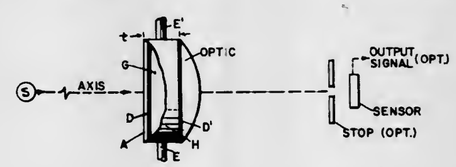
A bolometer which operates at room temperature and which can be made sensitive to all blackbody radiation in the visible spectrum and extending into the infrared, depending upon the nature of a faceplate used. The bolometer is constructed by sandwiching a suitable semiconductor in smoke form between gold black as one electrode and a flooding electron beam as the other, the sensing layer being mounted in a vacuum tube.

3,641,354

OPTICAL MODULATION BY FLUIDIC OPTICS UTILIZING CHROMATIC ABERRATION

Jack De Ment, 4847 Southeast Division St., Portland, Oreg.

Filed Mar. 8, 1967, Ser. No. 621,658
Int. Cl. H01j *3/14*
U.S. Cl. 250—216 **22 Claims**



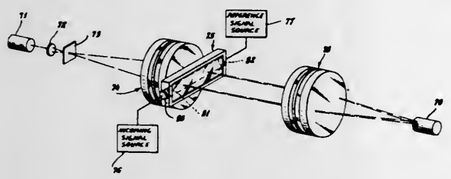
Optical modulation in the ultraviolet, visible and/or infrared spectrum, for a range of uses including optical computers, data-processing and optical information processing systems together with the transduction of gas and liquid fluidic signals and pressure transients to optical and electrical signals, a fluidic optic such as a transmission or reflection elastic lens which includes a fluid-oscillable elastic wall, typically a fluid-filled chamber having at least one elastic wall

driven by alternating flow or pulse fluid oscillation means, optically coupled with a light source like a laser which generates at least two different wavelengths, and a sensor. The fluidic optic separates the wavelengths by chromatic aberration, and a stop between the optic and the sensor passes a given wavelength while blocking other wavelengths during a given oscillation mode. The oscillable wall of the fluidic optic can include an elastic or deformable image, diffraction grating, polarizer or hologram.

3,641,355
OPTICAL CORRELATOR

Kendall Preston, Jr., New Haven, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Original application Feb. 24, 1966, Ser. No. 529,846, now Patent No. 3,457,425. Divided and this application Feb. 13, 1969, Ser. No. 822,091
Int. Cl. G01d *5/34*
U.S. Cl. 250—229 **4 Claims**

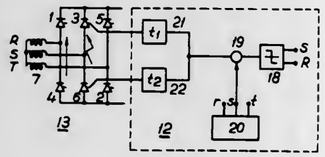


Apparatus for determining the correlation of two electrical signals includes means converting the two signals into two acoustic beams. Coherent collimated light is passed through both acoustic beams. A Fourier transform of light through the beams is taken and this light is focused on detection means which measures the intensity of the light diffracted (and hence modulated) by the acoustic beams for determining the correlation of the electrical signals. In one embodiment, the two acoustic beams are coaxial and the light is passed through both waves simultaneously.

3,641,356
STATIC CONVERTER STATION FOR HIGH VOLTAGE

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 16, 1971, Ser. No. 115,292
Claims priority, application Sweden, Feb. 19, 1970, 2089/70
Int. Cl. H02j ; H02m *1/02*
U.S. Cl. 307—64 **10 Claims**

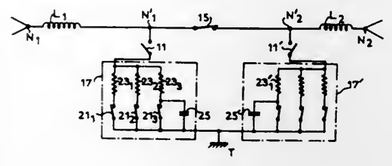


A converter station for high voltage is formed of a plurality of static converters with a direct current side directed in series. Each converter is a full-wave rectifier bridge provided with a control device. An additional control device is provided with a reserve control for one of the converters, which controls two series-connected rectifier groups of the bridge with different delay angles, one greater and the other less than 90°. As a result the two series rectifiers in one phase of the bridge conduct simultaneously and current is commutated at a certain frequency from the rectifier in one phase of the rectifier bridge to the rectifier in a subsequent phase of the bridge.

3,641,357
CIRCUIT-BREAKING TECHNIQUE AND DEVICE

Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, 92 Neuilly sur Seine, France

Filed May 28, 1970, Ser. No. 41,351
Claims priority, application France, June 3, 1969, 69 18 170
Int. Cl. H02h
U.S. Cl. 307—94 **15 Claims**

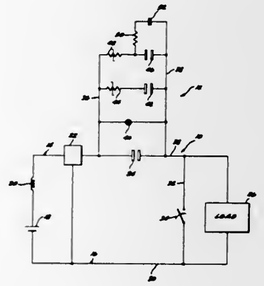


A method and apparatus for cutting off a branch between two junctions of a DC power transmission network in which there are first earthed by closing contactors two adjacent points of said branch, a circuit breaker located between said points is opened, other circuit breakers are successively opened, each such circuit breaker being mounted in series with a resistor, and a capacitor absorbs the final cutoff current.

3,641,358
CONSECUTIVE CROWBAR CIRCUIT BREAKER

Kenneth T. Lian, and Willis F. Long, both of Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 10, 1970, Ser. No. 45,147
Int. Cl. H01h *9/30*
U.S. Cl. 307—136 **12 Claims**

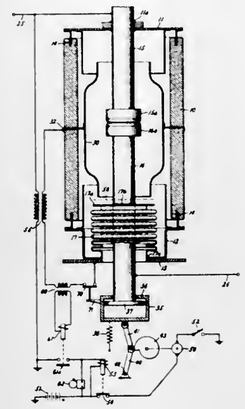


A circuit breaker is inserted in a high-current, high-voltage DC power line between the source and the load. The circuit breaker comprises a parallel connection of a transfer switch, an electronic switch, a first consecutive interrupter having a preferably nonlinear resistor in series therewith, and a second consecutive interrupter having a preferably nonlinear resistor in series therewith. Furthermore, a surge capacitor and its suppression resistance are serially connected in parallel around the second consecutive interrupter. When a fault occurs, the transfer switch is opened and is deionized during conduction of the electronic switch. Offswitching of the electronic switch causes current flow through the two parallel consecutive interrupters with their series resistances to decrease circuit current. During the period that the consecutive interrupters are sequentially opened, the electronic switch is conductive so that the consecutive interrupters can be deionized.

3,641,359
MONITOR CIRCUIT FOR VACUUM-TYPE ELECTRIC CIRCUIT INTERRUPTER

Orin P. McCarty, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 4, 1970, Ser. No. 95,107
Int. Cl. H01h *9/30*
U.S. Cl. 307—136 **8 Claims**

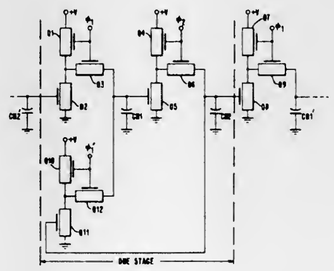


This application discloses a protective circuit for monitoring both loss of vacuum and contact wear in a vacuum-type electric circuit interrupter having separable contacts and a vapor shield surrounding the contacts. The shield is so located that a part fixed to the moving contact rod and normally spaced from the shield will closely approach or engage the shield as a result of contact wear. A monitor circuit including the rod-to-shield gap includes current responsive indication or control means.

3,641,360
DYNAMIC SHIFT/STORE REGISTER

Ying L. Yao, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,597
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 C **20 Claims**

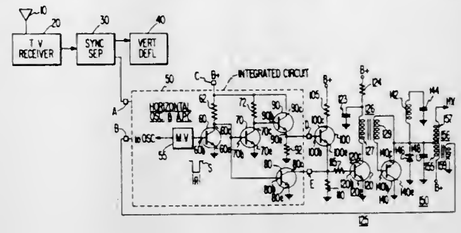


A dynamic shift register having storage capabilities. A regeneration circuit connected between the different sections of any stage (bit storage position) allows indefinite storage without shifting between stages. MOSFETS are used in a preferred embodiment and interelectrode capacitances are used to store data. Voltages on these capacitances are regenerated during store operation, rather than shifting the voltages in the direction of data shift.

3,641,361
PROTECTION CIRCUIT

Allen Leroy Limberg, Somerville, and Steven Alan Steckler, Clark, both of N.J., assignors to RCA Corporation

Filed Dec. 3, 1970, Ser. No. 94,841
Int. Cl. H02k *7/20*; **H03k** *5/08*
U.S. Cl. 307—202 **11 Claims**

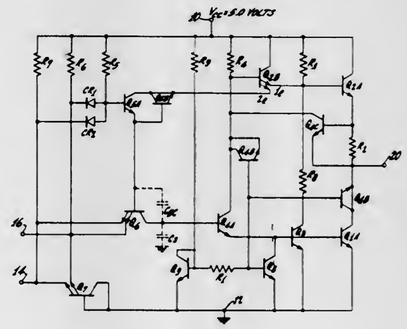


A protection circuit limits the collector current of a transistor employed as a clamp-to-ground stage in the event the collector terminal of the transistor is accidentally short circuited during conduction to a low-impedance voltage source. The protection circuit includes a transistor which has its base-emitter junction coupled across the base-emitter junction of the clamping transistor and has a collector resistor chosen to provide a saturation current for the protection transistor which holds the base-emitter junction voltage at a level which limits the collector current of the clamping transistor.

3,641,362
LOGIC GATE

Edward Bernard Gamble, Granada Hills, Calif., assignor to RCA Corporation

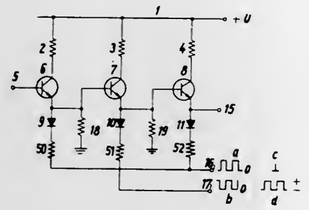
Filed Aug. 10, 1970, Ser. No. 62,399
Int. Cl. H03k *19/34*, *19/36*
U.S. Cl. 307—215 **10 Claims**



A logic circuit having a first multiemitter transistor each of whose emitters is connected to a different input terminal and whose collector is connected to a junction point. A second transistor, whose conduction is controlled by means of a plurality of diodes coupled between its base and a different one of the input terminals, has its emitter connected to the base of the first transistor. For one operating condition the emitter-to-base junctions of the first transistor as well as the diodes are reverse biased and the second transistor provides a high transient current followed by a lower steady state current, through the base-to-collector junction of the first transistor, into the junction point. For another operating condition at least one of the emitter-to-base junctions of the first transistor as well as at least one of the diodes are forward

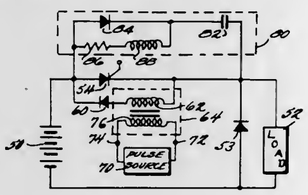
biased and a transient current is provided to the base of the first transistor which then draws its collector current out of the junction point.

3,641,363
SHIFT REGISTER
Gerhard Krause, Munich, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed Mar. 26, 1970, Ser. No. 22,884
Claims priority, application Germany, Mar. 27, 1969, P 19 15 700.7
Int. Cl. G11c *19/00*; H03k *23/00, 23/14*
U.S. Cl. 307—221 9 Claims



Shift registers using the charge-storage effect in individual semiconductors as data stores, including means for applying alternating signals to step the data forward.

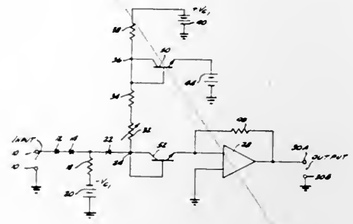
3,641,364
SCR CHOPPER CIRCUIT
Wally E. Rippel, Ithaca, N.Y., assignor to Electric Fuel Propulsion, Incorporated, Ferndale, Mich.
Filed July 18, 1969, Ser. No. 843,032
Int. Cl. H03k *17/00*
U.S. Cl. 307—240 22 Claims



An electrical circuit for controlling the energy supplied to a load from an energy source whereby an electronic switch such as an SCR which conducts the energy from the source to the load is driven alternately into nonconduction and conduction. Connected to the electronic switch are the secondary of a transformer and a diode whose turnoff time exceeds the turnoff time of the electronic switch. When a pulse of a given polarity is supplied to the primary of the transformer, then the diode begins conducting current so that when a pulse of the opposite polarity appears across the secondary of the transformer, the diode conducts current in the reverse direction, thus reverse biasing the electronic switch. When the diode recovers, recovery of the electronic switch also takes place.

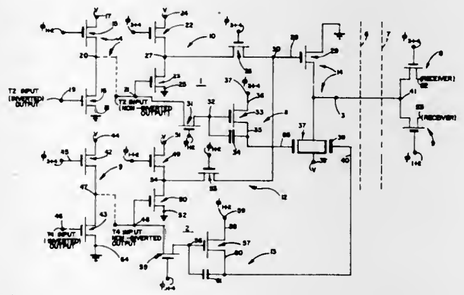
3,641,365
PRECISION FAST ANALOG SWITCH
Jon H. Grant, Diamond Bar, and Walter D. Bales, Garden Grove, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed May 15, 1970, Ser. No. 37,788
Int. Cl. H03k *17/00*
U.S. Cl. 307—241 9 Claims

A precision fast electronic switch is provided in an arrangement wherein, in the absence of a switching signal to the circuit, current flows from a source in one path through one diode to a sink. In the presence of a switching signal the one diode is blocked and the current flows through another



diode, connected to said path, to the output. The value of the current which is switched is maintained at a desired reference value by providing the path with a third clamping diode which is connected to a reference voltage.

3,641,366
MULTIPHASE FIELD EFFECT TRANSISTOR DRIVER MULTIPLEXING CIRCUIT
Ted Y. Fujimoto, Santa Ana, Calif., assignor to North American Rockwell Corporation
Filed Sept. 14, 1970, Ser. No. 71,702
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 2 Claims

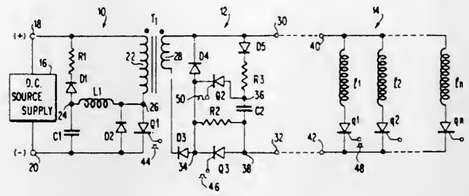


From one to four field effect transistor driver circuits on one semiconductor chip having phase related inputs are gated to a multiplexed output at a different phase times of a multiphase clock cycle and are sampled by corresponding receiver circuits on a different semiconductor chip during the same phase. While one output is being sampled during one phase, an input to another driver is being isolated prior to being gated to the output. The gating sequence is synchronized by a plurality of multiphase clock signals implementing the multiphase clock cycle.

3,641,367
PULSE DRIVING CIRCUIT FOR INDUCTIVE LOAD
Brandt M. Griffing, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,232
Int. Cl. H03k *17/00, 17/56*
U.S. Cl. 307—252 J 6 Claims

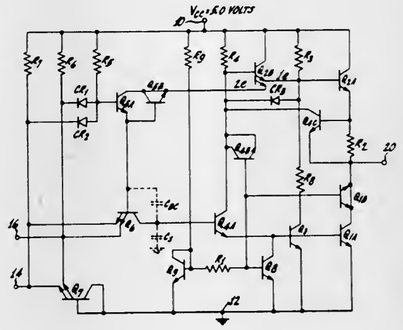
A circuit for providing constant width driving pulses to a plurality of selected print hammer coils from a single DC source. An RC circuit is used to commutate a controlled

rectifier in series with the hammer coils in order quickly to terminate the current through each coil after actuation of its



print hammer, thereby providing for high-speed operation of the hammers.

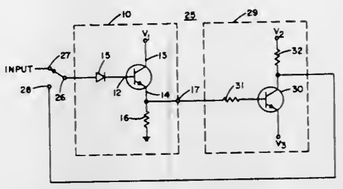
3,641,368
LOGIC CIRCUIT WHICH TURNS ON AND OFF RAPIDLY
Edward Bernard Gamble, and Ramon Hess Aires, both of Los Angeles, Calif., assignors to RCA Corporation
Filed Aug. 10, 1970, Ser. No. 62,515
Int. Cl. H03k *17/00, 19/08*
U.S. Cl. 307—254 15 Claims



A controllable shunt current path such as the conducting emitter-to-collector path of a first transistor, is connected in shunt with the emitter-to-base path of a conducting output transistor. In response to a turnoff signal for the output transistor, the first transistor is caused to conduct more heavily in a direction to stop forward conduction of the emitter-to-base diode of the output transistor and in this way to speed up its turnoff. Other features of the circuits illustrated include overload current protection and means for speeding up the discharge of any charge present at an output terminal upon switching of an output transistor from a nonconducting to a conducting condition. One of the circuits illustrated also includes means for ensuring proper sharing of current drive to a pair of transistors and means for ensuring "soft" saturation of the output transistor.

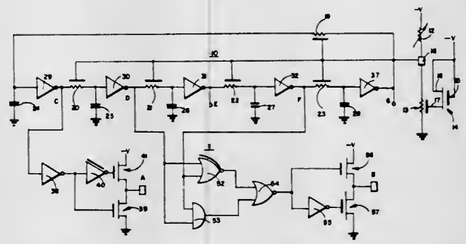
3,641,369
SEMICONDUCTOR SIGNAL GENERATING CIRCUITS
Clarence Robert Wallingford, Chicago, Ill., assignor to Hazeltine Research, Inc.
Original application Mar. 20, 1968, Ser. No. 714,663, now Patent No. 3,588,544. Divided and this application July 23, 1970, Ser. No. 57,738
Int. Cl. H03k *5/00*; H03b *5/12*
U.S. Cl. 307—260 6 Claims

Disclosed are semiconductor circuits which are capable of operating as oscillators or as combined oscillators and trig-



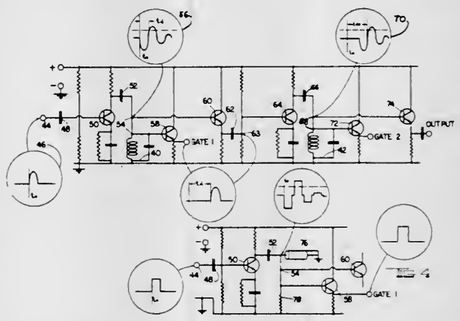
transistor capacitance in such a manner that external discrete capacitors are not required to provide such operation.

3,641,370
MULTIPLE-PHASE CLOCK SIGNAL GENERATOR USING FREQUENCY-RELATED AND PHASE-SEPARATED SIGNALS
Gary Lee Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed June 15, 1970, Ser. No. 46,095
Int. Cl. H03k *17/28*
U.S. Cl. 307—269 7 Claims



An oscillator generates two signals having a fixed phase separation and a frequency relationship. The signals are combined for producing double- and single-width multiple-phase clock signals having a predetermined phase separation and a frequency relationship.

3,641,371
DELAY SYSTEM FOR REGENERATING PULSE PERIODICALLY DURING DELAY INTERVAL
Victor F. Cartwright, 130 N. Janet Place, Fullerton, Calif.
Filed June 12, 1970, Ser. No. 45,618
Int. Cl. H03k *17/26, 17/28*
U.S. Cl. 307—293 4 Claims

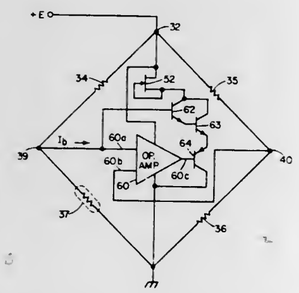


A time delay system capable of delaying very fast pulses for a relatively long time without appreciable distortion by

regenerating the pulse periodically during the delay interval. Each regenerated pulse is used to regenerate the next pulse. In preferred form, regeneration is accomplished in amplifiers or "switches" which are polarity sensitive. The pulse to be delayed is applied to a delay circuit which reflects it back to the input terminal with inverted polarity. The regenerating "-switch" is responsive to the reflection to initiate a new pulse.

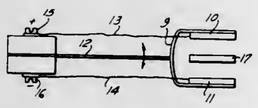
Two delay circuits are shown. One employs a delay line and utilizes the inherent broad band characteristics of such lines to reproduce rectangular pulses after a delay. The other employs a tuned circuit in a narrow band delay system.

3,641,372
TEMPERATURE CONTROLLED MICROCIRCUITS
Norman Green, Timonium; Harold M. Greenhouse, Baltimore; William C. Vergara, Towson, and Robert L. McGill, Jr., Fallston, all of Md., assignors to The Bendix Corporation
Filed Feb. 12, 1970, Ser. No. 10,962
Int. Cl. H03k *17/00*
U.S. Cl. 307—310 **14 Claims**



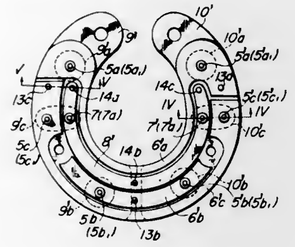
A circuit for stabilizing the temperature of a microcircuit substrate at a constant value includes a sensor in the form of a resistance bridge comprised of both positive and negative temperature coefficient resistors, a control circuit connected across a first set of bridge diagonal points which is powered by the bridge unbalance voltage across these points, and a heater circuit which optionally includes a current limiting device and which is connected across a second set of bridge diagonal points, the heater circuit being controlled by action of the control circuit.

3,641,373
ELECTROSTATIC SYSTEM FOR GENERATING PERIODICAL MECHANICAL VIBRATIONS
Franz Elkuch, Schellenberg, Liechtenstein, assignor to Etablissement Procor, Vaduz, Liechtenstein
Filed Oct. 2, 1969, Ser. No. 863,056
Claims priority, application Switzerland, Oct. 8, 1968, 14948/68
Int. Cl. H02h *1/00*
U.S. Cl. 310—6 **1 Claim**



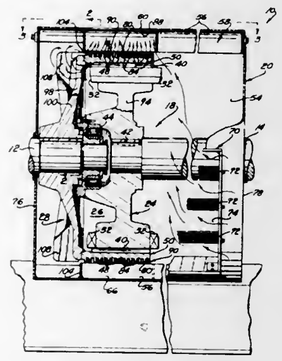
The present invention concerns means for generating periodical mechanical vibrations by means of electric energy, and deals with a greatly simplified and efficacious swing system, which produces mechanical vibratory movements, which system dispenses with any active elements or components except for an energy or current source or cell, the energy losses produced by ohmic resistances in the system being reduced to a minimum and resulting in a high degree of efficiency, reliability and accurate performance.

3,641,374
RECTIFYING MEANS FOR THREE-PHASE ALTERNATING GENERATORS FOR USE IN VEHICLES AND OTHER TRANSPORT FACILITIES
Suguru Sato, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Jan. 27, 1971, Ser. No. 110,044
Claims priority, application Japan, Mar. 11, 1970, 45/23542
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 D **1 Claim**



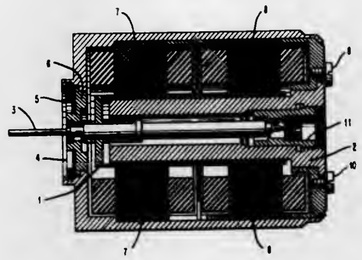
An extremely compact rectifying means capable of providing increased power is provided, which comprises rectifying elements sealed between a printed wiring plate having a neutral lead line and cooling fins, and in which two additional rectifying elements connected to the neutral point are sealed in addition to the conventional six rectifying elements.

3,641,375
TORQUE-TRANSMITTING DEVICE
William H. Moyer, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Sept. 4, 1970, Ser. No. 69,702
Int. Cl. H02k *49/04*
U.S. Cl. 310—105 **18 Claims**



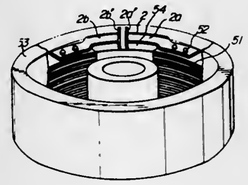
An electromagnetic torque-transmitting device or coupling includes a housing for enclosing a drum which extends around and is magnetically coupled with a rotor. The housing defines a chamber which is pressurized with a suitable cooling medium, such as air, which flows around the coupling to cool it during a transmission of torque between the drum and rotor. The pressurized cooling air flows into pockets spaced around the drum and impinges against the drum at circumferentially spaced locations around the drum while passing under a baffle to an exhaust pocket. The cooling air is then exhausted to the atmosphere through conveniently located openings. A plurality of circumferentially extending grooves are formed in an outer wall of the drum to further promote a transfer of heat from the drum to the cooling air.

3,641,376
SINGLE DRAG CUP MOTOR GENERATOR
Douglas J. Livingston, West Chester, Pa., assignor to Harowe Servo Controls Inc., West Chester, Pa.
Filed Jan. 7, 1970, Ser. No. 1,211
Int. Cl. H02k *47/20, 17/42*
U.S. Cl. 310—113 **5 Claims**



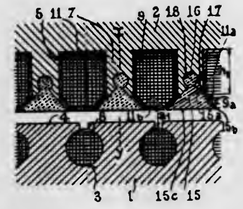
In a miniature motor generator, a drag cup is the rotating electrically conducting element for both the motor and the generator. The drag cup rotates about an iron core. Stator windings are energized to drive the cup as a motor. A second stator winding generates a signal representing rotational speed. In order to prevent interaction and cross coupling between the motor and the generator, the motor stator is wound with a different number of poles than the generator stator.

3,641,377
IGNITION TIMING PULSE GENERATOR FOR A CONTACTLESS IGNITION SYSTEM OF INTERNAL COMBUSTION ENGINES
Minoru Fujii, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Mar. 20, 1970, Ser. No. 21,396
Claims priority, application Japan, May 15, 1969, 44/37867; May 28, 1969, 44/49471; July 3, 1969, 44/63293
Int. Cl. H02k *21/22*
U.S. Cl. 310—153 **9 Claims**



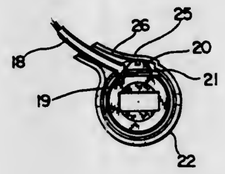
An ignition timing pulse generator for use in a contactless ignition system of an internal combustion engine which includes a magnetodynamo. The pulse generator includes a pair of auxiliary timing poles secured to main magnet poles of the magnetodynamo and disposed to oppose each other and to thereby define an airgap therebetween. Pickup means are also provided and are mounted on the stator of the magnetodynamo with the pickup means including a pickup core shielded by at least one magnetic shielding member and a first pickup coil wound on the pickup core. A second pickup coil is wound on said magnetic shielding member with the first pickup coil being differentially connected to the second pickup coil to produce an ignition timing pulse substantially without any disturbance from stray fields in response to passage of the airgap between the pair of timing poles when the rotor is rotated.

3,641,378
ARRANGEMENT FOR SECURING CONDUCTORS OF STATOR WINDING OF DYNAMOELECTRIC MACHINE
Jacques LeHenaff, Paris, France, assignor to Compagnie Electro-Mecanique, Paris, France
Filed May 22, 1970, Ser. No. 39,760
Claims priority, application France, May 29, 1969, 6917390
Int. Cl. H02k *3/48*
U.S. Cl. 310—214 **6 Claims**



An arrangement for securing the conductor bars of a distributed winding in place on the magnetic circuit of the stator element of a dynamoelectric machine is constituted by spaced-apart insulating pieces each including a heel portion engaged in a complementary configured recess in the stator iron and two tapered lateral projections which bear against the conductor bars only along tapered sides of the latter. The central surface portion of each conductor bar oriented towards the gap between the stator and rotor elements is left exposed. The advantage of the arrangement is that it enables the conductor bars to be brought closer to the rotor.

3,641,379
BRUSH LEAD RETAINER
Stephen L. Vick, Towson, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Sept. 15, 1970, Ser. No. 72,373
Int. Cl. H02k *5/14*
U.S. Cl. 310—239 **9 Claims**

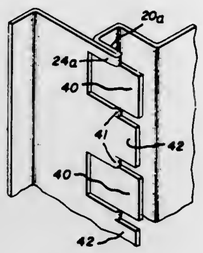


A heavy-duty portable electric tool such as a hammer which includes a universal motor and improved brush lead retaining means. A brush is held adjacent a commutator by means of a conductive brush holder and a conductive lead is attached to the brush holder by means of a fastener. An insulating ring is positioned to prevent the fastener from loosening. The ring also includes a channel-shaped extension which retains the lead and prevents it from moving outwardly toward the housing of the tool if the lead should break loose from the fastener.

3,641,380
ANODE ELECTRODE FOR ELECTRON DISCHARGE DEVICE

Joe F. Stephens, Owensboro, Ky., assignor to General Electric Company

Filed Feb. 24, 1970, Ser. No. 13,576
Int. Cl. H01j 19/36
U.S. Cl. 313—39 5 Claims

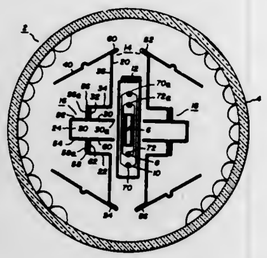


An anode electrode for an electron discharge device is provided having inwardly projecting fin means to electrostatically extend the anode toward the grids. The fin means are arranged to provide dual paths of heat flow from the fins to both the flange portions and the sidewalls of the anode electrode.

3,641,381
ELECTRON DISCHARGE DEVICE

Othmar E. Ringeman, St. Meinrad, Ind., assignor to General Electric Company

Filed Feb. 24, 1970, Ser. No. 13,574
Int. Cl. H01j 19/36
U.S. Cl. 313—40 3 Claims



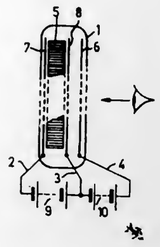
An electron discharge device is provided having an anode comprising portions each having two or more inwardly extending fins to electrostatically extend the anode toward the interior electrodes. Each fin has a separate and independent direct heat path to an external heat radiator. Heat generated at the fins is thus conducted through angularly displaced thermal paths from the electrodes toward the envelope whereby the heat can be radiated evenly throughout the envelope.

3,641,382
CHANNEL INTENSIFIER GLASS COMPOSITIONS

Derek Cregeen, Concord, N.H., assignor to U.S. Philips Corporation

Filed July 22, 1969, Ser. No. 843,745
Claims priority, application Great Britain, July 31, 1968, 36,567/68
Int. Cl. H01j 43/08; H01b 1/08; C03c 3/04
U.S. Cl. 313—105 6 Claims

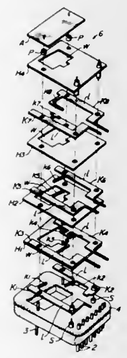
An electronic image intensifier employing a resistive matrix in the form of a plate the major surfaces of which constitute the input and output faces of the matrix, a conductive layer on the input face of the matrix serving as an input electrode, a separate conductive layer on the output face of the matrix serving as an output electrode, and elongated channels each providing a passageway from one face of the assembly consisting of the matrix and input and output electrodes to the other face of the assembly. The distribution and cross section of the channels and the resistivity of the matrix are such that the resolution and electron multiplication characteristic of any one unit area of the device is sufficiently similar to that of any other unit area for image purposes. The matrix consists of a lead-bismuth silicate glass which has been reduced in hydrogen so that the channel surfaces have a conductive reduced oxide layer with a resistivity in the range 10^{10} to 10^{14} ohms/square.



3,641,383
GLOW DISCHARGE TUBE FOR CODE DISPLAY

Hazime Tagawa, Takatsuki-shi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Sept. 22, 1969, Ser. No. 859,819
Claims priority, application Japan, Sept. 25, 1968, 43/70664
Int. Cl. H01j 61/66
U.S. Cl. 313—109.5 5 Claims

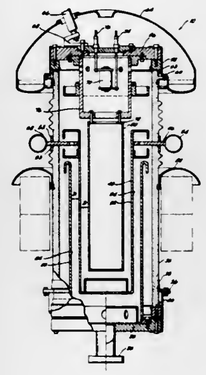


A glow discharge tube for code display in which a plurality of cold cathodes in the shape of a plate comprising a segmented portion forming a luminous code and a lead connected to that portion are piled up with a window-frame-shaped insulating plate interposing between each layer to construct a cold cathode structural body and interposing the said lead between the said insulating plates in order to prevent a negative glow at the said lead portion.

3,641,384
SWITCHING DEVICE

Roger E. Lund, Cottage Grove, Minn., and Gunter A. G. Hofmann, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 16, 1970, Ser. No. 19,563
Int. Cl. H01j 1/50
U.S. Cl. 313—161 6 Claims

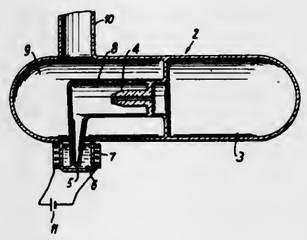


The switching device has three spaced electrodes with a gas-filled annular space therebetween. When an axial magnetic field above a certain value is applied to the gas-filled space, and after initiation, cascading ionization occurs for conduction. The electrodes can be electrically serially connected for higher holdoff voltage during nonconduction, or can be electrically connected in parallel for higher current capacity in the same envelope.

3,641,385
GAS-FILLED DISCHARGE TUBE WITH GAS-REFILLING MEANS

Taizo Oikado, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed June 24, 1970, Ser. No. 49,380
Claims priority, application Japan, June 30, 1969, 44/52065
Int. Cl. H01j 17/26, 61/24
U.S. Cl. 313—175 2 Claims

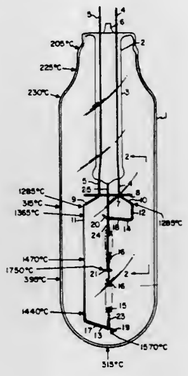


A unit for supplying gas to a gas-filled discharge tube includes a gas container and a reservoir in communication therewith. The reservoir has an outlet portion and valve means are provided at the reservoir outlet to selectively place the reservoir in and out of fluid communication with a chamber. The latter in turn communicates with the interior of the discharge tube.

3,641,386
TUNGSTEN HALOGEN LAMP

Emery G. Audesse, Salem; Robert M. Griffin, South Hamilton; Alexander Tartakoff, Beverly, and John J. Gutta, Hamilton, all of Mass., assignors to Sylvania Electric Products, Inc.

Filed July 23, 1970, Ser. No. 57,556
Int. Cl. H01j 61/26
U.S. Cl. 313—179 5 Claims

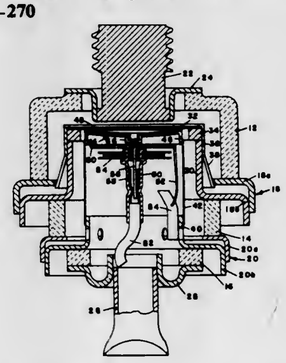


A tungsten halogen lamp in hard glass in which the temperature gradient in the envelope is such that the top of the latter is at about 200° C. and the remainder of the lamp hotter, so that the halogen will not only keep the glass bulb clear by means of the usual regenerative halogen cycle, but will also react with impurities in the tungsten to condense them out nonregeneratively on the top of the envelope, the lamp being operated base up. To insure the proper operation of the halogen cycle, the supporting conductors for the filament are made small enough to operate at incandescence at the designed current, in contrast to the much larger diameter used for supporting conductors in ordinary incandescent lamps, where the wires operate comparatively cool and have low resistance and voltage drop. The higher voltage drop in the incandescent supporting conductor is compensated for by designing the filament coil to operate at its desired temperature at lower voltage in an atmosphere of bromine and krypton.

3,641,387
PRESTRESSED CATHODE STRUCTURE FOR ELECTRON DISCHARGE DEVICES

Herbert L. Sholl, East Norwalk, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

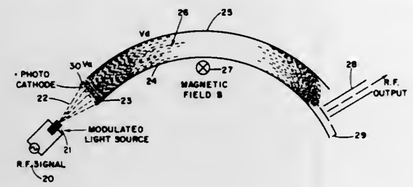
Filed Apr. 2, 1970, Ser. No. 25,130
Int. Cl. H01j 1/94, 19/48
U.S. Cl. 313—270 8 Claims



A planar-type cathode for electron discharge devices which is in relatively close-spaced relation with another elec-

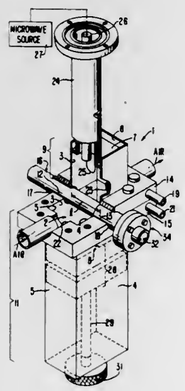
trode and which is provided with means for preventing bowing toward the electrode under thermal stresses.

3,641,388
MICROWAVE DELAY APPARATUS
Erwin F. Belohoubek, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 5, 1965, Ser. No. 493,275
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **5 Claims**



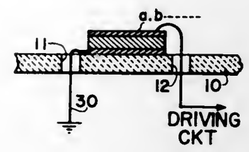
The microwave delay apparatus of this invention consists of an M-type travelling wave tube which employs a photocathode illuminated by a light beam amplitude modulated at the signal frequency as the apparatus for forming and injecting the modulated beam into the drift region. This arrangement permits a laminar beam filling the drift space to be launched into the interaction region where the crossed electric and magnetic fields occur. It eliminates the usual electron gun, its associated beam forming electrodes and the input coupler.

3,641,389
HIGH-POWER MICROWAVE EXCITED PLASMA DISCHARGE LAMP
William J. Leidigh, Belmont, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Nov. 5, 1969, Ser. No. 874,175
Int. Cl. H01j *7/46, 19/80*
U.S. Cl. 315—39 **9 Claims**



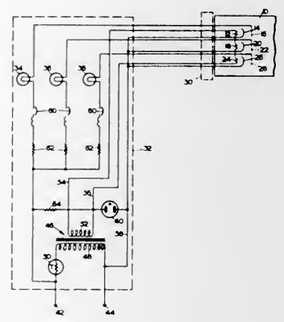
A high-power microwave plasma discharge lamp is disclosed. The lamp includes a ceramic tube filled with gas and closed at one end by a window transparent to the optical radiation output of the lamp. The ceramic tube extends through a cavity resonator excited with microwave energy for exciting a plasma discharge within the lamp.

3,641,390
SOLID-STATE LETTER DISPLAY DEVICE
Tadashi Nakamura, Ise-City, Japan, assignor to Ise Electronics Corporation, Ise-City, Japan
Filed June 5, 1969, Ser. No. 830,706
Claims priority, application Japan, July 9, 1968, 43/47619
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 **1 Claim**



A plurality of luminous diodes and a driving circuit therefor adapted to cause selected combinations of the luminous diodes to luminesce to display selected letters are formed on the same or different sides of a substrate and the assembly is encapsulated by a transparent molded protective coating. The driving circuit in the form of a diode matrix circuit is fabricated by the integrated circuit technique.

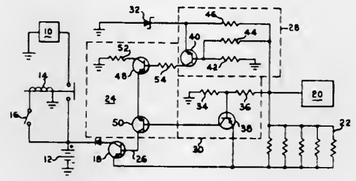
3,641,391
DEVICE FOR RESTORING CATHODE EMISSION IN CATHODE-RAY TUBE GUNS
Albert R. Badewitz, Vancouver, Wash., assignor to Beltron, Inc., Vancouver, Wash.
Filed June 6, 1969, Ser. No. 842,073
Int. Cl. H01j *9/50*
U.S. Cl. 316—28 **10 Claims**



The heater filaments of the cathode-ray guns of a color television picture tube are connected across the low-voltage secondary winding of a transformer, the primary of which is connected across the terminals of a conventional household alternating current supply through a thermistor to effect gradual increase of potential across the secondary winding. As the filament voltage increases to normal operating potential, the degree of intensity of the lamps indicates the relative electron emission of the cathodes. As the filament voltage increases above normal operating potential, the temperature of the filament and cathode are increased above normal to effect progressive removal of contaminating materials from the cathodes. The cathodes are connected to one terminal of the alternating current supply and the control grids are connected to the other terminal of the alternating current supply each through a dropping resistance, circuit breaker and indicator lamp, to produce a pulsating direct current which effects progressive drawing of fresh electron emissive material to the surface of the cathodes. This automatic progressive restoration of the cathode is evidenced by progressive

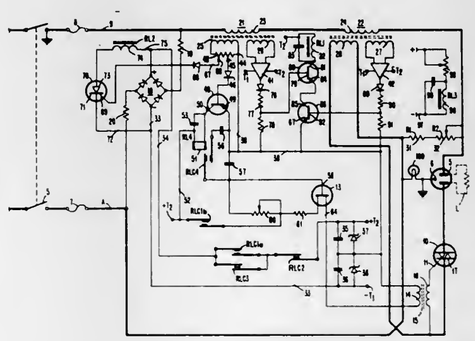
brightening of the lamps and when restoration of each cathode is completed, the associated circuit breaker opens automatically to terminate the treatment.

3,641,392
ELECTRICAL DEMAND PRIORITY CIRCUIT
William E. Coman, Newport, N.Y., assignor to The Bendix Corporation
Filed Mar. 23, 1970, Ser. No. 21,568
Int. Cl. H02h *7/09*
U.S. Cl. 317—13 R **4 Claims**



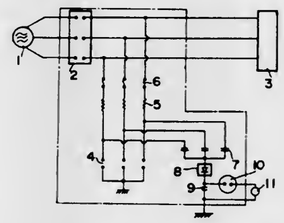
A circuit for controlling the provision of electrical energy to an accessory circuit in accordance with an established priority and the energy demands placed upon the remainder of the system by the other accessories powered therefrom is disclosed herein. The circuit includes a control transistor which provides an electrical interconnection between the vehicle bus bar and the accessory and its accessory battery. When the demands placed upon the remainder of the electrical circuit are high the control transistor limits or terminates the flow of energy to the high demand accessory portion of the circuit.

3,641,393
AUTOMATIC GROUND FAULT CIRCUIT INTERRUPTER
Douglas A. Florance, 1110 Hillside Drive, Vestal, N.Y.; Lloyd P. Nordholm, 1515 W. Addorra Drive, Phoenix, Ariz., and Stephen Foldes, 5 Riverside Drive, Binghamton, N.Y.
Continuation-in-part of application Ser. No. 828,836, May 29, 1969, now Patent No. 3,558,980. This application Jan. 25, 1971, Ser. No. 109,505
Int. Cl. H02h *3/28, 7/26*
U.S. Cl. 317—22 **3 Claims**



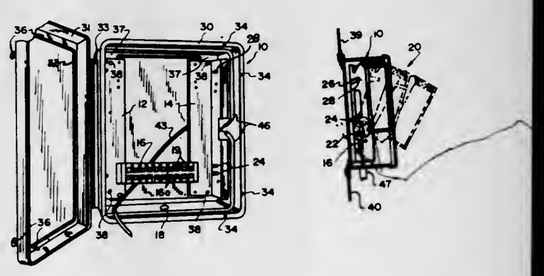
A power distribution system with automatic ground fault and overload protection is described. In series with the conductors of a powerline are placed current coils representing primary windings of a transformer connected in cancelling phase relation. The secondary windings of a transformer connected in cancelling phase relation. The secondary windings are energized by virtue of a predetermined reference current through one of the primary windings. The induced electromotive force due to reference current is cancelled by a ground fault leakage current. Switching means are actuated, effecting disconnection of the live conductor in accordance with excitation of the secondary windings.

3,641,394
VACUUM SWITCH ASSEMBLY
Kengo Hirose, Tokyo; Noboru Ishiwata, Yokosuka, and Todaomi Hukawa, Odaware, all of Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan
Filed May 19, 1970, Ser. No. 38,659
Claims priority, application Japan, May 22, 1969, 44/39453
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **5 Claims**



A polyphase vacuum switch assembly having a plurality of vacuum switching valves, a star-connected surge-absorbing unit connected in parallel with a load circuit, and a star-connected unbalance-detecting unit connected substantially in parallel with the surge-absorbing unit. The surge-absorbing unit repeatedly absorbs frequently occuring switching surge voltages while effecting emergency backup absorption of lightning surges with follow-current interruption by melting fuses incorporated therein. The unbalance-detecting unit detects the melting of the fuse and other unbalance of the load circuit.

3,641,395
APPARATUS FOR QUICKLY MOUNTING AND ELECTRICALLY CONNECTING COMPONENTS IN A HOUSING WITH CAMMING CONNECTOR ARRANGEMENT
Melvin S. Nation, Bensenville, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 28, 1970, Ser. No. 84,835
Int. Cl. H02b *1/04*
U.S. Cl. 317—117 **10 Claims**



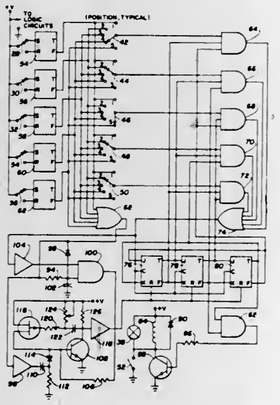
A housing for electronic equipment is provided with sidewall brackets that are secured in parallel relation with one another and with pins formed on the bracket to receive and guide a support rack containing electric or electronic components thereon. Rack receiving pins engage a first pair of slots on the support rack while guide pins engage a second pair of slots which are angularly formed in the support rack so that movement of the guide pins within the second slots

provides a cam action to urge the entire support rack into electrical connection with fixedly mounted quick connectors secured to a barrier strip which is secured within the housing. The quick connectors are trifurcated female connectors to receive male connectors during the inserting operation of the support rack, and the trifurcated connectors are resilient to allow for slight angular movement between the connectors during their interconnection.

3,641,396
ELECTRICALLY ACTUATED SWITCH COMBINATED OPERATING DEVICE FOR PERMITTING OPERATION OF LATCHES AND OTHER MECHANISMS

Dale J. Kossen, Orange; Richard W. Foster, Glendale, and Charles R. Benson, Costa Mesa, all of Calif., assignors to Alarm Lock Company, Inc., Los Angeles, Calif.

Filed May 21, 1970, Ser. No. 39,470
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 **14 Claims**

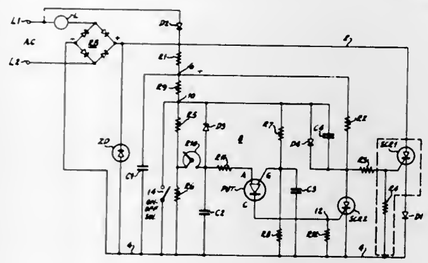


A plurality of normally off, pushbutton secure switches are located at an outer side and a same plurality of presettable, multiple positionable, secure switches are located at an inner side of a door guarded by a latch, with the first nonsecure switch being electronically connected through a set-reset flip-flop to the first position of all of the secure switches, the second nonsecure switch through a set-reset flip-flop to the second position of all of the secure switches and so forth. The output of each of the secure switches is connected to the input of an AND gate and the output of all of the AND gates are connected to the inputs of an OR gate, with the output of the OR gate and the other inputs of all of the AND gates being connected to an electronic counter formed by a plurality of toggle or clocked flip-flops. The output of the counter is connected through an AND gate of an electric solenoid circuit which is normally blocked from actuating the solenoid by a transistor, the transistor when driven to a conducting state permitting actuation of the solenoid. A timer circuit, including inverters, transistors, and AND gate, and other electronic components, is connected to the inputs of all of the secure switches through an OR gate and is also connected to the counter beginning an electronic timing upon predetermined correct momentary operation of one of the nonsecure switches to limit the total amount of time that the nonsecure switches can be correctly operated in proper sequence to finally permit energization of the electric solenoid. Thus, with the electrical circuitry including the electronic components, the secure switches may be set to any combination of multiple settings which determines the required sequence of operations of one or more of the nonsecure switches, the secure switches in their connection in the circuit requiring transmission therethrough in order or sequence. In the sequence of operation of the nonsecure switches does not follow the order of secure switches, the entire circuitry is reset to starting position including the timer circuit and if the time period of the timer circuit expires the entire circuitry is reset, thereby requiring exact operation of the nonsecure switches within a determined time period in order to energize the solenoid. The solenoid is mounted blocking operation of the latch guarding the door so that when the solenoid is energized, the latch can be operated and the door opened.

3,641,397
OFF-DELAY SOLID-STATE TIMER SYSTEMS

William H. Elliot, Whitefish Bay, and Isadore Small, III, Milwaukee, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Apr. 8, 1970, Ser. No. 26,527
Int. Cl. H01h *47/32, 47/18*
U.S. Cl. 317—141 S **13 Claims**

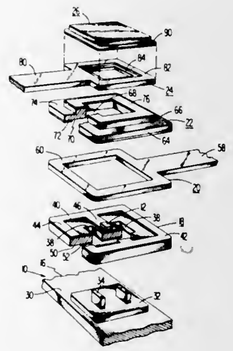


AC and DC solid-state timers for controlling loads such as electromagnetic relays or the like. The timer is supplied through a rectifier from the AC source and provides a time delay after opening of the control circuit; that is, when the control switch is moved to "off" position, the timer delays drop out of the relay for a predetermined, adjustable time interval. The timing can be cancelled at any time before relay dropout by moving the control switch back to "on" position and this will not affect relay energization. A second version works equally well on AC or DC power. A third version returns the load to the condition it was in before power failure when the power comes back on.

3,641,398
HIGH-FREQUENCY SEMICONDUCTOR DEVICE

William Vincent Fitzgerald, Jr., Basking Ridge, N.J., assignor to RCA Corporation

Filed Sept. 23, 1970, Ser. No. 74,591
Int. Cl. H01l *1/14*
U.S. Cl. 317—234 G **6 Claims**

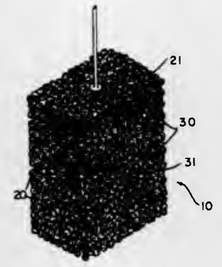


The device envelope comprises a plurality of members, some of which are electrically conductive, and others of which are electrically insulating, the various members being in stacked relationship, and some of the conductive members serving as device terminals. The various members are brazed to one another, the brazed joints on opposite surfaces of each of the insulating members not overlapping.

3,641,399
CLUSTER ANODE FOR ELECTROLYTIC CAPACITORS

Gerhart P. Klein, Manchester, and Ivan L. Wingood, Bedford, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed June 10, 1970, Ser. No. 44,927
Int. Cl. H01g *9/04*
U.S. Cl. 317—230 **15 Claims**

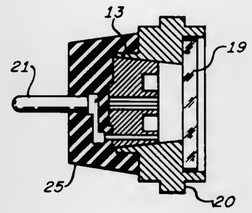


The application describes a film-forming metal anode preferably tantalum made from microporous droplets with interdroplet spaces that facilitate the penetration of the anodes by processing materials. Capacitors made from such anodes exhibit one or more of the following characteristics; improved DC leakage, lower DF, improved wide frequency characteristics.

3,641,400
LIGHT-EMITTING SEMICONDUCTOR RADIAL ARRAY

Eugene S. Rocks, Northport, and Thomas J. Poff, Dix Hills, both of N.Y., assignors to Sperry Rand Corporation

Filed July 16, 1970, Ser. No. 55,307
Int. Cl. H05b *33/00*
U.S. Cl. 317—234 R **13 Claims**

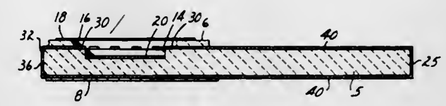


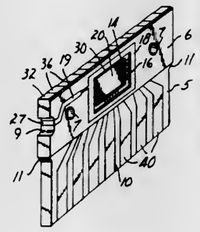
A light source including a radially disposed array of laser diodes each located in a centralized region between respective angularly spaced wedge-shaped electrically conductive sections which are arranged in a circularly symmetric configuration having a casing thereabout for holding the respective diodes and wedge sections in contacting relation. Electrical excitation is applied to the structure by means of contacts affixed to two of the wedge sections devoid of a diode therebetween whereby electrical series connections of the diodes is established to induce lasing action therein.

3,641,401
LEADLESS CERAMIC PACKAGE FOR INTEGRATED CIRCUITS

James E. Lynch, Chattanooga, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Continuation of application Ser. No. 843,460, July 22, 1969, now abandoned. This application Mar. 10, 1971, Ser. No. 123,050
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **7 Claims**



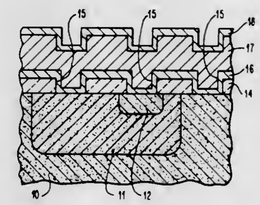


A plug-in leadless package for integrated circuits is provided having integral male contact members supported by ceramic backing. The package is adapted to connection by spring connectors or by soldering in mating female receptacles.

3,641,402
SEMICONDUCTOR DEVICE WITH BETA TANTALUM-GOLD COMPOSITE CONDUCTOR METALLURGY

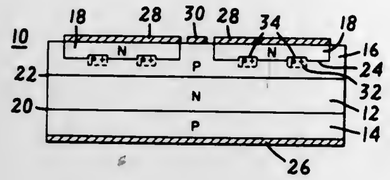
Martin Revitz, Poughkeepsie, and Francis E. Turene, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,203
Int. Cl. H01l *1/14*
U.S. Cl. 317—234 R **5 Claims**



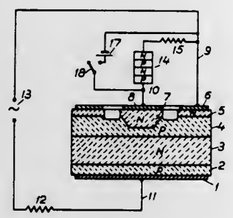
A deposited film of gold is adhered to a layer of silicon dioxide by a deposited film of Beta tantalum. After the gold is deposited on the Beta tantalum, a second film of Beta tantalum is deposited on the gold. This forms a composite sandwich adhering the gold to the silicon dioxide without decreasing the conductivity of the gold and allowing another layer of silicon dioxide to be adhered to the second film of Beta tantalum.

3,641,403
THYRISTOR WITH DEGENERATE SEMICONDUCTIVE REGION
Josuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 25, 1970, Ser. No. 41,130
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **6 Claims**



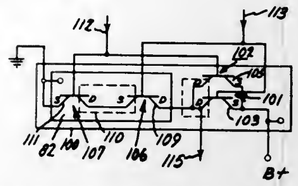
There is disclosed a thyristor provided with junctions formed such that predetermined portions of a cathode emitter junction and the adjacent portions of both regions forming that junction are highly doped to be degenerated thereby to introduce a multiplicity of centers of recombination. The thyristor is free from the disadvantages of the conventional shorted emitter-type thyristors and still retaining their advantages.

3,641,404
THYRISTOR CIRCUIT
Svedberg Per, Vallingby, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed June 5, 1969, Ser. No. 830,807
Claims priority, application Sweden, June 5, 1968, 7485/68
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **8 Claims**



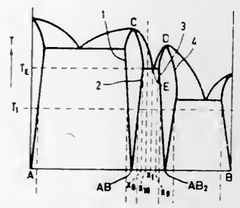
A thyristor circuit includes a first thyristor with first and second emitter layers and two base layers arranged therebetween. The first emitter layer is in two separate parts. The first part is provided with a connection for the load current of the thyristor. A second thyristor is connected between the second part of the first emitter layer and the load current connection to the first part. The breakover voltage in the forward direction of the series connection of the second thyristor and the partial thyristor composed of the second part of the first emitter layer and the other layers of the first thyristor is lower than the breakover voltage of the first thyristor. As a result, upon increase of off-state voltage the second thyristor breaks over first with the production of a simultaneous ignition over a large surface.

3,641,405
FIELD-EFFECT TRANSISTORS WITH SUPERIOR PASSIVATING FILMS AND METHOD OF MAKING SAME
Dale M. Brown, Schenectady, and William E. Engeler, Scotia, both of N.Y., assignors to General Electric Company
Original application Oct. 13, 1967, Ser. No. 679,957, now Patent No. 3,566,518, dated Mar. 2, 1971. Divided and this application Dec. 16, 1969, Ser. No. 885,660
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **9 Claims**



Improved semiconductor field-effect transistors have self-registration and electrical insulation. Conductivity-modified, surface adjacent source and drain regions are formed by diffusing dopants through gate-oxide layer. One embodiment features a conducting gate electrode which is formed from a thin deposited film. In this embodiment a large region of opposite-conductivity-type semiconductor is formed by diffusion through both conducting and oxide films. Complementary "N-channel" and "P-channel" devices may be formed on the same substrate by combining two separate embodiments. In such devices the original conductivity-type semiconductor is the base for one FET, while the large conductivity-modified-type region is the base for the other FET. Such modules may be interconnected to form integrated circuits capable of performing a variety of logical functions.

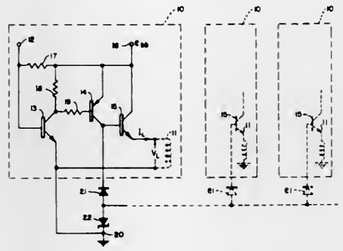
3,641,406
SEMICONDUCTOR HETEROJUNCTION DEVICE
Wouter Albers, and Jacobus Verberkt, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 3, 1969, Ser. No. 854,896
Claims priority, application Netherlands, Sept. 4, 1968, 6812544
Int. Cl. H01l *3/00*
U.S. Cl. 317—237 **5 Claims**



A semiconductor device including a semiconductor body having at least one junction between two semiconductor compounds which consist of same two elements, for example tin selenide and tin diselenide.

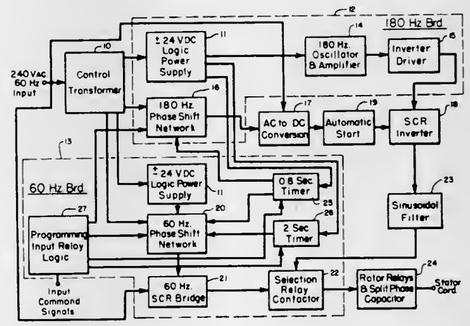
3,641,407
INDUCTOR SURGE PROTECTION FOR TRANSISTORS
Richard D. Scott, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Oct. 26, 1970, Ser. No. 84,041
Int. Cl. H02h *7/20*
U.S. Cl. 317—43 **17 Claims**

A circuit for clamping a voltage induced across an inductor utilizes a Zener diode to control the energy dissipation of the inductor through a transistor. A driver circuit for an inductor includes a Zener diode and an opposing diode connected across the series combination of the base-emitter junction of an emitter-follower output transistor and the inductor driven thereby. When the transistor is conducting, the inductor is energized and no current flows through the Zener diode. When the transistor is caused to cease conduction, the field of the coil of the electromagnet collapses, generating a voltage that is applied to the emitter of the output transistor. If the voltage thus generated is greater than the Zener breakdown voltage, the Zener diode breaks down and provides a bias current to the base of the output transistor to permit



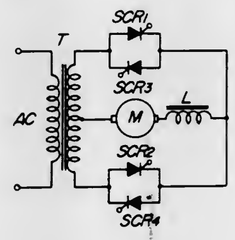
further conduction of the transistor and clamps the voltage at the emitter of the transistor to substantially the value of the Zener breakdown voltage. The voltage generated by the inductor is thus prevented from applying too high a voltage across the collector-emitter circuit of the output transistor, which might damage the transistor. The transistor continues to conduct during the dissipation of the energy stored in the inductor until the inductor is almost fully deenergized and can no longer generate a voltage equal to the Zener diode breakdown voltage. The output transistor is then rendered nonconductive, completing the deenergization of the inductor.

3,641,408
SOLID-STATE POWER SUPPLY SYSTEM FOR ROTATING ANODE X-RAY TUBES
Louis L. Fiocca, c/o Advanced Instrument Development Inc. 1001 North 25th Ave., Melrose Park, Ill.
Filed Aug. 24, 1970, Ser. No. 66,348
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **18 Claims**



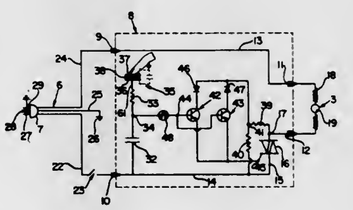
A compact solid-state power supply system for rotating anode X-ray tubes. The system includes an AC-to-DC solid state power converter which drives an inverter oscillator using silicon controlled rectifiers. The system provides means for operating the rotating X-ray tube anode at either low or high speeds with automatic braking when going from high speed to low speed. Means are also provided for automatically restarting the system in the event of paralysis of the inverter oscillator. Further, through the use of a novel programmed two-step driving signal, the desired operating speed is reached in a fraction of a second. The unit is compact and lightweight for optimum ease of installation.

3,641,409
CONTROL SYSTEM FOR DC MOTOR
Yutaka Maeda, and Kinya Hirata, both of Aichi-ken, Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan
Filed Oct. 8, 1969, Ser. No. 864,629
Claims priority, application Japan, May 23, 1969, 44/40374
Int. Cl. H02r *5/06*
U.S. Cl. 318—258 **4 Claims**



A control system for controlling a DC motor by controlling the conduction angle of controllable electric valves, wherein in order to discharge energy stored in a choke coil connected in series with the armature of the DC motor, the controllable electric valves including rectifiers are connected in parallel with the series circuit of the DC motor and choke coil for the control of unidirectional rotation, and a reverse parallel circuit consisting of controllable electric valves is connected in parallel with said series circuit for the reversible control.

3,641,410
TOUCH CONTROL FOR ELECTRICAL APPARATUS
Walter H. Vogelsberg, Carversville, Pa., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Apr. 30, 1970, Ser. No. 33,202
Int. Cl. H02p *7/00*
U.S. Cl. 318—345 **22 Claims**

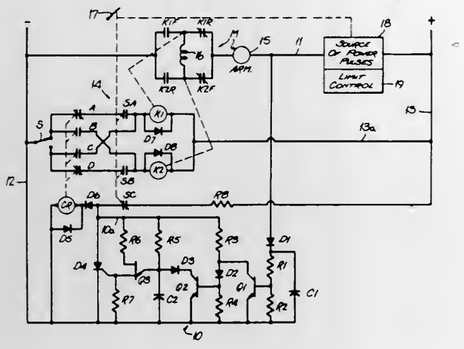


A touch control to energize the load of a tool or appliance. A timing circuit gates a triac ON to energize the load in response to a touch or touch device having no moving parts. The touch device in one embodiment is an impedance without moving parts and the value of which varies with the location of the operator's touch to vary the timing of the circuit and, correspondingly, to provide for variable energization of the load. The impedance can be a capacitor or a resistor. Another embodiment includes several impedances and several touch devices to provide for selective energization of the load of a predetermined extent.

3,641,411
DYNAMIC AUTOMATIC BRAKING FOR TRUCK

Robert V. Nemiroff, Philadelphia, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Sept. 20, 1967, Ser. No. 669,029
Int. Cl. H02p *3/06*
U.S. Cl. 318—373 12 Claims

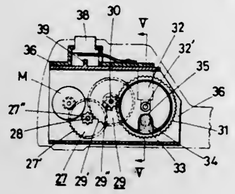


A dynamic braking system utilizing a switch that is operated by the accelerator of the truck, and that acts through a relay to move contacts that electrically reverse the traction motor of the truck when the accelerator moves to neutral position. The traction motor is driven by pulsating power that is applied also when the accelerator is in neutral position so as to brake the truck. Pulse limit means control the motor current while braking, and permit an increase in the pulse duty cycle when the truck substantially comes to rest and the braking effect ceases. The duty cycle, upon reaching a certain value, acts through the charging of a capacitor to operate transistors forming parts of a control circuit. That causes a silicon controlled rectifier to bypass the relay, causing the motor reversing contacts to return to a normal position. The accelerator while in neutral holds further contacts open so as to prevent a movement of the truck when the reversing contacts move to normal position.

3,641,412
MOTOR CONTROL CIRCUIT FOR PAD HOLDER

Chusaku Hayashi, Tokyo, Japan, assignor to Hayashi Seisakusho Co., Ltd., Sumida-ku, Tokyo, Japan

Filed Oct. 28, 1970, Ser. No. 84,669
Claims priority, application Japan, June 15, 1970, 45/59334
Int. Cl. G05d *3/06*
U.S. Cl. 318—470 4 Claims

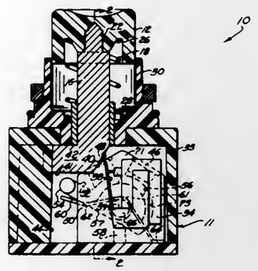


A writing pad holder is disclosed which incorporates an automatic feed control mechanism for feeding a length of pad from its roll, said mechanism including an electrical switch operable to start and stop a drive motor, said switch being associated with a switching gear and adapted to close during a full cycle of revolution of the switching gear.

3,641,413
PHOTOELECTRIC MOTOR CONTROL

Frederick F. Ohntrup, Plymouth Meeting, Pa.; John P. Truemper, West Helena, and Billy C. Smith, Forrest City, both of Ark., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Dec. 16, 1970, Ser. No. 98,789
Int. Cl. H02p *7/14*
U.S. Cl. 318—480 10 Claims

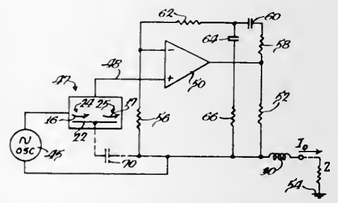


A control for an electric motor for producing a first control signal for controlling the speed of the motor and a second control signal for controlling the direction of rotation of the motor includes a pair of photocells connected in series across a power supply, a light source for illuminating the photocells, a movable mask for controlling the intensity of illumination on each of the photocells, a pair of switches and a pair of actuator members one of which is associated with each of the switches. An output terminal is connected between the series-connected photocells for producing the first control signal, the magnitude of which controls the speed of the motor, and is dependent upon the resistance of the photocells and hence the intensity of illumination acting thereon. The switches produce the second control signal. Initial movement of one of the actuating members effects activation of its associated switch to thereby produce the second control signal and further movement of the actuating member effects movement of the mask to thereby control the intensity of illumination acting on the photocells so as to control the magnitude of the first control signal. Thus, movement of one of the actuating members controls the direction of rotation of the motor associated with the control and the magnitude of movement of the actuating member controls the speed of the motor.

3,641,414
TRANSDUCER SYSTEM WITH FLOATING INPUT CIRCUIT AND CONSTANT CURRENT OUTPUT ELECTRONICS

Burton J. Thompson, Mount Lake Terrace, and Melvin O. Eide, Bellevue, both of Wash., assignors to United Control Corporation

Filed Oct. 16, 1970, Ser. No. 81,474
Int. Cl. G05b *1/06*
U.S. Cl. 318—662 11 Claims

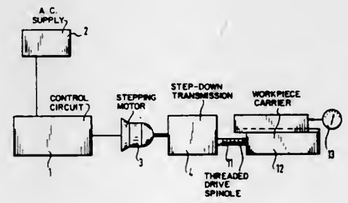


A servoed transducer system uses differential sensing capacitors to detect the movement of a pivoted seismic mass. Electrostatic forces across the sensing capacitors are reduced by electrically floating the capacitors and using stray capacitance to a torque coil on the seismic mass to complete a pickoff sensor and detector circuit which generates an error signal in response to movement of the seismic mass. A servoamplifier maintains a constant current through the torque coil for a fixed error signal in order to rebalance the seismic mass.

3,641,415
OPEN-LOOP STEPPING MOTOR CONTROL CIRCUIT FOR A MACHINE TOOL

Ernst A. Weinz, Auf der Bliz, Idar-Oberstein, Germany

Filed Nov. 14, 1969, Ser. No. 876,656
Claims priority, application Germany, Nov. 22, 1968, P 18 10 264.2
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 1 Claim

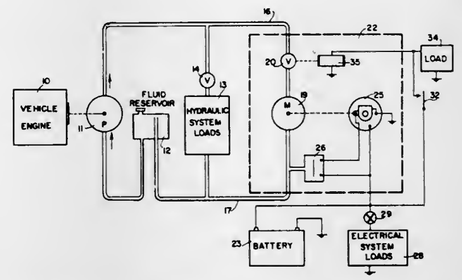


A tool or workpiece slide on a machine tool is advanced in uniform steps by an interruptor in the energizing circuit of the motor driving the slide. A counter which counts the steps stops the advancing movement of the slide after a desired movement of the tool or workpiece. The counter may be set manually. The invention resides in features of the motor circuit and associated controls.

3,641,416
HYDRODYNAMIC CHARGING SYSTEM

James A. Riff, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 8, 1969, Ser. No. 864,648
Int. Cl. H02j *7/14*
U.S. Cl. 320—61 5 Claims

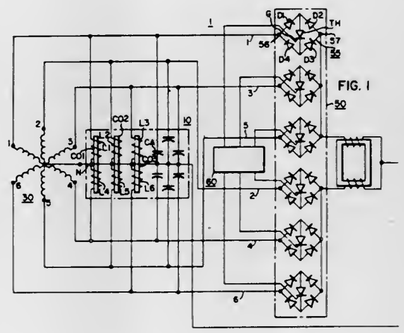


The hydraulic power source of a motor vehicle for supplying hydraulic power to operate a power steering mechanism or other hydraulic equipment of the vehicle is also utilized to drive a hydraulic motor, which in turn is coupled to an alternator through a direct mechanical drive, thereby eliminating the driving belt normally utilized to operate the alternator of the vehicle. The alternator operates as a current source to charge the vehicle battery. The hydraulic system provides sufficient pressure to drive the alternator at its full output even for an idling engine. When electrical power is not required by the system, the fluid supply powering the motor which drives the alternator may be shut off automatically, thereby extending the system life.

3,641,417
INPUT FILTER CIRCUIT FOR CYCLOCONVERTER APPARATUS

Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1970, Ser. No. 72,392
Int. Cl. H02m *1/12, 5/30*
U.S. Cl. 321—7 5 Claims

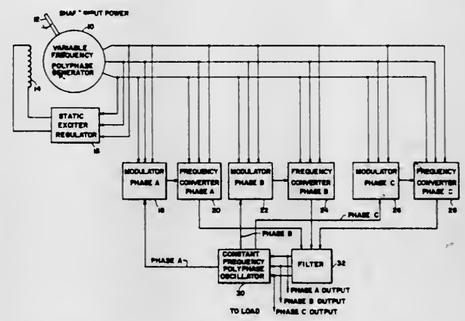


The invention relates to an electrical filter circuit operatively coupled between the output of a polyphase power source exhibiting measurable impedance and the inputs of a cycloconverter apparatus; the filtering circuit including coupled inductors connected between phases of the power source to shunt the unwanted frequency components generated by the cycloconverter apparatus in order to decrease the distortion of the terminal voltage of the polyphase power source, and to improve the input power factor of the cycloconverter.

3,641,418
FREQUENCY CONVERSION SYSTEM

David L. Plette, Waynesboro, Va., assignor to General Electric Company

Filed Mar. 21, 1966, Ser. No. 536,149
Int. Cl. H02m *5/16, 5/30*
U.S. Cl. 321—7 36 Claims



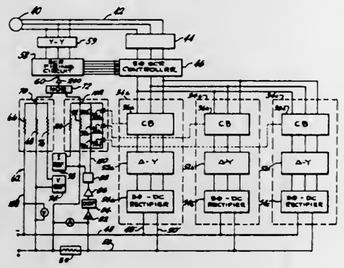
A power conversion system including a static cycloconverter for converting a varying input frequency signal to an output signal of constant frequency. The cycloconverter consists of a plurality of pairs of static switching devices such as

silicon-controlled rectifiers which are selectively triggered into conduction to produce an output wave of the desired constant frequency. The varying input frequency signal is applied to the SCRs to furnish the supply voltage for the anode-cathode path. In addition, a reference voltage of the desired output frequency is applied along with the varying input frequency signal to a modulator for providing firing or triggering pulses for the SCRs as a function of the relative amplitudes of the reference and input signal. The modulator thus produces triggering pulses which vary in time with the signals to provide an average current which varies sinusoidally at the same frequency as the reference voltage.

3,641,419
MODULAR POWER SUPPLY WITH PLURAL RECTIFIER HOUSINGS BACK OF WHICH CONTAINS RECTIFYING DEVICES, A TRANSFORMER AND FAN MEANS

Michael A. Koltuniak, Warren, and Thomas N. Urquhart, Troy, both of Mich., assignors to Controlled Power Corporation, Farmington, Mich.

Filed Feb. 6, 1970, Ser. No. 9,331
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 C **10 Claims**



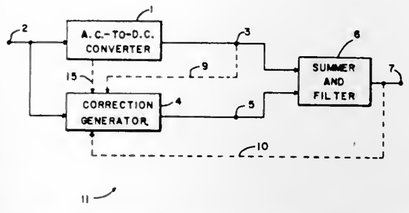
A modular power supply for converting three-phase alternating current to direct current for high kva applications. A plurality of individual rectifying modules are all fed through a common three-phase SCR controller. Each module in turn comprises a delta-wye transformer and a three-phase, full wave diode rectifying circuit. An individual cooling fan is packaged with the transformer and rectifying circuit of each module in a confined package. The transformer in each module is fed from the common SCR controller to an individual circuit breaker associated with each module but separately packaged in the module bank immediately adjacent its associated module. The DC output from each module is collected by a common bussing arrangement and a particular automatic voltage-current regulator is provided to control the duty cycle of the common SCR controller. The modules are arranged in a compact bank by stacking the modules in vertical columns and providing a plurality of columns side by side.

3,641,420
HARMONIC-INSENSITIVE AC-TO-DC CONVERTER

Peter L. Richman, 22 Barberry Road, Lexington, Mass.

Continuation of application Ser. No. 743,442, July 9, 1968. This application Mar. 12, 1970, Ser. No. 19,079
Int. Cl. H02m *1/12*
U.S. Cl. 321—9 **26 Claims**

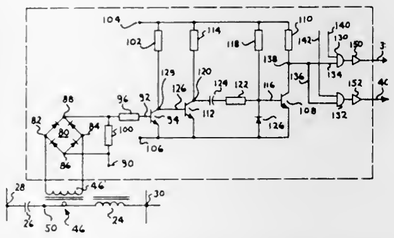
A system for converting a time-varying periodic, complex electrical input wave to DC with reduced response to selected harmonic distortion components of the wave, the system including a conventional AC–DC converter and means for selectively altering the gain of the converter between predetermined phase angles with respect to the fundamental of the wave. Gain alteration is typically effected by a second AC–DC converter having a different characteristic sensitivity to the distortion components than the first converter. The outputs of the two converters are scaled and then summed, the scaling factors being dependent on the harmonics the effect of which is intended to be reduced. One converter is an average-sensing device, the other being a peak-To-peak or peak-averaging sensing device.



3,641,421
COMMUTATION CONTROL FOR INVERTER CIRCUITS

Carlton Eugene Graf; Einar Aasen Skogsholm, both of Erie, and Werner Karl Volkmann, Fairview, all of Pa., assignors to General Electric Company

Filed Feb. 24, 1971, Ser. No. 118,402
Int. Cl. H02m *7/52*
U.S. Cl. 321—12 **14 Claims**

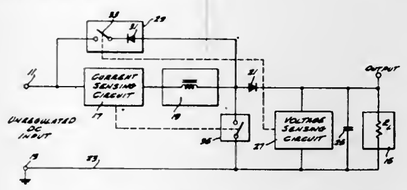


An inverter circuit utilizing gate controlled rectifiers for changing direct-current electric power to alternating-current electric power is provided with commutation control apparatus for sensing commutation current during the commutation of a first load rectifier and firing, or turning "on," another load rectifier in response thereto at a predetermined level of commutation current.

3,641,422
WIDE BAND BOOST REGULATOR POWER SUPPLY

Robert P. Farnsworth, 12612 Indianapolis, Los Angeles, Calif., and Dennis G. McCaughey, 1244 Saltair Ave., Los Angeles, Calif.

Continuation-in-part of application Ser. No. 884,858, Dec. 15, 1969, now abandoned. This application Oct. 1, 1970, Ser. No. 77,168
Int. Cl. G05f *1/56, 1/60*
U.S. Cl. 323—8 **12 Claims**



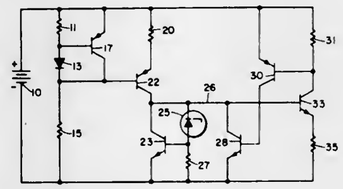
A power supply which, in one embodiment, provides to a load a relatively constant DC (direct current) output voltage

at a voltage level equal to or greater than that being supplied from a variable DC voltage source. The power supply includes a first switching circuit controlled by a voltage sensing circuit to allow energy to be transferred from a current storage device to a voltage storage device to maintain the amplitude of the output voltage within predetermined levels, and also includes a second switching circuit controlled by a current sensing circuit to allow the amplitude of circuit to be maintained within predetermined limits.

3,641,423
LOW-DROP VOLTAGE REGULATOR

Reuben Laverne Stauffer, Timonium, Md., assignor to The Bendix Corporation

Filed Nov. 16, 1970, Ser. No. 89,726
Int. Cl. G05f *3/14*
U.S. Cl. 323—9 **9 Claims**

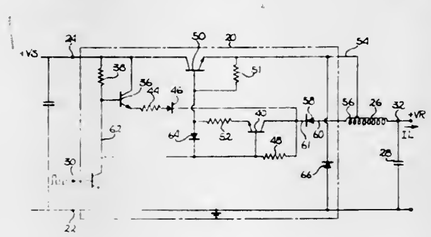


A follower amplifier which connects a variable and noisy power source to a load obtains its reference from a divider composed of two serially connected transistors using feedback to obtain two widely different ratios of dynamic resistance to average resistance.

3,641,424
REGENERATIVE VOLTAGE REGULATORS

James H. Kuykendall, Northridge, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 20, 1970, Ser. No. 91,336
Int. Cl. G05f *1/56*
U.S. Cl. 323—17 **6 Claims**

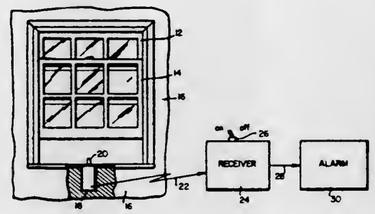


Regenerative power switches for use in semiconductor circuits such as in voltage regulators having a DC or low-frequency output controlled by a high-frequency pulse input. The circuits are designed to minimize the power dissipation in the regulator circuit and to minimize the number of components, particularly inductive components required. The regulator circuit having a negative common uses a feedback voltage from a secondary coil on the output filter choke to create a voltage exceeding the supply voltage, which is used without rectification thereof to force a series transistor into saturation during the ON portion of the cycle, thereby minimizing the voltage drop across that transistor and maximizing power output capability of the voltage regulator or amplifier. The regulator circuit having a positive common uses a feedback voltage from a top on the output filter choke winding to force a series transistor into saturation. The use of the tap minimizes the power dissipation in the regulator during the ON portion of the cycle and further aids in a fast and complete turnoff.

3,641,425
ALARM SYSTEM

Joel L. Cutler, and Joel I. Glickman, both of Huntingdon Valley, Pa., assignors to Transalarm Electronics Inc., Huntingdon Valley, Pa.

Filed Aug. 7, 1969, Ser. No. 848,258
Int. Cl. G08b *1/08*
U.S. Cl. 340—224 **7 Claims**

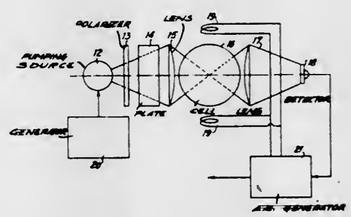


A window-mounted alarm-actuating unit comprises a transmitter for generating wireless signals, a power source connected to the transmitter, means for mounting the transmitter and the power source in a window frame, and switch means operable upon the opening of the window in normal operation for actuating the transmitter to generate a wireless signal for a relatively short period whereby the transmitter draws power from the power source only during the relatively short period.

3,641,426
OPTICAL PUMPING MAGNETOMETERS

Henri Brun, and Jean-Louis Meilleroux, both of Paris, France, assignors to Thomson-CSF

Filed Feb. 25, 1970, Ser. No. 13,967
Claims priority, application France, Mar. 6, 1969, 6906239
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 R **5 Claims**

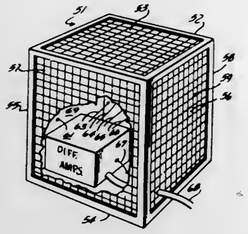


The invention relates to optical pumping magnetometers wherein an absorption cell is optically pumped with a pumping light source emitting two spectrum lines building up a doublet. The magnetometer according to the invention uses an absorption cell filed with a mixture of an alkali vapor and a buffer gas. The efficiency of the optical pumping is increased by insertion between the pumping source and the cell of an optical arrangement capable of circularly polarizing in mutually opposite directions the pumping radiations corresponding to the above-mentioned spectrum lines.

3,641,427
ELECTRIC FIELD SENSOR

Ed P. Pittman, and Roy A. Stanford, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 24, 1969, Ser. No. 862,642
Int. Cl. H04b *13/02*
U.S. Cl. 324—9 15 Claims

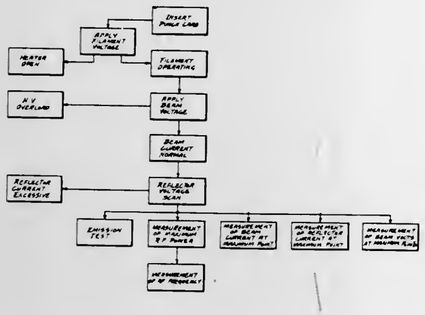


The invention is a method and means for sensing and measuring an electric field within sea water or any other environmental medium. It contains three pairs of diametrically opposed electric current sensing electrodes that are combined and configured in such manner as to form opposite faces of a cube. Each electrode is segmented to effect a predetermined mosaic pattern; and between each pair thereof, a differential amplifier, having an input impedance that is substantially equal to the operational environmental medium, is connected. A signal-processing system, including a telemetering link, a computer, and/or a readout, is connected to the outputs of the differential amplifiers.

3,641,428
KLYSTRON AUTOMATIC TUBE TESTER

Louis Mandel, Levittown, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 21, 1969, Ser. No. 878,737
Int. Cl. G01r *31/22*
U.S. Cl. 324—24 3 Claims

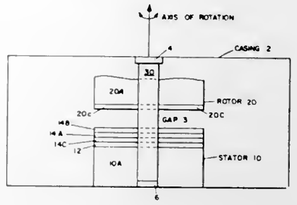


The apparatus is a device for testing klystron tubes and consists of filament control and regulator means, filament continuity and emission test means, reflector logic and control means, beam voltage programming and control means, RF power and frequency-determining means and indicator means for applying voltages to the filament and other electrodes of integral cavity klystron tubes in a predetermined sequence whereby the static and dynamic operating characteristics of the tubes can be tested.

3,641,429
POSITION-MEASURING TRANSDUCER COMPRISING A STATOR AND RELATIVELY MOVABLE FLUX-ALTERING MEMBER

Duncan B. Cox, Jr., Manchester, and Kenneth Fertig, Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 24, 1969, Ser. No. 887,896
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 PS 20 Claims

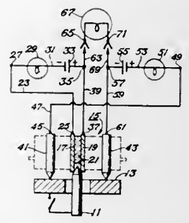


A transducer comprising a stator having printed thereon a pattern adapted to form pairs of electrical poles, and a rotor movable relative to the stator and separated therefrom by a gap. Each pole of the stator's pattern is coupled to an external power source via bridge circuitry or the like such that upon the application of power a magnetic field exhibiting flux is generated, inducing a voltage proportional thereto in each pole. The rotor's surface adjacent to and opposite the stator's pole pairs is coated with two types of oppositely acting flux-altering material. MOvement of the rotor relative to the stator positions the flux-altering material on the rotor's surface relative to the stator's pole patterns, thereby altering the flux of the magnetic field about each pole, which is equivalent to altering the impedance of each pole pattern. The resulting difference in flux-induced voltage between those poles whose flux is altered in one way and those poles of oppositely altered flux, as measured by the bridge circuitry, is a measure of the mechanical displacement of the rotor with respect to the stator. The transducer may be configured to measure either angular or linear displacement and is operable either as a single-speed and/or multispeed device.

3,641,430
ELECTRICAL CONTACT TEST APPARATUS FOR TESTING THE BREECH, OR BREECH CAP OF A MILITARY AIRCRAFT EJECTION RACK

Robert A. Williams, Fort Worth, Tex., assignor to Williams Instrument, Inc., Fort Worth, Tex.

Filed Mar. 12, 1970, Ser. No. 18,971
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 1 Claim

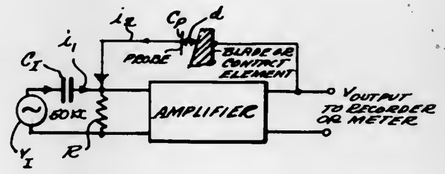


Test apparatus especially suitable for testing the breech or breech cap used with ejection racks in military aircraft and including one pair of contacts for engaging the inner contact of the breech or breech cap and connected in a series with a power source and an indicator. A second set of contacts engages an outer contact and a breech or breech cap and is also connected in series with a power source and an indicator. A third indicator is connected in a series across one of the inner contacts and one of the outer contacts of the breech or breech cap. As a consequence, the electrical conductivity of the surfaces of inner and outer contacts of the breech or breech cap may be determined, as well as stray voltage across the inner and outer contacts.

3,641,431
METHOD FOR INSPECTING AND ADJUSTING CUTTER BLADES

Robert F. Pigage, Rochester; Arthur B. Ryan, Victor, and Robert E. Smith, Rochester, all of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,223
Int. Cl. G01n *27/26*
U.S. Cl. 324—61 R 2 Claims

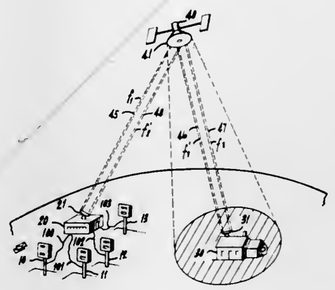


A cutter inspection device and a method of operating the device for determining cutter blade settings by measuring an air gap is disclosed. The device comprises an electronic measuring unit, with a capacitance probe that measures an air gap having a value dependent upon a blade setting. The air gap is formed between the capacitance probe and the cutter blade for some blade setting measurements and in other blade setting measurements, the air gap is formed between the capacitance probe and a contact element in contact with a surface or edge of a cutter blade.

3,641,432
RADIO POSTAL SYSTEM ACKNOWLEDGEMENT APPARATUS

Donald S. Bond, Princeton, N.J., assignor to RCA Corporation

Filed July 26, 1968, Ser. No. 747,950
Int. Cl. H04b *1/50, 7/20*
U.S. Cl. 325—4 5 Claims

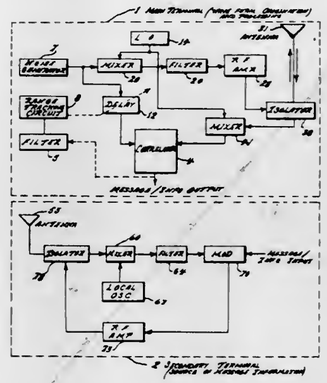


Acknowledgement apparatus for use in a radio postal system of the type employing an orbiting relay satellite for transmission, including receiver reply circuits operating at a narrower bandwidth and with a lower signal-to-noise ratio than are associated with corresponding transmitter message circuits so as to enable use of reply circuits of substantially reduced power.

3,641,433
TRANSMITTED REFERENCE SYNCHRONIZATION SYSTEM

Ralph W. Mifflin; Joseph P. Wheeler, both of Rome, and Joseph T. Massoud, Washington Mills, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 9, 1969, Ser. No. 831,479
Int. Cl. H04b *1/59*
U.S. Cl. 325—8 2 Claims

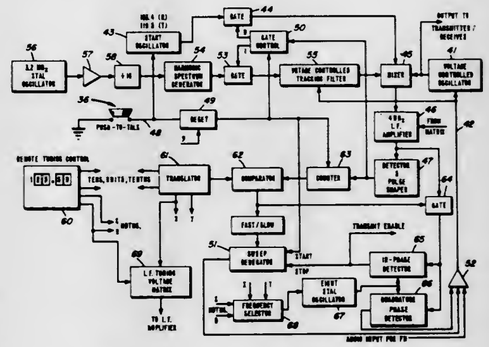


A transmitted reference synchronization system which combines a high process gain transmitted reference communication link with a fixed time delay automatic synchronization technique to allow a correlation process to be accomplished at the origination end of the link with extremely accurate and completely automatic synchronization.

3,641,434
WIDE-BAND CRYSTAL-CONTROLLED TRANSCEIVER WITH REMOTE DIGITAL TUNING

Lester R. Yates, Lighthouse Point, Fla.; Charles M. Dorsey, Jr., Baltimore; John B. Howell, Sparks; Winfred S. Conklin, Baltimore, all of Md.; Joseph J. Sawicki; Reeves T. Shepherd, both of Pompano Beach, Fla., and Silvio Soares, Baltimore, Md., assignors to The Bendix Corporation

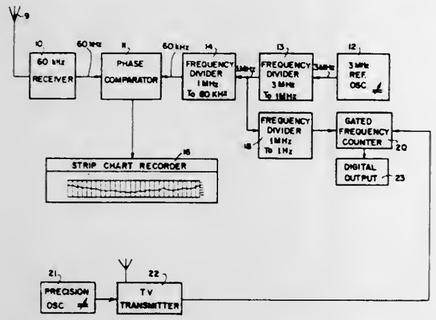
Filed Oct. 10, 1968, Ser. No. 766,435
Int. Cl. H04b *1/40, 3/08*
U.S. Cl. 325—17 8 Claims



A wide-band VHF crystal-stabilized transceiver remotely controlled by digital logic means. The transceiver incorporates a frequency synthesizer having a spectrum generator

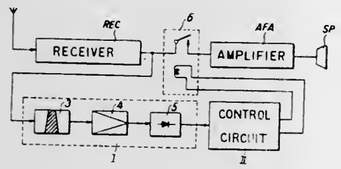
and a variable frequency oscillator phase locked to a selected component of the spectrum generator output. The particular component to which the oscillator is locked is selected by the digital logic which includes a translator for the ARINC 2×5 code enabling the use of decimal control switches.

3,641,435
TELEVISION FREQUENCY STABILIZING SYSTEM
Robert J. Munn, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 7, 1969, Ser. No. 848,246
Int. Cl. H04b *1/16*
U.S. Cl. 325—63 **4 Claims**



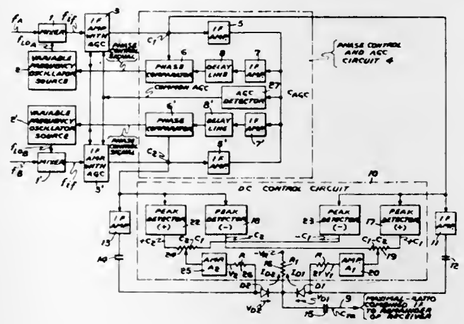
A very low-frequency receiver is tuned to a station transmitting a low-frequency standard signal, and this received signal is compared in a phase comparator with a signal divided down from a high-frequency precision reference oscillator at a transmitting station which is to be operated at a predetermined carrier frequency. The output of the precision reference oscillator also controls a gated frequency counter, the input signals to which are obtained from the local oscillator used to provide the carrier at the transmitting station. The frequency counter then provides an indication of the frequency of the transmitted carrier accurately referenced to the received low-frequency standard signal whenever the precision reference oscillator frequency is properly adjusted to produce a nonvarying output from the phase comparator.

3,641,436
BROADCAST SYSTEM FOR A CONTROL SIGNAL WITH INTERFERENCE REDUCTION
Masayuki Fukata, 94, Shimorenjaku, Metaka-shi, Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,402
Int. Cl. H04b *1/06*
U.S. Cl. 325—64 **4 Claims**



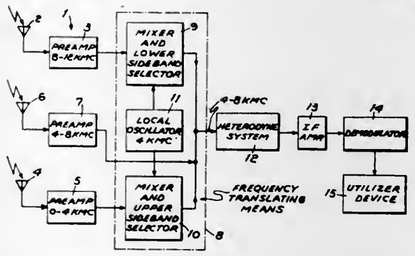
A system for controlling, from the sending side, the receiving side in a broadcast system using a control signal, where a false signal similar to the regular control signal is detected from the broadcast signals before the receiving side is spuriously triggered by the false signal. Elimination filter or filters is/are inserted in the path of the broadcast signals during only a predetermined time to eliminate the same frequency components as the control signal, whereby the control signal can be transmitted with no chance of spurious triggering.

3,641,437
MAXIMAL-RATIO DIVERSITY RECEIVING SYSTEM
Richard J. Gurak, Summit, and Milton D. Reicher, Parkridge, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Aug. 14, 1970, Ser. No. 70,624
Int. Cl. H04b *1/06*
U.S. Cl. 325—305 **10 Claims**



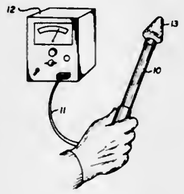
n RF diversity signals are routed to separate channels and heterodyned to *n* IF signals having the same IF frequency. The IF signals are linearly combined to provide a common IF signal from which an AGC signal is generated and is used to control the gain of each IF signal produced to assure a constant amplitude, common IF signal. This common IF signal is also used as a reference signal for a phase comparator in each channel. Each phase comparator compares the phase of its associated IF signal to the reference signal and adjusts its associated IF signal to be inphase with the other IF signals. A variable impedance diode is coupled to be responsive to each IF signal. The impedance of each diode is controlled by comparing the amplitude of the associated IF signal to the remaining $(n-1)$ IF signals. The IF signal output of each diode is combined to provide a maximal-ratio combined IF signal for utilization in the remainder of the receiver.

3,641,438
WIDEBAND RECEIVER
Eugene T. Canty, Santa Barbara, Calif., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Jan. 20, 1966, Ser. No. 522,808
Int. Cl. H04b *1/36*
U.S. Cl. 325—332 **10 Claims**



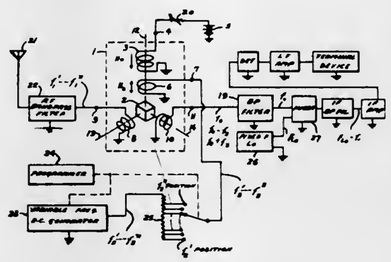
A plurality of preamplifiers divide a wideband frequency range into a plurality of different, contiguous frequency regions. A frequency translator is coupled to the preamplifiers to translate the frequency regions to the frequency region of one of the preamplifiers. An arrangement is coupled to the frequency translator to recover intelligence, or to determine the frequency of the signal, contained in the wideband frequency range.

3,641,439
NEAR-FIELD RADIATION MONITOR
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.
Filed Aug. 8, 1969, Ser. No. 848,620
Int. Cl. H04b *1/06*; **G01r** *5/22*
U.S. Cl. 325—363 **12 Claims**



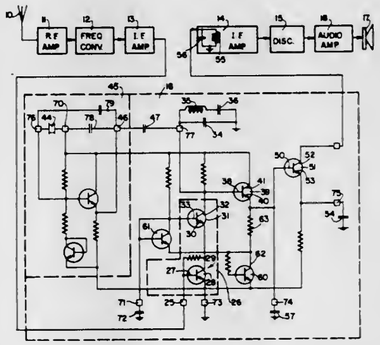
A probe having a pair of thin film thermocouples positioned in quadrature functions as both an antenna and detector. The thermocouple elements develop a voltage commensurate with the radiofrequency power of the impinging field and this voltage is then used to drive a meter element and display a quantity directly readable as radiofrequency power.

3,641,440
PROGRAMMED PARAMAGNETIC TUNING RADIO RECEIVER USING LARMOR RESONANCE
Henry J. Bush, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 15, 1970, Ser. No. 81,030
Int. Cl. H03j *13/00*
U.S. Cl. 325—383 **7 Claims**



A tunable radiofrequency selector and frequency converter for a radio receiver, particularly a receiver for radio signals that are hopped over a wide band in accordance with a prearranged code or program as a protection against jamming. The device derives its selectivity from the narrow band magnetic resonances associated with atomic particles. A cell containing a suitable magnetic resonance material is subjected to an amplitude modulated magnetic field which results in a frequency modulation of the Larmor resonance of the cell. The frequency modulation gives rise to sideband resonances which are restricted to first order resonances by limiting the modulation index and which may be moved over the reception band by varying the modulating frequency of the magnetic field. When a sideband resonance coincides with the frequency of a received signal in the input circuit of the device all sideband resonances are excited as well as the Larmor resonance corresponding to the steady component of the magnetic field, and energies at these frequencies are coupled into the output circuit of the device. The output circuit contains a band-pass filter passing energy in a narrow band centered on the Larmor frequency but rejecting the sideband energies. Therefore, the output of the device for all received signals lies in a narrow band centered on the Larmor frequency. The field modulating frequency is programmed to shift one of the sideband resonances in synchronism with the frequency hopping program of the transmitter. Wide transmission bands are covered by two magnetic resonance cells, one having its Larmor resonance above and the other below the radiofrequency band and each cell providing sideband sensitivities over one-half of the band. The resulting two Larmor output frequencies are reduced to a single output frequency by beating in a common mixer with a local oscillator frequency fixed at a value midway between the Larmor frequencies.

3,641,441
FREQUENCY CONVERSION MODULE INCLUDING EMITTER FOLLOWER MIXER
David L. Gunn, Lombard, and George M. Hanus, Norridge, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 13, 1969, Ser. No. 876,303
Int. Cl. H04b *1/26*
U.S. Cl. 325—430 **18 Claims**

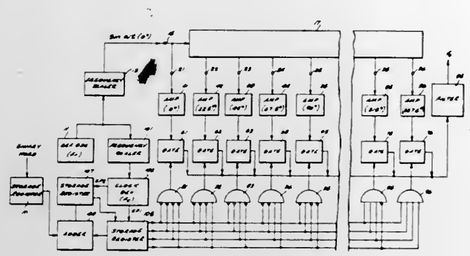


A frequency conversion circuit for a frequency-modulated receiver adapted to be manufactured in integrated circuit form. The circuit includes an oscillator of the Colpitts type, a mixer arranged in an emitter follower configuration, and input and output amplifiers. A feedback circuit coupled between the input amplifier and mixer allows operation of the circuit over a substantial voltage range. Arrangement of the mixer in an emitter follower configuration results in reduced levels of undesired frequencies. The gain of the input and output amplifiers may be varied allowing usage in different products.

3,641,442
DIGITAL FREQUENCY SYNTHESIZER
Robert J. Boucher, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 25, 1970, Ser. No. 49,688
Int. Cl. H03b *19/00*
U.S. Cl. 307—14 **23 Claims**

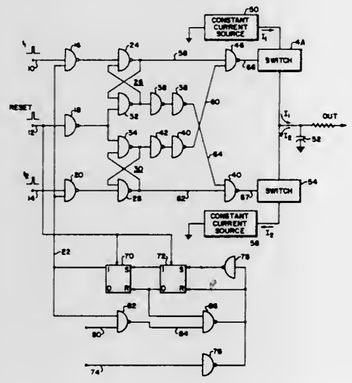
A system for generating any frequency in a desired band where, in one embodiment, a phase shifting circuit converts the output signal of a reference oscillator into a plurality of incremental phase shifts which are respectively applied to a plurality of gating circuits. In response to a multibit binary word, adder and register circuits combine to add the multibit binary word to itself at each occurrence of clock pulses and

apply the four most significant bits of the sum therefrom to each of the plurality of gating circuits in order to selectively



control the operation of the plurality of gating circuits to produce an output signal whose frequency is a function of the amplitude of the multibit binary word.

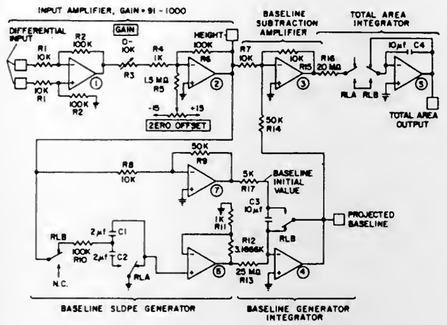
3,641,443
FREQUENCY COMPENSATED PULSE TIME DISCRIMINATOR
John C. Zerby, Houston, Tex., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 11, 1969, Ser. No. 884,159
Int. Cl. H03k *5/20*
U.S. Cl. 328—109 **4 Claims**



A pulse time discriminator for radar applications and the like adapted to measure the time or phase difference between pulses in two trains of pulses by the use of flip-flop and NAND circuit components only, and incorporating means for maintaining the transfer function and offset current of the discriminator substantially constant.

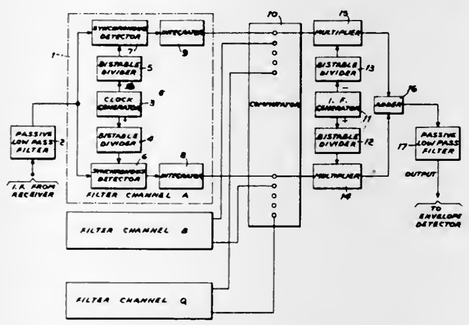
3,641,444
BASELINE COMPENSATING INTEGRATOR
Geoffrey P. Watts, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 1, 1970, Ser. No. 68,712
Int. Cl. G06g *7/18*
U.S. Cl. 328—127 **1 Claim**

A device to compensate for predictable variations from a baseline. A circuit stores information sufficient to predict the variation from the baseline and this variation is later subtracted from the total signal by a difference amplifier. A total



area integrator may be used with the device to provide additional information.

3,641,445
FREQUENCY ANALYZER
Joseph A. Green, Adelphi, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed July 23, 1970, Ser. No. 57,658
Int. Cl. H03b *3/04*
U.S. Cl. 328—140 **6 Claims**

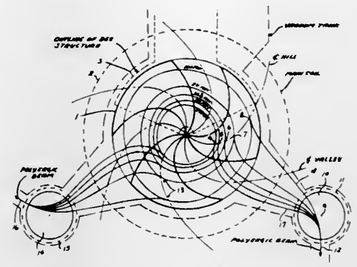


A frequency analyzer is provided wherein real-time, narrow band-pass filters having large dynamic range are synthesized for each frequency. Each filter consists of a local clock driven synchronous detector followed by a simple integrating circuit. Large dynamic range is achieved through the use of a two-state switching device as the synchronous detector. Since the output of the synchronous detector depends on the phase relationship between the input signal and the local clock, two phase-quadrature filters are provided for each frequency. The output from the filter pair is processed in a manner that yields a signal whose amplitude is independent of the input signal-local clock phase relationship.

3,641,446
POLYERGIC CYCLOTRON
Hayden S. Gordon, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 18, 1969, Ser. No. 886,237
Int. Cl. H05h *13/00*
U.S. Cl. 328—228 **3 Claims**

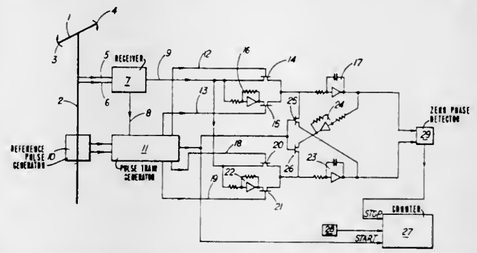
A device for the production of a multiple energy proton beam comprising a negative hydrogen ion cyclotron with

stripping foils placed at different radial and azimuthal positions. The negatively charged hydrogen ions at the various energy levels represented by the radial positions of the foils are stripped of their electrons thereby becoming protons which reverse their direction of curvature because of the



reversed polarity and exit from the cyclotron along paths that, with proper azimuthal positioning of the foils, meet at a single point outside the cyclotron. A circular combining magnet centered on this point bends the proton trajectories as required to continue along a common path thus creating the multiple energy or polyergic beam.

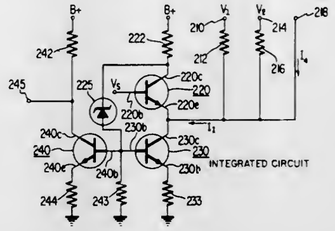
3,641,447
PHASE SHIFT DETECTOR
Brian R. Gaines, Colchester, and Raymond A. Shemer, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 25, 1970, Ser. No. 14,423
Claims priority, application Great Britain, Mar. 19, 1969, 14,389/69
Int. Cl. H03d *3/04*
U.S. Cl. 329—126 **1 Claim**



An apparatus for measuring the phase of an input signal utilizing cross-correlation techniques. In a first channel, the input signal is digitally compared with a reference pulse train having a pulse density distribution which approximates a sign wave and is then integrated. In a second channel, the input signal is digitally compared with a pulse train signal whose pulse density distribution approximates a cosine wave and is then integrated. The first and second channel integrators are cross coupled to form a harmonic oscillator. A digital counter provides a measure of the time elapsed before the oscillator signal reaches a zero phase. This measurement is proportional to the phase of the original input signal.

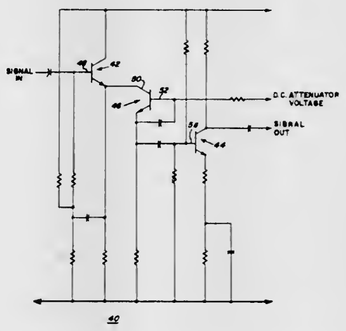
3,641,448
TRANSISTOR SIGNAL TRANSLATING STAGE
Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation
Filed Oct. 1, 1969, Ser. No. 862,759
Int. Cl. H03f *3/42*
U.S. Cl. 330—18 **17 Claims**

A signal translating circuit includes a constant current transistor, a variable conduction transistor having a signal input terminal, and a feedback loop coupling the transistors. The collector-emitter paths of the transistors are connected in series across a voltage source. An output transistor is electrically and thermally coupled to the variable conduction transistor to provide an output current which is proportional to and at a predetermined phase relationship with the input



current. The circuit is characterized by having both a low impedance current input, and a high impedance voltage input. The direct voltage level of the input can be selected for suitable biasing of the preceding stage. The circuit can be employed, for example, as a current sampler, a linear amplifier, a Q-multiplier, or a signal-matrixing circuit.

3,641,449
VARIABLE IMPEDANCE SEMICONDUCTOR NETWORK
Bjorn H. Engelhardt, Barrington, R.I., assignor to Raytheon Company, Lexington, Mass.
Filed Sept. 29, 1969, Ser. No. 861,955
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **1 Claim**

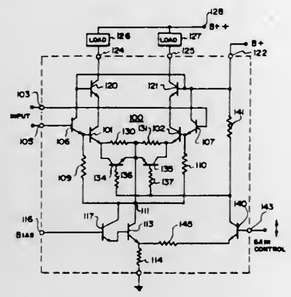


A transistor circuit in which the transistor as the nonlinear gain element has its AC gain destroyed through the use of an emitter to base capacitance thus making the transistor into a DC voltage divider. This permits operating the transistor in a substantially linear region along a DC resistive load line. Consequently, large magnitude AC signals coupled to the collector are resistively divided down by a voltage divider taken to be the transistor and a series resistor.

3,641,450
GAIN CONTROLLED DIFFERENTIAL AMPLIFIER CIRCUIT
Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 15, 1970, Ser. No. 98,279
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **11 Claims**

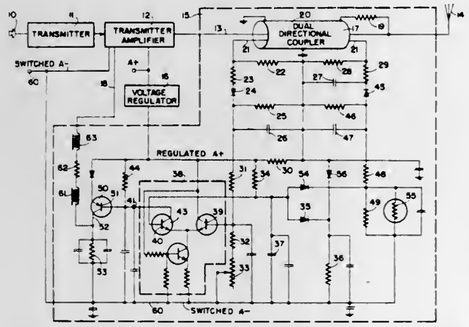
A two-stage monolithic differential amplifier circuit employs electronic gain control of both of the stages in order to

improve the signal-to-noise ratio of the circuit and to reduce signal distortion and cross-modulation at high-signal levels. The input differential stage operates with current-division gain control. The output signals of the input stage are applied to the second or output differential amplifier stage, in which the transistors each have emitter resistors connected to a



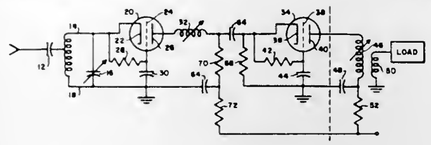
common terminal. The emitter resistors each are shunted by the collector-emitter path of a shunt transistor which is rendered nonconductive for maximum gain reduction of the output stage and which is saturated for minimum gain reduction of the output stage. The DC level of the output stage is maintained substantially constant throughout the AC gain control range.

3,641,451
AMPLIFIER PROTECTION CIRCUIT
Gale C. Hollingsworth, and Ronald V. Steffel, both of Addison, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 24, 1970, Ser. No. 13,475
Int. Cl. H03g *3/30*
U.S. Cl. 330—134 **13 Claims**



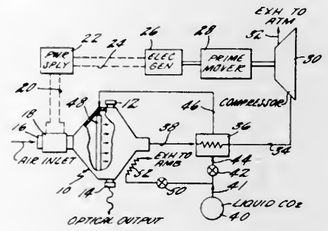
A protection circuit for a transmitter amplifier is provided which senses the forward power level and develops a first voltage which is compared with a reference voltage to provide a control voltage which controls the power developed by the transmitter amplifier. Increase in the forward power level is detected changing the control voltage to cause a reduction in the forward power developed by the transmitter amplifier. Decrease in forward power level is detected changing the control voltage to cause an increase in forward power developed by the transmitter amplifier. Reflected power is sensed developing a second voltage which causes a reduction in reference voltage when reflected power exceeds a predetermined level. Reduction of the reference voltage also changes the control voltage to reduce the forward power of the transmitter amplifier to a safe level. An increase in transmitter amplifier temperature beyond a predetermined level is sensed causing a reduction in the reference voltage to change the control voltage thereby reducing the power of the transmitter amplifier to a safe level.

3,641,452
PI-COUPLED LOW-NOISE AMPLIFIER
Willie L. Steed, 6812 Lynbrook Drive, Springfield, Va.
Filed July 2, 1970, Ser. No. 51,927
Int. Cl. H03l *1/00*
U.S. Cl. 330—176 **10 Claims**



Two stages of a series cascade amplifier are coupled by a Pi network. The amplifier stages may be grounded grid in the case of vacuum tube or grounded gate where the stages are field effect transistors. The Pi network coupling, cooperating with the stages in a stable grounded grid or grounded gate configurations allows the impedance of the Pi network to be adjusted for lowest noise with immunity from oscillation.

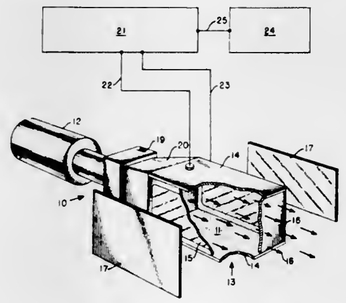
3,641,453
MODIFIED OPEN CYCLE GAS LASER SYSTEM
Frank R. Biancardi, Vernon, Conn., and Gorken Melikian, Springfield, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 10, 1969, Ser. No. 857,640
Int. Cl. H01s *3/04, 3/22, 3/09*
U.S. Cl. 331—94.5 **5 Claims**



A flowing gas "mixing" laser of the type which introduces a lasing gas into the laser chamber in proximity with the optical cavity, and provides excited energizing gas to the laser chamber separately, uses the cooling capacity of the liquefied lasing gas to improve the overall operation of the system. In one embodiment, the source of liquefied lasing gas is utilized as a coolant in a heat exchanger connected between the gas laser outflow and the inlet to the compressor used to cause gaseous flow through the laser. The compressor inlet temperature is reduced, thus permitting an increase in the capacity of the compressor and a reduction in the power of the prime mover which operates the compressor. In one variation of this embodiment, the lasing gas, from a liquefied source thereof is passed through the compressor inlet gas heat exchanger and is also utilized to cool the jacket of the laser chamber. In another variation of this embodiment, the lasing gas that is utilized as a coolant in a heat exchanger is vented to atmosphere, and the source of liquefied lasing gas also supplies the laser independently of the heat exchanger. In still another variation of this embodiment, a water cooled heat exchanger is used to precool the laser effluent before passing through the laser gas cooled heat exchanger. In another embodiment of the invention, the source of liquefied lasing gas is introduced in proximity with the laser chamber as a lasing gas and is separately used in heat exchangers to

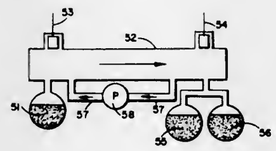
cool the inlet air and the gases leaving the laser chamber, and then vented to ambient. In each embodiment, the outflow of the compressor is vented to ambient, and the prime mover also powers an electric generator to operate a power supply that produces high-voltage DC current for a DC electric discharge plasma excitation means.

3,641,454
ELECTRON BEAM-PUMPED GAS LASER SYSTEM
Barton Krawetz, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed May 25, 1970, Ser. No. 40,037
Int. Cl. H01s *3/02, 3/22, 3/09*
U.S. Cl. 331—94.5 **7 Claims**



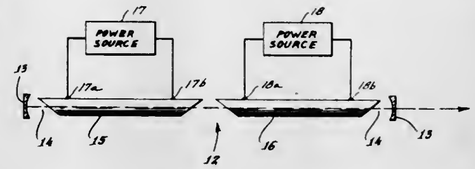
A high-power electron beam-initiated electrical-discharge gas laser system including a gaseous lasing medium placed in an optical cavity contained in a vessel having two large electrodes electrically insulated from each other; and a charged particle accelerator directing an electron beam through the gaseous medium perpendicular or parallel to the optical path. The system is capable of producing pulses having a total energy content on the order of about 20,000 joules, with the energy released or delivered in 0.5 μsec., giving a power rating on the order of about 10^4 megawatts.

3,641,455
METHOD AND MEANS FOR ACHIEVING CHEMICAL EQUILIBRIUM IN A SEALED-OFF CARBON DIOXIDE LASER
Edwin Matovich, Brea, Calif., assignor to North American Rockwell Corporation
Original application Mar. 13, 1968, Ser. No. 712,831.
Divided and this application July 13, 1970, Ser. No. 54,296
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **5 Claims**



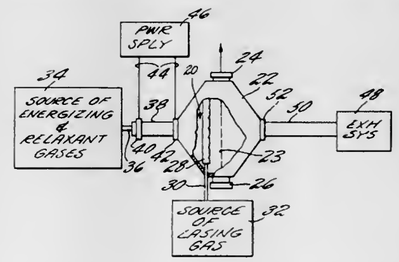
Chemical equilibrium and optimum operation in a sealed-off CO_2 gas laser is maintained by replenishing the CO_2 lost by dissociation into CO and O_2 either directly by providing a source and getter arrangement inside the laser tube or by replenishing the O_2 lost by reaction with oxygen gettering surfaces in the laser cavity by placing an oxygen yielding compound in the laser cavity which will react with the CO to product CO_2.

3,641,456
METHOD AND APPARATUS FOR PRODUCING HIGH-POWER SINGLE-FREQUENCY RADIATION
Paul H. Lee, Goleta, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Mar. 14, 1969, Ser. No. 807,245
Int. Cl. H01s *3/10, 3/22*
U.S. Cl. 331—94.5 **7 Claims**



A high-power single-frequency laser including a gain cell and an absorption cell having an absorption band corresponding to the gain band of the gain cell. Both cells are mounted within a resonant optical cavity. The absorption capacity of the absorption cell is less than the gain capacity of the gain cell but is sufficiently large so that the net self-saturation effect of an oscillatory mode within the cavity is less than the cross-saturation effect of the same oscillatory mode on other modes and, as a result, the reduction in gain at the frequency of an oscillating mode is less than the gain reduction caused by that mode at other frequencies. Tuning of the single frequency across the gain band of the laser is also a feature of this invention.

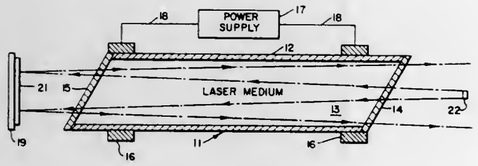
3,641,457
HIGH-PERFORMANCE GAS LASER
Clyde O. Brown, Newington, and Robert H. Bullis, Avon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 10, 1969, Ser. No. 857,649
Int. Cl. H01s *3/05, 3/09*
U.S. Cl. 331—94.5 **45 Claims**



Flowing gas laser systems of a variety of configurations, including exemplary CO_2—N_2He systems, are provided with a critical amount of relaxant gas, determined by maximum differential between the upper and lower laser levels of the lasing gas for a given rate of excitation of the upper laser level, a mass flow suitably high to convect the heat away from the optical gain region causing the temperature of the optical gain region to be maintained suitably low that the equilibrium population of an upper energy state of a limiting self-relaxation process between the lower laser level and ground is maintained less than the significant fraction of the total lasing gas population. Increased mass flow, resulting partially from increased pressure, provides increased losses within the electric field region where the upper laser level is excited through electron collisions, the increased losses permitting operation with a higher electric field, with higher

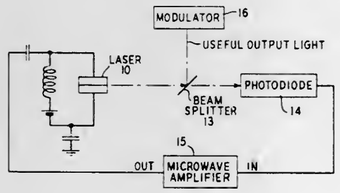
electron densities, and with increased pressure, thereby permitting operation at an optimum ratio between electric field to neutral particle density with a higher electric field.

3,641,458
MODE SELECTIVE LASER WITH SMALL FEEDBACK REFLECTOR AND DIFFRACTION COUPLED OUTPUT
James T. La Tourrette, Huntington; Maurice C. Newstein, Syosset, and Paul J. Rabinowitz, Plainview, all of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.
Continuation of application Ser. No. 386,619, July 31, 1964, now abandoned. This application Oct. 13, 1969, Ser. No. 866,165
Int. Cl. H01r *3/05*
U.S. Cl. 331—94.5 **12 Claims**



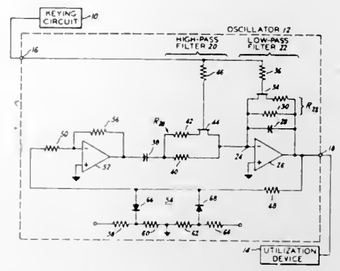
Laser apparatus is disclosed including a pair of reflectors for providing a regenerative feedback path through a laser working medium, one of the reflectors being substantially as large as the cross section of the working medium, and the other reflector being substantially smaller than the cross section of the working medium and sufficiently small to produce significant diffraction effects, the output of the apparatus being the portion of the laser beam not intercepted by the smaller reflector.

3,641,459
APPARATUS AND METHOD FOR NARROWING THE PULSE WIDTH AND STABILIZING THE REPETITION RATE IN SEMICONDUCTOR LASERS EXHIBITING SELF-INDUCED PULSING
Thomas L. Paoli, Chatham, and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 833,365, June 16, 1969, now abandoned. This application Dec. 1, 1969, Ser. No. 881,184
Int. Cl. H01s *3/18*
U.S. Cl. 331—94.5 **13 Claims**



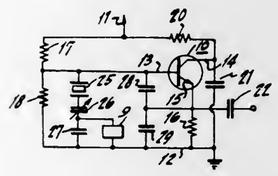
The width of pulses in the output of a semiconductor laser exhibiting self-induced pulsing is narrowed and its repetition rate stabilized by applying to the laser a perturbation signal having a frequency that is related to the pulse repetition rate as the ratio of two integral numbers.

3,641,460
FREQUENCY SHIFT TRANSMITTER
Jerry L. Holsinger, Lexington, Mass., assignor to Intertel, Inc., Burlington, Mass.
Filed Nov. 9, 1970, Ser. No. 87,706
Int. Cl. H03b *5/26*
U.S. Cl. 331—110 **4 Claims**



A frequency shift keying oscillator comprising filter circuits and a positive feedback circuit. First resistors and reactance elements in each filter determine the natural frequency of the oscillator. Keying signals selectively switch second resistors in parallel with the first resistors to change the natural frequency. The percentage resistance variations produced by the keying signals are substantially equal. This equalizes the steady-state gains of the oscillator in its two modes so that no amplitude discontinuities occur in the output signal as the oscillator switches from one mode to the other. As the reactor in each filter is a constant value element, no phase discontinuities occur. Hence, the output signal is a continuous, fundamental sinusoidal signal which has two mutually exclusive frequencies.

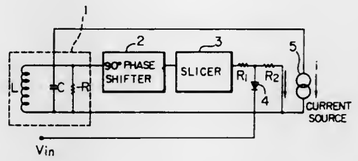
3,641,461
TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR
Pawel K. Mrozek, Washington, Pa., assignor to RCA Corporation
Continuation-in-part of application Ser. No. 591,860, Nov. 3, 1966, now abandoned. This application Aug. 23, 1968, Ser. No. 755,521
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **2 Claims**



A crystal controlled oscillator is frequency sensitive to variations in crystal load capacitance in circuit with the crystal, to variations in temperature and to operation over extended periods of time. A variable capacitor is provided in circuit with the crystal so as to correct for the crystal frequency drifts due to changes in operation of the crystal over extended periods of time. A separate fixed capacitor is connected in series with the crystal and in circuit with the variable capacitor to provide part of the frequency determining circuit of the crystal oscillator. A temperature compensation network is coupled across the fixed capacitor and is responsive to temperature changes to provide a correct degree of load capacitance change in the circuit so that the

oscillator frequency is maintained within a given frequency tolerance regardless of the adjustment of the variable capacitor which is used to adjust the crystal for frequency drift.

3,641,462
L-C OSCILLATOR TUNABLE BY EXTERNAL DC VOLTAGE THROUGH PHASE SHIFTED FEEDBACK NETWORK
Noriaki Fujimura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki-shi, Japan
Filed June 24, 1970, Ser. No. 49,295
Claims priority, application Japan, July 11, 1969, 44/55304
Int. Cl. H03b *5/12*
U.S. Cl. 331—117 R **7 Claims**

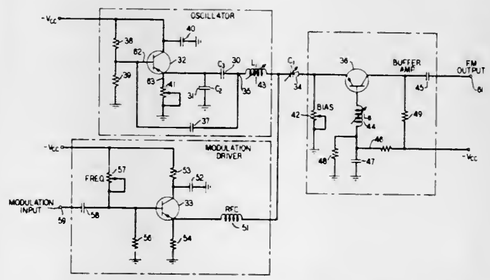


An L-C oscillator circuit is tunable as a function of the value of an externally applied DC voltage. The phase of the resonant circuit is shifted 90° by a phase shifting circuit and the amplitude of the output of the phase shifting circuit is controlled by the externally applied DC voltage. A current, the amplitude of which is proportional to the controlled output of the phase shifting circuit is generated by a current generator and fed back to the resonant circuit. As this current is shifted 90° out of phase, the capacitive element of the resonant circuit is controlled by controlling the output of the phase shifter by means of the applied DC voltage. A wave shaping circuit may be used to convert the output of the phase shifting circuit from a sinusoidal to a square wave.

ERRATUM

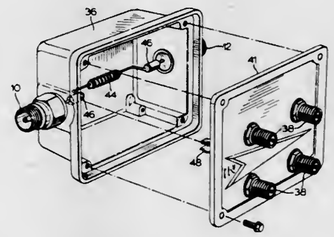
For Class 332—9 see: Patent No. 3,641,468

3,641,463
LINEARITY COMPENSATION FOR A VOLTAGE-CONTROLLED OSCILLATOR
Arthur Francis Perks, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 27, 1970, Ser. No. 40,938
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 T **6 Claims**



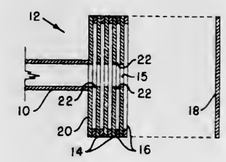
A circuit using a voltage-controlled oscillator with a hyperabrupt junction diode in the series resonant circuit is operated as a variable frequency modulation circuit. An amplifier with an inductor in the base circuit of a common base configuration is used to present an impedance with a frequency-dependent real part to the series resonant circuit of the oscillator. The nonlinearities in the characteristic of the hyperabrupt junction diode are compensated by the frequency-dependent real input impedance to achieve linear operation.

3,641,464
DIRECTIONAL COMMUNICATION SIGNAL TAP
David B. Crowhurst, Toronto, Ontario, and John E. Thomas, Lindsay, Ontario, both of Canada, assignors to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada
Filed Jan. 22, 1970, Ser. No. 4,977
Int. Cl. H01p *5/14;* **H03h** *7/38*
U.S. Cl. 333—10 **5 Claims**



This invention relates to a directive tap for tapping off a portion of a signal strength such as a television signal from a main cable transmission line. The tap of the invention has an improved directivity over a substantial bandwidth which is achieved by providing an electrostatic shield between the input and output levels of the tap on a tap circuit that has a directivity of at least 15 decibels over a range of at least 150 megahertz. The improved directivity is preferably achieved by constructional features of the current and voltage sensing transformers of the unit which includes a winding hole in the core of at least one-hundred-twenty-five thousandths of an inch to provide extra spacing for the windings and the use of a single turn winding on each core that is tightly pulled through the core to accurately and predictably locate the winding with respect to the core.

3,641,465
COMPACT HIGH-POWER BROADBAND RADIOFREQUENCY LOAD TERMINATION
Vernon G. Price, Los Altos, Calif., and Richard W. Grow, Salt Lake City, Utah, assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 15, 1970, Ser. No. 72,295
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **10 Claims**

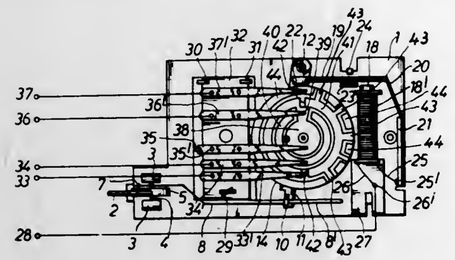


A load termination for absorbing a broad range of radiofrequency energy and comprised of a large number of aligned chambers formed by closely spaced plates that are coated with a lossy material and are spaced apart a distance that is substantially less than the spacing required for the chambers to resonate at the highest frequency of the range.

3,641,466
ELECTROMAGNETIC CONTROL, ESPECIALLY FOR CROSSING GATES OF TOY AND MODEL RAILROADS

Max Ernst, Lohengrinstrasse 14, 85 Nurnberg, Germany

Filed Aug. 6, 1970, Ser. No. 61,739
Claims priority, application Germany, Aug. 7, 1969, G 69 31 193.9
Int. Cl. H01h 3/00
U.S. Cl. 335—190 10 Claims

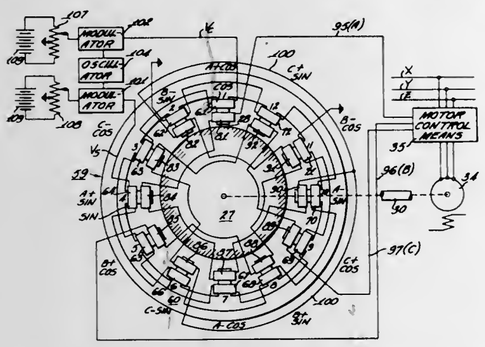


An electromagnetically operated control device, especially for a toy and model railroad, in which a disc is driven slowly in rotation by a vibrating armature and on one side has an eccentric for actuating a reciprocable element and on the other side has a plurality of annular contact paths engaged by contact fingers. When a coil adjacent the armature is energized to set the disc in motion, one contact path thereon provides for keeping the coil energized for 180° of travel of the disc while another contact path provides for intermittent sounding of a signal during one of the periods of rotation of the disc. The initiation of coil energization can be accomplished by manual switches or by switches operated by a train on the track of the railroad. The disc may cause a crossing gate to swing down to closed position during one 180° of travel of the disc and then to swing up to open position during the next 180° of travel of the disc.

3,641,467
ROTARY INDUCTOR

William L. Ringland, Greendale, and Ernest K. Kaeser, West Allis, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 13, 1969, Ser. No. 824,176
Int. Cl. H01f 33/00, 21/06
U.S. Cl. 336—5 22 Claims

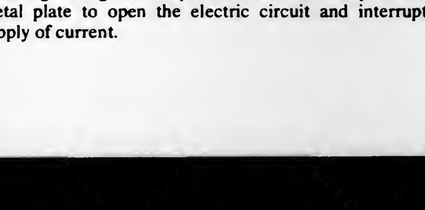


A rotary inductor has an annular stator with angularly displaced radial teeth, an energizing winding having turns encircling individual teeth to induce magnetic fluxes therein, an output winding having turns encircling individual teeth preferably displaced 180 electrical degrees apart connected in subtractive relation to cancel the base component of the magnetic flux, and a ferromagnetic rotor rotatable within the stator to cyclically modulate the permeances of the flux paths extending through the teeth and across the airgap into the rotor and thus cyclically vary the magnitude of the magnetic flux linking the turns of the energizing and output windings encircling each tooth. The preferred embodiment is a three-phase vector adder and has two energizing windings having turns surrounding sets of first and second teeth displaced 90 electrical degrees, three-phase output winding each of which has turns surrounding individual first teeth and second teeth, the three-phase output windings surrounding teeth displaced 120 electrical degrees on the stator, and the rotor being contoured so that the permeances of the magnetic flux paths through the teeth and across the airgap into the rotor vary substantially sinusoidally.

3,641,468
TIME-MODULATING APPARATUS

Wayne K. Hodder, Glendora, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,776
Int. Cl. H03c 3/08
U.S. Cl. 332—9 12 Claims

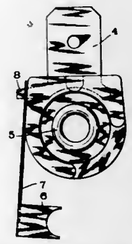


An apparatus with error signal precorrection for time-modulating an information signal, which upon demodulation tends to be accompanied by an unwanted component, comprises a time modulator and auxiliary circuits. The auxiliary circuits include a network for providing an error signal having a frequency equal to the difference between the average sampling frequency of the time-modulation and the frequency of the unwanted component, and a network for combining the error signal with the information and for applying these combined signals to the time modulator for simultaneous modulation, whereby the error signal precorrects the information signal for the above mentioned unwanted component.

3,641,469
ELECTRIC FUSE

Luigi Pramaggiore, Corsa Battaglione Aosta 14, Aosta, Italy

Filed Sept. 9, 1970, Ser. No. 70,853
Claims priority, application Italy, Apr. 11, 1970, 68234 A/70
Int. Cl. H01h 37/76
U.S. Cl. 337—404 5 Claims

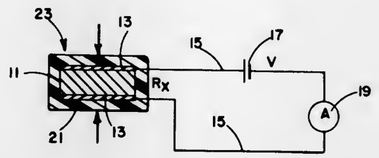


An electric fuse, especially for electric lighters in motor vehicles, comprising electrically conductive fusible means for releasing at a given temperature an electrically conductive metal plate to open the electric circuit and interrupt the supply of current.

3,641,470
PRESSURE TRANSDUCER

Alan Rembaum, Altadena, Calif., and Allen M. Hermann, New Orleans, La., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sept. 18, 1969, Ser. No. 858,950
Int. Cl. H01c 9/06
U.S. Cl. 338—99 6 Claims

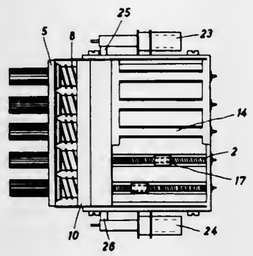


Crystals of a monomeric charge-transfer complex of pyrenetetracyanoethylene are found to have an electrical conductivity that is extremely pressure dependent, such that these crystals can form the sensing element of a novel pressure transducer.

3,641,471
ADJUSTING UNIT

Wolfgang Labude, and Josef Kohler, both of Bad Neustadt/Saale, Germany, assignors to Preh Elektrofeinmechanische Werke, Jakob preh, Nachf., Bad Neustadt/Saale, Germany

Original application Sept. 30, 1965, Ser. No. 491,708, now Patent No. 3,522,542, dated Aug. 4, 1970. Divided and this application Aug. 4, 1969, Ser. No. 847,220
Int. Cl. H01c 9/02
U.S. Cl. 338—128 9 Claims

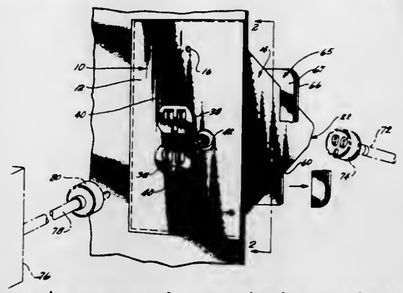


An adjusting unit for producing stored, selectively adjustable working voltages for control and tuning elements, more particularly varactors, comprising variable strip resistances for operation in a voltage divider circuit, said variable resistances being combined into a component, mutually releasable operating elements being mounted on the adjusting unit, said voltage dividers having wiper contacts selectively connectable to a contact rail and being adjustably movable along a track for varying the tapped voltage by means of said elements, said resistances having a common initial and end connecting rails, arranged substantially at right angles to them, and the resistance component representing a ladder-like structure with side rails corresponding to the initial and end rails and the rungs constituting resistances proper, said resistance component being made of a rectangular insulation plate provided with a homogeneous resistance layer for producing a nonlinear resistance curve by stamping out non-rectangular openings so that said resistance strips have different widths along said wiper track.

3,641,472
EXTERIOR POWER SUPPLY CONNECTION FOR RECREATION VEHICLES

Lawrence Phillips, Jr., Laguna Beach, Calif., assignor to Unicorn Industries, Inc., Anaheim, Calif.

Filed Sept. 14, 1970, Ser. No. 71,835
Int. Cl. H01r 33/00, 13/60
U.S. Cl. 339—10 10 Claims

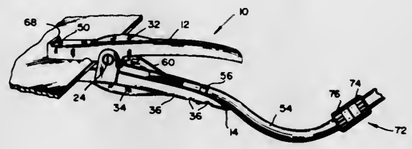


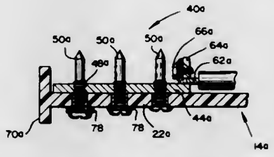
An exterior power supply connection for supplying electrical power from a permanent power source to the interior of a recreation vehicle is adapted to be mounted in aligned openings in the walls of the vehicle, with a faceplate inside the vehicle and a slanted rainproof shield outside the vehicle. A pair of slots in opposite lateral walls of the adapter receive the outer shell of the vehicle and a clamping frame. A fastener between the frame and the shield causes the frame and the faceplate to bear tightly on the vehicle walls to secure the supply connection in place. A female receptacle mounted in the faceplate faces the interior of the vehicle, and a male receptacle disposed in a compartment located under the shield faces the outside. A slanted, downwardly opening coverplate is spring biased to cover the male receptacle. In use, a connector on a cord from the power supply is connected with the male receptacle in the compartment to supply power through the female receptacle to the interior of the vehicle.

3,641,473
VEHICLE-GROUNDING CLAMP

Thomas J. Attaway, 50 S.E. 14th St., Dania, Fla.

Filed May 28, 1970, Ser. No. 41,249
Int. Cl. H01r 11/22
U.S. Cl. 339—14 R 7 Claims





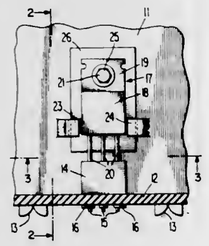
A grounding clamp is constructed of two arms pivotally interconnected intermediate the ends thereof with each arm having a handle end and a jaw end. The jaw ends of the arms are spring biased toward one another. The arms of the clamp are formed of a synthetic plastic having high electrical insulating characteristics. Replaceable metal jaw elements are secured to the jaw ends of the arms and the jaw elements include perpendicularly projecting spiked teeth. The teeth of each jaw element project toward the opposite jaw element,

and the tips of the teeth of each jaw element lie in substantially parallel planes. An electrical lead extends to each jaw element with one of the leads grounded and the other lead in series circuit with a signal triggering device. When the clamp engages a portion of the vehicle to be grounded between the teeth, the vehicle is grounded and the triggering circuit completed through the vehicle. In an alternate embodiment, the teeth are formed by the pointed ends of mounting bolts which extend from the jaw ends of the arms through the jaw elements. A snap apart electrical connector is provided in an electrical lead cable which extends between an electrostatic drain and the clamp and the connector will open to prevent damage of the grounding clamp if the vehicle is moved without first removing the clamp.

3,641,474
SEMICONDUCTOR MOUNTING STRUCTURE

Raymond Clyde Owens, Carmel, Ind., assignor to RCA Corporation

Filed May 11, 1970, Ser. No. 36,057
Int. Cl. H02b *1/02*; **H05k** *1/02*
U.S. Cl. 339—17 L **8 Claims**

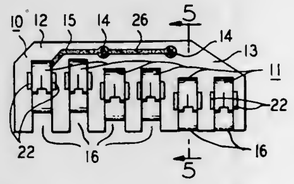


The electrode leads extending from the body of a capsule enclosing a heat-generating semiconductor device are plugged into a connector socket affixed to a circuit board and the mounting tab of the capsule is connected by a screw in good heat-conducting contact to a heat-dissipating metal plate attached to the circuit board, the capsule being prevented from moving laterally when the screw is tightened by two spaced blocks positioned on the metal plate at the sides of the capsule body.

3,641,475
INTERCEPT CONNECTOR FOR MAKING ALTERNATIVE BRIDGING CONNECTIONS HAVING IMPROVED CONTACT CLIP CONSTRUCTION

Carleton D. Irish, Neptune, and Harold Painkin, Matawin Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1969, Ser. No. 886,181
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 L **7 Claims**

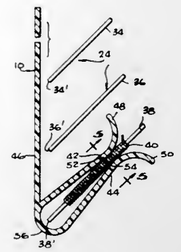


An intercept connector for providing alternative bridging connections between terminals is disclosed in which circuit paths and contact clips are combined on a circuit board in predetermined circuit configurations.

3,641,476
TELEPHONE TERMINAL CLIP-ON PROTECTOR

King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Mar. 12, 1970, Ser. No. 18,831
Int. Cl. H01r *13/44*, *13/60*
U.S. Cl. 339—36 **11 Claims**

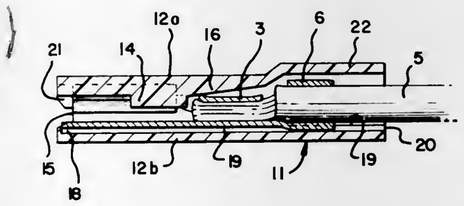


The telephone terminal clip-on protector has a pair of opposed engagement jaws which are integrally formed together with a protection flange so that, when the jaws engage a telephone terminal, the flange extends over adjacent terminals to protect the terminals and to protect workers from being scratched by the terminals.

3,641,477
HOUSING FOR AN ELECTRICAL TERMINAL

Roberto Plana, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1970, Ser. No. 14,139
Claims priority, application Spain, Mar. 22, 1969, 146,825
Int. Cl. H01r *11/02*, *9/08*
U.S. Cl. 339—59 R **5 Claims**



An insulating molded synthetic plastic housing for an electrical terminal, the housing being of generally tubular shape and open at both ends. The housing is deformed during entry of the terminal and subsequently returns to its original shape to lock the terminal in position.

3,641,478
SEPARABLE PLUG

Paul C. Savoca, Massapequa, N.Y., and Anthony D. Marasco, Norwalk, Conn., assignors to J. B. Nottingham & Co., Inc., New York, N.Y.

Filed July 3, 1969, Ser. No. 838,749
Int. Cl. H01r *21/04*
U.S. Cl. 339—63 M **4 Claims**

An electrical plug is provided consisting of a body member loosely receiving the cable and a plug member separable from the body member and carrying the terminals for the cable and the prongs of the plug. When damaged, these prongs, or the body member as a whole, can readily be replaced and thereby discarding of the cable and plug assembly avoided. The body portion of the plug is of hollow, skirtlike structure, the cable being capable of being slid

through the body to expose the terminals of the plug. The plug and body have interfitting parts forming pressure seals which render the interior of the body, and hence the ter-

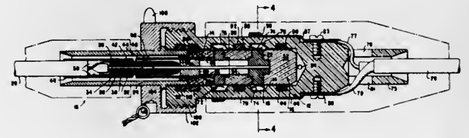


minals and conductors of the plug member, immune against the entry of water, moisture, or other foreign matter, particularly in portable equipment exposed to the weather.

3,641,479
UNDERWATER DISCONNECTIBLE CONNECTOR

Donald G. O'Brien, Framingham, and Edward R. Walker, South Natick, both of Mass., assignors to D. G. O'Brien, Inc., Framingham, Mass.

Filed June 16, 1969, Ser. No. 833,614
Int. Cl. H01r *13/54*
U.S. Cl. 339—94 R **14 Claims**



An electrical connector of the plug and socket type for use in an electrically conductive environment such as under water. The plug is cylindrical in shape and carries a number of axially spaced contactor bands which are exposed at and in flush relation to the cylindrical surface. The socket, which is of greater diameter than the plug, has an equal number of axially spaced annular contacts which protrude inwardly into the socket to engage the contactor bands of the inserted plug. Each connected pair of contacts is isolated and sealed from the other connected contacts and from the surrounding environment by resilient O-rings supported in the socket and axially spaced in alternating arrangement with the socket contacts. Insertion of the plug causes the O-rings to be compressed radially between the cylindrical surface of the plug and the internal surface of the socket.

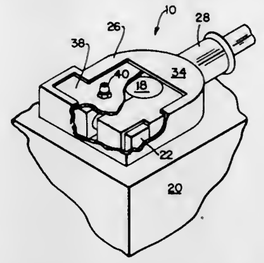
3,641,480
BATTERY TERMINAL GUARD

Edward L. Robin, 115 Glacier Circle, Vacaville, Calif.

Filed Apr. 5, 1971, Ser. No. 130,988
Int. Cl. H01r *11/26*
U.S. Cl. 339—116 R **5 Claims**

A device for preventing the corrosion or sulfation of a cable connector on the battery terminal includes a flexible

casing that fits snugly around the connector and the base of the terminal. A top cover element retained by the casing has

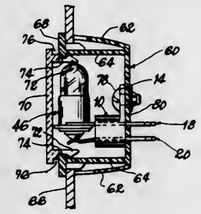


a grease fitting so that corrosion preventive material can be forced into the casing to surround the connector.

3,641,481
LAMP SOCKET CONSTRUCTION

Guy M. Farrell, 261 Poplar, Elmhurst, Ill.

Filed Feb. 2, 1970, Ser. No. 7,944
Int. Cl. H01r *13/66*, *19/22*
U.S. Cl. 339—126 R **5 Claims**

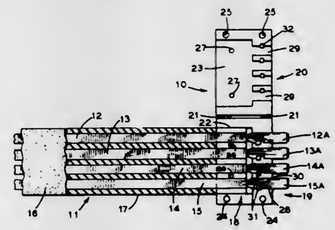


A lamp socket construction comprising a bracket and a first conductor mounted on the bracket comprising a pair of spaced-apart arms for receiving the peripheral contact portion of a lamp. A second conductor is mounted on the bracket in spaced relationship with the first conductor, and the second conductor includes a resilient contact arm for engaging the end contact portion of the lamp. The socket can be mounted in a housing for display on an instrument panel, and this assembly is designed so that the lamp can be replaced from the front of the panel.

3,641,482
PLUG CONNECTOR FOR FLAT CONDUCTOR STRIP LINE

Klaus Bretting, Heroldsberg, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

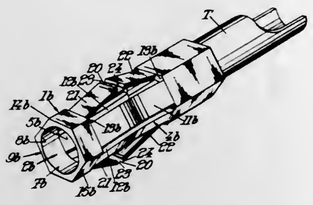
Filed June 25, 1970, Ser. No. 49,656
Claims priority, application Germany, July 1, 1969, P 19 33 229.7
Int. Cl. H01r *33/74*
U.S. Cl. 339—196 M **1 Claim**



A terminal connector for a flat conductor strip line having its conductor strips in spaced-parallel arrangement, the ter-

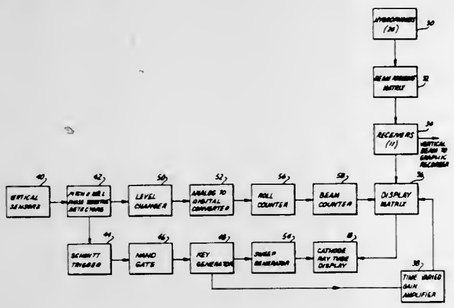
minal portion of the strip being received in a flat connector construction in which contacts are arranged for conductive engagement with the respective conductors of the strip.

3,641,483
SOCKETS FOR PRONG SOCKET ELECTRICAL CONTACTS AND IN THEIR METHODS OF MANUFACTURE
Francois Robert Bonhomme, Saint-Cloud, France, assignor to Connectronics Corporation, New York, N.Y.
Filed July 2, 1970, Ser. No. 51,773
Claims priority, application France, July 4, 1969, 6922890
Int. Cl. H01r *9/12, 11/22*
U.S. Cl. 339—217 S **10 Claims**



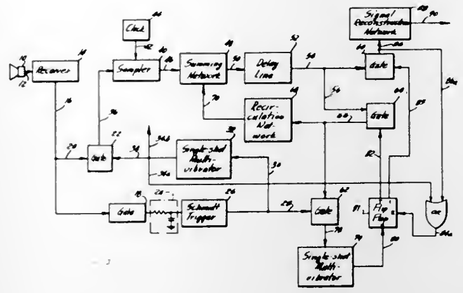
The socket comprises a portion cut out into contact strips by longitudinal slots and has, over at least a fraction of its length comprising the portion cut into strips, a cross section internally limited by a closed continuous curve and externally by a polygonal closed line. The longitudinal slots are closed at their longitudinal ends and pass through the vertices of the polygonal closed line. The strips are concave in axial direction. The socket ensures good electrical contact even after numerous insertions and extractions.

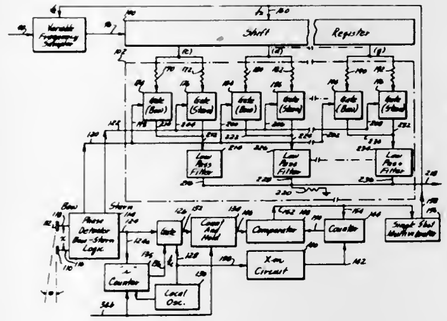
3,641,484
CONTOUR-MAPPING SYSTEM
Donald J. White, Natick, and William R. Navin, Jr., Raynham, both of Mass., assignors to General Instrument Corporation, Newark, N.J.
Filed Mar. 10, 1970, Ser. No. 18,137
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **8 Claims**



A system for mapping the contour of a surface from a mapping vehicle moving over said surface and having means for transmitting and receiving reflected radiation from said surface and which includes a display scope adapted to produce a visual trace in successive sweeps representing said surface contour. Means are provided for timing the commencement of said trace along said sweep in accordance with the angular position of said vehicle receiving means so that the angular position of said trace corresponds to the true angular position of said vehicle with respect to the vertical.

3,641,485
ECHO SIMULATION MEANS
Francis J. Murphree, Winter Park, and Michael T. Marrero, Casselberry, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 25, 1970, Ser. No. 40,179
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 E **8 Claims**



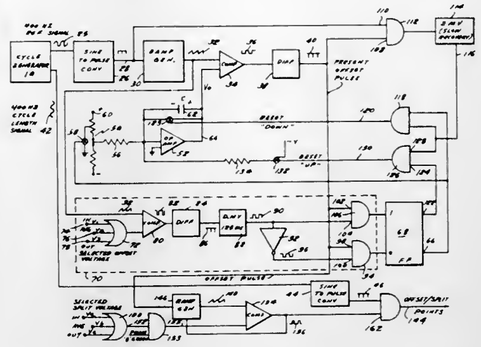


Synthetic sonar echoes are generated in response to a sonar signal by utilizing a delay line, time compression technique to generate a reconstructed waveform which is then sampled to provide a pulsed input to a shift register means having taps spaced therealong corresponding to structural highlight positions along a target. The shift register is caused to serve as a variable delay line by varying the sampling and shift rate in response to aspect angle as determined by phase-sensitive logic means. The taps feed a network of attenuators and filters which produce across an output resistor an electrical signal which can be amplified and used to drive a sound projector to produce the desired simulated echo.

3,641,486
LOCAL CONTROLLER FOR TRAFFIC CONTROL SYSTEM
Peter C. Brockett, Milford, and Ludwig R. Pallat, Stanford, both of Conn., assignors to LFE Corporation, Waltham, Mass.
Filed June 23, 1969, Ser. No. 835,343
Int. Cl. G08g *1/07*
U.S. Cl. 340—41 **9 Claims**

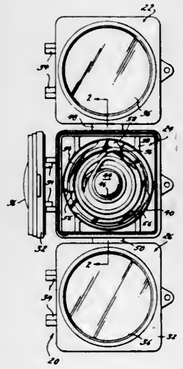
A local controller for use in a traffic control system is provided with all solid-state means for displacing the local traffic cycle relative to a master traffic cycle and for effecting the

smooth transition between alternate displacements. The traffic cycle length is determined by measuring the period



between the phase coincidence of two signals having a slight difference in frequency.

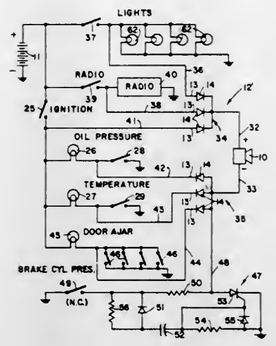
3,641,487
TRAFFIC CONTROL LIGHT WITH MEANS RESPONSIVE TO A POWER FAILURE
John J. Rogers, West Miami Shores, and John A. Stratman, West Hollywood, both of Fla., assignors to Lumidor Products Corp., Miami, Fla.
Filed Oct. 29, 1969, Ser. No. 872,173
Int. Cl. G08g *1/095*
U.S. Cl. 340—46 **11 Claims**



A traffic control light is provided with a supplemental lamp which is illuminable by a secondary power source. Switching means are also provided which are responsive to a failure of the primary power source to connect the supplemental lamp to the secondary source so that the supplemental lamp is illuminated in a flashing mode to continue traffic control.

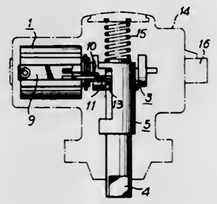
3,641,488
MULTIPLE-CONDITION AUTOMOTIVE ALARM SYSTEM
William F. Mullin, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Continuation of application Ser. No. 639,944, May 22, 1967, now abandoned. This application Sept. 21, 1970, Ser. No. 74,196
Int. Cl. G08b *7/00*
U.S. Cl. 340—52 F **9 Claims**

An electrical audible alarm unit connected across a vehicle battery through a number of switches for indicating the presence of one of a number of conditions or malfunctions. Isolation diodes are used at avoid the coupling of electrical circuits within the vehicle. Switches may be connected to



both terminals of the alarm unit, with or without isolation diodes, to provide a warning signal only when certain conditions are met.

3,641,489
STEERING COLUMN LOCK FOR VEHICLES
Yoshisada Shimomura, Tokyo-to, Japan, assignor to Yushin Seiki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 8, 1969, Ser. No. 864,767
Claims priority, application Japan, Oct. 12, 1968, 43/88705
Int. Cl. B60r *25/02, 25/10*
U.S. Cl. 340—52 D **3 Claims**

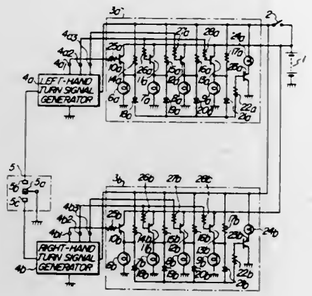


A retractable steering column lock for vehicles. The lock is urged by a spring to a locking position and can be retracted from the locking position into a retracted position releasing the steering column for turning movement. A rotary key-operated assembly forms part of the ignition switch structure and coacts through a motion transmission with the lock for retracting the latter to its retracted position when the ignition switch is turned on. A swingable lever assembly responds to turning on of the ignition switch for releasably holding the lock in its retracted position while when the ignition switch is turned off and the key is withdrawn, the lock is automatically released for return to its locking position.

3,641,490
DEVICE FOR INDICATING DISCONNECTION OF TURN SIGNAL LAMP IN A TURN-SIGNALLING SYSTEM FOR AUTOMOTIVE VEHICLE
Hisashi Kawai, Toyohashi-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan
Filed June 10, 1969, Ser. No. 831,845
Claims priority, application Japan, June 14, 1968, 43/41062; July 16, 1968, 43/50091
Int. Cl. G08b *21/00;* **B60q** *1/38*
U.S. Cl. 340—55 **15 Claims**

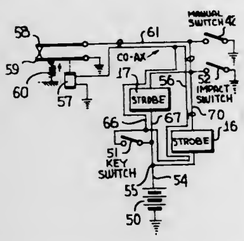
A device for indicating disconnection of turn signal lamps having a power source, a turn signal generator, a plurality of

current-interrupting elements controlled by said turn signal generator, a plurality of turn signal lamps connected to said power source through the respective current-interrupting elements, a plurality of series circuits of a resistor and a diode or of two resistors whose junction is respectively connected to the junction of each set of said current-interrupting element and said turn signal lamp, a transistor whose base is



connected through a resistor or directly to said series circuits so that it constitutes an OR circuit together with said series circuits and said resistor if used, said OR circuits being connected to said power source in such a manner that it is placed in operation in response to the closure of a key switch, and a turn signal indicator connected to said power source through the collector and emitter of said transistor in said OR circuit.

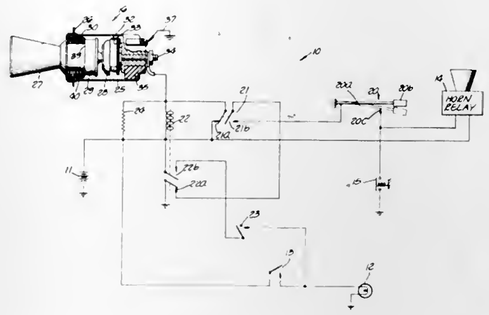
3,641,491
AUTOMATIC ANTICOLLISION AND ACCIDENT MARKER SYSTEM FOR AUTOMOTIVE VEHICLE
James Reynolds Bath, Drawer 60337, Houston, Tex.
Filed June 10, 1968, Ser. No. 735,776
Int. Cl. B60q *1/00*
U.S. Cl. 340—61 **4 Claims**



An impact switch mounted on a vehicle controls high-intensity condenser discharge lights (hereinafter called strobe lights) also mounted on the vehicle. The strobe lights may be turned on in response to operation of an impact switch, through circuit interruption, or manually at will. Strobe lights emit light having a spectrum which is largely in the blue, which is readily visible in rain and fog, and peak intensity of light emission is at least 10 times greater than that of a standard beam.

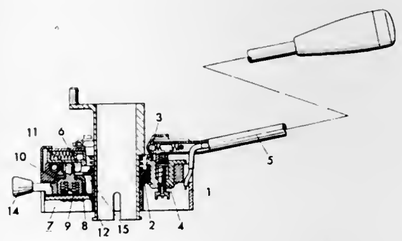
3,641,492
VEHICLE ANTITHEFT DEVICE UTILIZING CIGARETTE LIGHTER AS TIMER
David Vinokur, 16217 Dalark St., La Puente, Calif.
Filed Mar. 30, 1970, Ser. No. 23,903
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 **5 Claims**

A vehicle antitheft accessory readily connectable in circuit with the vehicle electrical system for the horn, running lights and the customary cigarette lighter, and utilizing the latter as a timer to temporarily deactivate an antitheft alarm but not the vehicle lights to permit the driver to exit, lock the vehicle and leave the immediate vicinity. Termination of the lighter



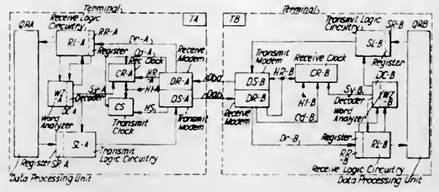
timing cycle automatically arms the alarm device and any attempt to enter or move the vehicle is effective to energize the alarm intermittently and irregularly thereby alerting bystanders to the fact that a vandal or unauthorized person is attempting to enter or molest the vehicle.

3,641,493
COMBINATION TURN-SIGNAL AND HAZARD-WARNING SIGNAL SYSTEM
Masaru Suzuki, Hekikai-gun, Aichi, and Masayoshi Hyodo, Toyota, Aichi, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishihiwajima-cho, Nishikasugaigun, Aichi Prefecture, Japan
Filed Apr. 23, 1969, Ser. No. 818,537
Claims priority, application Japan, Apr. 29, 1968, 43/28727
Int. Cl. B60q *1/38*
U.S. Cl. 340—81 F **10 Claims**



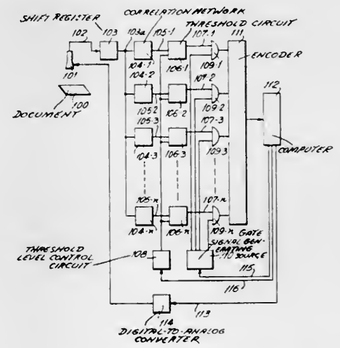
A combination turn signal and hazard-warning-signal system having movable contact means disposed for coaction with stationery contact means to permit energization of the right and left vehicle indicator lights. The movable contact means is mounted within a casing which is displacable in response to movement of a turn signal control lever for permitting energization of either the right or left indicator lights. The casing is also manually movable to a position wherein the movable contact means engages the fixed contact means irrespective of the position of the control lever for causing simultaneous flashing of both the right and left indicator lights.

3,641,494
BIDIRECTIONAL DATA TRANSMISSION SYSTEM WITH ERROR CORRECTION
Jean Perrault, Port Marly, and Adelin E. G. Salle, Versailles, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,837
Claims priority, application France, Feb. 14, 1969, 6903551
Int. Cl. G08c *25/00*; **H04l** *1/10*
U.S. Cl. 340—146.1 **7 Claims**



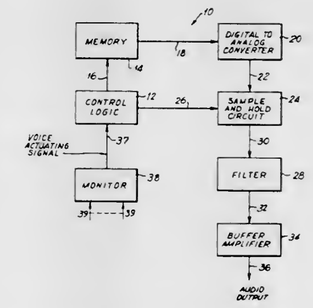
A bidirectional data transmission system for transmitting information between two terminal stations incorporating in each terminal station an arrangement for checking the received data and providing error correction when errors are detected in the received data. Each of the terminals include a memory for storing the *m* last words transmitted from that terminal. When an error is detected in one terminal, the transfer of received data to a data processor is blocked and a repetition request word is generated and transmitted to the other terminal. The other terminal detects the presence of the repetition request word in the received data and transmits a repetition start word and the last *m* data words stored in the memory to said one terminal to accomplish the error correction.

3,641,495
CHARACTER RECOGNITION SYSTEM HAVING A REJECTED CHARACTER RECOGNITION CAPABILITY
Kazuo Kiji, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Continuation-in-part of application Ser. No. 664,424, Aug. 30, 1967, now abandoned. This application Aug. 12, 1970, Ser. No. 63,162
Claims priority, application Japan, Aug. 31, 1966, 41/57403
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 R **6 Claims**



A character recognition system for reading alphanumeric characters and/or symbols printed or otherwise formed upon a document. The characters on the document are initially scanned in sequential fashion to generate a signal representative of the character. The representative signal is compared, on a character by character basis, against standardized signals each representing high quality criteria of those characters which the system is capable of recognizing. A signal is generated to indicate any character which fails recognition. After each of the characters are scanned and either identified as valid characters or are rejected, an analysis is made to determine the greatest likelihood of the identity of the rejected character or characters. A second scanning operation is performed on only those characters which have failed recognition. The criteria of those standardized signals compared against the rejected character are also significantly reduced to greatly enhance the probability of recognition of rejected characters.

3,641,496
ELECTRONIC VOICE ANNUNCIATING SYSTEM HAVING BINARY DATA CONVERTED INTO AUDIO REPRESENTATIONS
Martin J. Slavin, Huntington, N.Y., assignor to Phonplex Corporation, Huntington, N.Y.
Filed June 23, 1969, Ser. No. 835,525
Int. Cl. H04q *3/00, 5/00*
U.S. Cl. 340—148 **11 Claims**

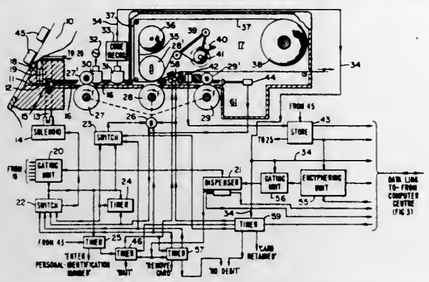


A voice annunciating system having an electronic memory for storing digital data representative of the analog audio signal of a plurality of predetermined sound components, selected series of said data being applied from said memory to a digital to analog converter adapted to produce an audio signal corresponding to the digital data applied thereto, by means of a control logic. The control logic is operative in response to an actuating signal associated with the desired message. Substantially all redundancy is eliminated from the digital data stored in the memory, said control logic being adapted to repetitively apply individual sound components or series of sound components to the digital to analog converter for reconstructing the desired message.

3,641,497
ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT
Geoffrey Ernest Patrick Constable, Cheltenham, England, assignor to Smiths Industries Limited, Cricklewood, London, England
Filed Aug. 19, 1969, Ser. No. 851,186
Claims priority, application Great Britain, Aug. 30, 1968, 41,424/68
Int. Cl. H04q *9/00*; **G06k** *7/00*
U.S. Cl. 340—149 A **14 Claims**

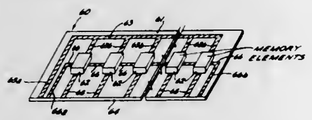
A money-dispensing system is operative to dispense money in response to a bank customer's embossed credit card and keyed-entry of his personal identification number, only if this number accords with the customer's account number as read from an accounting record impressed from the card. Accord is checked at the bank's central computer and approval for dispensing is given by an encyphered signal individually generated there using the account number and transmitted

back to the dispensing terminal, recognition of the encyphered signal, required for operation of the dispenser,



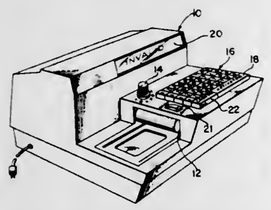
being effected by separate programmed-generation of it at the terminal.

3,641,498
KEYS FOR ELECTRONIC SECURITY APPARATUS
Robert A. Hedin, San Pedro, Calif., assignor to R. B. Phinizy, Anaheim, Calif.
Continuation-in-part of application Ser. No. 628,599, Apr. 5, 1967, now abandoned , Continuation-in-part of application Ser. No. 889,666, Dec. 31, 1969. This application Mar. 27, 1970, Ser. No. 23,272
Int. Cl. H04q *9/00*
U.S. Cl. 340—164 R **25 Claims**



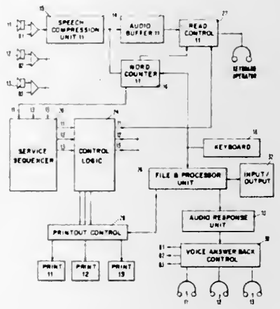
A key is constructed with a base member of epoxy glass on which are electrically conductive contact strips offering a binary code permutation of open and closed circuit paths for controlling a security apparatus such as an electronic lock or computer. The code permutation can be established in the key by applying electric current that changes the state of the circuits on the key. For the purpose, the key circuits are equipped with fusible elements or magnetic memory elements. The memory elements may be of a type that will change the code when the key is used. The key may have a portion forming an identification card. In further forms the key will have eddy current rings that will react when applied to proper key-receiving means, and the key may comprise an optical mask containing a binary code in the form of a pattern of opaque and translucent areas.

3,641,499
CARD AND VERIFICATION SYSTEM HAVING CARD VOIDING ELEMENT
William A. Housman, 1626 N. 190th, Seattle, Wash.
Filed Dec. 22, 1969, Ser. No. 887,291
Int. Cl. H04q *3/00*
U.S. Cl. 340—149 **8 Claims**



A card is coded with preselected partially completed circuits including selectively positioned insulators, a card reader is coded with second partially completed circuits and a plurality of manually operated contacts which are actuated in an array known only to the owner of the card, a mismatch completes the network through the card reader and the card and energizes a fuse device within the card to void the card. A coded circuit in the card corresponds to the stored amount of credit and an electrical network in the machine is operable by contacts corresponding to the amount of stored credit to complete a circuit to the fuse of the device to void the card when the credit is used up.

3,641,500
VOICE ENTRY SYSTEM
Evon C. Greanias, Chappaqua, and Wilbur J. Levine, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,303
Int. Cl. H04q *9/00*
U.S. Cl. 340—152 R **10 Claims**

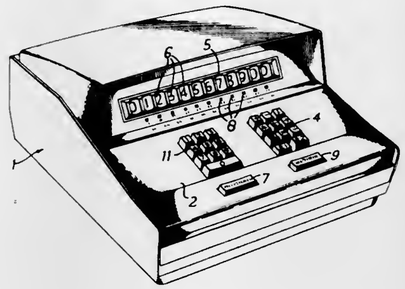


An arrangement is disclosed for making entries into an information system from a plurality of remote locations by voice communications. The arrangement comprises a speech compression means and an audio buffer means associated with each location, the speech compression means functioning to compress the duration of a message whereby a keyboard operator receiving the voice communications can handle a plurality of locations, the audio buffer means being operative to store the compressed message. There is also associated with each location a word counter which contains a count of the words in a message, a count in a word counter signifying that a complete message is in the audio buffer enabling the locations where that message has been entered to have that message processed. The arrangement includes a sequencing unit which establishes which location can receive processing. The keyboard operator enters the messages into an information-processing system and the results of this processing are then transmitted back to the appropriate locations where they can be printed out or otherwise be availed of.

3,641,501
CALCULATING MACHINES
John George Lloyd, Uxbridge, and Alan Fripp, Iver Heath, both of England, assignors to Bell Punch Company Limited, Uxbridge, England
Continuation-in-part of application Ser. No. 626,049, Mar. 27, 1967, now abandoned. This application Jan. 23, 1970, Ser. No. 5,221
Claims priority, application Great Britain, Mar. 31, 1966, 14,300/66
Int. Cl. G06f *7/02*
U.S. Cl. 340—172.5 **10 Claims**

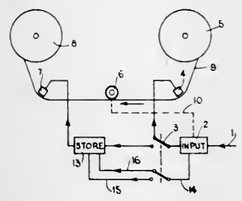
An electronic calculating machine with two multistage registers and with circuitry controlled by an interchange function key on a keyboard are used to interchange the corresponding digit denominations of the numbers stored in the two registers. The interchange of each digit denomination is

a two-part operation. In the first part a first pulse train is used to simultaneously circulate the digits in the corresponding denomination of the registers in order to store in a counter circuit a difference pulse count equal to the difference between the digits and to obtain a signal whose polarity is dependent upon which register has the larger digit.



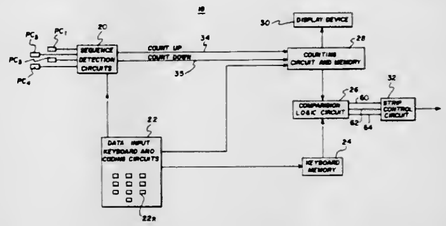
In the second part the difference pulse count and the polarity of the signal are used during the second pulse train to control the entry of part of the second pulse train to the one register and then to control the entry of the rest of the second pulse train to the other register so as to interchange the corresponding digits.

3,641,502
DATA RECORDING APPARATUS
Cecil Thomas Whitehead, Crowthorne, and Anthony Francis Ewart Critchley, Kingston, both of England, assignors to International Computers Limited, London, England
Filed Apr. 17, 1970, Ser. No. 29,579
Claims priority, application Great Britain, Apr. 18, 1969, 19,808/69
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **5 Claims**



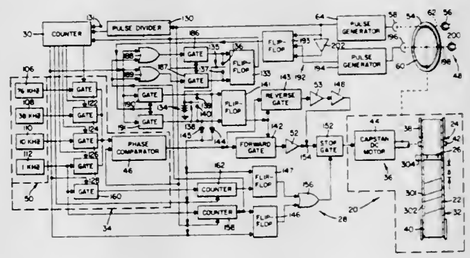
A data recording apparatus includes two magnetic recording heads which are spaced apart along the length of an exchangeable magnetic recording tape. A switch normally connects an input data device to the first recording head such that data is recorded in a normal fashion. When it has become necessary to exchange a new tape for an old one, the incoming data is switched to a store where it is held as the tapes are exchanged. When a new tape is ready to record data, the switch is returned to its normal position such that data in the store is recorded by the second recording head concurrently with incoming data being recorded by the first recording head. The heads are spaced apart by a distance such that stored data recorded by the second recording head does not overlap incoming data recorded by the first head.

3,641,503
APPARATUS FOR SENSING AND COUNTING IMAGES DISPOSED ON INFORMATION BEARING MEDIA HAVING AN ADDED COUNTING CAPABILITY
Robert E. Cullen, Foxborough, Mass., assignor to Eastman Kodak Company
Filed Apr. 24, 1970, Ser. No. 31,474
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 **17 Claims**



Apparatus is disclosed for sensing and counting the number of images disposed on an information-bearing medium such as a strip of microfilm. Specifically, a plurality of counting marks are associated with each of the images disposed on the information-bearing medium and are sensed illustratively by a radiation-sensing means which detects radiation derived from a suitable source alternately transmitted and intercepted by the counting marks. The radiation-sensing means provides a plurality of signals which are applied to a counting and memory circuit for counting the number of marks that have passed the radiation-sensing means. A comparison circuit is provided for producing a signal indicative of a coincidence between counted number of marks and a preselected number indicative of that image which is to be disposed at a utilization station. When a coincidence is so derived, the strip of microfilm will be brought to a stop and the selected images disposed at the utilization station. The counting and memory circuit has a limited capability as to the number of marks which it may count, illustratively determined by the number of decade counters comprising the counting and memory circuit. The counting and memory circuit of this invention is capable of counting numbers of images in excess of its capability and for directing the strip of information-bearing medium in the correct direction to thereby access the selected image at the utilization station.

3,641,504
APPARATUS FOR TRANSPORTING A RECORDING MEDIUM FOR STORING INFORMATION
George B. Sidline, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Feb. 20, 1969, Ser. No. 801,100
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **8 Claims**



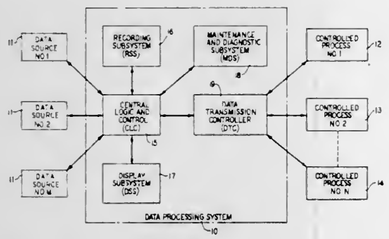
A preset counter counts pulses received from a tachometer as a magnetic tape is transported to position a particular

storage address on the tape at a selected location relative to a magnetic head. The pulse count is representative of the distance that the particular storage address must be transported to position it at the selected location. The counter is coupled to the motor drive circuit of the tape transport mechanism to control the speed of the tape movement in accordance with the count stored in the counter. As the particular storage address is transported to position it at the selected location, the counter issues signals while its count is in predetermined ranges of its counting sequence corresponding to predetermined ranges of distances that the particular storage address must be transported to position it at the selected location. The signals issued by the counter are coupled to change the motor drive signal incrementally whereby the tape is accelerated and decelerated according to the transport's acceleration characteristic in positioning the storage address.

3,641,505
MULTIPROCESSOR COMPUTER ADAPTED FOR PARTITIONING INTO A PLURALITY OF INDEPENDENTLY OPERATING SYSTEMS

Walter M. Artz, Succasunna; Kenneth R. Cornelius, Parsippany; John W. Olson, Morris Township, Morris County, all of N.J.; Gary R. Signor, Burlington, N.C., and Francis E. Slojkowski, Millburn, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Artz, said Cornelius, said Olson and said Slojkowski and Western Electric Company, Incorporated, New York, N.Y., by said Signor

Filed June 25, 1969, Ser. No. 836,242
Int. Cl. G06f *9/00, 15/00*
U.S. Cl. 340—172.5 **13 Claims**



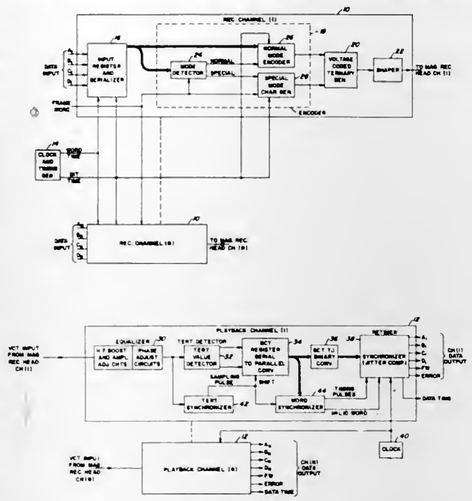
A multiprocessor computing system is disclosed in which a number of processing units, program storage units, variable storage units and input-output units may be selectively combined to form one or more independent data processing systems. System partitioning into more than one independent system is controlled alternatively by manual switching or program-directed partitioning signals. Isolation of single units and segmentation of a plurality of units less than a full operating system are also controlled by the same lockout system.

3,641,506
INFORMATION HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA

Frederick B. Cupp, Fairport, and John S. Whiting, Canandaigua, both of N.Y., assignors to General Dynamics Corporation

Filed Nov. 14, 1969, Ser. No. 876,980
Int. Cl. G06f *5/02*; **G05b** *13/02*; **G11b** *5/86*
U.S. Cl. 340—172.5 **13 Claims**

A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is described. Binary input information is encoded into a ternary signal for recording. That ternary signal has spectral properties which facilitate recording with extremely high bit packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which

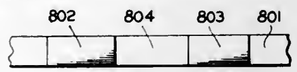


make up the works, is also derived. The system includes means for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

3,641,507
ELECTRONIC TEACHING APPARATUS

Masahiro Kosaka, and Tadamasa Fujita, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1969, Ser. No. 881,766
Claims priority, application Japan, Dec. 6, 1968, 43/90683; Dec. 9, 1968, 43/91266; Dec. 10, 1968, 43/92151
Int. Cl. G06k *17/00*; **G09b** *5/04, 19/04*
U.S. Cl. 340—172.5 **5 Claims**



An electronic teaching apparatus. The apparatus comprises a reproducing means for reproducing an instructional tape which has an instructional program recorded intermittently thereon, and a plurality of practice tape recorders for recording and reproducing oral responses of a plurality of learners.

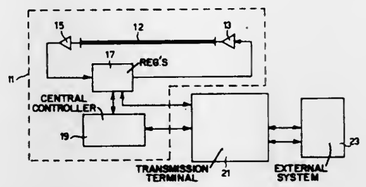
A first detecting means is provided for generating a detecting signal upon the occurrence of reproduction of one part of said instructional program, and a first control means coupled to said first detecting means for controlling said practice tape recorders and a memory means after receiving said detecting signal from said first detecting means. A second detecting means is provided for generating and detecting signal upon the occurrence of reproduction of one part of said instructional program and is coupled to a second control means for controlling said instructional tape recorder and said practice tape recorders after receiving said detecting signal from said second detecting means.

The memory means stores a value of the time interval between the detecting signal from said first detecting means and the detecting signal from said second detecting means, and produces a control pulse after a time which is the same as said time interval stored in said memory means.

3,641,508
TRANSMISSION TERMINAL

Fabrizio Saltini, Modena, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Dec. 31, 1969, Ser. No. 889,758
Claims priority, application Italy, Feb. 12, 1969, 50559-A/69
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **8 Claims**

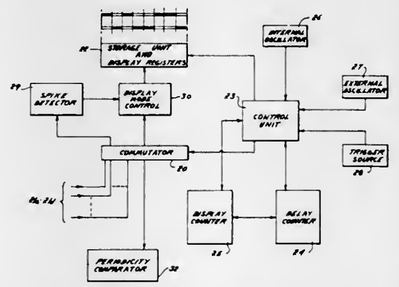


This invention relates to a transmission terminal unit responsive to transfer instructions from a computer for serially transferring a plurality of information segments one at a time between successive locations within a region of a serial memory of the computer and an external system. The transmission terminal comprises buffer means for temporarily storing an information segment presently being transferred, means for serially transferring the information segments between said buffer means and the successive locations in the serial memory. Furthermore the transmission terminal comprises means responsive to the instructions from the computer for controlling the direction of transfer of the information segments by said transferring means and to signals from said computer and said external system for controlling the timing of the transfer by enabling, after the receipt of a ready signal from the external system, said transferring means to operate to transfer the next successive information segment when the location within the region of the serial memory which is next to be operated upon is available for transfers.

3,641,509
DIGITAL DATA ANALYSIS AND DISPLAY DEVICE

Philip S. Di Vita, Richboro; Earl N. Powers, Philadelphia, and Charles J. Werneth, Newtown, all of Pa., assignors to Data Display Systems, Inc., Willow Grove, Pa.

Filed May 2, 1969, Ser. No. 821,211
Int. Cl. G11c *7/00*; **G01r** *13/04*
U.S. Cl. 340—173 R **11 Claims**

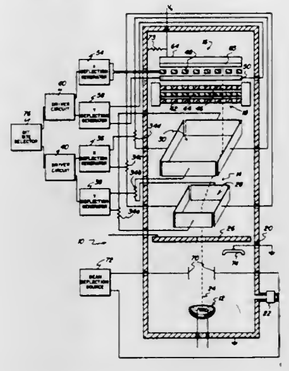


Apparatus for the analysis and display of digital waveforms comprising a commutator arrangement for selectively distributing input information from a plurality of sources to predetermined storage and display units and for selectively modifying the display characteristics of said input information with respect to time, mode of representation and the relative proportion of the cyclic input information signal to be displayed.

3,641,510
BEAM ADDRESSABLE MASS STORAGE USING THIN FILM WITH BISTABLE ELECTRICAL CONDUCTIVITY

Arthur C. M. Chen, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 2, 1970, Ser. No. 145
Int. Cl. G11c *11/42*
U.S. Cl. 340—173 CR **7 Claims**

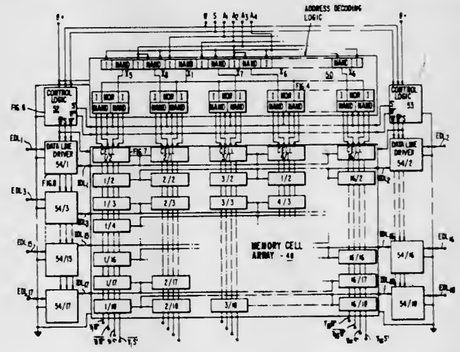


An electron beam addressable mass memory and recording technique is described wherein information is stored by selective electron beam irradiation of bit sites in a target characterized by a thin film of a bistable conductivity material, e.g., an arsenic-tellurium-germanium glass, to switch the electrical resistance of the irradiated sites. The recorded information subsequently is nondestructively read out by impinging a lower intensity electron beam upon each bit site and measuring current flow through the site to a metal substrate juxtaposed with the bistable conductivity film. To erase recorded information, the switch bit site is irradiated with an electron beam having an intensity above the threshold level required to return the site to the original resistance state.

3,641,511
COMPLEMENTARY MOSFET INTEGRATED CIRCUIT MEMORY

James R. Cricchi, Baltimore, and Edgar D. Lancaster, Jr., Linthicum Heights, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

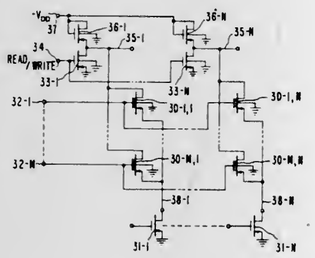
Filed Feb. 6, 1970, Ser. No. 9,381
Int. Cl. G11c *11/40, 5/02, 7/00*
U.S. Cl. 340—173 R **13 Claims**



A random access nondestructive voltage readout complementary MOSFET memory fabricated on a single integrated circuit "chip," including not only a plurality of identical

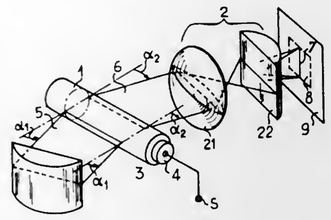
memory cells arranged in a matrix array, but also the digital address decoding logic circuitry as well as the input/output buffer circuitry including data line driver circuits insulating the memory cell array from external data lines and input/output control logic circuits insulating the address decoding logic circuitry and the data line driver circuits from external read/write control and strobe input sources. Both N-channel and P-channel MOSFETS are fabricated adjacent to one another as complementary pairs on the same "chip" with the exclusion of at least one guard ring diffusion region between adjacent drain diffusion regions of the complementary pairs by the inclusion of a relatively thick oxide layer (15–20 KA.) which operates to minimize internal interconnection line capacitance and parasitic surface channels. The data line drivers are bidirectional to provide nondestructive readout, fast readout response, noisy immunity and low-input capacitance. Each memory cell is comprised of two pairs of complementary MOSFETS coupled together as cross-coupled inverter circuits. Additionally, each cell is provided with a pair of parallely connected complementary MOSFETS acting as an input/output transmission switch and are coupled to a common input/output internal data line and operated by separate address command signals from the address decoding logic circuit. Another pair of parallely connected complementary MOSFETS are coupled to the memory cell as a feedback transmission switch and are operated by still other separate address command signals from the address decoding logic circuit. The address command logic utilized to operate the parallely connected pairs comprising the input/output transmission switch and the feedback transmission switch is timed to permit nondestructive readout of the memory cell.

3,641,512
INTEGRATED MNOS MEMORY ORGANIZATION
Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Apr. 6, 1970, Ser. No. 26,004
Int. Cl. G11c *5/02, 11/00*
U.S. Cl. 340—173 R **5 Claims**



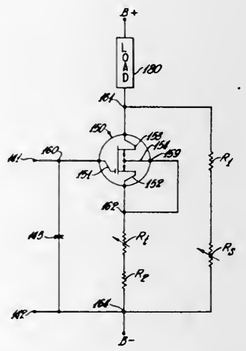
A semiconductor memory array consists of an array of MNOS transistors. Each transistor possesses an hystereris relationship between the gate voltage required to turn on the transistor and a previously applied gate voltage. Thus each MNOS transistor stores, by itself, one bit of information. A binary "1" is written into a transistor by applying a voltage of a first selected magnitude to the gate of the MNOS transistor while grounding its source and drain. Applying simultaneously a negative voltage to the drain of the MNOS transistor lowers the voltage across the dielectric beneath the MNOS transistor's gate electrode and prevents the storage of a binary "1." No electrical isolation is required between the MNOS transistors.

3,641,513
READOUT SYSTEM FOR MEMORIES COMPRISING MATRICES OF PHOTOSENSITIVE ELEMENTS
Jean Edgar Picquendar, and Roger Torguet, both of Paris, France, assignors to Thomson-CSF
Filed Aug. 4, 1970, Ser. No. 60,838
Claims priority, application France, Aug. 12, 1969, 69/27.692
Int. Cl. G11c *13/04, 11/42*
U.S. Cl. 340—173 LM **3 Claims**



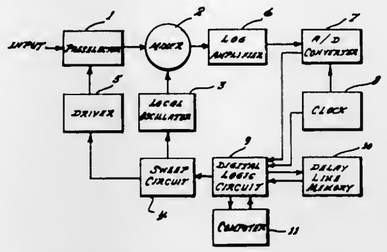
A readout system for memories comprises one or more matrices of photosensitive elements. An optical scanning system (3) produces a light beam with a scanning movement a lens system (21–22) transforms said beam into a beam which is flat perpendicularly to the plane of scan, and directs it onto a matrix of photosensitive elements (8) in the form of a line of light (7) covering a line of the matrix for each resolved point of the scanning function.

3,641,514
MEMORY SYSTEM
Vernon C. Rees, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed July 20, 1970, Ser. No. 64,015
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **8 Claims**



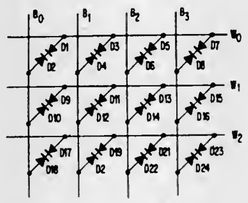
A memory unit comprising an electronic valve component having a very high-input impedance and including a control electrode and two output load electrodes. An input signal storage means is connected to the control electrode. An output means is connected between one of the output or load electrodes and a voltage supply. A zero adjustment impedance means is connected between that one of the output electrodes and the voltage supply to adjust current flow through the output means when no input signal is present. A span adjustment impedance means is connected between the other of the two output electrodes to regulate gain of the electronic valve independently of the zero adjustment impedance means. The electronic valve component is preferably a field effect transistor.

3,641,515
SPECTRUM ANALYZER
Lawrence B. Sues, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Sept. 10, 1970, Ser. No. 70,971
Int. Cl. G11c *21/00;* **G01r** *23/02*
U.S. Cl. 340—173 R **4 Claims**



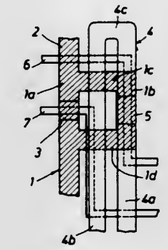
A spectrum analyzer is provided in which a digital recirculating delay line memory is used in conjunction with a swept receiver to effect a time variant signal across a frequency range of interest. The swept receiver is fed analog signals for subsequent analog to digital conversion. Thereafter, a logic circuit simultaneously associated with a delay line memory, sweep receiver circuit and computer receives the converted digital signals. The logic circuit and an analog to digital converter are simultaneously controlled by a common clock. The logic circuit synchronizes the receiver sweep to the recirculating memory and the digital recirculating memory stores in digital format for future utilization the spectral characteristics of the frequency range of interest.

3,641,516
WRITE ONCE READ ONLY STORE SEMICONDUCTOR MEMORY
Paul P. Castrucci, Poughkeepsie; Harlan R. Gates, Wappingers Falls; Robert A. Henle, Hyde Park; Wilbur David Pricer, Poughkeepsie; Robert M. Morton, Hopewell Junction; John W. Mason, and William D. North, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 15, 1969, Ser. No. 858,053
Int. Cl. G11c *11/36, 17/00*
U.S. Cl. 340—173 SP **12 Claims**



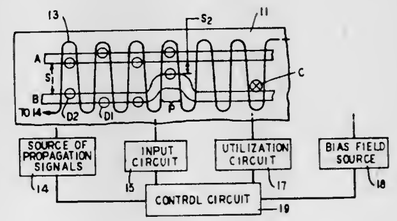
A read only memory having the capability of being written into once after manufacture. The cells of the memory are capable of being fused or permanently altered by directing a fusing current to the selected cells. The cell is a monolithic semiconductor device comprising a diode to be biased in a forward direction and a diode to be biased in the reverse direction structured so as to form back-to-back diodes. The reverse diode has a lower reverse breakdown voltage than the forward diode, and a metal connection, unconnected to any remaining circuit elements contacts the semiconductor device between diode junctions. The fusing current causes a metal-semiconductor alloy to form and short out the reverse diode.

3,641,517
SUPERCONDUCTIVE DATA STORAGE ARRANGEMENT
Michel Edmond Francis Brilman, Bruyeres-Le-Chatel; Jean-Pierre Alain Campagne, Antony, and Guy Georges Gorinas, Saint-Michel-sur-Orge, all of France, assignors to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel", Paris, France
Filed Jan. 9, 1970, Ser. No. 1,604
Claims priority, application France, Jan. 9, 1969, 6900230
Int. Cl. G11c *11/44, 5/02*
U.S. Cl. 340—173.1 **10 Claims**



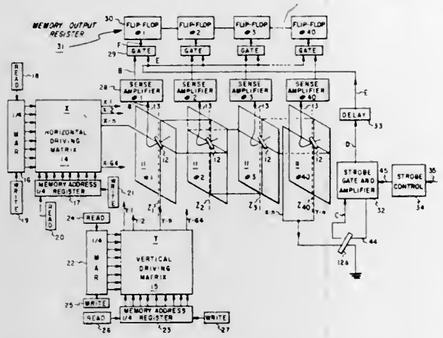
A superconductive device for the storage and the nondestructive reading of information or data, which has a minimum spatial requirement while assuring a practical and workable operation free from any parasitic signals including a storage arrangement having two portions which are positioned in close relationship with respect to each other, one of these portions providing a superconductive loop consisting of two superimposed layers of superconductive materials having different critical temperature points, one area thereof having one partially interrupted superconductive layer which allows this portion to readily lose the superconductive property thereof in the presence of a magnetic field, and the other portion also consisting of two superimposed semiconductive layers with one layer interrupted serving as a test conductor actuated by the field generated by the superconductive loop and a readout conductor.

3,641,518
MAGNETIC DOMAIN LOGIC ARRANGEMENT
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 30, 1970, Ser. No. 76,883
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **6 Claims**



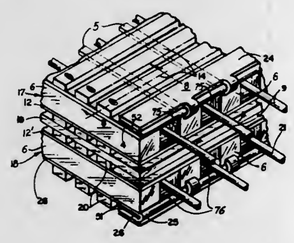
A single wall domain logic circuit arrangement is realized by a pair of magnetically soft rails on the surface of a material in which domains can be moved. The distance between the rails is reduced over a prescribed portion of the rails to define a position at which domains moving along both rails interact.

3,641,519
MEMORY SYSTEM
Albert H. Ashley, Bedford, Mass., assignor to Sylvania Electric Products Inc., Wilmington, Del.
Filed Apr. 10, 1958, Ser. No. 727,602
Int. Cl. G11c 7/02, 11/06
U.S. Cl. 340—174 RC 18 Claims



A ferrite-core memory system employing a specimen magnetic core or memory device, having the same operating characteristics as the memory elements, to generate the requisite strobe pulses for addressing the memory.

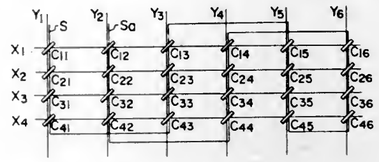
3,641,520
INTERSTITIAL CONDUCTORS BETWEEN PLATED MEMORY WIRES
Joseph M. Shaheen, La Habra, and John Simone, Garden Grove, both of Calif., assignors to North American Rockwell Corporation
Filed June 12, 1970, Ser. No. 45,677
Int. Cl. G11c 5/04, 11/04, 11/14
U.S. Cl. 340—174 PW 5 Claims



A copper layer on a dielectric substrate is etched into strips for forming interstitial conductors. Layers of resinous material are placed over the strips for forming channels therebetween. The exposed surface of a dielectric layer clad on one side by a metal layer is placed over the channels to form tunnels for plated memory wires. The outer metal layers of the structure are etched to form word straps orthogonal to the tunnels. The interstitial conductors between the tunnels are interconnected at a common point.

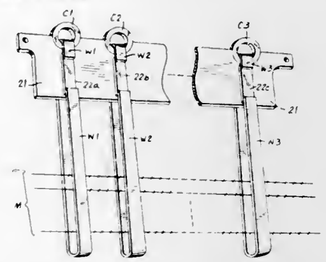
3,641,521
MAGNETIC-CORE MEMORY MATRIX
Joichiro Ezaki, Chiba-ken, Japan, assignor to TDK Electronics Company Ltd., Tokyo, Japan
Filed Aug. 25, 1969, Ser. No. 852,809
Claims priority, application Japan, Aug. 30, 1968, 43/74828
Int. Cl. G11c 5/02, 11/06
U.S. Cl. 340—174 BA 1 Claim

A magnetic-core memory matrix formed in such a manner that the spacing between the adjacent drive windings parallel with the sense winding is made larger than the spacing between the adjacent drive windings not parallel with the



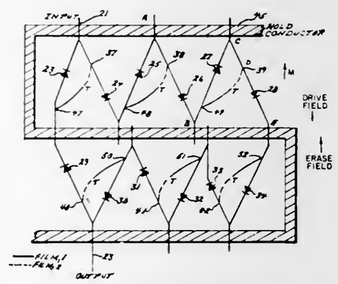
sense winding, thereby eliminating the noise produced in the sense windings due to the inducing voltage from the adjacent parallel drive windings.

3,641,522
INDUCTANCE ELEMENT FOR PREVENTING HALF-SELECT NOISE IN MEMORY ELEMENTS
Harumi Maegawa; Yohihiro Sato; Yasuo Furuhata, and Takayuki Kiumi, all of Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 14, 1969, Ser. No. 876,772
Claims priority, application Japan, Nov. 16, 1968, 43/83898
Int. Cl. G11c 7/02, 5/08
U.S. Cl. 340—174 M 4 Claims



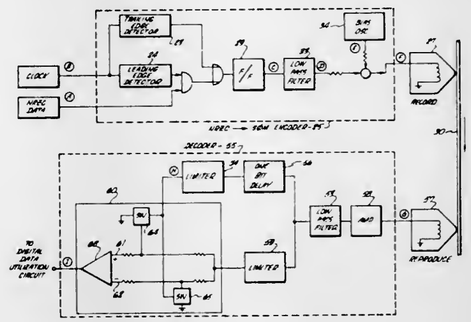
Each of a plurality of magnetic wires has a conductor covered by ferromagnetic material. The magnetic wires are equidistantly spaced from each other in parallel relation and are affixed to each other by electrical insulating material interposed therebetween.

3,641,523
MAGNETIC DOMAIN CIRCULATING SHIFT REGISTER
Harvey I. Jauvtis, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 31, 1969, Ser. No. 889,371
Int. Cl. G11c 21/00, 11/14
U.S. Cl. 340—174 SR 3 Claims



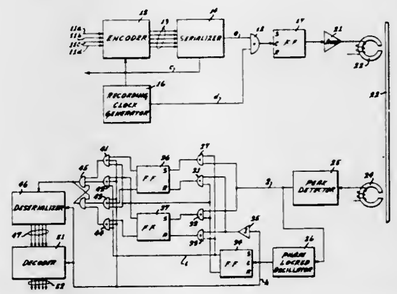
A magnetic domain circulating shift register in which magnetic channels are in a continuous zigzag configuration and magnetic domain diodes are positioned in each channel branch to obtain single direction of propagation. Fan outs from alternating branch channels through a film-to-film transfer junction into a second film inhibit propagation in adjacent branch channels while an interlacing hold conductor permits selective erasure.

3,641,524
MAGNETIC RECORD AND REPRODUCE SYSTEM FOR DIGITAL DATA HAVING A NRZC FORMAT
Kermit A. Norris, Azusa, Calif., assignor to Leach Corporation, South Pasadena, Calif.
Original application Nov. 7, 1966, Ser. No. 592,458, now Patent No. 3,518,648, dated June 30, 1970. Divided and this application Feb. 13, 1970, Ser. No. 8,123
Int. Cl. G11b 5/02
U.S. Cl. 340—174.1 H 7 Claims



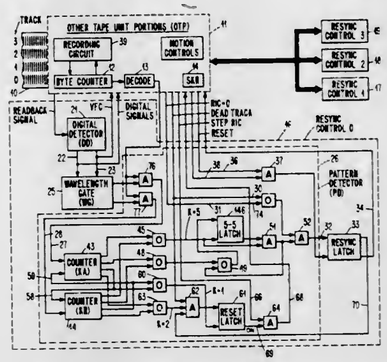
Apparatus for recording and reproducing digital data on a magnetic medium is disclosed. The apparatus operates to convert data in a NRZC format to a NRZ–S format and then to a SϕM format for recordation. Reproduced signals are reconverted from the SϕM format to a NRZ–S format. The reproduced signals are then filtered and threshold detected to derive the original data in NRZC format.

3,641,525
SELF-CLOCKING FIVE BIT RECORD-PLAYBACK SYSTEM
Gene E. Milligan, Torrance, Calif., assignor to The National Cash Register Company, Dayton, Ohio
Filed Aug. 17, 1970, Ser. No. 64,355
Int. Cl. G11b 5/06
U.S. Cl. 340—174.1 G 10 Claims



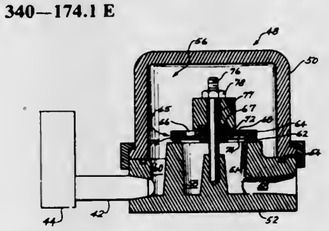
A magnetic recording and reproducing system wherein a parallel four-bit input code is converted into a five-bit character code and magnetically recorded. The code has a low redundancy when recorded with a magnetic state changing only for each zero bit. As a result, the magnetic recording has a high-bit density. Upon reading the magnetic recording, the zero-bit pulses are employed to synchronize a phase lock oscillator, enabling self-clocking as in the Manchester recording system. The recorded five-bit code is recovered by applying the read pulses and the phase lock oscillator output to logic circuits including flip-flops and gates. The five serial bit character is parallelized and decoded to recover the original five-bit code.

3,641,526
INTRA-RECORD RESYNCHRONIZATION
David L. Bailey, Longmont, and Harry C. Hinz, Jr., Arvada, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,595
Int. Cl. G11b 5/02
U.S. Cl. 340—174.1 A 19 Claims



A self-clocking recording system using signals representative of data having predetermined one-half wavelength sequences including short and long one-half wavelengths. Resynchronization (resync) and position indicating signals are recorded among data signals in each track for indicating track position with respect to other tracks. Frequency synchronization utilizes recorded data signals. The position-indicating resync signal is limited in length to a small number of cycles of record state changes which primarily use the longer one-half wavelengths used to record data. In one recording scheme, two long wavelengths of the same polarity indicate position in the tracks. In another, two successive long one-half wavelengths indicate track position and data phase relationships. In yet other recording schemes, a unique sequence of two one-half wavelengths or a sequence of three long one-half wavelengths indicates data phase and track positional information.

3,641,527
PNEUMATIC HEAD-ACTUATING SYSTEM HAVING AUTOMATIC CONTROL FOR READING AND WRITING THROUGH HEADS
Ko Ko Gyi, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 9, 1970, Ser. No. 9,807
Int. Cl. F16k 7/17; G11b 15/12; H01h 35/24
U.S. Cl. 340—174.1 E 15 Claims



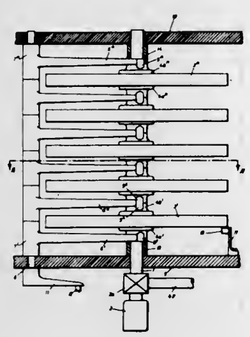
A pneumatic system for controlling the relative position of electromagnetic heads with respect to a magnetic disc

recording surface. A source of fluid pressure is supplied through a first valve means to the input port of a pressure regulator and to the input port of a second valve means. Pressure emanating from the output port of the regulator is applied to electromagnetic heads which causes them to move from a first to a second position relative to the magnetic disc surface. Pressure emanating from the output port of the second valve means is supplied to a pneumatic switch for enabling or disabling electrical circuit means which reads or writes information from the magnetic recording disc through the magnetic heads. The second valve means has a first time delay corresponding to the rate of fluid flow from its input to output port which insures the enabling of the electrical circuit by the pneumatic switch only after the heads have moved into their second position, and has a second time delay, shorter than the first time delay, corresponding to the rate of fluid flow from its output to input port which insures the disabling of the electrical circuit by the pneumatic switch before the heads commence movement from their second position back to their first position.

3,641,528
SIGNAL-STORING DEVICE WITH REMOVABLE SIGNAL-STORING UNIT

Gerhard Dirks, Los Altos Hills, Calif., assignor to Dirks Computer Systems Corporation, Los Altos Hills, Calif.

Original application Dec. 22, 1964, Ser. No. 420,294, which is a division of application Ser. No. 627,441, Dec. 10, 1956, now Patent No. 3,172,082. Divided and this application Nov. 14, 1969, Ser. No. 876,840
Int. Cl. G11b *25/00*
U.S. Cl. 340—174.1 C **5 Claims**



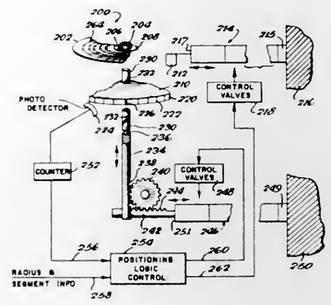
A selective signal storage device which includes a signal-storing unit composed of a supporting shaft and a plurality of disks having signal-storing surfaces on at least one face thereof and being secured axially spaced from each other to the shaft for rotation therewith. Releasable coupling means are provided to releasably couple the supporting shaft to drive means so that the signal-storing unit can be removed as a unit from the remainder of the device.

3,641,529
RADIAL AND CIRCUMFERENTIAL MAGNETIC HEAD POSITIONING MECHANISM

Donald L. Bitzer, Urbana; Lyle E. Bandy, Decatur; Roger L. Johnson, Monticello, and Dominic O. Skaperdas, Champaign, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Aug. 18, 1969, Ser. No. 850,965
Int. Cl. G11b *17/02;* **A63d** *15/04;* **G01d** *15/28*
U.S. Cl. 340—174.1 C **12 Claims**

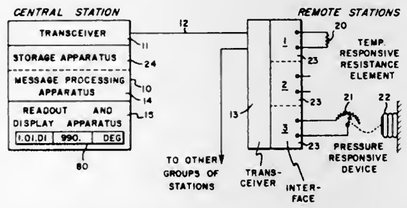
Random access information retrieval apparatus for selecting a particular item from a plurality thereof including an improved pair of *x–y* coordinate digitally positionable devices which are driven by a four-way control valve. A polar coordinate random access information retrieval apparatus including a rotatable recording disc having information recorded on at least one surface thereof, a transducer for detecting said information, radial positioning means for moving said transducer radially along said disc, and angular positioning means coupled to said recording disc for incrementally rotating said disc to position desired information on said disc adjacent said transducer. An improved four-way control valve including a valve housing having a pair of inlet ports for connection to a pressure source and a pair of outlet ports for connection to a load, a first control chamber communicating one of said inlet ports with one of said outlet ports, a second control chamber immediately adjacent said first chamber and communicating the other of said inlet ports with the other of said outlet ports, a diaphragm intermediate said first and second chambers and forming a common wall therebetween, and a diaphragm control means for moving said diaphragm to selectively seal one of said inlet ports in said respective first and second chambers to control the fluid flow between said inlet and outlet ports.



3,641,530
SYSTEM FOR DISPLAYING VALUES OF CONDITIONS REPORTED AT A CENTRAL STATION FROM VARIOUS REMOTE STATIONS OF A BUILDING AIR CONDITION SYSTEM

Frank H. W. Schoenwitz, Schaumburg, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed July 13, 1970, Ser. No. 54,174
Int. Cl. G08c *19/04, 15/12*
U.S. Cl. 340—183 **8 Claims**

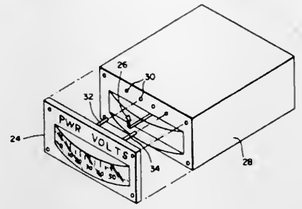


A system for displaying the values of reported conditions of a building air-conditioning system wherein a reporting message from a remote station has a first portion for selecting the engineering units for the normalized condition value reported in a second portion of the message so that upon the message being received at a central station the first portion of the message is used to retrieve from a memory the engineering unit data to be applied to the normalized condition value to report the condition as a true reported value.

3,641,531
CHANGEABLE ADDRESS DISPLAY DEVICE

Robert Alan Heartz, Deland, Fla., assignor to General Electric Company

Filed Dec. 30, 1970, Ser. No. 102,655
Int. Cl. G08c *15/00*
U.S. Cl. 340—184 **3 Claims**

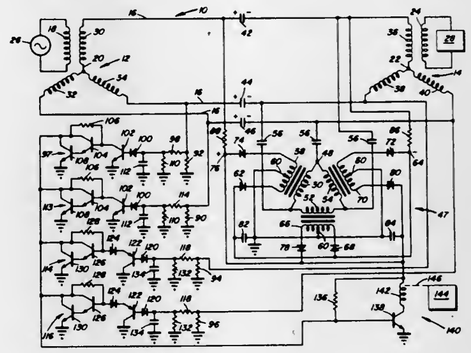


Analog display devices such as meters are mounted at a central location. Measurements taken at remote positions are digitized, given identifying characters, and multiplexed in a serial stream to the central location. Each display device has an address constituting the identifying characters. The address is a unique digital number implemented by closing a particular combination of switches. The display device faceplate carries the switch-closing means so that as the faceplate is mounted on different display devices, the information having that address will automatically appear on that particular display device.

3,641,532
FAULT MONITOR FOR USE WITHIN A SYNCHRO-TORQUE SYSTEM

Hugh P. McAdams, Jr., Drexel Hill, Pa., assignor to Litton Precision Products, Inc., Beverly Hills, Calif.

Filed Jan. 26, 1970, Ser. No. 5,768
Int. Cl. G08c *19/00*
U.S. Cl. 340—198 **5 Claims**

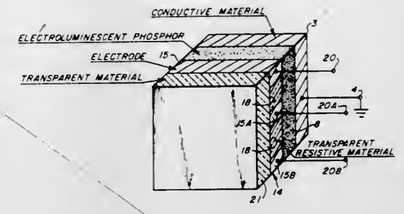


A fault monitor is connected within a synchro-torque system between a synchro transmitter and a synchro receiver forming the system. The synchro transmitter is energized by alternating current that transmits data to the synchro receiver over electrical conductors to which the fault monitor is connected for receiving energizing alternating current. The monitor passes generated direct current through the synchro transmitter and receiver and applies the current to monitoring switches connected to a warning device. The warning device is energized in the absence of the direct current for indicating a fault condition within the synchro-torque system.

3,641,533
SOLID-STATE ELECTROLUMINESCENT MOVING DISPLAY DEVICE

Frederick B. Sylvander, Rutherford, N.J., assignor to The Bendix Corporation

Filed June 26, 1969, Ser. No. 836,704
Int. Cl. G08c *19/38*
U.S. Cl. 340—198 **5 Claims**

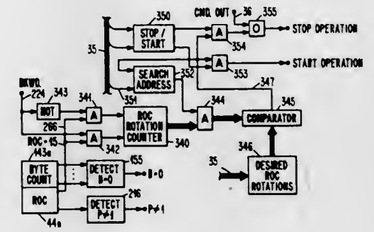


A device for providing a moving display having an electroluminescent phosphor layer arranged to emit a band of light when alternating current voltages of different amplitudes are applied across the phosphor layer. A layer having a plurality of electrodes separated by transparent resistive material is positioned at one side of the phosphor layer and a common electrode layer is positioned at the opposite side of the phosphor layer. The voltages are applied to the electrodes and to the common electrode layer and the amplitudes of the voltages are changed sequentially to cause the band of light to move in a direction and at a speed in accordance with the sequence and rate of change in the amplitudes of the voltages.

3,641,534
INTRARECORD RESYNCHRONIZATION IN DIGITAL-RECORDING SYSTEMS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,766
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 A **59 Claims**

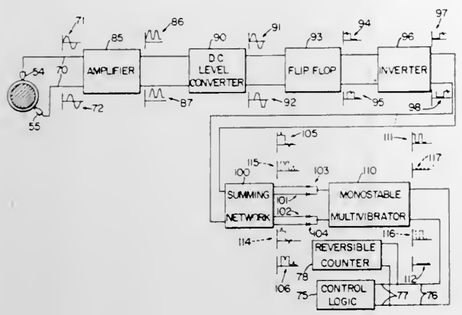


In a block of recorded data, resynchronization signals are interleaved among sets or subblocks of digital data signals for enabling reestablishment of self-clocking in a dead track. Resynchronization occurs within a block of recorded data. In a multitrack system, requeuing the dead track in the skew buffers (SKB) is accomplished by placing the dead track SKB position at maximum leading relationship to the most lagging active track. If data signals from the previously dead track are received by SKB before the dead track has reached maximum lagging relationship, the previous dead track is activated for normal operation. Otherwise, the dead track is returned to dead-tracking status. The readout counter (ROC) of SKB controls read-back operations and determines signal format on the record media.

3,641,535
POSITIONING APPARATUS EMPLOYING A MAGNETIZED SCREW THREAD

George S. Knopf, Dayton, Ohio, assignor to The Bendix Corporation

Filed May 13, 1969, Ser. No. 824,243
Int. Cl. G08c 19/00
U.S. Cl. 340—195 19 Claims

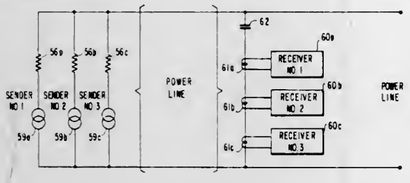


A positioning apparatus, and method of making same, having two relatively movable members with one of the members having detectable means thereon and the other having reading head means capable of detecting the detectable means whereby such apparatus is capable of precisely relatively moving its members and indicating both the magnitude and direction of movement of one member with respect to the other.

3,641,536
GASOLINE PUMP MULTIPLEXER SYSTEM FOR REMOTE INDICATORS FOR SELF-SERVICE GASOLINE PUMPS

Frank B. Prosprich, West Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Apr. 14, 1970, Ser. No. 28,379
Int. Cl. G08c 19/16
U.S. Cl. 340—203 15 Claims

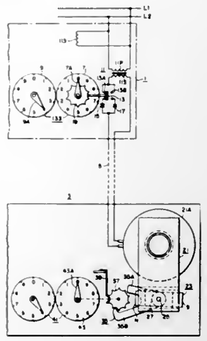


A multiplexer system employing a form of pulse width modulation and detection. The system is particularly adapted to use in a telemetering system for remote indicators. The system operates in connection with a self-service gasoline pump and transmits via a 60 Hz. powerline gallons and dollars information. A modified form of the system transmits only dollars or only gallons information for a plurality of pumps. The system can be further adapted for inventory control purposes. Variants include signal forcing and totalizing circuits for a plurality of independent information sources providing absolute accuracy.

3,641,537
METERING SYSTEM HAVING A REMOTE REGISTER

Emil deCoudres Hoffman, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1969, Ser. No. 816,503
Int. Cl. G08c 19/16
U.S. Cl. 340—205 4 Claims

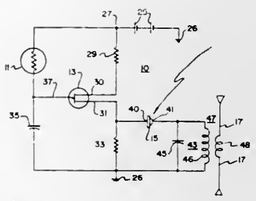


Information is transmitted from a meter to a remote register. At the meter a transmitter is provided which generates two groups of unidirectional pulses having different polarities. The changes from a group of one polarity to a group of another polarity occur at a rate dependent on a variable quantity being measured. The pulses are transmitted to the remote register for application to an electromagnet which develops a magnetic field having a direction dependent on the polarity of the pulses. A polarized magnetic armature disposed in the field oscillates a pawl at a rate dependent on the rate of change in the direction of the magnetic field. The pawl actuates indicators which form part of the remote register.

3,641,538
TELEMETERING TRANSMITTER

John A. Whitney, Fort Wayne, and Richard E. Woods, Markle, both of Ind., assignors to Peter Eckrich & Sons, Inc., Fort Wayne, Ind.

Original application Nov. 2, 1967, Ser. No. 680,111, now abandoned. Divided and this application Feb. 18, 1970, Ser. No. 12,348
Int. Cl. G08c 19/18; H04b 1/04; H03k 7/10
U.S. Cl. 340—208 8 Claims

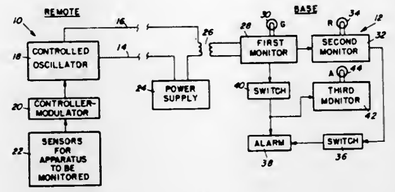


A temperature sensor in circuit with a unijunction transistor drives a tunnel diode FM transmitter for generating discontinuous bursts of a frequency modulated oscillatory output signal. The transmitter is mounted within a unitary housing which is conveyed along with linked meat products whose internal temperature is being monitored.

3,641,539
REMOTE MONITORING AND CONTROL SYSTEM

John C. Lesher, Erie, Pa., assignor to James Barber, Erie, Pa., a part interest

Filed Dec. 23, 1968, Ser. No. 786,316
Int. Cl. G08b 29/00, 19/00
U.S. Cl. 340—123.1 24 Claims



A system is disclosed which is capable of monitoring the condition of an apparatus, generating signals indicative of that condition, and, at a remote location, providing signals indicative of the detected status. The remote unit comprises a controllable oscillator which produces a signal which may be pulsed, or modulated, to represent data to be sent to the base station. The base unit includes three monitoring circuits responsive to the pulse rate of the data signals to provide positive readings of the status of the device being monitored. The first monitoring circuit represents a rest condition at the remote station when in a first state of energization, and indicates an alarm, or fault, condition when in a second state of energization, for example. In this second state, the second monitoring network is also energized to provide a positive indication of the alarm. The third monitoring circuit is a self-surveillance circuit which becomes energized when the telemetering network malfunctions. By energizing the monitoring networks in various combinations, additional information concerning the remote station can be derived. Audible alarm means are provided in conjunction with the monitoring networks to indicate a fault condition at the remote unit. Switching means are provided to turn the audible alarm off during the time that the fault condition is being corrected, the alarm again sounding when corrections have been made and the system is ready to be returned to its monitoring condition.

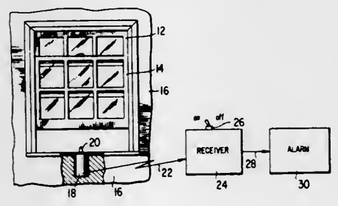
ERRATUM

For Class 340—224 see:
Patent No. 3,641,425

3,641,540
WIRELESS ALARM SYSTEM

Joel L. Cutler, 798 Red Barn Lane, and Joel I. Glickman, 812 Red Barn Lane, both of Huntingdon, Pa.

Continuation-in-part of application Ser. No. 848,258, Aug. 7, 1969. This application Mar. 30, 1970, Ser. No. 23,577
Int. Cl. G08b 1/08
U.S. Cl. 340—224 6 Claims

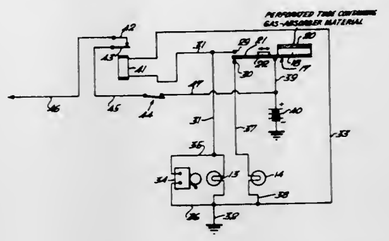


A double-hung window mounted alarm actuating unit comprises a transmitter for generating wireless signals, a relative constant voltage power source connected to the transmitter, and switch means mounted to the bottom and top windows operable upon the opening of either the bottom or top window for actuating the transmitter to generate a wireless signal for a relatively short period, whereby the transmitter draws power from the power source only during the relatively short period. Switch means closing for relatively short period via magnetic decoupling of spring biased armature.

3,641,541
EMERGENCY GAS ALARM SYSTEM

James R. Borkhuis, 485 Lakeview Drive, Oradell, N.J.

Filed Jan. 12, 1970, Ser. No. 2,203
Int. Cl. G08b 21/00
U.S. Cl. 340—237 R 8 Claims

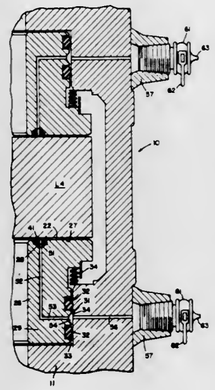


A gas alarm system utilizing a gas absorber cartridge having a high affinity to the desired gas to be detected and a balance scale supporting the gas absorber container at one side and an adjustable counterweight of the other side, is described. Imbalance of the scale due to gas absorption in the gas absorber cartridge actuates an electrical switch in an alarm circuit to energize visual and audible signals indicative of gas in the surrounding atmosphere.

3,641,542
VALVE APPARATUS HAVING LEAK-DETECTING MEANS

Marvin H. Grove; Kee W. Kim, and Lyle R. Van Arsdale, all of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Filed Mar. 19, 1970, Ser. No. 21,074
Int. Cl. F16k 25/00, 37/00
U.S. Cl. 340—238 5 Claims



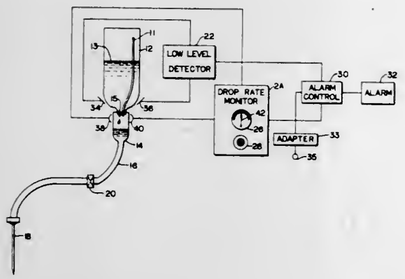
Apparatus making use of at least one main flow control valve and having means for determining whether or not the

valve is leaking. The valve employs a sealing assembly which seals with respect to the valve working surface of the valve member (e.g., gate) on two spaced concentric areas. Duct means serves to establish communication between the space between the sealing areas and the exterior of the valve. In the event of leakage past the sealing assembly, it can be detected by noting any discharge of fluid through the duct means to the exterior of the valve. In one embodiment the leakage is noted by opening a vent valve adjacent the main valve. In another embodiment the valve can be checked for leakage at a remote station.

3,641,543
LOW-LEVEL DETECTOR AND DROP RATE MONITOR, PARTICULARLY FOR INTRAVENOUS FEEDING APPARATUS

Sherman Rigby, Boston, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.

Filed June 9, 1969, Ser. No. 831,522
Int. Cl. G08b *21/00*; **G05d** *7/00*; **A61m** *5/14*
U.S. Cl. 340—239 R **12 Claims**



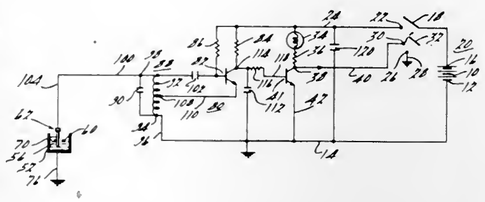
In a low-level detector, a capacitance is established between an active electrode and grounded electrode as a function of a solution level in a container. A detector, which is periodically clamped to ground at a rate specified by a multivibrator, is operatively connected to the active electrode. The capacitance between the electrodes, which represents the solution level, is sensed in the detector. In a drop rate monitor, a signal from a multivibrator is applied to a first electrode and is capacitively coupled to a second electrode when a solution drop in a chamber appears therebetween. A stabilizing loop maintains the signal at the second electrode at a constant level. The coupled signal at the second electrode is applied to a detector which generates a signal in response to each drop. The signal from the detector is applied to a tachometer circuit for determination of the drop rate of the solution.

3,641,544
LOW-LIQUID LEVEL INDICATOR

Bernard G. Radin, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1970, Ser. No. 48,218
Int. Cl. G08b *7/00*
U.S. Cl. 340—244 C **6 Claims**

A low-liquid level indicator particularly adapted for use in an automotive vehicle which employs an oscillator whose tank coil is shunted by a probe adapted to be immersed in a liquid. When the liquid level is satisfactory, the probe is immersed in the liquid and its impedance will be relatively low thereby reducing the Q of tank circuit to a value where no oscillations will be produced. When the liquid level falls to an unsatisfactory level, the probe will no longer be immersed in the liquid, and its impedance will be increased sharply thereby resulting in oscillations being produced by the oscillator. This change, between the nonoscillatory and the oscillatory states, is sensed by a solid-state switching network which controls the energization of a warning means,

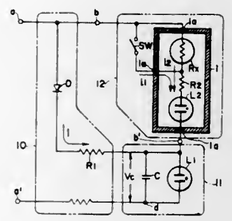


preferably in the form of a lamp. The warning means is energized when the probe is not immersed in the liquid and the oscillator is in an oscillatory state.

3,641,545
DEVICE FOR INDICATING INTERRUPTED ELECTRIC SERVICE

Takaaki Okada, Ageo-shi, Japan, assignor to Kabushiki Kaisha Koparu

Filed Dec. 3, 1969, Ser. No. 881,711
Claims priority, application Japan, Dec. 9, 1968, 43/107246
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 B **6 Claims**



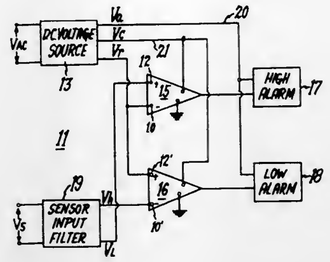
A device having neon lamps for indicating an interruption of AC service. One of the neon lamps remains to be dark for the initial service period prior to an interruption and also for the subsequent interruption period, but it automatically begins to flicker in a predetermined cycle upon the resumption of service following the interruption. If necessary, another neon lamp adapted to be lighted up only for the period of the initial service may be utilized as the pilot lamp for indicating the initial service period. The distinguishment of the initial service period from the resumed service period is undertaken by an impedance-retaining circuit which utilizes a combination of a photoconductive element and a neon lamp.

3,641,546
HIGH-LOW VOLTAGE LEVEL SENSOR

Richard D. Blackburn, Dalton, Mass., assignor to General Electric Company

Filed Jan. 2, 1970, Ser. No. 47
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 A **6 Claims**

High- and low-level voltages are derived from a voltage to be monitored and applied, along with a reference voltage, to the input terminals of a pair of comparators. An over voltage condition causes the comparator monitoring the low-level voltage to be energized, while an under voltage condition results in the energization of the comparator monitoring the

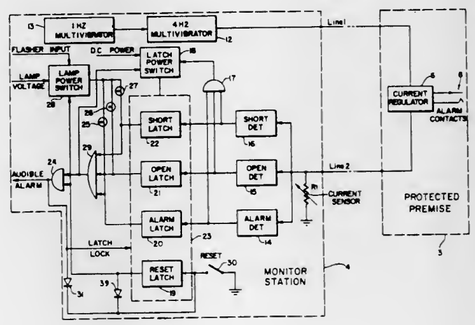


higher level voltage. The signal then produced by the comparators is used to energize an alarm device.

3,641,547
LINE SECURITY SYSTEM

Martin H. Reiss, Newton, and William L. Cotter, Beverly, both of Mass., assignors to Alarmtronics Engineering, Inc., Newton, Mass.

Filed May 25, 1970, Ser. No. 40,285
Int. Cl. G08b *13/22*
U.S. Cl. 340—253 R **3 Claims**

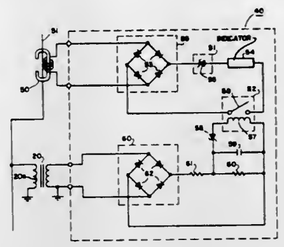


A system for insuring the security of electrical transmission lines extending between a monitor station and a remote station utilizes a voltage source at the monitor station which impresses an AC voltage signal on the transmission lines. At the remote station, the AC voltage signal is rectified and the rectified signal is applied to a current regulator which provides a quiescent pulsed direct current of constant level to the transmission lines. The current regulator is arranged to provide a higher alarm current when an intruder is detected at the remote station. At the monitoring station, a shorted line fault detector provides a signal when a reversal in the direction of normal current flow occurs in the transmission lines, an open line fault detector provides a signal when a drop in current below the quiescent current level is detected, and an alarm current fault detector provides a signal when a rise in current above the quiescent current level is detected. The impressed voltage is periodically reduced in amplitude to a level which barely sustains the minimum quiescent current level to test line impedance.

3,641,548
OVERCURRENT-FAULT INDICATOR APPARATUS FOR TRUNK LINES OF AN ELECTRICAL POWER DISTRIBUTION SYSTEM

Larry A. Groce, Route 2, Box 575, Arlington, Tex.

Continuation-in-part of application Ser. No. 780,541, Dec. 2, 1968, now abandoned. This application Feb. 17, 1969, Ser. No. 799,621
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 A **5 Claims**

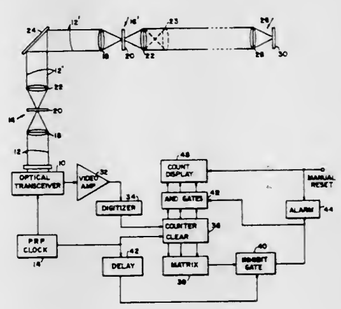


Disclosed is an overcurrent-fault indicator apparatus for locating a trunk line fault in a power distribution system. The apparatus includes a pair of input terminals adapted to be connected with the primary and secondary of a power distribution transformer, first and second switches which may be a zener diode and reed-type contact, respectively, coupled to the first input terminal through a full wave rectifier, indicating display means which is actuated by the closing of the first and second switch, and second switch closing means coupled to the other input terminal for closing said second switch, this closing means including time delay circuitry provided by a resistor and capacitor for temporarily delaying the opening and closing of the reed switch.

3,641,549
ELECTRO-OPTICAL PERIMETER INTRUSION ALARM

Victor A. Misek, Hudson, N.H., and Robert Myers, Chelmsford, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

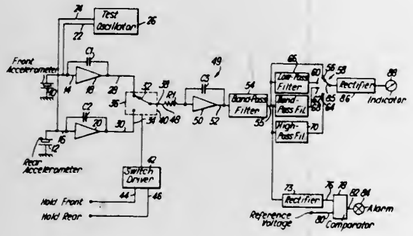
Filed June 25, 1970, Ser. No. 49,794
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 B **14 Claims**



An electro-optical perimeter intrusion alarm system wherein a pulsed beam of collimated optical energy from a transceiver is directed sequentially to a plurality of partially retroreflective stations. Each station may have an additional

reflector for directing energy transmitted by that station in a desired direction to enclose a perimeter with a beam or beams of energy. An intruder interrupting the beam blocks the pulsed energy which would otherwise be returned to the transceiver by any retroreflectors further along the perimeter. The area between stations which is crossed by an intruder is determinable from the characteristics of the energy retroreflected by the plurality of partially retroreflective stations.

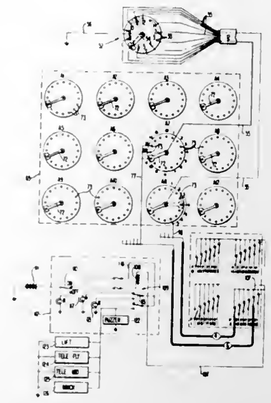
3,641,550
VIBRATION-MONITORING SYSTEMS
Derek L. Lynas, and Walter G. Cross, both of Mickleover, England, assignors to Rolls Royce Limited, Derby, England
Filed Feb. 25, 1970, Ser. No. 13,940
Claims priority, application Great Britain, Mar. 5, 1969, 11,582/69
Int. Cl. G08b *19/00*
U.S. Cl. 340—261 **10 Claims**



A vibration-monitoring system for use with a three-shaft gas turbine engine. Vibration from the engine is picked up by two electrical transducers and transmitted to a filter network. The filters produce three electrical outputs in three separate frequency bands, each of which corresponds to the frequency band of the vibration produced by a respective one of the shafts. The vibration produced by each shaft can thus be separately indicated.

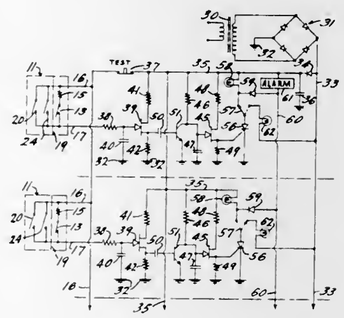
3,641,551
SAFE LOAD CONTROL SYSTEM FOR TELESCOPIC CRANE BOOMS
Russell L. Sterner, Greencastle, Pa., and William L. Lowe, Hagerstown, Md., assignors to Grove Manufacturing Company, Shady Grove, Pa.
Filed Dec. 19, 1968, Ser. No. 785,145
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 **18 Claims**

An overload prevention and indicator system for telescopic boom cranes of the stationary and/or mobile types in which the boom is pivotally raised and lowered in vertical planes by hydraulic lift motor means, the system including first electrical circuit means responsive to complete a selected on of a plurality of circuits corresponding to the length of the boom, the plurality of circuits being respectively connected in series to a corresponding plurality of second electrical circuit means, each representative of a predetermined increment of boom length, responsive to angular position of the telescopic boom in the vertical plane. The plurality of angular position outputs of each second electrical circuit means are connected according to predetermined crane overload information to a plurality of third circuit means representative of pressure range increments, and a pressure switch responsive to fluid pressure in the lift motor means, which is indicative of boom load, is connected to successively operate said third circuit means as the fluid pressure in said lift motor means increases and actuate an indicator and render inoperative selected operations of the crane when the crane approaches an overload or tipping condition at the particular length,



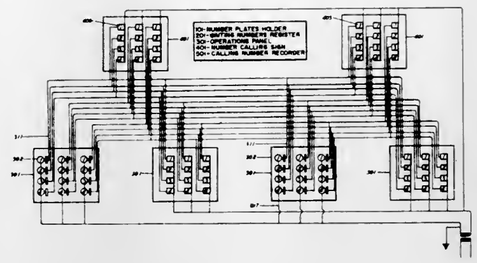
angle and load condition at which it is operating at any instant.

3,641,552
CENTRALLY LOCATED ACCESS ALARM SYSTEM
Nelson A. Friberg, Toledo, Ohio, assignor to International Assemblix Corporation, Toledo, Ohio
Filed Feb. 18, 1970, Ser. No. 12,401
Int. Cl. G08b *13/22*
U.S. Cl. 340—274 **9 Claims**



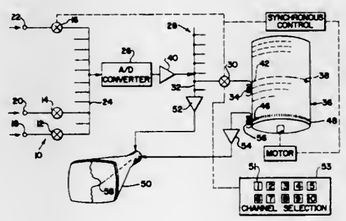
Apparatus for monitoring a plurality of remotely located doors or conditions in a building. A separate sensor is positioned adjacent each door or at each location at which a condition is sensed. Each sensor or group of connected sensors has a resistor which is connected to a centrally located detector circuit by means of a separate pair of electrical conductors. Each sensor includes means for disconnecting the resistor from the connected pair of conductors either when the adjacent door is open, when some other monitored condition is sensed, or when the sensor is tampered with. The detector circuit includes two relaxation oscillators. The resistor in one or more sensors forms a portion of an RC timing circuit in a first of the oscillators. A change in the resistance in the sensor changes the operating frequency of the first oscillator to cause the second oscillator to cycle and trigger an alarm.

3,641,553
REGISTERING AND CALLING SYSTEM FOR WAITING NUMBERS
Dicksen T. W. Lau, 450 17th Ave., San Francisco, Calif.
Filed May 4, 1970, Ser. No. 34,039
Int. Cl. G07c *9/00*; **G08b** *5/00*
U.S. Cl. 340—286 **9 Claims**



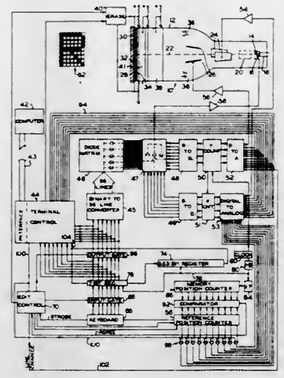
A unified system for recording the presence of patrons in a waiting area, registering the total number of such patrons to enter said waiting area, and notifying said patrons of the availability of servicing facilities consecutively, in the order of their arrival in said waiting area. Until such time as a patron is called to an available servicing facility, there is no requirement to wait in a particular regimented position within the waiting area. No pens, guard railings or the like are utilized to maintain lines and the waiting area may be comfortably and aesthetically designed.

3,641,554
DISPLAY SYSTEM
Peter E. Slavin, Winchester, Mass., assignor to Intelligent Instruments, Inc., Winchester, Mass.
Filed Jan. 9, 1970, Ser. No. 1,584
Int. Cl. G08b *5/22*
U.S. Cl. 340—324 A **2 Claims**



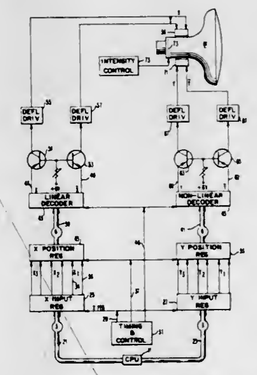
Analog data from a number of sources are converted to digital form and stored in a memory unit having a plurality of channels. Any channel of digital data may be retrieved selectively and converted back into analog form to operate a cathode-ray tube which will graphically display the original data as a trace, the deflection in one direction representing the magnitude of the quantity and the deflection in the other direction representing time.

3,641,555
COMPUTER TERMINAL APPARATUS
John R. Griffin, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Dec. 9, 1968, Ser. No. 782,254
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **18 Claims**



A computer terminal, e.g., for communicating with a remote computer via a telephone link, includes a bistable cathode-ray storage tube having a split screen comprising first and second storage portions, and an input device such as a keyboard for writing a line of information on a first portion of the tube target. A shift register is employed for digitally storing a line of information inserted therein from a local keyboard. The same line of information is written on a first portion of the target from the shift register. This line of information is selectively correctable by inserting corrections in the shift register, erasing the first portion of the target, and rewriting the contents of the shift register. The corrected line may then be transmitted from the shift register to the distant computer, and a plurality of lines of information are written on the second portion of the cathode-ray tube split-screen target from the computer. Each corrected line may be added to computer storage and displayed on the second part of the split-screen target.

3,641,556
CHARACTER ADDRESSING SYSTEM
Richard A. Jones, Red Hook, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,790
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **6 Claims**



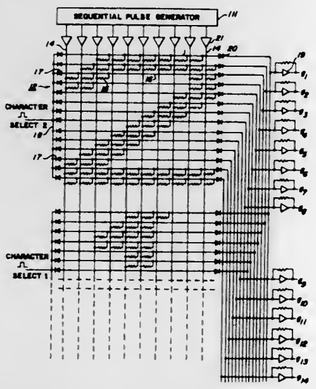
In a cathode-ray tube display, digital signals representative of characters to be generated are divided into two groups

representing the two directions of deflection. A first group provides a linear region in which uniform deflection steps are generated for each signal increment, while a second group provides a nonlinear region in which varied deflection increments are generated for each signal increment. The nonuniform regions provide higher resolution in those areas where curves normally occur and less resolution in the remaining areas thus providing higher character resolution in specified positions on the same size matrix. The nonuniform deflection is obtained from associated decoders through a weighted addressing system which provides nonuniform current increments independent of the digital data input.

3,641,557.
CIRCUIT ARRANGEMENT FOR AN ELECTRIC DISCHARGE TUBE

Arthur Tisso Starr, 39 Northumberland Road, New Barnet, Hertfordshire, England

Original application May 6, 1965, Ser. No. 453,757, now Patent No. 3,503,063, dated Mar. 24, 1970. Divided and this application Nov. 20, 1969, Ser. No. 878,493
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **4 Claims**



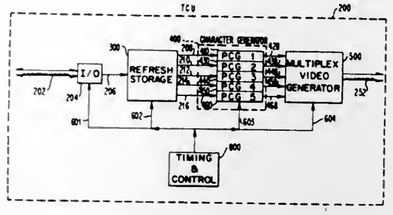
For an electric discharge tube which forms character symbols on the fluorescent material on the face thereof, a circuit arrangement for selectively energizing electrodes within said tube. Said circuit arrangement has interconnections to said tube for determining the formation of said character symbols. According to one aspect of the present invention there is provided a circuit arrangement for modulating the pattern of voltages appearing on a set of electrodes in said electric discharge tube at predetermined intervals of time, comprising selection means for selecting a predetermined pattern corresponding to a symbol representing data, timing means for governing the timing of said predetermined intervals of time, and circuit means each having a set of interconnections determining said pattern.

3,641,558
MULTIPLEXED VIDEO GENERATION

William C. Cook, Rockville, and Walter J. Hogan, Silver Spring, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,711
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **5 Claims**

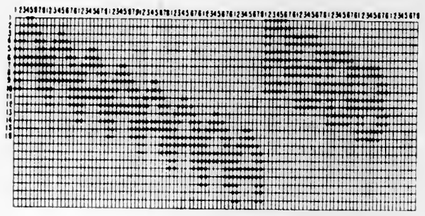
The number of sequential line buffers in a digital TV system including a symbol generator which consists of a group of segment generators is reduced by connecting in series a group of sequential line buffers. Each sequential line buffer is a shift register which contains the number of character positions representing one horizontal row of characters. For a 10-line-high character with six lines of vertical spacing between rows of characters, five segment generators and five sequential line buffers are used to achieve maximum hardware efficiency.



3,641,559
STAGGERED VIDEO-DIGITAL TV SYSTEM

Walter J. Hogan, Silver Spring, and Ancile E. Malden, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,712
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**



A display system including a symbol generator which consists of a group of segment generators. Each segment generator generates a portion of the symbol to be displayed in time sequence so that the segment generator which generates the first portion of the symbol would be free to generate first portion of a following symbol or the first portion of a symbol on an other display device while the other segment generators are generating the remainder of the first symbol. The outputs from this group of segment generators are transmitted through a group of multiplex gates which assemble the symbol segments into video data signals for a group of display devices. The transmission of the information signals to the segment generators is staggered so that during a specified period of time mutually exclusive symbol segments are presented on different displays. Since the staggering of the display presentation would result in the rows of symbols being displaced vertically on the different display devices, the vertical synchronization signals are also staggered to allow the vertical positioning of rows of symbols on all displays to be the same.

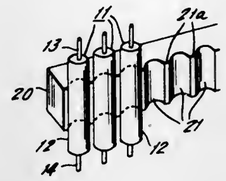
3,641,560
HIGH-SPEED ILLUMINATION APPARATUS

Joseph M. Klockenbrink, Riverside, Conn., assignor to Path Computer Equipment Inc., Stamford, Conn.

Filed Feb. 24, 1969, Ser. No. 801,635
Int. Cl. G08b *5/36*
U.S. Cl. 340—343 **6 Claims**

A high-speed illumination apparatus advantageous for use in non-impact printers and character display devices. Rows

of openings are provided on a rotatable drum, with the openings in each row forming a specific character or symbol such that the character or symbol of each row differs from the character or symbol of every other row. A large number



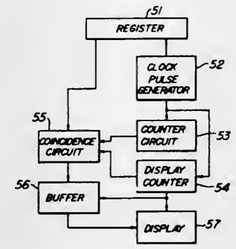
of characters are provided in each row. In some applications, greater than 100 characters or symbols are provided per row. A line of characters to be either printed or displayed are examined for the purpose of illuminating lamps at positions in each row of the rotating drum which are present in the line of characters to be either printed or displayed. A single row of lamps is provided in a lamp assembly which is mounted in a stationary fashion within the drum. Those specified character positions of a particular row which are to be illuminated are enabled by energizing the cathode and anode electrodes of the selected lamps. A single trigger pulse is applied for igniting the lamps through a common conductive bar which has the dual function of operating as the trigger electrode and as reflector means for all of the lamps to concentrate illumination toward those selected characters formed within the row to be illuminated.

The illumination may be converted into a character display through the use of a long-persistence, luminescent panel or, alternatively, may be printed through the use of either a paper having a light-sensitive coating or may be printed upon plain paper through the use of a transfer drum which transfers the image formed by a sensitized coating upon the transfer drum which is then transferred and imprinted upon the plain paper.

3,641,561
DISPLAY SYSTEM FOR USE IN DESK TOP COMPUTERS

Kinichiro Osugi, Yokohama-shi; Yoshiaki Suzuki, Tokyo; Tokio Mori, and Toshiharu Inamoto, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1969, Ser. No. 798,407
Claims priority, application Japan, Feb. 28, 1968, 43/13228
Int. Cl. G06f *7/02*
U.S. Cl. 340—324 R **4 Claims**

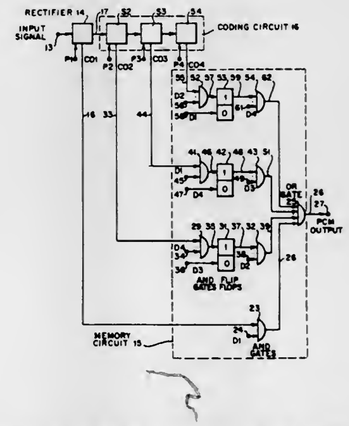


A display system for use in a serial-type desk top computer having a recirculating shift register and a plurality of cold-cathode gas readout tubes adapted to indicate information stored in the register sequentially. The system includes in combination a clock pulse generator operating the register, incremental and decremental counters connected to receive the output of the pulse generator, a coincidence circuit receiving the outputs of the register and both counters at its input side and providing a signal to light a corresponding one of the tubes so that the information may be displayed on the tubes from the most significant character to the least significant character successively for a display period of time sufficiently long to be visually recognized for each character being displayed thereon.

3,641,562
METHOD OF TIMING A SEQUENTIAL APPROXIMATION ENCODER

Toshio Kobayashi, Yokohama, and Yukihiko Mineshima, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 9, 1970, Ser. No. 9,497
Claims priority, application Japan, Feb. 14, 1969, 44/10898
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **1 Claim**



A method of coding in a plurality of unit coding circuit stages connected in cascade and of the same number as the coded bits comprises the steps of applying input signals to a first unit coding circuit stage, rectifying the input signals in the first stage, discriminating the polarity of the input signals in the first stage, successively applying the absolute value output signals of the first stage to the following stages for coding the absolute value signals, and converting the coded pulses of the following stages into series-coded pulses by discriminating the polarity of the input signals in the first stage in the coding period for the absolute value signals in the following stages.

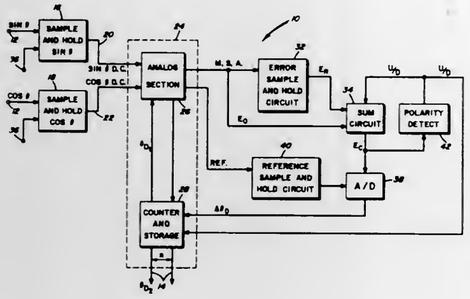
3,641,563
CORRECTION CIRCUIT FOR CONVERTERS

Glenn F. Cushman, Burlington; Brijeshwari Prasad, Methuen, and Robert W. Wisleder, Wilmington, all of Mass., assignors to Litton Systems, Inc., Burlington, Mass.

Filed Feb. 25, 1970, Ser. No. 14,025
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **11 Claims**

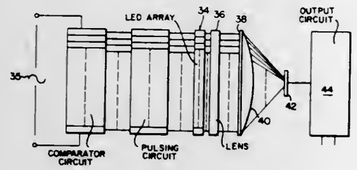
An error correction circuit for an analog-to-digital converter is shown wherein and analog-to-digital converter includes a counter-and-storage circuit that stores an analog input signal in the form of a preliminary digital signal. An error sample-and-hold circuit receives an error signal, including switching and offset errors, generated by the analog-to-digital converter and stores that signal while the switching and offset errors are removed therefrom. The resulting signal

is then applied to a second analog-to-digital converter where it is converted to a digital error signal which is applied to the counter circuit. The counter removes the digital error signal



from the stored preliminary digital signal and stores the final corrected digital signal within the storage circuit. This error correction circuit does not cause an increased quantization error while removing the switching and offset errors from the input signal.

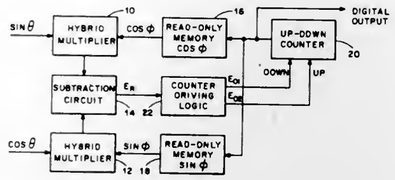
3,641,564
DIGITAL-TO-ANALOG AND ANALOG-TO-DIGITAL SIGNAL TRANSLATION WITH OPTICAL DEVICES
Matthew Fassett, Belmont, Mass., and Phyllis S. Unger, Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed June 23, 1966, Ser. No. 559,973
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **4 Claims**



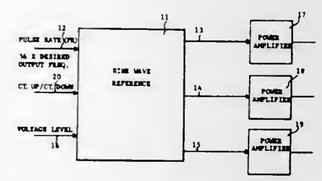
A signal-translating apparatus is disclosed wherein an electrical signal can be transformed between analog form and digital form by use of electrically energizable radiation sources which are selectively energized to produce a radiation signal in one form and electrical and optical means are used to modify this radiation signal into an electrical signal of a different form.

3,641,565
DIGITAL RESOLVER
Richard J. Ivers, Arlington, and William H. McDonough, Acton, both of Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.
Filed Sept. 2, 1969, Ser. No. 854,658
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **6 Claims**

A digital system for providing precise high-resolution angular data directly from analog input signals. Quadrature-phased input signals are processed to provide an error signal which is employed to control a digital feedback loop operative to generate a digital output signal representative of input angular data.

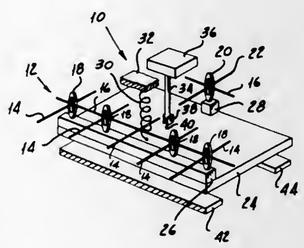


3,641,566
FREQUENCY POLYPHASE POWER SUPPLY
Charles E. Konrad, and Burnette P. Chausse, both of Roanoke, Va., assignors to General Electric Company
Filed Sept. 29, 1969, Ser. No. 861,840
Int. Cl. H03b *19/00*; **H03r** *13/02*
U.S. Cl. 340—347 DA **7 Claims**



An apparatus for providing a polyphase alternating current including a pulse generator and a digital counter for converting the pulses into a predetermined number of distinct consecutive signals which are cyclically applied to a decoding circuit for each phase, each having one output line per signal. A digital to analog converter connected to each decoding circuit designates a voltage level to each consecutive signal which is proportional to the sine of the phase angle during which the signal occurs.

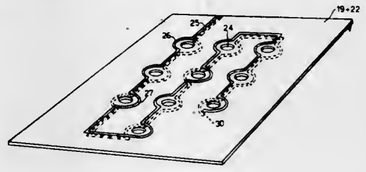
3,641,567
NONCONTACTING KEYBOARD AND INTERLOCKNG SYSTEM
Ivan O. Fieldgate, Halesite, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,771
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 **1 Claim**



A noncontacting keyboard encoder having an interlocking system for preventing erroneous readouts in response to a

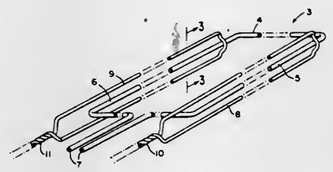
concomitant actuation of a plurality of keys in which there is provided for each character to be encoded a key-operated floating plate which is eccentrically biased to a position at which respective saturating magnets carried thereby are positioned adjacent a column of locations at which saturable cores are selectively arranged in a coded pattern and adjacent a saturable gate core spaced from the column normally to inhibit generation of signals on respective output lines each of which is common to corresponding positions of all columns and on a readout gating line common to all gate cores in response to an interrogating signal on an interrogating line threading all cores. Actuation of a key first enables the associated gate core and then the associated column cores and release of the key first disables the column cores and then the gate core to prevent readout until one key is fully actuated and when two keys are concomitantly actuated.

3,641,568
KEYBOARD FOR CALCULATING MACHINES, TELEPRINTERS, TERMINALS AND THE LIKE
Riccardo Brescia, Ivrea, and Lucio Montanari, Cascinette d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Aug. 31, 1970, Ser. No. 68,392
Claims priority, application Italy, Sept. 1, 1969, 53173 A/69
Int. Cl. G08c *9/04*
U.S. Cl. 340—365 **12 Claims**



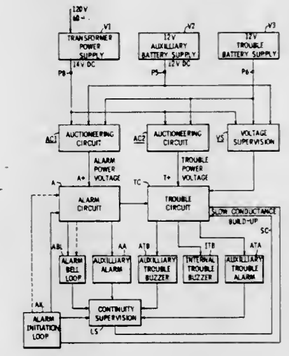
In a keyboard for calculating machines and the like having a magnetic circuit and means for generating a magnetic flux therein, a means operated by depressing the keys for causing a variation in the magnetic flux and detecting that variation including a ferromagnetic plate having a plurality of openings through which ferromagnetic elements can be caused to move by the action of the keys, and a plurality of detecting windings disposed about the openings in accordance with a predetermined digital code whereby an electromotive force is generated at the ends of the detecting winds when a ferromagnetic element moves through an opening in the ferromagnetic plate.

3,641,569
HIGHWAY VEHICLE SENSOR SYSTEM
David Bushnell, Framingham; Roger L. Fuller, Stow, and Joseph J. Oliver, Allston, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Oct. 1, 1970, Ser. No. 77,155
Int. Cl. G08g *1/015*
U.S. Cl. 340—38 L **10 Claims**



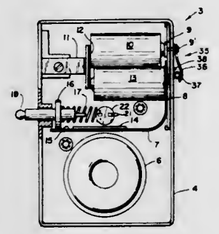
A highway vehicle sensor, consisting of a main loop energized with low radiofrequency energy and having side legs spaced apart a predetermined distance, is buried in the surface of a highway. Around each side leg is a probe loop in which a signal is generated by the presence of a vehicle over the probe loop. The two output signals from the two probe loops are processed to determine vehicle presence, direction of travel, speed and length and headway between vehicles on the highway.

3,641,570
ALARM SYSTEM
Francis T. Thompson, 3482 Treeline Drive, Murrysville, Pa.
Filed Apr. 2, 1969, Ser. No. 812,621
Int. Cl. G08b *17/06, 19/00, 29/00*
U.S. Cl. 340—409 **10 Claims**



An alarm system is disclosed wherein an alarm initiation loop, including sensing devices, an alarm bell loop and other auxiliary alarm and trouble indicating devices are supervised for continuity. Should a fault occur in one of these loops, such as for example a broken wire, a trouble indication is given and alternate paths are provided in the initiation and bell loops to insure that an alarm is given in case an alarm condition, such as a fire, should occur. A trouble indication is also given if the main power source should fail or if any auxiliary power sources utilized should fail or drop below safe limits. Also a trouble indication is given if a spurious conductive path should gradually build up in the alarm initiation load due to moisture for example.

3,641,571
COMBINATION BURGLAR AND FIRE ALARM
Irwin I. Kitman, 5840 Beacon St., Pittsburgh, Pa.
Filed Sept. 15, 1969, Ser. No. 857,793
Int. Cl. G08b *19/00*
U.S. Cl. 340—420 **4 Claims**



A burglar alarm which may be mounted on the inside of a door, having a switch that is actuated upon opening of the

door to sound an alarm. A lock may be operated from the outside or inside by a key to prevent operation of the alarm when opening the door.

The alarm, with modifications, may be operated in several ways, such as by a placement on the floor and opening of the door; by triggering as the result of opening a window blind when the alarm is mounted below the window; and by mounting on the inside of a door so as to be operated by opening thereof.

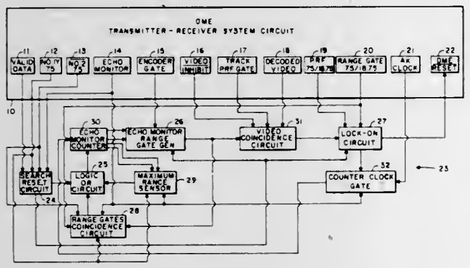
A fire alarm may be combined therewith so as to be operated by melting of a fusible element.

3,641,572

DIGITAL ECHO PROTECTION CIRCUIT FOR DME AND TACAN

Michael W. Lundgreen, Cedar Rapids, Iowa, and Rolin H. Denniston, Crystal, Minn., assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Jan. 19, 1970, Ser. No. 3,699
Int. Cl. G01s *9/16, 9/56*
U.S. Cl. 343—7.3 **10 Claims**



A false distance indication sensing and correction circuit for aircraft radio distance measuring systems, such as DME, that searches from zero miles out to the DME range gate or 100 miles whichever is shorter. When the echo monitor range gate is coincident with a decoded video pulse, it looks again at the same range two more times and then continues on outbound if decoded video pulses do not reappear in the echo monitor range gate with the repeated looks. If the decoded video is a valid synchronous range reply pulse, the echo monitor range gate stays at that range and after 0.2 second, when the DME is in the 75 Hz. PRF (Pulse Repetition Frequency) mode, or 0.8 second, when the DME is in the 18.75 Hz. PRF mode of operation, the DME is trigger reset to search thereby initiating another search cycle.

3,641,573

PSEUDONOISE RADAR SYSTEM

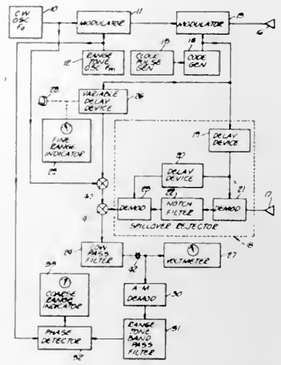
Damian F. Albanese, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,057
Int. Cl. G01s *9/04*
U.S. Cl. 343—12 R **8 Claims**

A radar system having the features of spillover discrimination and unambiguous range indication.

Spillover occurs in a continuous wave radar, for example, in direct transmission of electromagnetic energy from a transmitting antenna to a receiving antenna. It is desirable to suppress this energy in the receiver so that the target echo will come in clear. The invention provides this suppression by using a low-pass filter having a cutoff frequency less than f_w, where f_w is the word rate in a pseudonoise radar system.

In the case of ambiguous range, the carrier is modulated with a pilot tone or range tone. If the range tone wavelength is at least twice as long as the maximum range desired, the



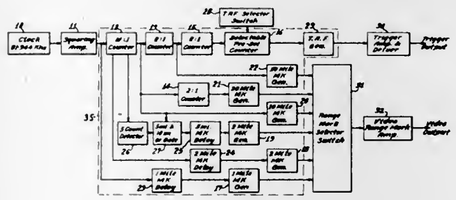
received range tone may be filtered out and used with a phase detector to produce an unambiguous range indication.

3,641,574

RADAR RANGEMARK CALIBRATOR

Robert D. Douglas, 298 Coral Way, Jacksonville Beach, Fla.

Filed Mar. 16, 1970, Ser. No. 19,975
Int. Cl. G01s *7/40*
U.S. Cl. 343—17.7 **10 Claims**



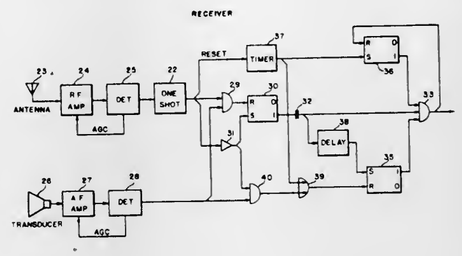
A calibrator for a radar system calibrated in standard distance units including an oscillator producing analog signals having a frequency of oscillation of a whole digit ratio to a predetermined number of whole standard distance units, a squaring amplifier converting the analog signals to digital signals, and digital logic means for scaling down the digital signals into a plurality of digital outputs differing in a plurality of whole number multiples of the frequency of oscillation. A switch selectively completes the circuit from the logic means to an amplifier which amplifies selected digital outputs to provide the plurality of video rangemark pulses. The digital logic means also includes a selectable preset counter for further scaling down the scaled down digital outputs into a plurality of other digital outputs differing in a plurality of whole number multiples of the frequency of oscillation. A switch selectively sets the counter to feed a selected other digital output to a trigger repetition generator which generates a plurality of trigger repetition pulses for feeding into an amplifier. Delay means are also incorporated in the digital logic means for selectively delaying some of the digital outputs.

3,641,575

REMOTE CONTROL APPARATUS

John H. Auer, Jr., Fairport, and Jerry P. Huffman, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,980
Int. Cl. H03k *5/20*
U.S. Cl. 343—225 **12 Claims**



There has been provided remote control apparatus for generating signals over a communications means which selectively controls the actuation of apparatus at remotely located devices from a control location in accordance with the distance of the control location to the devices.

The improvement includes dual range signal means for transmitting the signals over two ranges of energy having different propagation time characteristics and receiver means at each of these remotely located devices responsive to each associated range of energy for receiving the signal and generating associated outputs. Gating means responsive to the first associated output initiates the gating sequence signal having a duration relative to the propagation time of the second associated output. Output control means responsive to the gating sequence signal and the second associated output activates the apparatus when the second associated signal occurs within the duration of the gating sequence signal.

There has also been included a timing means coupled to the communication means at the remote location responsive to the control signals for generating a second gating signal of predetermined duration longer than the first gating signal for each control pulse. A counter responsive to the first gating means generates an output signal after a predetermined number of registered first gating signals, the output signal for activating the apparatus at the remotely located devices. Reset means responds to the control signals, the first gating means and the timing means for cancelling the counts stored in the counter when a control signal occurs during the first gate interval and without said second gate interval thereby only control signals of a selected range of frequency are capable of driving the counter to predetermined counts for generating the output signal.

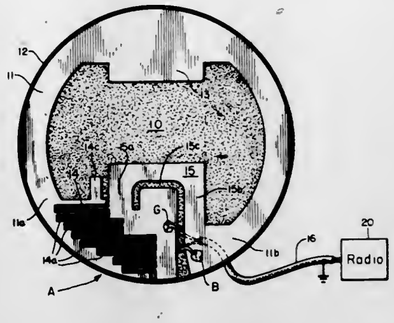
3,641,576

PRINTED CIRCUIT INDUCTIVE LOOP ANTENNA

Walter Farbanish, Park Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,562
Int. Cl. H01q *11/12*
U.S. Cl. 343—743 **5 Claims**

A relatively high-impedance FM radio antenna is provided consisting essentially of a circular loop of conductive foil having a discontinuity therein and deposited on one side of a substantially planar, nonconductive substrate. Attached to one end of the loop is a conductive foil impedance element, such as an inductor, for providing impedance matching in order to efficiently transfer the received electrical signals from the high-impedance antenna to a relatively low-impedance radio input circuit. A conductive foil capacitance element is connected between the impedance-matching element and the other end of the loop in order to parallel tune



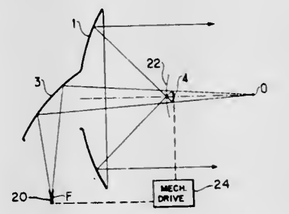
the antenna to the FM radio signal band. The capacitance is formed by depositing spaced interdigitated elongated strips of conductive foil on the substrate, with successive strips alternately attached to the loop end and to the impedance-matching element.

3,641,577

SCANNING ANTENNA HAVING A SPHERICAL MAIN REFLECTOR WITH MOVEABLE SUBREFLECTOR

Yves Tocquec, Marcoussi, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 12, 1969, Ser. No. 806,458
Claims priority, application France, Mar. 12, 1968, 143418
Int. Cl. H01q *19/14*
U.S. Cl. 343—754 **12 Claims**



An antenna having a large spherical reflector and a small reflector, wherein the main lobe may be oriented with respect to the large spherical reflector by virtue of the displacement of the small reflector, these displacements being rotations around the center of curvature of the large reflector, and the waves irradiating the small reflector being spherical around the same center, the beam formed by these waves shifting with the displacement of the small reflector.

3,641,578

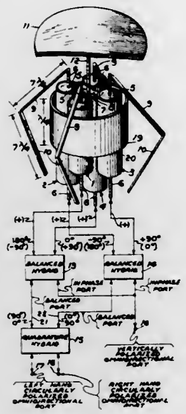
DISCONE ANTENNA

William M. Spanos, Wayne, and Michael S. Polgar, Ocean Port, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 21, 1970, Ser. No. 56,830
Int. Cl. H01q *1/48, 13/00, 21/00*
U.S. Cl. 343—773 **8 Claims**

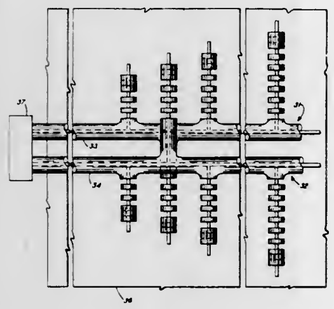
A multimode discone antenna providing simultaneously, without interference, right- and left-hand circularly polarized omnidirectional patterns and a vertically polarized omnidirectional pattern. Four coaxial cables are disposed parallel to each other with the outer conductors electrically coupled together. An extension of the central conductor of each

coaxial line is extended downward from the upper end of and at a given angle less than 90° to the associated one of the coaxial lines. This arrangement, when the two pairs of diagonally disposed coaxial lines are excited in a balanced



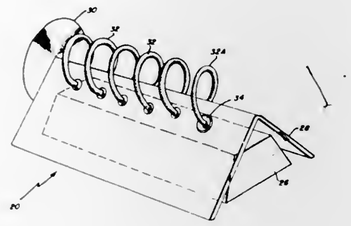
relationship and the pairs are excited orthogonally by first energy, provides simultaneously both right- and left-hand circularly polarized omnidirectional patterns. When a disc is electrically connected to the outer conductors of the four coaxial lines and is physically supported in spaced and orthogonal relation to the upper end of the four coaxial lines, the antenna, in addition, simultaneously provides, when each of the four coaxial lines are excited in phase by second energy, a vertically polarized omnidirectional pattern. An embodiment of a feed arrangement is disclosed enabling the four coaxial lines to be excited in phase by the second energy and simultaneously to enable each of the four coaxial lines to be excited by the different orthogonally related first energy.

3,641,579
FREQUENCY-INDEPENDENT ICR ANTENNA
George N. Voronoff, San Francisco, Calif., assignor to Textron Inc., Belmont, Calif.
Filed Mar. 17, 1969, Ser. No. 807,603
Int. Cl. H01q *11/10, 1/36*
U.S. Cl. 343—792.5 **7 Claims**



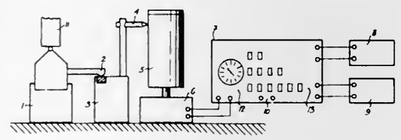
The invention provides interrupted coaxial-line radiators upon a ground plane and arranged in a frequency-independent manner for broadband radiation from a flush-mounted structure. The radiators may be arranged in a log-periodic array or in a spiral array for frequency-independent operation.

3,641,580
FRACTIONAL TURN HELICAL ANTENNA
George J. Monser, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 22, 1969, Ser. No. 887,024
Int. Cl. H01q *1/36*
U.S. Cl. 343—895 **4 Claims**



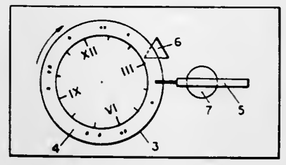
A modified helical antenna comprising an array of uniformly spaced fractional turns of a helix mounted on a ground plane bent in the form of a gable such that the fractional turns are positioned outside the ridge of the gable about a common axis parallel to the ridge. The ends of the fractional turns are in electrical contact with the ground plane except for one end of the first fractional turn which passes through the ground plane into a connector. A reflecting plate is positioned perpendicularly to the axis at the end of the antenna opposite the connector to provide a backwardly directed wave which enhances the directivity pattern.

3,641,581
METHOD AND ARRANGEMENT FOR REGISTERING AND RECORDING OF DEFORMATIONS OF MATERIALS
Milan Holecek, Prague, Czechoslovakia, assignor to Projektovy ustav dopravnich a inzenyrskych staveb, Prague, Czechoslovakia
Filed June 17, 1969, Ser. No. 834,116
Claims priority, application Czechoslovakia, June 18, 1968, PV 4459/68
Int. Cl. G01d *9/10;* **G01n** *3/08*
U.S. Cl. 346—1 **6 Claims**



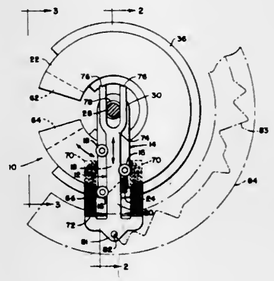
Deformations of material such as soil and rock due to prolonged application of pressure are automatically registered and recorded on record carriers moved through an equal step at given time interval which time intervals are increased automatically in the course of application of pressure.

3,641,582
RING MONITOR
George Constantin Theodoridis, 17 Colonnade Club, University of Va., Charlottesville, Va.
Filed July 15, 1970, Ser. No. 55,189
Int. Cl. G01d *9/10*
U.S. Cl. 346—21 **1 Claim**



An electronically amplified acoustic signal is used to activate a marker and record the time of occurrence of the signal on a rotating disc.

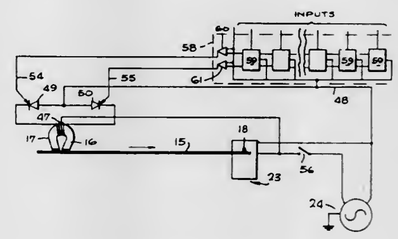
3,641,583
ELECTRODYNAMIC TRANSDUCER
Gerhard Cless, Skokie, and Jerome L. De Boo, Barrington, both of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed May 28, 1970, Ser. No. 41,486
Int. Cl. G01d *5/20*
U.S. Cl. 346—29 **10 Claims**



An input/output assembly comprises a pair of members coupled such that a first thereof carrying an input/output element is reciprocative relative the second at each position of the second; and both members are translocatable simultaneously in a path extending transversely of the direction of reciprocation. First and second electrical induction coils, having portions which are coupled in the magnetic flux field of a permanent magnet structure, are secured to the first and second members, respectively, with the coupled portions disposed in planes having orthogonal aspects, each to the other. The second coil is circumposed about a rail which is included in the magnetic structure and is movable longitudinally thereof in response to magnetmotive forces when the transducer is adapted as a motor and in response to mechanical forces applied to the element when the transducer is adapted as a generator for generating an electrical effect therein. The displacement of the second coil results in simultaneous movement of the first coil longitudinally of said rail. The first coil is arranged in said flux field for movement transversely of said rail independently from the second coil such that the element is reciprocated when the transducer operates as a motor and an electrical effect is generated therein upon movement of the element along a vector having a velocity coordinate corresponding to the first coil when the transducer operates as a generator.

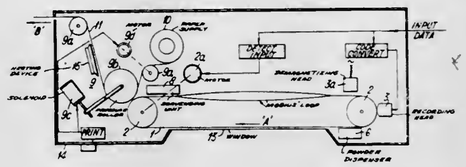
The rail may be arcuate whereby the first member is reciprocative radially, along an r axis, independently of said second member with which it is simultaneously translocatable angularly, along a θ axis in a plane with the r axis.

3,641,584
INCREMENTAL RECORDER WITH COMMON CONTROL OF DRIVE AND RECORDER
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif.
Filed Aug. 4, 1969, Ser. No. 847,354
Int. Cl. G11b *15/20*
U.S. Cl. 346—74 M **5 Claims**



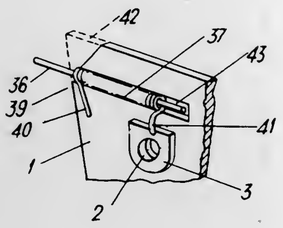
Apparatus for recording a series of data bits on a record track, and including a motor preferably operable by alternating current to advance the record track one step for each half cycle of the alternating current in either direction, and a recording head structure for recording data bits on the track during one of the half cycles of the alternating current but not during the reverse half cycle.

3,641,585
APPARATUS FOR DISPLAYING AND PRINTING INFORMATION
Robert James Hodges, Cheshunt, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 26, 1969, Ser. No. 853,182
Claims priority, application Great Britain, Nov. 14, 1968, 53,999/68
Int. Cl. G03g *15/16, 15/22, 19/00*
U.S. Cl. 346—74 MP **6 Claims**



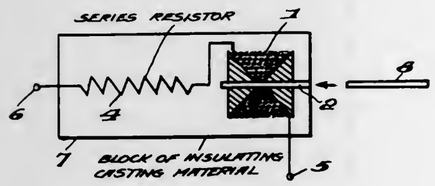
Apparatus for display and printing of received information by means of a continuous recording band of stainless steel of the type which when selectively magnetized forms the resulting information pattern throughout the thickness of the band. The band is powder treated on the one side for viewing the true image pattern therein and is powder treated on the other side as well for transferring the inverse image pattern therein to a permanent recording medium, thereby converting both sides to visible and true images. An alternative embodiment provides for a single twist in the band whereby it is first treated for viewing and then in accordance with the twist is recycled for purposes of generating permanent copy.

3,641,586
MAGNETIC RECORDING HEAD OF MULTIPLE CORE PRINTED CIRCUIT CONSTRUCTION
Jack Thomas Armon Woodward, and Edward Graham Jordan, both of Harlow, England, assignors to Standard Telephones and Cables Limited, London, England
Filed Nov. 5, 1969, Ser. No. 874,180
Claims priority, application Great Britain, Jan. 8, 1969, 1,233/69
Int. Cl. G11b *5/20, 5/28, 5/42*
U.S. Cl. 346—74 MC **16 Claims**



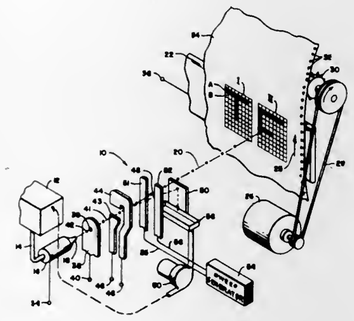
A magnetic recording device comprising a row of closely spaced core members each having a separate energization winding wherein each core winding combination is in fixed relationship with a corresponding single-sided printed circuit board, with an end turn and the associated core end thereof being flush with that printed circuit board edge perpendicular thereto which forms part of the device's recording surface. The terminations on the respective printed circuits of each winding and its corresponding input leads are cyclically staggered from board to board to allow the boards to be stacked together without increasing the overall length of the stack, thus permitting the cores to be separated by substantially the thickness of the windings only. Means are included for aligning each board with respect to the others and for aligning the device with the recording medium.

3,641,587
MEANS FOR RECORDING TRANSIENT VOLTAGES
Lars-Goran Virsberg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 22, 1969, Ser. No. 887,047
Claims priority, application Sweden, Feb. 24, 1969, 2492/69
Int. Cl. G01r *19/16;* **G11b** *5/12;* **H01f** *27/40*
U.S. Cl. 346—74 MC **2 Claims**



For recording overvoltages in a high-voltage network a coil is used wound on a nonmagnetic, insulating frame providing with a double conical space for the winding. The coil is provided with an axial hole through which a magnetic tape is drawn. The coil is connected to the network over a voltage divider and the coil, together with a series resistor, is cast into a block to form a compact unit.

3,641,588
ELECTROSTATIC PRINTER
Jack L. Metz, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed June 10, 1970, Ser. No. 44,953
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **3 Claims**



A stream of ink drops is electrostatically moved in a printing course from each of a plurality of supply nozzles toward an ink receiving carrier which is moved vertically in a straight path transversely of said course. A sweep voltage associated with each nozzle is repeatedly generated across a first pair of parallel electrodes which are generally horizontally spaced laterally of said course, and has a magnitude adapted for deflecting the associated stream generally horizontally in repeated lines extending transversely of the path of carrier travel and the course between the nozzle and the carrier. The movement of the carrier is adapted to generate one dimension of a two dimensional character from each stream, the sweep of the trace made by the associated "horizontally"deflected ink stream generating the other dimension.

A print or nonprint mode is produced by selected of a pair of voltages applied across a second pair of parallel electrodes which are disposed about the course of each stream and generally vertically spaced. In the print mode, each stream remains in its printing course by clearing the edge of a mask. In the nonprint mode, each stream is deflected generally vertically from its course onto the mask and prevents printing. Accordingly, character definition is obtained. The edge of the mask is a sawtooth configuration having sloping segments, each of which is associated with one stream.

To produce characters which are "squared" to the carrier, the electrodes of each first pair are nonparallel to the direction of the path of carrier movement. Their angle of tilt from a parallel condition is a function of the speed of the carrier such that a line trace resulting from a single sweep of an associated stream of ink drops will mark the carrier normal to the path of carrier movement; and the edge of the mask is parallel to the line along which each ink stream is "horizontally" deflected when printing.

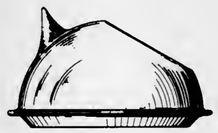
DESIGNS

FEBRUARY 8, 1972

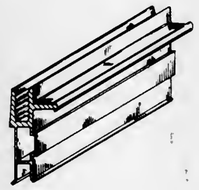
222,930
HAT
Barbara L. Goldfarb, 30165 Stellamar Drive, Birmingham, Mich. 48010
Filed May 25, 1970, Ser. No. 23,120
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—239



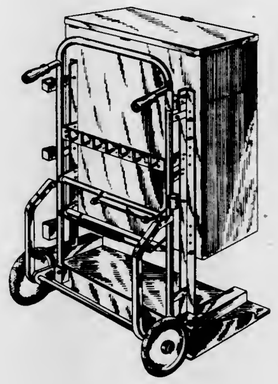
222,931
DISPENSING CONTAINER FOR LIQUIDS OR THE LIKE
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 26, 1970, Ser. No. 25,634
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—83



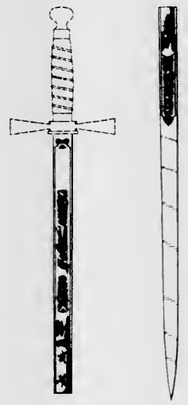
222,932
EXTRUDED PLASTIC MEETING RAIL FOR WINDOW UNIT
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,973
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



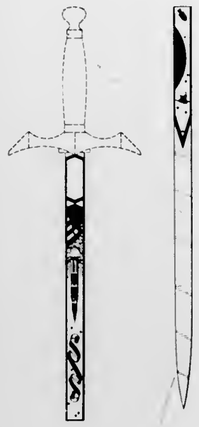
222,933
MOBILE STORAGE CABINET
Hesper P. Brown, 1314 Portland Ave., Walla Walla, Wash. 99362
Filed June 26, 1970, Ser. No. 23,679
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



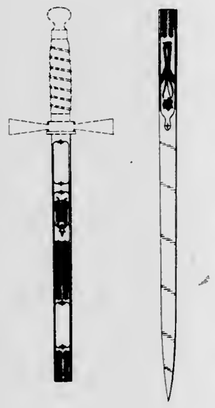
222,934
SWORD BLADE
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed June 16, 1970, Ser. No. 23,507
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



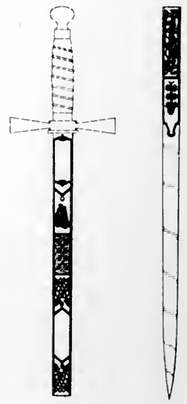
222,935
SWORD BLADE
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed June 16, 1970, Ser. No. 23,508
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



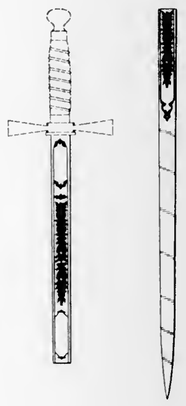
222,936
SWORD BLADE
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed June 16, 1970, Ser. No. 23,510
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



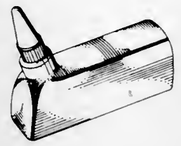
222,937
SWORD BLADE
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed June 16, 1970, Ser. No. 23,511
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



222,938
SWORD BLADE
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed June 16, 1970, Ser. No. 23,512
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



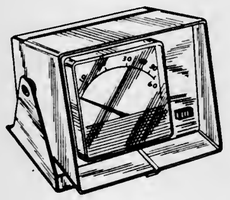
222,939
OIL CONTAINER
Robert V. Haas, Colonia, N.J., assignor to The Singer Company, New York, N.Y.
Filed Oct. 21, 1970, Ser. No. 25,584
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—5



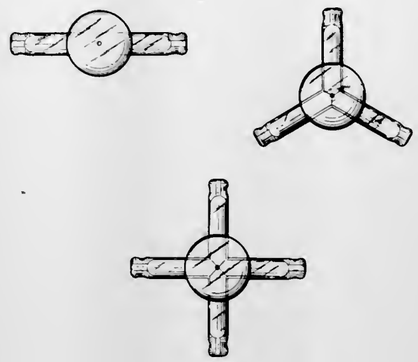
222,940
FIREPLACE GRATE
Randall H. Eaves, Chattanooga, Tenn., assignor to Desoto, Inc., Des Plaines, Ill.
Filed Sept. 28, 1970, Ser. No. 25,242
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—98



222,941
DEPTH METER
Robert C. Knutson, Rosemount, Minn., assignor to Vexilar, Inc., Minneapolis, Minn.
Filed Sept. 11, 1970, Ser. No. 24,948
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D26—1



222,942
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Sept. 2, 1970, Ser. No. 24,806
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



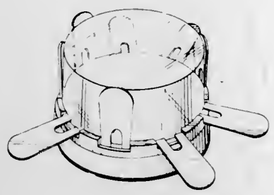
222,943
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Sept. 2, 1970, Ser. No. 24,807
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



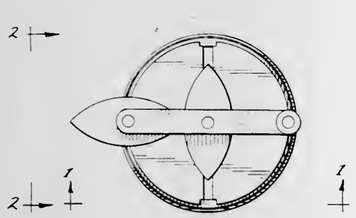
222,944
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Sept. 2, 1970, Ser. No. 24,808
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



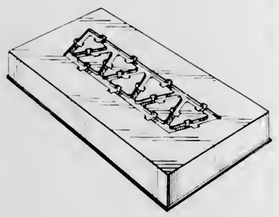
222,945
GAME PIECE BOX
William W. Knox, Concord, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed May 13, 1971, Ser. No. 143,295
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



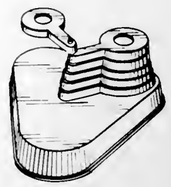
222,946
NOVELTY AMUSEMENT DEVICE
William W. Knox, Concord, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed May 13, 1971, Ser. No. 143,288
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



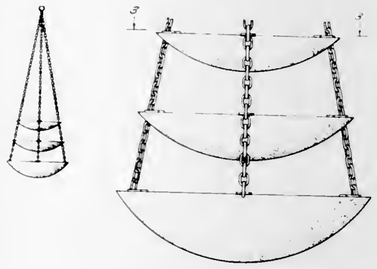
222,947
TRANSPOSITION PUZZLE
William W. Knox, Concord, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed May 13, 1971, Ser. No. 143,293
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



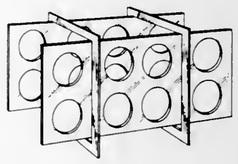
222,948
STACKING PUZZLE
William W. Knox, Concord, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed May 13, 1971, Ser. No. 143,294
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,949
HANGING PLANTER
Raymond Godfrey Souder, 808 NW. 1st Ave., Fort Lauderdale, Fla. 33311
Filed Oct. 23, 1970, Ser. No. 25,609
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3



222,950
STORAGE RACK FOR WINE BOTTLES OR THE LIKE
Eugene J. Majewski, 121 Elmore St., Park Ridge, Ill. 60068
Filed Sept. 2, 1970, Ser. No. 24,809
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



222,951
COMBINED LITTER AND ARTICLE STOWAGE BUCKET FOR AUTOMOBILES OR THE LIKE
Freeman Stringer, 209 W. 3rd St., Lee's Summit, Mo. 64063
Filed Sept. 24, 1970, Ser. No. 25,182
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—34



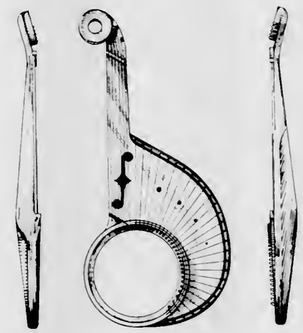
222,952
SPOON OR SIMILAR ARTICLE
Shiro Kaneko, 58 Ohaza Matsuoka-Shinden, Yoshida-cho, Nishi Kanbara-gun, Nugatan-ken, Yoshida, Japan
Filed Sept. 24, 1970, Ser. No. 25,579
Claims priority, application Japan Mar. 25, 1970
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



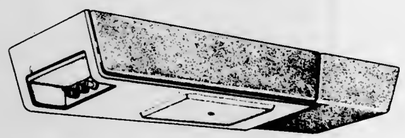
222,953
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 16, 1970, Ser. No. 26,025
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



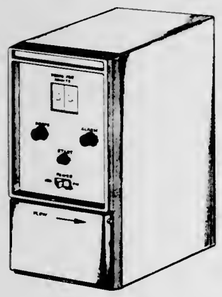
22,954
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manhein Gardens, Philadelphia, Pa. 19144
Filed Sept. 28, 1970, Ser. No. 25,211
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

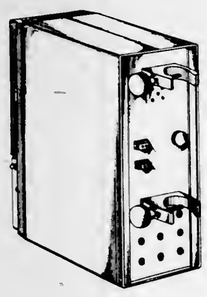


222,955
TELEVISION CAMERA OR SIMILAR ARTICLE
Donald K. Krumin, Fort Lauderdale, and Richard John Toth, Oakland Park, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 29, 1970, Ser. No. 25,708
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D61—1

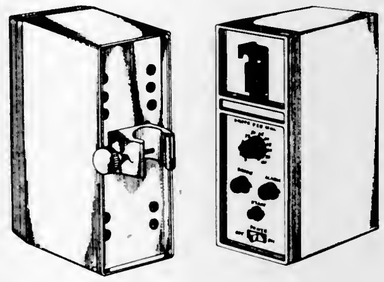


222,956
FLUID DELIVERY APPARATUS
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Continuation-in-part of design application Ser. No. 20,773, Jan. 6, 1970. This application Sept. 16, 1970, Ser. No. 25,029
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

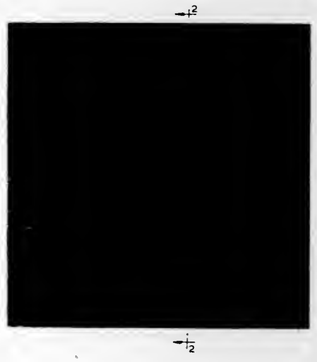




222,957
FLUID DELIVERY APPARATUS
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Continuation-in-part of design application Ser. No. 20,774, Jan. 6, 1970. This application Sept. 16, 1970, Ser. No. 25,030
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



222,958
SOLID SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Oscar G. Tejeda, Newark, and Harry A. Shortway, Glen Rock, N.J., assignors to Congoleum Industries, Inc., Kearney, N.J.
Filed Mar. 17, 1969, Ser. No. 16,258
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF FEBRUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Akerlund & Rausing: *See—*
Dilot, Rolf Nagnus, 3,640,188.
Abe, Kozo: *See—*
Nakanishi, Michio; Kobayashi, Ryosuke; Abe, Kozo; and Mukai, Toshihiko,3,641,060.
Abex Corporation: *See—*
Kohler, William H., 3,640,586.
Abramson, Aaron L. Time coded, coin control gate system. 3,641,314, Cl. 235-61.8
Abrasive Aids Pty. Limited: *See—*
Griffiths, Wilfred, 3,639,958.
Abrasive Development Limited: *See—*
Field, Anthony Gerard, 3,640,023.
Abriss, Murray S. Method for stabilizing latices. 3,640,935, Cl. 260-29.6
ACF Industries, Incorporated: *See—*
Nelson, Norman A., 3,640,299.
Acme-Hamilton Manufacturing Corporation: *See—*
Bauman, Joseph F.; Kurtz, Edward, Jr.; Cini, Adrian V.; and Antrobus, Robert E., 3,640,312.
Adaglio, Marie-Francoise. Warning device for cylinders for liquefied gas under pressure. 3,640,241, Cl. 116-109.
Adams, Gary A., to Koehring Company. Part removing mechanism for removing container parts and the like from nested stacks of parts. 3,640,408, Cl. 214-8.5
Adams, Robert B., to Moore Products Co. Flow meter. 3,640,133, Cl. 73-194.
Adams, Robert P., to Cenco Medical/Health Supply Corporation, mesne. Apparatus for tissue preparation. 3,639,999, Cl. 34-92.
Addressograph-Multigraph Corporation: *See—*
Raab, Lester R.; and Toby, Dennis E., 3,640,203.
Adelberg, Marvin. Medical liquid administration device. 3,640,277, Cl. 128-214.
Adolphi, Heinrich; Steimmig, Anna; and Spaenig, Hermann, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Imidazole synergist-enhanced phosphoric ester insecticide compositions and insect control therewith. 3,641,248, Cl. 424-212.
Advance Metal Products, Inc.: *See—*
Piccolo, Jerry, 3,640,294.
Advanced Terminals, Inc.: *See—*
Hutley, Ronald W. F., 3,640,521.
Aeroprojects Incorporated: *See—*
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Agfa-Gevaert Aktiengesellschaft: *See—*
Huber, Hans-Peter, 3,640,619.
Huckstadt, Harald; Saleck, Wilhelm; Randolph, August; Moll, Franz; and Ranz, Erwin, 3,640,715.
Von Konig, Anita; Moll, Farnz; Muller-Bardorff, Wolfgang; and Saleck, Wilhelm, 3,640,719.
Agolini, Franco, to Du Pont de Nemours, E. I., and Company. Polymeric phenone photosensitizers and blends thereof with other polymers. 3,641,217, Cl. 260-897.
Aho, Edwin, to Federal-Mogul Corporation. Bearing retainer construction. 3,640,594, Cl. 308-212.
Aichenegg, Paul C.: *See—*
Emerson, Carl D.; and Aichenegg, Paul C.,3,641,109.
Air Reduction Company, Incorporated: *See—*
Michals, Chester S.; and Motroni, Philip J., 3,640,166.
Aires, Ramon Hess: *See—*
Gamble, Edward Bernard; and Aires, Ramon Hess,3,641,368.
Ajax Hardware Manufacturing Corporation: *See—*
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Ajinomoto Co., Inc.: *See—*
Ito, Tomiyasu,; Nagata, Koichiro; Ichikawa, Takehiko; and Kato, Tetsuya, 3,641,003.
Akatsu, Mitsuhiro: *See—*
Yamamoto, Hisao; Kitagawa, Sumio; Inaba, Shigeho; Sakai, Shigeru; Hirohashi, Toshiyuki; Maruyama, Isamu; Akatsu, Mitsuhiro; and Izumi, Takahiro,3,641,002.
Akio, Huruya: *See—*
Ishiwata, Mamoru; and Akio, Huruya,3,640,752.
Akita, Minoru: *See—*
Inamura, Seiichi; Kondo, Yusuke; Akita, Minoru; and Chikanari, Kenichi,3,640,509.
Aktiebolaget Asea-Atom: *See—*
Stilling, Jens Ole, 3,640,117.
Aktiebolaget Electrolux: *See—*
Crener, Bengt Olof; Anderson, Erik Arne; and Ernolf, Stig Carl-Oskar, 3,639,939.
Aktiebolaget Kanthal: *See—*
Bizzarri, Venanzio, 3,640,907.
Aktienbolaget Bahco Ventilation: *See—*
Gustavsson, Karl-Axel Goran, 3,640,053.
Aktieselskabet Niro Atomizer: *See—*
Moller, Aage; and Straarup, Orla, 3,640,467.
Alarm Lock Company, Inc.: *See—*
Kossen, Dale J.; Foster, Richard W.; and Benson, Charles R., 3,641,396.
Alarmtronics Engineering, Inc.: *See—*
Reiss, Martin H.; and Cotter, William L., 3,641,547.
Albanese, Damian F., to International Telephone and Telegraph Corporation. Pseudonoise radar system. 3,641,573, Cl. 343-12.
Albers, Wouter; and Verberkt, Jacobus, to U.S. Philips Corporation. Semiconductor heterojunction device. 3,641,406, Cl. 317-237.
Albert, Joel M.: *See—*
Weiss, Shirley I.,3,640,027.
Albritton, George Washington, to Ashbrook Corporation. Aeration. 3,640,514, Cl. 261-91.
Alderson, William T.: *See—*
Hornschuch, Hanns; and Alderson, William T.,3,640,646.
Aleks, Vytant, to Brearley Company, The. Adjustable shelf and cabinet structure. 3,640,498, Cl. 248-230.
Alfa Romeo S.p.A.: *See—*
Garcea, Giampaolo, 3,640,259.
Alfa-Laval AB: *See—*
Thylefors, Henric Wilhelm, 3,640,452.
Alfelt, Lars-Goran: *See—*
Falk, Sven Uno; and Alfelt, Lars-Goran,3,640,772.
All American Tool & Mfg. Co.: *See—*
Reibig, Eric A., 3,640,508.
Alleman, Raymond Arthur; and Henry, William Nelson. Apparatus for chemically etching surfaces. 3,640,792, Cl. 156-345.
Allen, C. Andrew, to Allen, S. A., Inc. Nipper apparatus for harvesting trees. 3,640,322, Cl. 144-34.
Allen, Clayton H.; and Heine, John C., to Bolt Beranek and Newman Inc. Linear phonograph record strip. 3,640,539, Cl. 274-42.
Allen, Joseph H.: *See—*
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Allen, Robert J.; and Novack, Robert Lee, to Prototech Company, division of Bolt Beranek and Newman Inc. Method of operating fuel cell and preventing corrosion. 3,640,773, Cl. 136-86.
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Tomiyasu, Hiroshi; Inagaki, Tsuguya; Kajiura, Hiroshi; and Watanabe, Kinnosuke. Device for measuring flow rates of powdery and granular materials. 3,640,135, Cl. 73-228.

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LIST OF DESIGN PATENTEES

TO WHOM

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Oneida Ltd.: *See*—
Manderfield, Ellen B. 222,953.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

93 3,639,914
114 3,639,915
130 3,639,916
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CLASS 4

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166 3,639,920
172.11 3,639,921
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91 3,639,927
327 3,639,929
330 3,639,930
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CLASS 8

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CLASS 9

2F 3,639,933

CLASS 13

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71 3,639,934
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250.06 3,639,938
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352 3,639,940
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CLASS 16

29 3,639,942
82 3,639,943
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CLASS 17

11 3,639,945
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CLASS 18

1 3,640,655
8 3,640,670
16 3,640,660
35 3,640,668

CLASS 23

15R 3,640,679
22 3,640,678
111 3,640,680
3,640,681
137 3,640,682
145 3,640,683
147 3,640,684
153 3,640,685
181 3,640,686
209.1 3,639,953
230B 3,640,687
232R 3,640,688

CLASS 24

30.5R 3,639,947
49 3,639,949
205.17 3,639,948
230 3,639,950
3,639,951
255BC 3,639,952

CLASS 25

1 3,640,658

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1CL 3,639,954
1.6 3,639,955

CLASS 29

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130 3,639,958
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149.5B 3,639,961
155R 3,639,962
157.3R 3,639,963
159.01 3,639,964
195 3,640,689
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203MM 3,639,965
203D 3,639,966
211 3,639,968
237 3,639,967
408 3,639,969
411 3,639,970
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580 3,639,975
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628 3,639,977
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CLASS 33

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2 3,639,987
11 3,639,988
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19A 3,639,991
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CLASS 34

82 3,639,998
92 3,639,999
125 3,640,000
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CLASS 35

8R 3,640,002

CLASS 36

2.5AL 3,640,003
8.1 3,640,006
15 3,640,004

CLASS 37

42R 3,640,005

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2R 3,640,008
2.2 3,640,009
124.1 3,640,010
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CLASS 42

1R 3,640,012
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42.43 3,640,014
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CLASS 44

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62 3,640,691
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23 3,640,017
29 3,640,018
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CLASS 47

1 3,640,020
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CLASS 51

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215R 3,640,026
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322 3,640,029
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36 3,640,033
126 3,640,036
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177 3,640,035
224 3,640,038
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337 3,640,040
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747 3,640,045
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30 3,640,048
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CLASS 56

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CLASS 57

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34R 3,640,059
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CLASS 60

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320 3,640,088
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CLASS 64

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CLASS 65

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CLASS 66

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CLASS 134

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CLASS 136

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6.16 3,640,776
12.7 3,640,781
13 3,640,777
32.5 3,640,779
111 3,640,780
186 3,640,783
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251 3,640,790
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CLASS 228

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265.35 3,640,469
333 3,640,470
337 3,640,471
552 3,640,472
583 3,640,465
658 3,640,473

CLASS 240

1 3,641,332
6.4W 3,641,333
6.45R 3,641,334
10P 3,641,335
10.6R 3,641,336
52.15 3,641,337

CLASS 241

46.02 3,640,474
55 3,640,475
74 3,640,476

CLASS 242

18R 3,640,477
3,640,478
55.19A 3,640,479
56 3,640,480
56.8 3,640,481
67.1 3,640,482
74.1 3,640,483

CLASS 244

3.21 3,640,484
12C 3,640,485
12R 3,640,486
15A 3,640,487
17.19 3,640,488
23C 3,640,489
116 3,640,490
117R 3,640,491
124 3,640,492

CLASS 246

1R 3,641,338

CLASS 248

27 3,640,493
42 3,640,494
99 3,640,495
188.9 3,640,496
225 3,640,497
230 3,640,498

CLASS 250

41.9G 3,641,339
3,641,340
49.5E 3,641,341
52 3,641,342
71R 3,641,343
71 3,641,344
83R 3,641,346
83.3HP 3,641,348
83.3H 3,641,345
3,641,347
3,641,349
3,641,350
203 3,641,351
207 3,641,352
213VT 3,641,353
216 3,641,354
229 3,641,355

CLASS 251

305 3,640,499
326 3,640,500
332 3,640,501

CLASS 252

8.1 3,640,823
8.3 3,640,824
8.5A 3,640,826
8.5C 3,640,825
8.55 3,640,827
17 3,640,828
32.7 3,640,855
33.2 3,640,856
49.8 3,640,858
3,640,958
49.9 3,640,857
54 3,640,859
56 3,640,860
59 3,640,870
61 3,640,862
62.1 3,640,861
3,640,863
62.3V 3,640,864
62.51 3,640,871
62.61 3,640,867
62.9 3,640,865
3,640,866
63 3,640,868
67 3,640,869
75 3,640,872
78 3,640,873
95 3,640,874
99 3,640,875
3,640,876
3,640,877
3,640,878
103 3,640,879
121 3,640,882
171 3,640,881
3,640,884
182 3,640,886
186 3,640,885
301.1R 3,640,888
301.1 3,640,887
301.2R 3,640,889
301.4F 3,640,890
3,640,891
301.4R 3,639,932
316 3,640,892
321 3,640,893
344 3,640,894
396 3,640,895
408 3,640,896
412 3,640,897
429 3,640,898
431R 3,640,899
437 3,640,900
3,640,901
439 3,640,902
451 3,640,903
455R 3,640,904
455Z 3,640,905
3,641,095
3,641,096
519 3,640,906
521 3,640,907
545 3,640,883
555 3,640,880

CLASS 254

45 3,640,502
84 3,640,503
134.3PA 3,640,504
150 3,640,505
187 3,640,506

CLASS 256

6 3,640,507

CLASS 259

72 3,640,508
104 3,640,509
108 3,640,510
148 3,640,511

CLASS 260

2BP 3,640,909

2EP 3,640,910
2A 3,640,908
2.3 3,640,912
2.5AK 3,640,920
2.5EP 3,640,917
2.5FP 3,640,914
2.5HA 3,640,919
2.5E 3,640,921
2.5F 3,640,911
2.5L 3,640,916
2.5P 3,640,918
2.5R 3,640,913
3,640,915
4R 3,640,922
13 3,640,923
3,640,924
17.4GC 3,640,925
18EP 3,640,926
23CP 3,640,927
23EM 3,640,931
23XA 3,640,928
3,640,930
23H 3,640,929
29.3 3,640,932
29.4U 3,640,934
29.6HN 3,640,936
29.6TA 3,640,935
29.6R 3,640,933
30.8DS 3,640,937
32.8N 3,640,938
33.6AQ 3,640,939
3,640,940
33.6A 3,640,941
37SB 3,640,943
37N 3,640,942
40 3,640,944
41B 3,640,946
45.7R 3,640,945
45.75K 3,640,947
3,640,950
3,640,953
45.75R 3,640,948
3,640,949
45.8NZ 3,640,952
45.8 3,640,951
45.95 3,640,954
47CP 3,640,956
47CZ 3,640,955
47EC 3,639,928
47EN 3,640,957
58 3,640,958
64 3,640,959
65 3,640,960
67R 3,640,961
3,640,963
75H 3,640,964
75M 3,640,962
77.5AN 3,640,967
77.5AP 3,640,965
77.5R 3,640,966
3,640,968
78TF 3,640,969
78R 3,640,970
78.3R 3,640,971
78.4N 3,640,972
78.5T 3,640,973
3,640,974
79.5B 3,640,976
79.5C 3,640,975
80.78 3,640,977
82.1 3,640,978
3,640,979
3,640,980
88.2C 3,640,981
88.2R 3,640,982
89.7 3,640,983
92.1 3,640,984
3,640,985
93.1 3,640,986
93.7 3,640,987
94.2M 3,640,988
94.7A 3,640,990
99.3 3,640,989
112.5 3,640,991
141 3,640,992
146R 3,640,993
191 3,640,994
207.1 3,640,995
3,640,996
209R 3,640,997
210R 3,640,998
239BC 3,640,999
239.1 3,641,000
3,641,001
239.3R 3,641,003
239.3 3,641,002
239.55C 3,641,006
239.55D 3,641,005
239.55 3,641,007
3,641,008
239.57 3,641,009
239.8 3,641,004
240D 3,641,010
240G 3,641,011
240.9 3,641,012
243A 3,641,016
243C 3,641,014
3,641,015
3,641,018
3,641,021
2D 3,641,017
247 3,641,022
248AS 3,641,019
248CS 3,641,020
3,641,023
248 3,641,024
249.5 3,641,025
250 3,641,026
256.4C 3,641,035
256.4F 3,641,027
3,641,028
268BC 3,641,029
268TR 3,641,030
3,641,031
268C 3,641,036
270 3,641,037
287R 3,641,032
289R 3,641,038
292 3,641,039
293.72 3,641,040
294.8F 3,641,033
296D 3,641,034
296R 3,641,042
296T 3,641,041
306.8R 3,641,043
307D 3,641,044
307G 3,641,045
308R 3,641,046
309 3,641,047
309.2 3,641,048
3,641,051
309.6 3,641,049
310C 3,641,050
310R 3,641,052
326.3 3,641,053
327P 3,641,054
332.3R 3,641,055
333 3,641,056
340.2 3,641,057
340.5 3,641,058
340.6 3,641,059
340.7 3,641,060
340.9 3,641,061
347.4 3,641,062
348A 3,641,064
348R 3,641,063
3,641,065
348.5L 3,641,067
348.5V 3,641,066
397.45 3,641,069
3,641,070
397.5 3,641,068
398 3,641,071
401 3,641,072
410 3,641,075
410.6 3,641,073
410.9 3,641,074
429R 3,641,076
3,641,077
429.5 3,641,079
429.7 3,641,078
429.9 3,641,080
3,641,081
431 3,641,082
438.5C 3,641,083
448AD 3,641,085
3,641,086
448A 3,641,084
448.2N 3,641,088
3,641,089
3,641,090
448.8R 3,641,087
3,641,091
453AR 3,641,093
453PC 3,641,092
453PH 3,641,094
456A 3,641,097
465 3,641,098
465.3 3,641,100
3,641,101
3,641,102
465.4 3,641,103
465.6 3,641,099
3,641,104
465.8A 3,641,105
465.8 3,641,106
465.9 3,641,107
468B 3,641,108
473G 3,641,109
3,641,110
475SC 3,641,115
475P 3,641,111
3,641,112
479R 3,641,114
482B 3,641,116
484R 3,641,117
3,641,118
486H 3,641,119
491 3,641,120
497A 3,641,113
3,641,121
497R 3,641,122
500.5H 3,641,123
501.17 3,641,124
501.18 3,641,125
502.4A 3,641,126
513 3,641,131
514B 3,641,128
3,641,129
515P 3,641,130
516 3,641,127
517 3,641,132
518R 3,641,133
520 3,641,134
524R 3,641,135
3,641,136
526N 3,641,137
530N 3,641,138
533R 3,641,139
543P 3,641,141
543R 3,641,140
544F 3,641,142
545R 3,641,143
546 3,641,144
558H 3,641,145
562C 3,641,146
562 3,641,147
563P 3,641,148
563R 3,641,149
566A 3,641,150
570D 3,641,151
570.7 3,641,152
570.8TC 3,641,153
571 3,641,154
583H 3,641,155
586 3,641,156
599 3,641,157
600 3,641,158
611F 3,641,160
611R 3,641,159
613D 3,641,161
614AA 3,641,162
615A 3,641,163
3,641,164
618R 3,641,165
621R 3,641,166
648F 3,641,167
650R 3,641,168
652.5R 3,641,169
658C 3,641,170
3,641,171
658R 3,641,172
665R 3,641,186
666PY 3,641,173
666A 3,641,174
666B 3,641,175
3,641,187
668B 3,641,176
668F 3,641,179
669 3,641,180
671C 3,641,177
671P 3,641,178
674 3,641,181
680R 3,641,182
683D 3,641,189
683 3,641,183
3,641,190
683.15D 3,641,188
3,641,191
683.2 3,641,184
683.76 3,641,185
823 3,641,192
830TW 3,641,193
835 3,641,194
837R 3,641,195
849 3,641,196
854 3,641,197
857R 3,641,198
859R 3,641,199
860 3,641,200
867 3,641,201
869 3,641,202
870 3,641,203
874 3,641,204
876B 3,641,205
876R 3,641,206
3,641,207
3,641,208
880 3,641,209
885 3,641,210
889 3,641,211
893 3,641,212
895 3,641,213
897A 3,641,215
897B 3,641,214
3,641,217
897 3,641,216
928 3,641,218
929 3,641,219
944 3,641,220
949 3,641,221
959 3,641,222
961 3,641,223
964 3,641,224
976 3,641,225
990 3,641,226

CLASS 261

34A 3,640,512
78 3,640,513
91 3,640,514
92 3,640,515
121M 3,640,516

CLASS 263

11 3,640,517
52 3,640,518

CLASS 264

.5 3,641,227
43 3,641,229
53 3,641,228
152 3,641,230
155 3,641,231
171 3,641,232
179 3,641,233
282 3,641,234

CLASS 269

.024 3,640,519
323 3,640,520

CLASS 270

61F 3,640,521
72 3,640,522

CLASS 271

28 3,640,523
36 3,640,524

CLASS 272

79R 3,640,525
80 3,640,526
81 3,640,527
3,640,528
83A 3,640,530
83R 3,640,529

CLASS 273

1R 3,640,531
1.5A 3,640,532
73C 3,640,533
80.7 3,640,534
126R 3,640,535
130AB 3,640,536
161 3,640,537
187R 3,639,923

CLASS 274

4G 3,640,538
42 3,640,539

CLASS 277

25 3,640,540
96 3,640,541
134 3,640,542
237 3,640,543

CLASS 280

36C 3,640,547
47.35 3,640,544
124 3,640,545
150AB 3,640,546
289 3,640,548
435 3,640,549
491B 3,640,550

CLASS 285

39 3,640,551
110 3,640,552
277 3,640,553
382.2 3,640,554

CLASS 287

103A 3,640,555
189.36A 3,640,557
189.36B 3,640,556

CLASS 292

264 3,640,558
288 3,640,559
341.16 3,640,560

CLASS 294

16 3,640,561
65 3,640,562
87.2 3,640,563
99R 3,640,564

CLASS 296

137B 3,640,565

CLASS 297

68 3,640,566
116 3,640,567
232 3,640,568
248 3,640,569
316 3,640,570
384 3,640,571
390 3,640,572
440 3,640,575
3,640,576

CLASS 298

1SG 3,640,577
17S 3,640,578

CLASS 299

4 3,640,579
31 3,640,573
3,640,580
32 3,640,574
3,640,581

CLASS 300

3 3,640,582

CLASS 301

9DN 3,640,583
63PW 3,640,584

CLASS 302

17 3,640,585

CLASS 303

21BE 3,640,589
21F 3,640,587
21P 3,640,588
21R 3,640,586

CLASS 307

64 3,641,356
94 3,641,357
136 3,641,358
3,641,359
202 3,641,361
215 3,641,362
221C 3,641,360
221 3,641,363
240 3,641,364
241 3,641,365
251 3,641,366
252J 3,641,367
254 3,641,368
260 3,641,369
269 3,641,370
293 3,641,371
310 3,641,372

CLASS 308

9 3,640,590
184 3,640,591
193 3,640,592
196 3,640,593
212 3,640,594

CLASS 310

6 3,641,373
68D 3,641,374
105 3,641,375
113 3,641,376
153 3,641,377
214 3,641,378
239 3,641,379

CLASS 312

198 3,640,595
223 3,640,596

CLASS 313

39 3,641,380
40 3,641,381
105 3,641,382
109.5 3,641,383
161 3,641,384
175 3,641,385
179 3,641,386
270 3,641,387

CLASS 315

3.5 3,641,388
39 3,641,389
169 3,641,390

CLASS 316

10 3,640,597
28 3,641,391

CLASS 317

13R 3,641,392
22 3,641,393
27R 3,641,394
43 3,641,407
117 3,641,395
134 3,641,396
141S 3,641,397
230 3,641,399
234G 3,641,398
234R 3,641,400
3,641,401
3,641,402
235R 3,641,403
3,641,404
3,641,405
237 3,641,406

CLASS 318

227 3,641,408
258 3,641,409
345 3,641,410
373 3,641,411
470 3,641,412
480 3,641,413
662 3,641,414
696 3,641,415

CLASS 320

61 3,641,416

CLASS 321

7 3,641,417
3,641,418
8C 3,641,419
9 3,641,420
12 3,641,421

CLASS 323

8 3,641,422
9 3,641,423
17 3,641,424

CLASS 324

.5R 3,641,426
9 3,641,427
24 3,641,428
34PS 3,641,429
51 3,641,430
61R 3,641,431

CLASS 325

4 3,641,432
8 3,641,433
17 3,641,434
63 3,641,435
64 3,641,436
305 3,641,437
332 3,641,438
363 3,641,439
383 3,641,440
430 3,641,441

CLASS 328

14 3,641,442
109 3,641,443
127 3,641,444
140 3,641,445
228 3,641,446

CLASS 329

126 3,641,447

CLASS 330

18 3,641,448
29 3,641,449
30D 3,641,450
134 3,641,451
176 3,641,452

CLASS 331

94.5 3,641,453
3,641,454
3,641,455
3,641,456
3,641,457
3,641,458
3,641,459
110 3,641,460
116R 3,641,461
117R 3,641,462

CLASS 332

9 3,641,468
16T 3,641,463

CLASS 333

10 3,641,464
22R 3,641,465

CLASS 335

190 3,641,466

CLASS 336

5 3,641,467

CLASS 337

404 3,641,469

CLASS 338

99 3,641,470
128 3,641,471

CLASS 339

10 3,641,472
14R 3,641,473
17L 3,641,474
3,641,475
36 3,641,476
59R 3,641,477
63M 3,641,478
94R 3,641,479
116R 3,641,480
126R 3,641,481
196M 3,641,482
217S 3,641,483

CLASS 340

3E 3,641,485
3R 3,641,484
38L 3,641,569
41 3,641,486
46 3,641,487
52D 3,641,489
52F 3,641,488
55 3,641,490
61 3,641,491
65 3,641,492
81F 3,641,493
146.1 3,641,494
146.3R 3,641,495
148 3,641,496
149A 3,641,497
149 3,641,499
152R 3,641,500
164R 3,641,498
172.5 3,641,501
3,641,502
3,641,503
3,641,504
3,641,505
3,641,506
3,641,507
3,641,508
173CR 3,641,510
173LM 3,641,513
173SP 3,641,516
173R 3,641,509
3,641,511
3,641,512
3,641,514
3,641,515

173.1	3,641,517	253R	3,641,547	792.5	3,641,579	92	3,640,611	12	3,640,633	78	3,641,240
174BA	3,641,521	258B	3,641,549	895	3,641,580	124	3,640,612	35	3,640,634	120	3,641,241
174PW	3,641,520	261	3,641,550	CLASS 345		CLASS 353		101	3,640,635	153	3,641,242
174RC	3,641,519	267	3,641,551	208	3,641,538	23	3,640,613	128	3,640,636	181	3,641,244
174SR	3,641,523	274	3,641,552	CLASS 346		26	3,640,614	197	3,640,637	188	3,641,245
174TF	3,641,518	286	3,641,553	1	3,641,581	CLASS 355		CLASS 415		195	3,641,243
174M	3,641,522	324A	3,641,554	21	3,641,582	8	3,640,615	172	3,640,638	204	3,641,246
174.1A	3,641,526		3,641,555	29	3,641,583		3,640,616	219	3,640,639	211	3,641,247
	3,641,534		3,641,556	74MC	3,641,586	10	3,640,617	CLASS 416		212	3,641,248
174.1C	3,641,528		3,641,557		3,641,587	35	3,640,618	2	3,640,640	243	3,641,013
	3,641,529		3,641,558	74MP	3,641,585	36	3,640,619	62	3,640,641	CLASS 425	
174.1E	3,641,527		3,641,559	74M	3,641,584	38	3,640,620	93	3,640,642	20	3,640,652
174.1G	3,641,525	324R	3,641,561	75	3,641,588	45	3,640,621	136	3,640,643	33	3,640,653
174.1H	3,641,524	343	3,641,560	CLASS 350		65	3,640,622	157	3,640,644	78	3,640,654
183	3,641,530	347AD	3,641,562	3.5	3,640,598	67	3,640,623	CLASS 417		83	3,640,793
184	3,641,531		3,641,563		3,640,599	CLASS 356		174	3,640,645	109	3,640,655
195	3,641,535		3,641,564	34	3,640,600	36	3,640,624	203	3,640,646	113	3,640,656
198	3,641,532	347DA	3,641,566	117	3,640,601	97	3,640,625	389	3,640,647	114	3,640,657
	3,641,533	347	3,641,565	120	3,640,602	103	3,640,626	CLASS 418		117	3,640,658
203	3,641,536	365	3,641,567	124	3,640,603	104	3,640,627	133	3,640,648	133	3,640,659
205	3,641,537		3,641,568	162SF	3,640,604	152	3,640,628	191	3,640,649	141	3,640,660
208	3,641,538	409	3,641,570	184	3,640,605	CLASS 401		206	3,640,650	159	3,640,661
213.1	3,641,539	420	3,641,571	226	3,640,606	132	3,640,629	269	3,640,651	174	3,640,662
224	3,641,425	CLASS 343			3,640,607	188	3,640,630	CLASS 424		233	3,640,663
	3,641,540	7.3	3,641,572	307	3,640,608	206	3,640,631	8	3,641,235	275	3,640,664
237R	3,641,541	12R	3,641,573		3,640,609	CLASS 408		16	3,641,237	297	3,640,665
238	3,641,542	17.7	3,641,574	CLASS 351		11	3,640,632	19	3,641,236	302	3,640,666
239R	3,641,543	225	3,641,575	13	3,640,610			49	3,641,238	326	3,640,667
244C	3,641,544	743	3,641,576	CLASS 352				64	3,641,239	346	3,640,668
248A	3,641,546	754	3,641,577							376	3,640,669
248B	3,641,545	773	3,641,578							382	3,640,670
253A	3,641,548									387	3,640,671
											3,640,672
										CLASS 431	
										168	3,640,673

CLASSIFICATION OF DESIGNS

D 2—239	222,930		222,935		98	222,940	D34— 5	222,945	D44— 29	222,950	D61—	222,955
D 9— 83	222,931		222,936	D26—	1	222,941	15	222,946	D49— 34	222,951	D83—	222,956
D13— 6	222,932		222,937		13	222,942		222,947	D54— 12	222,952		222,957
D14— 3	222,933		222,938			222,943		222,948		222,953	D92— 4	222,958
D22— 1	222,934	D23— 5	222,939			222,944	D35— 3	222,949	D56— 1	222,954		

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Design Patents

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 15, 1972 Volume 895 Number 3

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PATENT OFFICE NOTICES

Patent Office Committee on Enrollment

The following named persons are hereby appointed members of the Patent Office Committee on Enrollment:

Lutrelle F. Parker, Chairman
Leslie H. Gaston, Vice Chairman
Rodney B. Bennett, Jr.
Frank H. Bronaugh
Fred E. McKelvey

Mrs. Marian E. Ford shall serve as Clerk of the Committee and Mrs. Patricia M. Alexander as Assistant Clerk.

This notice cancels and supersedes any previous appointments to the Patent Office Committee on Enrollment.

ROBERT GOTTSCHALK,
Jan. 18, 1972. *Commissioner of Patents.*

Publication of Trademark Registration Treaty

Due to unavoidable circumstances, the publication of the Trademark Registration Treaty and accompanying Regulations and Comments released by the World Intellectual Property Organization (WIPO) on Jan. 31, 1972, which was scheduled to appear in this issue, has been delayed until Feb. 22, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,540,955, J. R. Moore, LAUNDRY DRIER, **filed** Jan. 12, 1963, D.C., E.D. Wis. (Milwaukee), Doc. 63–C–291, *Imperial Appliance Corporation et al.* v. *Hamilton Manufacturing Company.* Final judgment by consent, defendant owner of patent in suit; action is dismissed with prejudice, Sept. 20, 1971.

2,643,699, T. H. Krueger, DRY MOUNTING PRESS; **2,644,151,** same, DRY MOUNTING PRESS WITH TIMING SIGNALS, **filed** Mar. 26, 1970, D.C.N.J. (Newark), Doc. 360–70, *Seal, Incorporated* v. *Technal Corporation and Bogen Photo Corporation.* Stipulation and order of dismissal, Sept. 24, 1971.

2,644,151. (See 2,643,699.)

2,688,906, R. J. Dokopil, METHOD AND MEANS FOR THE MANUFACTURE OF FLEXIBLE TUBES (PIPES), **filed** Mar. 12, 1969, D.C. Conn. (New Haven), Doc. 13025, *American Flexpipe Company* v. *The Wiremold Company.* Stipulation and order of dismissal, Sept. 22, 1971.

2,694,692, Amos, McCurdy and McIntire, METHOD OF MAKING LINEAR INTERPOLYMERS OF MONOVINYL AROMATIC COMPOUNDS AND A NATURAL OR SYNTHETIC RUBBER, **filed** Mar. 31, 1967, D.C., S.D.N.Y., Doc. 67–C–1257, *Foster Grant Co., Inc.* v. *The Dow Chemical Company.* Stipulation of voluntary dismissal with prejudice, Oct. 14, 1971. **Same, filed** May 5, 1965, D.C., S.D. Ohio (Cincinnati), Doc. 5916, *The Dow Chemical Co.* v. *Monsanto Co.* Cause dismissed, no infringement by defendant, Nov. 3, 1971.

2,724,720, Berger and Ludwig, DICARBAMATES OF SUBSTITUTED PROPANE DIOLS, **filed** Nov. 8, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71C1445/1446, *Carter-Wallace, Inc.* v. *Interstate Drug Exchange* and *Carter-Wallace, Inc.* v. *Sherry Pharmaceutical, etc., and Blank Drug Corp.*

2,734,225, E. A. Glynn, TREAD CENTERING DEVICE FOR TIRE MOLDS; **2,826,788,** E. S. Robbins, QUICK ACTING TIRE RETREADING MOLD; **2,908,929,** Eriksen and Roesch, BEAD ENGAGING PRESSURE RING UNIT, **filed** Sept. 15, 1971, D.C. Conn. (New Haven), Doc. 14627, *Super Mold Corporation* v. *J. E. Sheehan Tire Retreading, Inc.* **Same, filed** June 30, 1971, D.C., W.D. Ky. (Louisville), Doc. 6989, *Super Mold Corporation* v. *International Rubber Industries, Inc.*

2,803,105, Stoddard and Seem, APPARATUS FOR PROCESSING TEXTILE YARNS; **2,803,108,** same, METHOD OF PROCESSING TEXTILE YARNS; **2,803,109,** same, METHOD OF PROCESSING THERMOPLASTIC YARNS; **3,091,912,** same; **3,077,724,** same, APPARATUS FOR PROCESSING YARNS; **3,472,011,** E. P. Scragg, TREATMENT OF ARTIFICIAL YARNS AND THREADS, **filed** June 28, 1971, D.C., S.D. Fla. (Miami), Doc. 71–1026–C–JLK, *Celanese Corp. et al.* v. *Leesona Corp. et al.*

2,803,108. (See 2,803,105.)

2,803,109. (See 2,803,105.)

2,826,783. (See 2,734,225.)

2,855,760, E. W. Simons, METHOD AND MEANS FOR MAINTAINING MATERIAL AT A PREDETERMINED TEMPERATURE IN AN OPEN COMPARTMENT; **2,862,369,** same, AIR CONDITIONED DISPLAY COMPARTMENT AND METHOD; **3,010,379,** Arzberger, Swart and Rauscher, AIR DISTRIBUTION SYSTEM FOR A FOOD DISPLAY CASE; **3,130,559,** S. Beckwith, MULTIPLE JET CONDITIONING CABINET; **3,143,952,** E. W. Simons, METHOD AND APPARATUS FOR CONDITIONING GAS; **3,149,476,** S. Beckwith, REFRIGERATED DISPLAY CABINET; **3,182,467,** same, REFRIGERATION SYSTEM WITH DEFROST, **filed** Sept. 29, 1971, D.C., W.D. Mich. (Grand Rapids), Doc. G252–71 CA, *Pet Incorporated* v. *Kysor Industrial Corporation.*

2,862,369. (See 2,855,760.)

2,908,939. (See 2,734,255.)

2,942,512. (See 3,038,363.)

2,949,053. (See 3,038,363.)

2,972,754, U. A. Weidner, COMBINATION SITTING AND SLEEPING PIECE; **3,284,813,** J. G. Sevcik, same, **filed** June 25, 1969, D.C., W.D. Wis. (Madison), Doc. 69–C–144, *Burton-Dixie Corporation* v. *Wisconsin State Agencies Building Corporation, United States Bedding Company.* Consent decree, plaintiff owner of patents, U.S. Bedding Co. has infringed and permanently enjoined, Oct. 6, 1971.

2,999,121, H. G. Mead, FAST ACTING TOTALLY EXPENDABLE IMMERSION THERMOCOUPLE; **3,024,295,** P. J. Moore, IMMERSION PYROMETER WITH NON-DIRECTIONAL CONTACT STRUCTURE; **3,038,951,** H. G. Mead, FAST ACTING TOTALLY EXPENDABLE IMMERSION THERMOCOUPLE; **3,048,642,** K. B. Parker, Jr., IMMERSION PYROMETER WITH EXPENDABLE PLUG-IN TEMPERATURE SENSING UNIT; **3,055,961,** Robertson and Ross, QUICK DISCONNECTING MEANS FOR EXPENDABLE THERMOCOUPLES, **filed** Oct. 6, 1971, D.C., M.D. Pa. (Scranton), Doc. C–71–430, *Leeds & Northrup Company* v. *UELCO Electronics Corp.*

3,010,379. (See 2,855,760.)

3,024,295. (See 2,999,121.)

3,038,363, B. F. Miessner, ELECTRONIC PIANO; **2,942,512,** same; **2,949,053,** C. W. Andersen, TONE GENERATOR, **filed** May 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1145, *The Wurlitzer Company* v. *Chicago Musical Instrument Co.* On motion of plaintiff case in suit is dismissed with prejudice, Nov. 8, 1971.

3,038,951. (See 2,999,121.)

3,048,642. (See 2,999,121.)

3,055,961. (See 2,999,121.)

3,077,724. (See 2,803,105.)

3,091,912. (See 2,803,105.)

3,130,637, K. E. Golden, SLIDE PROJECTOR; **Re. 26,619,** W. J. Hall, SLIDE PROJECTOR USING A BOX OR CIRCULAR SLIDE MAGAZINE, **filed** Nov. 6, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2293, *GAF Corporation* v. *Honeywell, Inc., Shutan Camera.* By agreement cause dismissed without prejudice; if contemplated settlement is not effected the cause will be restored, Oct. 4, 1971.

3,143,952. (See 2,855,760.)

3,149,476. (See 2,855,760.)

3,182,467. (See 2,855,760.)

3,190,059, Bauder and Hart, POCKET FILTER; **3,273,321,** Bauder, Hart and Cleminshaw, AIR FILTER HAVING A REPLACEABLE CARTRIDGE, **filed** July 11, 1969, D.C., S.D.N.Y., Doc. 69–C–3001, *Cambridge Filter Corporation* v. *ARCO Manufacturing Corp.* Final consent judgment, defendant enjoined from infringing claim 11 of 3,190,059 as indicated, Sept. 17, 1971.

3,273,321. (See 3,190,059.)

3,284,813. (See 2,972,754.)

3,302,285, H. J. Mann, Jr., TUBING CUTTER HAVING PIVOTALLY MOUNTED DRIVE ROLLER; **3,507,035,** same, TUBING CUTTER, **filed** Sept. 27, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2307–RJK, *Go-Tools, Inc.* v. *Jack Mann.*

3,472,011. (See 2,803,105.)

3,498,215, L. D. Brinkman, LAMINATING DEVICE; **3,513,521,** A. L. Fritz, APPARATUS FOR ASSEMBLING AND SECURING T-EDGING, **filed** Oct. 21, 1971, D.C. Ariz. (Phoenix), Doc. C–71–585, *Royal Industries, Inc.* v. *Unique Machine Tool Co., Inc. et al.*

3,507,035. (See 3,302,285.)

3,513,521. (See 3,498,215.)

3,551,581, D. J. Goodman, WATER COOLED ELECTRIC CABLE, **filed** Sept. 28, 1971, D.C., E.D. Mich. (Detroit), Doc. 37167, *Sargent Industries of Michigan, Inc.* v. *Nu-Core, Inc.*

3,594,044, B. Koback, APPARATUS FOR MANUFACTURING STRIP BRUSHES, **filed** Sept. 24, 1971, D.C. Oreg. (Portland), Doc. C–71–672, *Ben-Ko-Matic, Inc.* v. *Daniel C. Hanna, doing business as Hanna Equipment Co., and Jeff R. Welter.*

Re. 26,619. (See 3,130,637.)

D. 154,178. (See D. 213,316.)

D. 201,707, R. D. Moyer, TIRE INFLATION TESTER; **Reg. No. 740,908** (TIRE BILLY), R. D. Moyer, doing business as B & J Mfg. Co., **filed** June 22, 1971, D.C., N.D. Ind. (Fort Wayne), Doc. 71–F–61, *R. D. Moyer, doing business as B & J Distributors* v. *Willard C. Knight, doing business as Knight Leather & Mfg. Co.*

D. 213,316, J. S. Madsen, FLOOR TILE OR SIMILAR ARTICLE; **D. 154,178,** J. E. Ryan, TILE FLOOR AND WALL COVERING, **filed** Mar. 25, 1969, D.C. Mass. (Boston), Doc. CA-69 308–F, *American Biltrite Rubber Co., Inc.* v. *GAF Corporation.*

D. 219,860, Burts and Jones, PORTABLE ILLUMINATED SIGN, **filed** July 9, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–337–C–T, *Trail-R-Sign of Tampa, Inc.* v. *Portable Signs of America, Inc.*

Reg. No. 740,908. (See D. 201,707.)

Certificates of Correction for the Week of Feb. 15, 1972

Re. 27,047	3,573,802	3,592,633
D. 221,079	3,574,281	3,592,926
3,282,861	3,574,597	3,593,366
3,410,401	3,575,528	3,593,619
3,438,721	3,575,682	3,593,727
3,458,957	3,575,916	3,593,751
3,486,113	3,576,134	3,594,133
3,492,359	3,577,087	3,594,187
3,495,955	3,578,661	3,594,268
3,496,285	3,578,883	3,594,343
3,497,563	3,579,875	3,594,382
3,511,629	3,581,412	3,594,491
3,511,841	3,581,784	3,594,549
3,521,444	3,583,122	3,594,684
3,532,625	3,584,458	3,595,681
3,533,962	3,584,972	3,595,810
3,541,027	3,585,779	3,595,887
3,545,921	3,585,866	3,595,893
3,547,951	3,586,496	3,596,201
3,548,089	3,586,512	3,596,245
3,551,181	3,586,580	3,596,820
3,552,735	3,586,668	3,596,830
3,554,891	3,586,770	3,597,268
3,554,915	3,587,312	3,597,415
3,555,004	3,588,175	3,598,566
3,556,037	3,588,384	3,598,765
3,560,449	3,589,441	3,598,805
3,560,594	3,589,450	3,598,837
3,562,276	3,589,629	3,599,351
3,562,362	3,589,796	3,599,395
3,563,161	3,590,031	3,599,715
3,564,543	3,591,057	3,600,380
3,566,230	3,591,612	3,600,935
3,567,234	3,591,663	3,603,000
3,567,641	3,592,061	3,604,305
3,572,049	3,592,151	3,619,154
3,573,073	3,592,495	

Disclaimers

3,268,636.—*Richard G. Angell, Jr.,* Highland Park, N.J. METHOD AND APPARATUS FOR INJECTION MOLDING FOAMED PLASTIC ARTICLES. Patent dated Aug. 23, 1966. Disclaimer filed Oct. 15, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 9, 10, 11, 12 and 13 of said patent.

3,436,446.—*Richard G. Angell, Jr.,* Bridgewater Township, Somerville, N.J. MOLDING OF FORMED THERMOPLASTIC ARTICLES. Patent dated Apr. 1, 1969. Disclaimer filed Oct. 15, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 13, 14, 15 and 20 of said patent.

Dedications

2,877,152.—*Joe R. Willard* and *John F. Henahan,* Middleport, N.Y. PESTICIDAL PHOSPHORUS ESTERS. Patent dated Mar. 10, 1959. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,916,415.—*Joe R. Willard* and *John F. Henahan,* Middleport, N.Y. PESTICIDAL PHOSPHORUS ESTERS. Patent dated Dec. 8, 1959. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,941,920.—*Joe R. Willard* and *John F. Henahan,* Middleport, N.Y. PESTICIDAL PHOSPHORUS ESTERS. Patent dated June 21, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,946,718.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated July 26, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,946,719.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated July 26, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,960,430.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 15, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,961,369.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 22, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,961,371.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 22, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,970,940.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Feb. 7, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,990,317.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,990,323.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 25, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-06-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-03-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-23-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-18-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director... Fertilizers; Foods Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-10-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-25-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-27-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-01-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	12-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	12-07-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-05-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-01-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-05-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during January 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,700,764 to 2,702,900, inclusive
Plant Patents..... Numbers 1,345 to 1,354, inclusive

REISSUES

FEBRUARY 15, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,280

PRODUCTION OF SEMIPERMEABLE MEMBRANES

Serop Manjikian, Del Mar, Calif., assignor to Universal Water Corporation, Del Mar, Calif.

No Drawing. Original No. 3,483,282, dated Dec. 9, 1969, Ser. No. 692,307, Dec. 21, 1967, which is a continuation-in-part of Ser. No. 614,398, Feb. 7, 1967. Application for reissue July 15, 1970, Ser. No. 55,296

Int. Cl. B01d *39/18*; B29d *7/02*; B29h *7/20*

U.S. Cl. 264—41 9 Claims

Producing a semipermeable membrane of enhanced strength, useful in separation systems such as those based on osmosis or reverse osmosis, by casting such membrane from a solution comprising; a cellulosic derivative, for example, cellulose acetate, a flux promoter; a water miscible organic solvent; and from about 2% to about 50% pyridine by weight.

27,281

ARYL KETONE CONTAINING ORGANOSILICON MATERIALS

Edward V. Wilkus, Monroe, Conn., and Abe Berger, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original No. 3,391,109, dated July 2, 1968, Ser. No. 591,118, Nov. 1, 1966. Application for reissue June 30, 1970, Ser. No. 51,398

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 Y 7 Claims

Organosilicon materials, including monomers and polymers, and a method for making them, are provided. One class of materials have chemically combined

$$\equiv SiR''\overset{O}{\overset{\|}{C}}Q$$

units, where R'' is a divalent hydrocarbon radical and Q is a radical selected from aryloxyaryl, arylthioaryl, arylsulfonylaryl, and certain heteroaromatic radicals. In addition, organosilicon polymers and copolymers are provided having chemically combined

$$\equiv SiR''\overset{O}{\overset{\|}{C}}Q'$$

units, where Q' is a radical selected from Q radicals, monovalent aromatic hydrocarbon radicals and halogenated monovalent aromatic hydrocarbon radicals. The subject monomers can be employed as perfume oil bases in cosmetics, etc. The subject polymers can be employed as fluids and in the manufacture of elastomers and resins.

27,282

COLD CATHODE GAS LASER DISCHARGE TUBE

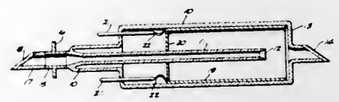
William P. Kolb, Jr., Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Original No. 3,495,119, dated Feb. 10, 1970, Ser. No. 703,384, Feb. 6, 1968. Application for reissue June 11, 1970, Ser. No. 45,602

Int. Cl. H01j *17/04*; H01s *3/22*

U.S. Cl. 313—217 7 Claims

A cold cathode gas laser discharge tube of improved design is disclosed. A cylindrical cathode is disposed coaxially about a capillary discharge tube. A substantial longitudinal overlap of the capillary discharge tube and the cathode provides a shorter structure than available in



the prior art, while still allowing a large area cathode emitting surface for long-life operation.

27,283

CARRYING ELEMENT

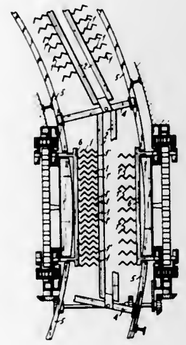
Roger Bajulaz, Geneva, Switzerland, assignor to Rotopark S.A., Geneva, Switzerland

Original No. 3,260,353, dated July 12, 1966, Ser. No. 369,991, May 25, 1964. Application for reissue May 5, 1970, Ser. No. 34,925

Claims priority, application Switzerland, May 30, 1963, 6,774/63

Int. Cl. B65g *15/00*

U.S. Cl. 198—156 7 Claims



1. A car storage installation comprising [a] first and second [support] *carrying elements* [having interfingering portions], means for vertically moving one of said [supports] *carrying elements* to transfer a load from either [support] *element* to the other *element* [support, said interfingering portions when seen in plan view having a general shape of zig-zag line.] *each carrying element having a plurality of first bearing surfaces disposed on one side of an axis which axis bisects the longitudinal symmetry plane of the carrying element, said first bearing surfaces being spaced apart from one another; a plurality of second bearing surfaces disposed on the other side of the axis said second bearing surfaces being spaced apart from one another; the first set of bearing surfaces offset from the second set of bearing surfaces said carrying element in a plan view describes generally a zig-zag line and said first and second carrying elements having interfingering portions.*

27,284

THREADED DRILL ROD ELEMENT

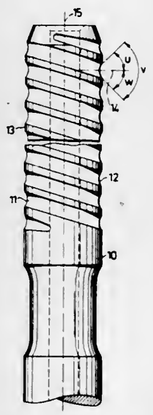
John Anders Hjalsten and Gunnar Arne Gustafsson, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Original No. 3,388,935, dated June 18, 1968, Ser. No. 633,339, Mar. 27, 1967, which is a continuation of Ser. No. 456,656, May 18, 1965. Application for reissue Apr. 13, 1970, Ser. No. 28,157

Claims priority, application Sweden, May 29, 1964, 6,532/64

Int. Cl. F16b *31/06*

U.S. Cl. 287—117 9 Claims



A drill rod coupling comprising a threaded rod and a matching threaded sleeve, the rod threads having at least two starts and flank angles adjacent the crests of at least 45° which gradually increase toward the base, which latter has a concave shape with a radius greater than the depth of the thread, the flanks of the thread being symmetrical and the crests being bevelled, and spaced from the bottoms of the sleeve threads.

27,285

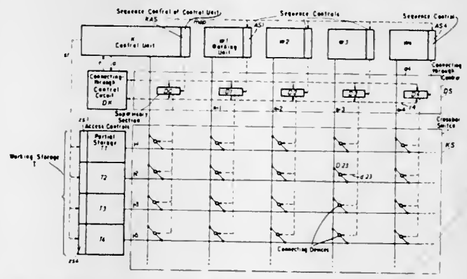
PROGRAM-CONTROLLED ELECTRONIC DATA-PROCESSING SYSTEM

Hans-Joachim Dreyer, Korntal, Rolf Basten, Hirschlanden, and Gottfried Porst, Konstanz, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Original No. 3,174,136, dated Mar. 16, 1965, Ser. No. 795,479, Feb. 25, 1959. Application for reissue Mar. 16, 1967, Ser. No. 629,350

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 27 Claims



An electronic data processing system is described having a plurality of partial storages and a plurality of working units which are adapted to operate upon data signals of the kind stored in the partial storages. Interposed between the working units and the partial storages is means for establishing selective transfer connections therebetween. A central program control unit is cyclically operative to examine program instructions stored in a predetermined one of the partial storages and to set up a transfer connection between at least one of the partial storages and working units according to each examined program instruction. Associated with each of the working units and under the control of the central control unit is means for seizing and independently maintaining control of each transfer connection set up by the control unit while the control unit proceeds to execute the next examination cycle of program instruction.

27,286

METHOD OF HANDLING CREVICE-CORROSION INDUCING HALIDE SOLUTIONS

Octavian Bertea, Warren, Howard B. Bomberger, Jr., Canfield, and Layne F. Plock, Geneva, Ohio, assignors to RMI Company, Niles, Ohio

No Drawing. Original No. 3,469,975, dated Sept. 30, 1969, Ser. No. 635,686, May 3, 1967, which is a continuation-in-part of Ser. No. 561,391, June 29, 1966. Application for reissue Mar. 26, 1970, Ser. No. 23,052

Int. Cl. C22c *15/00*

U.S. Cl. 75—175.5 7 Claims

A method of handling crevice-corrosion-inducing halide solutions such as sea water that involves containing the solution in a structure having a solution-contacting surface of an alloy of titanium with at least one of nickel, cobalt or molybdenum. The nickel, cobalt and molybdenum are present in amounts of up to 5.0% nickel, at least about 0.3% cobalt and at least about 2.0% molybdenum.

27,287

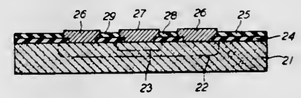
METHOD OF FABRICATING SEMICONDUCTOR CONTACTS

Martin P. Lepselter, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original No. 3,442,701, dated May 6, 1969, Ser. No. 457,056, May 19, 1965. Application for reissue July 17, 1969, Ser. No. 847,479

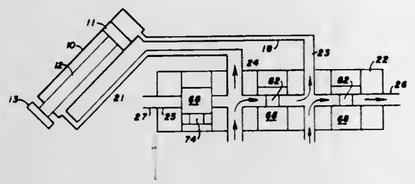
Int. Cl. B44d *1/18*; C23c *15/00*

U.S. Cl. 117—212 3 Claims



A method of fabricating electrodes on a semiconductor device in order to avoid the unsatifactory technique of chemical etching. A silicon oxide mask is deposited on the surface of a semiconductor body, [the mask conforming to the desired electrode geometry] *such that the unmasked portions of the surface are those portions to which it is desired to make electrical contact.* A first layer of refractory metal from the group consisting of titanium, zirconium, vanadium and hafnium is deposited over the masked and unmasked portions of the semiconductor body and a second layer of platinum, nickel or gold is deposited over the first metal layer. Portions of the second metal are removed by a back-sputtering technique [to conform to the electrode geometry defined by the silicon oxide mask] *from the areas in which it is desired to provide electrical separation between conductive electrodes.* Then, the refractory metal *not covered by the remaining portions of the second metal* is converted to an insulating oxide by low temperature heat treatment when exposed to oxygen.

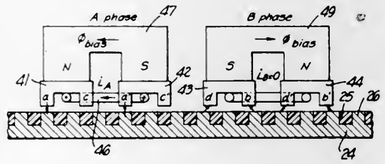
27,288
HYDRAULIC SYSTEM FOR OPERATING A CYLINDER
Harvey S. Landers, 207 E. Broadway, Fort Worth, Tex. 76118
Original No. 3,434,392, dated Mar. 25, 1969, Ser. No. 632,969, Apr. 24, 1967. Application for reissue May 7, 1970, Ser. No. 35,478
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 100—218 **9 Claims**



[The combination with a cylinder having a piston therein and an extending piston rod, first and second passage means connecting fluid pressure means with the piston and rod ends of said cylinder, transverse passage means connecting said first and second passage means and extending outwardly of each side thereof, and first, second and third valves in said transverse passage means, the second said valve being located between said first and second passage means and the first and third said valves being located outwardly and on each side of said first and second passage means.]

An animal feed compression device characterized by having; in addition to the compression chamber, ram and discharge gate; a hydraulic cylinder for powering the ram; low and high pressure pumps connected directly with, respectively, the rod and piston ends of the hydraulic cylinder via first and second passages; and a plurality of valves exterior to the first and second passages for controlling fluid flow without blocking the passages; thereby eliminating hydraulic shock and fatigue of equipment. Also disclosed are specific embodiments having: (1) a throttling valve between passages for effecting a predetermined force balance on the hydraulic cylinder piston, and (2) a particular arrangement of the valves.

27,289
MAGNETIC POSITIONING DEVICE
Bruce A. Sawyer, 20120 Allentown Drive, Woodland Hills, Calif. 91364
Original No. 3,457,482, dated July 22, 1969, Ser. No. 678,842, Oct. 30, 1967. Application for reissue Apr. 9, 1970, Ser. No. 31,434
Int. Cl. H02p *1/54, 7/68, 7/74*
U.S. Cl. 318—38 **34 Claims**



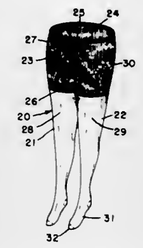
A magnetic system for moving a marking tool over a surface for plotting curves, graphs and other data. A head incorporating two parallel sets of magnets along each of two perpendicular axes. A plate having a grid of zones of magnetic material. Driving circuitry for selectively energizing magnet coils in response to input stepping signals for moving the head over the plate along each axis.

PATENTS

GRANTED FEBRUARY 15, 1972

GENERAL AND MECHANICAL

3,641,589
METHOD OF FABRICATING COMBINATION PANTY HOSE GARMENT
Elba H. Bryant, Ararat, N.C., assignor to Amos and Smith Hosiery Company, Pilot Mountain, N.C.
Filed June 16, 1969, Ser. No. 833,362
Int. Cl. A41b *9/00, 11/00*
U.S. Cl. 2—224 R **8 Claims**



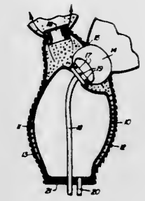
The method of fabricating a combination panty hose garment having a panty portion with integrally knit depending leg portions comprising the steps of knitting elongated seamless hosiery blanks, positioning one hosiery blank in another blank at least in the waist portions for alignment, severing the blanks longitudinally to a crotch position in the panty portion of the garment, and sewing the blanks together in the waist portions to form the panty portion of the garment. An apparatus having a hosiery supporting form in juxtaposition to a member through which one or more stockings may be mounted for nesting together.

3,641,590
ACETABULAR REPLACEMENT PROSTHESIS AND METHOD OF ASSEMBLING
Arthur A. Michele, 4 Stonebridge Road, Montclair, N.J.
Filed Jan. 16, 1970, Ser. No. 3,353
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **11 Claims**



A selective individualized technique for acetabulum socket replacement per se, or in conjunction with a hip replacement prosthesis (Michele U.S. Pat. No. 3,228,393) for a total hip replacement, designed for all ages including the very young. A selective anchorage for a cup prosthesis of a size selected from the limited number of differently sized cups is made available. Anchorage of the acetabular socket replacement conforms to variations in dimensions, shapes and positions of the (medullary) canals of the acetabulum pelvis of the individual patient and includes at least two elongated and convergent or divergent fasteners. The bone is preferably drilled for a main pin fastener of the appropriate length at the proper inclination and site. There is then arranged in the acetabulum socket a selected cup prosthesis having a preformed hole determined by and corresponding to the drilled hole, into which the main pin is driven after passing through the prosthesis hole. The spherical cup is quite thick and has generally keyhole or T-shaped slots penetrating its rim and its outer surface at various inclinations but avoiding penetration of its inner surface. A relatively wide fastener drift of T-shaped or other appropriate cross-sectional shape, designed to be inserted with part of its width in the slot and the remaining part projecting transversely as well as longitudinally beyond the cup and out of the slot is driven into and through a selected slot at the inclination and site most advantageous to the recipient patient.

3,641,591
SOFT SHELL MUSHROOM SHAPED HEART
Willem J. Kolff, Salt Lake City, Utah, assignor to University of Utah
Filed Feb. 6, 1970, Ser. No. 9,307
Int. Cl. A61f *01/24*
U.S. Cl. 3—1 **4 Claims**

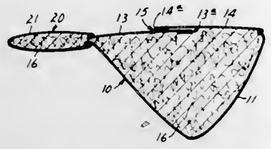


The output volume of the artificial heart of this invention is highly responsive and directly proportional, within limits, to the atrial filling pressure of the blood flowing into the pumping chamber of the artificial heart. Flexible wall construction is responsible for the output volume being a function of the inlet pressure and also serves to reduce tissue damage to the surrounding body organs when the artificial heart is placed in the same general locality as that usually occupied by the natural heart. An integral valve means operable in conjunction with an inflatable blood displacement member occludes the inlet to the heart during the pumping phase of the heart.

3,641,592
BREAST PROSTHESIS
Hazel M. Den Bleyker, 445 East Hoyt Avenue, St. Paul, Minn.
Filed Jan. 29, 1970, Ser. No. 6,787
Int. Cl. A61f *1/00;* **A41c** *3/10*
U.S. Cl. 3—36 **4 Claims**

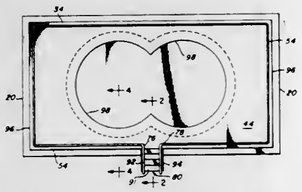
A surgically removed breast is replaced by a prosthesis which also has a foldable tab extending under the arm. The

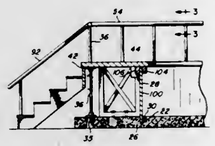
prosthesis comprises a soft cloth case filled with polyester fiber fluff, overlapping panels at the back providing access

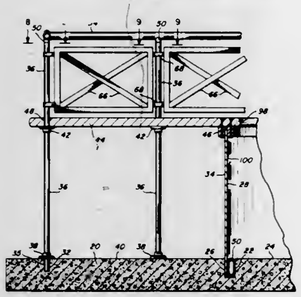


for insertion or removal of fluff. Snaps hold the prosthesis in place in a brassiere cup.

3,641,593
ABOVEGROUND SWIMMING POOL CONSTRUCTION
Adam D. Goettl, P.O. Box 10036, Phoenix, Ariz.
Filed Feb. 24, 1970, Ser. No. 13,698
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **10 Claims**



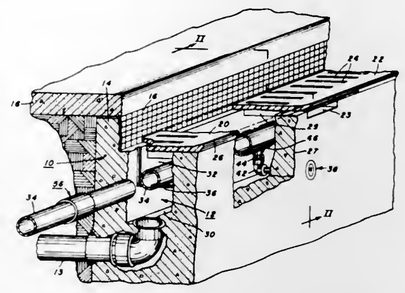




An aboveground swimming pool construction having a substantially rigid base provided with a groove therein, said groove holding the lower edge of a water retaining wall adjacent to an inflatable seal in the groove, decking supported on the upper portion of the wall; recesses in the base removably holding upstanding posts which support said deck outwardly beyond said wall; and fence railing coupled to said posts above said deck.

3,641,594
GUTTER AND WATER SUPPLY SYSTEM FOR SWIMMING POOLS
William D. Hough, McKeesport, Pa., assignor to Leisign Engineering Company, Inc., Pittsburgh, Pa.
Filed Dec. 18, 1969, Ser. No. 886,110
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.17 **8 Claims**

A gutter and water supply system for swimming pools wherein the gutter is cast into a concrete sidewall of the swimming pool and provided with a slotted cover preferably formed from molded plastic sections having integral seating lugs which fit into the top of the gutter to hold the sections in place. A water supply conduit for the swimming pool is carried beneath the cover and above the gutter floor and pro-



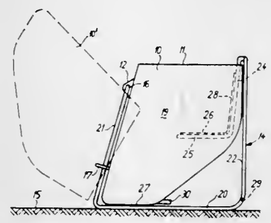
vided with inlet nozzle assemblies which feed filtered return water into the pool. The water supply conduit can be disconnected quickly from the nozzle assemblies by quick-disconnect couplings and removed without the necessity for excavating around the pool or providing a passageway around the entire periphery of the pool.

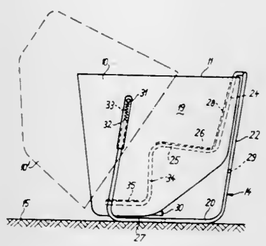
3,641,595
PREFABRICATED AND TRANSPORTABLE BASINS OR POOLS
Hans Viessmann, Battenberg/Eder, Im Hain, Germany
Filed Mar. 9, 1970, Ser. No. 17,850
Claims priority, application Germany, Aug. 5, 1969, G 69 30 879.8
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **13 Claims**

A swimming pool comprises waterproof bottom and sidewall liners whose lower edges have a waterproof seal. A

sidewall extends about, and adjacent, the bottom liner to support the sidewall liner. The sidewall includes a vertical corrugated wall portion whose U-shaped sections are deep enough to enable this wall portion to stand unsupported, and alternating connecting wall parts of these sections are wide enough to form a planar supporting contact for the sidewall liner. The upper and lower edges of the corrugated wall portion are held respectively in upper and lower channellike horizontally extending support members, and the lower support member has an inwardly extending ledge for supporting the bottom liner.

3,641,596
BATHING APPARATUS
Hugo Bill, Bruhlbergstrasse 8, Winterthur, Switzerland
Filed Sept. 2, 1970, Ser. No. 68,925
Claims priority, application Switzerland, Sept. 5, 1969, 13467/69
Int. Cl. A47k *3/062*
U.S. Cl. 4—173 **15 Claims**

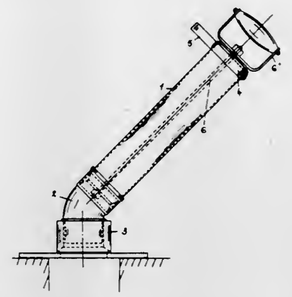




Bathing apparatus, particularly for physically handicapped persons, has a framework carrying a bather's seat and a pivotally mounted tub which can be swung between operative, i.e. bathing, and inoperative positions. In the operative position, the sitting bather is surrounded by the tub which can then be filled, while in the inoperative position the seat is freely accessible for the bather to sit on it or to leave it.

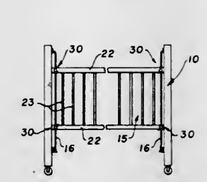
3,641,597
APPARATUS INTENDED FOR CLEARING SANITARY APPLIANCES
Joseph David, 390, rue Jean Jaures, a Ivoz-Ramet, and Jules Hubert, 132, rue Hayeneux, a Herstal, both of Belgium
Filed Feb. 10, 1969, Ser. No. 797,787
Int. Cl. E03d *5/09*
U.S. Cl. 4—255 **2 Claims**

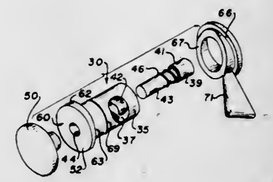
An apparatus for unblocking or clearing sanitary appliances, such as sinks, latrines, etc., comprising a pump member or body terminating in an oblique mouthpiece and provided with a double-action piston. The double-acting piston comprises a pair of frustoconical rubber rings provided internally with spiral spring rings for biasing the rubber



rings against the pump member in which the double-action piston reciprocates.

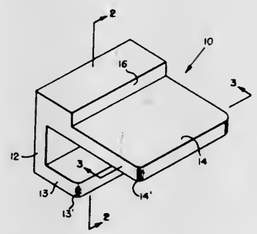
3,641,598
CRIB AND STABILIZING LATCH APPARATUS THEREFOR
Morris Feldstein, 782 West 52nd Avenue, Vancouver, British Columbia, Canada
Filed July 30, 1970, Ser. No. 59,428
Int. Cl. A47d *7/00, 9/00*
U.S. Cl. 5—100 **17 Claims**





A crib having at least one drop-side slidably mounted on vertical rods adjacent the ends thereof, and stabilizing latch apparatus at one or both ends of the crib side for locking said side at different levels on the rod. The latch apparatus includes means for clamping said crib side on one of the rods, and/or means for locking said side in one position or in a selected one of a plurality of vertically spaced positions.

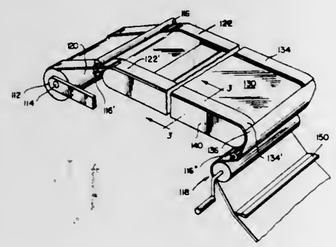
3,641,599
RUBBER SHIMS FOR SQUEAKY BEDS
Michael S. Addante, Lakeshore Drive, Canandaigua, N.Y.
Filed June 22, 1970, Ser. No. 48,195
Int. Cl. A47c *19/00*
U.S. Cl. 5—309 **6 Claims**



In a bed of the type in which the box spring is supported on a plurality of bed slats, which extend transversely between

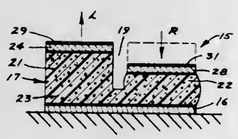
opposite sides of the bed frame, undesirable squeaking and wear of the box spring cover are eliminated by inserting resilient bed shims over opposite ends of the bed slats. Each shim rests upon one of the side rails of the bed frame, and has a pair of vertically spaced, lateral projections, which embrace one end of a bed slat. The lower projection on such shim extends between a side rail and the lower surface of a slat, and the upper projection extends between the upper surface of the slat and the box spring resting thereon. A vertical lip projects above each upper projection; and these lips embrace opposite sides of the box spring to secure it against lateral movement.

3,641,600
METHOD AND APPARATUS FOR DISPOSABLE STORAGE AND UTILIZATION OF BEDDING MATERIALS
Edwin O. Oats, Indianapolis, Ind., assignor to Roll-A-Sheet, Inc., Indianapolis, Ind.
Filed Oct. 12, 1970, Ser. No. 79,979
Int. Cl. A47c *21/00*
U.S. Cl. 5—317 R **3 Claims**



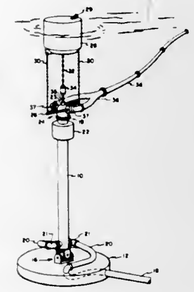
In the storage and utilization of disposable bedding materials as for example for institutional usage, comprising bedding materials roll secured to a portable bed, which includes tensioning therefor, whereby the lowermost of two bedding materials such as sheets are held in stretched relation to the mattress of a bed, the system to include means for shifting used portions, for cutting same while simultaneously replacing same in bedding relation to the mattress.

3,641,601
SIMULATED WALKER, JOGGER, AND RUNNING EXERCISER
William F. Sieg, P.O. Box 278, St. Bonifacius, Minn.
Filed Apr. 30, 1969, Ser. No. 820,447
Int. Cl. A47c *27/14*
U.S. Cl. 5—345 **16 Claims**



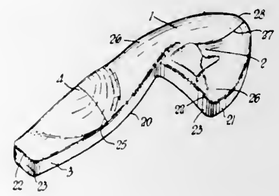
An exercising device usable to simulate walking, jogging and running. The device has a base carrying a pad of elastic compressible material, as yieldable foam rubber, foam plastic and the like, having air confining cavities, open cells and passageways. The pad has a longitudinal slot along the top dividing the pad into separate upwardly extended sections joined to a common lower section. Separate rigid platforms are secured to the top of each upper section to evenly distribute the pressures to the pad. Additional elastic means can be provided to hold the platforms in their upper positions. Also, a horizontal rail or handle can be used as a stabilizer for the person exercising on the device.

3,641,602
SINGLE ANCHOR LEG SINGLE POINT MOORING SYSTEM
John F. Flory, Morristown, N.J.; Colin N. T. Baptist, Tripoli, Libya; Russel C. Kuhn, Princeton, and Frederick H. Stracke, Convent Station, both of N.J., assignors to Esso Research and Engineering Company
Filed Sept. 9, 1969, Ser. No. 856,445
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 P **11 Claims**



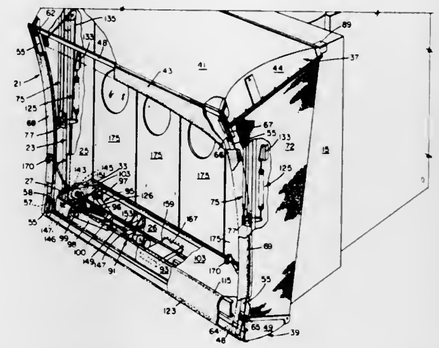
A single anchor leg single point mooring and cargo-handling system, primarily for tanker vessels, is provided which comprises a mooring buoy anchored to a mooring foundation by a single anchor leg, a portion of which is a rigid conduit utilized for cargo transfer, and a portion of which is a flexible connection, and providing means for permitting the buoy to rotate with respect to the mooring foundation.

3,641,603
SHOE MAKING
Charles A. Lockwood, Kettering, England, assignor to The Shoe and Allied Trades Research Association, Northamptonshire, England
Filed Jan. 29, 1970, Ser. No. 6,837
Claims priority, application Great Britain, Jan. 29, 1969, 4,864/69
Int. Cl. A43d *11/00*
U.S. Cl. 12—146 C **26 Claims**



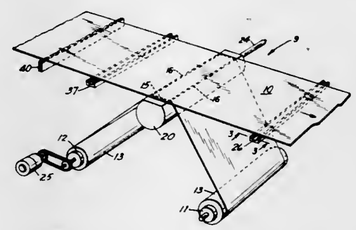
Methods of preforming shoe uppers are provided using molds of a novel shape. The shape of the mold is such that the material is not stretched more than, in preferred embodiments, about 25 percent. The mold corresponds to the shape of the whole upper but is flatter than the last, is preferably unitary but can be in two or more parts. The methods involve heating the material and carrying out a pressure differential forming operation. Mechanical movement of the molds into the material, just prior to the vacuum forming is also described. When forming several uppers simultaneously, a template may be placed over the molds and subsequently used as a cutting guide. The difficulties of lasting in the normal way are avoided by the invention.

3,641,604
CLOSURE APPARATUS
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.
Filed May 27, 1970, Ser. No. 40,834
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **10 Claims**



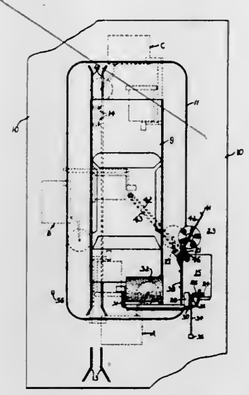
Closure apparatus for a walkway which closes the small gap remaining after the walkway has been aligned with a doorway opening in a structure such as a parked airplane. The apparatus will follow lateral excursions of the airplane with a constant contact force. The face of the apparatus is sufficiently flexible to mate with the side surfaces of most present-day commercial airplanes.

3,641,605
WEB CLEANING APPARATUS
Thomas W. Lindsay, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 4, 1970, Ser. No. 34,129
Int. Cl. A47l *13/40*
U.S. Cl. 15—1.5 **11 Claims**



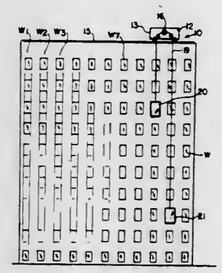
A web cleaning apparatus for thoroughly cleaning continuous webs moved through the apparatus. The apparatus comprises a lint free wiping cloth for wiping dust and foreign objects from a web, a means for using a vacuum to move the web to be cleaned into intimate contact with a section of the wiping cloth so that the web will be thoroughly wiped clean, and nuclear means for removing static electrical charges from the surface of the web before and after it is cleaned so that cleaning will be facilitated and so that the web will not tend to attract dust after being cleaned.

3,641,606
CARWASHING MACHINE
James L. Lee, Missoula, Mont., assignor to Brush-A-Matic, Inc., Missoula, Mont.
Filed Sept. 22, 1969, Ser. No. 860,003
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **3 Claims**



An apparatus and process for washing vehicles, particularly private sedans and station wagons. The apparatus comprises a carriage mounted about an enclosed track. The carriage moves about the periphery of a stationary vehicle. It supports a yieldable upright brush that engages the vehicle sides and a yieldable upper horizontal brush that engages the vehicle upper surfaces. Means is provided to lift the upper brush while the carriage moves across the rear of the vehicle. The washing process includes the step of lifting the brush and maintaining it at an elevated position as the brush traverses the rear of the vehicle.

3,641,607
BUILDING MAINTENANCE APPARATUS
Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.
Filed Mar. 17, 1969, Ser. No. 807,486
Int. Cl. A47l *1/02*, *11/00*
U.S. Cl. 15—50 C **10 Claims**

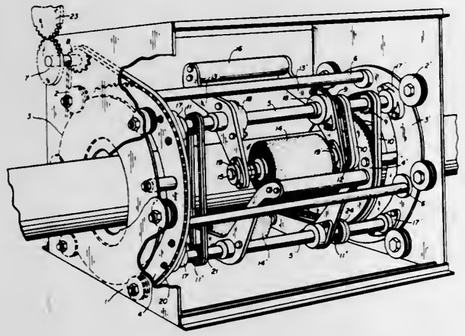


A building maintenance apparatus is provided for performing automatic operations on the facing of tall buildings such as the operation of automatically cleaning the windows or side panels thereof. Automatic cleaning machinery is suspended from a cable which is supported from above on a fixture which is movable laterally across the sidewall of the building to position the suspended cable and cleaning machinery with respect to particular locations such as vertical rows of windows or side panels. The cable is raised and lowered either automatically or intermittently to position

window- or panel-cleaning machinery with respect to individual windows or panel sections which machinery automatically operates either continuously or intermittently to clean said windows or panels.

In one form of the invention, two cleaning machines or fixtures are provided, one at each end of a cable having a length approximately equal to the height of the building or portion thereof to be cleaned and these machines serve to counterbalance each other with respect to a winch which is supported from above and selectively positionable with respect to different rows of windows. Automatic means are provided for not only moving the cable-supported cleaning machines vertically first in one direction and then in the other in the act of cleaning windows or building panels but also for shiftably locating the cable support to bring the machines into alignment with new portions of the building to be cleaned.

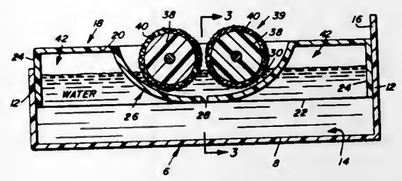
3,641,608
CLEANING BRUSH ASSEMBLY FOR CLEANING CYLINDRICAL SURFACES
Henry J. Kratt, Tulsa, Okla., assignor to Remco Manufacturing Co., Inc., Tulsa, Okla.
Continuation-in-part of application Ser. No. 785,529, Dec. 20, 1968, now abandoned. This application Aug. 26, 1970, Ser. No. 67,166
Int. Cl. B08b *1/00*
U.S. Cl. 15—88 **3 Claims**



A new and improved brush assembly for cleaning a cylindrical surface, the improvement being in the planetary system which includes in combination a chain and a large stationary sprocket mechanism attached to the body of the cleaning machine, the said chain extending over the large sprocket and a second smaller sprocket, the second sprocket in the planetary system being the power transmitting means to a system of cleaning brushes for cleaning cylindrical surfaces.

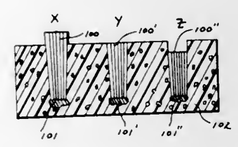
3,641,609
CLEANING DEVICE FOR SHOE SOLES
Wesley M. Hansen, Route #2, Box 1-A, Vale, Oreg.
Filed July 20, 1970, Ser. No. 56,457
Int. Cl. A47l *23/22*
U.S. Cl. 15—112 **8 Claims**

For use in lieu of or in conjunction with a household or equivalent entrance doormat, a portable brushing, swabbing and cleaning device for muddy and dirty boots or shoes. It comprises a self-standing open top boxlike base or pan whose receptacle portion is filled to a desirable level with detergent-containing water. A cover spans and closes the open top and has depending rim flanges snugly but slidingly contacting the interior walls of the pan. The plate portion of the cover descends when weight or pressure is applied and has a semicircular slotted well in which water is pooled to soak the nylon swabbing surfaces of a pair of freely rotatable brushing



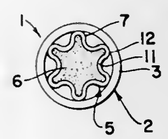
and cleaning rollers. An upstanding scraper is provided at one end of the pan.

3,641,610
ARTIFICIAL TUFTED SPONGES
John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.
Filed Feb. 11, 1970, Ser. No. 10,475
Int. Cl. A46b *3/06*; **A47l** *13/12*
U.S. Cl. 15—114 **12 Claims**



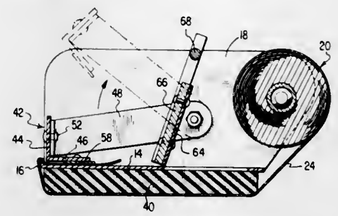
A tufted sponge construction is presented comprising an artificial sponge having apertures opening through a scrubbing surface and having the prefused end of a synthetic filament tuft received in each aperture before said mass cools so that the prefused mass conforms to the internal confines of the aperture and adheres thereto to support the tuft. Tufted sponge constructions of this invention may be formed from sponge.

3,641,611
BRUSH CONSTRUCTION
Arthur T. Schofield, Brecksville, Ohio, assignor to The Manufacturers Brush Company, Cuyahoga, Ohio
Filed Oct. 6, 1969, Ser. No. 863,779
Int. Cl. A46b *13/02*
U.S. Cl. 15—180 **24 Claims**



Rotary brushes formed with brush components comprising a bundle of bristle material bound and tightly compacted at one end by a uniformly corrugated metal band, the other end of such bristle bundle extending from the corrugated band to form a composite generally circular brush face, including rotary end brushes and rotary wheel brushes of substantially unitary design and also of a plurality of end-to-end interlocking annular brush elements; further including the foregoing brushes with plastic holder portions; and, further including the foregoing brushes with convexly curved elastomeric collars, such as O-rings encircling the bristles inside the holders.

3,641,612
FLOOR-CLEANING DEVICE
Morton P. Clurman, and Jerry M. Emerson, both of c/o Sanitation Systems, Inc., Box 124, Croton-on-Hudson, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,210
Int. Cl. A47l *13/00*
U.S. Cl. 15—231 **9 Claims**



A floor-cleaning device wherein the base portion has mounted thereon, a supply roll of floor-cleaning material and a clamp bar which retains the end of a web fed off the supply roll and across the underside of the base portion. When the web gets dirty from cleaning the floor, the clamp bar can be raised and a new web portion fed off the roll. The clamp bar includes a severing portion so that the dirty part of the web can be torn off after the clean web portion has been fed off the supply roll. The supply roll is releasably retained on the base portion by a spring-biased roll-engaging element.

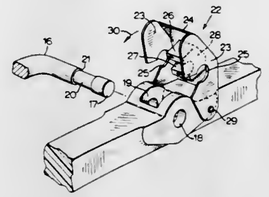
3,641,613
VEHICULAR HEADLAMP CLEANER
Frank R. Povilaitis, Detroit, and Carmon R. Strobel, Washington, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 4, 1969, Ser. No. 882,239
Int. Cl. B60s *1/46*
U.S. Cl. 15—250.02 **3 Claims**



A vehicle headlamp cleaner comprising a brush pivotally mounted adjacent each headlamp on a shaft which is driven by a vacuum actuator. The vacuum actuator is controlled by an electrical circuit including a vacuum solenoid switch and a flasher switch with the flasher switch cycling to intermittently energize the solenoid switch and intermittently connect the vacuum actuator with engine vacuum to pivot the brush through a cleaning stroke in which it scrubbingly engages the headlamp lens. The return stroke of the brush is accomplished by the return spring of the vacuum actuator upon deenergization of the solenoid switch by the flasher switch. A nozzle is also disclosed which is mounted on the brush and directs a stream of washer fluid onto the bristles of the brush as the brush is moving over the headlamp lens so that the bristles function to distribute the washer fluid over the entire brushed area of the lens.

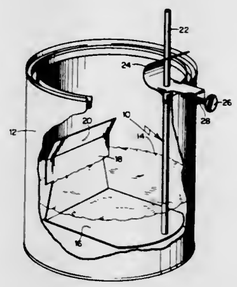
3,641,614
WINDSHIELD WIPER ASSEMBLIES
Alfred Anthony Newsome, 250 Montmorency Drive, Hamilton, Ontario, Canada
Filed Mar. 16, 1970, Ser. No. 19,861
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **2 Claims**

A windshield wiper clip assembly for attaching a windshield wiper to a wiper arm, particularly for a wiper/arm, combination of side pin mounting type. The clip body has a transverse bore for the reception of the wiper arm pin, the pin having an intermediate portion of reduced diameter to provide two spaced parallel radially extending shoulders; a clip member which preferably is pivoted to the



clip body embraces the clip body in a retaining position and has a part which extends into the body and engages the pin shoulders to retain the pin in the bore. The clip member preferably is of U-shape with two parallel sidewalls embracing the clip body and slotted to be a snap fit on the portions of the pin protruding from the clip body.

3,641,615
COMBINED BRUSH DEPTH REGULATOR AND SCRAPER
Curtiss M. Peasley, 25 Boulder Drive, Burlington, Mass.
Filed July 10, 1969, Ser. No. 840,765
Int. Cl. A47l *13/50*
U.S. Cl. 15—257.05 **3 Claims**

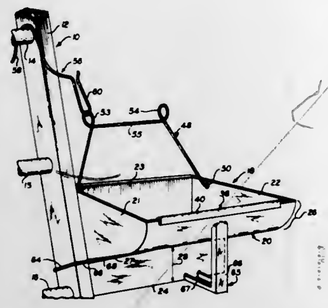


An adjustable platform is provided for immersion in a paint can. One edge of the platform has an upstanding inwardly disposed edge for scraping excess paint from the brush while the opposite edge has a support rod for varying the depth of the platform in the paint and for fastening to a clamp on the edge of the can.

3,641,616
PAINT HOLDER FOR PAINTING WITH ROLLER
Adolph Bonci, 68 Van Buren St., Pearl River, N.Y.
Filed Sept. 17, 1970, Ser. No. 72,975
Int. Cl. B44d *3/14*
U.S. Cl. 15—257.06 **12 Claims**

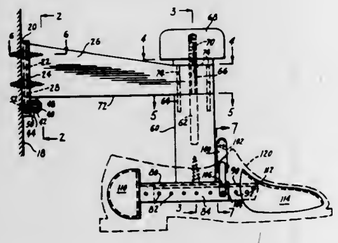
This specification discloses a painting apparatus for roller painting. A container for the paint, with a surface over which a dipped roller is operated to equalize the paint distribution, is constructed for attachment to a ladder. Detachable fastening means connect the container to the ladder selectively in convenient positions for right- or left-handed painters; and

the container is quickly shifted to different levels of the ladder as the painting progresses. The container is also



adapted to be used in the same manner as conventional roller paint holders when not working from a ladder.

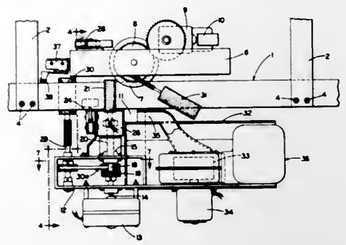
3,641,617
ADJUSTABLE SHOESHINE MOUNT
Pedro R. Lopez, 144 Follett St., Richmond, Calif.
Filed Sept. 4, 1970, Ser. No. 69,597
Int. Cl. A47l *23/18*
U.S. Cl. 15—267 **6 Claims**



A mounting bracket, an arm mounted therein and transverse thereto, a vertical support pivotally mounted at the other end of the arm, and a shoe frame mounted at the bottom of the support comprising sections pivotally and slidably connected to each other for securing and stretching the shoe to be polished.

3,641,618
AUTOMATIC RAIL CLEANER
George E. Rainey, Canton; Donald H. Heidmeyer, and Donald E. Davis, both of Massillon, all of Ohio, assignors to Klenco Corp., Massillon, Ohio
Filed Mar. 11, 1970, Ser. No. 18,536
Int. Cl. E01h *8/00*
U.S. Cl. 15—312 R **11 Claims**

An automatic cleaner for rails in provision companies and the like. A carriage has a motor-driven trolley wheel riding upon the top of the rail. A frame, suspended from the carriage, carries a brush-driving motor having an upright motor shaft with a rotary brush at the upper end thereof for cleaning one side of the rail. A shaft parallel to the motor shaft is operatively connected thereto as by gears, and has a rotary brush at its upper end for cleaning the other side of the rail. The upper portions of the motor shaft and parallel shaft are flexible and are connected to solenoids which are energized whenever the brush shafts approach one of the shaft hangers, so as to flex the upper end of one shaft enough to pass the brush thereon around the rail hanger and the upper end of the other shaft enough to pass the brush thereon around the boltheads connecting the rail to the hanger. A third vertical shaft parallel to the motor shaft has a rotary brush at its upper end and is located forwardly of the motor shaft and connected thereto as by pulleys and belt. A fourth brush, de-



pending from the carriage, passes between each hanger and the adjacent side of the rail to clean the same. A vacuum cleaner device of conventional construction is mounted on the carriage for picking up dust and dirt removed from the rail by the brushes.

3,641,619
MOVABLE LADDER
William H. Roylance, 1654 Redondo Ave., Salt Lake City, Utah
Filed Oct. 19, 1970, Ser. No. 81,898
Int. Cl. E06c *1/397*
U.S. Cl. 182—15 **20 Claims**

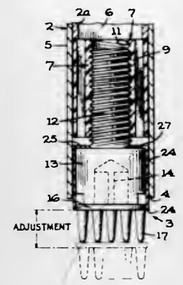


A ladder which can be moved across a surface such as a floor, by an occupant while mounted thereon includes a pair of structural units which are disposed adjacent each other and are adapted to rest upon the surface in a stable, upright position with or without an occupant on the ladder. Each unit has a support structure, preferably including a base, which is supported on the surface by wheels, casters, skids, or the like; a supporting frame attached to the base; one or more footrests attached to the support structure; and means for braking each unit and holding it stationary relative to the floor while permitting the other unit to be moved, for example by the occupant. In order to move the ladder the occupant stands with one foot on each unit and brakes one of the units, then moves the second unit in the desired horizontal direction. The occupant then brakes the second unit and moves the first unit into the desired position. When the ladder is in the final location, both units can be braked to provide safety and stability while the ladder is in use.

3,641,620
FURNITURE GLIDE
Carl H. Hage, Youngstown, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio
Filed Nov. 19, 1970, Ser. No. 91,016
Int. Cl. B60b *33/04*
U.S. Cl. 16—19 **10 Claims**

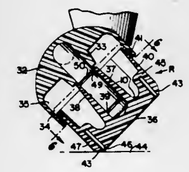
A glide assembly attached to the hollow lower portion of a furniture leg includes a screw stud having a cylindrical plug

projecting from the bottom of the leg upon which is supported a free-moving vertically displaceable sleeve having a skirt slidable between the periphery of the plug and the walls



of the leg. A foot element is provided on the bottom of the plug while means are included on the plug, normally masked by the sleeve, to facilitate rotary displacement of the foot, plug and stud.

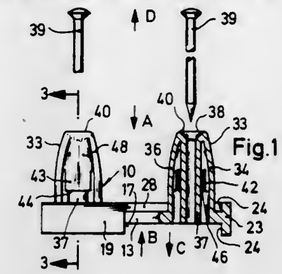
3,641,621
TILTED ROLLER CASTER
Jose Closa, Barcelona, Spain, assignor to Super Caster Corporation, Miami, Fla.
Continuation-in-part of application Ser. No. 740,658, June 27, 1968. This application Jan. 16, 1969, Ser. No. 791,577
Int. Cl. B60b *33/04*
U.S. Cl. 16—45 **5 Claims**



The present invention relates to casters of the type in which a roller is rotatably mounted on an axis disposed at an angle of 45° with respect to the vertical and is concerned primarily with certain improvements which improve the service usage and characteristics of such a caster.

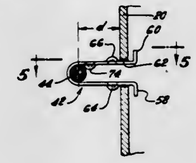
3,641,622
DEVICE FOR CONNECTING CURTAIN RAILS END TO END
Wilhelm Hachtel, 6994 Niederstetten, Germany
Filed Feb. 19, 1969, Ser. No. 800,670
Claims priority, application Germany, Feb. 29, 1968, P 17 29 929.5
Int. Cl. A47h *1/04*
U.S. Cl. 16—95 **9 Claims**

One or more molded plugs or fingers are nailed through an axial passage to the end of one curtain rail. The plugs fit for rigid attachment into channels opening at the end of a



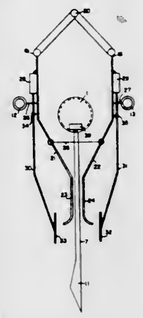
second curtain rail. As a result, the curtain rails can be connected end to end.

3,641,623
HINGE STRUCTURE FOR ELECTRIC POWER DISTRIBUTION BOX OR THE LIKE
Hubert L. Weiss, c/o American Construction Equip. Co., Inc. 5055 West Jefferson Boulevard, Los Angeles, Calif.
Original application Apr. 25, 1968, Ser. No. 724,187. Divided and this application Aug. 8, 1969, Ser. No. 871,083
Int. Cl. F05d *7/12*; **A44s** *21/00*
U.S. Cl. 16—149 **2 Claims**



A hinge structure is provided by hinge knuckle elements snapped into position at apertures of the members designed to be hingedly connected. The hinge knuckles are provided with stop flanges and spring means to secure the hinge knuckles in position. A straight hinge pin interconnects the knuckles and the members to be connected, and is restrained against longitudinal movement by the friction imposed by the lateral thrust of a cover closing spring.

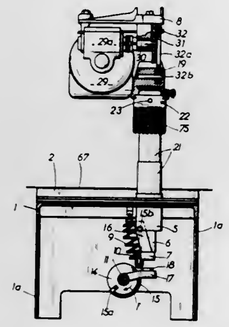
3,641,624
CARCASS SEPARATION
Georges Aubert, 6 rue Pierre Dupre, Marseille, France
Filed July 28, 1969, Ser. No. 845,456
Claims priority, application France, July 7, 1968, 22359
Claims priority, application France, July 7, 1968, 22359; Sept. 11, 1968, 22385
Int. Cl. A22c *17/06*
U.S. Cl. 17—23 **5 Claims**



An apparatus for cutting carcass of butchers' meat into two portions has means for engaging each side of the

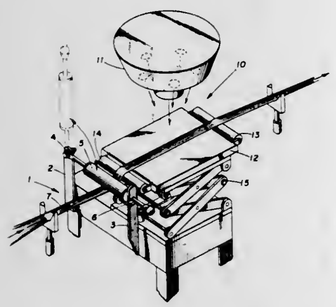
thoracic cage of the carcass and for forcing said sides apart, and a cutting device arranged to move longitudinally between said cage-engaging means to cut the backbone of the carcass along its entire length.

3,641,625
MEAT-TENDERIZING MACHINE
Fernand Stanislas Allinquant, 53, Avenue le Notre, 92 Sceaux, France
Continuation of application Ser. No. 756,619, Aug. 30, 1969, now abandoned. This application Dec. 7, 1970, Ser. No. 95,931
Int. Cl. A22c *9/00*
U.S. Cl. 17—25 **8 Claims**



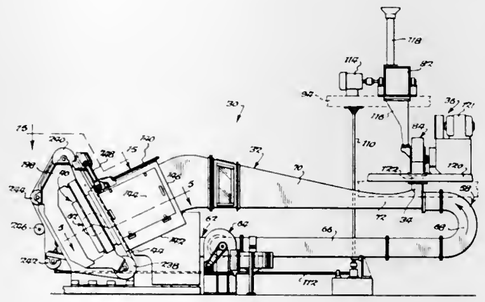
The invention relates to a meat-tenderizing machine comprising a belt conveyor carrying a piece of meat to be tenderized and a block of blade plates above the conveyor and the plates of which are parallel to the advance direction of the conveyor. An electromechanical device causes a reciprocating movement of the block and an advance movement of the conveyor to take place alternately, the advance movement being a multiple of the step of the blades, so that the blades always penetrate into the piece of meat at the same places thereof.

3,641,626
DEVICE FOR PRODUCING UNIFORM TOW
Charles H. McGill, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 26, 1968, Ser. No. 787,033
Int. Cl. D01b *3/04*
U.S. Cl. 19—65 **1 Claim**



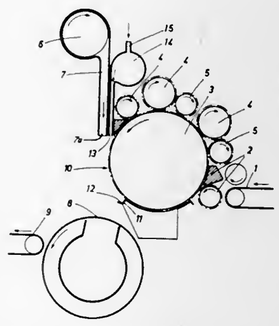
A holddown device for compacting and flattening tow for uniform presentation to a color detection apparatus. The tow is passed under a roll which is secured at its ends to a support means and which is positioned on a plane parallel and below the working plane of the background plate of the color detection apparatus, and then passed over the background plate for color determination.

3,641,627
FORMING APPARATUS
Charles Allen Lee; Warren R. Furbeck, both of Knoxville, Tenn.; Thomas S. Bartley, and Jeremy Beaty, both of Toronto, Ontario, Canada, assignors to International Paper Company, New York, N.Y.
Original application Nov. 10, 1965, Ser. No. 507,089, now Patent No. 3,501,813. Divided and this application July 28, 1969, Ser. No. 870,898
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **14 Claims**



A single integral web of loose fibrous material having a nonuniform cross-sectional thickness is formed on a carrier moving at a uniform rate by causing first and second quantities per unit time of loose fibrous material to be conveyed by air and deposited on first and second different portions of the carrier.

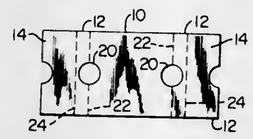
3,641,628
APPARATUS FOR MANUFACTURING WEBS FROM FIBER MATERIAL
Ernst Fehrer, Auf der Gugl 28, Linz, Austria
Filed Jan. 26, 1970, Ser. No. 5,591
Claims priority, application Austria, Feb. 7, 1969, A 1243/69
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.4 **7 Claims**



A carding drum has a peripheral surface which has a substantially vertically extending release portion. The drum is operable to rotate in a predetermined sense whereby said release portion is moved downwardly. Inlet means supply

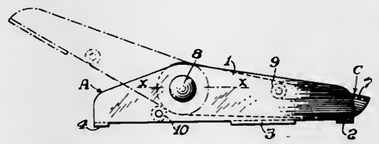
fiber material to said peripheral surface outside said release portion. Workers and stripples cooperate with said peripheral surface between said inlet means and said release portion in the direction of movement of said peripheral surface during rotation of said drum. A web-forming conveyor succeeds said drum and has a web-forming surface formed with suction openings. An air nozzle is connected to a blower to receive compressed air therefrom and extends throughout the length of said drum and has an outlet orifice arranged to discharge said air in a substantially downwardly directed stream, which flows tangentially past said release portion to impinge on said suction surface. During rotation of the drum, fibers are released from said release portion and entrained by said airstream in a substantially vertical direction to said suction surface through an open space. A baffle defines a lower limit of said release portion and extends approximately radially relative to said drum and close to said peripheral surface thereof.

3,641,629
BAND BUCKLE, METHOD OF MAKING AND TOOL FOR APPLYING
Harold H. Beardsley, Denver, Colo., assignor to Band-It, Denver, Colo.
Filed June 18, 1970, Ser. No. 47,351
Int. Cl. B65d *63/06*
U.S. Cl. 24—23 W **10 Claims**



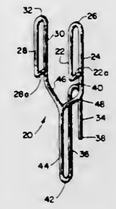
Band buckle, method of making the buckle, and tool for applying the buckle to lapped ends of a looped band. The buckle is provided with apertures or cutouts in its sidewalls into which wedging ends of the tool may enter and form locking detents or dimples in the outer band without shear or removal of the band cross section thereat, thereby retaining uniform tensional strength of the band at all cross sections thereof. The method includes the steps of forming a flat blank with the apertures therein and thence bending or folding it along predetermined fold lines to form a buckle of conventional channel shape, the folds being so chosen relative to each aperture to dispose a portion thereof in a sidewall of the buckle and the remaining portion in the top wall, and the final steps of applying the buckle to the band and forming the locking detents. The tool employs pair of pivoted crimping or dimpling jaws and a buckle pressure applying member which are operated in the desired sequence by cams directly engageable therewith, preferably eliminating links or other mechanism which would otherwise complicate the apparatus.

3,641,630
STRAP-TIGHTENING BUCKLE
Holt A. Farley, Annandale, N.J., assignor to Kinedyne Corporation, Mountainside, N.J.
Filed Aug. 17, 1970, Ser. No. 64,334
Int. Cl. A43c *11/00*
U.S. Cl. 24—68 **5 Claims**



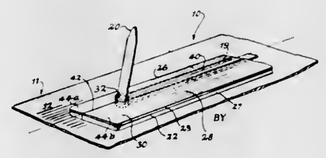
A buckle includes a body which has two spaced parallel sideplates connected together by crossbars at the bottom side of the body and one of which provides for connection of a strap to one end of the body while another serves as a strap guide bar. A U-shaped strap tightening lever has two side arms each pivotally connected to one of said sideplates intermediate the ends of said sideplate and carrying a strap tensioning bar for looping therearound an intermediate portion of said strap.

3,641,631
DRAPERY HANGER FOR PINCH PLEAT DRAPERY
Sadie Gass, 1119 Lincoln St., Hollywood, Fla.
Filed Nov. 28, 1969, Ser. No. 880,780
Int. Cl. A44b *13/00*
U.S. Cl. 24—84 C **7 Claims**



A drapery hanger for hanging pinch pleat drapery in which a pair of horizontally spaced pleat gripping clamps are carried by a common support which is joined to a downwardly facing support hook that is to be carried on a drapery rod; the clamps grasp the two outer pleats of the pinch pleat drapery so that they are held in an opened position.

3,641,632
FASTENER MEANS
Joseph T. Corey, 299 Hunters Lane, Williamsville, N.Y.
Filed Mar. 25, 1970, Ser. No. 22,519
Int. Cl. A44b *9/00*
U.S. Cl. 24—153 BP **3 Claims**



A device for fastening papers or the like to a backing member including a strip member having bendable prong end portions on which papers are to be impaled and an overlay member for fixing the strip member to the backing member. The overlay member is characterized by an intermediate portion adapted to straddle the strip member and end portions having a pair of apertures to receive the prong portions of the strip member. Slits extending from the apertures to the free ends of the end portions may be provided to facilitate assembly of the strip and overlay members.

3,641,633
BUCKLE
Frederick R. Leavenworth, Woodbury, Conn., assignor to Waterbury Buckle Company, Waterbury, Conn.
Filed Nov. 23, 1970, Ser. No. 91,666
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **10 Claims**

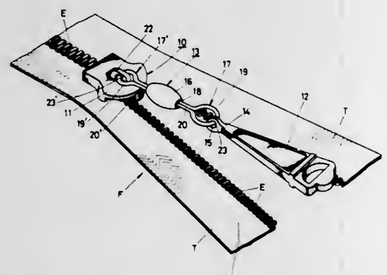
A buckle having frame and clamping elements including cooperating side flanges which retain the elements in operative alignment. Notches formed in the flanges of the frame element receive trunnions associated with the flanges on the

clamping element to support the latter element for general pivotal movement between clamping and releasing positions



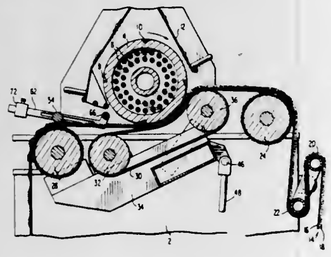
relative to the frame element. The two elements are retained in assembled relation by a connecting spring which biases the clamping element toward its clamping position.

3,641,634
SLIDER FOR ZIP FASTENERS
Hidekazu Asai, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1970, Ser. No. 94,437
Int. Cl. A44b *19/26*
U.S. Cl. 24—205.15 H **4 Claims**



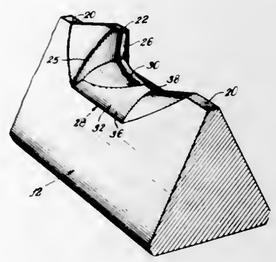
A slider for zip fasteners is disclosed for opening and closing the opposed tape stringers of the fastener, which slider having an elongated pull tab disposed for universal movement relative to the slider body. A link assembly couples the pull tab to the slider body which assembly comprises eyelet link elements movably connected to a socket.

3,641,635
PILE-FABRIC-FINISHING METHODS AND APPARATUS
Henry L. Martin, Elmira, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Mar. 2, 1970, Ser. No. 15,625
Int. Cl. D06c *23/04*
U.S. Cl. 26—2 E **24 Claims**



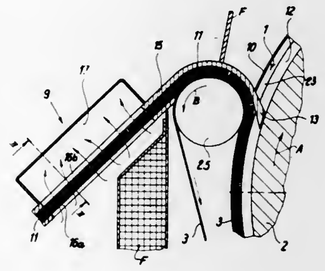
Deep heating of the pile of a pile fabric is accomplished rapidly by an electrifier roll and the heated pile fibers are acted upon by a downwardly weighted embossing or texturing roll or bar having temperature approximating that of the pile fibers. The position of the patterning roll or bar is adjustable, and control is exercised over both axial and rotational movements thereof to enable the production of different pattern effects.

3,641,636
FELTING NEEDLE
Edson P. Foster, 409 South 29th St., P. O. Box 527, Manitowoc, Wis.
Filed Oct. 14, 1970, Ser. No. 80,720
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **7 Claims**



A barb construction for a felting needle comprising a convex arcuate spur and a bottom wall extending obliquely from the base of the spur to the outer surface of the felting needle's elongated body. The bottom wall is defined by three distinct contiguous surfaces which are centered along a line parallel to the centerline of the needle's body.

3,641,637
STUFFING BOX CRIMPING DEVICE
Lutz Brenner, and Wolfgang Gerhardt, both of Karl-Marx-Stadt, Germany, assignors to Veb Spinn- Und Zwirnerei-Maschinenbau, Karl-Marx-Stadt, Germany
Filed Aug. 4, 1969, Ser. No. 847,098
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **10 Claims**

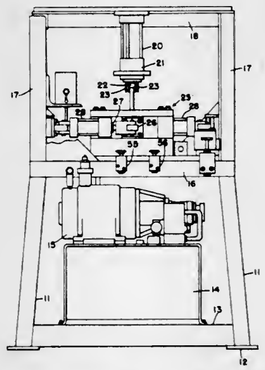


A stuffing box crimping device includes a curing chamber formed as a circumferential groove on a rotating heating wheel and in which the crimped yarn is held by a tight-fitting belt overlying the wheel and rotating therewith. The groove has a stepped cross section including a narrow inner part, a central part of wide diameter in which the crimped yarn is carried, and an outermost part of a diameter wider than that of the central part. An elongated member secured to the device is insertable into the narrow part of the groove at the end of the heating path in order to lift the yarn out of the curing chamber.

3,641,638
NONWOVEN FIBROUS FELT BALLISTIC ARMOR MATERIAL
Roy C. Laible, Jamaica Plain, Mass., assignor to The United States of America as represented by the Secretary of the Army
Continuation-in-part of application Ser. No. 773,336, Nov. 4, 1968, now abandoned. This application Apr. 7, 1970, Ser. No. 26,437
Int. Cl. D04h *18/00*
U.S. Cl. 28—72.2 R **5 Claims**

A method of making a nonwoven fibrous felt ballistic armor material having improved ballistic resistance comprising forming a batt of staple fibers, layering a plurality of the batts to form a laminar sheet, needling the laminar sheet once only in a substantially nonrepeating pattern by barbed needles penetrating the sheet in a direction substantially normal to the plane of the sheet to form a nonwoven fibrous felt, pressing the nonwoven fibrous felt to reduce its thickness, and layering a plurality of the nonwoven fibrous felts to form the nonwoven fibrous felt ballistic armor material.

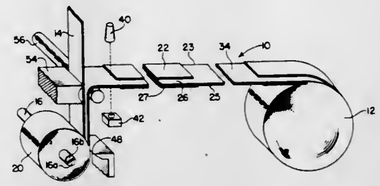
3,641,639
FIN-SHEARING MACHINE
John B. Lepore, P. O. Box 107, Landing, N.J.
Filed Feb. 5, 1970, Ser. No. 8,802
Int. Cl. B21k *21/06*
U.S. Cl. 29—1.2 **6 Claims**



A compact and lightweight machine for accurately and quietly shaping the peripheral contour of radially extending projectile fins in a single operation. The machine die arrangement includes a group of arcuate inwardly facing cutting surfaces formed on circumferentially spaced segmental members that are secured to an annular ring which is circumferentially reciprocated in a die baseplate annular recess by a pair of fluid work cylinders. Corresponding work support members secured to the baseplate have external surfaces mating with respective circumferentially reciprocable, segmental member cutting surfaces. After a finned workpiece is positioned on the work support within the die, depending guide members on an air cylinder operated positioning mechanism piston descend into corresponding vertical apertures provided in the work support members prior to the fin-shaping operation performed by the cutting surfaces.

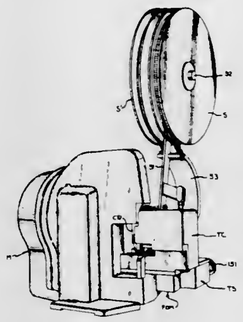
3,641,640
METHOD OF MAKING METALLIZED CAPACITORS
Charles C. Rayburn, Falls Church, Va., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 14, 1969, Ser. No. 866,213
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **7 Claims**

Method of making a plurality of identical wound metallized capacitors from a strip of dielectric material which is metallized in a plurality of overlapping areas on both sides. The metallized dielectric strip has a plurality of clear or demetallized zones along its length which overlap each other. The method steps comprise: winding a portion of the strip containing a metallized area and a cleared zone into a capacitor; and simultaneously cutting the strips in the cleared zone and heat sealing the outer wraps of cleared dielectric to



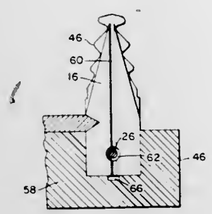
the underlying wraps of the capacitor. The metallized dielectric strip may be either wound together with a plain dielectric strip or may be wound without the need for a plain dielectric strip by winding it about an axis which generally coincides with a transverse line through the center of the metallized area. A photoelectric cell may be used to sense the presence of a clear area to initiate the cutting and sealing operation.

3,641,641
COVERING FOR A CONNECTING MEMBER
Willard Le Roy Busler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Original application June 12, 1967, Ser. No. 645,310, now Patent No. 3,431,548, which is a division of application Ser. No. 347,907, Feb. 27, 1964, now Patent No. 3,332,053. Divided and this application Dec. 4, 1968, Ser. No. 781,154
Int. Cl. H01r *43/00*
U.S. Cl. 29—33 M **4 Claims**



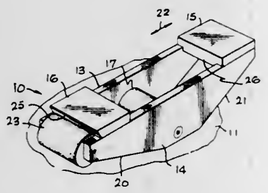
A machine for applying a covering member on a connecting member simultaneously feeds a strip of connecting members to a connecter crimping station and a strip of covering members to a covering closing station. A connecter member at the connecter crimping station is crimped to a wire sheared from the strip of connecter members and transferred into an open covering member which has been sheared from the strip of covering members. As the crimped connecter is being positioned into the covering member, the covering member is being moved to its closed position and after the connecter member has been positioned in the covering member, the covering member is moved to its fully closed position thereby providing a covered connecter member.

3,641,642
INDIVIDUAL TOOTH BROACH
Frederick W. Schmidt, 19 Windmill Hill Road, Branford, Conn.
Continuation-in-part of application Ser. No. 716,919, Mar. 28, 1968, now Patent No. 3,528,154. This application Dec. 30, 1969, Ser. No. 889,088
Int. Cl. B26d *1/00*
U.S. Cl. 29—95.1 17 Claims



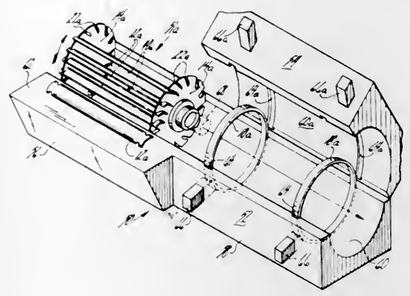
In the present invention a form broach is composed of a number of individual interlocking cutting elements which combine in an interdependent relationship to create the form broach. Each individual cutting element in the broach alignment interlocks with a neighboring cutting element by a male and female V-groove interlock structure which forms a part of each tooth in the assembly. Each individual cutting element is provided with an oil-distributing channel which may also have branches extending therefrom, and the ram body in which the assembled broach is housed contains an oil-distributing slot communicating with the grooves in the individual cutting elements.

3,641,643
PRESSURE APPLICATOR
William Niemi, 28122 Deep Creek Drive, Saugus, Calif.
Filed May 19, 1969, Ser. No. 825,776
Int. Cl. B05c *1/08*
U.S. Cl. 29—110.5 3 Claims



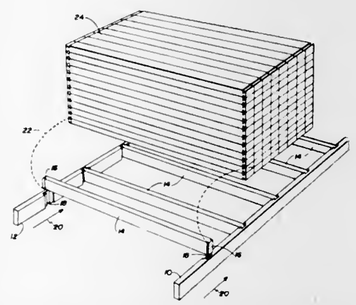
A pressure applicator is disclosed herein having spaced-apart parallel side members joined at their opposite ends by a pair of hand-pressure elements and joined at their midsections by at least a single hard roller having a portion of its periphery extending beyond the bottom edge of the side members. The undersurfaces of the side members converge from the opposite ends towards the midsection so that the roller serves as a fulcrum about which the opposite ends may pivot when hand pressure is exerted on the pair of elements to forcibly and rollably engage the roller surface against a prepared laminated product.

3,641,644
CENTRIFUGAL BLOWER WHEEL METHOD OF MAKING
Jay P. Conniff, Campbell County, Va.; Vincent N. Delaney, New Hartford, and Kenneth A. Merz, Cornwall Bridge, both of Conn., assignors to Torin Corporation, Tarrington, Conn.
Continuation-in-part of application Ser. No. 679,112, Oct. 30, 1967, now abandoned. This application Aug. 21, 1969, Ser. No. 863,739
Int. Cl. B21k *3/04*; B23p *15/02*, *15/04*
U.S. Cl. 29—156.8 CF 8 Claims



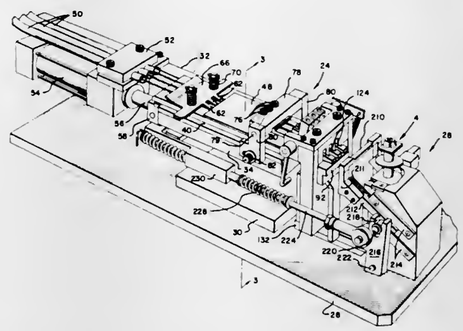
In a centrifugal blower wheel construction a circumaxially spaced series of axially elongated fluid-moving blades each received in an associated recess in a radially disposed support member are secured in assembly therewith by a thin annular band the interblade portions of which are simultaneously deformed.

3,641,645
APPARATUS FOR PRODUCING WALL PANELS
George E. Kunkle, Jr., 2507 Cumberland Drive, Mesquite, Tex.
Filed Jan. 26, 1970, Ser. No. 5,792
Int. Cl. B23p *19/00*, *19/04*
U.S. Cl. 29—200 A 10 Claims



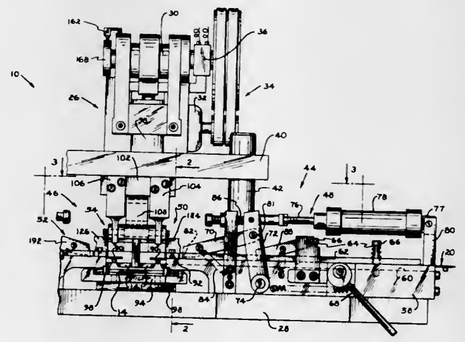
An apparatus for automatically forming wall panels by lacing or inserting studs having male dovetailed key members formed on the ends thereof into two plates having dovetailed keyways formed therein. The apparatus includes a supply bunk or rack for holding a plurality of studs to be laced, a stud clamp for grasping a stud from the box and positioning it for insertion into the keyways of the two plates, means for simultaneously pressing the stud into the keyways of the two plates, and mechanism for advancing the two plates and positioning the next consecutive keyways at a predetermined location for insertion of a next stud. The method includes the novel procedure by which the next consecutive keyways in the plates are positioned to receive a stud.

3,641,646
FEEDING AND INSERTING APPARATUS
Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 27, 1970, Ser. No. 6,103
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 R 8 Claims



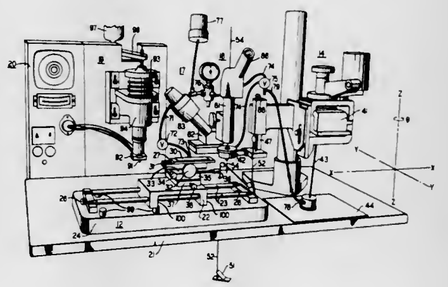
Inserting apparatus for inserting terminals in coil bobbins as improved feed means for feeding a strip of terminals. The apparatus comprises a reciprocable inserter which moves towards and away from the bobbin. During movement of the inserter towards the bobbin, feed fingers which are fixed onto the inserter, engage the strip so that it moves with the inserter towards the bobbin. During return movement of the inserter, the strip is engaged by a detent which is affixed to the frame and which prevents rearward movement of the strip. Feeding is thus accomplished by restraining the strip against rearward movement while the inserter moves rearwardly.

3,641,647
TERMINAL APPLICATOR
John D. Balmer, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed June 8, 1970, Ser. No. 44,113
Int. Cl. H01r *43/04*; H05k *3/00*
U.S. Cl. 29—203 B 13 Claims



A terminal applicator in which the lead terminal of a chain of terminals is positioned above a circuit board between a punch and a tool adjacent the board. The tool is raised to sever the terminal from the strip, and the punch is moved toward the tool to engage the terminal prior to severing. The punch and tool, with the terminal confined therebetween, then move toward the circuit board and the terminal is staked to the board. While the punch and tool both move toward the circuit board, the punch moves faster than the tool so that the terminal is moved past the tool and is bent to a desired configuration. The terminal is positively held during the severing, bending and staking operations.

3,641,648
PIECE PART HANDLING APPARATUS
Louis Werner Kalberman, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 20, 1970, Ser. No. 65,580
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 5 Claims

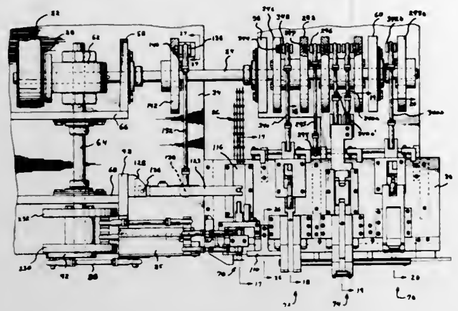


There is described an apparatus for holding an integrated circuit chip and positioning beam leads extending therefrom in registration with conducting pads on a substrate. The apparatus includes a substantially closed cylindrical vacuum chamber having a center axis normal to the surfaces of both the chip and the substrate. The chip is held by vacuum to an opening in one end of the chamber. Both ends of the cylindrical vacuum chamber are transparent so that a line of sight exists along the center axis of the chamber and normal to the surfaces of both the chip and the substrate. This line of sight enables a microscope to bring into focus at once all of the beam leads and the conducting pads associated with the chip.

3,641,649
ASSEMBLY OF TERMINALS TO BOBBINS
Willard Leroy Busler; Howard Charles Phillips, and Milton Dean Ross, all of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Original application Apr. 30, 1968, Ser. No. 725,299, now Patent No. 3,562,903, dated Feb. 16, 1971. Divided and this application Sept. 14, 1970, Ser. No. 71,953
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 D 4 Claims

Elongated terminals are manufactured as a continuous strip made up of four side-by-side parallel columns of end-to-end connected terminals, these columns of terminals defining successive rows of side-by-side terminals, each row being separated from the next adjacent row by a transversely extending slug strip. A plurality of terminals are assembled to a bobbin or the like by feeding the strip until the leading ends of the leading row of terminals extend through a flange of the bobbin. The leading row, and the slug strip integral with the trailing ends of the terminals in the leading row, is severed from the next adjacent row of terminals. This slug strip remains integral with the inserted terminals until further forming operations are carried out and functions to maintain alignment of the terminals in the bobbin during these forming operations. The subsequent forming operations, in the disclosed embodiment, comprise the steps of bending the lead-

ing ends of the terminals through an angle of 90° until they lie in a plane of the flange of the bobbin. The terminals are



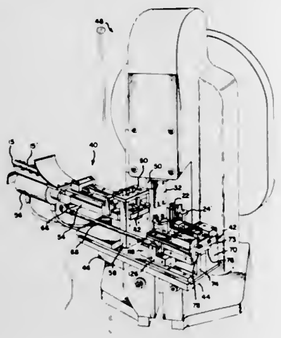
thereafter staked to the bobbin flange and the slug strip is then severed from the trailing ends of the terminals.

3,641,650

MACHINE FOR ASSEMBLING A CONNECTING DEVICE TO AN ELECTRICAL DEVICE

Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 24, 1970, Ser. No. 66,379
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **7 Claims**



Apparatus for terminating tap wires of an electrical coil by inserting connecting devices into a flange of the coil bobbin and concommitantly crimping each connecting device onto one of the tap wires. Each individual connecting device includes an integral mounting means for mounting the device on the bobbin, and a terminal means which can be engaged with a complementary terminal means to form connections to the coil.

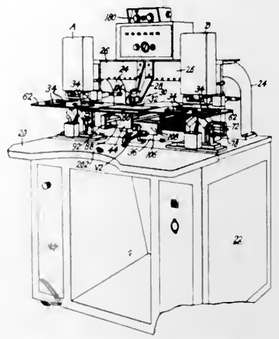
3,641,651

WORK POSITIONING MECHANISM

Adelbert W. Rockwell, Jr., Gloucester; Donald F. Herdeg, Beverly, and Armand L. Tardiff, Salem, all of Mass., assignors to USM Corporation, Flemington, N.J.

Filed Feb. 18, 1970, Ser. No. 12,260
Int. Cl. H05k *3/30*
U.S. Cl. 29—203 B **20 Claims**

A machine is disclosed for successively positioning a workpiece such as a circuit board in predetermined relation to a tool such as an inserter according to a program dictated for instance by a template. Motors respectively drive X and Y cross slides until one sensor is aligned with a particular X-location template hole and with the corresponding Y-location holes of a particular Y-row in use in the template whereupon a sensing stylus successively engages the Y-row holes to locate the work-carrying slide in its precise predetermined



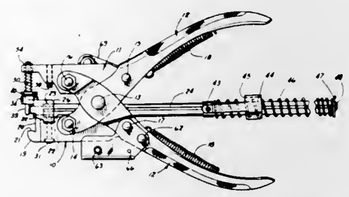
operating position. Successive "Y-sweeps" in opposite directions are automatically repeated with an intervening shorter "X-sweep" in one direction after each completed Y-sweep. A fluidic system preferably, though not necessarily, controls the drive motors and hence the tool operation in programmed manner.

3,641,652

MAGAZINE-EQUIPPED SLUG-DRIVING TOOL

Douglas Arnold, Meriden, Conn., and Harry A. Faulconer, La Mesa, Calif., assignors to Sargent & Company, New Haven, Conn., by said Arnold

Filed Sept. 20, 1968, Ser. No. 761,097
Int. Cl. H05k *13/04*; **H01r** *43/04*
U.S. Cl. 29—203 D **16 Claims**



There is provided a tool which may be hand powered or power operated of a magazine-equipped type, for ejecting slugs and performing work by inserting these slugs in workpieces defining receptacles therefor, which tool supports the workpieces. The tool comprises one or more plungers, each of which has the sequential function of moving through the magazine to eject a slug therefrom and to insert it by driving the slug into such a receptacle.

3,641,653

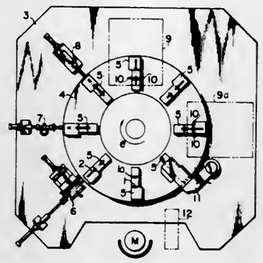
APPARATUS FOR AUTOMATIC ASSEMBLY OF A ROTOR AND THE LIKE

Kiyokazu Yamamoto, Kyoto; Masaru Kishimoto, Kaizuka-shi; Susumu Ueno, Kadoma-shi; Hiroshi Fujimoto, Hirakata-shi; Kazutaka Hatamoto, and Tadashi Kubota, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 15, 1969, Ser. No. 850,449
Claims priority, application Japan, Dec. 7, 1968, 43/89792; 43/89793; 43/89794; 43/89795; 43/89796; 43/89797; 43/89798; 43/89799
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 R **8 Claims**

Apparatus for automatically assembling or welding parts in the form of discs such as forming a rotor of a television tuner

with a shaft. The apparatus comprises a plurality of parts mounting jigs located at an equal distance from each other on a turntable driven intermittently, a shaft supply device located adjacent to the outside of the periphery of the turntable and adapted to supply shafts to the respective jigs so as to be inserted into the parts held in each of the jigs, a shaft position regulating device for causing relative angular movement between the shaft and the mating parts so that the shaft is



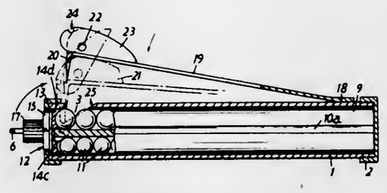
located at a predetermined angular position with respect to the parts, a shaft position detecting device adapted to detect the axial position as well as the angular position of the shaft assembled to the parts, a joining device for joining the shaft with the mating parts, and a detaching device for removing the parts with the shaft assembled therewith from each of the parts mounting jigs, so that a series of operations for the assembly of the parts are automatically carried out.

3,641,654

SPLIT SHOT DEVICE

Raymond Ralph Wheeler, 514 Elk Drive, Riverton, Wyo.

Filed June 9, 1969, Ser. No. 831,644
Int. Cl. B23q *7/10*
U.S. Cl. 29—212 D **11 Claims**



A device for the storage and splitting of shot for fishing line has a body within which a plurality of shot are housed in one or more magazine recesses and can be positioned at an opening of the body for splitting by a cutter movably mounted on the body. A plurality of magazine recesses for different sized shot may be selectively presented at the opening, by rotation of a core adapted to be located in the selected position by locking means. A lever may be provided to act between the cutter and the body to permit increased force to be applied to split a shot. The cutter may carry a pusher member arranged to abut against and close to a split shot when the cutter is moved towards the body. The cutter may carry means serving as a guillotine for cutting fishing line.

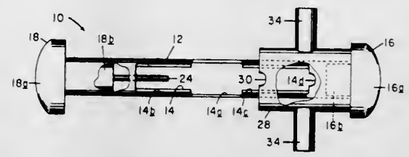
3,641,655

DEVICE FOR MOUNTING AND DEMOUNTING A BIT

Bernt Johnson, 644 S.E. 135th Avenue, Portland, Oreg.

Filed June 25, 1970, Ser. No. 49,831
Int. Cl. A61c *3/00*; **B23p** *19/02*
U.S. Cl. 29—243 **6 Claims**

A device for mounting and demounting a bit in a friction chuck of a portable tool, which chuck includes a bit-receiving bore extending therethrough and opening to opposite sides of the tool. The device includes an elongated tube, open along one of its sides forming a channel which freely and slidably receives the tool for movement in the channel along a path paralleling the axis of the bore. A collar is mounted for sliding along the tube and for engaging a tool in the channel to move it toward opposite ends of the channel. An abutment is positioned at one end of the channel. On



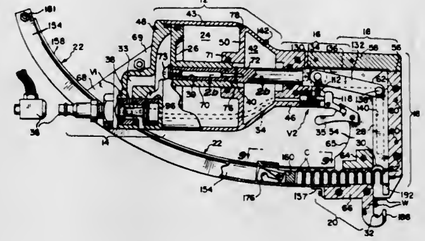
movement of the tool toward the abutment a bit interposed between the abutment and the tool is stopped by the abutment, and further movement of the tool forces the bit into the chuck. An elongated pin paralleling the channel axis extends into the channel from the opposite end of the tube and is aligned with the bore in the opposite side of the tool. On movement of the tool toward the pin end of the channel, the pin enters the bore and forces the bit out of the chuck.

3,641,656

CLIP APPLYING AND CLINCHING TOOLS

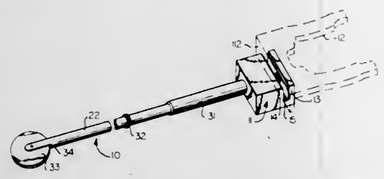
Arthur Langas, Greenview, and Harrison C. Lingle, Wilmette, both of Ill., assignors to Hartco Company, Wilmette, Ill.

Filed Oct. 21, 1969, Ser. No. 870,469
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.57 **11 Claims**



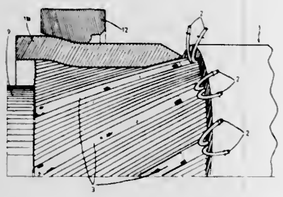
A portable, pneumatically operable, magazine-fed, trigger-actuated, clip-applying tool for clinching open-ended clips around adjacent wire members and having a fixed anvil jaw and a cooperating movable jaw which is actuated by a novel toggle linkage under the control of a reciprocable piston and cylinder arrangement. The direction of toggle thrust is at a right angle to the direction of jaw movement, thereby eliminating the necessity for employing bellcrank or wedge toggle actuators and the toggle linkage is such that it effects quick travel of the movable jaw for rapid clip feed, terminating in high-pressure application to the clip for final effective clinching purposes. An open-trough, clip-containing magazine feeds the clips directly to the jaw structure, thereby eliminating the usual clip transfer mechanism which places the clips in an intermediate position before they are engaged by the clinching jaws. The magazine further cooperates with the movable clinching jaw in such a manner that a positive shearing of the clips from the remaining ribbon-connected clips in the magazine takes place without the creation of ribbon fragments and consequent jaw clogging. The magazine is curved on a long radius so that the usual clip follower employed thereby tends to keep the string of clips firmly seated in the magazine trough. Convenient tool balance in the hand of the operator is a further novel feature of the tool.

3,641,657
EXTRACTOR FOR LOCK RETAINER CLIPS
Cleo W. Shufflebarger, 405 West Ann Street, Punto Gorda, Fla.
Filed Jan. 6, 1970, Ser. No. 965
Int. Cl. B25b 27/20
U.S. Cl. 29—278 7 Claims



An extractor which has a clamp head operating on a universally jointed handle enables the operator to engage and easily remove the spring steel lock retaining clip that holds locks onto car doors or like sheet metal areas.

3,641,658
PROCESS FOR COUPLING TO A CONNECTING ELEMENT AN ELONGATED FLEXIBLE MEMBER INCLUDING LINES FOR REMOTE TRANSMISSION OF POWER OR DATA
Andre Chevalier, Pantin; Pierre Grolet, Viroflay, and Remi Reynard, Montesson, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France
Filed Apr. 20, 1970, Ser. No. 30,084
Claims priority, application France, Apr. 23, 1969, 6912939
Int. Cl. B23p 17/00
U.S. Cl. 29—423 1 Claim

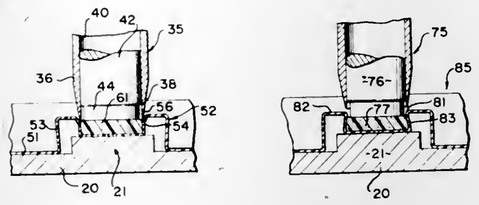


This process makes it possible to couple to a connecting element an elongated flexible member having electric or hydraulic lines contained in at least one armouring of metallic wires, without causing any damage to these electric or hydraulic lines.

It consists in drawing through a die an auxiliary ring covering the amouring, so as to make the metallic rigid metallic bars locally substituted for the electric or hydraulic lines, penetrate into an underlaying anchoring ring. The auxiliary ring and the bars are then removed and the electric or hydraulic lines placed in the grooves or farrows hallowed in the anchoring ring by the bars. A clamping ring surrounding the so constituted assembly is then sompressed by an additional drawing operation through a die.

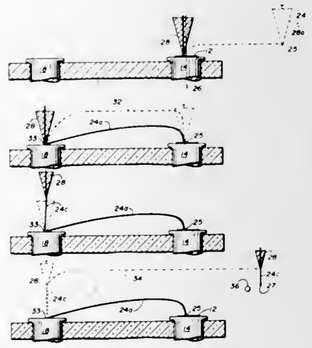
3,641,659
MANUFACTURE OF VENTED CLOSURES
Charles E. Colgan, Glen Ellyn, and Edward J. McArdle, Morton Grove, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Original application Aug. 30, 1965, Ser. No. 483,526, now Patent No. 3,455,481. Divided and this application Feb. 26, 1969, Ser. No. 816,459
Int. Cl. B23p 11/02
U.S. Cl. 29—451 7 Claims

This disclosure relates to a method of and apparatus for manufacturing vented closures by first forming a disklike body having an end panel and a recess defined by a peripheral wall and an apertured end wall, temporarily enlarging an entrant opening of the recess, inserting a hydrophobic element into the recess through the temporarily



enlarged entrant opening, compressing the hydrophobic element, and returning the entrant opening to a size which prevents the removal of the hydrophobic element from the recess through the entrant opening.

3,641,660
THE METHOD OF BALL BONDING WITH AN AUTOMATIC SEMICONDUCTOR BONDING MACHINE
Anthony L. Adams, Dallas; Gerald A. Yearsley, Garland; Marion I. Simmons, Richardson, and Billy P. Yager, Lake Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 30, 1969, Ser. No. 837,485
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 12 Claims

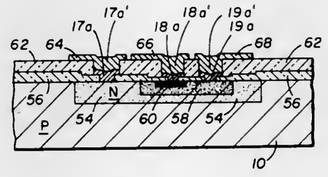


An automatic machine for ball bonding a lead wire to an expanded contact of a semiconductor device and stitch bonding the wire to a lead of the semiconductor package is described. The machine automatically aligns an X–Y table in predetermined relationship to the semiconductor device by means of an electro-optical system. A bonding needle mounted on the table is then moved in a predetermined manner to press the balled end of the wire against the expanded contact. Wire is then positively payed out as the bonding needle is moved to the lead where a stitch bond is performed. After the stitch bond, the needle is raised to pull out a length of wire, then the wire is clamped to break the wire near the stitch bond. The length of the wire protruding from the needle is then passed through a flame to form a new ball preparatory to a new cycle.

The wire is payed out to the bonding needle from a spool supported by an air bearing. After the ball is formed, reverse torque is applied to the spool to pull the ball up against the end of the bonding needle. After the ball bond, forward

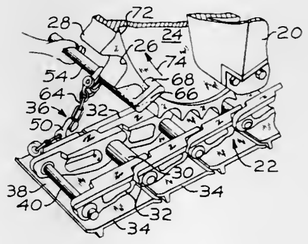
torque is applied to pay out the wire, and the wire is positively fed through the needle by an airstream. After the stitch bond is completed and the ball reformed by the flame, reverse torque is again applied to the spool to draw the ball up against the end of the needle preparatory to the next bonding cycle.

3,641,661
METHOD OF FABRICATING INTEGRATED CIRCUIT ARRAYS
Michael Leo Canning; Roger Stanley Dunn, and Gerald Embry Jeansonne, all of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 25, 1968, Ser. No. 739,869
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—574 3 Claims



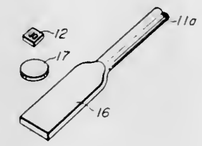
A large number of integrated circuits are formed on a semiconductor substrate. Conductive feedthrough connections are made through an insulating layer deposited over the integrated circuits and then the functional characteristics of the circuits are determined by testing at the feedthrough connections. Only the feedthrough connections connected to circuits having desirable functional characteristics are interconnected to provide the desired system function.

3,641,662
METHOD OF INSTALLING A TRACK CHAIN
James A. Garman; Richard D. Eastman, both of Eureka, and Thomas A. Watson, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 9, 1970, Ser. No. 26,837
Int. Cl. B23p 19/00
U.S. Cl. 29—428 7 Claims



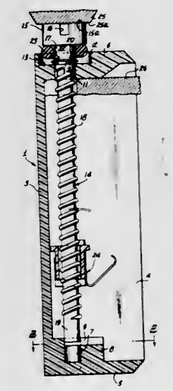
A method of installing a track chain on a track-type vehicle utilizes a series of temporary interconnections between portions of the chain and various vehicle components together with the driving power of the vehicle to permit as few as two operators to quickly and safely install the chain on the vehicle.

3,641,663
METHOD FOR FITTING SEMICONDUCTOR PELLET ON METAL BODY
Hideru Osoegawa, Kodaira-shi, and Katuei Kobayashi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 27, 1968, Ser. No. 763,201
Claims priority, application Japan, Oct. 2, 1967, 42/63059
Int. Cl. B01j 17/00; H01l 7/02, 7/16
U.S. Cl. 19—589 12 Claims



A method for fitting a semiconductor pellet on a metal substrate, welding preliminarily a gold disc on the surface of a nickel plate by the electric resistance welding method and thereafter alloying a silicon pellet with said gold disc under the eutectic temperature of gold-nickel.

3,641,664
METHOD FOR MANUFACTURING ELECTRICAL DEVICES
William D. Kirkendall, c/o Schlumberger Ltd., 277 Park Ave., New York, N.Y.
Filed Oct. 22, 1969, Ser. No. 870,882
Int. Cl. H01s 4/00
U.S. Cl. 29—592 5 Claims

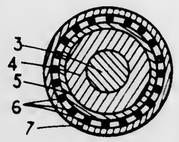


Electrical devices, such as rectilinearly adjustable potentiometers, are provided in which a hollow housing has a wall portion formed of thermoplastic polymeric material such as nylon and having an opening to accommodate a rotary adjusting member, typically a metal lead screw, the lead screw having a transverse retaining rib completely embedded in the polymeric material of the wall portion. Though the wall of the opening embraces the adjusting member, and the retaining rib is completely embedded, the adjusting member is rotatable relative to the housing. A method based on ultrasonic insertion is disclosed for making the devices.

3,641,665
METHOD OF MANUFACTURING HOLLOW SUPERCONDUCTING BODIES

Marcel Matricon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 9, 1970, Ser. No. 9,509
Claims priority, application France, Feb. 13, 1969, 6903417
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 14 Claims

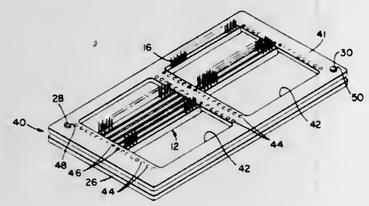


To make hollow stabilized superconductor bodies a core of two or more concentric materials is prepared, the center material having a low-melting point and the other being chemically, physically or biologically degradable. The core is introduced into a first stabilizing material; the thus constituted assembly is drawn; and the external surface of the drawn product is lined with superconducting elements. The subassembly thus developed is introduced into a second stabilizing material and the block thus formed is again drawn until it has the requisite dimensions and in such a manner that the two stabilizing materials will cold-weld and embed the superconductor elements therein. Then the material or materials constituting the above-mentioned core are successively removed, the center core material by melting, or vaporization, and the outer core material by dissolving, or other physical, or chemical or biological methods.

3,641,666
METHOD OF PACKAGING ELECTRICAL CONNECTORS AND ASSEMBLING SAME INTO A WIRE WRAP MACHINE

James Scaminaci, Jr., Newbury Park, Calif., and Robert G. Knowles, Litchfield, Conn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 18, 1968, Ser. No. 760,499
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 1 Claim

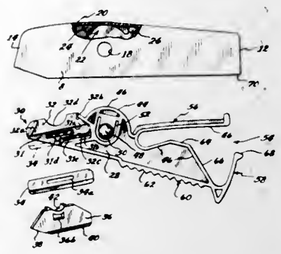


Described is a method of packaging a number of electrical connectors for use with an automatic wire-wrapping machine and described also is a frame for supporting the connectors. The method comprises providing a jig having a master reference pin and located therefrom a number of paired alignment pins. Molded-in alignment holes on the connectors mate with the paired alignment pins when the connectors are mounted upon the jig. A frame having a rectangular opening fits about the positioned connectors while oversized pair alignment openings in the frame are adapted to receive machine screws which are then threaded in mating holes in the connectors. The frame also has a second hole for mounting over the master reference pin which corresponds to a master reference pin on the automatic wire-wrapping machine. The wrapping machine receives the frame-connector package after the frame is separated from the jig.

3,641,667
CARTON CUTTER OR THE LIKE

Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill.

Filed Jan. 29, 1970, Ser. No. 6,910
Int. Cl. B26b *5/00, 29/02*
U.S. Cl. 30—2 10 Claims

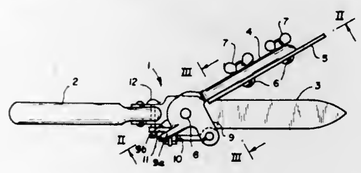


A carton cutter of simple design which is easily fabricated and which device, in an exemplary embodiment, is made of molded plastic. The components of the device are easily made and assembled and the device carries a blade, for example, an ejector-razor type, in a sheathed or noncutting position and in order to expose the blade an affirmative force must be applied by the user, thereby preventing dangerous exposure of the cutting edge of the device during periods of nonuse.

3,641,668
GRASS SHEARS

David Howard Keiser, Jr., 53 Park Road, Wyomissing Hills, Pa.

Filed Sept. 30, 1969, Ser. No. 862,303
Int. Cl. B26b *13/04*
U.S. Cl. 30—260 1 Claim



Grass shears and the like in which one of the blades is of rectangular cross section and is disposed substantially at right angles to the other blade so as to provide four different corners that selectively serve as cutting edges. The last-mentioned blade is pivotally movable and is detachably secured to a blade carrier so as to enable the blade to be selectively positioned in a manner for use of any one of said four edges as the cutting edge and thereby provide four times the life of the blade.

3,641,669
GRASS SHEARS

David Howard Keiser, Jr., 53 Park Road, Reading, Pa.

Filed Sept. 30, 1969, Ser. No. 862,304
Int. Cl. B26b *13/04*
U.S. Cl. 30—260 2 Claims

Grass shears in which a composite movable blade is made in the form of a casting with a curvature which serves as a backup or support for a separate flexible cutting blade which can be bent to conform to the curved shape of the support

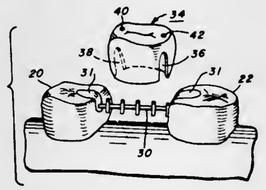


and which is detachably secured to such support so as to be readily replaceable.

3,641,670
METHOD AND APPARATUS FOR FORMING DENTAL PROSTHESIS

Louis J. Karageorge, 518 St. James Place, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 26,329
Int. Cl. A61c *13/22*
U.S. Cl. 32—6 13 Claims



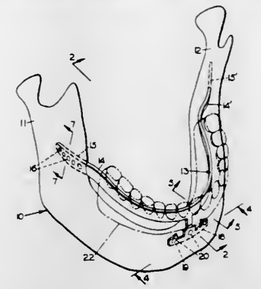
Method and apparatus for forming permanent dental prosthesis (i.e., dental bridges) in situ, meaning that the bridge is formed and secured in place directly in the mouth of the patient without the necessity for making impressions, casting models and other processes normally required to form a bridge. This is accomplished in accordance with the principal embodiment of the invention by (1) drilling cavities in two teeth on either side of a space to be occupied by a bridge; (2) inserting into the cavities the opposite ends of a metallic bar; (3) securing the ends of the bar in place within the cavities with a filling material placed in the cavities; (4) inserting a filling material, preferably an unhardened resin-bonded quartz composite in paste form, into one or more hollow tooth molds; (5) forcing the tooth molds containing the unhardened pastelike filling material over the bar and permitting the filling material to harden to form a solid tooth structure which is bonded to the aforesaid bar; and (6) removing the tooth mold or molds from the thus-hardened tooth structure, the thus-formed teeth being held in the mouth by the aforesaid bar anchored to living teeth on either side of the space occupied by the bridge. While in most cases the bar will be secured at its opposite ends within two cavities, it is also within the purview of the invention to secure one end of the bar only within a cavity drilled in one tooth, the prosthesis being supported in cantilever beam fashion. This is particularly useful in forming teeth at the front of the mouth (e.g., a lateral incisor supported on a cantilever bar secured at one end to a cuspid).

3,641,671
ENDOSSEOUS RAMUS IMPLANT AND DENTURE SUPPORT FRAME

Harold D. Roberts, 272 N. Knott St., Portland, Oreg.

Continuation-in-part of application Ser. No. 843,579, July 22, 1969, now Patent No. 3,377,853, dated Apr. 20, 1971. This application Sept. 10, 1970, Ser. No. 71,001
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A 2 Claims

A permanent frame for removably supporting an artificial denture for the entire lower jaw. The frame comprises a rigid bar sized and shaped to correspond to the mandible and the denture. The bar terminates at each end in a ramus implant and has an integral intraosseous blade at the central portion providing a holding implant in the front of the mandible. The

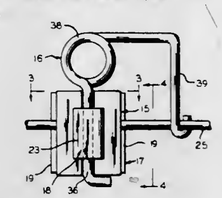


bar is spaced above the epithelium between the ramus implants and the mandible implant. The denture is firmly but removably set down over the bar with the foundation material for the denture barely contacting the epithelium.

3,641,672
COMBINATION LOCK RING AND UPRIGHTING SPRING ORTHODONTIC APPLIANCE

Peter C. Kesling, Green Acres, La Porte, Ind.

Filed Jan. 12, 1971, Ser. No. 105,898
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A 9 Claims

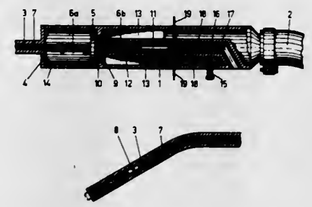


An orthodontic appliance for locking an arch wire or arch wires to an orthodontic bracket and to effect mesiodistal inclinations, and which includes a lockring and an uprighting spring. The bracket to which the appliance may be applied includes the usual occlusal-gingivally extending opening in the body, and the lockring is adapted to be slipped over the body and locked into place by insertion of the tail of the uprighting spring into the bracket opening. Means is provided on the lockring to lock the arch wire to the bracket.

3,641,673
AMALGAM GUN

Jozeph Roelof Jochems, 21 J.P. Coenlaan, Vlaardingen, Netherlands

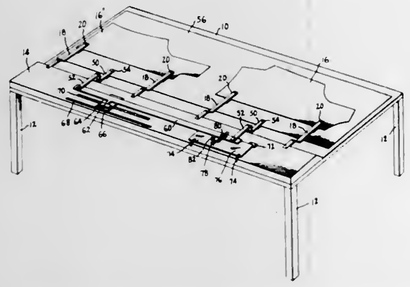
Filed Jan. 16, 1970, Ser. No. 3,469
Claims priority, application Netherlands, Jan. 22, 1969, 6901061
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 10 Claims



An air-driven plunger in an amalgam gun moves outwardly to force a known quantity of amalgam into a cavity. Upon

reaching its outward limit, the plunger is caused to vibrate back and forth by automatic operation of valving. The vibrating plunger packs the amalgam in the cavity. An adjustment at an end of the gun opposite the plunger predetermines the amount of amalgam which the gun carries.

3,641,674
PATTERN GRADING METHOD AND APPARATUS THEREFOR
Joseph Balogh, 30 Vibberts Ave., New Britain, Conn.
Filed June 19, 1969, Ser. No. 834,655
Int. Cl. A41h *43/00*
U.S. Cl. 33—17 A **14 Claims**



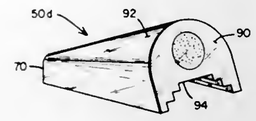
A pattern grading machine has means to secure a pattern or a sheet of grading paper upon a planar upper surface, and means constraining a carrier to substantially free translatory movement thereover; the carrier is adapted to support either the pattern or the grading paper thereon. Indicia on a recording member can be located by a stylus to facilitate placing the carrier in a multiplicity of significant positions, and the stylus may be adapted for initial use to produce the indicia on the recording member.

3,641,675
OPTICAL ALIGNMENT SYSTEM
Buford H. Funk, Jr., 213 Wingate Ave., S.W., Huntsville, Ala.
Filed July 14, 1969, Ser. No. 841,443
Int. Cl. F41g *1/00;* **F41b** *5/00*
U.S. Cl. 33—46 R **18 Claims**



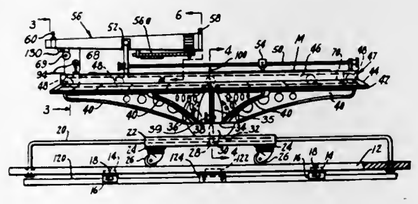
An alignment system employing a round, transparent cylinder with indices marked on diametrically opposite surfaces, which when viewed at an angle to the surface provide a magnified indication of coincidence or proximity to coincidence of the eye with a plane of symmetry through the longitudinal axis of the cylinder and indices.

3,641,676
RADIOLUMINESCENT GUNSIGHT AND METHOD
Elliel F. Knutsen, Rosemount, and Julio A. Santiago, Burnsville, both of Minn., assignors to Nite-Site, Inc., Rosemount, Minn.
Filed Aug. 7, 1969, Ser. No. 848,152
Int. Cl. F41g *1/30, 1/32, 1/34*
U.S. Cl. 33—52 **9 Claims**



An improved gunsight utilizing radioluminescent material for permitting sighting of the gun in darkened conditions is described. Particular housings for holding the radioluminescent material are also described, together with methods of applying the radioluminescent material to the sights of guns.

3,641,677
GEOMETRIC INSTRUMENT FOR AZIMUTH SIGHTINGS
Gerome Davis, General Delivery, Florence, Oreg.
Filed Nov. 17, 1969, Ser. No. 877,148
Int. Cl. G01c *1/00, 15/00, 21/22*
U.S. Cl. 33—67 **8 Claims**

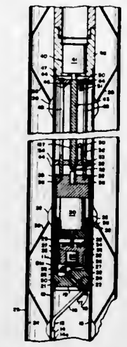


An instrument particularly adapted for use in fire watch towers, artillery observation and the like for taking an azimuth reading on a remote smoke, target, etc., including a portable instrument readily mounted on support tracks and reciprocable in two directions at right angles to each other, including an element journaled for rocking adjustment about horizontal axes and having supported thereon a platform upon which a telescope is adjustably supported, and in which a fine adjustment for rotating the telescope about a vertical axis includes a quick-release coupling.

3,641,678
DEFORMATION LOGGING APPARATUS AND METHOD
Carey E. Murphey, Jr., Houston, and Bascom C. Sheffield, Bellaire, both of Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 20, 1968, Ser. No. 785,569
Int. Cl. G01b *7/28, 7/34*
U.S. Cl. 33—174 L **4 Claims**

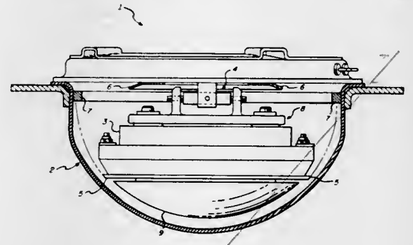
A method and apparatus for inspecting the internal configuration of a circular opening wherein a scanning probe device having a feeler arm is extended into the opening and the arm is pivoted into engagement with the inner wall of the opening. The feeler arm pivots about its pivoting axis while

the pivoting axis is revolved about an axis of revolution within the opening. The degree of variation between the



angle of the feeler arm and the axis of revolution indicates the internal contour of the opening.

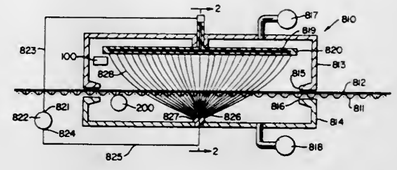
3,641,679
RUGGEDIZED FLUX VALVE ASSEMBLY
Donald J. Kesselring, and Thomas G. Mulera, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.
Filed June 29, 1970, Ser. No. 50,482
Int. Cl. G01c *17/30, 17/18*
U.S. Cl. 33—204 **5 Claims**



A pendulous flux valve universally mounted in a supporting housing having a resilient and a rigid bumper which permits the use of smaller mounting pivots to enhance repeatability. The rigid bumper is located so as to act at or about the center of percussion of the flux valve and associated pendulous parts, whereby the pivot mounting point is subjected to minimum shock.

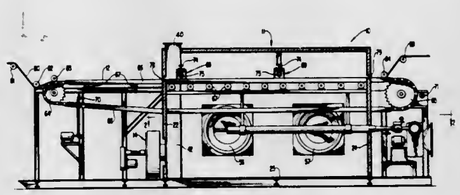
3,641,680
LIQUID-REMOVING APPARATUS AND METHOD
Robert R. Candor, 5940 Munger Road, Dayton, Ohio, and James T. Candor, 5440 Cynthia Ln., Dayton, Ohio
Continuation-in-part of application Ser. No. 769,155, Oct. 21, 1968, now Patent No. 3,543,408, which is a continuation-in-part of application Ser. No. 748,298, July 29, 1968, now Patent No. 3,491,456, which is a continuation-in-part of application Ser. No. 639,639, Jan. 9, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 639,354, May 18, 1967, now Patent No. 3,405,452, which is a continuation-in-part of application Ser. No. 532,266, Mar. 7, 1966, now Patent No. 3,330,136, which is a continuation-in-part of application Ser. No. 219,587, Aug. 27, 1962, now Patent No. 3,238,750. This application June 1, 1970, Ser. No. 42,335
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **26 Claims**

This disclosure relates to a laundry apparatus, papermaking apparatus or the like wherein the moisture in the wet laundry, paper slurry or the like, disposed therein is removed by an electrostatic means that provides a nonuniform field between the moisture in the laundry, paper slurry or the like and an electrode means to tend to cause the moisture to leave the laundry, paper slurry or the like and move toward



the electrode means where the higher intensity portion of the nonuniform field is located. Such moisture removal operation can take place while the moisture-bearing material is being subjected to an inaudible scream and/or ultrasonic vibration, etc., to enhance the electrostatic moisture removal operation.

3,641,681
CARPET DRYER
James Donald Brock, P.O. Box 9126, Chattanooga, Tenn.
Filed Oct. 7, 1969, Ser. No. 864,357
Int. Cl. F26b *3/32*
U.S. Cl. 34—41 **9 Claims**

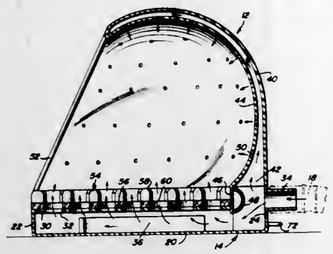


A dryer for carpet and the like which includes a housing that defines a carpet inlet opening, a carpet outlet opening, and conveying means for moving a single layer of carpet along its length from the inlet opening through the housing to the outlet opening. An open flame gas heating unit is positioned in the housing below the path of the carpet for heating the air in the housing, and circulating fans are positioned in the sidewalls of the housing to continuously recirculate the air in the housing from the lower air heating chamber, around the side edges of the carpet, to an air zone above the carpet, and back down through the carpet. An upright partition is located in the housing below the path of the carpet adjacent the inlet opening of the housing to define an exhaust duct, and exhaust fans communicate with the exhaust duct to flow heated air from above the carpet at a high velocity through the carpet and out of the housing. Thus, the carpet is initially treated with a high-velocity heated airflow, and subsequently treated with a lower velocity heated airflow.

3,641,682
HAIR DRYER WITH REMOVABLE LAY-ON RESILIENT CUSHION
Georgia E. Glintz, 2909 University Ave., Des Moines, Iowa
Filed Mar. 11, 1970, Ser. No. 18,558
Int. Cl. A45d *20/24*
U.S. Cl. 34—99 **6 Claims**

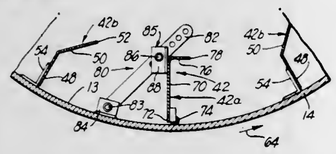
A hair dryer including a removable cushion having waffelike projections thereon. Facing sides of adjacent projections are inclined and are adapted to contact rollers on a person's head resting on the cushion during hair drying. Heated

air flows through apertures formed in the cushion and then onto the person's hair. A molded hollow hood surrounds the



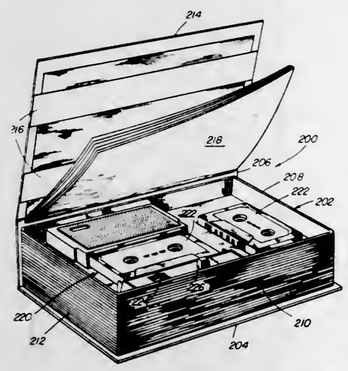
person's head and contains heated air which serves to accelerate drying.

3,641,683
ASPHALT PLANT DRIER WITH VARIABLE LIFTERS
Marvin B. Preeman, Los Angeles, Calif., assignor to Standard Steel Corporation, Los Angeles, Calif.
Filed Dec. 29, 1969, Ser. No. 888,565
Int. Cl. F26b *11/02*
U.S. Cl. 34—132 **17 Claims**



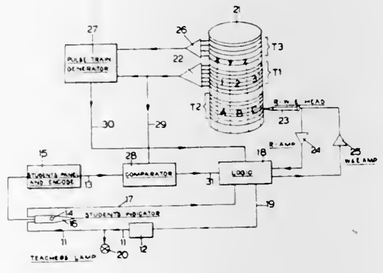
A countercurrent gravity-feed, drum-type drier for flowable solid material comprising a rotatable shell, inclining downwardly from its inlet or feed end to its outlet end, having mounted circumferentially to the inner wall of the shell pivotally mounted lifter plates adjacent its inlet end.

3,641,684
TALKING BOOK
Richard E. Paige, 215 East 68th St., New York, N.Y.
Continuation-in-part of application Ser. No. 811,148, Mar. 27, 1969, now Patent No. 3,553,851. This application Jan. 11, 1971, Ser. No. 105,529
Int. Cl. G09b *5/06*; **G11b** *25/06*
U.S. Cl. 35—8 A **7 Claims**



A teaching device for simultaneously teaching the reading and pronouncing of words is described which includes the combination of a housing having the appearance of a book, a tape player within the housing, a replaceable prerecorded tape and a printed book detachably mounted on the housing, the material printed in the book corresponding to the material recorded on the tape.

3,641,685
METHOD AND APPARATUS FOR MONITORING STUDENTS' ACTIONS
Jakob Zawels, and Eric D. Renaud, both of Pretoria, Republic of South Africa, assignors to Associated Research Laboratories (Proprietary) Limited
Filed July 11, 1969, Ser. No. 841,071
Claims priority, application Republic of South Africa, July 19, 1968, 68/4656; Nov. 22, 1968, 68/7617
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 C **37 Claims**

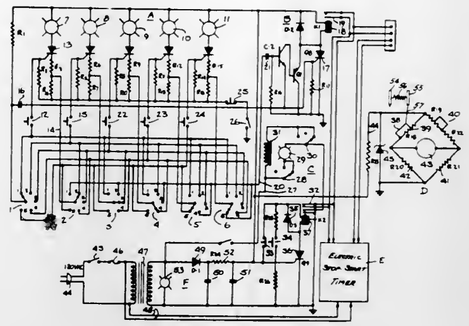


A method and apparatus for teaching individual as well as groups of students through each student responding on his own terminal to questions which involve multicharacter answers. The students receive immediate (psychological) reinforcement both while they are responding and when they have completed a response, the reinforcements relating to different actions being distinguishable. A student is thus enabled to modify his response while he is responding to avoid wrong complete responses and to elicit correct responses sooner.

The student's terminal in a preferred embodiment includes a panel with conductive segments and a penlike indicator, with a built-in light, the tip of the indicator being capable of making conductive contact with the segments, each segment being associated with a character. The terminal serves both as an input and as an output device, a multicharacter output being possible when the answer to a question is not known, the student retrieving the necessary information by scanning the panel with the indicator.

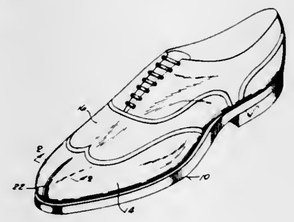
3,641,686
EDUCATIONAL TESTING MACHINE
Alvin Krass, Holmdel, N.J., assignor to Key Education Inc., Red Bank, N.J.
Filed Apr. 22, 1970, Ser. No. 30,914
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 R **5 Claims**

A unitary compact portable teaching instrument for psychology, providing for a number of distinct tests, specifically (1) a learning ability testing unit on which the speed with which a preset sequence of consecutive switches can be



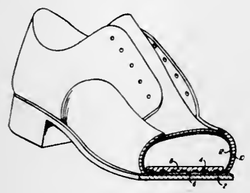
learned, (2) a reaction time tester and (3) a manual pressure measuring device, has been developed.

3,641,687
BOWLING SHOES WITH SIGHTING LINE IN TIP
William M. Hibbard, Waupun, and Douglas L. Reeder, Jr., Mequon, both of Wis., assignors to Wisconsin Shoe Company, Milwaukee, Wis.
Filed June 15, 1970, Ser. No. 46,124
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 T **4 Claims**



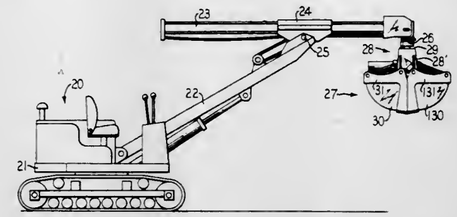
Bowling shoes with a built-in sighting line in the tip of the shoe extending longitudinally centrally of the shoe. The bowler sights the line on the shoe with a guide and/or a target on the lane to assist in delivering the bowling ball in the desired direction.

3,641,688
SHOE MOLDED BY INDUCTION HEATING
Elizabeth von den Benken, 2212 Centre St., West Roxbury, Mass.
Filed Dec. 10, 1969, Ser. No. 883,952
Int. Cl. A43b *13/38*
U.S. Cl. 36—43 **8 Claims**



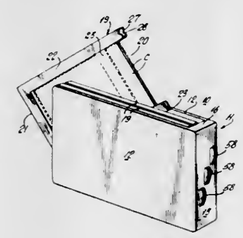
The invention concerns a shoe whose bottom has a layer of thermoplastic material in it and which has embodied in its bottom electromagnetic energy absorbing material which can be heated by alternating magnetic flux, thus activating the layer of thermoplastic material which then can be molded according to the contour of a human foot.

3,641,689
HYDRAULICALLY ACTUATED CLAMSHELL BUCKETS
Roy O. Billings, 6621 West Wisconsin Ave., Milwaukee, Wis.
Filed July 7, 1969, Ser. No. 839,372
Int. Cl. B66c *3/02*
U.S. Cl. 37—186 **8 Claims**



A clamshell bucket has complementary bowl sections pivotally supported from a deck, there being a generally horizontally disposed hydraulic cylinder which is trunnion mounted near its head end through linkage fixed to the top of one bowl section, and there being a piston rod for said cylinder pivotally connected at its outer end through linkage fixed to the top of the other bowl section, and there also being linkage which includes an equalizer link for insuring equal movement of the bowl sections when the hydraulic cylinder is operated. A bucket cleaner is also supported from the deck and is arranged to automatically clean the bowl sections as they are moved to open position.

3,641,690
CARD EJECTOR CASE
Jay Ehrensaal, Forest Hills, N.Y., assignor to Swank, Inc., Attleboro, Mass.
Filed Jan. 22, 1970, Ser. No. 5,058
Int. Cl. G09f *11/06*
U.S. Cl. 40—67 **11 Claims**

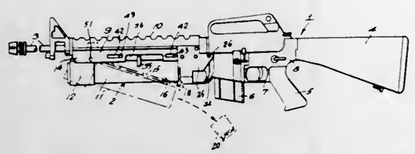


A cardcase includes a rectangular casing open along its top and front and a plurality of open-backed, card-carrying rectangular frames nesting in the casing in retracted side-by-side positions and pivoted at their bottom front side corners to the casing bottom front corner. Each frame is spring urged to an advanced position external of the casing, exposing the rear thereof and is releasably locked in its retracted position by a pivoted catch member located in the casing and engaging either the upper or lower rear end of the retracted frame, and a finger-actuated release member slideably mounted on the casing rear wall cooperates with the catch member to retract it upon depression of the release member to release the corresponding card carrying frame which is swung to its advanced exposed position.

3,641,691
GRENADE LAUNCHER WITH PIVOTALLY MOUNTED BARREL

Paul H. Ellis, Aberdeen; Ralph J. Kibler, Phoenix, and Richard R. Kramer, Charlestown, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed May 21, 1969, Ser. No. 826,315
Int. Cl. F41c 27/06
U.S. Cl. 42—1 F 7 Claims

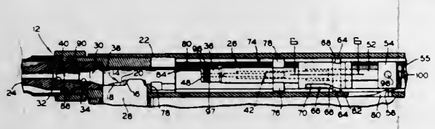


A single-shot grenade launcher which can be conveniently attached to a rifle by substitution of relatively few original parts and is a self-contained unit consisting of a launcher barrel pivotally mounted to the underside of the rifle. The unit has its own receiver and firing mechanism, a spring loaded ejector rod and a launcher barrel lock. When the launcher barrel is pivoted downwardly to a 15° angle the ejector rod ejects the cartridge. When the launcher barrel is closed it is automatically locked in the firing position. Locking and release of the launcher barrel and cocking of the firing mechanism is accomplished by a manually operated, spring-loaded slide.

3,641,692
EXTRACTOR AND BOLT MECHANISM FOR FIREARM FIRING CASELESS AMMUNITION

Warren W. Wells, Silvis, Ill., assignor to The United States of America as represented by the Secretary of the Army

Filed May 19, 1970, Ser. No. 38,822
Int. Cl. F41c 15/00, 11/00
U.S. Cl. 42—25 7 Claims



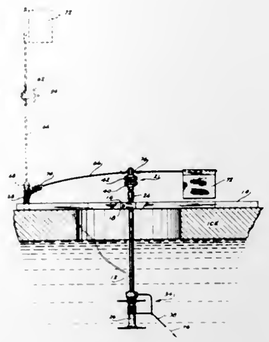
In an autoloading firearm for firing rounds of caseless ammunition, the extraction of unspent rounds is effected by an extractor which is a part of the reciprocating bolt and engages the forward end of the round to effect withdrawal of an unspent round upon movement of the bolt from battery. Locking and unlocking of the bolt in battery is effected by movement of the firing pin either manually, or, in normal operation, by gas pressure acting thereon in response to firing of a round.

3,641,693
MAGNETIC TIP-UP SIGNAL FOR ICE FISHING

James E. Pinnow, Racine, Wis.

Filed Jan. 11, 1971, Ser. No. 105,164
Int. Cl. A01k 97/12
U.S. Cl. 43—17 9 Claims

An ice-fishing signal device comprising a line reel submerged in a hole in the ice, which reel rotates when a fish is caught on the line. A pair of magnets are superimposed axially and face to face; one being fixed for rotation with the reel, and the other nonrotatable and fixed integrally with a flagstaff. The signal is initially set with the poles of the magnets so related that the unlike, opposed poles thereof are mutually aligned, thus maintain positive magnetic contact between the magnets. Rotation of the reel when the line is

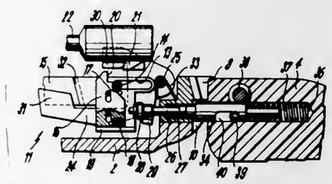


being unwound by a fish, rotates the magnet that is integral with the reel, thus breaking the magnetic attraction and permitting the flag to assume an erect position and indicating that a fish is on the line.

3,641,694
SELF-LOADING PISTOL WITH CONTINUOUS FIRING DEVICE

Alex Seidel; Tilo Moller, both of Oberndorf/Neckar, and Helmut Weidle, Beffendorf, all of Germany, assignors to Firma Heckler & Koch GmbH, Oberndorf, Germany

Filed Sept. 17, 1969, Ser. No. 858,642
Claims priority, application Germany, Sept. 18, 1968, P 17 28 249.4
Int. Cl. F41c 23/00, 5/00
U.S. Cl. 42—72 13 Claims



A self-loading pistol incorporates a trigger assembly which can be selectively adjusted to a position for single shot firing and to a position for continuous firing, and comprises a shoulder support which is releasably attached to the hand grip of the pistol and which accommodates adjusting means for setting the trigger assembly to the one or other of the selectable positions, the trigger assembly being arranged to return to the single shot firing position when the shoulder support is disconnected from the hand grip. The shoulder support may be hollow and shaped to accommodate the pistol.

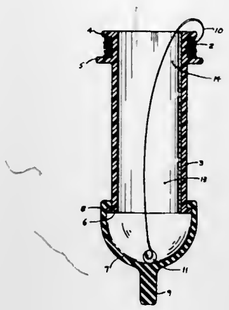
ERRATUM

For Class 43—17 see:
Patent No. 3,641,693

3,641,695
DEVICE FOR CASTING A FISHING LINE

Raymond G. Zenick, 912 Briarwood Lane, Glendale, Calif.

Filed Aug. 25, 1969, Ser. No. 852,748
Int. Cl. A01k 91/02
U.S. Cl. 43—19 30 Claims

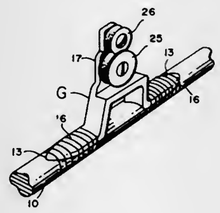


A device for casting a fishing line that includes a cylindrical spool and handle unit with a longitudinal passage therethrough and an elastic balloon anchored to this unit. A fishing line wound on the spool is stripped from the spool when the elastic balloon containing a weighted end of the fishing line is stretched and released, hurling this weighted end out through the passage on the unit.

3,641,696
INTERENGAGING ROLLER LINE GUIDE FOR FISHING RODS

Oscar Fleischer, deceased, 2610 S.W. 21st St., Miami, Fla. (by Helen Krohn Fleischer, executrix)

Filed Feb. 2, 1970, Ser. No. 7,581
Int. Cl. A01k 87/04
U.S. Cl. 43—24 2 Claims

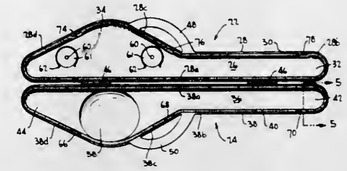


A roller line guide for fishing rods and the like having a support adapted to be secured to a fishing rod and a pair of grooved rollers or sheaves having rim portions with the rollers rotatably mounted on the support one above the other and in engagement with each other. One roller has a peripheral flange about its rim portion for receiving the rim of the other roller whereby the fishing line received between the rollers cannot engage any stationary portion of the guide and the line cannot leave the confines of the pair of rollers. The engagement of the rollers also provides that the rollers rotate in unison when the fishing line engages either of the rollers.

3,641,697
CARRYING CASE FOR A FISHING ROD AND REEL

Albert G. Heidtman, 565 Colonial Way, and Albert H. Teitjen, 515 Colonial Way, both of Reno, Nev.

Filed Aug. 27, 1969, Ser. No. 853,282
Int. Cl. A01k 97/08
U.S. Cl. 43—26 4 Claims

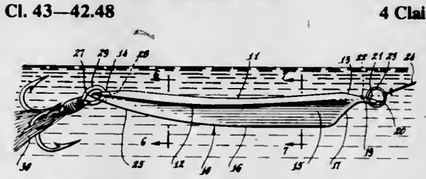


A rigid plastic carrying case is provided with two elongated sections interconnected by hinges and thus being foldable into a closed container. One of the sections is provided with an outwardly directed depression along the side thereof to accommodate a fishing reel. This enables the carrying case to receive and retain a fishing rod and an attached reel, without the need for detaching the reel from the rod when inserting the same into the case.

3,641,698
FISHING LURE

John A. Varaney, 23 Overton Ave., Milford, Conn.

Filed Apr. 29, 1969, Ser. No. 820,071
Int. Cl. A01k 85/00
U.S. Cl. 43—42.48 4 Claims

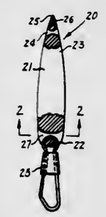


A fish lure shaped to resemble live bait fish and having water reaction surfaces which produce movements simulating the undulating, rolling, wagging movements of a swimming bait fish through reaction to water pressures as the lure is drawn through the water during normal fishing techniques, such as retrieving following casting, trolling from behind a moving boat, and jigging in deep water from an anchored boat or wharf. The water reaction surfaces also maintain stability of the lure against spinning, planing to the top, or sinking to the bottom.

3,641,699
FISHING WEIGHTS

Domenic Mattarocci, 2120 West 31st St., Pueblo, Colo.

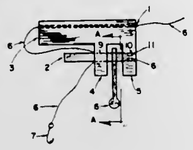
Filed Oct. 24, 1969, Ser. No. 869,111
Int. Cl. A01k 95/00
U.S. Cl. 43—43.1 1 Claim



Fishing weights are set forth which are snag free and which can be attached to the line or leader handily. A snap-on hook projects from one end of one form of the invention and in another form the opposite ends of the weight have line

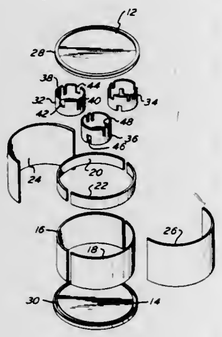
receiving bores and grooves to attach the weight to the line. The weights are long and thin to prevent fouling and a split weight is provided of the same nature for squeeze clamping on the line or leader.

3,641,700
SINKER RELEASE FOR FISHING TACKLE
John R. G. Harrison, c/o Robert Frayne & Co., Rm. 212, 1200 West Pender St., Vancouver 1, British Columbia, Canada
Filed Sept. 22, 1969, Ser. No. 859,756
Claims priority, application Canada, Oct. 30, 1968, 033889
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **3 Claims**



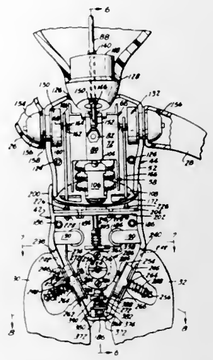
A sinker release assembly mounted on a fishing line with means to frictionally engage the line and hold the assembly in a fixed position on the line, which means is releasable to permit the parts of the assembly to slide on the line. The assembly comprises a body member having a longitudinal passage therethrough with two spaced wing elements having aligned holes to receive a plug of a size closely fitting in the holes and which has a transverse aperture adjacent one end. The fishing line is passed through the body passage and plug aperture and the plug is then inserted into the aligned holes to wedge the line therein and hold the assembly on the line. A pull by a fish will withdraw the plug from the holes and free the body and plug to slide on the line.

3,641,701
FURNITURE AND TOY CONSTRUCTION
Michael Rosenfeld, 371 Harvard St., Cambridge, Mass.
Filed Oct. 22, 1969, Ser. No. 868,493
Int. Cl. A63h *3/52*
U.S. Cl. 46—14 **10 Claims**



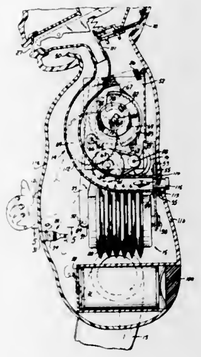
A knockdown furniture and toy construction is disclosed wherein the components may be assembled into an orientation for easy storage. Arcuate members are embraced by a top and bottom member so as to form a container of some of the components of the furniture with slotted connector members and other arcuate members disposed within the container. The arcuate members and the connector members are releasably interconnected to form the furniture.

3,641,702
DOLL WITH LEG KICK ACTION
Robert Gardel, New York, N.Y., and Egon Gorsky, Westfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Continuation-in-part of application Ser. No. 866,953, Oct. 16, 1969. This application May 4, 1970, Ser. No. 34,010
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 **15 Claims**



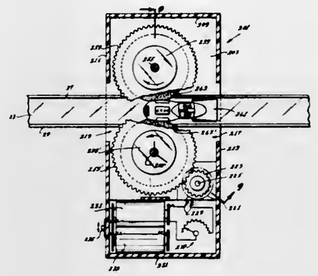
A doll having animated torso, leg, arm and head movement. The torso is comprised of an upper and lower portion, the upper portion of which gyrates with respect to the lower portion. The arms and the head of the doll move as the torso of the doll gyrates. The legs of the doll kick upwardly to a substantially horizontal position, in alternate movements, as the arms, torso and head of the doll are moving.

3,641,703
ANIMATED DOLL RESPONSIVE TO MOUTH-INSERTED ELEMENT
Sidney Tepper, Millburn, and Hyman P. Boydman, Springfield, both of N.J., assignors to Topper Corporation
Filed Mar. 9, 1970, Ser. No. 22,740
Int. Cl. A63h *33/26*
U.S. Cl. 46—232 **16 Claims**



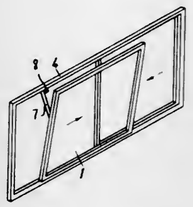
The doll has electrical circuit means including one or more loads, e.g., an electric motor and/or light source, and a switch operable by an element, e.g., a nursing bottle nipple or a simulated pill, inserted into the doll's mouth. With more than one load, a separate parallel circuit is provided for each load, and the switch, which has several positions, completes no more than one of the parallel circuits in any of its positions. The switch may be operated by a ratchet and pawl mechanism.

3,641,704
ACCELERATOR FOR A VEHICLE TOY
Anson Sims, Redondo Beach; Edwin O. Stastny, Santa Ana, and Janos Beny, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Continuation of application Ser. No. 752,232, Aug. 13, 1968, now abandoned. This application Apr. 2, 1971, Ser. No. 130,797
Int. Cl. A63h *29/22*
U.S. Cl. 46—243 LV **26 Claims**



This is an action toy wherein small, unpowered vehicles are adapted to coast along miniature roadway and wherein vehicle propulsion means is disposed adjacent the roadway and engages and accelerates the vehicles therealong.

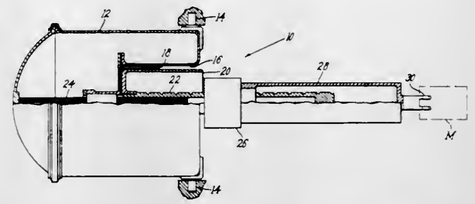
3,641,705
WINDOW UNIT
Hans Schmidlin, Bruelweg 47, Aesch, Switzerland
Continuation of application Ser. No. 814,428, Apr. 8, 1969, now abandoned. This application Aug. 11, 1970, Ser. No. 62,974
Claims priority, application Germany, Apr. 11, 1968, P 17 59 241.5
Int. Cl. E05f *7/02*
U.S. Cl. 49—256 **12 Claims**



A window unit comprises a frame which surrounds a frame opening elongated in horizontal direction. A pair of window panels are received within the confines of the frame and together close the opening. Means mounts at least one of the window panels for horizontal sliding movement in the general plane of the opening as well as for tilting movement transversely to this general plane.

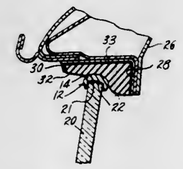
3,641,706
PNEUMATIC COUNTERBALANCERS
John H. Carlson, Danvers; Donald L. Mansfield, South Hamilton, and Hugh A. Robinson, Wenham, all of Mass., assignors to USM Corporation, Flemington, N.J.
Filed Jan. 14, 1969, Ser. No. 790,917
Int. Cl. E05f *15/02*
U.S. Cl. 49—324 **7 Claims**

A lightweight energy-storing device usable, for example, as a counterweight is disclosed. Thus for instance, on being lifted, a door imparts rotation to a pinion via a rack. This rotation is converted by means of a ball nut screw assembly to linear motion for effecting the compressive stroke of a piston-cylinder assembly charged with gas under pressure,



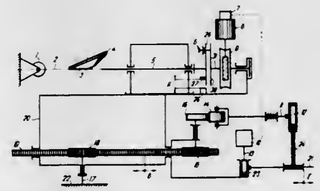
and this compression load is usable to offset the weight of the door.

3,641,707
WINDOW SEAL TAPE OR STRIP
Arnold J. Kellos, P.O. Box 3617, Augusta, Ga.
Filed Feb. 27, 1970, Ser. No. 15,044
Int. Cl. B60r *13/02, 13/04*
U.S. Cl. 49—462 **5 Claims**



A U-shaped soft, resilient sealing tape or strip for mounting on the edge of auto door glass for cooperation with a sealing strip of similar or different material mounted as a molding in a door opening to prevent whistling noise caused by air when the vehicle is in motion and to avoid entry of rainwater. The door glass sealing tape or strip is U-shaped in transverse cross section, with a thick base portion and relatively thin legs. The surface of the groove in the strip is coated with pressure sensitive adhesive overlaid with a removable, protective strip of paper. The door glass sealing strip can also be applied to the edge of the door to prevent paint chipping or other damage and to also serve as a seal.

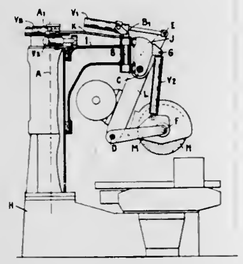
3,641,708
APPARATUS FOR FINISHING GLOBOID WORMS
Bohuslav Strejc, Plzen, Czechoslovakia, assignor to Skoda, narodni podnik, Plzen, Czechoslovakia
Filed Dec. 29, 1969, Ser. No. 888,646
Claims priority, application Czechoslovakia, Dec. 28, 1968, 8879/68
Int. Cl. B24b *7/00*
U.S. Cl. 51—33 R **6 Claims**



Apparatus for finishing globoid worm gears wherein the angular position of the shaft of a disk-shaped tool for finishing a globoid worm is adjusted according to changes of the

lead of the globoid helix by mounting the disk-shaped tool on a pivotably supported base, the angular position of which is determined in dependence on the working process as it proceeds. Means are included for adjusting simultaneously in dependence on the position of said base the position of the shaft of the disk-shaped tool with respect to the worked globoid worm, the latter adjustment being carried out by way of a selsyn coupling.

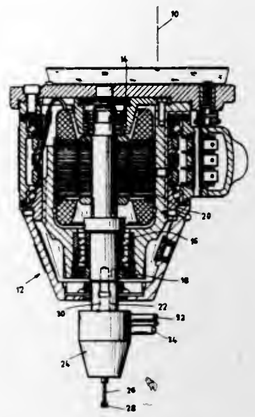
3,641,709
MACHINES FOR REMOVING SURFACE CRACKS AND FLAWS FROM ROUGH STEEL PRODUCTS
Georges Gazuit, Chemin Chauveau, 03 Montlucon, France
Filed July 1, 1970, Ser. No. 51,619
Claims priority, application France, Aug. 1, 1969, 6926539
Int. Cl. B24b *7/00*
U.S. Cl. 51—34 D **4 Claims**



Machine for removing surface cracks and flaws from steelwork products which comprises a rotary grinding wheel adapted to perform a rectilinear horizontal movement of translation, advantageously of alternating type, at an adjustable height. The outer end of the swivel horizontal radial arm of an upright rotatably mounted about a vertical axis on the frame structure of the machine carries a swivel bracket trunnioned about a vertical axis and maintained in a fixed direction by a link interconnecting a pair of studs rigid the one with said frame structure and the other with said swivel bracket. A beam adapted to pivot about a horizontal pivot pin rigid with said swivel bracket has a upper end connected to one point of said swivel bracket through a first actuator and a lower end pivoted to an arm supporting the grinding wheel at a height determined by another actuator connecting one point of said wheel carrier arm to one point of said swivel bracket.

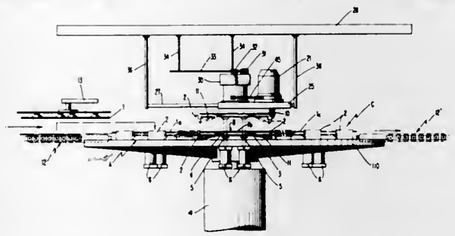
3,641,710
ORBITALLY DRIVEN GRINDING APPARATUS
Roland Heinelt, Munich, Germany, assignor to Friedrich Deckel Prazisions Mechanik & Maschinenbau, Munich, Germany
Filed Oct. 6, 1969, Ser. No. 863,787
Int. Cl. B24b *5/00*
U.S. Cl. 51—90 **6 Claims**

A turbine driving means for the spindle of an orbital grinding machine. A standard air turbine is fixed to the spindle for following the orbital path and maintaining a given alignment



and the grinding tool is positioned on the output shaft of the turbine.

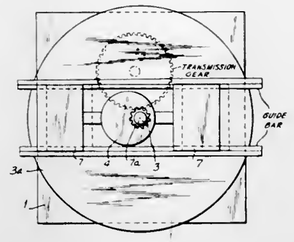
3,641,711
APPARATUS FOR GRINDING GLASS
Friedrich Halberschmidt, Merkstein, and Albrecht Overath, Wurselen, both of Germany, assignors to Compagnie de Saint-Gobain, Seine, France
Filed Oct. 8, 1969, Ser. No. 864,702
Claims priority, application France, Oct. 14, 1968, 169764
Int. Cl. B24b *9/10*
U.S. Cl. 51—100 **10 Claims**



An apparatus for automatically grinding the edges of sheets of glass to a predetermined contour. A template of the desired shape and a plate of glass to be ground are mounted in fixed positions; a carriage movable with respect to the template and glass carries a template follower and an edge grinding mechanism. The grinding tool is adjustable on the carriage toward and away from the glass, so as to compensate for wearing of the tool. The tool mounting and driving means is rotatable about an eccentric axis to vary the position of the zone of the tool engaging the glass; rotation of such means is under the automatic control of the template follower as it turns about its axis in following the template.

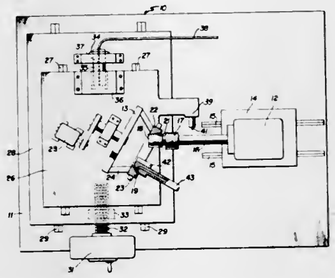
3,641,712
MACHINE FOR GRINDING EDGES OF GLASS ARTICLES
Gerhard Menzel, Braunschweig, Germany, assignor to Propper Manufacturing Company, Inc.
Filed Nov. 28, 1969, Ser. No. 880,588
Int. Cl. B24b *9/08*
U.S. Cl. 51—122 **5 Claims**

A machine for grinding the edges of glass articles such as slides for carrying specimens to be observed under a microscope. These glass articles are held in a suitable frame with the edges which are to be ground in engagement with a rotary grinding wheel. During the grinding operations a transmission is operatively connected with the frame to move the



latter radially with respect to the axis of the grinding wheel so that in addition to the rotary movement of the grinding wheel there is the radial movement of the frame with the glass articles held thereby.

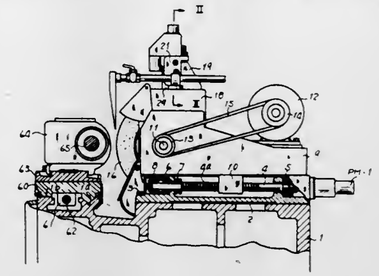
3,641,713
GRINDING MACHINE
Norman S. Humes, c/o The Heald Machine Co., New Bond St., Worcester, Mass.
Continuation of application Ser. No. 686,358, Aug. 3, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 380,780, July 7, 1964, now abandoned.
This application July 9, 1970, Ser. No. 56,176
Int. Cl. B24b *49/18*
U.S. Cl. 51—165.88 **8 Claims**



This invention has to do with apparatus for finishing a surface of revolution by the abrasion process and includes a spindle having a roughing abrasive wheel and a finish abrasive wheel, with means for dressing them individually, with the roughing abrasive wheel being dressed more frequently than the finish abrasive wheel, with a feed mechanism by which the force between the roughing abrasive wheel and the workpiece is regulated to a predetermined value, and with an in-process gauge terminating the feeding of the roughing and finish abrasive wheels.

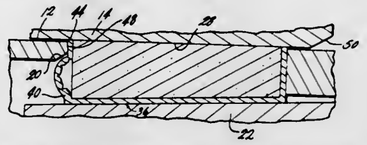
3,641,714
MACHINE TOOL PROVIDED WITH APPARATUS FOR COMPENSATING THE WEAR OF GRINDING WHEEL
Hiroaki Asano, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan
Filed May 22, 1970, Ser. No. 39,604
Claims priority, application Japan, May 30, 1969, 44/42625
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.87 **6 Claims**

A grinding machine is provided with first feeding means for moving a wheel slide toward and away from a workpiece, a dressing tool arranged to be moved transversely of the face of the grinding wheel to dress the grinding wheel, second feeding means for moving the dressing tool toward and from the surface of the grinding wheel, detecting means for sensing the engagement between the dressing tool and the



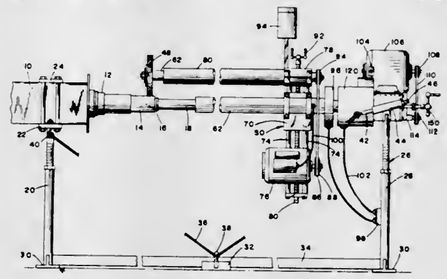
surface of the grinding wheel, and control means adapted to control the first and second feeding means so as to advance the wheel slide and the dressing tool until the detecting means detects the engagement between the dressing tool and the surface of the grinding wheel.

3,641,715
HONING APPARATUS
Carl H. Kramm, Pinckney, and Roger E. Lee, Brighton, both of Mich., assignors to Wedge-Lock Honing Stone Co., Brighton, Mich.
Filed July 13, 1970, Ser. No. 54,403
Int. Cl. B24b *5/10;* **B24d** *17/00*
U.S. Cl. 51—204 **11 Claims**



A honing-stone assembly utilized in a honing head wherein the stone is forced outwardly into engagement with the workpiece. The novel construction residing in the use of a stone retainer having a portion deformable upon engagement with the workpiece to cooperate with the honing head and retain the stone therein as the stone is used and consumed.

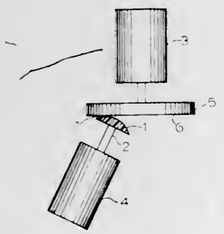
3,641,716
BEARING-GRINDING MACHINE
Daniel J. Price, R.D. #1, Thomasville, Pa.
Filed May 19, 1970, Ser. No. 38,764
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 R **8 Claims**



A grinding machine for grinding exterior bearing surfaces on the outer ends of axle housings of trucks, trailers and

similar automotive vehicles which have been repaired by restoring worn surfaces to original sizes by adding metal thereto by welding procedures, the grinding machine being capable of being positioned relative to the housing or axle being repaired, whether the same is still mounted on the vehicle or removed therefrom, and operable to rotate a grinding wheel about the axis of the bearing and also move it longitudinally along said axis to form a renewed bearing surface of precise dimensions.

3,641,717
METHOD FOR MAKING ASPHERIC CONVEX SURFACES
Charles W. Neefe, Box 361, Big Spring, Tex.
Continuation-in-part of application Ser. No. 643,250, June 2, 1967, now Patent No. 3,510,207. This application Feb. 27, 1970, Ser. No. 15,120
Int. Cl. B24b *1/00*
U.S. Cl. 51—284 **5 Claims**



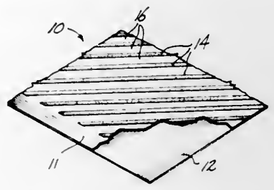
A method of generating aspheric convex surfaces by abrading a spherical rotating surface against a flat rotating surface. The rotating axis of the convex surface is inclined in relation to the rotating axis of the flat surface and abrades the convex surface near the edge to provide an aspheric surface having a larger radius of curvature at the periphery.

3,641,718
ABRASIVE CUTTING TOOL
Harold W. Ferchland, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of application Ser. No. 751,479, Aug. 9, 1968, now abandoned. This application July 31, 1969, Ser. No. 850,314
Int. Cl. B24b *55/02*; **B24d** *5/00*, *7/00*
U.S. Cl. 51—356 **16 Claims**



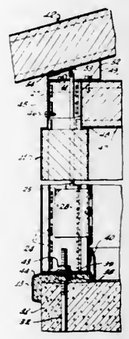
A cool-running abrasive cutting tool having a working surface comprising a layer of diamond particles included in a heat-conductive matrix and a heat-dissipating region immediately subjacent the working surface. The heat-dissipating region is comprised of a highly porous material having a macroporosity profile, an extended internal heat transfer surface area and preferably is formed from a metal having a thermal conductivity coefficient of at least about 0.05 g.-cal./(sec.) (cm.^{2}) (°C./cm.). A particular electroplated diamond peripheral wheel is disclosed.

3,641,719
CLEANING TOWEL
Christen H. C. Yang, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Mar. 12, 1969, Ser. No. 806,532
Int. Cl. B24d *11/00*
U.S. Cl. 51—402 **6 Claims**



A cleaning towel comprising multiple paper plies and a cleaning aid adhered to the outer face of a face ply forming one side of the towel. The cleaning aid comprises a granular abrasive material, a detergent, and a binder holding the abrasive material together and adhering the cleaning aid to the paper ply. The cleaning aid is distributed as a noncontinuous coating, forming a pattern of multiple spaced-apart stripes over the face of the paper ply. A back ply provided behind the face ply has a somewhat greater absorbency than the face ply. A method of preparing the towel where the cleaning aid is prepared as a flowable liquid mass and transferred through a striping roll to the face of a continuous paper web. After such coating has dried, another paper web is applied against the back of the web with the coating, to produce an assembly which is then cut into lengths and folded to form the towel. The multiple plies in a towel may be held together with an adhesive, or by mechanical embossing.

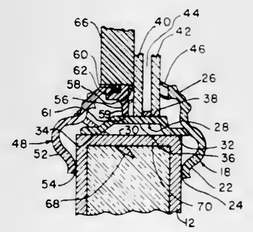
3,641,720
PREFABRICATED BUILDING CONSTRUCTION WITH INTERFITTING STUD SPLINES
Robert W. Berrie, Yorba Linda, Calif., assignor to Omnico Systems International Inc., Downey, Calif.
Filed Nov. 6, 1969, Ser. No. 874,514
Int. Cl. E04c *1/10*
U.S. Cl. 52—122 **13 Claims**



A building structure employing prefabricated panels having outer skins and an adhesive insulating filling. The edges

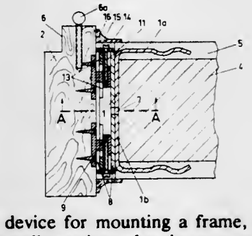
of the panels are in the form of metal sockets adapted to receive box-type, metal stud splines to which they are interlocked horizontally by means of complemental protrusions and recesses to prevent relative movement longitudinally between the panels and the stud splines. The stud splines form conduits for electrical wiring and have an at least partially open side for the insertion of electrical outlets. The stud splines are provided with bottom plates integrally attached thereto by which they are secured to a base slab. Assembly of panels and stud splines is effected sequentially and with final transverse movement to effect interlocking between the panels and the stud splines.

3,641,721
MAINTENANCE-FREE DOOR LIGHT INSERT ASSEMBLY
Robert I. Martin, Manheim, Pa., assignor to Rimar Manufacturing, Inc., Manheim, Pa.
Filed Feb. 25, 1970, Ser. No. 14,118
Int. Cl. E06b *1/30*
U.S. Cl. 52—212 **3 Claims**



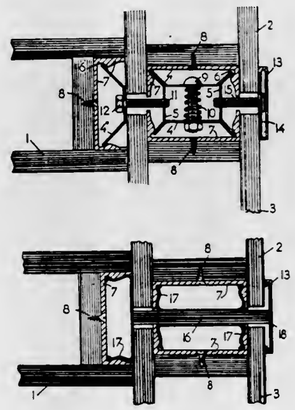
A maintenance-free insert assembly for use with exterior doors of steel or other construction comprising an exterior peripheral frame member including an inwardly extending flange, an interior frame member cooperating with the exterior frame member to retain a pane of glass therebetween, the exterior and interior frame members being secured to the door construction by fastening screws which are driven from the interior side through both the interior frame member and the inwardly extending flange of the exterior frame member to thereby secure the insert assembly in position without employing externally positioned nails, screws, fastening devices, or other construction subject to weather.

3,641,722
FASTENING DEVICE FOR MOUNTING A FRAME IN A WALL OPENING
Emil Schmitt, 8702 Guntersleben, Germany
Filed Apr. 15, 1970, Ser. No. 28,969
Claims priority, application Germany, Apr. 23, 1969, P 19 20 604.3
Int. Cl. E06b *1/24*, *1/60*
U.S. Cl. 52—213 **12 Claims**



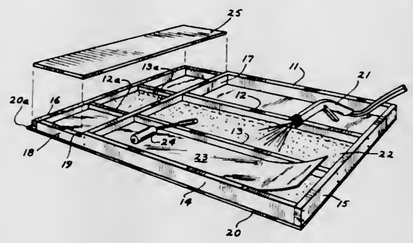
A fastening device for mounting a frame, for example a doorjamb, in a wall opening, wherein open-ended horizontal guide channel means are attached to the wall adjacent to said opening, and wherein the doorjamb has attached thereto stay means, such as staybolts which slidingly fit into said guide channel means. Adjustment screws are threaded into said stay means at both ends of said guide channel means and bear against the open ends of the guide channel means preferably through washers.

3,641,723
STRUCTURAL ASSEMBLY EMPLOYING RESILIENT CLIPS
Andre Delcroix, 5, rue Pasteur, 59 Wattrelos, France
Filed May 16, 1969, Ser. No. 825,203
Claims priority, application France, May 17, 1968, 19104
Int. Cl. E04b *2/56*
U.S. Cl. 52—281 **7 Claims**



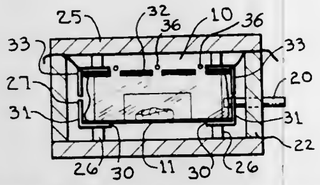
A connector assembly comprises an elongated member having opposed major and minor surfaces. A resilient clip is attached to both of the major surfaces and to one of the minor surfaces and the resilient clips releasably engage with mating surfaces on the structural members which are to be connected together.

3,641,724
BOX BEAM WALL CONSTRUCTION
James Palmer, Route 5, Box 227, Excelsior, Minn.
Filed Mar. 29, 1969, Ser. No. 872,272
Int. Cl. E04c *2/46*
U.S. Cl. 52—615 **2 Claims**



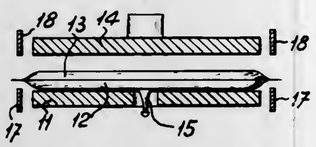
A wall construction for homes and the like developed for the construction of wall sections at locations removed from the building into which includes an integral box beam construction at the upper portions thereof with insulating and reflective material being provided as integral elements within the wall section. The box beam construction is built directly into the wall section and provides a strengthening factor to permit the placement of doors and windows at any point and permits the placement of truss rafters at any point along the wall.

3,641,725
METHOD OF PACKAGING
Richard T. Grisell, Terre Haute, Ind., assignor to Polypac, Inc., Terre Haute, Ind.
Continuation-in-part of application Ser. No. 847,921, Aug. 6, 1969, now abandoned. This application Jan. 16, 1970, Ser. No. 3,546
Int. Cl. B29d 27/00; B65d 81/12, 85/68
U.S. Cl. 53—14 14 Claims



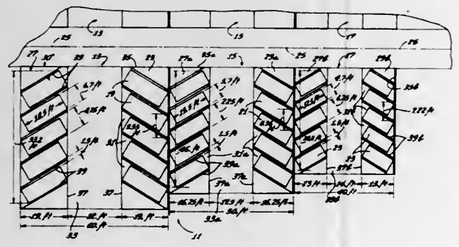
A method of packaging steel and other articles wherein the articles to be packaged are first enclosed in a flexible sheet of material such as polyethylene and are then encapsulated in a cellular plastic sheath in a mold by placing a liquid foamable reaction mixture in the mold under confinement and at resulting conditions of elevated temperature and pressure. The flexible sheet enclosure is vented to atmosphere through the mold wall so that, as the foamable reaction mixture expands in the mold, there is no blockage by bubbles of air inside the flexible sheet enclosure.

3,641,726
METHOD FOR A REDUCED SIZE PACKING OF ARMCHAIRS, DIVANS AND THE LIKE
Cesare Cassina, Milan, Italy, assignor to S.R.L. Centro Cesare Cassina
Filed Feb. 3, 1970, Ser. No. 8,316
Claims priority, application Italy, July 19, 1969, 19870 A/69
Int. Cl. B65b 31/00, 1/20; A47c 27/00
U.S. Cl. 53—24 4 Claims



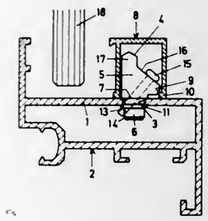
A method of packaging irregular size articles by compressing the same between impervious sheets, joining the edges, evacuating the air and sealing the sheets.

3,641,727
VEHICLE-PARKING SYSTEM
Charles D. Hill, 222 West Arbor Vitae, Inglewood, Calif.
Filed Mar. 24, 1969, Ser. No. 869,102
Int. Cl. E01f 9/00
U.S. Cl. 52—174 5 Claims



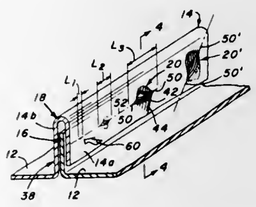
This disclosure describes a vehicle-parking system in which a series of relatively large stalls are laid out in one region of the parking area and smaller stalls are laid out in another region of the parking area. Relatively large or full sized passenger vehicles are then directed to the relatively large stalls and the smaller or compact and foreign vehicles can be directed to the smaller stalls. Thus, no space is lost as a result of a relatively small vehicle parking in a relatively large parking stall.

3,641,728
SECURING DEVICE
Walter Hallauer, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Oct. 22, 1969, Ser. No. 868,466
Claims priority, application Switzerland, Nov. 18, 1968, 17218/68
Int. Cl. E06b 3/58
U.S. Cl. 52—498 7 Claims



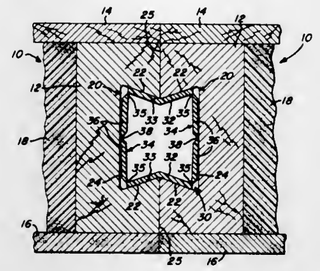
Disclosed is a coupling device comprising a head portion having a base surface and a stud portion projecting from the head portion to pass through an opening of a rigid support sheet to which the device is to be secured. A bore for receiving a retaining pin extends through both the head and the stud portions and is inclined at such an angle as to guide the retaining pin into a tight contact with the bottom edge of the opening, thus retaining the stud portion in the support sheet.

3,641,729
LIP CLINCHING DIES AND JOINT PRODUCED THEREFROM
Donald G. Irvin, Burlington, Ontario, Canada, assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Feb. 10, 1970, Ser. No. 10,223
Claims priority, application Canada, Mar. 14, 1969, 45813
Int. Cl. E04d 3/362
U.S. Cl. 52—528 6 Claims



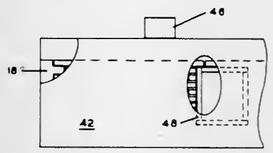
A shear lock connection for securing interengaged connecting lips of adjacent sheet member panels firmly together. The connection comprises two lobes produced in the connecting lips by sequential shearing and displacement operations. The lobes are displaced equally in opposite directions to achieve a connection of improved longitudinal shear resistance and improved vertical pullout resistance. Apparatus is described for producing the shear lock connection.

3,641,730
EXPANDABLE JOINT DEVICE
Alan F. Meckstroth, 2357 Shelterwood Drive, Kettering, Ohio
Filed Dec. 19, 1969, Ser. No. 886,498
Int. Cl. E04c 1/10
U.S. Cl. 52—584 12 Claims



The adjacent edge surfaces of prefabricated building panels have opposing undercut recesses of dovetail configuration and are rigidly connected and sealed by an elongated tubular joint device including a pair of opposing rigid V-shaped sidewalls connected by a pair of opposing flexible base walls each having a set of rigid sections. The joint device is formed as a polypropylene extrusion with the sidewalls and base wall sections integrally connected by thin web hinges, and is expandable from a collapsed position facilitating insertion into the recesses to an extended position where the sidewalls clamp the panels together in response to flexing of the base wall sections to overcenter locking positions. In another embodiment, only one of the panels has an undercut recess, and integral hinges connect the sidewalls of the joint device to the adjacent panel.

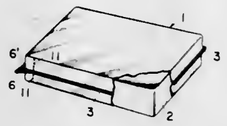
3,641,731
BRICK WALL CONSTRUCTION
Jimmie J. Winfree, Peach Bottom, Pa., assignor to Winfree Associates, Inc., Wilmington, Del.
Filed June 18, 1970, Ser. No. 47,355
Int. Cl. E04g 21/22
U.S. Cl. 52—747 5 Claims



A brick wall is laid by stacking up a plurality of bricks without mortar. Retaining structures are used on the front and back faces of the stack of bricks, and mortar is introduced onto the top of the stack of bricks and will flow down to fill the voids between the bricks. The bricks may have special protrusions to space the bricks apart or special spacers may be used to space the bricks apart the required distance. Appropriate forms are provided for openings in the brick wall and end joints in the brick wall.

3,641,732
METHOD OF PACKAGING PACKS OR ARTICLES WITH A HEAT-SHRINKING MATERIAL
Masaaki Fujio, 3-15-8 Aoyamadai, Suita, Japan
Filed Mar. 5, 1970, Ser. No. 16,896
Int. Cl. B65b 61/18; B65d 65/32
U.S. Cl. 53—14 7 Claims

A method of packaging packs or other articles with a heat-shrinking material is disclosed whereby a tear-tab is automatically formed protruding sideways from each package. The method comprises wrapping a pack or article with a sheet of overwrap of synthetic resin film which tends to shrink when heated. The open sides of the overwrap are heat-sealed thereby hermetically sealing the wrap. At the same time, a laminate of the front and rear part of the overwrap is formed by fusion with heat at a suitable portion on a

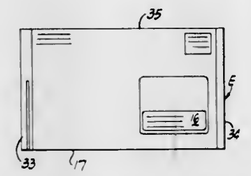


side of the overwrap. Then, the overwrap is heated thereby allowing it to shrink in such manner that the entire overwrap excepting the laminated portion shrinks close to the outer surface of the pack or article and that the inner edge of the laminated portion is supported by the outer surface of the pack or article in the direction at a right angle thereto thereby allowing the laminated part to extend outwardly.

ERRATA

For Classes 53—14 and 53—24 see:
Patent Nos. 3,641,725 and 3,641,726

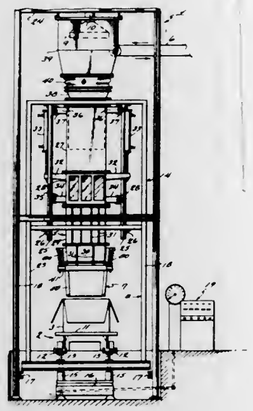
3,641,733
METHOD AND APPARATUS FOR LOADING AND FORMING ENVELOPES AND BLANK ENVELOPE STRUCTURE USED THEREWITH
Hershey Lerner, Warrensville Township, Cuyahoga County, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio
Filed June 5, 1970, Ser. No. 43,743
Int. Cl. B65b 43/02
U.S. Cl. 53—29 19 Claims



Apparatus for loading and forming envelopes includes a supply structure for a web of plastic envelope blanks, web control means including a web feeding and locating mechanism and a web tensioning mechanism which cooperate to intermittently feed the web along a path of travel, a loading station at which the blank envelopes are loaded, and a forming station at which loaded blank envelopes are simultaneously sealed and cut to size. The web control means feeds a part of each blank envelope to a predetermined location on the path of travel. The feed of the web is then terminated with blank envelopes registered at the loading and forming stations. Loading and forming apparatus operates in timed relation with the web control structure to perform the loading and forming operations when the web is stopped.

The web of blank envelopes is defined by a web of sheet plastic material which bears a printed image and folded on itself to provide coextending edges. The sides of the folded web are structurally connected in registration with the printed image. This connection between the sides of the web is engaged by a feed or tensioning mechanism during advancing of the web and also serves to locate material placed in the web relative to the printed image.

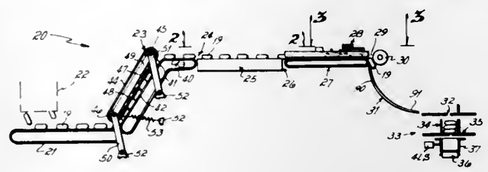
3,641,734
APPARATUS FOR PACKING LOOSE COMPRESSIBLE MATERIAL IN RECTANGULAR CONTAINERS
Francis B. Fishburne, P.O. Box 338, Arden, N.C.
Continuation of application Ser. No. 746,064, July 19, 1968, now abandoned. This application May 15, 1970, Ser. No. 37,451
Int. Cl. B65b *1/24, 1/28, 63/02*
U.S. Cl. 53—124 B **13 Claims**



Apparatus for packing loose, compressible material, such as leaf tobacco, in rectangular containers. The invention is an improvement in apparatus of the type comprising a press with a vertically reciprocatory plunger, means for supporting the rectangular container below the press plunger, and an upright charger which surrounds the path of the press plunger and through which the plunger moves, the charger being movable upwardly and downwardly independently of the press plunger. The invention provides a sleeve mounted on the lower end of the charger and depending therefrom, the sleeve being inserted into the rectangular container as the charger descends, and being extracted from the container by upward movement of the charger, as the press plunger remains in lowered position to keep the compressed material within the containers. The construction of the sleeve is such that it is initially tapered, assuring ease of entry through the open top of the container, without danger of damaging the container. As the compressible material is packed into the sleeve, after the sleeve has been inserted in the container, the sleeve expands to a rectangular form of uniform transverse cross section. The construction of the sleeve, and its relation to the charger and the container, are such as to provide an improved action in minimizing and resisting the forces exerted by compression of the material within the container.

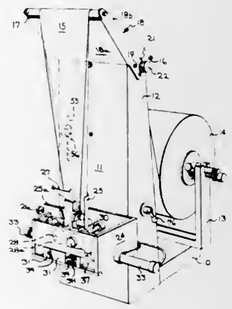
3,641,735
BAG PACKER WITH HORIZONTAL TRANSFER
William C. Daily, and Fred H. Welzel, both of Covington, Ky., assignors to R. A. Jones & Company, Inc., Covington, Ky.
Continuation-in-part of application Ser. No. 808,831, Mar. 20, 1969, now abandoned. This application Jan. 20, 1970, Ser. No. 4,378
Int. Cl. B65b *35/50, 5/06*
U.S. Cl. 53—159 **13 Claims**

Apparatus for packing flexible bags into cases, the apparatus elevating the bags, dividing them into a plurality of channels, delivering them to a hopper having an accumulator chamber, the bags being dropped into the accumulator



chamber one layer at a time, and when a case load is accumulated all bags being transferred into the case.

3,641,736
MACHINE FOR MAKING FILLED PACKAGES
Raymond J. Dwyer, 4737 Secor Road, Toledo, Ohio
Filed June 22, 1970, Ser. No. 47,943
Int. Cl. B65b *9/10*
U.S. Cl. 53—180 **7 Claims**

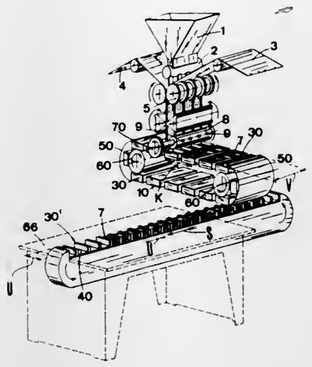


A machine for making filled packages by which an air-operated rack bar drives pull rolls by which the bag material is unrolled from a supply roll. The bag material has pressure-sensitive coating and, after passing upwardly from the supply roll over guide rollers, it passes downwardly over a mandrel in a troughlike form and to which the articles to be packaged are delivered through a chute. During the downward operation of the rack bar, the pressure rolls operate to advance the sheet material. However, when the rack bar retracts or moves upwardly, the pull rolls do not operate, and at that time pressure blocks move against the bag material, and, as it is clamped, a knife severs the material so that the upper end of the filled packages is sealed and cut off, and at the same time the bottom end of the next succeeding bag is sealed. The bag material can be advanced by the pull rolls in the next cycle of operation. The machine is operated by compressed air and may operate either automatically or by actuation of a foot valve.

3,641,737
PACKAGING MACHINE FOR BAGS TO BE FILLED WITH LIQUIDS, POWDERS OR GRANULAR PRODUCTS
Luigi Tamagni, Milano, Italy, assignor to EUROSICMA-Societa Italiana Costruzioni Macchine Automatiche S.r.l., Milan, Italy
Filed Jan. 14, 1970, Ser. No. 2,858
Claims priority, application Italy, Jan. 23, 1969, 11900 A/69
Int. Cl. B65b *9/02, 61/08*
U.S. Cl. 53—182 **3 Claims**

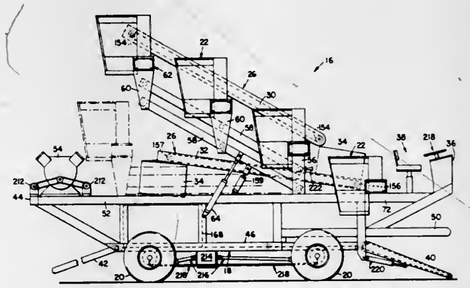
The improvement resides in the provision of a deflecting roller sucking with suction pads the packages sealed and cut, so as to horizontally deflect the same of 90° nd cause the

fall thereof in containers constituting a first endless conveyor. A second endless conveyor is provided, the width of



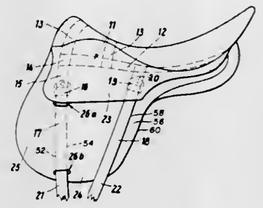
which is the same as the package and moved perpendicularly to the first mentioned endless conveyor.

3,641,738
ORCHARD PRUNING AND PICKING APPARATUS
Roy W. Johnson, P.O. Box 115, Woodland, Calif.
Filed Jan. 19, 1970, Ser. No. 3,714
Int. Cl. B65b *67/02*; **B60p** *1/36*
U.S. Cl. 53—391 **14 Claims**



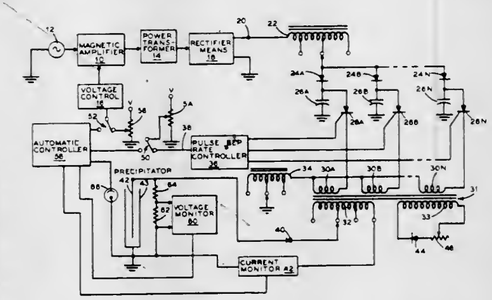
An agricultural implement for use when pruning or trimming orchard trees, or when picking fruits, which has a wheel mounted frame for movement between rows of orchard trees and that includes a hold for a fruit crate. The frame mounts a plurality of work platforms on each side of the frame for lateral movement of the platforms toward and away from the frame. Power-driven fruit transport means move the fruit from the platforms to a central gathering belt mounted to the frame for discharge of the fruit into the crate. A fruit decelerator between the discharge end of the gathering belt and the crate significantly reduces the vertical speed of the fruit as it moves through the decelerator to prevent high-speed impacts and resulting damage to the fruit. Means are provided for raising and lowering at least some of the work platforms to enable the use of the implement on relatively tall trees, to facilitate the transport of the implement on public highways and to reduce the required storage room.

3,641,739
RIDING SADDLE AND ATTACHMENT MEANS
Werner Johannes Karl Stubben, Krefeld, Germany, assignor to Joh's Stubben OHG, Krefeld, Germany
Filed July 7, 1969, Ser. No. 839,603
Claims priority, application Germany, Aug. 7, 1968, P 17 85 066.7
Int. Cl. B68c *1/04*
U.S. Cl. 54—46 **7 Claims**



A saddle which is placed on the top of the back of an animal to provide a seat for a rider thereon, a first girth strap having a front end attached to the front of the saddle on one side and rear end attached to the other side of the saddle at a central point, a second girth strap having a front end attached to a front portion of the saddle on said other side and a rear end attached to the saddle on said one side. The saddle is secured to the animal by passing the straps diagonally beneath the animal so that they cross beneath the animal, and as a result will be less likely to cause saddle galls in the region of the animal's elbows than will girth straps which extend transversely beneath the animal. At least one end of each strap is secured by a girth buckle including means for clamping the strap at any desired position along its length by pulling on the free end of the strap.

3,641,740
PULSE-OPERATED ELECTROSTATIC PRECIPITATOR
John L. Schumann, Little Silver; John W. Schindeler, Wayne, and Milton Rosen, Woodcliff Lake, all of N.J., assignors to Belco Pollution Control Corporation, Paterson, N.J.
Filed July 9, 1969, Ser. No. 840,404
Int. Cl. B03c *3/66*
U.S. Cl. 55—105 **3 Claims**

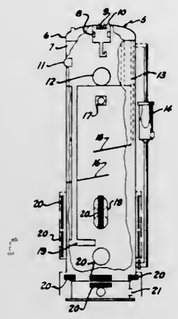


An electrostatic precipitator in which the discharge electrodes thereof receive electrical pulses from a power supply. The power supply includes a source of DC (direct current) energy which feeds, in parallel, a bank of capacitors, via a plurality of diodes. Periodically the capacitors are discharged, via thyristors, into parallel primary windings of a step-up transformer whose secondary winding is connected to the discharge electrode.

3,641,741
EMULSION TREATER HAVING INFRARED HEATING UNITS

Grant M. Smith, 112 Rancho Rd., Roswell, N. Mex.

Filed June 9, 1970, Ser. No. 44,689
Int. Cl. B01d *19/00*
U.S. Cl. 55—175 4 Claims

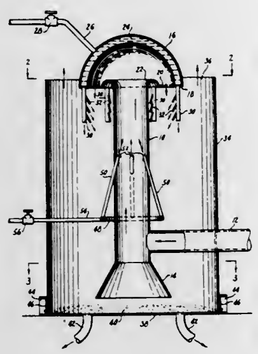


A longitudinally vertical emulsion treater having an oil-gas separator, mist eliminator, baffles, U-tube furnace and to which infrared heating units have been secured around the lower sides, the bottom and in the U-tube furnace.

3,641,742
POLLUTION CONTROL FOR SMOKESTACKS

Joseph Vizza, 414 Broad Ave., Belle Vernon, Pa.

Filed Feb. 5, 1970, Ser. No. 8,850
Int. Cl. B01d *50/00*
U.S. Cl. 55—222 4 Claims

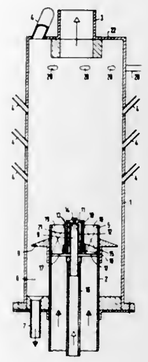


An open-bottomed domelike member is supported over and in spaced relation to the open end of a stack or flue to divert products of combustion outwardly and downwardly into a casing, the downwardly moving products of combustion being sprayed with water then escaping outwardly and upwardly from a casing surrounding the domelike structure. Air jets tend to force feed the products of combustion upwardly through the stack to maintain proper circulation and to supply additional oxygen to assist in completing combustion of the flue gases.

3,641,743
TORNADO-FLOW APPARATUS FOR SEPARATING PARTICULATE SUBSTANCE FROM GASES, PARTICULARLY ADHESIVE LIQUIDS FROM GASES

Alfred Hoffmann, Forchheim, and Heinrich Klein, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Mar. 11, 1969, Ser. No. 806,187
Claims priority, application Germany, Mar. 13, 1968, P 17 19 526.5
Int. Cl. B01d *47/06*
U.S. Cl. 55—236 3 Claims

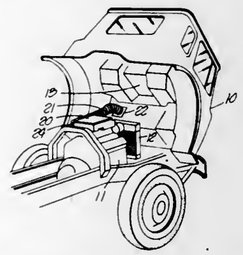


A tornado-flow apparatus for separating particulate substances, especially adhesive liquids, from gases, comprises a cylindrical separator vessel with an axial clean-gas outlet, a gas inlet duct coaxially opposite the outlet and tangential gas inlets obliquely opposed to the flow direction of the inlet duct for producing in the vessel a tornado flow which causes the particulate substance to be separated from the gas and carried outwardly into an annular interspace surrounding the axial inlet duct. Nozzle devices are provided for producing a veil of liquid in the tornado chamber or on the inner wall surface of the chamber. Preferably the nozzle devices comprise a spray nozzle coaxially mounted in the mouth of the inlet duct so as to produce a conical veil of liquid in the lower region of the vessel; and tangential nozzle means in the upper region of the vessel inject liquid to wet the inner wall of the vessel.

3,641,744
AIR FILTER FOR TRUCKS

Robert M. Culbert, Manhattan Beach, and Richard V. Southworth, Marina Del Rey, both of Calif., assignors to Farr Company, El Segundo, Calif.

Filed July 22, 1969, Ser. No. 843,587
Int. Cl. B01d *50/00*
U.S. Cl. 55—319 7 Claims



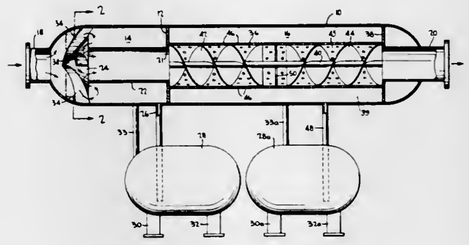
A compact air filter adapted for mounting in the limited space in the engine compartment of a truck and on the truck

engine which permits the filtered air to be supplied directly from the filter to the engine intake and minimizes an air pressure drop. The incoming air to the filter is introduced at the extreme front of the truck with the filter first continually removing and discharging moisture from the incoming air and then passing the air through a replaceable flow-through filter cartridge comprised of a plurality of pleated paper panels arranged in a zigzag stacked relationship to provide a maximum filter area.

3,641,745
GAS LIQUID SEPARATOR

Lester P. Moore, P.O. Box 1762, Corpus Christi, Tex.

Filed Jan. 31, 1969, Ser. No. 795,531
Int. Cl. B01d *45/12*
U.S. Cl. 55—345 4 Claims

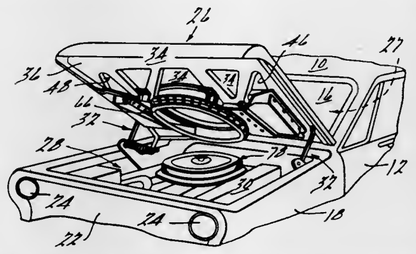


A gas liquid separator in which a conical deflector is interposed between relatively aligned and spaced conduit sections through which a flowing gas stream having liquid entrained therein moves. The conical deflector has its apex directed upstream to deflect the flowing stream of gas and liquid radially outwardly so that the gas may return radially inwardly after separation by inertia of the large masses of liquids to reenter the downstream conduit section for delivery to and through a spiral passageway surrounded by a multiperforated cylindrical shell whereby the velocity of the gas and its resulting swirling action centrifugally impel the remaining entrained smaller particles against the inner face of this cylindrical shell, the liquid then being free to escape through the perforations in the shell, while the flowing stream of gases is substantially confined therewithin.

3,641,746
CARBURETOR AIR DELIVERY SYSTEM

John L. Smith, Troy; Robert A. Dent, Berkley, and James R. Raetz, Birmingham, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 8, 1969, Ser. No. 855,892
Int. Cl. F02m *31/14*
U.S. Cl. 55—385 6 Claims

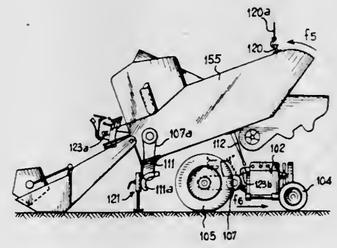


An air delivery system for the carburetor of the engine of a motor vehicle in which cold outside air is taken in through laterally spaced scoops on the vehicle hood and then directed laterally to the opposite sides of a hood mounted chamber sealingly receiving the carburetor air cleaner; a door is provided in each lateral air duct and these doors may be selectively moved by a control member in the passenger compartment between a "cold air" position in which the doors open the ducts to allow cold outside air to enter the carburetor and a "warm air" position in which the doors block the flow of outside air through the ducts but open up a passage through the ducts for the delivery of warm under-hood air to the carburetor.

3,641,747
SELF-PROPELLED HARVESTER-THRESHER BUILT UP FROM A CONVENTIONAL TRACTOR AND HARVESTING AND THRESHING MEANS

Emile Bobard, 17 Rue de Reon, Beaunne, France

Continuation-in-part of application Ser. No. 604,890, Dec. 27, 1966, now abandoned. This application Nov. 20, 1969, Ser. No. 878,414
Int. Cl. A01d *41/04*
U.S. Cl. 56—15.6 6 Claims

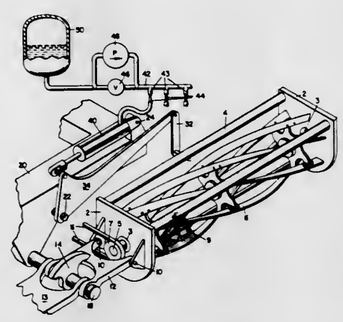


Harvester-threshers built up from a harvester-thresher and tractors of the conventional-type, which, independently of such harvester-thresher, can be used in conventional manner when the tractor is disconnected from the harvester-thresher outside the harvesting periods.

3,641,748
COUNTERBALANCE AND LIFT SYSTEM FOR MOWING UNITS

Robert W. Vose, 1528 Piper Road, W. Springfield, Mass.

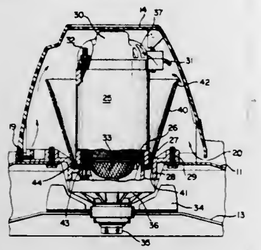
Filed Mar. 12, 1970, Ser. No. 18,894
Int. Cl. A01d *35/24*
U.S. Cl. 56—15.7 3 Claims



Means are provided constituting a single unified system for accomplishing the several functions of counterbalancing, adjusting, equalizing, damping, lifting, and stowing the individual units of a mowing machine or lawnmower. An air charge in an accumulator functions as the resilient counterbalancing element; adjustability is obtained by the alteration

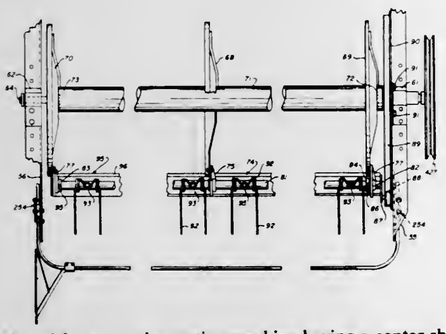
of the air pressure; equalization results from hydraulic distribution to lifting cylinders at each of the mowing units; and oscillation is suppressed by damping restrictions in the hydraulic lines. Additionally, a pump and valve combination in the hydraulic line converts the system to lift the moving units for transport and to elevate and stow same.

3,641,749
BAFFLE FOR ELECTRIC LAWNMOWER
John R. Dwyer, Jr., Timonium, and Alvydas P. Karasa, both of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Oct. 5, 1970, Ser. No. 77,884
Int. Cl. A01d *35/26*
U.S. Cl. 56—17.5 **8 Claims**



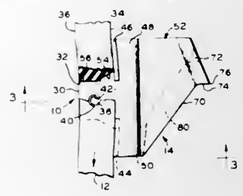
An electric lawnmower which includes a deck mounted on wheels and a blade mounted for rotation under the deck to cut grass. An electric motor is supported by the deck for rotating the blade upon actuation of a switch. The motor extends above the deck and is enclosed by a shroud. Air passages are defined between the bottom of the shroud and the deck to permit air to enter and be pulled through the motor by a fan for cooling purposes. A baffle is positioned between the motor and the passages to block any straight line communication therebetween so that the airflow is forced to turn and contaminants carried thereby are substantially removed before it enters the motor.

3,641,750
CONVERTIBLE REEL
Thomas J. Scarnato, Barrington; Martin H. Meyer, Elburn, and Peter J. Peacock, Western Springs, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 9,025
Int. Cl. A01d *57/22*
U.S. Cl. 56—226 **7 Claims**



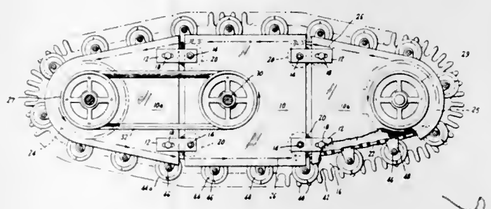
A reel for a crop-harvesting machine having a center shaft and mounting plates sleeved thereon. The end plates are connected to the shaft and the intermediate plate is loose on the shaft. The plates have series of holes about their outer peripheries so arranged that with a minimum of holes four, five or six tine bars can be mounted on the plates. The bars are provided with mounting brackets which support bats disposed ahead of the tine bars in planes tangential to the peripheries of the plates to hold the crop down against the deck of the harvesting machine and to readily shed the material on the back side of the reel.

3,641,751
SIDE-SHARPENABLE CUTTER STRUCTURES
Norman C. Locati, Lake Oswego, and John Leslie Edgerton, Canby, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.
Continuation of application Ser. No. 705,738, Feb. 15, 1968, now abandoned. This application Jan. 16, 1970, Ser. No. 4,466
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 **20 Claims**



Endless V-belts mounted on swathers or mowers carry side-sharpenable cutters secured to the belts. One cutter includes a body having a tang projecting through a slot in the V-belt and locked thereto by a transverse roll pin with angular, oppositely extending, transverse feet portions of the body engaging the outer face of the belt, an offsetting portion extending outwardly from the belt, a shank portion transverse to the offsetting portion, and an inclined cutter plate which has a side surface which can be ground to sharpen a cutting edge thereon. The cutter plate has an angularly positioned outer edge portion. In another cutter, the mounting plate extends completely through the V-belt and a roll pin and an arcuate washer secure the mounting plate to the V-belt. Another cutter includes an angular body portion, an offsetting portion and a shank portion forming a "U". The shank portion carries an inclined side cutter, and a staple extends through the body, the belt and an arcuate washer to secure the cutter to the belt. An inclined side plate is secured to a shank carried by a body portion joining the shank and the foot.

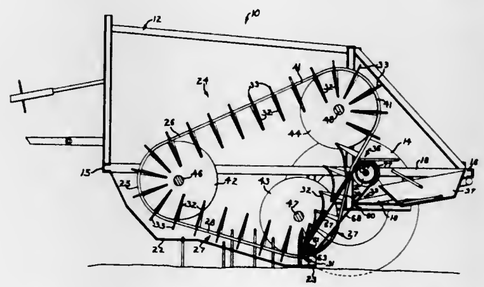
3,641,752
GRASS-CUTTING APPARATUS
Henry E. Ipbach, 55 Foxen Road, East Haven, Conn.
Filed Dec. 14, 1970, Ser. No. 97,664
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 **6 Claims**



A plurality of circular cutters are mounted in spaced relationship on a chain, which chain is entrained on sprockets rotatably mounted in a frame. These cutters travel in a closed path adjacent the peripheral edge of a bottom plate, which

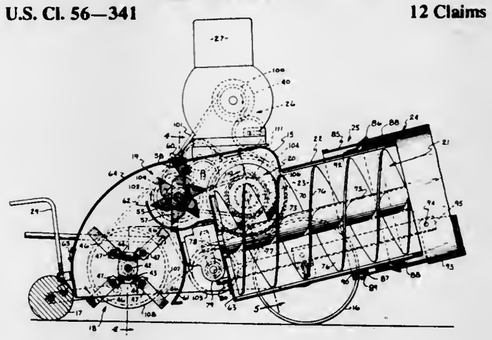
edge has a plurality of teeth. Each cutter is mounted on a bracket fixed to the chain so as to be capable of rotation on its support shaft, or axle. Springs bias the cutters against the teeth-defining peripheral portion of the bottom plate so that the circumferential lower edge of each cutter is adapted to cut grass in the slots defined between the teeth. Each cutter tends to rotate slowly as it travels over the bottom plate due to frictional forces between it and the bottom plate thereby presenting a continuously varying segment of its cutting edge to the grass, and also providing thereby a continuous self-sharpening cutting action.

3,641,753
HARVESTER FOR ASPARAGUS AND LIKE CROPS
Charles R. Lyons; Adam D. Dunn, both of Route 2, Box 119B, Zillah, Wash., and Leslie Wadekamper, 17 Lo. Ahtanum Road, Yakima, Wash.
Filed Feb. 16, 1970, Ser. No. 11,608
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 A **4 Claims**



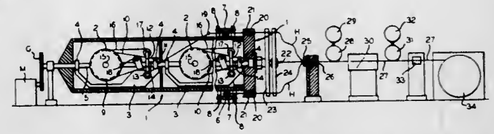
An asparagus harvester is provided with a continuous conveyor having flexible transverse paddles mounted thereon with free ends for moving downward between the asparagus as the harvester is propelled. A belt deflector engages the free ends of the paddles deflecting one paddle against the succeeding paddle to grip the asparagus therebetween. The paddles are then elevated while they are biased together to remove the severed spears while permitting the unsevered spears to remain in the ground.

3,641,754
GRASS AND LEAF PACKAGING MACHINE
Leon L. Anstee, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed July 22, 1970, Ser. No. 57,248
Int. Cl. A01d *39/00*
U.S. Cl. 56—341 **12 Claims**



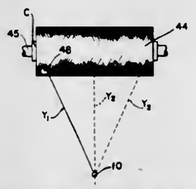
A machine adapted to collect and package grass and leaf materials as it moves across the ground behind a towing implement using pickup means to lift material from the ground and direct the material upwardly and rearwardly to a shredding unit and then to a pair of consolidating augers which convey the material inwardly of the machine to the collecting means where it is compacted and packaged in easily handled containers.

3,641,755
MACHINE AND PROCESS FOR MAKING WIRE CABLES
Peter Heinen, Oberbruch; Hans Guthmann, Hilden, and Peter Gossens, Oberbruch, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Nov. 5, 1969, Ser. No. 874,202
Claims priority, application Germany, Nov. 9, 1968, P 18 08 120.4
Int. Cl. D07b *3/00, 7/00*
U.S. Cl. 57—9 **17 Claims**



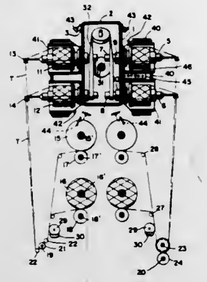
Method and apparatus for making strands, wire cables or stranded cables, with or without a core wire or core strand, which are either free from twist or have a directed twist when free from tension, by spiral preforming the wires or strands, wherein wires or strands move forward at a distance from an axis about which they are simultaneously rotated, and each wire or strand is drawn over one or more edges towards a twisting station located on the said axis, the wires or strands being permanently deformed at the said edges which displace their points of contact on the wires or strands once around the periphery of the wire or strand for every one revolution of the wire or strand about the said axis. The apparatus includes a preforming mechanism comprising two or more discs disposed one behind the other, each of the discs being provided with at least one circular row of bores, each of which rows in one of the discs contains the same number of bores as a corresponding row in the other disc or discs, the bores in one disc being offset by an adjustably predetermined amount with respect to the bores in the preceding disc, and the radii of curvature of the edges of at least one row of bores being so small that wires or strands passing through the bores are permanently deformed.

3,641,756
STRAND HEATING APPARATUS
John V. Keith, and Hans H. Richter, both of Warwick, R.I., assignors to Leesona Corporation, Warwick, R.I.
Original application Mar. 25, 1966, Ser. No. 537,526, now Patent No. 3,393,880, Continuation of application Ser. No. 710,163, Mar. 24, 1968, now abandoned. Divided and this application Jan. 8, 1970, Ser. No. 3,580
Int. Cl. D01h *13/26*
U.S. Cl. 57—34 HS **8 Claims**



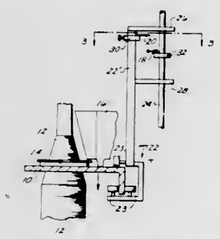
A heater for a false twist machine. A strand of yarn passes in a circuitous path through the heater and over guides which provide a fluid cushion supporting the strand.

3,641,757
MULTISPINDLE DOUBLE TWIST TWISTING MACHINE
Karl-Heinz Rehn, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed June 11, 1970, Ser. No. 45,285
Claims priority, application Germany, June 13, 1969, P 19 30 207.9
Int. Cl. D01h *1/32*
U.S. Cl. 57—34 20 Claims



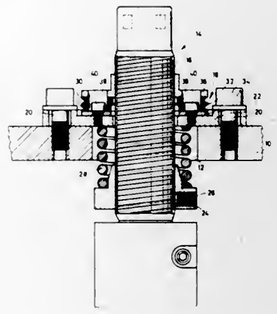
A multispindle double twist twisting machine having twisting spindles arranged in rows on either side of an elongated, vertically positioned drive housing which substantially encloses the driven elements of the twisting spindles and contains drive means to rotate said spindles, preferably including a tensioned belt entrained over rollers on a common drive shaft, the spindles extending substantially horizontally outwardly from the housing and associated with a corresponding number of winding means arranged in similar rows above or below the spindles with a preliminary drawoff means including a common rotatable shaft which is preferably located at about the same level as the row of winding means furthest removed from the spindles. The enclosed drive housing for the spindles is advantageously of soundproof construction with means for circulating cooling air therethrough, thereby providing a compact, efficient and more quietly operated two-sided double twist twisting machine.

3,641,758
MECHANISM AND METHOD FOR YARN-RETRIEVAL CONTROL
Roberto Escursell-Prat, 105 4.°, 1.°, Barcelona 6, Spain
Filed Oct. 1, 1969, Ser. No. 862,722
Int. Cl. D01h *13/26*
U.S. Cl. 57—34 R 12 Claims



In the end-down servicing of a textile spinning frame, wherein a suction head or other yarn retrieving means movable with the traversing ring rail is disposed adjacent the surface of yarn wound upon a spindle-mounted bobbin above the spinning ring encircling such bobbin, the yarn-retrieving means is actuated when the ring rail is at a predetermined desired location within its traverse. The location, which can be adjustably varied, is preferably adjacent the bottom of a downward traverse of the ring rail. Deactuation of the retrieval means preferably occurs after lapse of a predetermined desired time interval. The bobbin-yarn package is subjected to yarn-retrieving forces for only a minimum period of time, and a sufficient but not excessive length of yarn is retrieved.

3,641,759
SPINDLE BEARING ASSEMBLY
Gisbert Kohler, Stuttgart, Germany, assignor to SKF Kugellagerfabriken Gesellschaft mit beschrankter Haftung, Schweinfurt, Germany
Filed July 14, 1970, Ser. No. 54,777
Claims priority, application Germany, Aug. 16, 1969, P 19 41 866.7
Int. Cl. D01h *7/08*
U.S. Cl. 57—129 11 Claims



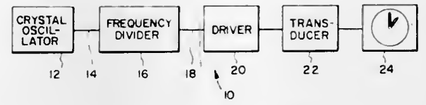
A spindle bearing assembly wherein a bearing housing is mounted in the recess of a spindle rail. A helical spring is provided between the lower surface of the rail and the end of the housing to axially bias the housing. A laminar spring is interposed between the upper surface of the rail and the housing, the laminar spring having a greater radial resiliency than axial resiliency.

3,641,760
FOAM FIBRILLATED YARN AND PROCESS
Herbert W. Keuchel, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
Filed Mar. 7, 1969, Ser. No. 805,302
Int. Cl. D02g *3/02*
U.S. Cl. 57—157 R 6 Claims



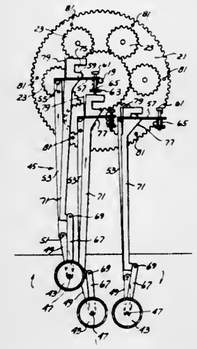
Foam fibrillated yarn having the appearance, hand and texture of conventional spun staple yarn may be prepared by initially forming a foam fibrillated film having narrow areas of preferential film weakness and pulling apart the film along said areas to form zones of free fibrillar ends. The film can either be completely severed into two or more bands or only internally split depending upon the character of the areas of weakness. Interentanglement of the separate bands or intratwining of the integral film containing a plurality of slits results in a yarn of spun staple quality coupled with high strength.

3,641,761
WATCH TRANSDUCER
James H. Reese, Manheim, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed June 17, 1970, Ser. No. 46,936
Int. Cl. G04c *3/04*; H02k *33/02*
U.S. Cl. 58—28 B 28 Claims



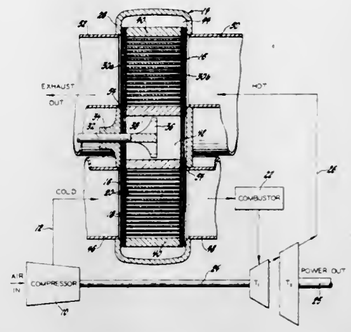
Disclosed is a crystal controlled watch having an improved transducer for converting the electrical impulses from a crystal oscillator and divider into unidirectional stepwise rotary motion suitable for driving watch hands. The transducer comprises a lightweight coil wholly mounted in the field of a permanent magnet having a natural frequency at least approximately equal to the frequency of the divider output so that the transducer coil is slaved to the crystal. An eccentric oscillates with the coil and drives the watch train through a lever pivoted to it and engaging an index wheel with magnetic attraction.

3,641,762
FLOATING TURBINE CONSTRUCTION
John Dumitriu, 166 Pierre Avenue, Windsor, Ontario, Canada
Filed Nov. 30, 1970, Ser. No. 93,611
Int. Cl. F03c *5/00*
U.S. Cl. 60—22 8 Claims



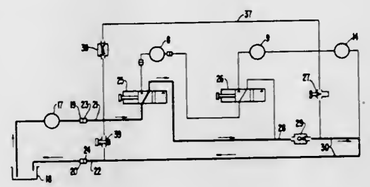
A floating turbine construction which provides within a suitable framework, a plurality of linkage systems with each system flexibly connected with a series of floats partly immersed in a body of water having a current and wherein the linkage system is connected with a power transmission unit which consists of a series of sun gears, a series of planetary gears upon the sun gears interconnected with the linkage assembly and with corresponding interplanetary gears interconnecting the series of planetary gears upon the sun gear in such a manner that upward buoyant forces of the floats transmitted through the individual linkage assemblies progressively and successively cause a torque action in the gear system to thus provide torque which may be used for a useful purpose.

3,641,763
GAS TURBINE CATALYTIC EXHAUST SYSTEM
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 8, 1970, Ser. No. 70,020
Int. Cl. F02c *7/10*
U.S. Cl. 60—39.51 H 3 Claims



A gas turbine engine including a rotary regenerator having an annular matrix with a catalytic material thereon exposed to exhaust gases passing through the matrix and effective to eliminate the noxious constituents thereof as part of the exhaust stream by catalytic reaction, the heats of such reaction being absorbed by the matrix, thereby providing increased sensible heat in the matrix effective to heat the incoming combustion air.

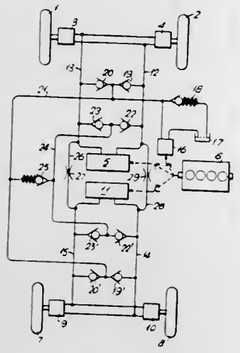
3,641,764
HYDRAULIC SYSTEM FOR SEQUENTIAL CONTROL OF HYDRAULIC MOTORS
John F. Destefan, Waynesboro; James J. Ezolt, State Line, and James Martin Benchoff, Waynesboro, all of Pa., assignors to Grove Manufacturing Company, Shady Grove, Pa.
Original application July 16, 1968, Ser. No. 745,165, now Patent No. 3,520,434, dated July 14, 1970. Divided and this application Apr. 9, 1970, Ser. No. 31,441
Int. Cl. F15b *11/16*
U.S. Cl. 60—52 R 4 Claims



A hydraulic control system for a self-unloading vehicle having at least a pair of conveyors and beaters operated by individual hydraulic motors for unloading forage from the vehicle body, which preferably utilizes the existing hydraulic pump and reservoir system on a tractor adapted to tow the vehicle and which includes valves adapted to sequentially connect the fluid motors for the conveyors and beaters in a series circuit. One of the valves is connected as a safety valve to stop operation of all of the hydraulic motors. The circuit is arranged so that by reversing the connections of the hydraulic lines to the tractor one of the conveyors can be operated at adjustable speeds in reverse by one of the valves. The hydraulic system is also provided with means to provide the same hydraulic fluid flow rate through the system indepen-

dent of the output of the tractors hydraulic system so that the self-unloading vehicle may be used with all sizes of tractors.

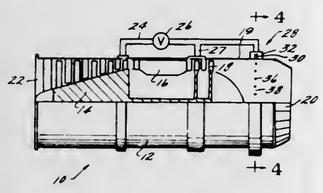
3,641,765
HYDROSTATIC VEHICLE TRANSMISSION
Roger Harvey Yorke Hancock, and James McCallum, both of East Kilbride, Scotland, assignors to National Research **Development Corporation, London, England**
Filed Mar. 3, 1970, Ser. No. 16,188
Claims priority, application Great Britain, Mar. 13, 1969, 13,339/69
Int. Cl. F15b *15/18*
U.S. Cl. 60—53 A **5 Claims**



A hydrostatic transmission system for a vehicle. Separate pumping sources each supply a wheel motor or group of wheel motors over respectively separate circuits each having a high-pressure and a low-pressure fluid line and conventional interconnecting valves, enabling the two fluid lines to exchange functions on over-run or for reversing. To provide for limited differential action between the separate circuits their corresponding fluid lines are interconnected through a flow-restrictive passage.

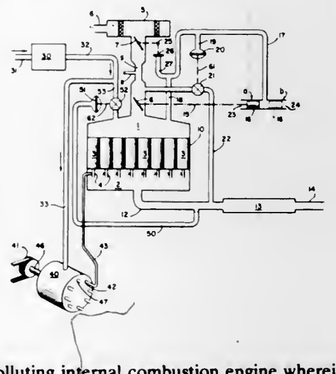
The two pumping sources may be derived from a single pump by the cylinders during a pumping stroke delivering in succession into separate delivery ports which communicate with different circuits. The leakage across the land between adjacent delivery ports may be arranged to fulfill the function of the flow-restrictive passage. The access hole to a cylinder may be made bigger than the land between delivery ports to interconnect them and the cylinder momentarily to fulfill the functions of the flow-restrictive passage.

3,641,766
GAS TURBINE ENGINE CONSTANT SPEED THRUST MODULATION
Donald E. Uehling, Cincinnati, Ohio, assignor to General Electric Company
Filed Nov. 26, 1969, Ser. No. 880,136
Int. Cl. F02k *3/02*
U.S. Cl. 60—262 **3 Claims**



A device is shown for modulating the thrust output of a gas turbine engine without the necessity of varying the speed of said engine. The device includes means for bypassing a portion of the compressor discharge air to a manifold surrounding the engine tail pipe, and, as required, to the turbine cooling flowpath for the purpose of transiently augmenting turbine cooling flow. The manifold is provided with a plurality of swirl inducing nozzles having inlets in fluidic flow cooperation with the manifold and outlets in fluidic flow cooperation with the tail pipe such that bypass flow is provided to the tail pipe in such a manner as to induce swirl within the main gas stream thereby significantly increasing tail pipe pressure losses and thus reducing thrust output of the engine. Engine speed may be maintained during operation of this device and delay time between increased thrust demand and actual thrust output are thereby lessened.

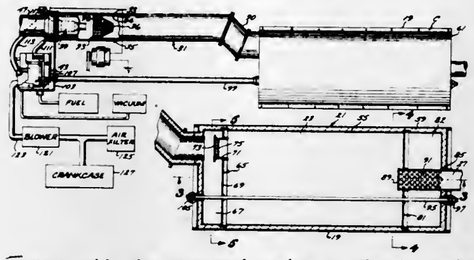
3,641,767
LOW-POLLUTING INTERNAL COMBUSTION ENGINE WHEREIN SECONDARY AIR IS UTILIZED TO PREVENT OVERHEATING OF THE EXHAUST MANIFOLD
Bernhard J. Kraus, Roma-Ostia, Italy, and Dae Sik Kim, Maplewood, N.J., assignors to Esso Research and Engineering Company
Filed Feb. 12, 1970, Ser. No. 10,904
Int. Cl. F01n *3/10*
U.S. Cl. 60—30 **5 Claims**



Low-polluting internal combustion engine wherein means are provided to inject secondary air in a pulsed manner to the exhaust ports of the cylinders when these ports are open to permit the ejection of exhaust gases. Particular features comprise controlling these pulses with respect to the shape of pulse, duration of pulse and timing of the pulse with the cycle of the engine. A particular feature comprises the control of the temperature in the exhaust manifold or reactor. During normal engine operation, the temperature can be maintained within the desired range by controlling the engine carburetion. Further, to protect from overheating the reactor(s) during a sustained high-power operation, an automatic leaning of the carburetor mixture by the introduction of additional atmospheric air into the intake manifold by particular mechanical means is provided.

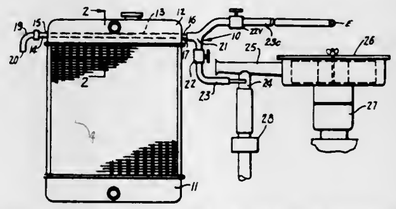
3,641,768
AFTERBURNER APPARATUS HAVING LINED BURNER CAN
George W. Cornelius, 279 W. Seventh St., Palos Verdes Estates, Calif.
Filed Feb. 20, 1970, Ser. No. 13,034
Int. Cl. F01n *3/14*
U.S. Cl. 60—30 **8 Claims**

Afterburner apparatus for use with an internal combustion engine and including a burner can having a structural casing lined with a low thermal capacity material which forms a flame chamber having an inlet for connection with the exhaust manifold of the engine and an outlet for egress of exhaust which has been burned in the chamber. A pilot burner is mounted in the chamber and means is provided for controlling the rate and ratio of fuel and air thereto in response to various engine speeds and conditions. Thus a flame is produced in the chamber which is insulated against direct



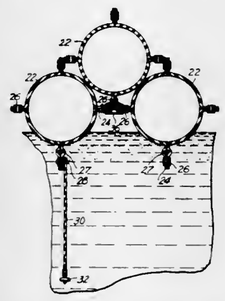
contact with the structural casing to thereby reduce quenching of the flame upon contact with the walls of the chamber and provide for relatively rapid heating of the chamber to the desired high temperature for burning the combustibles in the exhaust.

3,641,769
ANTIPOLLUTION CARBURETOR ATTACHMENT
Joseph Vizza, 414 Broad Avenue, Belle Vernon, Pa.
Filed Jan. 16, 1970, Ser. No. 3,282
Int. Cl. F01n *3/00*; **F02d** *21/00*
U.S. Cl. 60—30 **6 Claims**



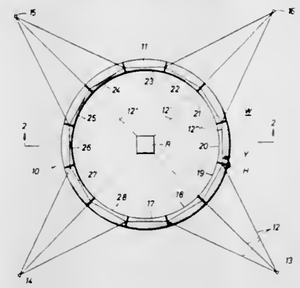
A carburetor attachment is disclosed for selectively feeding water vapors into the air intake of a carburetor through the conduit which contains the PVC valve or directly to the exhaust pipe. The water vapors are fed from a source of heated water such as the radiator, and tanks which are heated by the exhaust pipe or the muffler from the internal combustion engine.

3,641,770
FLOATING OIL CONFINING APPARATUS
Hugh J. Fitzgerald, Austin, Tex., assignor to Ocean Pollution Control, Inc., Dallas, Tex.
Filed June 25, 1969, Ser. No. 836,545
Int. Cl. E02b *15/04*; **F16l** *39/02*; **B01d** *17/02*
U.S. Cl. 61—1 **3 Claims**



Apparatus for confining and removing oily material on the surface of a body of water consisting of a polygonal ring formed by flexible tubular float members inflated to a pressure on the order of 0.5 p.s.i., with a weighted skirt depending therefrom, and with a transfer pipe having its inlet end removably supported in the leeward corner of the ring at a level within the thickness of the oily accumulation.

3,641,771
APPARATUS AND METHOD FOR CONFINING AND COLLECTING OIL FLOATING ON A WATER SURFACE
Howard D. Spandau, Houston, Tex., assignor to David M. Johnson and Robert L. Fleming, part interest to each
Filed Aug. 14, 1969, Ser. No. 849,985
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **5 Claims**



A series of gas inflated bodies are secured end-to-end to form a buoyant toroidal barrier which confines oil floating within the area circumscribed by the barrier. Each of the bodies includes a coupling means which secures adjacent bodies together in a leakproof seal and also acts as a harness structure for anchoring the composite toroidal body in place. Water and/or oil may be placed inside the inflated bodies to act as ballast and to provide storage for oil.

In a modified form, a number of the inflated bodies are secured to each other and attached to the main barrier to form a lock which permits vessels to enter or leave the circumscribed area without loss of any of the confined oil.

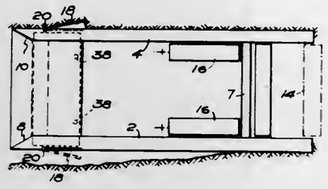
3,641,772
ROCK ANCHOR
Hans Dietrich, Bern, Switzerland, assignor to Losinger & Co. AG, Bern, Switzerland
Filed June 4, 1970, Ser. No. 43,502
Int. Cl. E21d *20/02*
U.S. Cl. 61—35 **16 Claims**



A rock anchor comprising a corrugated tube sealed closed at one end and axially receiving a stressing cable with cast material such as grout received between the tube and cable for transmitting forces from the cable to the tube. The tube is received in a bore in rock and the space between the tube and the rock wall of the bore is filled with settable material such as grout for transmitting forces from the tube to the rock. A spanning head closing the other end of the bore is

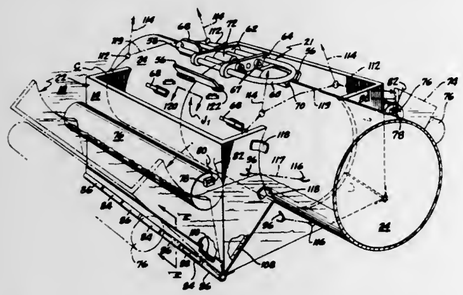
secured to the end of the cable for anchoring to the rock, an object such as a retaining wall engaged by the spanning head.

3,641,773
TRENCH SHORING FRAME
Anthony R. S. Morrice, 72 Kent Road, Harrogate, Yorkshire, England
Filed July 23, 1970, Ser. No. 57,444
Claims priority, application Great Britain, July 26, 1969, 37,636/69
Int. Cl. E21d *5/00*
U.S. Cl. 61—41 A **4 Claims**



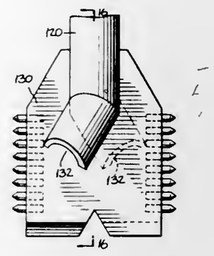
A trench shoring frame which comprises a pair of opposed sidewalls, means interconnecting the said sidewalls so as to maintain the sidewalls in spaced relationship, a rigid thrust plate located at the rear of the sidewalls said sidewalls and said thrust plate being interconnected so as to be movable relative to each other by a plurality of jacks so as to advance the shoring frame along a trench, and plate means movably connected to the shoring frame so as to be operable to cause an adjustment in at least the direction of travel of the shoring frame upon operation of said jacks. Said shoring frame may also be provided with plate means which are operable to cause an adjustment in the level of operation of the shoring frame.

3,641,774
METHOD AND APPARATUS FOR FABRICATING AN OFFSHORE STRUCTURE
Eero M. Hekkanen, Walnut Creek, and Alpo J. Tokola, Lafayette, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.
Filed Jan. 30, 1970, Ser. No. 7,182
Int. Cl. E02d *21/00;* **B63b** *35/40;* **B63c** *13/00*
U.S. Cl. 61—46.5 **18 Claims**



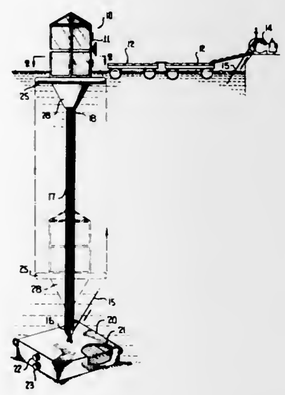
Improved method and apparatus for assembling and completing the fabrication of a multilegged structure of extended length at an offshore site wherein separate multilegged structural modules are selectively floated, disposed end-to-end, and aligned relative to each other at the offshore site such that the ends of aligned legs of the individual sections can be drawn and clamped together and then welded while in a clamped condition whereby the several welded-together sections can form an elongated unitary structure.

3,641,775
INSTALLATION OF SAND DRAINS
Augustus P. Godley, Hohokus; Francis M. Fuller, Washington Township, Bergen Co.; Charles R. Houk, Scotch Plains; Henry A. Nelson Holland, Ridgewood, and George J. Gendron, Oradell, all of N.J., assignors to Raymond International Inc., New York, N.Y.
Original application Feb. 6, 1968, Ser. No. 703,440. Divided and this application Aug. 25, 1969, Ser. No. 872,793
Int. Cl. E02d *5/22, 5/46;* **E21d** *1/08*
U.S. Cl. 61—63 **2 Claims**



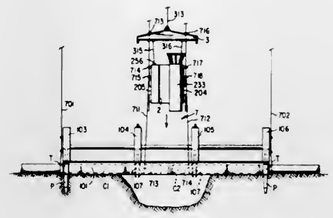
Formation of sand drains in the earth by drilling and forcing a fluid at high velocity to wash out a hole and thereafter filling the hole by forcing filler material down through a pipe; the pipe being outfitted with special valve control means to control the flow of fluid and filler therethrough in generally inverse manner.

3,641,776
DIVING BELL INVENTION
Jack Diamond, 5135 Wissioming Road, Washington, D.C.
Filed July 9, 1969, Ser. No. 840,224
Int. Cl. B63c *11/00*
U.S. Cl. 61—69 **1 Claim**



A diving bell arrangement having a transportable counterweight in the form of a hollow enclosure which can be filled with sand or water to maintain its position or emptied of that sand or water while submerged, to facilitate its transportation, and pulleys extending between a submersible bell and the counterweight so that the bell may be raised and lowered against the force of the filled counterweight, but the counterweight resurfacing when empty, due to its own buoyancy.

3,641,777
METHOD AND APPARATUS FOR WORKING ON SUBMERGED CONDUIT MEANS
Mark P. Banjavich; George R. Morrissey, both of New Orleans, and Anthony V. Gaudiano, Metairie, all of La., assignors to Taylor Diving & Salvage Co., Inc., New Orleans, Jefferson Parish, La.
Filed July 15, 1969, Ser. No. 841,777
Int. Cl. B63c *11/40*
U.S. Cl. 61—69 **20 Claims**

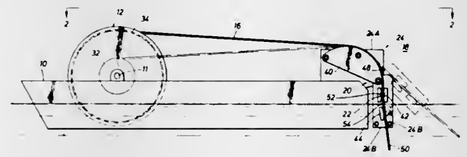


A method and apparatus for working on submerged conduits entailing the use of a conduit manipulating and aligning frame and a working chamber.

The aligning frame straddles independently movable conduit portions. A plurality of clamps engages each conduit portion and the clamps are manipulated to bring the conduit portions into an appropriate alignment.

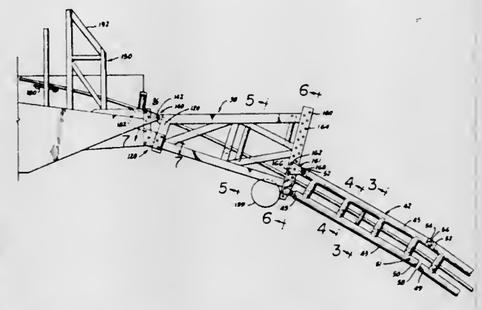
The working chamber straddles the aligned conduit portions and provides a controlled, relatively dry atmosphere within which conduit repairing, connecting or other operations may be performed.

3,641,778
APPARATUS FOR DIVERTING A PIPELINE
Robert G. Gibson, Houston, Tex., assignor to Fluor Ocean Services, Inc., Houston, Tex.
Filed Jan. 26, 1970, Ser. No. 5,863
Int. Cl. B63b *35/04;* **F16l** *1/00*
U.S. Cl. 61—72.1 **1 Claim**



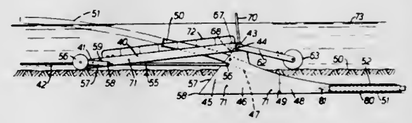
An apparatus for diverting by application of plastic stresses, a moving pipeline between the top and bottom surfaces of a marine body of water. The pipeline is made of an elastoplastic metal pipe having a suitable coating of corrosion-proofing material. The pipe is initially bent at the top water surface to a constant radius of curvature over a finite arcuate length, and subsequently straightened to a substantially rectilinear configuration colinear with the pipe's trajectory. The radius of curvature is sufficient to prevent buckling of the pipeline and the applied moment yields the pipe material in a controlled fashion to obtain a relatively large change of direction in a relatively short finite arcuate length. The application of the moment is such that the coating remains substantially intact and flattening of the pipe's cross section remains negligible. Under such conditions, the constant radius of curvature of the diverted pipe and the finite arcuate length may be selected to allow the diverted pipeline to assume any desired inclination angle without the need of customary expensive and large vertical support structures. Suitably applied tension stress depending on this angle prevents the pipe from buckling at the marine bottom.

3,641,779
STINGER SYSTEM FOR GUIDING A PIPELINE FROM OR ON A MOVING VESSEL
Francis Detrich Koop, Jr.; Paul Kingston Johnson, and Larry Rayner Russell, all of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.
Filed Mar. 24, 1970, Ser. No. 22,221
Int. Cl. B63b *35/04;* **F16l** *1/00*
U.S. Cl. 61—72.3 **3 Claims**



The improved stinger system includes a pivotal, compression hitch, a stinger coupling, and one or more stinger sections. The hitch pivotally connects the front end of the coupling to the rear end of the vessel and establishes below the pivotal connection a compression joint between the coupling and the vessel. Pivot means carried on the rear end of the stinger coupling pivotally connect the uppermost stinger section for pivotal motion about a generally horizontal axis extending through the stinger coupling. The pivot means can be selectively and vertically adjustable along the rear end of the coupling to change the pipe's radius of curvature dependent on the desired exit angle of the pipe from the stinger system into the body of water. At least the stinger coupling carries horizontal, pipe-engaging support rollers and lateral, pipe-restraining rollers. The horizontal support rollers can be selectively and vertically adjustable to provide for predetermined radii of curvature for the moving pipeline.

3,641,780
TRENCHLESS LAYING OF PIPE UNDERGROUND
Ainsley N. Ede, 36 Thornton Way, Cambridge, England
Original application May 3, 1968, Ser. No. 726,495, now Patent No. 3,546,890, dated Dec. 15, 1970. Divided and this application July 10, 1970, Ser. No. 53,796
Claims priority, application Great Britain, May 3, 1967, 20,476/67
Int. Cl. F16l *1/00;* **E02f** *5/18*
U.S. Cl. 61—72.4 **6 Claims**

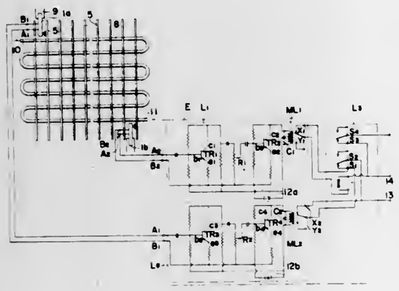


The invention is a method and apparatus for the trenchless laying of pipe underground, in which a mole plough is forced through the ground by means of a tractor or winch to form an underground tunnel, and a continuous length of flexible sleeving, for example made of polythene, is fed down through the hollow coulter of the advancing mole plough and is laid in the newly formed tunnel behind the mole; and at the same time a length of rigid pipe is thrust forwards lengthwise into

the tunnel and within the sleeving laid behind the advancing mole plough, by means of a driving machine including sets of pneumatic-tiered driving rollers between which the pipe is frictionally engaged. The pipe length is forced forwardly within the sleeving from the start of the underground tunnel at a speed which is coordinated with the speed of travel of the mole plough, for example by means of a trailing marker, so that the leading end of the pipe length follows closely behind the rear of the advancing mole. In this way the pipe length is pushed into its final position enclosed in the protective sleeving which protects it against corrosive attack by soil water. If desired cement grout may be injected into the sleeving to form an auxiliary protective coating around the pipe.

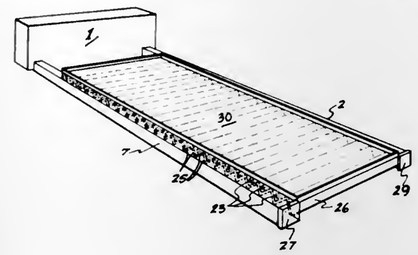
The specification also describes a modified form of mole plough designed to be used in a submerged position for pipe laying by the described method in a river bed or estuary bed, and to be rendered buoyant by means of compressed air for navigation purposes. This mole plough has a hollow framework and pivoted front and rear undercarriages with pivoted hollow rollers which also act as floats.

3,641,781
METHOD OF DETECTING TEMPERATURE FOR CONTROLLING A REFRIGERATOR OR A FREEZER
Kiyoichi Nijo, No. 4-10, 3-chome, Furuichi-Odori, Joto-ku, Osaka-shi, Osaka-fu, Japan
Filed Apr. 22, 1970, Ser. No. 30,651
Int. Cl. F25d *21/00*
U.S. Cl. 62—80 **2 Claims**



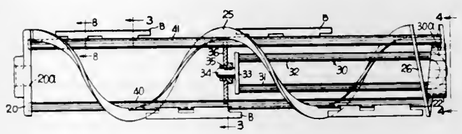
This invention relates to a method of detecting temperature for controlling a refrigerator or a freezer, and consists in that in order to detect a temperature in the refrigerator or freezer, vibration of cooling fin in the refrigerator or freezer produced from vibrating sounds of a compressor during operation, sounds of a refrigerating medium passing through cooling pipes, and rotating vibration sounds is utilized, that is, sounds above described are all transmitted to pickups through ice or frost formed therein at a temperature of 0° C. and by which the temperature of the refrigerator or freezer is electrically detected for controlling it.

3,641,782
ICE SKATING RINK
Rayford W. Timms, St. Louis, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed June 1, 1970, Ser. No. 41,862
Int. Cl. F25d *17/00*
U.S. Cl. 62—177 **9 Claims**



An improved ice skating rink utilizing a refrigerated gas as a means for freezing and keeping frozen a surface which may be utilized for ice skating. The refrigerated gas is supplied to a plenum which is disposed beneath the skating surface.

3,641,783
SCRAPER ASSEMBLY AND MATERIAL RETARDER FOR A CYLINDRICAL CONTINUOUS FREEZER
Bernfried M. Werner, Pompano Beach, Fla., assignor to Louis A. M. Phelan, Pompano Beach, Fla.
Filed July 29, 1970, Ser. No. 59,099
Int. Cl. F25c *7/10*
U.S. Cl. 62—343 **4 Claims**

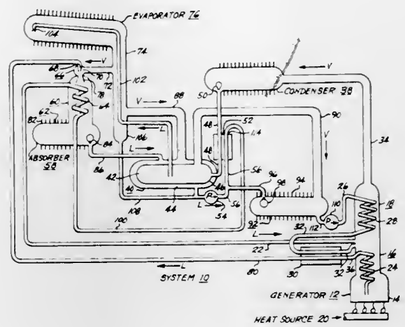


A scraper assembly for a continuous soft ice cream freezer or the like, which assembly rotates within the freezing cylinder of the freezer and serves to scrape the product being frozen from the cylindrical inner wall of the cylinder and also serves to move the product generally from the rear of the cylinder to the front end of the cylinder where the product is drawn out. The assembly has a minimum of surface area which is exposed to the material. Scraper blades are mounted in complementary slots which are formed in the longitudinal supports forming part of the assembly and are easy to install and remove in a foolproof manner. A material retarder is stationarily mounted in the assembly to promote proper mixing of the product and is separate from but supported on both the rotatable scraper assembly and the freezer front door.

3,641,784
ABSORPTION REFRIGERATION SYSTEM WITH MULTIPLE ABSORPTION
Ralph C. Schlichtig, 11212 3rd. South, Seattle, Wash.
Continuation-in-part of application Ser. No. 791,650, Jan. 16, 1969, now Patent No. 3,552,142. This application Nov. 16, 1970, Ser. No. 89,840
Int. Cl. F25b *15/04*
U.S. Cl. 62—476 **11 Claims**

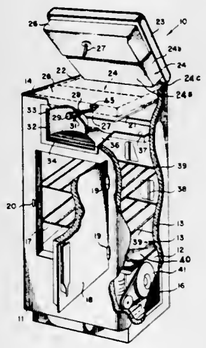
This refrigeration system includes a first absorber, an evaporation heat exchanger, and a second absorber for drawing refrigerant vapor from the evaporation heat exchanger, which components are so interconnected with one another

and with a plurality of heat exchangers and an inductor as to permit the system's condenser to operate at a temperature higher than that in the first and in the second absorber,



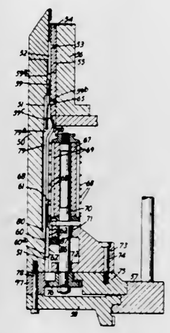
which are ambient cooled, so that a single source of cooling air of minimum quantity can flow first over such absorbers and then over the condenser while still maintaining a good C.O.P. for the refrigeration system.

3,641,785
WATER COOLER
William H. Portz, 1454 State Line Avenue, Calumet City, Ill.
Filed Apr. 16, 1970, Ser. No. 29,174
Int. Cl. F67d *5/62*
U.S. Cl. 62—396 **6 Claims**



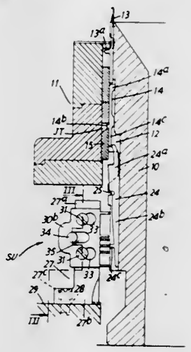
A water cooler including a frame having a plurality of vertically spaced chambers, including a compressor chamber, a food storage chamber, and a water storage chamber. The water storage chamber is provided with an open end and covered by a hingedly connected cover member. A support bracket for supporting a water container is mounted on the underside of the cover. A water container is placed in the support bracket and includes a tube for connecting the container to a water spout.

3,641,786
PATTERNING MECHANISM FOR MULTIFEED CIRCULAR KNITTING MACHINES
Henry S. Burdett, Oadby, and Ronald Harris, Leicester, both of England, assignors to Stibbe Machinery Limited, Leicester, England
Filed Apr. 21, 1969, Ser. No. 817,930
Claims priority, application Great Britain, May 3, 1968, 20,995/68; Aug. 21, 1968, 39,958/68; Dec. 27, 1968, 61,532/68
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B **10 Claims**



A multifeed circular knitting machine with heightwise movable elements which are radially movable selectively into cylinder tricks. In same trick as each element there is a presser jack having a single patterning butt. For action on the patterning butts there are rotary drums, one per feed, provided with protruding teeth arranged in circumferential series located in superimposed planes normal to drum axis. Bolt cams, acting on height selection butts on presser jacks, shift latter upwards and downwards to dispose their single patterning butts in predetermined planes. Each drum preferably tricked to accommodate inserts furnished with the teeth. Patterning jacks are of different forms and operate in conjunction with appropriate dispositions of the patterning butts for half-gauging.

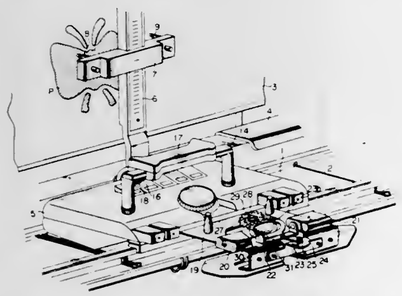
3,641,787
PATTERNING DEVICES FOR CIRCULAR KNITTING MACHINES
Philip Amos Robottom, Syston, England, assignor to Stibbe Machinery Limited, Leicester, England
Filed Oct. 17, 1969, Ser. No. 867,276
Claims priority, application Great Britain, Oct. 23, 1968, 50,307/68
Int. Cl. D04b *15/68*
U.S. Cl. 66—50 R **7 Claims**



A multifeed circular knitting machine having needles and needle-actuating jacks. Jacks have operating butts acted

upon by raising cams. Besides being movable heightwise by these cams, jacks are radially movable to enable their operating butts to be moved into and out of range of said cams. Patterning butts associated with jacks are selectively pressed in by selecting units—one per feed. Each unit comprises a bracket secured in position, and a selector plate which is attached to bracket and provided with prongs spaced apart in predetermined positions heightwise for action upon and to press in patterning butts in corresponding planes.

3,641,788
AUTOMATIC PATTERN STITCH DEVICE IN A HAND KNITTING MACHINE
Miyoshi Mori, and Shozo Takasu, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Aug. 26, 1969, Ser. No. 853,005
Claims priority, application Japan, Sept. 4, 1968, 43/63496
Int. Cl. D04b *7/00*
U.S. Cl. 66—60 **8 Claims**



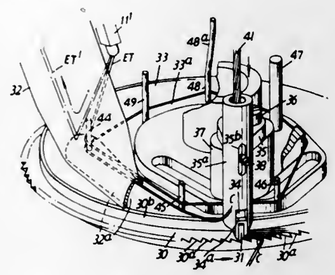
This invention relates to a pattern stitch hand knitting machine, wherein a pattern follower device cooperating with the knitting machine carriage is provided, whereby yarns of different kinds and of different color are selected according to the desired pattern on a pattern board through the operation of cursor contactors scanning the pattern of the pattern board, which pattern consists of electrically conductive material and insulating material.

3,641,789
STRAIGHT BAR KNITTING MACHINES
Raymond Blood, Shepshed, Loubourough, and Barry Colin Strong, Syston, both of England, assignors to William Cotton Limited
Filed June 2, 1969, Ser. No. 829,561
Claims priority, application Great Britain, June 6, 1968, 26,903/68
Int. Cl. D04b *15/09*
U.S. Cl. 66—96 **12 Claims**



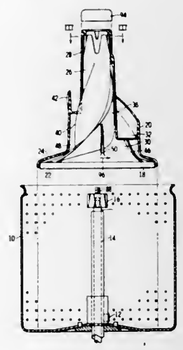
Method of "loop doubling" between rib and plain knitted fabric, consisting in simultaneously transferring spaced groups of loops to form a limited number of the "loop doublings" gaps between spaced groups of loops simultaneously followed by forming a remaining required number of "loop doublings" between the simultaneously formed "loop doublings" and closing the gaps, in successive manner, and a machine for the method comprising a row of sliders for controlling loop transfer points, cam-operated control bars for rendering groups of the sliders operative and inoperative, and a cam-operated stepped bar for dividing the sliders into required groups.

3,641,790
CIRCULAR KNITTING MACHINES
Sidney B. Grewcock, and Alan A. Cooper, both of Burbage, England, assignors to Barber & Nicholls Limited, Burbage, Nr. Hinckley, England
Filed Apr. 20, 1970, Ser. No. 30,028
Int. Cl. D04b *15/61*
U.S. Cl. 66—140 S **3 Claims**



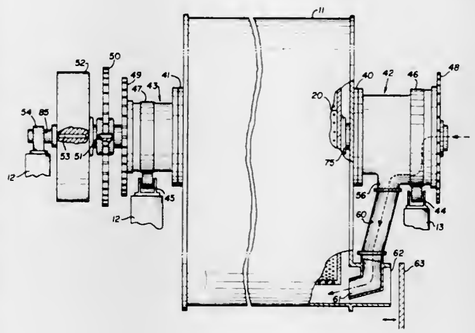
A multifeed circular knitting machine having a circular saw coupled to a welting dial and a knife seated upon the saw for cutting a yarn withdrawn from knitting. There is also a suction tube for holding a cut yarn. At one feed there is a guide for an elastomeric thread. A holder for the knife is slidable up and down in a bracket. When the knife is raised there is a space between it and the saw. But when the holder is released the knife moves down to cooperate with the saw. A cam on a control drum controls the holder. With the knife raised, a withdrawn elastomeric thread is first carried round on the saw past the knife element without being cut. The knife is then restored to its operative position. The thread is thereafter cut and held only after having been carried round a distance substantially in excess of that between the thread guide and the cutting and holding location.

3,641,791
AGITATOR FOR A WASHING MACHINE
Robert R. Wine, and Jerome G. Jacobsen, both of Mansfield, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 4, 1970, Ser. No. 34,465
Int. Cl. D06f *13/02, 39/00*
U.S. Cl. 68—4 **5 Claims**



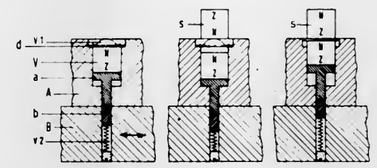
Agitator structure for variable washing action in a center-post washing machine which comprises two similarly shaped agitators, one capable of being nested in and enclosed by the other. The inner agitator provides a relatively gentle washing action and the outer agitator, when placed over and driven by the inner agitator, provides regular washing action.

3,641,792
AUTOMATIC UNLOADING WASHING MACHINE
Martin Hutterer, Forest Hills, N.Y., assignor to Cummings-Landau Laundry Machinery Co., Inc., Brooklyn, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,852
Int. Cl. D06f *39/14*
U.S. Cl. 68—210 **7 Claims**



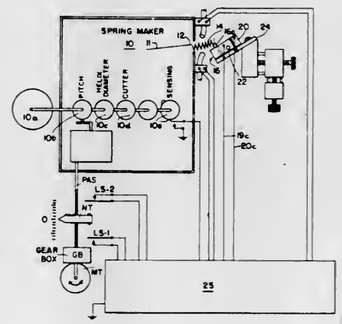
This machine comprises an internal washing drum and an external cylindrical shell. Washing fluid and materials are inserted into the unit via a port located upon the surface of the external shell and the two cylinders are relatively movable in order to effect the necessary operations of loading, washing, and unloading.

3,641,793
MAGNETIC PIN TUMBLER LOCK
Christiaan Johannes Van Dalen, Voorburg, Netherlands, assignor to De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur-General Der Posterijen, Telegrafie En Telefonie, The Hague, Netherlands
Filed Dec. 22, 1969, Ser. No. 886,895
Claims priority, application Netherlands, Dec. 23, 1968, 6,818,494
Int. Cl. E05b *47/00*
U.S. Cl. 70—276 **21 Claims**



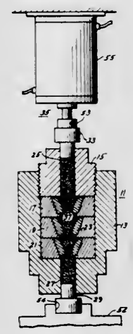
A pin tumbler-type lock in which the pin tumblers are movable by a magnetic key into at least two and usually three different positions in each of their aligned apertures between the two parts which are to be locked and unlocked. Only one position for each of the tumblers is its unlocking position. Spring means are provided in either or both parts for moving a tumbler which may be composed of one or two aligned tumbler pins, respectively, into one of the positions, and separate magnetic means are aligned with each of the pin tumblers which means may include a magnet or a magnetizable material. The magnetic key means is employed for attracting, repelling, or not affecting each of the tumblers through its magnetizable means for placing each of the tumblers into its unlocking position. The only difference between the tumblers, if any at all, is in the length of one of the pins thereof, namely, long, medium, or short corresponding to the attracted, repelled or nonaffected positions of its corresponding magnet in the key.

3,641,794
MONITORING SYSTEM FOR A HELICAL COIL SPRING WINDER AND METHOD
Albert W. Lidert, c/o L.C. Co., 217 S. W. 33rd Court, Fort Lauderdale, Fla., assignor to Sam J. Carrozza, Oak Lawn, Ill., a part interest
Filed Jan. 26, 1970, Ser. No. 5,614
Int. Cl. B21d *55/00*; **B21b** *37/00*; **B21f** *11/00*
U.S. Cl. 72—4 **12 Claims**



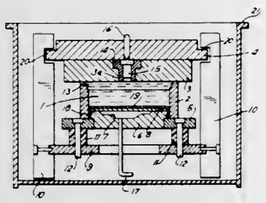
A machine for winding helical springs is provided with a monitoring system to control accurately the length of finished springs; such monitoring system having a sensing means for determining if a finished spring length is correct, too long or too short and applying the sensing information to pitch control adjusting means to provide compensating changes in spring length when so required.

3,641,795
METHOD AND APPARATUS FOR WIRE DRAWING WITH PRESSURE DIES
Raymond H. Lester, and James N. Snyder, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Filed Dec. 24, 1969, Ser. No. 887,843
Int. Cl. B21c *1/00, 3/14, 9/00*
U.S. Cl. 72—42 **14 Claims**



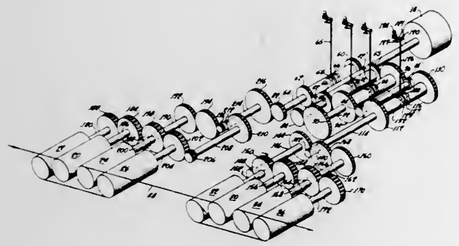
Improved surfaces on drawn wires and especially on wires drawn while precoated with a metallic coating are obtained by drawing the wires in a pressure-type die which has been initially prepacked with lubricant under a high pressure.

3,641,796
APPARATUS FOR SHOCK-FORMING OF WORKPIECES
Heinrich Hertel, and Dietrich Ruppin, both of Berlin, Germany, assignors to Heinrich Hertel, Berlin, Germany
Filed Sept. 24, 1969, Ser. No. 860,705
Claims priority, application Germany, Sept. 25, 1968, P 17 77 210.0
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 **13 Claims**



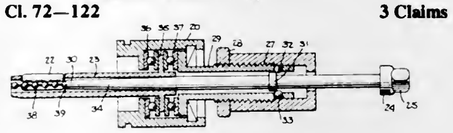
Wall means surrounds a pressure chamber arranged to accommodate a workpiece and a die having a surface contour into conformance of which the workpiece is to be deformed by shock action. The wall means includes at least two walls at least one of which is movable relative to the other between a chamber-closing and a chamber-opening position, and the wall means has an inertia so selected as to at least substantially equal the necessary shock-pressure for producing the predetermined energy level required to obtain the desired workpiece deformation so that, when the shock-pressure is exceeded, relative movement of the walls to said chamber-opening position occurs with concomitant venting of the chamber. Shock-pressure producing means is provided and is activated for producing a sudden increase in pressure in the chamber. A recess has first and second openings communicating with the interior and exterior of the chamber, respectively, and accommodating the shock-pressure producing means. Inertial closure means serves to close the second opening which communicates with the exterior of the chamber.

3,641,797
STRETCHER LEVELING SYSTEM
Ronald J. Bell, Riverside, and Edward C. O'Neal, Colton, both of Calif., assignors to Hunter Engineering Company, a division of American Metal Climax, Inc., Riverside, Calif.
Filed Feb. 5, 1970, Ser. No. 8,921
Int. Cl. B21d *1/02*
U.S. Cl. 72—160 **17 Claims**



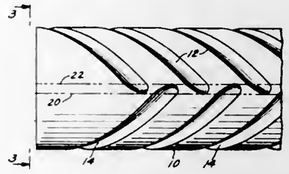
A stretcher leveling system having a closed mechanical drive system with the exit roll stand gear train connected to the entrance roll stand gear train through a finite number of fixed gear ratios. A split power transmission train is used for connecting the change gear train with the roll driving gear trains. In one embodiment the change gear train is mechanically connected in series with a differential to reduce the range of stretch which is differential controlled to a small range with a series of fixed gear ratios.

3,641,798
EXPANDING TOOL
Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.
Filed June 1, 1970, Ser. No. 41,808
Int. Cl. B21d *39/06, 39/10*
U.S. Cl. 72—122 **3 Claims**



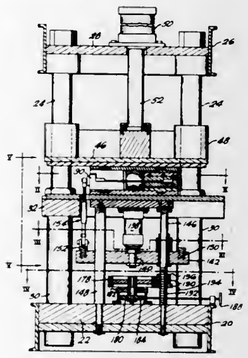
A nonrigid portion is attached to the end of the tapered rigid mandrel of an epicyclic motion roller-type tube expander unit to enable tube bends to be located closer to the end fitting to which the tube is being attached.

3,641,799
DEFORMED WIRE FOR CONCRETE REINFORCEMENT
Roger H. Wildt, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Original application Dec. 5, 1968, Ser. No. 781,320, now abandoned. Divided and this application July 16, 1970, Ser. No. 55,558
Int. Cl. B21h *7/18, 8/00*
U.S. Cl. 72—198 **2 Claims**



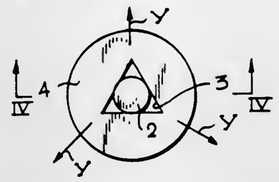
A wire having overlapping rows of indentations in the surface thereof whereby deformation roll wear and/or improper roll adjustment are visually indicated by the deviations from the desired amount of overlap.

3,641,800
METHOD AND APPARATUS FOR BENDING FAN SPIDER ARMS
Robert G. Wickham, Clark Lake, Mich., assignor to Hayes-Albion Corporation, Jackson, Mich.
Filed Nov. 14, 1969, Ser. No. 876,844
Int. Cl. B21d *11/14*
U.S. Cl. 72—299 **4 Claims**



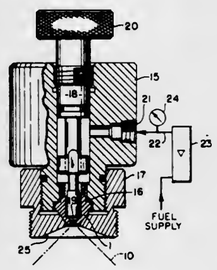
The invention pertains to the method and apparatus for twisting or bending the arms formed upon fan spiders, particularly of the type used to draw air through the cooling radiators of internal combustion engines. Such fans include a fan spider which defines the fan hub, and a plurality of radially extending arms project from the hub. Twisting of the arms to provide the desired pitch to the fan blades is achieved by firmly clamping the spider hub portion upon opposite sides while simultaneously, individually, clamping each arm outer region. Thereupon each arm outer region is simultaneously pivoted about an axis substantially perpendicularly disposed to the axis of the spider hub to impart the desired pitch to the spider arm. Clamping of the arms is accomplished by relatively movable components utilizing uniquely related rotatable portions whereby the two parts of the clamp which are to be rotated are coaxially aligned when clamping and bending.

3,641,801
METHOD FOR MANUFACTURING DISCS FROM WIRE
Maurice L. Lachaussee, Ans-lez-Liege, Belgium, and Andre D. Maigret, Val de Mare, France, assignors to Etablissements Lachaussee, societe anonyme, Ans-lez-Liege, Belgium
Filed Dec. 5, 1969, Ser. No. 882,544
Claims priority, application Belgium, Aug. 18, 1969, 42398
Int. Cl. B21d *22/00*
U.S. Cl. 72—339 **1 Claim**



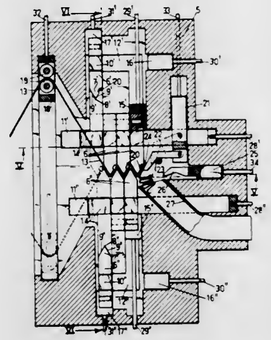
A method is provided for manufacturing discs or other metal parts of circular or similar cross section from metal wire, according to which the wire is cut into portions of a predetermined length, then each portion is introduced individually along its longitudinal axis into a prismatic housing in a first matrix to be subjected to a first press forging. The prismatic blank is then withdrawn from the first matrix and is inserted into a cavity having the cross-sectional shape of the final object to be produced. The cavity provided in the second matrix subjects the blank to a final press forging to produce the final shape of the fabricated part.

3,641,802
METHOD AND APPARATUS FOR SETTING THE FLOW RATE OF A FUEL INJECTION NOZZLE
Basil S. Segro, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Sept. 17, 1969, Ser. No. 858,680
Int. Cl. B21d *51/38*
U.S. Cl. 72—377 **14 Claims**



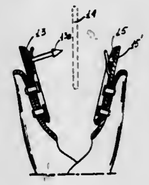
A method and apparatus wherein a tapered plug member, e.g. a cone or a ball, is forcibly engaged with a nozzle body member to progressively deform the latter to decrease the flow capacity through the swirl slots in the body member until a desired fluid flow rate is achieved.

3,641,803
METHODS FOR THE MANUFACTURE OF A CONTACT STRIP FOLDED IN ZIGZAG FOR A FIXED SWITCHING CONTACT AND FOLDING MACHINES FOR PERFORMING SAID METHODS
Petrus J. Schuurbiers, Harmelen; Louis A. Verhagen, and Johannes G. L. Vernhout, both of Utrecht, all of Netherlands, assignors to N.V. COQ, Kanaalweg, Utrecht, Netherlands
Filed Oct. 20, 1969, Ser. No. 867,797
Claims priority, application Netherlands, Apr. 24, 1969, 6906378
Int. Cl. B21d *13/00*
U.S. Cl. 72—381 **11 Claims**



A method and a machine for the manufacture of a zigzag folded metal contact strip for a fixed contact which permanently snugly encloses an axially movable switching rod of an electric switch, said strip being alternately bent in said machine in one and in the other direction out of its plane over the foremost teeth of two cooperating sets of intermittently movable teeth.

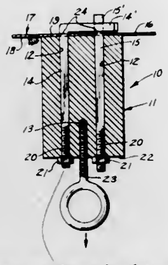
3,641,804
TOOL FOR PLACING MARKS IN THE EARS OF ANIMALS
Theodorus Antonio Gerardus Oudenhoven, 499 Punta Chica, Partido San Fernando, Buenos Aires, Argentina
Filed Oct. 20, 1969, Ser. No. 867,706
Int. Cl. B21d *9/08*
U.S. Cl. 72—409 **3 Claims**



A tool for attaching a two-part identification tag to an animal, one part of the tag having a pointed projection to pierce an animal's ear, the other part having an aperture for the projection, comprising pincers having triangular-shaped plates at one end with cooperating resilient tongues to more or less firmly hold each of the two parts of the tag in position during attachment, one of the resilient tongues and plates

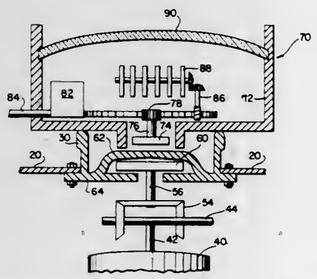
being notched to permit the pointed projection to pass through the aperture in the tag held therein.

3,641,805
SHEET METAL PULLER
Edward C. Reinke, 3230 Braun Court, Golden, Colo.
Filed July 22, 1970, Ser. No. 24,908
Int. Cl. B21d *1/12*
U.S. Cl. 72—460 **5 Claims**



A tool for pulling out dents in the metal of automobiles. This tool consists of a block having a pair of rod members for insertion into drilled openings in the sheet metal, the tool being adaptable for pulling out dents in areas where access to the rear side of the sheet metal is impossible.

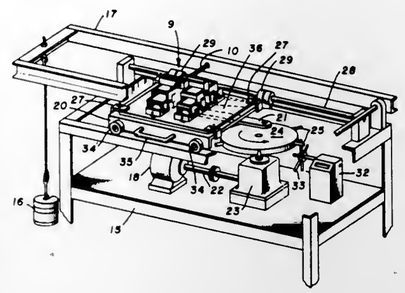
3,641,806
TESTING DEVICE FOR WATER METER REGISTERING UNITS
James H. Lee, and David J. Bruening, both of Montgomery County, Md., **assignors to Washington Suburban Sanitary Commission**
Filed Sept. 2, 1970, Ser. No. 69,061
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 **8 Claims**



A testing device for testing a water meter register unit which comprises a rotatable magnet and which causes signals to be transmitted to a remote register: the testing device includes a housing for batteries, a motor and a rotatable magnet driven by the motor. The magnet is located within a chamber on which are supports for the water meter register unit. The batteries are connected to the motor through a switch in either parallel or series, and adapter rings enable the holding of register units of various sizes.

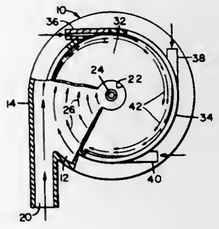
3,641,807
TRAFFIC MACHINE FOR CARPETS
Gene A. Brooks, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 24, 1970, Ser. No. 13,409
Int. Cl. G01n *31/56*
U.S. Cl. 73—7 **1 Claim**

A traffic machine for testing carpets to simulate the effect of flat floor wear thereon, said machine having a roller assembly comprising a beam pivotally connected to a lever, the beam being adapted to pivot on an axis substantially parallel to the direction assumed by the path of travel of a table, a



plurality of rollers connected to said beam, the rollers being adapted to move substantially perpendicular to the direction of travel of the table.

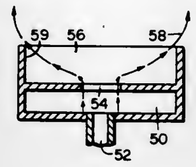
3,641,808
VORTEX GENERATING SENSOR WITH SECONDARY FLOW
Heinz J. Smirmaul, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 1, 1970, Ser. No. 41,786
Int. Cl. G01b *13/12*
U.S. Cl. 73—37.5 **11 Claims**



A vortex generating sensor for detecting and indicating the presence of an object in the path of a stream of fluid comprising a cylindrical vortex generating chamber, a supply port for introducing fluid into the vortex chamber, a vortex outlet port communicating with a central portion of the vortex chamber for permitting the fluid to be exhausted therefrom, a vortex direction chamber communicating with said generating chamber through said outlet port for affecting the configuration of the exhausted fluid, at least one secondary fluid flow port communicating with said direction chamber, and a sensing port by means of which the pressure within the central portion of the vortex chamber is sensed.

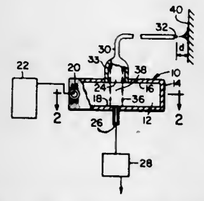
3,641,809
VORTEX-GENERATING SENSOR
Thomas W. Bermel, Durham, N.H., assignor to Corning Glass Works, Corning, N.Y.
Filed June 1, 1970, Ser. No. 42,154
Int. Cl. G01b *13/12*
U.S. Cl. 73—37.5 **10 Claims**

A fluid-driven sensor for detecting and indicating the presence of a foreign object in the path of a fluid medium having a cylindrical vortex generation chamber, a supply port for introducing a driving fluid into the generation chamber, a vortex egress port communicating with a central portion of the generation chamber for permitting the driving fluid to escape from the generation chamber, and a sensing port by



means of which the pressure within the central portion of the generation chamber is sensed.

3,641,810
NONCONTACTING SENSOR APPARATUS
Heinz J. Smirmaul, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 1, 1970, Ser. No. 42,325
Int. Cl. G01b *13/12*
U.S. Cl. 73—37.5 **12 Claims**



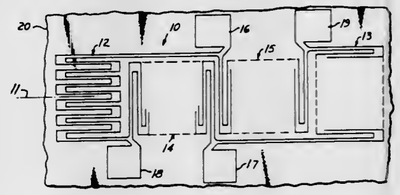
A noncontacting vortex-generating sensor apparatus for detecting and indicating the presence of an object in the path of a stream of fluid and for providing an indication of the distance of said object from the nozzle emitting said stream of fluid. The apparatus comprises a cylindrical vortex-generating chamber, a supply port for introducing fluid into the vortex chamber, a vortex outlet port communicating with a central portion of the vortex chamber for permitting the fluid to be exhausted therefrom, nozzle means for issuing or emitting the exhausted fluid as a stream, and a sensing port by means of which the pressure within the central portion of the vortex chamber is sensed.

3,641,811
METHOD AND APPARATUS FOR DETERMINING STRUCTURAL CHARACTERISTICS
Robert J. Gnaedinger, Jr., 1387 Lincoln Avenue South, Highland Park, Ill., and John P. Gnaedinger, 160 Sheridan Road, Kenilworth, Ill.
Filed Dec. 2, 1969, Ser. No. 881,482
Int. Cl. G01n *29/00*
U.S. Cl. 73—69 **12 Claims**



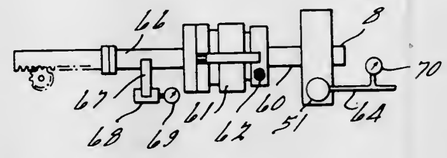
A method and apparatus for determining the soundness of a structure such as a foundation pier or caisson wherein a generator for producing sonic pulses or mechanical vibrations is located in the body of the structure at a location remote from a detecting location. The detector is positioned at the detecting location with at least some of the structure body being disposed between the generator and detector whereby there is transmission through the body. Recording means are provided for determining the characteristics of the pulses detected thereby providing an indication of the quality of the structure.

3,641,812
SILICON DIAPHRAGM WITH INTEGRAL BRIDGE TRANSDUCER
Gerald L. Vick, La Verne, Calif., assignor to Conrac Corporation, New York, N.Y.
Filed May 20, 1970, Ser. No. 38,940
Int. Cl. G01l *9/04*
U.S. Cl. 73—88.5 SD **7 Claims**



A piezoresistive strain gage is produced by forming a pressure-responsive diaphragm from a suitably oriented single crystal of silicon of negative conductivity type and forming one or more complete Wheatstone bridge structures of opposite conductivity type in a diaphragm surface as a compact unitary diffusion pattern comprising two sets of opposite bridge arms extending radially and tangentially, respectively, parallel to respective selected crystal axes, the diffusion pattern including all interconnections between those arms. The unitary nature of such bridge structures reduces inaccuracies of previous structures that were due to thermal and aging effects, and facilitates production of several electrically isolated bridge configurations on a single diaphragm, enhancing potential quality, accuracy and reliability.

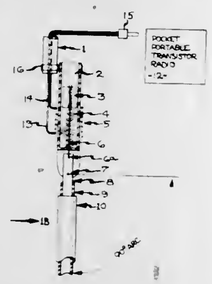
3,641,813
STATIC TORQUE-TESTING DEVICE
Craig R. Groat, Pontiac, and Manfred R. Happold, Farmington, both of Mich., assignors to Link Engineering Company
Filed Apr. 13, 1970, Ser. No. 27,638
Int. Cl. G01l *5/28*
U.S. Cl. 73—121 **10 Claims**



After a stack of brake discs have been set to break the landing speed of an airplane or other vehicle, a test on the brake material is desired to find the break-way force for releasing the rotor and stator discs to permit the airplane or vehicle to be driven thereafter. To obtain this information, a drive is provided on the brake disc test device for applying a load on the brake discs when set which is constantly increased until free movement of the rotor discs occurs relative to the stator discs. A fluid motor drives through a worm wheel for applying the load on the rotor discs, the increasing

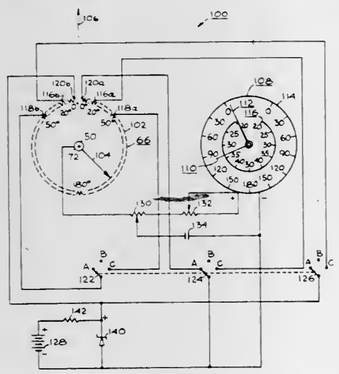
applied fluid pressure providing a load record, while a torque arm on the tailstock which supports the testing device registers the load being applied through the stack of brake discs. The pressure on the fluid required to release the rotor and stator discs of the stack can be compared to the force recorded by the torque arm at the time of release.

3,641,814
ELECTRONIC METHOD AND APPARATUS FOR AUDIBLY DETECTING CHANGES
Vincent DiMaio, Toledo, Ohio, assignor to Customflex, Inc., Toledo, Ohio
Filed May 7, 1970, Ser. No. 35,507
Int. Cl. G01c *21/00*
U.S. Cl. 73—186 **9 Claims**



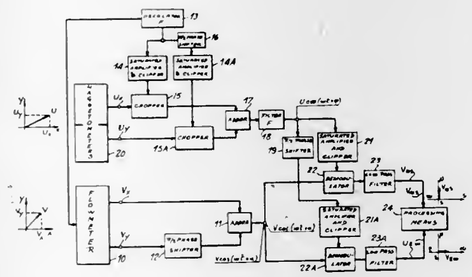
Device for measuring the relative change in a variety of physical phenomenon, such as acceleration, pressure, temperature, etc., by an audible signal. A transducer has a pivoted extensible rod for indicating changes in velocity of an object moved through a fluid medium, such as water. The rocking of the arm is operative to shift a ferrite core within an insulated coil forming one part of an audio oscillator circuit. The coil is connected to a portable transistor radio, and the movement of the ferrite core through the insulated coil changes the induction of the coil producing a change in the audio oscillator circuit in a transistor radio. This produces a change in the sound produced by the radio. According to an alternate form, a stationary rod on which a strain gauge is mounted is similarly connected to a transistor radio.

3,641,815
WIND DIRECTION INDICATOR
James M. Fassett, II, 23320 Anza Ave., Torrance, Calif.
Filed Jan. 10, 1968, Ser. No. 696,789
Int. Cl. G01w *1/00*
U.S. Cl. 73—188 **10 Claims**



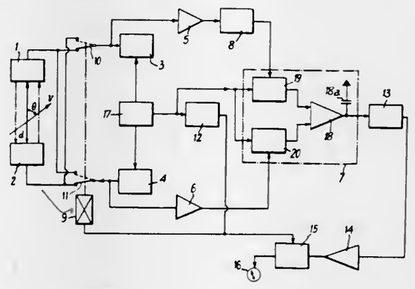
There is disclosed herein a wind direction indicator in which an improved weather vane incorporating an elongated airfoil-shaped member for providing the weather vaning is coupled to a potentiometer enclosed in a housing. The potentiometer is coupled to an indicating means that provides a visual display. Mechanically, the weather vane coupling to the potentiometer is within a cavity of the housing that is utilized also as an oil reservoir for lubricating the shaft of the weather vane and the potentiometer so that free rotation thereof may be obtained over extended periods of operation without servicing. The indicating means has two modes of operation on the display device for providing both a high scale and a low scale. That is, when the invention is utilized in boat applications for indicating the direction of the wind relative to, for example, the centerline of the boat extending from the bow to the stern when sailing off the wind the relative wind can have comparatively high-angular relationship to the centerline of the boat and consequently the display device indicates with comparatively large increments the large angular displacements. In the second mode of operation for a sailboat when running close hauled, the angle of the relative wind is comparatively more important and generally the angle will be in a range of between 20° and 50° from the centerline. Consequently, in the second mode of operation the 20° to 50° range of angles of relative wind is expanded to cover the full range of the display device for indicating such angles with comparatively small increments. Signal-damping means are also included so that short time duration wind changes will not provide excessive signal variations in the display device.

3,641,816
METHOD AND DEVICE FOR METERING A VECTOR PARTICULARLY APPLICABLE TO THE METERING OF A FLUID FLOW VELOCITY
Stephane Chambolle, Paris, and Michel Max Hanff, Brest, both of France, assignors to Compagnie Des Compteurs, Paris, France
Filed Feb. 11, 1970, Ser. No. 10,422
Claims priority, application France, Feb. 18, 1969, 6903999
Int. Cl. G01w *1/00*
U.S. Cl. 73—189 **20 Claims**



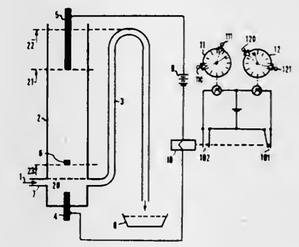
Method and device for metering a vector particularly applicable to the metering of a fluid velocity in which the method comprises the use of a first apparatus giving the components of the vector according to two perpendicular directions, a second apparatus giving the components of a known field according to said directions and electric means to process the components coming from said first and second apparatus and give at the output thereof an information of the vector in relation to the known field.

3,641,817
ULTRASONIC FLOWMETER
Jacques Dory, Meaux, France, assignor to Realisations Ultrasoniques, Meaux (Seine-&-Marne) Chaussee de Paris, France
Filed Feb. 14, 1969, Ser. No. 799,212
Claims priority, application France, June 19, 1968, 155534; Feb. 26, 1968, 141181
Int. Cl. G01k *7/00*
U.S. Cl. 73—194 A **8 Claims**



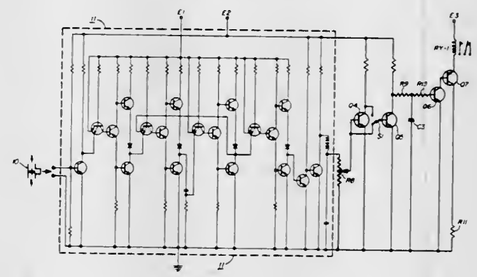
The invention relates to ultrasonic fluid flowmeters of the type comprising a pair of transducers acting both as a transmitter and receiver, and circuit means for measuring the time shift between the ultrasonic signals respectively received by the two transducers after propagation in the fluid. According to an important feature, switching means are provided whereby the connection between the two transducers and the receiving and measuring circuits is periodically reversed, which eliminates errors due to variations in the conditions of propagation.

3,641,818
APPARATUS FOR MEASURING LIMITED FLOW CAPACITIES
Klaus-Jurgen Ern, Langenfeldt-Richrath, Germany, assignor to Zellweger Ltd., Uster, Switzerland
Filed Mar. 19, 1970, Ser. No. 21,030
Claims priority, application Switzerland, July 29, 1969, 111528/69
Int. Cl. G01f *1/00*
U.S. Cl. 73—226 **12 Claims**



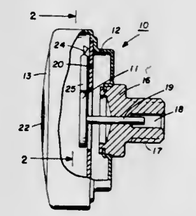
The present disclosure is directed to an apparatus for measuring limited flow capacities, particularly for monitoring continuous-cycle automatic dispensing and analyzing devices. The apparatus comprises a measuring chamber adapted to be charged with a liquid to be measured, inlet means for introducing a quantity of liquid into the lower portion of the measuring chamber, a siphon tube communicating with the measuring chamber at substantially the same level as the inlet means, a first and second level sensor device disposed in the lower portion and upper portion of the measuring chamber respectively, said level sensor devices generating electrical signals when a predetermined level is passed and at least one clock means associated with the sensor devices for determining at least one filling time.

3,641,819
FLOW-RESPONSIVE CIRCUIT
Gary R. Kendrick, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.
Filed Dec. 18, 1967, Ser. No. 691,527
Int. Cl. G01f *1/00*
U.S. Cl. 73—229 **2 Claims**



A circuit receives pulses of voltage from a fluid meter. A section of the circuit converts the pulses to a DC potential. The DC potential is connected to a transistor through a selection switch to control a relay actuation when the DC potential value changes from a preselected range of values. A time-delay section in the circuit provides a time period between the potential value change and relay actuation.

3,641,820
BOURDON TUBE HAVING INTEGRAL POINTER
Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Mar. 9, 1970, Ser. No. 17,681
Int. Cl. G01l *7/04*; **B23p** *17/00*
U.S. Cl. 73—418 **8 Claims**

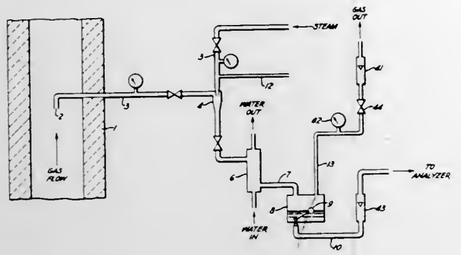


A Bourdon tube in which the integral free end is constructed to simulate a pointer. When employed in a pressure gauge, the free-pointered end is moveable relative to a calibrated dial plate for indicating the values of pressure being sensed.

3,641,821
SAMPLING SYSTEM FOR STACK GAS
Edmond Donald Neuberger, and Thomas Joseph Junker, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1970, Ser. No. 26,340
Int. Cl. G01n *1/24*
U.S. Cl. 73—421.5 R **9 Claims**

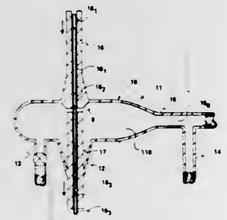
A system is described for withdrawing a gaseous or other sample from a source and preparing it for analysis. The sam-

pling device employs a steam eductor which utilizes steam as the force for moving the sample and at the same time for scrubbing the sample. Soluble an insoluble components of the sample are present in dissolved or suspended form in the



condensate. The system is particularly useful to provide a continuous sample. A chemical may be added to the steam to enhance the tendency of a component of a gaseous sample to enter the liquid phase.

3,641,822
FLUID SAMPLE INJECTION VALVE
Rano J. Harris, Sr., 1945 Carolyn Sue Drive, Baton Rouge, La., and Rano J. Harris, Jr., 9880 South Riveroaks, Baton Rouge, La.
Filed Oct. 1, 1969, Ser. No. 862,903
Int. Cl. G01n *1/00, 1/22*
U.S. Cl. 73—422 GC **9 Claims**



A valve which is employed to simplify and expedite injection of accurately measured fluid specimens into analytical instruments. The valve embodies a chamber for receiving an accurately measured fluid specimen, and a pair of oppositely disposed tubular members, spaced apart one from the other, extending to an opening within the said chamber. In one embodiment, the fluid specimens are contained and sealed within tubular-shaped cartridges by use of end plugs, completely closed at one end but containing a partial opening extending axially from the other end to the side of a plug. Cartridges and plugs are placed within the bore of the coaxially aligned tubular members alternately, one plug abutting and closing via exposure of a solid wall to an end of the cartridge while the open end of another coincides with the axial opening through the cartridge. On transport at desired intervals through the bore of the coaxially aligned tubular members, the fluid contents of the cartridges are discharged to the chamber. In a more preferred embodiment, reciprocable plungers with fixed end seals are mounted, one within each of a pair of tubular members. One tubular member contains a plunger which is used to cover and uncover, i.e., close and open, and also to seal off the opposite tubular member from the entry to the chamber, said other tubular member containing a volume for carrying an accurately measured quantity of the fluid and a plunger which is used to displace the fluid specimen to the chamber.

3,641,823
INJECTION DEVICE
Rano J. Harris, Sr., 1945 Carolyn Sue Drive, Baton Rouge, La., and Rano J. Harris, Jr., 9880 South Riveroaks, Baton Rouge, La.
Filed Apr. 10, 1970, Ser. No. 27,207
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 **10 Claims**

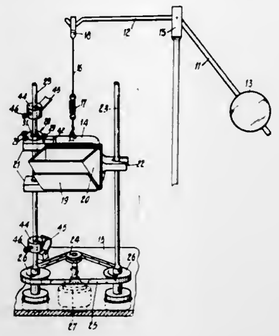


In combination, liquid injection apparatus comprising a tubular plastic member, e.g., Teflon, through the internal tubular opening of which the forward end of a reciprocable plunger, adapted for receipt of a specimen, can be extended into contact with, and for receipt of, a liquid to be sampled. Upon withdrawal of the forward end of the plunger through the tubular opening, with which the plunger surface is in wiping contact, a measured quantity of the liquid specimen is transmitted therethrough for storage or for injection, while unmeasured liquid is wiped off of, and removed from, the surface of the plunger. In preferred embodiments, the forward end of the reciprocable plunger itself is recessed or provided with an internal capillary opening of measured capacity for containing the measured liquid specimen, and in another a longitudinal slot, or slots, located within the internal opening of the tubular plastic member leaves an accurately measured, or measurable, streak of liquid on the surface of the plunger for storage or injection.

3,641,824
APPARATUS AND METHOD TO CONTROL DAMPING OF MOVABLE MEMBER IN MEASURING INSTRUMENTS
Fortuyn Koenraad Droogleever, Star Numanstraat 12, Groningen, Netherlands
Filed Mar. 20, 1969, Ser. No. 808,836
Claims priority, application Netherlands, Mar. 22, 1968, 6804090
Int. Cl. G01d *11/10*
U.S. Cl. 73—430 **4 Claims**

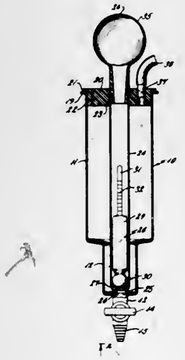
Static friction of a moving member which is guided by a shaft is eliminated by causing the shaft to rotate in a direction transverse to that of the moving member movement. The damping effected on the moving member is con-

trolled through variation of the resultant frictional force acting between the shaft and movable member, such variation



being effected by maintaining the friction component which resists rotation of the shaft substantially constant.

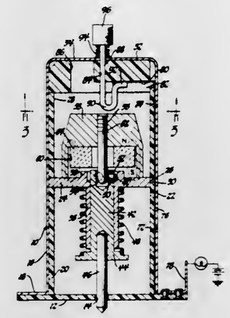
3,641,825
SPECIFIC GRAVITY URINOMETER
Ronald C. Reid, 4205 Enchanted Court, Nashville, Tenn.
Filed May 15, 1970, Ser. No. 37,830
Int. Cl. G01n *9/14*
U.S. Cl. 73—444 **3 Claims**



Apparatus for measuring the volume and specific gravity of fluids and including inner and outer generally concentric compartments arranged in such a manner that relatively small quantities of fluid can be measured with a high degree of accuracy.

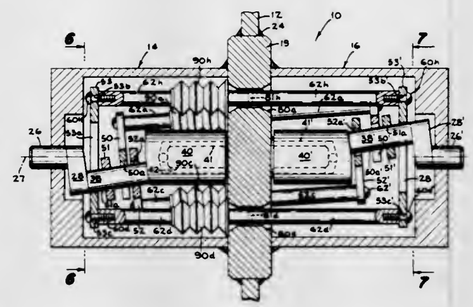
3,641,826
OMNIDIRECTIONAL SENSOR
Howard A. Heckendorf, Brookfield, and Donald A. Voorhies, Wauwatosa, both of Wis., assignors to General Motors Corporation, Detroit, Mich.
Filed May 8, 1970, Ser. No. 35,767
Int. Cl. G01p *15/02*
U.S. Cl. 73—514 **8 Claims**

An operator is slidably mounted in a guide tube and resiliently biased toward actuated position. A plurality of balls are received within radial bores in the operator which open to an axial bore. A control rod is moved within the bore to force the balls outwardly of the radial bores and into engagement with a radial shoulder of a support to retain the operator in nonactuated position. A seismic mass seats on the support and mounts a permanent magnet. The mass controls the movement of the pin out of the axial bore of the operator. The magnetic flux between the magnet and support maintains the seismic mass in seated position. An acceleration pulse of predetermined amplitude and time applied to the seismic mass tilts the mass relative to the support to move the pin out of the axial bore of the operator. When the pin is moved outwardly of the axial bore by tilting of the seismic



mass, the balls are released from engagement with the support shoulder for movement within the radial bores and movement with the operator to actuated position. A manual member is movable between a first position wherein it blocks tilting movement of the seismic mass and a second position wherein it it permits such movement. In the first position the manual member completes a circuit across a source of power and a light indicating that the sensor is in inoperative condition. In the second position, the manual member does not complete the circuit.

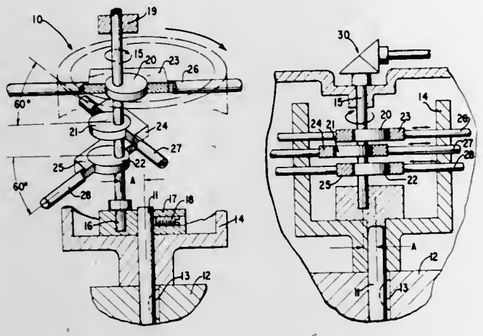
3,641,827
TORQUE TRANSMITTING APPARATUS
Gerald H. Hooper, 331 Galli Court, Los Altos, Calif.
Filed Apr. 22, 1970, Ser. No. 30,901
Int. Cl. F16j *15/52*
U.S. Cl. 74—18.1 **14 Claims**



Apparatus for the transmission of torque through a partition. The apparatus utilizes a plurality of torque rods driven respectively in a planar pivotal or a "seesaw" movement. The torque rods are driven by radially disposed links, which, in turn, are actuated by a pin. The pin is attached to one end of a crank arm and the other end of the crank arm is attached to a shaft. The pin rotates concentrically relative to axis of the shaft. The torque rods, in turn, rotate an arm at the opposite end in a rotary motion to operate a driven shaft. The

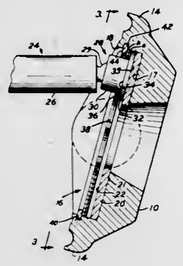
apparatus may be employed for the transmission of torque to or from hermetically sealed chambers.

3,641,828
ROTARY-LINEAR MOTION CONVERTER
John J. Ryan, 18 Ellwood St., Glen Cove, L.I., N.Y.
Filed Aug. 28, 1970, Ser. No. 67,944
Int. Cl. F16h *21/18*
U.S. Cl. 74—49 **4 Claims**



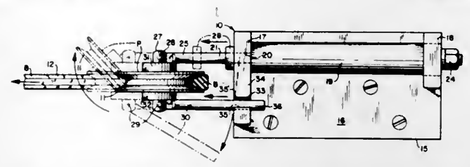
A rotary-linear motion converter has a rotatable housing and a shaft within the housing offset from the rotary axis thereof and having a number of journal or cam discs eccentrically fixed on the shaft. The journal discs are rotatably positioned within corresponding openings in a corresponding number of slide members which are slidably mounted in the housing for reciprocatory movement so that rotation of the shaft causes the slide members to reciprocate and to rotate the housing.

3,641,829
PISTON SHOE HOLDDOWN ASSEMBLY
David W. Reynolds, West Des Moines, Iowa, assignor to Delavin Manufacturing Co.
Filed Feb. 16, 1970, Ser. No. 11,441
Int. Cl. F01b *13/04, 3/02*
U.S. Cl. 74—60 **6 Claims**



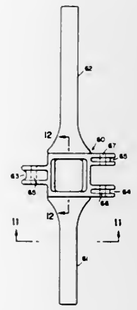
A piston shoe holddown assembly for maintaining the piston shoes of an axial piston fluid pressure device against the cam surface of the cam plate includes a holddown plate overlying a shouldered portion of the piston shoes and an annular groove about the circumference of a recess in the cam plate having a resilient retaining ring radially expanded into the groove and overlying the holddown plate.

3,641,830
SAFETY RELEASE FOR TENSIONER OF A BELT OR CHAIN DRIVE
Dwight D. Stofer, P.O. Box 116, Santa Clara, Calif.
Filed Aug. 31, 1970, Ser. No. 68,448
Int. Cl. F16h *7/08, 7/10*
U.S. Cl. 74—242.6 **5 Claims**



A release mechanism for a spring-loaded tensioning pulley or sprocket and a drive belt or chain by misalignment of the pulley or sprocket and disentrainment of the drive belt or chain relative thereto upon excessive tension developed thereto by insertion of an object between the latter and any pulley or sprocket over which it is trained.

3,641,831
LINK CONFIGURATION FOR DRIVE CHAIN
Karl V. Palmaer, 5643 Fair Oaks Boulevard, Carmichael, Calif.
Filed Mar. 16, 1970, Ser. No. 19,985
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 C **14 Claims**

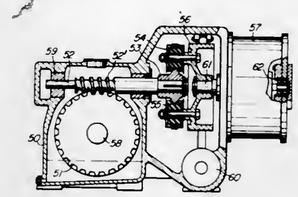


A configuration for the links of a drive chain is disclosed in which the link is a unitary body having projections formed thereon for connecting the links together by means of pintles passing through apertures therein to form a chain. The link body has a central recess formed therein for engagement with the teeth of a sprocket wheel. Various embodiments are described, in all of which the link body is provided with a cylindrical driving surface having its axis coincident with the axis of one of the apertures therein through which a pintle is passed to connect the link into the chain. Methods for and advantages of fabricating the link configuration in plastic are disclosed.

3,641,832
WORM-GEAR-TYPE SPEED REDUCTION DEVICE FOR AN ELEVATOR
Masayuki Shigeta, and Katsumi Aoki, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 20, 1970, Ser. No. 21,312
Claims priority, application Japan, Mar. 26, 1969, 44/22351
Int. Cl. F16h *1/16, 57/00;* **B66b** *11/04*
U.S. Cl. 74—427 **8 Claims**

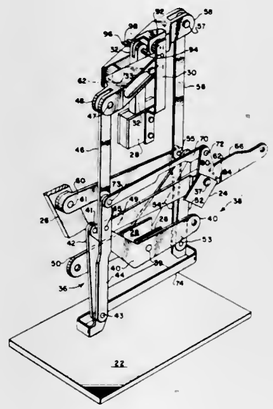
An elevator including a worm-gear-type speed reduction device which comprises a worm and a worm wheel, said device further including a resilient member for receiving a thrust load on the worm whereby the misalignment of the

gearing engagement between the worm and the worm wheel is converted into an axial displacement of the worm shaft and



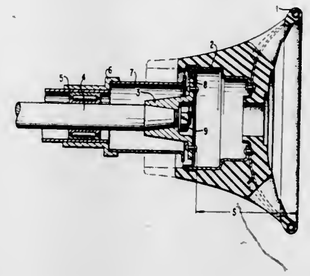
absorbed by said resilient member so that a vibration and noises of a cage caused by a fluctuation of rotation in the wheel shaft are prevented.

3,641,833
MECHANICAL AMPLIFIER
Max Maroshick, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Sept. 30, 1969, Ser. No. 862,288
Int. Cl. G05g *11/00;* **B64c** *13/28*
U.S. Cl. 74—479 **12 Claims**



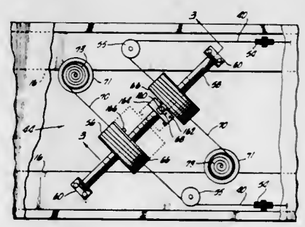
A mechanical amplifier is provided for use in a failure correction control system in which the amplifier receives two mechanical input signals during failure-free operation of the control system, and combines these signals to produce an output. The amplifier includes two mechanical channels which can comprise a series of pivotally connected links. Each channel includes an input element that receives a separate input signal and transmits this signal to an output member. Gain control means are connected to each channel to restore a full range of movement to the output member if one of the input signals is jammed. The gain control means increase the length of the output moment arm in the nonfailed channel. This increased moment arm increases the distance the nonfailed channel can move the output member and offsets the effect of the failed channel. The amplifier also includes disconnect failure accommodation means for maintaining a full range of output after a disconnect failure in the linkage supplying one input signal, or in one channel of the amplifier.

3,641,834
SAFETY STEERING ARRANGEMENT
Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 17, 1969, Ser. No. 867,275
Claims priority, application Germany, Oct. 19, 1969, P 18 04 034.1
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **28 Claims**



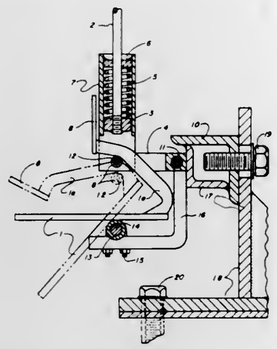
A safety steering arrangement for motor vehicles, especially for passenger motor vehicles in which the steering wheel is connected with the axially displaceably supported steering spindle by way of an unguided impact pot, and in which an axially deformable member is arranged about the steering spindle which is disposed with its one end face adjacent to the impact pot.

3,641,835
TENSIONING DEVICE
Harold Tornheim, 430 North Auburn Avenue, Sierra Madre, Calif.
Original application Aug. 1, 1968, Ser. No. 749,358, now Patent No. 3,522,894. Divided and this application Apr. 23, 1970, Ser. No. 31,073
Int. Cl. G05g *5/00*
U.S. Cl. 74—501.5 **5 Claims**



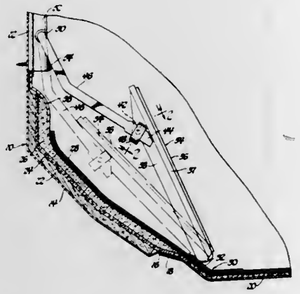
A tensioning device for maintaining a pair of coacting tension lines taut includes an elongated threaded shaft, and a pair of drums rotatably mounted on the shaft so they move axially relative to the shaft as they rotate. An end of each tension line is wound around a respective one of the drums, and a load imposed upon the other end of each line rotates the respective drums about the shaft. Biasing means rotationally bias each drum in a direction opposite to the direction of the torque imparted to the drums by the load so as to take up the slack in the tension lines to maintain them taut. Stop means limit rotation of the drums imposed by the load acting on the tension lines to limit the lengths of the tension lines that run out.

3,641,836
SPINDLE BRAKE ACTUATOR
Beryl Aaron Boggs, Chester, and Robert Ellis Quinn, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,917
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 2 Claims



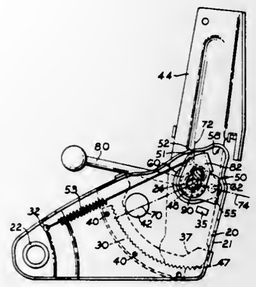
A spindle brake actuator is disclosed which utilizes force transmitted through a rotating foot lever or brake pedal and integral rotating cam to a traversing cam roller attached to means for transmitting the force to actuate the brake. The lever is locked in actuating position by engaging the traversing cam roller at an acute angle of the cam past center position relative to cam rotation. The actuator is released by kicking a toe plate attached to the cam.

3,641,837
VEHICLE ACCELERATOR PEDAL
Ralph Dean, Jr., Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 28, 1970, Ser. No. 76,102
Int. Cl. G05g *1/14*
U.S. Cl. 74—513 2 Claims



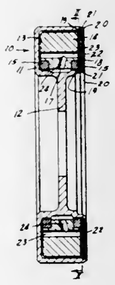
A vehicle accelerator pedal has its upper end pivoted to one end of a throttle linkage control member, the other end of which is pivoted to the vehicle firewall. The vehicle floor pan is welded to the firewall and supports a slide plate which is slidably engaged by the lower end of the pedal. As the pedal is moved from a raised position to a partially depressed position, where the engagement between the lower end of the pedal is aligned with the pivotal connections of the control member, the lower end of the pedal slides along the slide plate in one direction. As the pedal is moved from the partially depressed position to a fully depressed position, the lower end of the pedal slides along the slide plate in the opposite direction.

3,641,838
SEATS FOR VEHICLES
Harold Roy Turner, Walsall, England, assignor to H. R. Turner (Willenhall) Limited, Walsall, England
Filed Apr. 13, 1970, Ser. No. 27,770
Claims priority, application Great Britain, Oct. 24, 1969, 52,107/69
Int. Cl. G05g *5/06*
U.S. Cl. 74—530 5 Claims



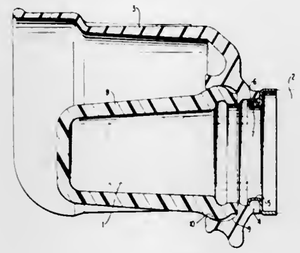
An automobile seat which may be adjusted to any angle, or if desired, folded flat to permit ingress or egress of a passenger in a rear seat. The seat includes a pair of arcuate toothed gear segments which may be selectively disengaged to permit adjustment of the seat back angle but which are normally biassed together by a spring to prevent catastrophic, accidental disengagement thereof.

3,641,839
VISCOUS TORSIONAL VIBRATION DAMPERS
Anthony P. Greeley, Elma, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,843
Int. Cl. F16f *15/10*
U.S. Cl. 74—574 10 Claims



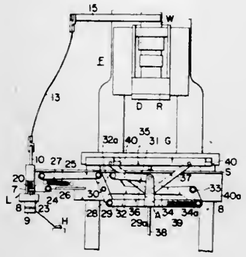
Viscous damping fluid is filled into a working chamber of a damper through a filling opening in the damper housing and conveyed to a reservoir through a passage in a relatively rotatable annular member mounted within the working chamber and the fluid then transferred from the reservoir to shear film spaces between working surfaces in parallel shear film spaced relation.

3,641,840
POWER TAKEOFF SHAFT PROTECTION
Heinrich Rossler, Baden-Baden, and Manfred Hentschel, Rotenfels (Murgtal), both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 20, 1969, Ser. No. 878,386
Claims priority, application Germany, Nov. 23, 1968, P 18 10 542.5
Int. Cl. F16p *1/02*
U.S. Cl. 74—609 10 Claims



A power takeoff shaft protection which essentially consists of elastic synthetic resinous material and which is mounted by means of an annular flange on a mounting ring provided at the bearing support of the power takeoff shaft.

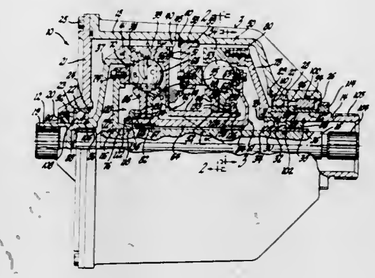
3,641,841
SAFETY GATE FOR PRESS
Masahiro Komori, Tokyo, Japan
Filed Mar. 13, 1970, Ser. No. 19,225
Claims priority, application Japan, Mar. 24, 1969, 44/21898; Sept. 10, 1969, 44/71268
Int. Cl. F16p *3/04*
U.S. Cl. 74—615 9 Claims



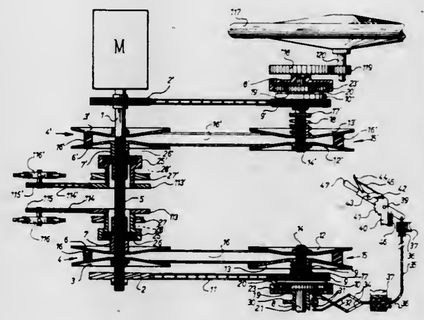
A safety gate held vertically in front of a press and a gate lift comprising a linkage system for moving the gate between a press exposing and a press blocking position. Spring means normally urge the lift into one of these positions, and a hydraulic motor or solenoid is connected to an initial link of the lift for normally urging the lift opposite thereto upon selective operation thereof.

3,641,842
ROLLER TRACTION DRIVE
Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 25, 1969, Ser. No. 879,701
Int. Cl. F16h *37/06, 13/06*
U.S. Cl. 74—665 K 15 Claims

A single input, contrarotating, equal speed reduction ratio, dual output roller traction drive mechanism, wherein the single input is effective from the input shaft to both the outer ring of a first friction gearing unit and split suns of a second friction gearing unit. A fixed but flexible reaction member is attached through the carrier of the second unit to split suns of the first unit. One output shaft is rotated by the carrier of the first unit, while the other output shaft is rotated by the outer ring of the second unit. Both friction gearing units include identical corresponding radii. Dual torque loader mechanisms vary internal preload in proportion to torque transmitted by causing the two outermost suns of the first and second split sun sets to move axially, with the members interconnecting the two friction gearing units and on portions of which the two sets of suns are mounted flexing in response to the axial movement of the two outermost suns to permit a corresponding axial movement of the two innermost suns.

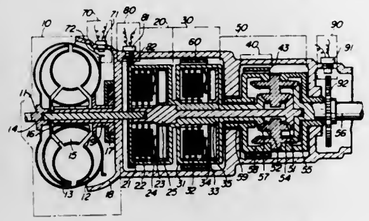


3,641,843
VARIABLE-SPEED TRANSMISSION
Jospeh Lemmens, 616 Boisvert Street, #6, St. John, Quebec, Canada
Filed Sept. 22, 1969, Ser. No. 859,689
Int. Cl. F16h *33/02, 37/02*
U.S. Cl. 74—751 6 Claims



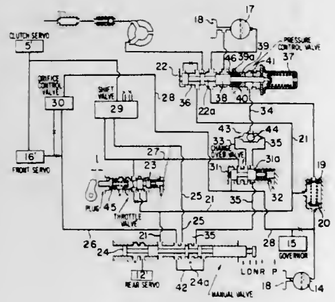
Various applications or embodiments of a variable speed transmission concept wherein a variable speed drive and a proportional speed drive are operatively connected to a differential gear arrangement, such that variation of the speed ratio of the variable speed drive causes variation of the speed of an output shaft connected to the differential gear arrangement, said variable speed drive comprising a pair of variable diameter pulleys operatively interconnected by a belt. The variable speed transmission is combined with a flywheel to conserve and/or recuperate energy.

3,641,844
AUTOMATIC TRANSMISSION SYSTEM
Hisato Wakamatsu, Kariya-shi; Takaaki Kato, Toyohashi-shi; Mamoru Kawakubo, and Katsunori Ito, both of Kariya-shi, all of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan
Filed Sept. 16, 1969, Ser. No. 858,300
Claims priority, application Japan, Oct. 28, 1968, 43/78388
Int. Cl. F16h 5/42, 19/00
U.S. Cl. 74—752 4 Claims



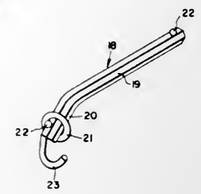
An automatic transmission system having a speed changing unit including a torque converter and speed-changing gear means, actuators for varying the meshing engagement of the gears, a hydraulic circuit for controlling the actuators, and an electronic circuit. In the apparatus, the electronic circuit computes the ratio between the rotating speed of the input shaft of the torque converter and the rotating speed of the input or output shaft of the speed-changing gear means to deliver an output signal which is used to actuate a distributing valve in the hydraulic actuating circuit to effect the changing of speed.

3,641,845
OIL PRESSURE CONTROL DEVICE FOR FLUID-TYPE AUTOMATIC TRANSMISSION
Sumio Uozumi, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed July 22, 1969, Ser. No. 843,509
Claims priority, application Japan, July 23, 1968, 43/51630
Int. Cl. B60k 21/00
U.S. Cl. 74—867 4 Claims



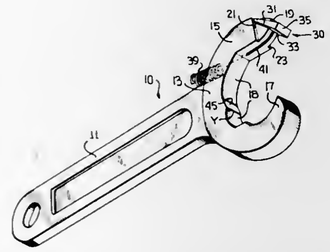
The present invention provides an oil pressure control device for an automatic transmission of vehicles, in which an oil pressure proportional to the opening of the throttle is applied through the aid of springs to the pressure control valve for controlling the pressure acting on the servosystems. The oil pressure is increased to a prescribed level in proportion to the throttle opening, but once at that level, the oil pressure is maintained constant regardless of any additional increment of the throttle opening, so as to improve the operation and efficiency of the transmission without changing the throttle pressure Pth.

3,641,846
FIREMEN'S WRENCHLIKE TOOL
Peter J. Prial, 3-36 148th Street, Whitestone, N.Y.
Continuation-in-part of application Ser. No. 867,311, Oct. 17, 1969, now abandoned. This application May 13, 1971, Ser. No. 142,906
Int. Cl. B25b 13/50
U.S. Cl. 81—90 F 2 Claims



A tool, possessing particular utility for firemen, is formed from a one-piece, rigid bar having a straight lever body portion with opposing ends, on one of which is an integral, obtusely angularly arranged end portion. The lever body and angular end portions have complemental, angularly disposed inner sides that straddle the periphery of a spoked hand valve wheel and engage it tangentially at circumferentially spaced fulcrum points. A hook element normally operatively depends from the angular end portion to engage a spoke and the opposite end of the lever body portion serves as a handle to which torque is applied in turning the handwheel.

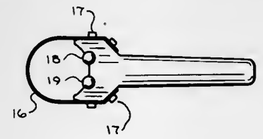
3,641,847
OPEN END RATCHET WRENCH
Billy M. Horton, 3238 Rodman St., Washington, D.C.
Filed Nov. 7, 1969, Ser. No. 874,875
Int. Cl. B25b 13/28, 13/12
U.S. Cl. 81—111 11 Claims



An open end ratchet wrench is made from three parts: The wrench body, a single ratcheting pawl, and a spring actuator for retaining the pawl in its operating position and actuating the pawl to permit insertion of a nut. In one embodiment the pawl is pivotally mounted about the end of one wrench jaw between drive and open positions. This wrench is provided with three drive surfaces for contacting the nut during drive operation, including the drive surface of the pawl, the inner surface of the jaw opposite the pawl, and a projection from the working surface between the jaws contoured to contact the nut approximately 120° from the other two contact points. The working surface is further contoured to provide room for the pawl to swing clear from the nut during ratcheting and to permit the nut to contact as much of the working surface as possible during ratcheting. In a second embodiment, the pawl is both pivotable and slidable with respect to a slot in the wrench jaw and has two drive surfaces for engaging a nut in two different nut positions relative to the wrench jaws. In this embodiment the working surface is contoured to

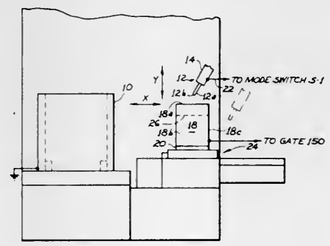
accommodate the nut in both of its drive positions and provides three-point drive contact in at least one of these positions. Moreover, the adjacent surfaces of the pawl and wrench jaw are contoured to prevent binding of the pawl during ratcheting, irrespective of the point about which the wrench is rotated. In yet another embodiment two drive positions of the nut are made possible without the necessity of a pawl actuator to permit nut insertion by providing two pawls, rotatable about opposite jaws, and arranged so that each has its drive surface contacting the nut in a respective one of the nut drive positions. With the pawls in their normally retracted position the wrench jaws may be slipped over a nut head.

3,641,848
CYLINDRICAL NUT AND WRENCH
George W. Franks, 2619 East Prince Road, Tucson, Ark.
Filed June 30, 1969, Ser. No. 837,462
Int. Cl. B25b 13/04
U.S. Cl. 81—121 B 1 Claim



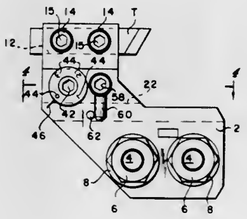
My invention relates to a new and improved type of cylindrical nut having an outer scalloped periphery and an improved wrench which has mating means including a pin to provide operative engagement with the cylindrical nut. The pin being located near the arcuate surface of the wrench, and having its center offset beyond the arcuate surface a distance proportional to the pin diameter in the order of one-sixth of the pin diameter to provide optimum design to all elements of the mating means.

3,641,849
METHOD AND APPARATUS FOR CALIBRATING THE POSITION OF A TOOL AND FOR GAUGING THE DIMENSIONS OF A WORKPIECE
John M. Kinney, Cortland, Ohio, assignor to The American Welding & Manufacturing Company, Warren, Ohio
Continuation-in-part of application Ser. No. 776,389, Nov. 18, 1968. This application Aug. 13, 1970, Ser. No. 63,620
Int. Cl. B23b 3/20
U.S. Cl. 82—1 28 Claims



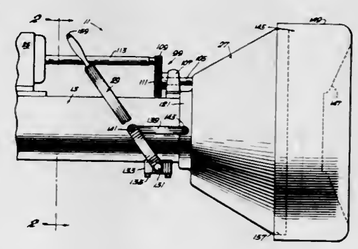
In a machine tool, a calibration and gauging system comprising drive means for moving a tool or inspection probe to a commanded position which is beyond a calibration position. The calibration and gauging system also includes circuitry for developing a transfer signal when the tool or inspection probe has arrived at the commanded position and a "false" transfer signal when the tool or probe has arrived at the calibration position. The transfer signals initiate the next sequence of the machine tool program.

3,641,850
ADJUSTMENT FOR TOOL HOLDERS
Anders A. Peterson, Elmira, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Continuation-in-part of application Ser. No. 713,057, Mar. 14, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 884,784
Int. Cl. B23b 29/10
U.S. Cl. 82—36 11 Claims



This invention relates to a device for adjusting a machine tool through extremely small increments of movement by means of a micrometer dial attached to an adjusting screw. Rigidity of the tool is maintained, after adjustment, by a lock bolt which prevents movement of the tool-holding part relative to its base. The lock bolt includes an adjustment means attachable to the lock bolt for regulating locking pressure. Between the lock bolt and the tool-holding part is positioned a spring for maintaining a constant minimum pressure along the axis of movement of the tool-holding part for eliminating backlash in component parts of the tool-holding part when direction of the cutting tool movement is reversed.

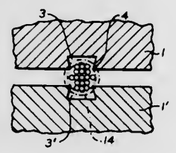
3,641,851
PIPE-CUTTING APPARATUS
James W. Gibbs, 8027 West 14th Ave., and John L. Gibbs, 14820 Miami Lakeway East, both of Hialeah, Fla.
Filed Oct. 13, 1969, Ser. No. 865,767
Int. Cl. B23b 5/14
U.S. Cl. 82—73 6 Claims



Apparatus for transversely cutting and severing lengths of pipe or rod work stock material and having a tubular frame adapted to endwise receive a length of pipe stock to be cut. A plurality of clamping jaw assemblies is stationarily supported in radial arrangement on the tubular frame and provides spring-loaded jaw means radially projecting into the tubular frame interior for clamping and centering the pipe work stock in the tubular frame. A cutter head having radially arranged cutter jaw assemblies is supported on one end of the tubular frame and is rotatingly driven to form a groove around the pipe wall for severing the pipe stock at the grooved portion. A crowder element having frustoconical in-

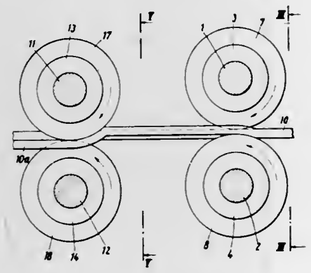
terior cam surface means is movably mounted concentrically on the tubular frame and is adapted for translational movement longitudinally of the frame. Movement of the crowder element in one direction is operative through the frustoconical cam surface means thereof for simultaneously causing radial endward movement of the plurality of clamping jaws and the plurality of cutting jaws for respectively clamping and cutting the pipe stock material. Movement of the crowder element in the opposite direction is operative for causing radial outward movement of the plurality of clamping and cutting jaws and for releasing the pipe stock from the tubular frame of the cutting apparatus.

3,641,852
STRIPPING METHOD AND APPARATUS FOR INSULATED COVERED WIRE AND CABLE
Manzo Terada, Kitakatsuragi-gun, Nara Prefecture, Japan, assignor to Nissho Iwai Company Limited, Osaka, Japan
Filed Oct. 24, 1969, Ser. No. 869,307
Claims priority, application Japan, Nov. 12, 1968, 43/82719
Int. Cl. H02g *1/12*
U.S. Cl. 83—1 **5 Claims**



A stripping device and method for insulated covered wire and cables, providing an automatic and continuous stripping apparatus for perfect recovery of the metal core from various wires or cables which are different in size and construction, providing a forced pressure to the insulation cover at the place where four angle parts are formed in each pair of oppositely facing concave grooves which are engraved with different widths in the outer peripheral surfaces of a pair of rotatables facing rollers, insuring the stripping to be performed.

3,641,853
PROCESS AND APPARATUS FOR THE CUTTING OF MATERIAL
Manfred Jungbeck, Plettenberg, Germany, assignor to Kallwalzwerke Brockhaus GmbH, Plettenberg, Bahnhof, Germany
Filed Feb. 10, 1969, Ser. No. 797,743
Claims priority, application Germany, Oct. 31, 1968, P 18 06 305.3
Int. Cl. B26d *3/08;* **B23d** *19/04*
U.S. Cl. 83—7 **9 Claims**



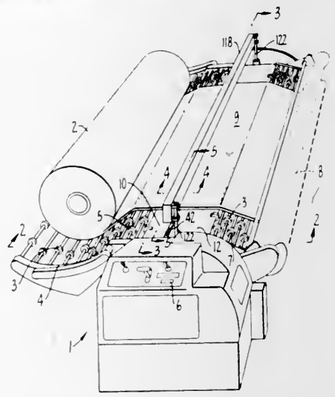
In the cutting of material to sever a first part thereof from second part thereof along a path in the material, the steps of

a. offsetting by shearing said first part from said second part along with said path, to only partially cut said first part from said second part, and to displace said first part in elevation from said second part, and thereafter

b. cutting said first part from said second part to sever the first and second parts by shearing along said path to displace said first part in elevation from the second part in the direction opposite to the displacement of said first and second parts effected in step (a).

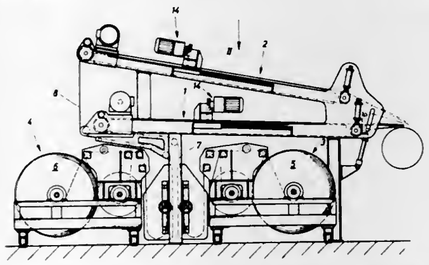
The process, and also apparatus for practicing the process are claimed.

3,641,854
CARPET-CUTTING APPARATUS AND METHOD
Clifford E. Keesling, San Jose, Calif., assignor to Functional Systems Corporation, Santa Clara, Calif.
Filed Dec. 14, 1970, Ser. No. 2,728
Int. Cl. B26d *7/14, 7/02*
U.S. Cl. 83—18 **2 Claims**



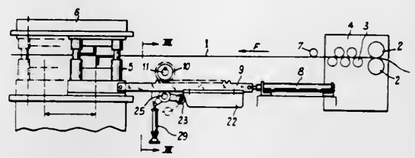
A sloping edged-cutting blade is mounted in a horizontally moving carriage so as to effect a transverse cut on carpet and related materials from below. A pair of overheat mounted parallel combs hold the material on both sides of the cutting channel. The leading edge of the blade carrier is raised so as to push up on the material before the blade reaches the material.

3,641,855
DEVICE FOR CUTTING CORD WEBS OF PNEUMATIC TIRES
Walter Balle, Dornigheim/Kreis, Hanau, assignor to Leonhard Herbert Maschinenfabrik, Dornigheim/Kreis, Hanau, Germany
Filed May 12, 1970, Ser. No. 36,638
Claims priority, application Germany, May 13, 1969, P 19 24 355.1
Int. Cl. B26d *7/10, 7/26*
U.S. Cl. 83—171 **20 Claims**



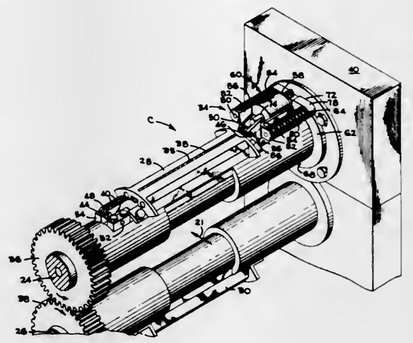
A device for cutting through cord webs for the production of pneumatic tires having cutters in a blade holder with a driving mechanism for the displacement of the cutters and a mechanism for transpiercing the cord webs with the cutter points.

3,641,856
CUTTING MACHINES
Marcel Louis Levy, Joffre, batiment K, Garches, France
Filed July 14, 1970, Ser. No. 54,757
Claims priority, application France, July 18, 1969, 6923649
Int. Cl. B23d *25/16*
U.S. Cl. 83—295 **3 Claims**



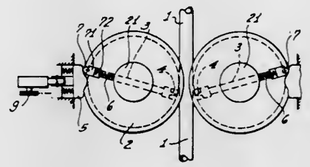
The cutting tool is reciprocated and the strip or sheet of material is continuously advanced by drive members in such a manner that the period of acceleration of the cutting tool to the same speed as that of the strip is constant from one cycle to another.

3,641,857
ROTARY CUTTING HEAD FOR WRAPPING MACHINE
Jerome J. Vande Castle, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 22, 1970, Ser. No. 5,077
Int. Cl. B26d *1/28*
U.S. Cl. 83—322 **2 Claims**



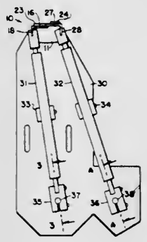
A rotary cutting head for severing the packaging material webs in a wrapping machine includes an elongate saw type of knife blade mounted with parallelogram linkage on one of the cutting head shafts. A face cam, coaxial with the shaft, actuates a spring biased cam follower that is connected to the knife blade. The spring(s) during each revolution of the knife blade are sequentially armed by the cam, and then triggered or released to provide an instantaneous power impulse that rapidly swings the knife blade through the web.

3,641,858
APPARATUS FOR CUTTING PIECES OF PREDETERMINABLE LENGTH
Eckhard Osnabrueck Tuschy, and Theodor Niggemann, both of Sutthausen, Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Jan. 26, 1970, Ser. No. 5,669
Claims priority, application Germany, Jan. 9, 1969, P 19 00 873.2
Int. Cl. B26d *1/28*
U.S. Cl. 83—337 **5 Claims**



A device for cutting elongated workpieces is disclosed in which the cutters rotate continuously. The cutters are disposed in discs having grooves for guiding the workpiece. The cutters are actuated through cams and cam followers. When the cutters are in cutting position the cam followers, coupled to the cutters, are in the operating range of the cams, and the latter may cause protraction of the cutters for cutting.

3,641,859
FILAMENT CUTOFF AND HOLDING HEAD
John M. Bishop, Orange, and Emmett F. Simon, Garden Grove, both of Calif., assignors to The Conolon Corporation
Filed Mar. 2, 1970, Ser. No. 15,727
Int. Cl. B23d *31/00*
U.S. Cl. 83—566 **4 Claims**

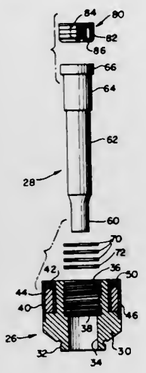


In a rod-wrapping machine moving a filament supply about a rod to be wrapped, an improved filament cutoff and holding head is provided with an L-shaped slidably mounted grab which is moved by a double acting air cylinder to extend under a final turn of the wrapping and then be retracted to cutoff the filament against a knife edge and clamp the filament adjacent to the knife edge. The head has a filament positioner which pushes the clamped filament away from the head at the start of a winding cycle. A diaphragm overrides the double acting cylinder to slightly move the grab and release the filament.

3,641,860
PUNCH RETAINER ASSEMBLY

Lawrence V. Whistler, Sr., 259 Doncaster Road, and Lawrence V. Whistler, Jr., 251 Doncaster Road, both of Kenmore, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,914
Int. Cl. B26f 1/14
U.S. Cl. 83—686 9 Claims

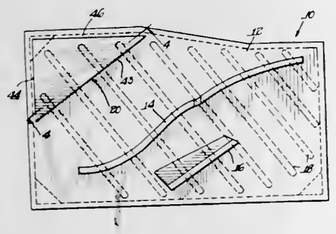


A punch retainer has a bore formed completely therethrough including a first portion and a second portion of greater cross-sectional dimension than the first portion, the second bore portion being threaded. A button head type punch includes a body received in the first bore portion and an enlarged head which is received in the second bore portion. Backup means in the form of a threaded plug is threaded within the second bore portion and engages the head of the punch to positively hold the punch in position and to prevent relative axial movement of the punch with respect to the retainer. A plurality of annular spacer members are positioned between the head of the punch and an annular shoulder formed in the punch retainer.

3,641,861
TONE-BALANCING ELEMENT

Clifford W. Andersen, De Kalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.

Filed June 1, 1970, Ser. No. 41,978
Int. Cl. G10c 3/06
U.S. Cl. 84—192 6 Claims

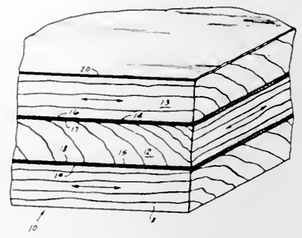


A laminated piano soundboard includes a treble and bass bridge for transmitting vibrations from the piano strings and a plurality of spaced-apart ribs for localizing the vibrations at the center, prime resonating area of the soundboard. Since the laminated character of the soundboard tends to inhibit localization thereby adversely effecting its tonal quality, a tone-balancing element is provided for assuring enhanced resonance.

3,641,862
STRING INSTRUMENT CONSTRUCTION

Stanley E. Rendell, Kalamazoo, Mich., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed June 16, 1970, Ser. No. 46,629
Int. Cl. G10d 3/00
U.S. Cl. 84—291 11 Claims

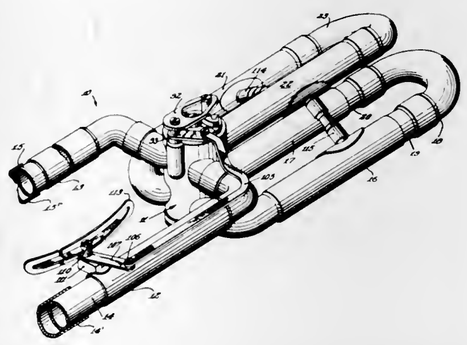


A musical instrument has a laminated wood construction including three layers of wood bonded together, there being a fine layer of metal between the layers of wood.

3,641,863
MUSICAL INSTRUMENT VALVE CONSTRUCTION

Zigmant J. Kanstul, Anaheim; Gregory F. Quinn, Garden Grove, both of Calif., assignors to Chicago Musical Instrument, Co., Lincolnwood, Ill.

Filed Feb. 18, 1970, Ser. No. 12,188
Int. Cl. G01d 9/04
U.S. Cl. 84—390 27 Claims



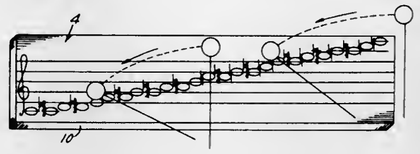
A slide assembly for a brass wind musical instrument includes a rotary valve which may be selectively manipulated to render the instrument playable in a plurality of different musical keys. The slide assembly may be serially interposed in the fluid passage of an instrument, such as a bass trombone or a bugle, by replacing a tuning slide of the instrument. The rotary valve includes a casing having six ports therein which terminate one end of an inlet tube, one end of an outlet tube, both ends of the third tube and both ends of a fourth tube. The third and fourth tubes each include a tuning slide and are selectively connected in series with the inlet and outlet tubes by operation of the rotary valve to define the total length of fluid flow through the valve assembly as, accordingly, the musical key of the instrument. The slide assembly has pivotally mounted thereon a T-shaped handle which is connected to the rotary valve by way of a lever assembly. The rotary valve is biased to normally render the instrument playable in a predetermined key and to return the valve to the corresponding predetermined position upon

release of the handle from a position corresponding to any of the other musical keys.

3,641,864
MUSICAL INSTRUMENT

Jose Jakubovicz, c/o Custodio de Almeida & Cia., P.O. Box 3386-ZC-00, Rio de Janeiro, Brazil

Filed July 14, 1969, Ser. No. 841,339
Int. Cl. G09b 15/04
U.S. Cl. 84—470 11 Claims

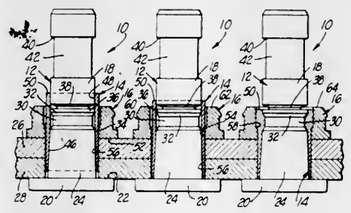


A musical instrument comprises sonorous bars arranged in sequence of pitch in the chromatic or diatonic scale. Above the bars is replaceably mounted a flexible band of material with a musical staff and musical notes indicated on the staff. The notes correspond to respective bars, and the notes are manually struck with a hammer to strike the bar therebeneath and produce a tone corresponding to the note indicated in the staff on the band.

3,641,865
SEALING SHEAR FASTENER

Joseph K. Swindt, Manhattan Beach, and Erwin S. Oelke, Cypress, both of Calif., assignors to Blake Rivet Co., South Gate, Calif.

Filed Apr. 20, 1970, Ser. No. 29,923
Int. Cl. F16b 19/05, 39/02
U.S. Cl. 85—7 7 Claims



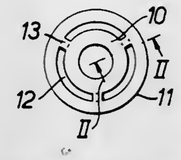
A sealing shear fastener comprises a three-part structure arranged for interengagement for joining pieces or for filling a hole. The structure includes a main body having a head and a stem, a retainer, and a ductile sleeve, wherein the ductile sleeve is adapted to be deformed against abutments on the stem and on the retainer to interlock the retainer with respect to the stem.

3,641,866
TUBULAR ANCHORING MEMBER

Louis Aackersberg Mortensen, Petersholm Hillerduej 1, 3480 Fredensborg, Denmark

Filed Feb. 6, 1970, Ser. No. 9,276
Claims priority, application Denmark, Feb. 7, 1969, 664/69
Int. Cl. F16b 13/06
U.S. Cl. 85—72 5 Claims

A tubular anchoring member, such as a dowel, an expansion bolt or the like for mounting in a bored hole and for cooperating with a screw, a bolt or a similar fastening member and having at one end a collar or flange connected to the said end of the tubular member by means of one or more breakable connecting parts. The said connecting part or parts extend(s) radially beyond the cross section of the tubular member and the inner edge of the collar or flange encircles an annular uncovered area of said cross section. When the tubular member is mounted in a bored hole in a

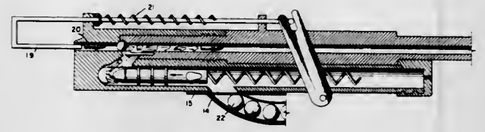


wall with the flange abutting the outer surface thereof the flange or collar may conveniently be separated from the tubular member by exerting a pressure or a blowing action to the exposed or uncovered annular part of the end of the tubular member by means of a suitable tool.

3,641,867
REDUCED RECOIL CASELESS CARTRIDGE MACHINE GUN

Ralph Daniel Junker, 33 North Main St., Southampton, N.Y.

Filed Mar. 11, 1970, Ser. No. 883,416
Int. Cl. F41d 11/06, 11/14
U.S. Cl. 89—1.704 3 Claims



A forward flow, chamber-gas-pressure-actuated automatic firearm employing caseless ammunition and nonmoving barrel. Chamber bolt blown forward parallel to the bore, permitting antirecoil gas thrust and counterrecoil impact of parts operating forward opening breech mechanism in the form of a gas check ball valve. Provides for accelerated autoloading of projectile and subsequent feeding of solid propellant charge in such a manner that the projectile is seated in the bore and the breech sealed before the front-loading charge is delivered to the ignition portion of the chamber.

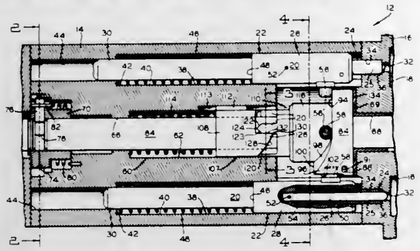
3,641,868
FIRING MECHANISM FOR A MULTISHOT ROCKET LAUNCHER

Frederick P. Reed, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army

Filed July 14, 1970, Ser. No. 54,722
Int. Cl. F41f 3/04
U.S. Cl. 89—1.813 7 Claims

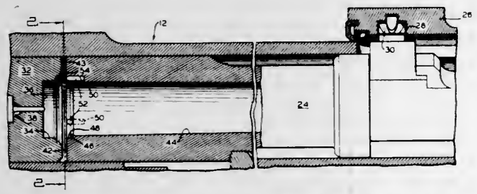
A trigger-actuated firing mechanism for a multishot rocket launcher comprises in association with each rocket a firing pin with a roller arranged for cam engagement by a trigger-rotated cam rotor to retract and release for rocket primer impact the related firing pin, and disposed in cooperation with the cam rotor is an antihang-up device including a spring-biased driving member actuatable against a driven member connected to the cam rotor to effect counterrotation thereof, and thereby return the firing pin engaged by the cam rotor back to its normal position, if trigger pressure is released before the retraction and release of the firing pin is completed. Means are provided for mounting the cam rotor for limited free rotation on the supporting shaft whereby the cam rotor is accelerated in the direction of rotation sufficiently, by the

camming engagement of the cam lobe peak with the circumference of the roller when the cam lobe peak is moved past



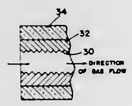
the center of the engaged roller, to release the roller and assure immediate impact of the related firing pin against the associated rocket primer.

3,641,869
CARTRIDGE CHAMBER STRUCTURE TO COMPENSATE FOR VARIABLE HEADSPACE
James F. Buchanan, Corona Del Mar, and Clifford E. La Fever, Mission Viejo, both of Calif., assignors to The United States of America as represented by the Secretary of the Army
Filed June 9, 1970, Ser. No. 44,837
Int. Cl. F41c *21/12*; **F41f** *17/00*
U.S. Cl. 89—14 R **6 Claims**



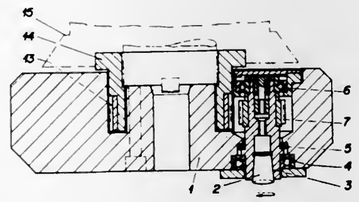
In an automatic gun wherein the headspace varies with the thermal elongation of the barrel during firing operation, the barrel chamber is provided with at least three control pins which are disposed parallel to the longitudinal axis of the chamber so as to act simultaneously upon the rim of the chambered cartridge to compensate by indentation of the rim for the variations in headspace and assure positive zero space between the cartridge and breechblock throughout the range of headspace variations and greater than zero space between the barrel and breechblock when the gun is in battery.

3,641,870
SHINGLE-WRAP LINER FOR A GUN BARREL
Merrill Eig, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army
Original application Sept. 3, 1968, Ser. No. 756,832, now abandoned. Divided and this application June 4, 1970, Ser. No. 57,409
Int. Cl. F41f *17/08, 17/04*; **F41c** *21/00*
U.S. Cl. 89—15 **3 Claims**



Completely nonmetallic gun tube having excellent hot gas erosion resistance, lightness in weight, and being economical to fabricate, the gun tube liner being made of strips or tapes of double-biased, unidirectionally-oriented, nonwoven fiberglass filaments bonded together with a high-temperature epoxy resin. The strips are wrapped to form the inner liner of the gun barrel, the strips making an angle with the bore of the gun to form an edge grain effect or shingling, which effect results in optimum resistance to gun tube erosion and wherein high deformation under load is provided, and processes therefor.

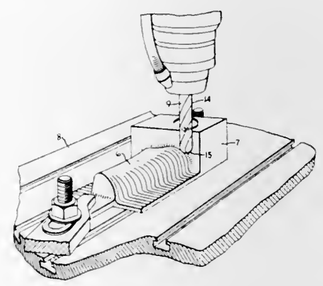
3,641,871
MILLING TOOL
Istvan Vig, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed July 15, 1969, Ser. No. 841,700
Claims priority, application Switzerland, Oct. 29, 1968, 16097/68
Int. Cl. B23c *5/00*
U.S. Cl. 90—11 A **3 Claims**



A milling tool structure comprises a rotatable milling head which carries a cutting tool having a circular cutting edge. A power takeoff derived from rotation of the milling head is used to impart a relatively slower rotation to the cutting tool so as to present a continuously changing cutting point on its circular cutting edge to the work.

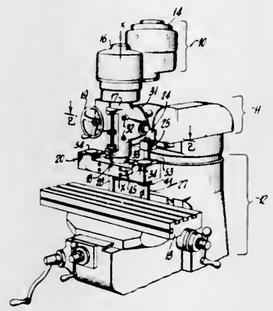
The power takeoff can be in the form of a worm-type of drive or planetary-type of drive.

3,641,872
PRODUCING A CURVED SURFACE WITH NUMERICALLY CONTROLLED MACHINE TOOL
Christer Ulfhielm, Saab Aktiebolag, Linkoping, Sweden
Filed Dec. 15, 1969, Ser. No. 884,782
Int. Cl. B23c *1/16*
U.S. Cl. 90—13 C **3 Claims**



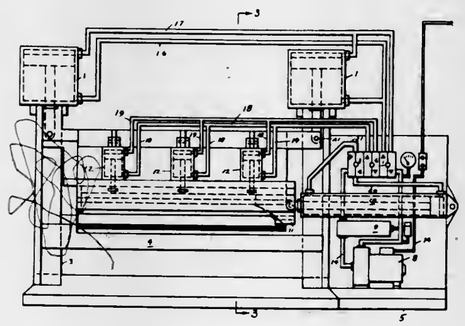
For machining a surface having compound curvature by means of a numerically controlled machine tool, a rotary cutting or grinding tool is used. It has a convex working surface that has the same circular profile on any radial plane through the tool's rotational axis, which profile, on every such plane, has the same radius *r* about a center which has the same location relative to the tool axis. Machining is planned in terms of an imaginary reference surface which is at *r* distance from the desired surface as measured along outward normals to the desired surface at every point thereon. Said center in the tool is maintained in coincidence with the reference surface during machining. Various methods of determining the reference surface are disclosed.

3,641,873
MILLING MACHINE WITH MULTIPLE-SPINDLE ATTACHMENT
David E. Jacques, Waterbury, Conn., assignor to Waveline, Inc., West Caldwell, N.J.
Filed May 15, 1970, Ser. No. 37,709
Int. Cl. B23c *1/08*; **B23b** *39/16*
U.S. Cl. 90—14 **13 Claims**



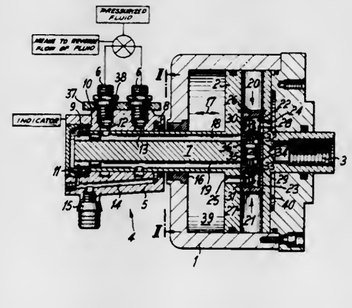
An adapter for converting a vertical single-spindle milling machine to a machine capable of simultaneously performing a number of milling operations. The adapter, which includes at least one auxiliary spindle, fits upon the quill and is supported by guide rods mounted to the frame of the machine and to the adapter. Means are provided to transmit motion from the vertical miller spindle to the adapter-auxiliary spindle, and to stabilize the auxiliary spindles so that they are unaffected by the rotation of the quill about its own axis.

3,641,874
CHAMFER CUTTER
Frank G. Rick, 114 Gilfillen St., Franklin, Pa.
Filed June 18, 1970, Ser. No. 47,190
Int. Cl. B23d *1/08*
U.S. Cl. 90—38 **6 Claims**



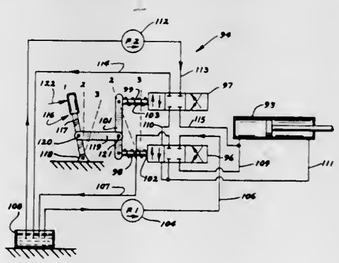
A machine for cutting chamfers on the edges of elongated workpieces such as plates, structural members, and the like. The machine is made up of a support, with a means for supporting the workpiece, a track support for carrying a cutter, and a cutter carried on the track. The cutter has one generally flat side which will cut burs off along the edge of a plate and an inclined cutting surface which will cut the chamfer, thus eliminating burning losses and the expense of burning chamfers.

3,641,875
OMNIDIRECTIONAL PRESSURIZED HYDRAULIC AND PNEUMATIC FLUID-ACTUATED PISTON-TYPE POWER MEANS FOR OPERATING MECHANISMS, SUCH AS A CHUCK, BY RECIPROCATING LINEAR MOVEMENTS, OMNIDIRECTIONALLY, WITHIN ANY PLANE
Rudi Kodalle, Sontheim am Brenz, Germany, assignor to Rohm-Gesellschaft m.b.H. Werkzeug- und Maschinenfabrik, Sontheim am Brenz, Germany
Filed Jan. 23, 1970, Ser. No. 5,305
Claims priority, application Germany, Mar. 7, 1969, P 19 11 558.3
Int. Cl. F01b *31/12*; **F15b** *13/042*
U.S. Cl. 91—1 **9 Claims**



A hydraulically or pneumatically controlled apparatus for operating a chucking tool on a lathe or other machine tool for clamping and releasing workpieces. Due to its particular structure and especially the particular design and arrangement of its check valves, this apparatus takes up a very small space, and the axial movements of its piston are transmitted to the outside and may be employed for controlling the operations of the machine tool.

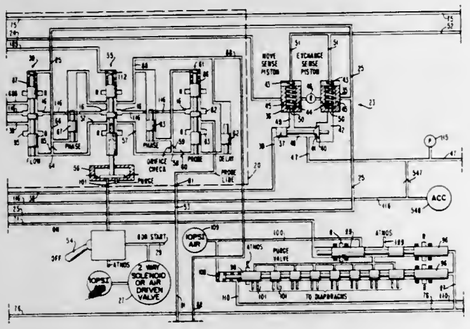
3,641,876
TWO-SPEED HYDRAULIC CONTROL SYSTEM
Charles W. Wienke, North St. Paul, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.
Filed Nov. 12, 1969, Ser. No. 875,746
Int. Cl. F01b *25/02*; **F15b** *9/03*
U.S. Cl. 91—6 **9 Claims**



A backhoe having a stick cylinder and bucket cylinder selectively operable with a hydraulic control system having separate pumps to supply hydraulic fluid under pressure to the stick and bucket cylinders. Each pump delivers hydraulic

fluid to a primary valve which gives the pump priority to a single cylinder. A second valve is operable to combine the hydraulic fluid output from both pumps to a single cylinder, thereby increasing the speed of operation of the cylinder. When both cylinders are operated at the same time, each cylinder receives the hydraulic fluid from its priority pump. An air control system, operable with high and low air pressure, is used to selectively operate the hydraulic control system.

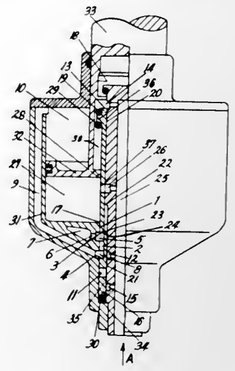
3,641,877
FLOW-SENSING SYSTEM AND VALVE
Roland C. Hebert, New Windsor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 14, 1969, Ser. No. 824,425
Int. Cl. F15b *15/26, 11/18*
U.S. Cl. 91—44 **10 Claims**



A digital hydraulic system converts binary digital input information into displacement of a digital drive. An air reader is used to operate binary latch valves through an air hydraulic interface. A flow-sensing system and a hydraulic logic unit cooperate to provide high-speed exchange between the piston adders of the digital drive prior to displacement of the load. A hydraulic cylinder sweeps the load about a vertical axis. A self-cooling, air-driven hydraulic pump with an accumulator provides relatively constant pressure. A damper secured to the piston adders has an additional drive for providing precise location at the end of damping. An incremental paper tape feed with a four motion rack with toggle action operates the air reader.

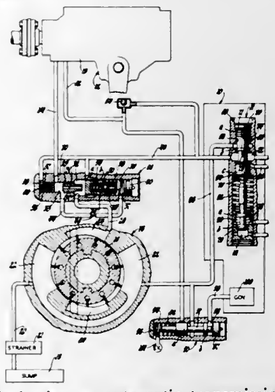
3,641,878
COMPRESSED LIQUID ENGINE OR PUMP
Witold Rozwadowski, ul. Strzeleckon 10, and Aleksander Szymanski, ul. Devtymy 48, both of, Warszawa, Poland
Filed Feb. 5, 1969, Ser. No. 832,513
Claims priority, application Poland, Feb. 9, 1968, P 125,133; June 26, 1968, P 127,741; P 127,742; July 24, 1968, P 128,283; Oct. 11, 1968, P 129,474
Int. Cl. F01l *21/04, 23/00*; **F04b** *7/00*
U.S. Cl. 91—222 **18 Claims**

In a fluid operated device, a novel timing system which is formed by a fixed hollow mandrel mounted in a working cylinder with a timing sleeve and a piston mounted on the mandrel and within the cylinder. Compressed fluid is fed axially through the mandrel and through radial ports therein, which ports are selectively opened and closed by the timing sleeve sliding on the mandrel. The timing sleeve is provided



with catches acting on corresponding catches on the piston to move the timing sleeve in response to piston movement.

3,641,879
CENTRAL HYDRAULIC SYSTEM FOR A VEHICLE
Nils P. Week, Allen Park, and Paul D. Stevenson, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 16, 1970, Ser. No. 29,090
Int. Cl. F15b *11/16*
U.S. Cl. 91—412 **5 Claims**

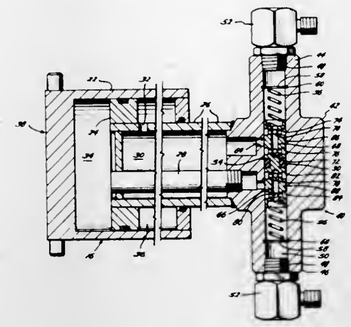


In a vehicle having an automatic transmission and power steering, there is provided a central hydraulic system wherein the power steering and transmission control systems are connected in series to receive the fluid from a single pump when pump flow is low and are connected in parallel to receive fluid from the pump when pump flow is high.

3,641,880
HYDRAULIC LOCK ROD EYE ASSEMBLY
Don R. Honeycutt, Bryan, Tex., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Jan. 5, 1970, Ser. No. 557
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **9 Claims**

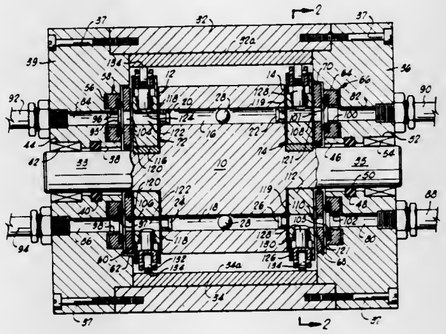
The present invention is directed to rod eye assemblies for use with hydraulic cylinder assemblies such as on cranes and deals specifically with safety lock valve means in the rod eye assembly. The safety valve means is comprised of a slidably mounted spool within the rod eye assembly which shifts in response to pressure exerted on the spool when hydraulic

fluid is pumped to the cylinder. This shift allows the fluid to flow to and from the cylinder for the operation thereof. Ab-



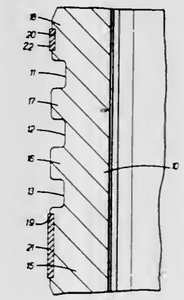
sent such incoming pressure, however, spring means are employed to center the spool, blocking flow from the cylinder.

3,641,881
DRIVE MECHANISM
Hadi T. Hashemi, Norman, Okla., assignor to E-C Corporation, Dallas, Tex.
Filed Feb. 6, 1970, Ser. No. 9,268
Int. Cl. F01b *13/06*
U.S. Cl. 91—483 **5 Claims**



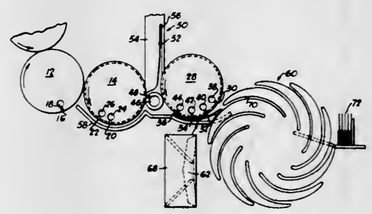
A drive mechanism for using a high-pressure fluid to directly impart rotation to a rotatably mounted body, the mechanism including cylinders mounted concentrically around the axis of rotation of the body and each containing a piston reciprocably mounted in each cylinder for reciprocating movement in a direction which is radial relative to the rotational axis of the body. A piston rod or equivalent structure extends radially outwardly from the piston and bears against a continuous surface which eccentrically surrounds the rotational axis of the body. Fluid passageways extend through the body and communicate with each cylinder. A stationary structure is provided adjacent the openings of the fluid passageways into the body, and is ported to alternately admit fluid at relatively high pressure, and then fluid at relatively lower pressure to each of the fluid passageways in the body as the body is rotated about its axis. The sequence and timing of those pressure variations in each fluid passageway, and thus in each radial cylinder communicating therewith, is such that relatively high-pressure fluid acts against each piston when its piston rod, in contacting the continuous eccentric surface, develops a reaction force which causes the body to rotate in one direction, and relatively low-pressure fluid acts against each piston when its piston rod, in contacting the continuous eccentric surface, develops a reaction force which opposes rotation of the body in said one direction.

3,641,882
CYLINDER LINER
George Ernest Herbert Hall, Chesterfield, England, assignor to Sheepbridge Stokes Limited, Chesterfield, England
Filed Mar. 4, 1970, Ser. No. 16,499
Claims priority, application Great Britain, Mar. 7, 1969, 12,237/69
Int. Cl. F16j *11/04*
U.S. Cl. 92—171 **4 Claims**



To decrease fretting between lands of a fitting band extending circumferentially around a cylinder liner and the bore containing said liner, a layer of plastic material is provided on at least a part of the fitting band. The plastics material is sprayed onto the fitting band or is in the form of a circumferential strip of plastics material preformed and shrunk on to the liner. The fitting band is machined to the required diameter after the plastics material has been applied.

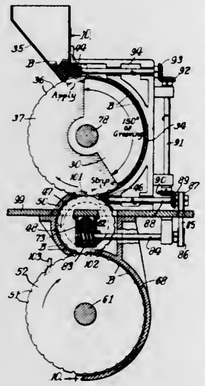
3,641,883
METHOD AND APPARATUS FOR FOLDING A CLOSURE FLAP OF AN ENVELOPE
Eliot S. Smithe, New York, N.Y., and Herbert W. Helm, Hollidaysburg, Pa., assignors to F. L. Smithe Machine Company, Inc., Duncansville, Pa.
Filed May 6, 1970, Ser. No. 35,190
Int. Cl. B31b *21/26*
U.S. Cl. 93—62 **12 Claims**



Closure flap folding apparatus includes a transfer cylinder with rows of vacuum ports extending longitudinally along the periphery, a delivery cylinder having a plurality of rows of peripheral vacuum ports extending longitudinally thereon in spaced relation to each other and an intermediate seal fold cylinder also having vacuum ports extending longitudinally

thereon. The transfer cylinder and delivery cylinder have the same diameter and are arranged to rotate in the same direction at substantially the same peripheral speed. The seal fold cylinder is positioned between the transfer cylinder and delivery cylinder and is arranged to engage a portion of the envelope transferred thereto by the transfer cylinder and retain engagement of the portion of the envelope while folding of the seal or closure flap takes place. The delivery cylinder engages the body portion of the envelope and transfers the envelope to a collecting device. The seal fold cylinder rotates at the same peripheral speed as the transfer cylinder in a direction opposite thereto and at an exact multiple of the angular velocity of the transfer cylinder, as for example, the seal fold cylinder completes four revolutions to a single revolution of the transfer cylinder. A timing device and valves are provided to exert a suction through the vacuum ports on the seal fold cylinder only when the vacuum ports are in overlying relation with the preselected portion of the envelope blank. The closure flaps may be folded forwardly in overlying relation with the opening in the envelope, rearwardly into overlying relation with the front surface of the envelope, or the envelope may be transferred through the folding device with the closure flap in an open unfolded position.

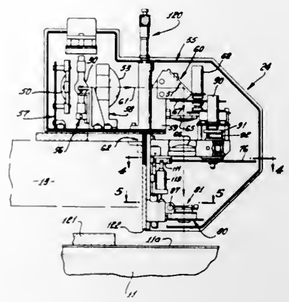
3,641,884
MANUFACTURING FLEXIBLE DRINKING STRAWS
Anton Jivoin, 4307 N. Hamlin St., Chicago, Ill.
Filed July 7, 1969, Ser. No. 839,299
Int. Cl. B31c *5/00*; **B31d** *5/04*; **B31f** *7/00*
U.S. Cl. 93—84 TW **36 Claims**



The method herein disclosed is to groove the straw circumferentially, one groove at a time, progressively part way toward one end of the straw, starting inwardly from the other end, the grooves having sides of unequal length for snapping over center in flexing or straightening the straw. The machine involves one drum on which the grooving is performed, and a second drum on which the grooved straws are subjected to endwise compression to close the corrugations in the grooved portion and define reentrant folds.

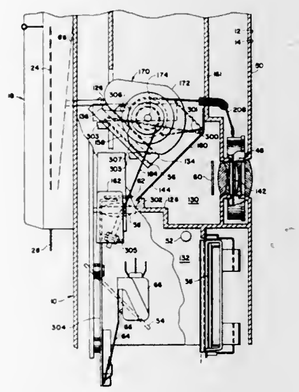
3,641,885
AUTOMATIC DRAFTING USING PROJECTED RING OF LIGHT
Armin J. Hill, Provo, Utah, assignor to California Computer Products, Inc., Anaheim, Calif.
Filed Mar. 29, 1968, Ser. No. 717,159
Int. Cl. G03b *11/00*
U.S. Cl. 95—1 **5 Claims**

The disclosure concerns a photoexposure device used in automatic drafting and characterized as forming a movable ring of light at the photosensitive drafting surface, and wherein said ring may be formed by a central mask at the optical axis and an outer mask spaced therefrom to form an



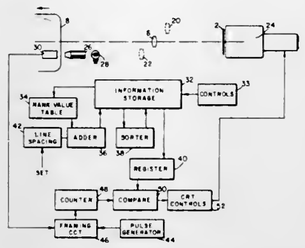
aperture ring, the central mask sized in relation to the aperture to substantially eliminate bleeding of light at the ring of light on the drafting surface and toward the edge of the ring, during line drawing.

3,641,886
CAMERA INCLUDING RESILIENT MIRROR MOUNT
Myron A. Seiden, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 5, 1970, Ser. No. 78,032
Int. Cl. G03b *17/24*, *19/12*; **A47g** *1/16*
U.S. Cl. 95—1.1 **14 Claims**



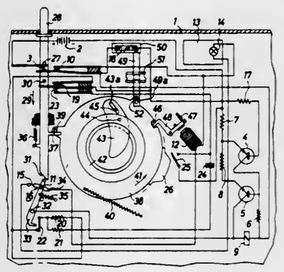
A camera for making identification cards which makes, in rapid succession on adjacent portions of a single sheet of film, a first photograph of an information card inserted into the camera and a second photograph of the person being identified. A pivoting mirror moves from a first position, in which it reflects the image from the card to the film and obstructs the image of the subject, to a second position, in which the second exposure can be made. The mirror is resiliently mounted on a boxlike frame so that the actual accurate positioning of the mirror in its first position is accomplished by precisely located stops which abut extension tabs of the mirror. In the second, inoperative, position of the mirror a light baffle covers the reflecting surface to prevent unwanted reflections.

3,641,887
PHOTOTYPESETTING MACHINES
Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla.
Filed Mar. 11, 1969, Ser. No. 896,126
Claims priority, application Great Britain, Mar. 14, 1968, 12,327/68
Int. Cl. B41b *17/14*
U.S. Cl. 95—4.5 **1 Claim**



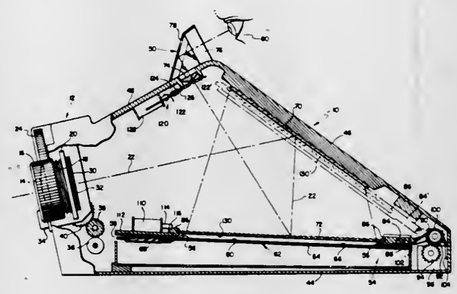
A simple high-speed photocomposing machine is disclosed. Character images are projected from a stationary glass matrix plate through a fixed lens to a continuously moving film. Every matrix character may at all times be projected to any position on the film (see FIG. 1). The film is driven by a drive band. A timing control synchronized with the motion of the film ensures that proper character information is withdrawn from storage at the precise moment to trigger the projection of a character image to the correct location on the continuously moving film. In this manner a complete page of characters is composed virtually simultaneously.

3,641,888
PHOTOGRAPHIC APPARATUS WITH AUTOMATIC EXPOSURE CONTROL MEANS
Helmut Durr, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 13, 1970, Ser. No. 19,284
Claims priority, application Germany, Feb. 14, 1969, P 19 14 945.2
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE **12 Claims**



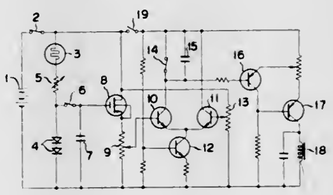
A photographic camera wherein the diaphragm respectively defines a smaller and a larger aperture at a higher and at a lower range of scene brightnesses. Depression of the camera release causes an electronic control circuit to energize a relay which is connected to the output of the control circuit and closes the shutter with a delay determined by a timer connected to the input of the control circuit and including a photosensitive receiver and a capacitor. The aperture size is automatically increased in response to energization of an electromagnet, which is in parallel with the relay, when the scene brightness is within the lower range. A signal lamp lights up when the user begins to depress the camera release at a scene brightness which is below the lower range and at which the exposure cannot be made with the camera held by hand.

3,641,889
EXPOSURE CONTROL SYSTEM
Viato K. Eloranta, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 2, 1970, Ser. No. 68,919
Int. Cl. G03b *9/07*, *9/14*, *9/08*
U.S. Cl. 95—10 CE **37 Claims**



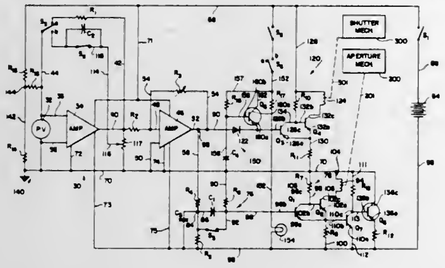
An exposure control system for a single-lens reflex camera. The system incorporates a shutter having a normally open status for camera viewing and focusing. An exposure cycle is commenced upon energization of a solenoid which drives a shutter to a closed position. This solenoid is deenergized to commence an exposure interval and reenergized to terminate the interval of exposure. During the latter energization, the camera is converted from an exposure operational mode to a viewing and focusing mode.

3,641,890
EXPOSURE-MEASURING DEVICE FOR CAMERAS PROVIDED WITH ELECTRONIC SHUTTER
Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Oct. 28, 1968, Ser. No. 771,002
Claims priority, application Japan, Oct. 31, 1967, 42/69585
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 C **2 Claims**



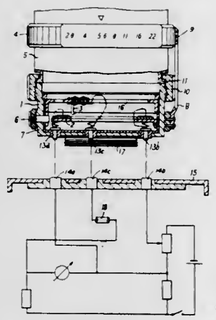
A camera of the retractable mirror-type having an electronic shutter has related to the shutter a circuit for measuring light intensity of a scene to be photographed passing through the camera's lens and a circuit for memorizing the measured value of light intensity by converting such value to an electrical quantity. A switch is provided intermediate the measuring and memory circuits, and means is provided to open the switch before the actuation of the retracted mirror may affect the light intensity falling on a light-sensitive element in the measuring circuit to thereby shorten the delay time before the shutter is actuated.

3,641,891
EXPOSURE CONTROL SYSTEM
John P. Burgarella, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 30, 1969, Ser. No. 837,688
Int. Cl. G03b *7/08, 7/16;* **G01l** *1/46*
U.S. Cl. 95—10 CE **79 Claims**



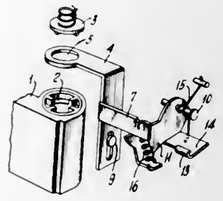
An exposure control system for photographic apparatus which functions automatically to regulate both exposure apertures and exposure interval. The system is operable under an exposure program wherein over a select range of light levels, aperture area is varied with respect to scene light values in a relationship less than 1:1. The system provides for sequential regulation first of aperture, then of exposure interval. Voltage-sensitive triggering circuits are used for controlling the apertures and shutter mechanisms. These circuits are coupled to receive the output of a light-sensitive circuit and are arranged in series with a power source to develop a voltage reference level for use with differential amplification stages within the system. The system is calibrated or accommodating varying sensitometric characteristics of films through the use of a gain control in connection with an amplification stage. The system is capable of operating under a predetermined exposure program through the use, inter alia, of an aperture control arrangement which functionally relates aperture blade dynamics, the output of a photosensing circuit and the signal of a function generator.

3,641,892
OBJECTIVE LENS ADAPTOR
Horst Strehle, Dresden, Germany, assignor to Kombinat VEB Pentacon Dresden Kamera-und Kinowerke
Filed Aug. 11, 1969, Ser. No. 849,006
Int. Cl. G03b *7/02, 17/14*
U.S. Cl. 95—10 C **1 Claim**



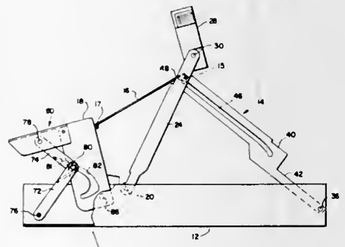
A photographic camera including a photoelectric measuring device built into its housing having circuit contacts for connection to a variable resistive element is provided with a lens mount. The mount is removably connectable with an objective lens housing and also with the camera housing and enables a suitable objective lens to be connected with the camera housing. The mount includes an electric circuit including a variable resistor moveable by a control member. The control member is adapted for interconnection with a diaphragm aperture setting member position on the housing of a suitable objective lens to permit concommitant movement therewith. The circuit in the mount is provided with circuit contacts positioned for connection with the contacts on the camera housing when the mount is connected.

3,641,893
CAMERA CARTRIDGE RELEASE MECHANISM
Sho Takahama, Takarazukashi, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan
Filed Mar. 5, 1970, Ser. No. 22,106
Claims priority, application Japan, Mar. 14, 1969, 44/22756
Int. Cl. E01c *5/00*
U.S. Cl. 95—11 W **6 Claims**



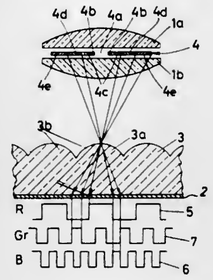
An underwater camera comprises a watertight housing including a separable cover and a camera body mounted therein including a winding member vertically movable into and out of engagement with the spool of a replaceable film cartridge. A vertical slide member engages the winding member and a spring biased lever raises the slide and winding members and includes a sensing arm engaging the housing cover which, upon closing of the cover, swings the lever to lower the slide and winding members and upon opening the cover the lever is spring rocked to raise the slide and winding members and release the film cartridge.

3,641,894
LENS SHADE
James M. Conner, Mamaroneck, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Aug. 21, 1969, Ser. No. 852,031
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 **4 Claims**



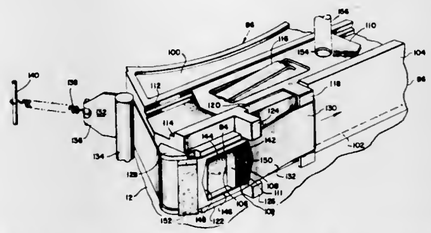
A folding camera comprising a plurality of housing sections including a lens housing pivotally coupled to each other for movement between folded and extended positions. The lens housing is provided with a shade and a linkage system connects the lens shade to the camera so that the lens shade will automatically (1) cover the lens when the camera is in the folded position and (2) move to a position wherein it will shade the lens when the housing sections of the camera are moved to the extended position.

3,641,895
APPARATUS FOR PHOTOGRAPHIC COLOR RECORDING
Friedrich Bestenreiner, Grunwald, near Munich, and Reinhold Demi, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of application Ser. No. 803,676, Mar. 3, 1969, now abandoned. This application June 3, 1969, Ser. No. 830,065
Int. Cl. G03b *33/14*
U.S. Cl. 95—12.21 **14 Claims**



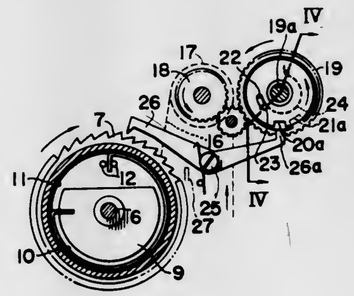
A photographic objective, in whose plane a set of filter strips associated with different colors is located, forms an image on a black and white film while the lens elements of a lenticular grating form images of the set of colored strips on the corresponding areas of the film. All strip images together form a strip grating on the film so that the image formed by the objective can be reproduced as a color picture by the diffraction orders of the strip grating.

3,641,896
MOTION PICTURE FILM CASSETTE-PROCESSOR SYSTEM
Rogers B. Downey, Lexington, and Paul W. Thomas, Duxbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 4, 1969, Ser. No. 813,586
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **47 Claims**



An applicator system including a dispensing container having a reservoir chamber for retaining processing fluid and an orifice provided therethrough communicating with the reservoir chamber. A strip of flexible material having an opening provided therein and a cleaning pad mounted adjacent that opening is disposed over the aforesaid orifice and connected to an actuator slidably mounted in guide tracks of the container's housing whereby the opening in the flexible material may be brought into and removed from alignment with the orifice. A mechanism is provided to progressively draw a strip of exposed photographic material across the container's orifice in intermediate spaced-apart relationship to the strip of flexible material and a spring mounted support plate when the orifice is sealed by the flexible material. The support plate automatically slidably engages the filmstrip against the flexible material whenever the actuator is displaced into a position where the opening through that material is in alignment with the orifice. In this position the filmstrip engages the cleaning pad immediately before being coated with processing fluid expressed from the orifice. This system can most advantageously be employed in a compact multipurpose film-handling cassette adapted to be first mounted in a camera to facilitate exposure operations and then subsequently in a unique processor-projector unit.

3,641,897
SELF-COCKING DEVICE FOR A CAMERA NORMALLY LOADED NONPERFORATED FILM
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 5, 1968, Ser. No. 742,720
Claims priority, application Japan, July 10, 1967, 42/59586; 42/59585; 42/59587; July 21, 1967, 42/63169
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 AC **4 Claims**

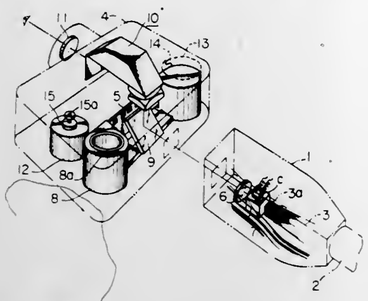


A manually operable drive shaft is connected to a winding spool through a clutch mechanism. When a measured amount of film has been advanced as measured by friction roller rotated by the advancing film, the clutch is disengaged and winding stops. The drive shaft continues to be rotated until a shutter is cocked. Disengagement of the clutch is effected by engaging a pawl with a ratchet wheel. Immobilization of the ratchet wheel renders inactive mechanism within the clutch which ordinarily connects the clutch halves.

3,641,898
ELECTRICALLY DRIVEN CAMERA FOR AN ENDOSCOPE
Ichizo Kawahara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 19, 1969, Ser. No. 851,179
Claims priority, application Japan, Aug. 21, 1968, 43/71914; 43/71915; 43/71916
Int. Cl. G03b *19/04, 19/12*
U.S. Cl. 95—31 EL **8 Claims**

Electrically operated single-lens reflex-type camera for an endoscope having an automatic exposure control mechanism which receives the signal in response to the intensity of the light illuminating an object and terminates the illumination of the object automatically for the proper exposure of the film. The feeding of the film is effected by an electric motor provided in the camera by rotating the motor in one direction. When the exposure of the film is effected by manually operable means, the motor is rotated in the reverse direction so as to operate a regulating mechanism which actuates switch means provided in the electric motor-operating circuit while

the camera is maintained in the condition for the exposure of the film a predetermined time until the proper exposure of the film is effected by the automatic exposure control mechanism. A movable mirror is interposed between the object and the film to operate as a shutter.

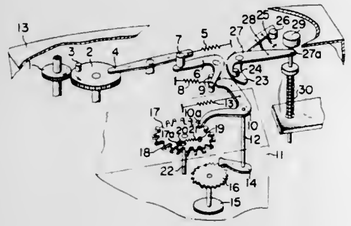


3,641,899

DEVICE FOR PREVENTING DOUBLE-EXPOSURES IN INTERCHANGEABLE FILM BACK-TYPE CAMERAS

Tomio Tsuruoka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,190
Claims priority, application Japan, Oct. 31, 1968, 43/94951
Int. Cl. G03b *17/42*
U.S. Cl. 95—31 FL **1 Claim**



Upon attachment of a film back having an exposed but unwound film to a camera body its shutter charged, a shutter release button is automatically locked so as to prevent the double-exposure during the film advancement, after which the shutter release button is automatically set free. Thereafter, the device is automatically disconnected from the shutter charging mechanism which also advances the film, so that the shutter may be charged and the film may be advanced in a normal manner.

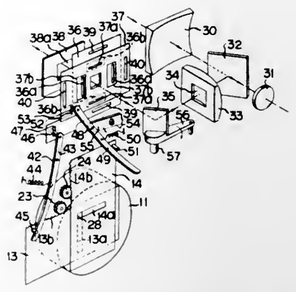
3,641,900

PARALLAX CORRECTION DEVICE FOR USE IN A MULTIPHOTOGRAPHIC DEVICE

Hisanori Ataka, and Nobunao Mikami, both of Kawasaki-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 25, 1968, Ser. No. 770,754
Claims priority, application Japan, Nov. 4, 1967, 42/70850; 42/70851
Int. Cl. G03b *19/02*
U.S. Cl. 95—36 R **9 Claims**

A parallax correction device for use in a multiphotographic device wherein a plurality of movable plates or frames having slots are disposed in an optical system of a viewfinder in order to determine the scope or portion of an object or scene to be photographed in response to the movement of a pair of movable plates which are adapted to move in the directions at right angles relative to each other so as to form an aperture for photographing and/or to the movement of means for adjusting the photographing distance.

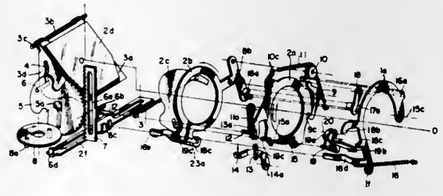


3,641,901

BEHIND-THE-LENS LEAF SHUTTER MECHANISM FOR USE WITH A SINGLE-LENS REFLEX CAMERA

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Richoh, Tokyo, Japan

Filed Mar. 16, 1970, Ser. No. 18,796
Claims priority, application Japan, Nov. 10, 1966, 41/73945
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **3 Claims**



A single-lens reflex camera body adapted to receive any one of a plurality of interchangeable lenses has a behind-the-lens leaf shutter with its blades positioned between the lens and a movable reflecting mirror. Operating mechanism for driving the shutter blades is distributed around the optical axis of the lens between the lens and the shutter blades and means are provided to deflect the movable mirror first out of the optical axis and then (after the image is recorded on the film) back to its original position.

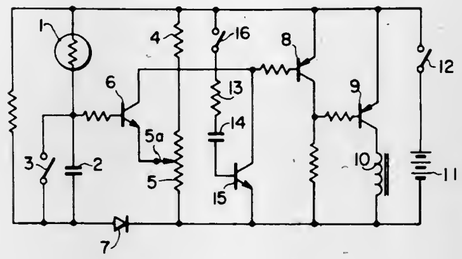
3,641,902

ELECTRONIC SHUTTER WITH ELECTRONICALLY CONTROLLED SELF-TIMER FOR PHOTOGRAPHIC CAMERA

Tomio Kikuchi, Tokorozawa, and Kiyokuki Arai, Gyoda, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Apr. 20, 1970, Ser. No. 30,162
Int. Cl. G03b *17/40, 7/08, 9/62*
U.S. Cl. 95—53.3 **10 Claims**

An electronic shutter equipped with an electronically controlled self-timer for use in photographic cameras, comprising a first delay circuit comprised of a photoconductive element and a capacitor and capable of controlling the exposure time, a first electronic switching means adapted to be controlled by said first delay circuit, an electromagnet connected to said first electronic switching means via an amplifier and capable of causing the shutter to start its opening movement upon being energized and also capable of causing the shutter to start its closing movement upon being subsequently deenergized, a second delay circuit comprised of a resistor and a capacitor and capable of controlling the self-timing,



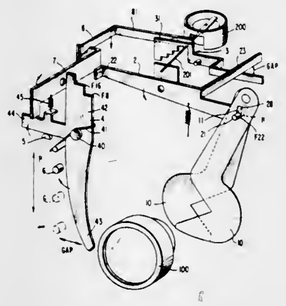
and a second electronic switching means adapted to be controlled by said second delay circuit, said electronic shutter being arranged so that said electromagnet will never become energized, via said first electronic switching means, by virtue of the action of said second electronic switching means so long as the second delay circuit remains to be actuated.

3,641,903

EXPOSURE CONTROL DEVICE FOR FLASHLIGHT EQUIPPED CAMERA

Susmu Fukuda, Nishinomiya-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1969, Ser. No. 870,031
Claims priority, application Japan, Nov. 27, 1968, 43/86820
Int. Cl. G03b *7/16*
U.S. Cl. 95—64 A **6 Claims**



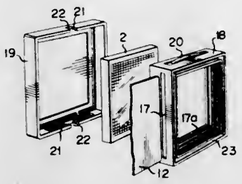
A camera for taking pictures with the aid of a flashlight carries a member coupled to the exposure meter indicator for moving a control lever which changes the lens aperture of the camera in accordance with the brightness of the object being photographed.

3,641,904

LIGHT SENSITIZED PLATE HOLDING BOX FOR COMPOUND PHOTOGRAPHIC CAMERA

Hisanori Ataka, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 14, 1969, Ser. No. 824,420
Claims priority, application Japan, May 16, 1968, 43/33071
Int. Cl. G03b *17/26*
U.S. Cl. 95—66 **2 Claims**



A box for holding light-sensitized plates comprising a frame for supporting a light-sensitized plate, a cover fitted over the frame, a light-shielding plate or drawplate for shielding the sensitized plate from the light and a shielding member disposed adjacent to an inlet through which the drawplate is inserted into the frame. The shielding member is adapted to advance elastically into the inlet when the drawplate is pulled out of the frame, thereby ensuring further light-tight shielding when the drawplate is displaced.

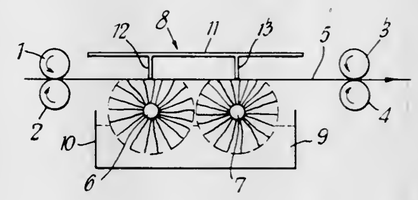
In order to avoid trouble when developing the images formed, it is convenient to use a sensitized plate coated with sensitizing solution on its back and to place it on the back of the plate provided with microlenses. This enables the sensitized plate in the holding box to be removed in the developing solution from the holding box. For that purpose the holding box should be made of such material that withstands the chemical reaction resulting from the developing agent.

3,641,905

APPARATUS FOR APPLYING A SURFACE COATING OF A LIQUID TO A SHEET

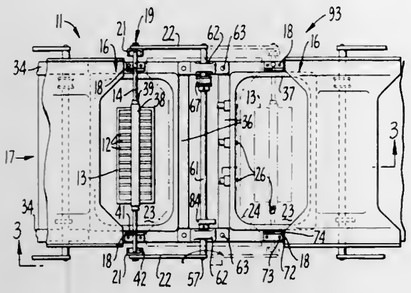
Ronald Alfred Charles Adams, Kent, England, assignor to Howson Algraphy Limited

Filed Jan. 21, 1970, Ser. No. 4,673
Claims priority, application Great Britain, Jan. 23, 1969, 4,028/69
Int. Cl. G03d *5/06*
U.S. Cl. 95—89 R **10 Claims**



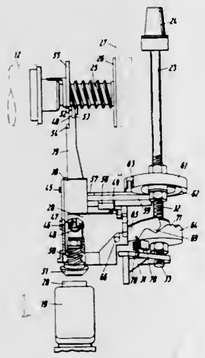
An apparatus for applying a surface coating of a liquid to a thin sheet passing through the apparatus includes a backing member having a projecting sheet abutting portion which urges the sheet against a movable brush, for example in the form of a rotating roller, which is immersed in the liquid. The projecting sheet abutting portion of the backing member deflects a part of the brushing portion of the brush away from the trailing edge of the sheet as the sheet passes downstream of the brush and thus prevents the trailing edge of the sheet from being distorted by the brush.

3,641,906
DEVELOPING APPARATUS
Robert F. Orr, Livermore, and Joseph H. Wyers, Pleasanton, both of Calif., assignors to Fluoroware of California, Inc.
Filed Mar. 18, 1970, Ser. No. 20,608
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 D **10 Claims**



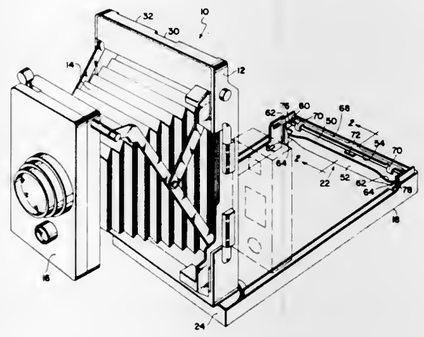
A photographic developing apparatus having a series of processing stations through which a tray carrying photographic slides is transported by a transfer mechanism. The transfer mechanism comprises at least one pair of crank arms which are rotatably mounted at one end thereof intermediate the processing stations, members journaled at the other ends of the arms for engaging the supporting rod of the tray, and a motor for rotating the crank arms through a complete revolution. A timer control device is provided for sequentially operating the transfer mechanism to thereby transport a tray from one processing station to another after a predetermined processing time has elapsed.

3,641,907
DEVELOPER REPLENISHING DEVICE FOR COPYING APPARATUS
Georg Cranskens, Wedel/Holstein; Hans Jakobson, Quickborn/Holstein; Armin Rathje, Hamburg, and Werner Salger, Hamburg-Langenhorn, all of Germany, assignors to Lumoprint Zindler KG, Hallerstrasse, Hamburg, Germany
Filed Apr. 23, 1969, Ser. No. 818,701
Claims priority, application Germany, Apr. 26, 1968, P 17 72 295.1
Int. Cl. G03d *3/08;* **G03g** *13/10*
U.S. Cl. 95—89 R **17 Claims**



In a copying apparatus, a developing tank holding developing fluid receives replenishment from a storage tank through a delivery valve. A roller turning as a function of the passage of copying sheets turns a threaded spindle or screw over a continuous forward path in response to each turning movement of the roller. The threaded spindle moves a plunger translatorily in response to each movement of the roller. The translatory movements accumulate until the plunger reaches a stop position where it opens the valve. After opening the valve the plunger returns to a starting position on the spindle. At least one of these positions is adjustable.

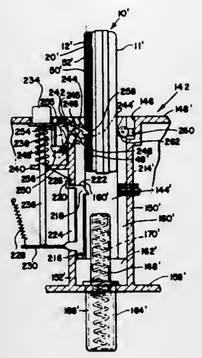
3,641,908
LIQUID SPREADER
Vaito K. Eloranta, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 672,036, Oct. 2, 1967, now abandoned. This application June 30, 1969, Ser. No. 837,422
Int. Cl. G03b *17/50;* **G03d** *5/02*
U.S. Cl. 95—89 R **27 Claims**



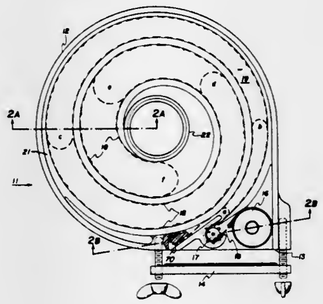
Apparatus for distributing a processing liquid between two sheets of material including a stationary spreader member and a movably mounted spreader member pivotally connected to each other by a rod to form a pressure-generating gap therebetween. The rod functions as a spring urging the movable spreader member towards the fixed spreader member when the spreader members are in a liquid-spreading position, and the rod acts as a support when the movable spreader member is pivoted towards an inoperative position in which portions of the spreader members are sufficiently spaced apart to allow for cleaning of the members.

3,641,909
SYSTEM FOR RUPTURING A POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC APPARATUS
Philip G. Baker, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed July 3, 1969. Ser. No. 838,793
Int. Cl. G03d *5/02*
U.S. Cl. 95—89 R **35 Claims**

A system for rupturing a pod, having a weakened edge portion and containing processing fluid for photographic material, and for expelling the fluid therefrom. The fluid-filled pod is mounted adjacent a support surface which typically forms part of a motion picture film-handling cassette. Such cassette includes a mechanism for advancing the filmstrip within the cassette into operable relationship with an applicator that communicates with the weakened portion of the pod. The cassette is inserted into processing apparatus against the force of a spring and is releasably locked therein by a latch of that apparatus adapted to seat in a recess of the cassette. In one embodiment the force-applying member is connected to a removable cover plate which forms part of the cassette and which is slidably disposed over the pod. The force-applying member of another embodiment comprises a relatively narrow strip of rigid material slidably mounted on the cassette for displacement across the pod. In a third embodiment the pod-rupturing member comprises a removable cover plate forming part of the cassette and mounted over the pod for displacement against the pod under the force of a roller mounted within the processor. In still another embodiment the pod-rupturing device consists of a roller slidably mounted between a pair of canted guide tracks. In a fifth embodiment the pod-rupturing element comprises a blade pivotably mounted within the processor.

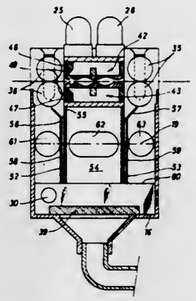


3,641,910
PORTABLE FILM DEVELOPING TANK
George S. Smith, 4118 Fourth Avenue, San Diego, Calif.
Filed Mar. 18, 1969, Ser. No. 808,150
Int. Cl. G03d *1/14*
U.S. Cl. 95—90.5 **3 Claims**



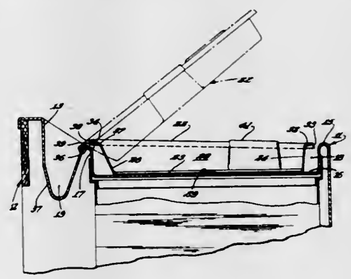
A portable film developing tank which can be utilized for daylight developing having a housing for the reception of developing fluid and a helical channel therein progressing from an outside channel adjacent a feeding spool toward the center thereof with a continuous widening of the channel toward the center for reducing friction as the film is payed out or, in another embodiment, having a film cassette mounting space in the center thereof with a gradually widening helical channel progressing toward the outside of the housing; a sealable cover on top of the housing and a sealable door for access to a film cassette therein.

3,641,911
PHOTOGRAPHIC PROCESSING APPARATUS
Marcel Frans Aelterman, Mortsel, and Emile Frans Stievenart, Hoboken, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Dec. 5, 1969, Ser. No. 882,681
Claims priority, application Great Britain, Dec. 6, 1968, 58,151/68
Int. Cl. G03d *5/04*
U.S. Cl. 95—94 R **6 Claims**



Processing apparatus for the rapid processing of film, which comprises a tank, an open-ended processing chamber which is composed of two symmetrical sections, which defines a substantially horizontal path for the material to be processed and which is located above the level of the liquid in the tank, an transport roller pair at the entry and at the outlet opening of said chamber, and means for directing streams of processing liquid towards the plane of said path in the processing chamber. The exposing of the liquid to which emerges from the inlet and outlet opening of the chamber is reduced by receiving said liquid in narrow vertical channels which dip in the body of liquid in the processing tank.

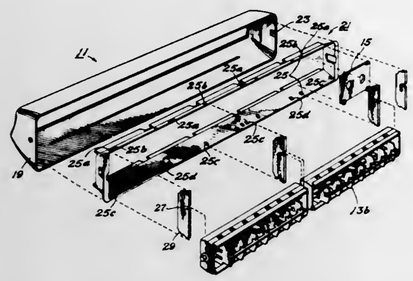
3,641,912
PHOTOGRAPHIC DEVELOPMENT SINK AND TRAY CONSTRUCTION
Thomas C. Mills, Wheaton, and Stanley T. Gresens, Downers Grove, both of Ill., assignors to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.
Filed Sept. 26, 1969, Ser. No. 861,375
Int. Cl. G03d *13/04*
U.S. Cl. 95—95 **8 Claims**



A tray, for use in a photographic processing sink having a partition separating a basin from a drain trough, has an extended lip portion along a side edge engageable over the partition to provide a pivot axis about which the tray may be pivoted for controllably dumping material from the tray into the drain trough. To enhance selectively controlled rocking of the tray, a pair of handle portions are integrally embossed

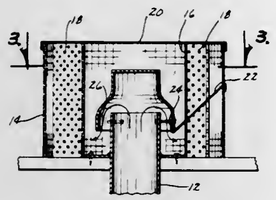
on opposite sides of the tray at relatively offset locations, and tapered sidewalls provide a configuration which reduces spillage.

3,641,913
BEZEL LOUVER SUPPORT STRUCTURE
Frank S. Dennis, 4101 Glenwood, Forth Worth, Tex.
Filed Aug. 24, 1970, Ser. No. 66,362
Int. Cl. F25f *7/00*
U.S. Cl. 98—40 VM **5 Claims**



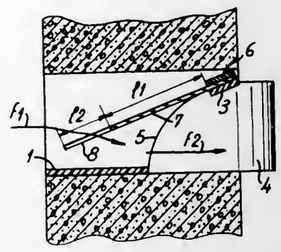
A bezel for use in a fluid distribution system characterized by an outer frame for connecting with a plenum and an inner guide frame adapted to conformingly fit within the outer frame to define a relatively streamlined flow boundary therewithin, the inner guide frame having a plurality of stations for mounting a plurality of louvers and a control panel within the outer frame. Also disclosed are preferred embodiments in which a plurality of sets of stations are included within the inner guide frame such that a variety of sizes of louvers may be employed; wherein the set of stations comprise at least a pair of stations adapted to receive a control panel and a pair of stations adapted to receive a support web that may be snapped into place, the support web in turn having a slot adapted for receiving the louvers which may be snapped into place; as well as preferred materials of construction.

3,641,914
WIND DEFLECTOR FOR CHIMNEYS AND THE LIKE
Everett C. Mueller, Fredericksburg, Iowa
Filed June 1, 1970, Ser. No. 41,913
Int. Cl. F23l *17/02*
U.S. Cl. 98—66 **8 Claims**



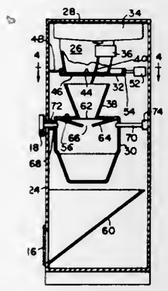
A wind deflector for chimneys and the like comprising a first open-mesh cylindrical wire element having a second open-mesh cylindrical wire element concentrically positioned in a spaced condition within the first wire element. A plurality of perforated arcuate baffle elements extend between the first and second wire elements and have their opposite ends secured thereto. The baffle elements are substantially symmetrically spaced in the space between the first and second wire elements. The deflector is positioned around the chimney or the like and is secured thereto by wires or the like. A cover extends over the upper ends of the wire elements and is secured thereto.

3,641,915
AUTOMATIC AIR DIFFUSER AND REGULATOR
Pierre Jardinier, Gournay sur Marne, and Jack Simonnot, Lesigny, both of France, assignors to ALDES Ateliers Lyonnais d'Emboutissage Special (Societe Anonyme), Lyon, France
Filed Aug. 13, 1970, Ser. No. 63,554
Claims priority, application France, Aug. 13, 1969, 6927876
Int. Cl. F24f *13/08*
U.S. Cl. 98—121 **11 Claims**



A device is provided for regulating and diffusing fresh air introduced into rooms, notably rooms of dwellings and the device comprises a resilient strip positioned across a fresh air passage in an outer wall. The resilient strip is responsive to air pressure differential generated in the passage and the strip has one edge fastened to the wall of the passage and a free edge remote from the fastened edge with lugs formed at spaced intervals along the free edge adapted to slidably engage a surface lining in the wall. A set of fixed blades for diffusing the incoming airstream are mounted in the passage end having leading edges disposed adjacent the fastened edge and shaped to constitute a bearing support for modifying the curvature of the strip according to the pressure differential acting upon said strip and thus cause the incoming airstream to have a substantial input in spite of wide variations in the incoming airstream.

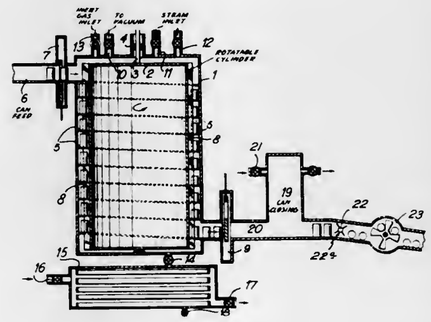
3,641,916
FRESH POPCORN VENDING MACHINE
James McDevitt, 122 Carlyle Drive, Palm Harbour, Fla., and Victor F. Hildebrand, P.O. Box 3188, Clearwater, Fla.
Filed Jan. 26, 1970, Ser. No. 5,527
Int. Cl. A23l *1/18*
U.S. Cl. 99—238.3 **10 Claims**



A fresh popcorn vending machine including a timed electrical control circuit initiated by insertion of coins into the

machine and including an oil solenoid valve introducing a timed volume of butter flavored oil into an electrically heated popper, a raw corn solenoid valve functioning an apertured gate to admit a timed volume of fresh corn into the popper, timed controls to electrically cook the fresh corn and oil and a plurality of electric lamp indicators which visually indicate the various stages of the machine operation.

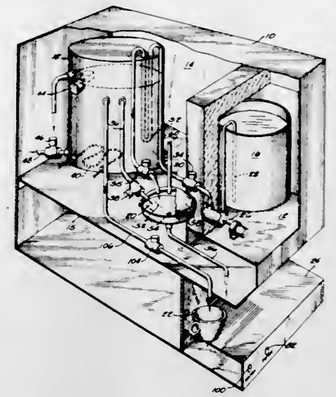
3,641,917
APPARATUS FOR THE STERILIZATION OF FOOD PRODUCTS
Felix Alexandre Jules Vallee, 7 rue Marcel Renault, Paris, 17eme, France
Filed Mar. 20, 1967, Ser. No. 624,607
Claims priority, application France, Mar. 28, 1966, 55151; Germany, Mar. 9, 1967, P 16 92 224.0
Int. Cl. A23l *3/100*; **C12h** *1/100*
U.S. Cl. 99—251 **4 Claims**



A method for sterilizing a food product contained in loosely sealed receptacles comprising placing the receptacles in an autoclave, drawing a vacuum, introducing steam to effect sterilization, reducing the pressure by drawing off or condensing the steam so as to evaporate some of the water contained in the receptacles and to thereby cause cooling of the receptacles and the food product, introducing a sterile inert gas to balance atmospheric pressure and sealing the receptacles before bringing them into contact with outside air. An apparatus for carrying out the method includes two concentric cylindrical shells defining between them an annular space. A spiral rail is secured to the inner surface of the outer cylinder and guides are secured to the outer surface of the inner cylinder so that rotation of the latter about its axis causes the receptacles to move along the rail. Appropriate valved inlets and outlets are associated with the annular space.

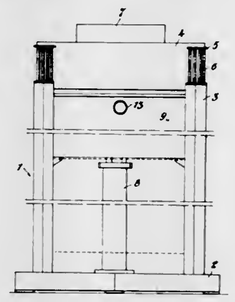
3,641,918
AUTOMATIC COFFEE DISPENSER
George M. Schellgell, 14600 Westover Road, Elm Grove, Wis., and Ward J. Torke, 630 South 26th Street, Sheboygan, Wis.
Filed Nov. 28, 1969, Ser. No. 880,753
Int. Cl. A47j *31/00*
U.S. Cl. 99—279 **8 Claims**

A coffee dispensing apparatus including a refrigerating chamber for a liquid coffee concentrate; a water heater having a float controlled solenoid for maintaining a predetermined level of water within said water heater; a coffee concentrate dispensing line extending through said water heater to a mixing bowl, a pump for pumping concentrate to the mixing bowl, a hot waterline from the water heater to the mixing bowl and a solenoid valve to control the discharge of hot water from said water heater. An electrical circuit including a pair of timing cams is provided for sequentially discharging a predetermined amount of coffee concentrate



and hot water into the mixing bowl to produce a single cup of coffee at a time.

3,641,919
APPARATUS FOR THE CONTINUOUS PROCESS COOKING OF HOMOGENIZED DIETETIC PRODUCTS
Franco Longinotti, San Casciano, Italy, assignor to I.B.P. Industrie Bultoni Perugina S.p.A., Perugia, Italy
Filed Jan. 27, 1970, Ser. No. 6,212
Claims priority, application Italy, Feb. 4, 1969, 34705A/69
Int. Cl. A47j *27/00*
U.S. Cl. 99—330 **7 Claims**

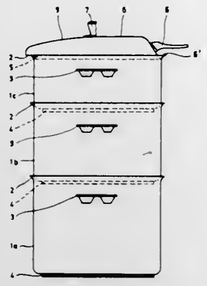


The mass of dietetic product is passed in a constant flow through a narrow gap defined by walls kept at cooking temperature, while owing to the narrowness of the gap and to the action of stirring and scraping means provided in said gap the heat is uniformly transmitted from the walls throughout the breadth and depth of the food mass. A temperature-controlled hot water system ensures the desired constant temperature to the walls.

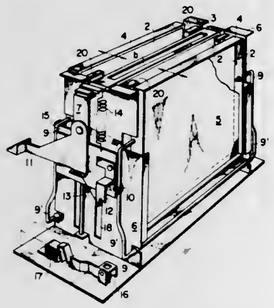
3,641,920
SET OF COOKING UTENSILS
Paul Kraft, Am Linsenbrunnen 1, and Karl Oberlander, Eberhardstr. 61, both of Geislingen, Steige, Germany
Filed Jan. 9, 1969, Ser. No. 790,107
Claims priority, application Germany, Jan. 11, 1968, P 17 53 156.5, Aug. 7, 1968, P 17 79 401.3; Feb. 12, 1969, P 18 14 978.5
Int. Cl. A47j *26/12*
U.S. Cl. 99—340 **14 Claims**

A set of cooking utensils having identical diameter openings but having different heights and, therefore, different capacities, each utensil being nestable one within the

other. Two types of lids are provided for the utensils. One lid is of the type to cover the utensil for normal cooking. The other type of lid is provided for pressure cooking and includes means for sealingly fastening same to the cooking utensils and means for releasing the steam in the utensil safely without danger of burning the user of the utensil.



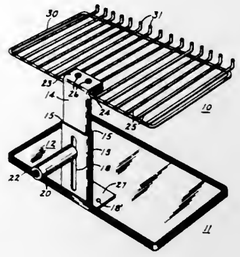
3,641,921
ELECTRIC TOASTER
Tadao Toyooka, Toyonaka; Hiromutsu Ueda, Ibaragi; Takeo Nishida, and Atsuo Ono, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1970, Ser. No. 88,865
Claims priority, application Japan, June 24, 1970, 45/55464; July 15, 1970, 45/62378; Sept. 26, 1970, 45/84219; Nov. 14, 1969, 44/108646; Apr. 11, 1970, 45/34941
Int. Cl. A47j *37/08*
U.S. Cl. 99—390 **7 Claims**



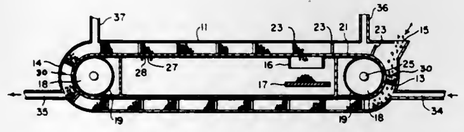
An electric toaster which has in a casing thereof a stationary plane heating element disposed centrally of said casing and a pair of movable plane heating elements disposed on both sides of said stationary plane heating element in opposed relation thereto, and which is capable of browning slices of bread over their entire surfaces to the same extent by the stationary and movable plane heating elements, holding the slices of bread from both sides in direct contact therewith, irrespective of the thickness and size of the slices of bread.

3,641,922
MULTIPURPOSE COOKING GRILL
Thomas Stanley Nachazel, and John Stanley Nachazel, both of 2061 E. Floyd Avenue, Englewood, Colo.
Filed Mar. 19, 1970, Ser. No. 20,976
Int. Cl. A47j *37/07*
U.S. Cl. 99—340 **10 Claims**

A cooking grill of the type for both indoor use over the fire on the grate of a fireplace and outdoor use over an open fire comprises a forward post which is adjustable in height, a grid extending horizontally from the top of the post, and a plate extending horizontally from the bottom. The post comprises overlapping half sections and is provided with an insulated handle threaded on a stud attached to the top half section and slidable along a slot in the bottom section, the post sections are clamped together by tightening the handle and quick adjustment during use is facilitated by the handle assembly.



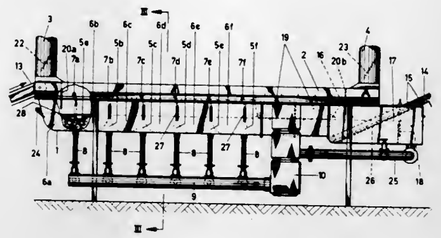
3,641,923
APPARATUS FOR DEEP FAT FRYING OF FOODSTUFFS
Raleigh J. Wilkinson, Arlington Heights, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 16, 1969, Ser. No. 885,422
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **1 Claim**



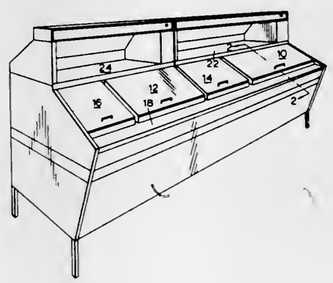
An apparatus is disclosed for use in the deep fat frying of food products. The apparatus includes a continuous looped tube with an entry port at one end and a discharge port on the bottom of the upper portion of the loop. Intermittently spaced perforated plates are pulled around the loop by a pair of chains, and a means is provided for supplying an inert atmosphere to the top of the loop.

3,641,924
OVEN FOR FRYING EDIBLE PRODUCTS, SUCH AS POTATO CHIPS
Pieter Herman Sijbring, Rhenen, Netherlands, assignor to Instituut Voor Bewaring En Verwerking Van Landbouwprodukten
Filed Oct. 29, 1969, Ser. No. 872,293
Claims priority, application Great Britain, Nov. 6, 1968, 52,570/68
Int. Cl. A47j *37/12*
U.S. Cl. 99—406 **9 Claims**

An oblong tank cooker for edible products is provided with a plurality of partitions which form compartments below the level of the cooking liquid, such as oil, in the tank. The cooking liquid and product move trough the tank and within each compartment the cooking liquid and product are rotated around an axis substantially transverse to the longitudinal axis of the tank whereby cooking liquid and product move from one compartment into the next adjacent compartment toward the outlet end of the tank. In one preferred embodiment part of the cooking liquid is withdrawn from each compartment and heated and recycled back into the individual compartments.



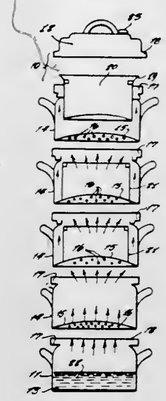
3,641,925
FRYING RANGES
Phillip Glithro, Huddersfield, England, assignor to E. W. Proctor Limited, Huddersfield, England
Filed Mar. 25, 1969, Ser. No. 810,130
Claims priority, application Great Britain, Mar. 29, 1968, 15,098/68
Int. Cl. A47j *37/12*
U.S. Cl. 99—416 **18 Claims**



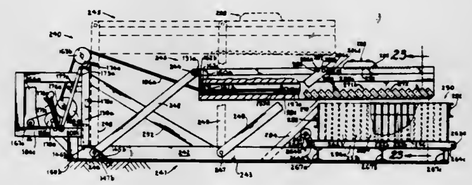
A frying range comprises a pan having a closure lid mounted above the pan by articulation means including guides fixed on the pan and studs projecting from lid into the guides and a cranked lever pivoted at one end on the pan and at its other end on the lid, the articulation means constraining a rear part of the lid to move rearwardly along a substantially horizontal path and a front part of said lid to move along an arcuate path to produce a compound translational and tilting motion of the lid between a closed position overlying the pan and a spaced fully open position.

3,641,926
COMBINATION OF COOKING UTENSILS
James M. Williams, and Helga Williams, both of 805 N.E. 194th, Seattle, Wash.
Filed July 2, 1969, Ser. No. 838,415
Int. Cl. A47j *27/13*
U.S. Cl. 99—448 **1 Claim**

A combination of pots for cooking an entire meal at one time upon a single burner, the pots being placeable one upon the other so as to receive the heat from therebelow and cooking a food contained therewithin.

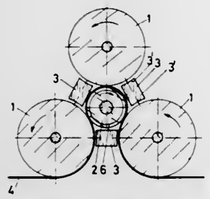


3,641,927
MULTIPLE-BLADE JUNKED METAL SHEAR
Wesley D. Ballard, 1311 West Broadway, Phoenix, Ariz.
Continuation-in-part of application Ser. No. 780,625, Dec. 3, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 555,187, June 3, 1966, now Patent No. 3,413,914, dated Dec. 3, 1968, and a continuation-in-part of 840,902, July 11, 1969. This application Aug. 19, 1969, Ser. No. 851,254
Int. Cl. B30b *15/08*
U.S. Cl. 100—98 **15 Claims**



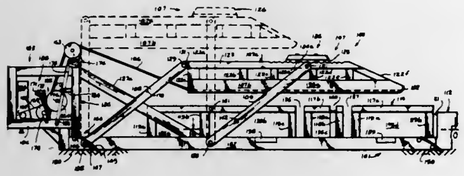
A multiple-blade junked metal shear is disclosed including a base, receptacle means, or specially constructed anvil; a hammer or cutter mount with forward and rear portions pivotally connected to the base by pantograph-type arms, the cutter mount carrying cutting blades that cooperate with fixedly positioned blades or knives on the base as the hammer descends; and a forwardly cantilevered platform at forward end which mounts means cooperative with hammer associated means whereby the hammer or cutter mount may descend in a cutting stroke to be returned thereafter to an upper or triggered position preparatory to a successive shearing or cutting stroke; the aforesaid hammer or cutter mount rear portion being adjustable in elevation with relation to the rear pantograph arms so that the cutter or shear blades cut with a scissors effect from front to rear with the base carried blades.

3,641,928
DEVICE FOR SURFACE TREATMENT OF MATERIAL
Rupert Kraft, Peristrabe 8, and Johannes Zimmer, Ebenlholerstrabe 133, both of 9020 Klagenfurt, Austria
Filed Dec. 23, 1968, Ser. No. 786,137
Claims priority, application Austria, Dec. 29, 1967, A 11817/67
Int. Cl. B30b *3/02*
U.S. Cl. 100—160 **8 Claims**



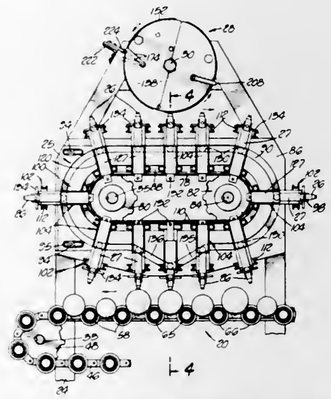
Means for the surface treatment of material moved between a plurality of rollers exerting a pressure onto each other under the action of magnetic forces. One form has at least two rollers having peripheries of magnetizable material and has first and second magnet portions associated with each for pulling or attracting the rollers into peripheral engagement with at least one calender or counterroller which may be of any desired peripheral material, with the resultant of the component magnetic attractive force between each of the rollers of magnetizable material and the respectively related magnet bodies lying in a plane passing through the axes of the rollers of magnetizable material and said counterroller. Another form has at least three rollers with magnetizable peripheral material and between which rollers there are magnet bodies arranged to exert magnetic attractive forces on the rollers to engage with at least one counter roller disposed inwardly thereof and providing a magnetic field closed by the said rollers of magnetizable material.

3,641,929
JUNKED METAL COMPRESSING SMASHER
Wesley D. Ballard, c/o S. M. Tucker, 1011 North 15th Street, Waco, Tex.
Continuation-in-part of application Ser. No. 780,625, Dec. 3, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 555,187, June 3, 1966, now Patent No. 3,413,914, dated Dec. 3, 1968. This application Mar. 19, 1970, Ser. No. 21,092
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **1 Claim**



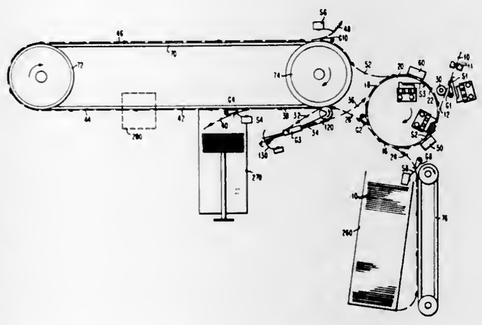
A junked metal compressing smashed comprises a base or anvil boxed in by sidewalls and an end stop at rear end and with a cantilevered platform at a forward end. The hammer is supported above the base by support arms at a transverse station pivotally connecting base and forward end of hammer, and by support arms of equal length between pivot connections, at a transverse station rearwardly of the first station, pivotally connecting said base and said hammer at equal distances on said hammer as the distance between base stations. Thus, by this pantagraph-type connection arrangement the crushing face of the hammer continuously remains substantially in a horizontal plane as it descends. Yieldable means deadened at one end within the hammer and with other end connected to the free or payout end of the cable, complete the cable length from its winch drum dead ended end to hammer dead ended end, regardless of where hammer stops on smashing descent.

3,641,930
APPARATUS FOR PRINTING INDICIA ON FRUIT
Fred W. Riddington, Ontario, Calif., assignor to Sunkist Growers, Inc., Los Angeles, Calif.
Filed Mar. 27, 1969, Ser. No. 811,181
Int. Cl. B41f *17/34;* **B41j** *33/512*
U.S. Cl. 101—35 **21 Claims**



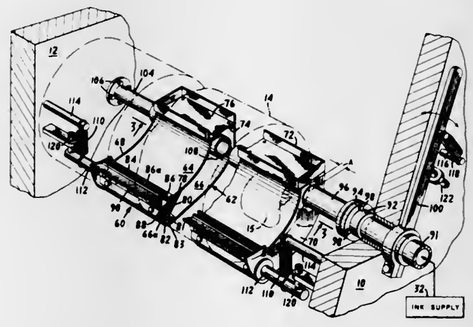
As the fruit travels in parallel rows on a conveyor, corresponding rows of travelling printing dies imprint the fruit, the rows of dies being inked by corresponding rotary inking drums. Each inking drum has a ribbon wound on two reels inside the drum with each reel alternately functioning as a takeup reel and as a supply reel.

3,641,931
ANALYZING, ORIENTING AND PRINTING MEANS IN TICKET HANDLING MECHANISM
Thomas A. Hickox; Gordon H. May, and Joseph E. Shepard, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,261
Int. Cl. B41j *1/54, 5/02*
U.S. Cl. 101—93 C **7 Claims**



A ticket-handling mechanism for processing commutation tickets which includes a drive means for carrying the ticket in a circular path past a magnetic transducer for reading and updating machine readable fare information. A tumbling station removes those tickets which cannot be read and returns them in a flipped-over condition to said drive means. A print station prints fare information on the ticket in a consistent manner regardless of the orientation of the ticket. The ticket-handling mechanism is adapted for use in a commutation entry gate, exit gate, or ticket vendor.

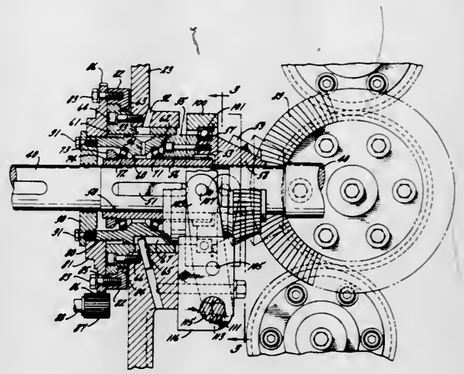
3,641,932
INK APPLICATOR FOR GRAVURE PRINTING PRESS
Alfred C. Behringer, Ringwood, N.J., assignor to Publication Corporation, Greenwich, Conn.
Continuation-in-part of application Ser. No. 704,391, Feb. 9, 1968, now abandoned. This application Apr. 27, 1970, Ser. No. 32,145
Int. Cl. B41f *9/10, 31/08*
U.S. Cl. 101—157 **28 Claims**



An ink applicator for applying ink to the plate cylinder of a gravure press comprising a vessel having an elongated, substantially continuous discharge orifice and adapted to contain ink to a level above the level of the orifice to produce a pressure head and thus afford gravity discharge of ink through the orifice. The vessel is mounted in a position locating the orifice in proximity to the plate cylinder surface so that ink flowing from the orifice contacts and is picked up on the plate cylinder surface. The vessel carries an ink metering or control element, which may be a member constituting one wall of the orifice and positioned to form a clearance gap and control the thickness of the ink coating applied to the cylinder. The vessel is curved generally to conform to the curvature of the cylinder, and its upper end has an opening to admit into the vessel ink removed by the doctor blade, shield members being positioned above the opening to capture and direct the ink into the vessel through the opening. The vessel is kept filled to a given level by ink returned to it through the opening and by a supply conduit receiving makeup ink fed in by the press ink circulation system. Excess ink delivered through the orifice but not applied to the cylinder flows over the upstream wall of the orifice and is returned to the ink reservoir. Adjacent the upstream edge of the orifice is an ink retainer formation adapted to provide an overflow path of substantial width adjacent the cylinder, thereby providing a larger area of contact between the cylinder surface and ink discharged from the vessel through the orifice.

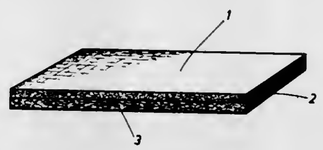
3,641,933
REGISTRY MECHANISM FOR PRINTING UNITS
Leonard I. Tafel, La Grange, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed June 8, 1970, Ser. No. 44,246
Int. Cl. B41f *13/14*
U.S. Cl. 101—181 **5 Claims**

A coupling mechanism between a printing unit and a drive shaft which powers a number of adjacent printing units acting upon the same web of paper having a drive gear adjustable in phase position. To obtain such adjustment, first and second sleeves are provided on the shaft having meshing helical splines. The first sleeve slidably keyed to the shaft, has a yoke for adjusting its axial position, thereby to change the degree of engagement of the helical splines and the phase



position of the drive gear. The yoke is in the form of a threaded collar encircling the first sleeve and axially movable by means of a captive nut. The second sleeve has a shiftable yoke which positions the drive gear in meshing engagement with the driven gear and which permits retraction of the drive gear for declutching and timing purposes.

3,641,934
INKING PAD IN HAND-HELD SELF-INKING STAMPS
Heribert Rudolf, Wels, Austria, assignor to Franz Just & Sohne Trodat-Werke, Wels, Austria
Filed Jan. 30, 1969, Ser. No. 798,856
Claims priority, application Austria, Mar. 5, 1968, A 2123/68
Int. Cl. B05c *11/00;* **B32b** *27/30;* **B41k** *1/42*
U.S. Cl. 101—333 **3 Claims**

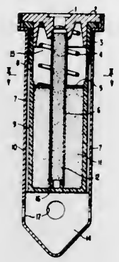


The top surface of an inking pad is formed by a nonwoven fabric comprising cotton fibers bonded by a natural or nitrile rubber latex.

3,641,935
PRESSURE CARTRIDGE CONTAINING SOLID FUEL PROPELLANT CHARGE
Heinz Gawlick, Furth; Gunther Marondel, Erlangen, and Hans Umbach, Stadeln, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed June 23, 1969, Ser. No. 835,654
Int. Cl. F42b *9/18*
U.S. Cl. 102—39 **5 Claims**

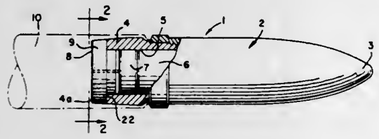
A pressure cartridge containing solid fuel for the production of a propellant gas, particularly for use in fire extinguish-

ing devices, including a case constructed from a synthetic



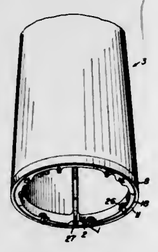
resin material, a bottom plate connected to the case in a form-locking manner, and a primer charge.

3,641,936
COMPOSITE SHELL WITH CERAMIC BASE
Charles W. H. Barnett, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army
Filed May 27, 1970, Ser. No. 40,954
Int. Cl. F42c *13/04*; **F42b** *13/12*
U.S. Cl. 102—56 **12 Claims**



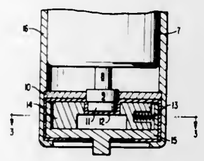
An explosive shell whose detonation is initiated by RF energy includes a ceramic spacer which separates, both physically and electrically, the two elements of the antenna and provides a mounting base and protection for the oscillator and associated components and wherein one element of the antenna is both led through the ceramic spacer and flushly disposed on the rear face of the spacer.

3,641,937
WARHEAD SECTION COUPLER
Clarence B. Silverthorne, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed June 2, 1969, Ser. No. 829,415
Int. Cl. F42b *13/00*
U.S. Cl. 102—56 **6 Claims**



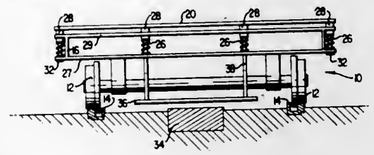
A coupler means for securing the sections of a missile warhead together utilizing pin means anchored in the sections by Allen screws. The missile sections each have a flange means integral with an end and a means integral with the flange which is adapted to receive pin means. The pin means contain a plurality of recess means adapted to receive screw means, and a hermetical seal means is located in an end of one section to be coupled to prevent moisture from entering the coupled sections.

3,641,938
PERCUSSION OR VIBRATION FUSE FOR EXPLOSIVE CHARGE
Heinz Gawlick, Furth, and Hellmut Bendler, Nurnberg, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Aug. 8, 1969, Ser. No. 848,418
Claims priority, application Germany, Aug. 9, 1968, P 17 03 991.7
Int. Cl. F42c *13/08*; **F42b** *27/00, 23/26*
U.S. Cl. 102—70.2 **9 Claims**



A percussion or vibration fuse device, particularly adapted for use in connection with hand and rifle grenades and mines, incorporating a time delay following actuation, in turn followed by a displacement of a battery to establish an electric current upon vibration and cause detonation of the explosive charge.

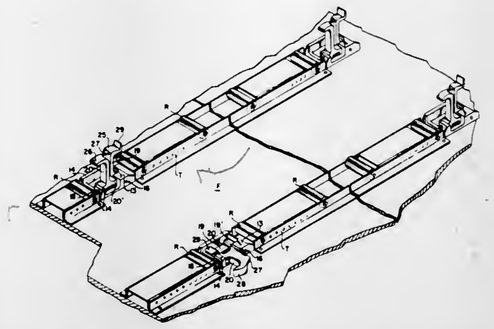
3,641,939
SPEED CONTROL SYSTEM FOR LINEAR MOTOR CONVEYORS
Emmanuel M. Remy, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Sept. 16, 1969, Ser. No. 858,319
Claims priority, application France, Oct. 17, 1968, 170196; May 22, 1969, 16834
Int. Cl. B60l *13/00*; **B61b** *13/08*; **H02k** *41/02*
U.S. Cl. 104—148 LM **10 Claims**



Speed control system for linear induction motors in transportation devices or conveyors wherein the gap of the linear motor or of the active surfaces of the motor are varied. Control means modify the spacing of the magnetic cores defining the gap of the motor. Load-detecting means govern the control means to automatically change the gap and the output of the motor to obtain constant speed.

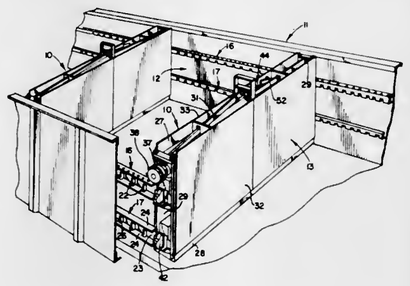
3,641,940
CARGO RESTRAINT MECHANISM
Richard A. Evans, Smyrna, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 9, 1970, Ser. No. 17,794
Int. Cl. B60p *7/08*; **B61d** *45/00*; **B65j** *1/22*
U.S. Cl. 105—369 A **8 Claims**

This cargo holddown device comprises two spring-biased levers mounted for rotation on fixed points disposed at right angles to one another, each adapted to engage and restrain one edge of adjacent cargo pallets or containers while serving at the same time as a spacer between the pallets or containers. The springs associated with the levers are biased in opposite directions permitting them to be maintained in



either an erect or depressed position by the sequential manipulation of one lever with respect to the other due to their position and pivotal mountings. Such manipulation requires no tools or special equipment, and can be readily accomplished by foot by the operator without bending or kneeling down.

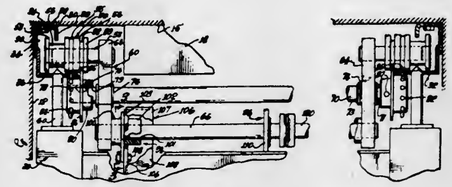
3,641,941
AUTOMATIC LOCKING MOVABLE BULKHEAD
Wes E. Sanders, 1922 E. 96th Street, Chicago, Ill.
Filed May 4, 1970, Ser. No. 34,352
Int. Cl. B60p *7/14*
U.S. Cl. 105—376 **10 Claims**



A movable bulkhead assembly for a freight vehicle. Said bulkhead is movable along rails on opposite sides of the vehicle and has gravity actuated latch plates engageable with keeper notches in the rails to hold the bulkhead in a selected position.

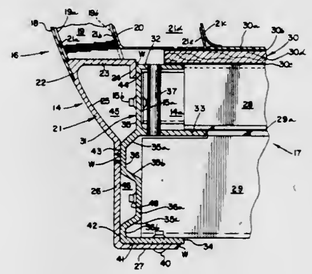
3,641,942
UNDERSLUNG GATE SUSPENSION
Marion G. Konrad, Hacienda Heights, and John W. Erickson, Huntington Beach, both of Calif., assignors to Preco, Inc., Los Angeles, Calif.
Filed July 6, 1970, Ser. No. 52,334
Int. Cl. B60p *7/14*
U.S. Cl. 105—376 **5 Claims**

Safety retaining structure is described that is applicable to a load dividing gate mounted on longitudinal rails by means of a special underslung suspension which provides clearance for an overhead central obstruction while retaining the known action of a squaring shaft. The suspension further includes vertical adjustment at each rail and permits swinging



movement of the gate structure about an axis parallel to the squaring shaft.

3,641,943
SIDE SILL FOR RAILWAY VEHICLE
Thomas J. O'Neill, Evergreen Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed June 1, 1970, Ser. No. 42,399
Int. Cl. B61d *17/08*
U.S. Cl. 105—418 **12 Claims**

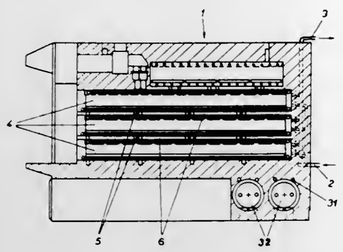


A side sill arrangement in which a first channel member which forms a part of a side frame is joined to a second channel member which forms a part of the underframe assembly. The joined channel members form a hollow side sill beam assembly which extends longitudinally of the railway car to function as a strengthening member having sufficient strength to eliminate the need of a through car center sill. The formed beam includes hollow portions used to conceal fasteners which attach internal members thereby rendering the side sill with a smooth unobstructed outside surface permitting it to be used as an external member without additional covering.

3,641,944
BAKING OVEN HEATED BY A FLUID MEDIUM
Marcel Scheyen, Strasbourg, France, assignor to Societe Dite: A. Scheyen Fils S.A., Strasbourg, France
Filed May 12, 1969, Ser. No. 823,917
Claims priority, application France, May 17, 1968, 9162
Int. Cl. A21b *1/08*
U.S. Cl. 107—55 A **7 Claims**

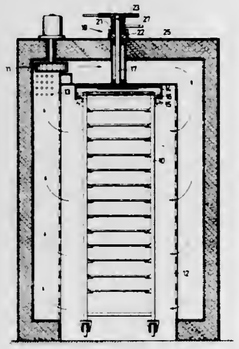
A baking oven heated by fluid thermal medium and comprising a furnace separated from an oven and placed in a suitable location, for preference outside the bakehouse, and the oven comprising cooking compartments separated one

from another by spaces of air, and heat exchangers for obtaining a maximum of regularity of the temperature in the



cooking compartments, and spray tubes for producing steam disposed near the center of each compartment.

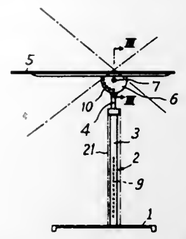
3,641,945
DISCONTINUOUS OVEN
Magnus E. Tillander; Ake B. Persson, both of Vallingby, and Leif A. T. Johansson, Huddinge, all of Sweden, assignors to Ti-Pe Elmeko, Tillander & Persson, Stockholm, Sweden
Filed July 15, 1969, Ser. No. 841,804
Claims priority, application Sweden, July 31, 1968, 10376/68
Int. Cl. A21b *1/42*
U.S. Cl. 107—60 **2 Claims**



In a rack oven in which the rack can be pushed into the oven chamber and gripped and rotated or reciprocated by a driver member at the top of the oven chamber, the driver member is shiftable between a lower position for gripping the rack with the latter supported by the floor of the oven chamber and an upper position for holding the rack raised from the floor. The shifting of the rack is effected by means of an axial cam or a toggle linkage and is controlled by the opening and closing movements of the door of the oven chamber.

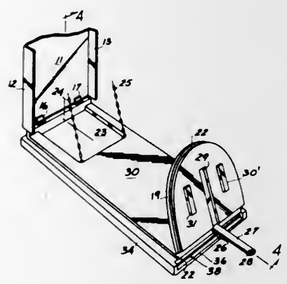
3,641,946
DRAWING TABLES
Henri Charnay, 148 Rue de Lourmel, Paris, 15 eme, France
Filed Dec. 29, 1969, Ser. No. 888,304
Claims priority, application France, Dec. 31, 1968, 182877
Int. Cl. A47f *5/10*
U.S. Cl. 108—6 **1 Claim**

Drawing or draughting table comprising a board, fast with plates oscillating on a pivot on which slide two arms adapted to also slide along two posts, pins on the arms penetrating



into apertures formed in the plates and in the posts and a cam controlling the sliding action of the arms on the pivots.

3,641,947
PICTURE-IRONING BOARD COMBINATION
Charlie N. Finney, 716 North Nonroe, Albany, Ga.
Filed May 18, 1970, Ser. No. 38,172
Int. Cl. A47b *3/00*
U.S. Cl. 108—38 **7 Claims**

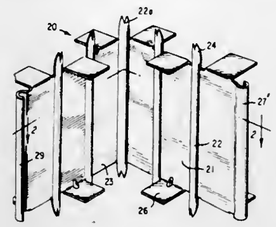


This invention relates to a foldable ironing board that is attached to a wall-mounted cabinet support means. The ironing board is pivotally supported on the cabinet support means for movement between an inoperative position and an operative position. When the ironing board is in its inoperative position, it is folded into the cabinet housing in a substantially vertical position. The underside of the ironing board is provided with a picture frame means which is detailed for holding decorative items thereon. The picture frame means is detailed to completely obscure the ironing board and support cabinet when the ironing board is moved to its inoperative position. In its operative position, the ironing board swings down from the support cabinet and folds out into a substantially horizontal position. Releaseable holding means in operatively associated with the ironing board and the support cabinet for holding the ironing board in the inoperative position.

3,641,948
PRESS-ON SUPPORT FOR A PALLET
Dwight C. Brown, 414 N. Granada Street, Arlington, Va.
Filed June 20, 1969, Ser. No. 835,115
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 **14 Claims**

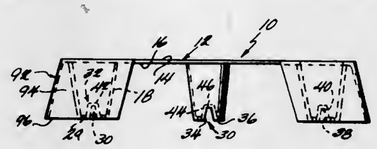
Metal supports having upright walls for self-fastening to a wooden or composition deck of a pallet to provide support for the deck. Each support has a plurality of prongs extending from at least one end of the upright walls to penetrate into the pallet deck during construction of the pallet. The

walls of the support may be tapered so as to facilitate the nesting of a plurality of like supports to reduce storage space



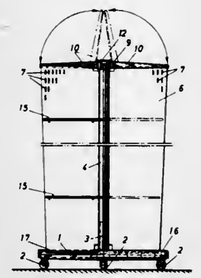
requirements and increase ease of handling prior to use in assembly of the pallet.

3,641,949
PALLET
Homer L. Monk, 3008 Edgewood Drive, Midwest City, Okla.
Filed Aug. 28, 1970, Ser. No. 67,836
Int. Cl. B65d *19/44*
U.S. Cl. 108—53 **23 Claims**



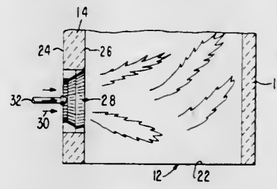
A pallet having the plurality of depending legs and which may be vertically stacked with like pallets in either of two nested positions having differing stacking heights depending upon the relative angular orientation about a vertical axis of vertically adjacent like pallets in the stack.

3,641,950
ROTATABLE DISPLAY STAND
Franc Lennart Axhamre, Savedalen, Sweden, assignor to Moderna Butiksenrednegar AB, Savedalen, Sweden
Filed Dec. 3, 1968, Ser. No. 780,823
Claims priority, application Sweden, Dec. 4, 1967, 16587/67; Mar. 14, 1968, 3341/68; June 4, 1968, 7429/68; Nov. 19, 1968, 15684/68
Int. Cl. A47b *57/10*
U.S. Cl. 108—60 **9 Claims**



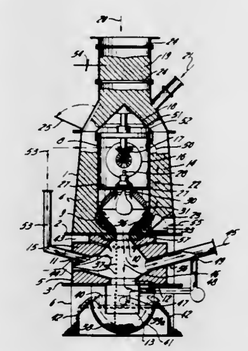
The present invention relates to a display stand of the kind having a vertical post rotatably carried in the center of a supporting means, which preferably is provided with wheels. The stand is further provided with all elements which are easily applied and easily replaced on the post. The object of the invention is to provide such a stand that is stable although its different compartments are differently shaped for exposing different kinds of goods. This has been achieved by providing the wall elements with hooks for engagement with slots in the post and the wall elements are further adapted, when applied on the post, to be retained in a fixed angle position by means of holding means on the lower and/or upper short sides of the wall elements.

3,641,951
COMBUSTION CHAMBER BURNER THROAT CONSTRUCTION
Chester S. Binasik, Palo Alto; Daniel H. Hudson, San Lorenzo, and Temple S. Voorheis, Atherton, all of Calif., assignors to Coen Company, Burlingame, Calif.
Filed Jan. 9, 1970, Ser. No. 1,653
Int. Cl. F23m *5/02*
U.S. Cl. 110—1 A **7 Claims**



A burner throat that is shaped in accordance with the shape of the combustion chamber in which the throat is installed to afford flame shaping so that the flame is distributed throughout the combustion chamber. A burner throat formed of a plurality of individual segmental bricks, the totality of which define the throat shape. Each brick is shaped in respect to its position in the throat to direct the flame appropriately within the combustion chamber. A burner throat formed at the site of installation with a plurality of appropriately shaped segmental bricks.

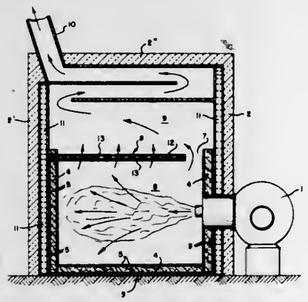
3,641,952
DEVICE FOR THERMIC DESTRUCTION OF RAW AND WASTE MATERIALS
Johannes Wotschke, Guntherstrasse 26, Hannover-Wladhausen, Germany
Continuation of application Ser. No. 765,206, Oct. 4, 1968, now abandoned. This application Aug. 19, 1970, Ser. No. 65,251
Claims priority, application Germany, Oct. 5, 1967, P 15 51 870.4; Nov. 27, 1967, P 15 51 871.5; Apr. 23, 1968, P 17 56 215.1
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **20 Claims**



A device is provided for the thermal decomposition of refuse materials. This device includes an upright column

formed of three stacked cylinders which are separated by bottoms arranged intermediate the cylinders. Within the uppermost of the stacked cylinders is suspended an internal cylinder which defines with the uppermost cylinder an annular space through which material to be processed is passed. The internal cylinder terminates above the bottom of the uppermost cylinder so that the material can move radially inwards from the annular space to define a flame chamber located below the uppermost cylinder. In the central of the stacked cylinders is a ceramic body defining an evacuating passage and a mixing chamber, both of which are combined with the annular chamber to define a vertical passage which extends downwardly into the bottommost of the stacked cylinders wherein is arranged apparatus for receiving melted material from the flame chamber. Arrangements are provided for passing air through the material being processed and for passing fuel and combustion air into various chambers for the proper treatment of the material. Controllable devices are provided for supplying raw material downwardly into the aforenoted annular chamber.

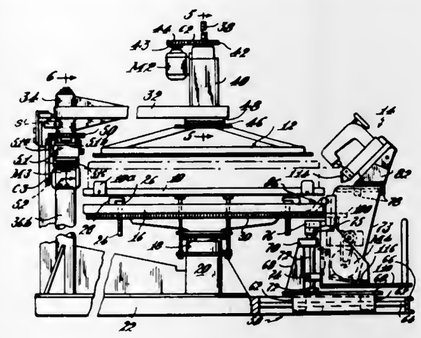
3,641,953
BOILER CONSTRUCTION
Claude Herzberg, Bron, France, assignor to Societe Generale des Produits Refractaires, Paris, France
Filed Sept. 26, 1969, Ser. No. 861,415
Claims priority, application France, Sept. 30, 1968, 168135
Int. Cl. F23m *9/06*
U.S. Cl. 110—97 R **7 Claims**



A boiler is provided, inside the water tubes or water jackets thereof, with a lining to its firebox or combustion chamber in the form of sheets or pads of mineral wool fiber enclosed between refractory steel grids, and with a refractory filter sheet of cloth woven of ceramic or mineral fiber filaments, permeable to gases but capable of holding back particulate material, the filter sheet extending over a major part of the exit from the combustion chamber and defining beyond it a heat exchange chamber in which the gases of combustion largely freed of particulate matter pass over heat exchange surfaces of the boiler water jackets or water tubes.

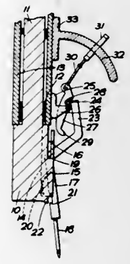
3,641,954
MATTRESS EDGE BINDING MACHINE AND METHOD OF EDGE BINDING
Frederick E. Kalning, Quincy, and Howard E. Redman, Weymouth, Mass., assignors to Mathewson Corporation, Weymouth, Mass.
Filed Dec. 23, 1969, Ser. No. 887,592
Int. Cl. D05b *11/00*
U.S. Cl. 112—3 R **21 Claims**

A rotatably supported table for supporting a mattress assembly including bottom, top and side panels of covering material, with one broadside in a horizontal upwardly facing position for rotation relative to a sewing machine supported adjacent the table with its sewing instrumentalities at a predetermined level, a compression platen supported above the table for compressive engagement with the upwardly facing broadside of the mattress assembly for compressing the mattress assembly to bring the upwardly facing side and the sewing instrumentalities into a substantially common plane with a sufficient slack in the covering material of the top and side panels at the edge formed by the intersection of the upwardly facing broadside and the narrow side to enable joining



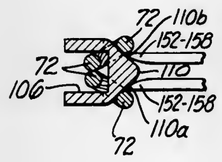
the edges of the panel for presentation to the sewing instrumentalities, a carriage adjacent the table, said carriage being movable radially with respect to the center of rotation of the table, said carriage supporting the sewing machine and a coupling connecting the carriage to the table operable to cause the carriage to following the contour of the table as the latter is rotated relative to the carriage to maintain the sewing instrumentalities in operative relation to said edges to be sewn as the assembly is rotated relative thereto.

3,641,955
APPARATUS FOR PRODUCING TUFTED MATERIAL
Philip Brown, Wembley, and Peter Hawkins, Kingston Hill, both of England
Filed Feb. 24, 1970, Ser. No. 13,619
Claims priority, application Great Britain, Feb. 25, 1969, 9,986/69
Int. Cl. D05c *15/20*
U.S. Cl. 112—79 R **11 Claims**



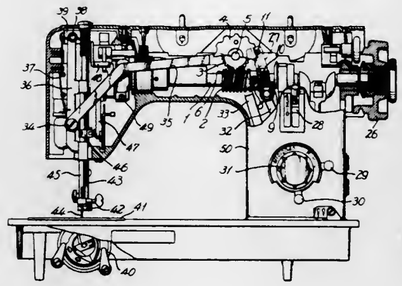
An apparatus for producing tufted material comprises a row of tufting needles, means for driving the needles towards and away from a backing to be tufted, the needles being individually movable into and out of driving engagement with the driving means, and a selectively operable latching device for each of the needles which device is movable into latching engagement with the needles to prevent movement of the needles toward the backing.

3,641,956
NONDIRECTIONAL LOOP TUFT CARPET-MAKING MACHINE
Sylvan B. Ownbey, 1200 Francisco, Torrance, Calif.
Filed Aug. 26, 1970, Ser. No. 67,101
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R **10 Claims**



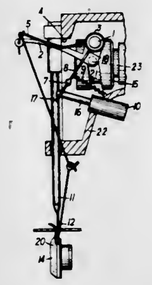
A pass-type carpet-making machine for making loop tuft carpeting having a nondirectional or random appearance. A plurality of reciprocating needles are preferably hollow throughout their length and each inserts two or more yarn strands into a base fabric. A pair of loopers cooperate with each needle to form at least two loops of yarn taken from the opposite sides of each needle on each reciprocal stroke of said needles.

3,641,957
ZIGZAG CAM DRIVE IN COMBINATION WITH A SEWING MACHINE
Susumu Hanyu, Tokyo, Japan, assignor to Janone Sewing Machine Co., Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 674,367, Aug. 24, 1967, now abandoned. This application Jan. 21, 1970, Ser. No. 7,294
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 R **9 Claims**



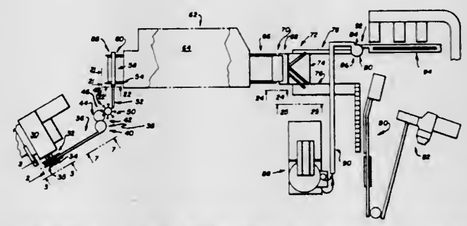
A worm driving the zigzag cam of a sewing machine through a gear is reciprocated in axial direction by a control cam so that the axial movement of the helical thread of the worm is accelerated and decelerated, resulting in cyclical acceleration and deceleration of the rotational speed of the zigzag cam which permits the construction of the zigzag cam with a smaller pitch than in conventional constructions so that the sewing machine makes a greater number of zigzag stitches during each cam revolution.

3,641,958
DEVICE FOR THE OCCASIONAL OMISSION OF BACKSTITCHES ON AUTOMATICALLY CONTROLLED QUILTING AND EMBROIDERY MACHINES
Ludwig Trageser, 32 Van Bargen Strasse, Hamburg-Wandsbek, Germany
Filed Mar. 18, 1970, Ser. No. 20,658
Claims priority, application Germany, June 6, 1969, P 19 28 811.0
Int. Cl. D05b *49/00*
U.S. Cl. 112—241 **4 Claims**



A device for the occasional omission of backstitches on automatically controlled quilting and embroidery machines, particularly on automatic embroidery machines, in which a main thread takeup lever is controlled in such a way that it can be moved up and down about a fulcrum. A spring lever is movable together with this main thread takeup lever and is mounted on the fulcrum thereof. A torsion spring urges the spring lever against a stop mounted in a permanent position in the machine. The upper thread in course of being unwound is additionally guided by the spring lever on the upstream side of the main thread takeup lever. The spring lever is preceded by a blocking device which can be moved into the path of motion of said spring lever.

3,641,959
METHOD FOR PRODUCING CLOSURES
Robert L. Hurst, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Dec. 18, 1968, Ser. No. 784,845
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 A **15 Claims**



Completely automatic system stamps and forms metal discs for closures of the two-piece type and feeds them sealing face down to a conveyor belt. At first transfer zone, magnet pulls each disc or lid up against lower pass of second conveyor belt. Magnetic pulley retains lids in contact with belt to swing up through arc to upper pass of belt. Lids are then conveyed to treating zone where gasket material is applied as lids are rotated and transported arcuately. Radial arms on carousel travel in circle to pick up lids sequentially by magnetism or vacuum from coating table and transfer them to upper pass

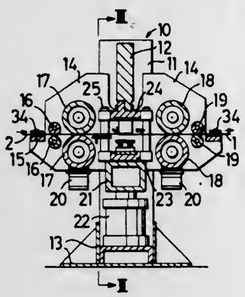
of next conveyor. At next transfer zone, lids are picked up sequentially by individual magnets on lower pass of next conveyor and moved to next transfer zone where they are released in groups to form transverse rows on wide conveyor belt. Belt passes through curing station and diverter realigns transverse rows to fore and aft single file. Next conveyor transfers and feeds lids sequentially to assembly zone. Closure bands are also fed sequentially to assembly zone and combined with lids to produce assembled two-piece closures. Lids may alternatively be fed to different assembly zone where they are packed in sets for shipping. One-piece closures with integral lid and flange may be formed and processed in same manner.

3,641,960

APPARATUS FOR JOINING SHEET METAL BANDS

Lennart Reinhold Kalb, Osterskar; Karl Gustav Olsson, Solna, and Bengt Gordon Theodor Blom, Stockholm, all of Sweden, assignors to Aktiebolaget Secor, Akers Runo, Sweden

Filed Dec. 15, 1969, Ser. No. 884,801
Claims priority, application Sweden, Dec. 30, 1968, 17942/68
Int. Cl. B23p *11/00*
U.S. Cl. 113—1 N **7 Claims**



An apparatus for joining separate sheet metal bands to be passed in succession through a band-treating plant by punching interengaging cuts in overlapping end portions of the bands and comprising band-gripping rollers operative to first position the band end portions to be joined in relation to a transverse series of band cutting and deforming tools, to subsequently stretch the joint in order to effect interlocking engagement of the cuts, and to finally subject the joint to a pressure deforming the edges of the engaged cuts.

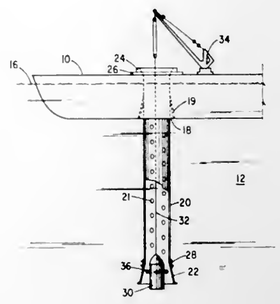
3,641,961

SYSTEM FOR LOWERING A SUBSEA DEVICE FROM A VESSEL

George C. Howard, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.

Continuation of application Ser. No. 861,221, Sept. 15, 1969, now abandoned , which is a continuation of application Ser. No. 737,556, June 17, 1968, now abandoned. This application May 25, 1970, Ser. No. 48,697
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 R **14 Claims**

A system for lowering a subsea device from a vessel floating on a body of water. Means are provided to prevent the subsea device from striking the vessel as it goes through the sea-air interface. In a preferred embodiment, an access well means such as a tube extends downwardly through the vessel to below the wave action of the body of water. The outer wall of the subsea device is provided with roller members urged against the inner wall of the access well. Other means



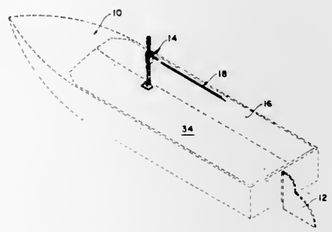
of moving a subsea device through the sea-air interface are also disclosed.

3,641,962

STEERING DEVICE FOR BOATS

George V. Fowlkes; Glenn E. Collins, and Darrell W. McCormack, all of Tulsa, Okla., assignors to Fo-Mac Enterprises, Inc., Tulsa, Okla.

Filed July 7, 1969, Ser. No. 839,164
Int. Cl. B63h *25/10*
U.S. Cl. 114—144 **7 Claims**



A stick-type steering mechanism for outboard motorboats wherein the steering stick is mounted on the side of the boat in a convenient position for the operation of the craft and may be pivoted about one end for effecting steering of the boat. At least two positions of connection between the stick and the motor or rubber are provided for achieving a variable mechanical ratio for steering of the boat whereby rapid steering response is possible during slow speeds of the boat, and lesser force and slower steering is possible during periods of fast travel or high speeds. In addition, the upper portion of the stick may be removed when not in use to provide less obstruction with the normal utilization of the boat.

3,641,963

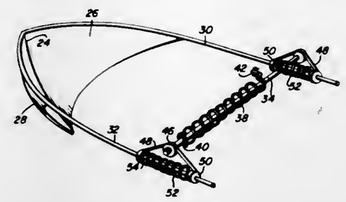
SPRING-SUPPORTED BOW BAFFLE FOR BOATS

Charles W. Chancellor, Jr., Midland, Tex., assignor to Chancellor Chair Company

Filed Dec. 31, 1969, Ser. No. 889,391
Int. Cl. B63b *39/00*
U.S. Cl. 114—219 **7 Claims**

A baffle disposed in front of the bow of a boat and generally conforming in shape and configuration therewith and being mounted from the boat hull for vertical swinging

movement and longitudinal reciprocation with movement of the baffle being resisted by spring devices to absorb and



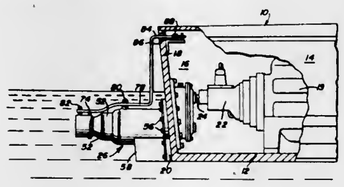
cushion the forces normally exerted by oncoming waves onto the bow of a boat.

3,641,964

WATER JET PROPULSION UNIT

Robert B. Lee, 810 N. E. 4th Avenue, Homestead, Fla.

Filed Oct. 20, 1969, Ser. No. 867,598
Int. Cl. B63h *11/00, 1/14*
U.S. Cl. 115—12 **6 Claims**



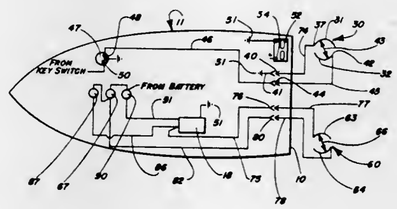
A propulsion unit for a boat hull of the type including a transom and an engine disposed forwardly of the transom and provided with a rearwardly facing output shaft spaced above the lower marginal edge portion of the transom. A hollow elongated housing is provided and supported from the lower marginal edge portion of the transom in rearwardly projecting position and the housing has a longitudinal impeller shaft journaled therein whose forward end projects forwardly through the transom. The forward end of the housing is provided with a downwardly opening outlet immediately rearward of the lower marginal edge portion of the transom and an offset drive train assembly is provided forwardly of the transom and drivingly connects the elevated engine output shaft to the lower forward end of the impeller shaft.

3,641,965

TRIM INDICATOR SYSTEM

Robert C. Schmiedel, Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,046
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 **21 Claims**



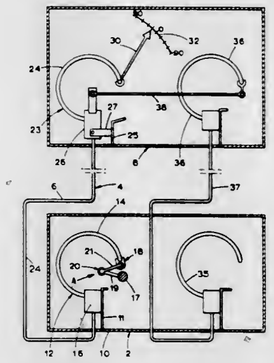
A system for indicating to the boat driver the trim angle at which his stern drive is set. The system incorporates a variable resistor which is enclosed in waterproof housing. The housing is mounted on the gimbal ring or yoke at the end of the shaft which is the horizontal tilt axis. The movable portion of the variable resistor is attached to the shaft which forms the horizontal tilt axis of a stern drive. In this manner, a signal proportional to the angle of tilt of the stern drive is created and can then be transferred to an indicator gauge. A trim limit switch having interchangeable parts with the variable resistor can also be mounted on the other end of the horizontal tilt axis and connected to the power trim system to limit the angular trim position of the stern drive.

3,641,966

POSITION INDICATOR

Olav Auerdahl, Sandvika, Norway, assignor to Norsk Hydro A.S., Bygdo Alle, Oslo, Norway.

Filed May 21, 1970, Ser. No. 39,391
Claims priority, application Norway, May 22, 1969, 2099/69
Int. Cl. F16k *37/00*
U.S. Cl. 116—125 **4 Claims**



A position indicator system for remote indication of a position of a governing member. The indicator system has two bourdon tubes, the first of which is mechanically connected to the governing member and the second serves as an indicator actuator. The two bourdon tubes are interconnected with a capillary tubing in a closed hydraulic system and transmits the pressure variations generated by the mechanical subjection of the first bourdon tube by the governing member to the bourdon tube in the indicator. A compensating system has an additional pair of bourdon tubes, the first of which is installed at the location of the governing member, and the second of which is installed at the location of the indicator. The bourdon tubes are interconnected with a capillary tubing in a closed hydraulic system. A mechanical connection is provided between the pivotable fitting supporting the second bourdon tube and a free end of the bourdon tube at the indicator position.

3,641,967

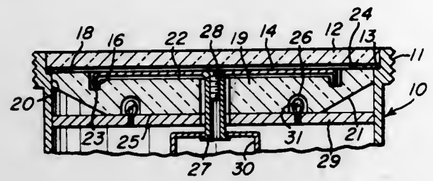
HIGH-VISIBILITY METER

Wilson A. Charbonneaux, Dayton, Ohio, assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Oct. 16, 1967, Ser. No. 675,535
Int. Cl. B60q *3/04*; **G01d** *11/28*
U.S. Cl. 116—129 L **11 Claims**

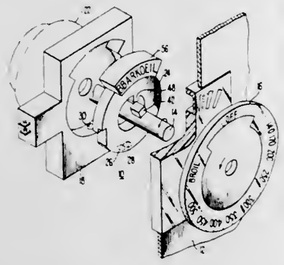
An illuminated meter housed in a cylindrical sealed casing and offering maximum visibility and minimum potential of parallactic error in readings, achieved by structure providing that its indicator or pointer is embodied in a disc form and

arranged closely adjacent and substantially coplanar with the related indicia. The indicia is incorporated in a dial body



capable of transmitting or reflecting light with substantially uniform intensity.

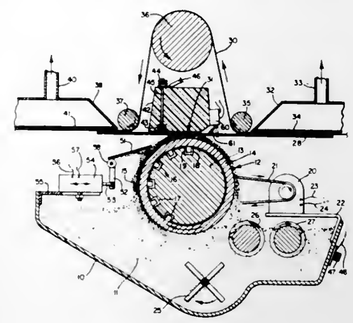
3,641,968
RANGE CONTROL SYSTEM
Richard Davis Grayson, Arcadia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Original application June 20, 1968, Ser. No. 738,460. Divided and this application Dec. 23, 1970, Ser. No. 101,064
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 **6 Claims**



The invention comprises a single control knob for controlling both the bake burner and the broil burner of a range. When the bake burner is operational, a display is provided to so indicate. When the control knob is turned to its maximum operating condition, the bake burner is disconnected and the broil burner then becomes operational; and simultaneously, a display indication is provided to that effect. Should the operator desire to operate the broil burner at a reduced temperature, the control may then be turned to the reduced operating temperature. Should it once again be necessary of operate the bake burner, the control knob is turned to the "off" position, whereupon, the knob may then be returned to a temperature whereby the bake burner will be operational.

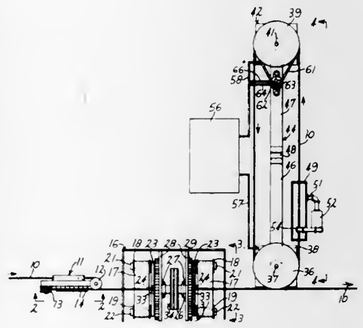
3,641,969
TONER UNIT FOR PHOTOELECTROSTATIC REPRODUCTION
Nils L. Hakanson, West Springfield, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.
Filed Dec. 18, 1969, Ser. No. 886,073
Int. Cl. G03g *13/08*
U.S. Cl. 118—3 **18 Claims**

Apparatus for applying toner to an electrostatic image carried by an insulating surface such as the surface of a copy sheet by contacting the surface with a toner mix comprising toner particles and magnetic carrying particles, which apparatus includes a gate disposed in a position adjacent to the moving surface of a magnetic brush unit on which a magnetic brush of toner mix is continuously formed, disrupted and reformed, the gate being adapted for selective movement by a control means so as to govern the advance of toner mix to a toning station where it contacts the image on the copy sheet. A switch is disposed along the path of the copy sheet and adapted to be actuated by the copy sheet and to control the



operation of the gate and the operation of the means driving the electrical brush unit. The apparatus prevents toner mix from contaminating the back side of the copy sheet when the leading end thereof is advanced through the toning station.

3,641,970
APPARATUS FOR PREPARING WIRE FOR DRAWING
Oliver R. Brekle, Birmingham, Ala., assignor to M & B Metal Products Company
Filed Jan. 6, 1970, Ser. No. 974
Int. Cl. B05c *11/00*
U.S. Cl. 118—5 **5 Claims**

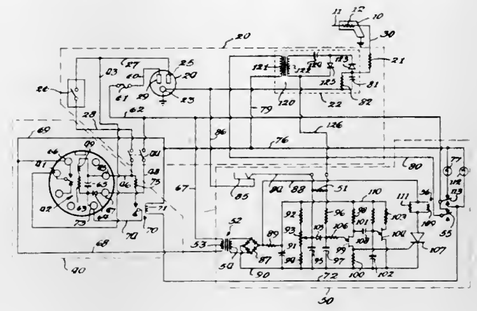


Wire delivered continuously in a direction axially of its length and passes around electrically conductive members. Coating applied to wire between conductive members. Electrical current passed through wire while supported between conductive members to heat wire and bake coating thereon. Coated wire pulled continuously to receiving end of wire drawing apparatus.

3,641,971
APPARATUS FOR PREVENTING ARCING IN AN ELECTROSTATIC COATING SYSTEM
Arvid C. Walberg, c/o H. G. Fischer & Co. 9451-9491 West Belmont Avenue, Franklin Park, Ill.
Filed Sept. 1, 1967, Ser. No. 665,104
Int. Cl. B05c *11/00, 5/02*
U.S. Cl. 118—8 **24 Claims**

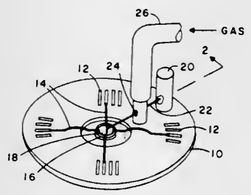
A safety device for an electrostatic coating system. This device automatically senses and deenergizes the power to the electrode in the spray gun when it exceeds a predetermined

level, as for example, when the operator allows the electrode to approach too close to a grounded object. By properly setting this predetermined level, deenergization occurs prior to the time a disruptive arc or spark would normally be emitted from the gun electrode. In addition, a delay circuit may be provided that is operable by the gun trigger switch. After the operator turns off the coating material at the end of



his stroke, this circuit would delay for a short time the deenergization of power to the gun's electrode. Surges of power are thus avoided in the circuitry which prolongs the life of the power transformer. Example of sharp edged charging nozzle electrodes useful with this system as well as the method of use and setup of the necessary circuitry are also disclosed.

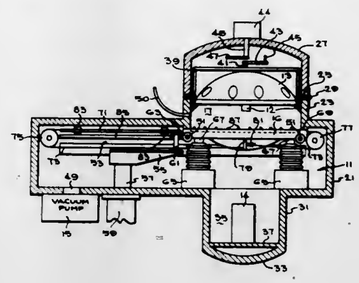
3,641,972
PROBE ASSEMBLY
John L. Hostetter, Santa Ana, Calif., assignor to Collins Radio Company, Dallas, Tex.
Filed Sept. 29, 1970, Ser. No. 76,356
Int. Cl. B05c *11/105*
U.S. Cl. 118—9 **2 Claims**



A probe for electrically testing devices and including a marker means for marking defective devices. The marker includes a dye container, an open-ended capillary connected to the container, and actuation means in the form of a gas cylinder for actuating the marker.

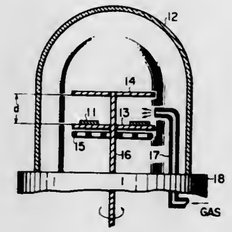
3,641,973
VACUUM COATING APPARATUS
Robert L. Shrader, Castro Valley, Calif., assignor to Air Reduction Company, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 92,702
Int. Cl. C23c *11/00*
U.S. Cl. 118—49 **6 Claims**

Vacuum coating apparatus is described wherein substrates to be coated supported on a substrate holder may be inserted into and removed from an isolatable region of the vacuum chamber, which isolatable region may be sealed off by a movable gate, whereby the remaining regions of the vacuum



chamber may be maintained under vacuum while inserting and removing the substrate holders.

3,641,974
APPARATUS FOR FORMING FILMS
Eiichi Yamada; Yoshiteru Arakawa; Masayuki Yamamoto, and Hiroto Nagatomo, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 28, 1970, Ser. No. 67,879
Claims priority, application Japan, Aug. 29, 1969, 44/68031
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **15 Claims**

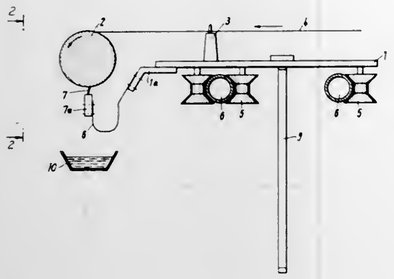


The present disclosure is directed to an apparatus for forming a film on a wafer which comprises a container means adapted to be hermetically sealed, a shaft means disposed for rotation in said container means, a first and second plate means fixed to said shaft means in a spaced-apart relationship, said first plate means adapted to support said wafer and pipe means for introducing a reaction gas into the container means, one end portion of said pipe means being placed between the first and second plate means.

3,641,975
TUBE WINDING APPARATUS
Bertrand P. E. Level, Le Vesinet, France, assignor to Plastres-Manurhin S.A.R.L., Mulhouse-Bourtzwiller, France
Filed Mar. 12, 1970, Ser. No. 18,936
Claims priority, application France, Mar. 21, 1969, 6908282
Int. Cl. B31c *11/04*
U.S. Cl. 118—107 **9 Claims**

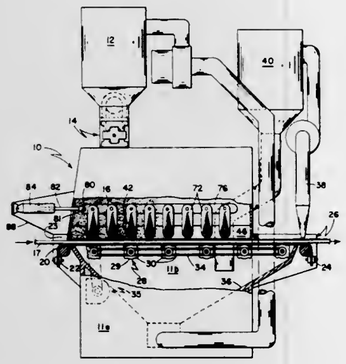
Apparatus for fabricating tubes by winding elongated fibers or filaments impregnated with synthetic resin upon a mandrel or core. The filaments are guided to be laid upon the mandrel in a desired manner by a filament guide mounted upon a carriage which reciprocates parallel to the axis of the mandrel. A scraper or doctor blade, preferably made of elastomeric material, is mounted on the carriage so as to reciprocate therewith, the blade being constantly

resiliently urged into contact with the winding on the mandrel in a longitudinal zone including that of the instantaneous



winding but spaced angularly therefrom so as to remove excess resin from the winding on the mandrel.

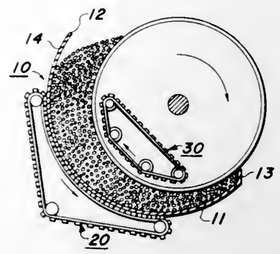
3,641,976
ELECTROSTATIC GRIDS
George E. Corneau, Central Falls, R.I., assignor to Indev, Inc., Pawtucket, R.I.
Filed Aug. 5, 1970, Ser. No. 61,056
Int. Cl. B05c *5/02*
U.S. Cl. 118—624 **9 Claims**



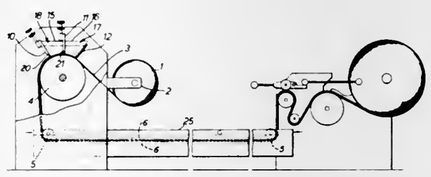
An electrostatic grid, especially useful in a flocking machine, has an exposed portion providing a corona which prevents flock from accumulating on the grid.

3,641,977
APPARATUS FOR AGITATING DEVELOPER MATERIAL WITHIN A HOUSING
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 27, 1970, Ser. No. 14,927
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **8 Claims**

An apparatus for developing a relatively moving surface bearing a latent electrostatic image wherein the apparatus includes a housing supporting developer material in contact with the surface. The motion of the image-bearing surface with respect to the development housing effects a frictional coupling of the development material therein to cause a circulation of developer for development of the latent image. The development apparatus further utilizes a moveable magnetic field producing means mounted exteriorly of the housing to increase the circulation of developer to produce enhanced development results over extended periods of use.



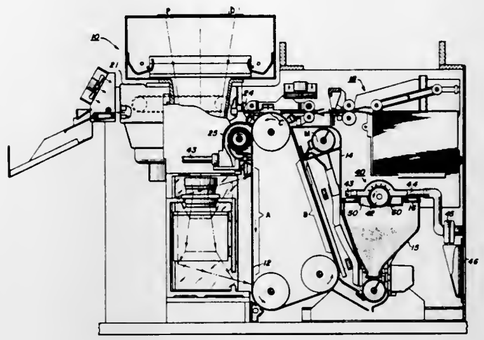
3,641,978
COATING APPARATUS
George Stuart Hathorn, Dagenham, Dock, England, assignor to Porvair Limited, Dagenham, Dock, England
Filed Jan. 7, 1969, Ser. No. 789,570
Claims priority, application Great Britain, Jan. 9, 1968, 1,260/63
Int. Cl. B05c *3/18, 3/12*
U.S. Cl. 118—412 **1 Claim**



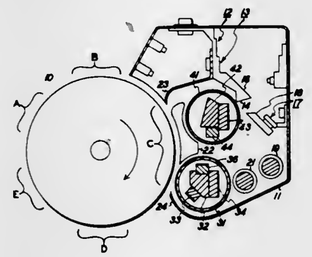
Coating apparatus suitable for depositing superimposed layers of two different viscous liquids or pastes on a support is provided which comprises a pair of hoppers having one lip common to both hoppers, forming the downstream lip of the upstream hopper and the upstream lip of the downstream hopper.

3,641,979
TONER-RECLAIMING SYSTEM
Dennis P. Gerbasi, West Webster, and James M. Donohue, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,861
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **7 Claims**

A toner powder reclaiming apparatus for use with the developing system of an electrostatic reproduction machine including a rotating drum in the path of movement of an airflow containing electrically charged toner particles which become attracted to the drum. A scraper blade is in contact with the drum for cleaning the toner off the collecting surface thereon. The toner particles thereby removed are directed automatically into the toner supply contained for the developing system.



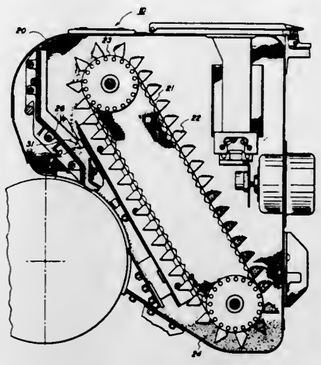
3,641,980
DEVELOPMENT APPARATUS
John T. Bickmore, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,648
Int. Cl. B05b *5/02*; **G03g** *13/00, 15/00*
U.S. Cl. 118—637 **13 Claims**



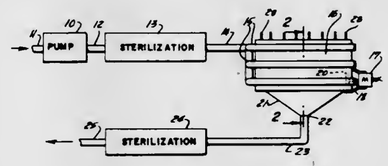
Apparatus for developing an electrostatic image including a train of rotatable transport rollers adjacent the development zone, each roller having fixed magnets located therein to attract magnetic developer material to the periphery of the roller, which transports the developer from a developer sump to an elevated position and releases the material so that it cascades across the electrostatic image.

3,641,981
APPARATUS FOR CONTROLLING DEVELOPER CHARGE LEVEL
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,844
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **9 Claims**

A method and apparatus for controlling the charge on circulating developer material in a development device. A corona discharge device sprays a corona charge onto the developer material to selectively control the charge on the carrier particles during development for enhanced development results.



3,641,982
BIVALVIA DEPURATION SYSTEM
David D. Woodridge; Joseph Clyde Kitchel, and William R. Garrett, all of Brevard County, Fla., assignors to National Shellfish Processors, Inc., Brevard County, Fla.
Filed Apr. 7, 1969, Ser. No. 827,441
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **4 Claims**

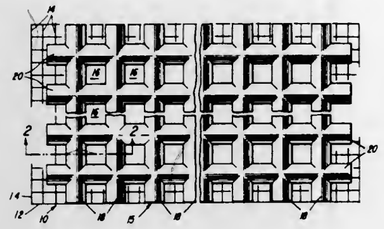


A bivalve depuration apparatus and method are provided in which bivalves, such as oysters, taken from contaminated waters, may be purified and rendered marketable.

3,641,983
ANTIBLISTER CAGE MAT AND METHOD FOR RAISING BROILERS
Everett M. Keen, and Anthony J. Siciliano, both of Vineland, N.J., assignors to Diamond International Corporation, New York, N.Y.
Filed Apr. 14, 1970, Ser. No. 28,390
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **9 Claims**

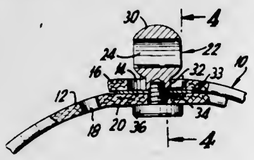
An antiblister mat, particularly adapted for raising broilers in a cage having a mesh floor on which broilers normally cannot be raised blister-free, in which the broilers are installed and breast or keel bone blisters are minimized, in which the mat is substantially resilient and comprises a plurality of openings so dimensioned and arranged as to prevent the breast of the broiler, when sitting, from engaging the mesh

floor of the cage, and in which the mat comprises various arcuate or tubular cross sections and in which the mat and cage



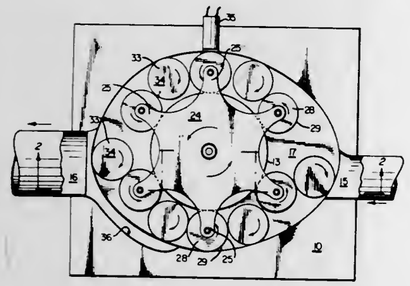
are readily cleaned and sterilized, and permit manure and the like to drop or pushed by birds' feet through the cage floor.

3,641,984
ADJUSTABLE DOG COLLAR
Alfred L. G. Lanus, New York, N.Y., assignor to L. Diaz Carlo, a part interest
Filed Jan. 22, 1970, Ser. No. 4,890
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **3 Claims**



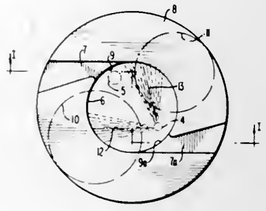
An adjustable dog collar includes an elongated strip having a single aperture at one end, and a bolt adjustably positioned at a predetermined location at its other end. That bolt passes through the aperture to establish a desired loop diameter and to provide an opening through which a leash may be attached.

3,641,985
INTERNAL COMBUSTION ENGINES WITH ROTARY PISTONS
David H. La Forge, R.R. 1, Box 648, Makawao, Hawaii
Filed July 7, 1970, Ser. No. 52,830
Int. Cl. F01c *1/02, 19/04;* **F02b** *53/10*
U.S. Cl. 123—8.09 **7 Claims**



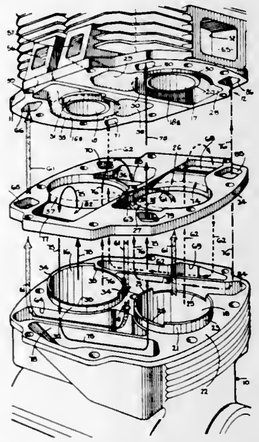
A rotary internal combustion engine is provided with a plurality of cylindrical pistons which move in rolling contact around a circular hub in a combustion chamber which has parallel sidewalls and an outer wall of generally elliptical configuration, with floating cylindrical rollers to seal the varying space between the pistons and the outer wall.

3,641,986
FOUR-CYCLE INTERNAL COMBUSTION ENGINE
Ludwig Fricker, Stuttgart-Feuerbach, and Manfred Schafer, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed May 22, 1970, Ser. No. 39,787
Claims priority, application Germany, May 24, 1969, P 19 26 613.8
Int. Cl. F02b *23/08*
U.S. Cl. 123—30 C **21 Claims**



A four-cycle internal combustion engine, particularly with externally controlled ignition, in which the piston is provided with an essentially cylindrical piston combustion space and in which a swirl of the charge present in the combustion space is produced by suitable squeeze flow channels terminating substantially tangentially in the piston combustion space within the area of the compression top dead center position of the working piston; the squeeze flow channels are formed by a suitable design of the working piston and/or of the cylinder head.

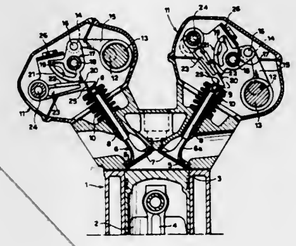
3,641,987
TWO-STROKE ENGINES
Bernard Hooper, Maybank House, Hope Street, Wordsley, Stourbridge, England
Filed Mar. 2, 1970, Ser. No. 15,799
Claims priority, application Great Britain, Mar. 7, 1969, 12,077/69
Int. Cl. F02b *33/14*
U.S. Cl. 123—71 R **11 Claims**



The specification discloses a stepped-piston two-cycle engine in which the cylinders are arranged in one or more sets

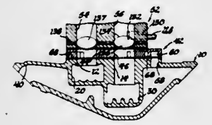
of two cylinders. The charge is pumped from a pumping part of each cylinder of the or each set to a working part of the other cylinder of the set through separate first and second separate transfer passages opening into the working part through first and second inlet ports respectively which are arranged symmetrically relative to the exhaust port of the cylinder. The first transfer passages of each set cross and the second transfer passages of the set cross. Each cylinder is arranged between parts of the transfer passages which feed its working part. The arrangement gives a compact engine with very good scavenging and capable of high performance.

3,641,988
VALVE-ACTUATING MECHANISM FOR AN INTERNAL COMBUSTION ENGINE
Giovanni Torazza, and Dante Giacosa, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy
Filed Feb. 2, 1970, Ser. No. 7,927
Claims priority, application Italy, Feb. 3, 1969, 50581 A/69
Int. Cl. F01l *1/34, 1/04*
U.S. Cl. 123—90.16 **16 Claims**



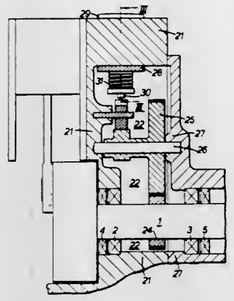
A valve-actuating mechanism for an internal combustion engine has a number of rocker arms for operating the respective valves, each rocker arm having a profiled cam surface for engaging the respective valve, and means, preferably hydraulically operated, for varying the valve movement produced by the rocker arm in dependence upon the engine speed and load to vary the valve timing for optimum efficiency.

3,641,989
EXHAUST GAS RECIRCULATION
David C. Hill, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 16, 1970, Ser. No. 89,755
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **1 Claim**



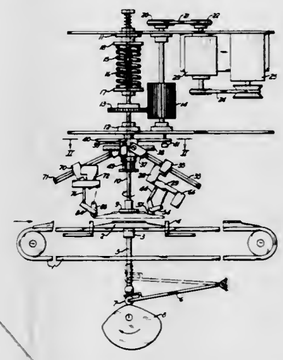
A diaphragm-operated control valve assembly, responsive to vacuum conditions at an induction passage slot traversed by the edge of the throttle, controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages.

3,641,990
INTERNAL COMBUSTION ENGINE
Richard Furneaux Kinnersly, Chapmans Farm, West Wellow, near Romsey, England
Filed Feb. 20, 1970, Ser. No. 13,046
Claims priority, application Great Britain, Feb. 21, 1969, 9,612/69
Int. Cl. F01m *1/00*
U.S. Cl. 123—196 R **9 Claims**



An internal combustion engine, either two-stroke or four-stroke, having sealed lubricant chambers at the locations of at least the crankshaft and the crankpin and/or the gudgeon pin. Where practical, certain bearing surfaces of the engine may comprise dry lubricating material.

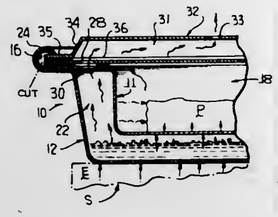
3,641,991
CERAMIC WARE DEBURRING MACHINE AND DRESSING HEADS
Arno Haber, 6015 Fifth Avenue, Pittsburgh, Pa.
Filed Apr. 27, 1970, Ser. No. 32,108
Int. Cl. B24b *5/36;* **B28d** *1/16*
U.S. Cl. 125—10 **13 Claims**



Ceramic ware rotating face down on a vertical axis is raised into engagement with a dressing head provided with a downwardly extending leg having a spring pressed arm inclined downwardly away from its lower end. A horizontal pivot connects the upper end of the arm to the leg in a position allowing the arm to swing in a vertical plane that is generally radial to the axis of rotation of the ware. The arm carries a tool bit that is pivoted to the arm on an axis parallel to the arm pivot. The bit has a lower ware-contact edge extending substantially parallel to the vertical plane of the arm. When rising rotating ware engages this contact edge and lifts the bit, the bit will move radially of the ware and also turn on

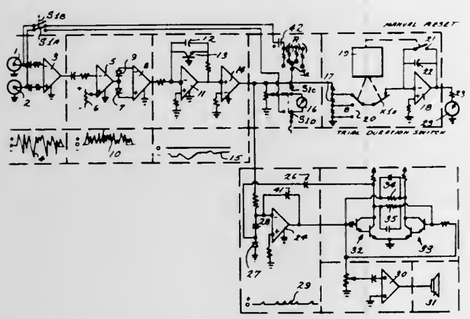
its own pivotal axis to conform to the engaged surface of the ware. Any burrs on the ware that strike the bit will be knocked off.

3,641,992
DOUBLE-BOILER HEATING CONTAINER
Harry A. Peyser, Olympia Fields, and Diane J. Doyle, Western Springs, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,341
Int. Cl. A47j 27/06
U.S. Cl. 126—378 9 Claims



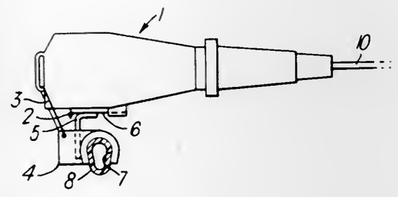
This disclosure relates to a container of the "double-boiler" type in which an edible product is packaged within an inner chamber and water is packaged within an outer chamber with the chambers at no time being in fluid communication. The container includes two lids, one of which closes the inner chamber and defines with the other a volume through which steam is permitted to pass through a venthole to atmosphere in a controlled manner whereby the edible product in the inner chamber is uniformly heated by conduction and/or convection.

3,641,993
NONLINEAR ELECTROMYOGRAPH
Kenneth R. Gaarder, Chevy Chase, and William B. Leaf, Silver Spring, both of Md., assignors to Prototypes, Inc., Kensington, Md.
Filed Apr. 23, 1970, Ser. No. 31,344
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1 R 10 Claims



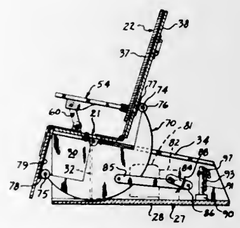
This specification discloses an electrical apparatus which measures human muscle activity and provides both visual and audio information relative to such activity for feedback to the human. Slight skin voltages caused by muscle activity are assumed by electrodes, transmitted via shielded electrical leads and processed by the apparatus, first to provide a visual display of the instantaneous logarithm of the peak value of such signals and secondly to provide a visual display of an accumulation or integration of the instantaneous logarithm of the peak signal values over a selectable and timed integration interval. In addition to these visual indications for human feedback, an audio signal, with a frequency proportional to the instantaneous logarithm of the peak value, is provided as a string of sharp pulses thus allowing human discrimination at very low frequencies such as 1 Hz.

3,641,994
TURBULENCE-SENSING BLOOD FLOWMETER
Raymond George Gosling, Hartron, Oldfield Road, Bickley, Kent, and David Henry King, 14, Aldersey Gardens, Barking, Essex, both of England
Filed July 22, 1969, Ser. No. 843,602
Claims priority, application Great Britain, July 19, 1968, 34,537/68
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 8 Claims



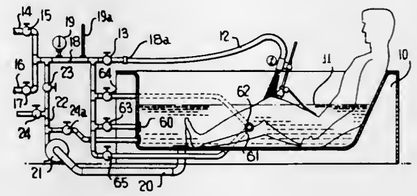
An apparatus which evaluates and signals a characteristic which is interdependent with a rate of flow of the bloodstream in an animal vascular system, by detecting and signalling undular alternations of pressure in the blood which alternations are the consequence of turbulence in the flow and are characteristically related to the flow rate. The invention includes the provision of means artificially to create the turbulence and may include adaptation to use in a surgical bypass duct. A C-shaped member fits onto the surgical bypass duct and turbulence in the duct which is indicative of flow rate is transmitted to the C-shaped member and to an acoustic transducer means mechanically connected to the C-shaped member which generates an electrical signal indicative of flow rate.

3,641,995
EXERCISING CHAIR
Vinton R. Brandt, 21 North Gretta, Waukegan, Ill.
Filed Nov. 26, 1969, Ser. No. 880,176
Int. Cl. A61h 1/02
U.S. Cl. 128—25 12 Claims



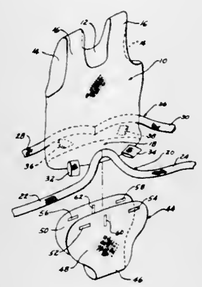
A chair having a seat, back and leg sections and arm supports. With a person seated in the chair, the back and leg sections and the arm supports are moved through a cycle in which the person's back is lowered and his legs are raised and thereafter his back is raised and his legs are lowered, and his arms are bent and unbent while being comfortably supported.

3,641,996
HYDROTHERAPY APPARATUS
Homer C. Friend, 6502 North 35th Avenue, Phoenix, Ariz.
Filed Nov. 14, 1969, Ser. No. 876,887
Int. Cl. A61h 9/00
U.S. Cl. 128—66 5 Claims



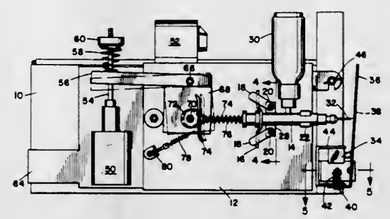
A hydrotherapy apparatus including a tub having water inlets spaced around the periphery thereof and adapted to selectively or simultaneously admit water into the tub so as to cause turbulence therein for hydrotherapeutic applications. Water may also be caused to impact upon a given portion of a patient's body under predeterminable conditions of volume and pressure by means of a nozzle the position of which is adjustable relative to the patient's body by means of a support rod which engages the patient's body and fixes the position of the nozzle relative thereto. The support rod includes a ball carried in a socket on one end thereof as well as a pivotable plate which is adapted to engage the patient's body and thus fix the angular position of the nozzle relative thereto.

3,641,997
RESTRAINING DEVICE
John T. Posey, Jr., 2835½ N. Holliston Avenue, Altadena, Calif.
Filed Dec. 29, 1969, Ser. No. 888,425
Int. Cl. A61f 13/00
U.S. Cl. 128—134 2 Claims



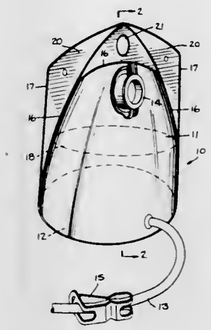
A device for comfortably holding a patient in a bed or wheelchair includes a jacket disposed around the upper torso of the patient and straps extending away from the front and rear of the jacket for attachment to the sides of the bed or wheelchair. The jacket can be used in combination with a pelvic support garment drawn between the legs of the patient and extending upwardly to his midriff. Belt loops on the lower part of the jacket extend through cooperating apertures at the top of the pelvic support garment and the straps are threaded through the belt loops to join the pelvic support garment to the jacket.

3,641,998
ANIMAL AND BIRD MEMBER OPERATED VACCINATOR
James Lyon, P.O. Box 30, San Diego, Calif., and Edward M. Hendrix, Rte. 2, Bentonville, Ark.
Filed Dec. 5, 1969, Ser. No. 882,474
Int. Cl. A61m 5/20
U.S. Cl. 128—218 3 Claims



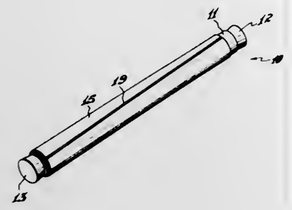
An electrically powered vaccinator operated by a body member of the bird or animal being vaccinated, usually the wing or leg of a chicken, which is manually brought into slight pressure contact with a plate operating a power-controlling switch, so that a vaccine applicator of needle or spray type is actuated at the instant that the body member is in optimum position for injection or spraying. The switch and contact plate assembly is shiftably mounted for multiple uses and the dosage and/or penetration of the body member is adjustable.

3,641,999
STANDUP CONTAINER ADAPTED FOR THE ADMINISTRATION OF ENEMAS
Franklin R. Greene, New York, N.Y., assignor to E-Z-Em Company, Inc., Westbury, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,906
Int. Cl. A61m 3/00
U.S. Cl. 128—227 6 Claims



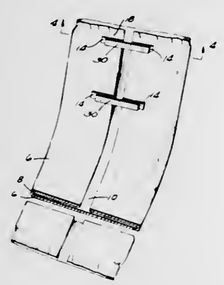
There is disclosed a standup container adapted for the administration of enemas, as well as the administration or reception of other fluids and/or compounds. The container consists of a stiffened bottom and flexible, collapsible sidewalls so joined and formed that the container can be made to stand, and such that it assumes a tapered shape, when partially or completely filled. The tapering results in great stability and considerable rigidity of the container when in use, while still preserving the desirable features of flexibility, malleability when filled, and collapsibility when emptied. A simple means for achieving the tapered shape of this container is also disclosed.

3,642,000
APPLICATOR
Harry L. Baker, Netherland Hilton Hotel, Cincinnati, Ohio
Filed Apr. 1, 1970, Ser. No. 24,700
Int. Cl. A61m *1/00*
U.S. Cl. 128—238 4 Claims



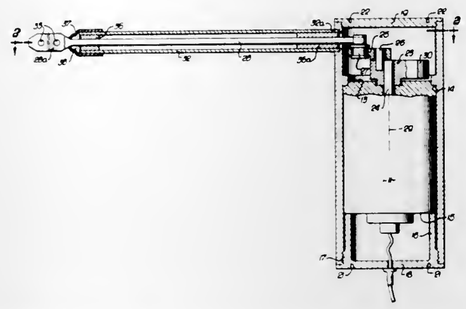
A tube having stoppers at both ends and a free piston intermediate the ends. A medicament is disposed in the tube between one of the stoppers and the piston. The piston is adapted to be engaged by a stem inserted in the tube to expel the medicament from the tube.

3,642,001
DISPOSABLE DIAPER OR THE LIKE
Reinhardt N. Sabee, 728 South Summit Street, Appleton, Wis.
Filed July 27, 1970, Ser. No. 58,281
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 12 Claims



A fundamentally conventional diaper having an absorbent pad between an impervious backing material and a pervious facing has its margins folded toward each other with the backing material outermost. Each margin is provided with an adhesively coated tab for use in applying the diaper, a portion of the length of each tab being adherent to the exposed plastic backing of the diaper and another portion being folded back on itself with the coating exposed. At least one such folded back portion is held in position by a spot of hot melt adhesive which connects it to the underlying part of the tab. A strip of polyethylene releasably engages the exposed adhesive surfaces of respective tabs and preferably spans the gap between them whereby a single release facing strip of approximately half the length normally used not only protects the adhesive surfaces of both tabs but also connects two margins of the folded diaper.

3,642,002
SURGICAL TOOL
Ralph W. Otterstrom, 2556 4th Avenue, San Diego, Calif.
Filed May 23, 1969, Ser. No. 827,245
Int. Cl. A61b *17/14*
U.S. Cl. 128—317 1 Claim



The disclosure concerns a drive for reciprocating a surgical tool at rapid rates, the drive and tool having unusually advantageous construction, particularly as facilitates ease of sterilization, handling and operation.

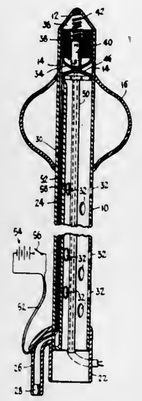
3,642,003
SUTURES HAVING LONG-LASTING GERMICIDAL PROPERTIES
Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.
Continuation-in-part of application Ser. No. 737,340, June 17, 1968, now abandoned. This application Aug. 26, 1969, Ser. No. 853,200
Int. Cl. A61l *17/00*
U.S. Cl. 128—335.5 9 Claims

Materials fabricated from fibrous proteins or other nitrogenous, amphoteric, film-forming, organic materials such as polymers, such as fibers, threads, films, yarns, fabrics and finished textile products, are provided with long-lasting germicidal properties by chemically combining germicidal ions with the nitrogenous, amphoteric, substrate. The germicidal ions are substantially incapable of being solvent extracted from the substrate which indicates that the ions have been chemically bonded thereto. For example, sutures, such as silk sutures, can be rendered germicidal for long periods of time by contacting a silk suture with an aqueous solution of a cationic or anionic germicidal surface active agent such as a germicidal quaternary ammonium salt or a germicidal organic sulfonate, to chemically bond the germicidal cation or anion of the salt to the proteinaceous substrate. The cationic or anionic germicidal agents can both be sequentially applied to the section containing both cationic and anionic germicidal ions bonded thereto.

3,642,004
URETHRAL VALVE
Sven M. Osthagen, South Dennis, Mass., and Henry M. Wise, Jr., Silver Spring, Md., assignors to Life Support Equipment Corp, Burlington, Mass.
Continuation-in-part of application Ser. No. 652,916, July 12, 1967. This application Jan. 5, 1970, Ser. No. 525
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R 10 Claims

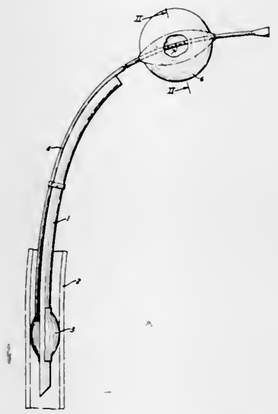
A valved drainage-control device adapted to be retained in the urinary canal, comprising a slim, elongate, flexible catheter tube at one end connected to both a valve housing and a collapsible enlargement or bulb which latter is adapted to be inflated and to occupy the bladder for retaining the catheter tube in place. At its inner end, the catheter tube is

closed and contains an electromagnetic valve comprising a magnet coil and a magnetic core of permanent magnet material. A flexible corrugated diaphragm spans the interior of the flexible tube adjacent the magnetic valve, said diaphragm forming with the closed end of the tube a sealed chamber in which the magnet coil and magnetic core are located. Adjoining the diaphragm and exterior to the sealed chamber is an annular valve seat which is engageable by a valve facing carried by the diaphragm. The diaphragm is connected with the magnetic core to be actuated thereby, for



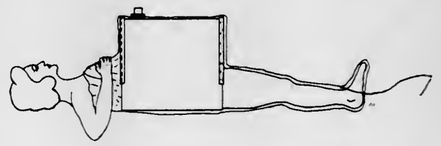
opening and closing the valve. Openings in the sidewall of the flexible tube communicate with the valve, to provide for a controlled drainage of the bladder. Extending along the flexible tube is a channel which communicates with the inflatable bulb for the purpose of providing an inflating fluid therein. The connecting wires for the electromagnet extend in said fluid channel and are brought out at the other or exterior end of the flexible tube, for connection to a battery and switch whereby the valve may be actuated from the exterior of the user's body.

3,642,005
ENDOTRACHEAL TUBE WITH INFLATABLE CUFF
Gerald E. McGinnis, 131 Kelvington Drive, Monroeville, Pa.
Filed Feb. 11, 1970, Ser. No. 10,559
Int. Cl. A61m *25/02*, *16/00*
U.S. Cl. 128—351 8 Claims



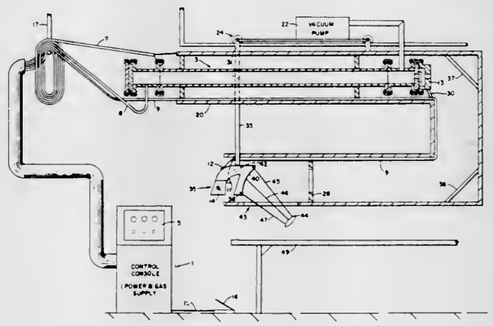
The inner end portion of an endotracheal tube is encircled by an inflatable cuff, to which is connected a tubule that extends toward the opposite end of the tube and is formed for connection to a source of air pressure. In communication with the tubule is an expandable chamber having an elastic wall. The chamber is expandable as long as air is forced into the tubule and is so formed that after it has expanded to a predetermined size, at which the air pressure therein is the same as the maximum air pressure desired in the cuff, additional air forced into the chamber will expand it further without substantially changing the pressure in the cuff.

3,642,006
DEVICE FOR PARTIAL VACUUM TREATMENT OF PREGNANT WOMEN
Walter Wobbe, Wachtstr. 27, 28 Bremen, Germany
Filed Sept. 29, 1969, Ser. No. 861,888
Claims priority, application Germany, Oct. 1, 1968, P 18 00 287.4
Int. Cl. A61b *17/42*; A61m *1/00*
U.S. Cl. 128—361 3 Claims



A device for partial vacuum treatment of pregnant women in which a partial vacuum is induced within an abdomen-surrounding body support. The body support is a cylindrical drum having lids with flanges which fit over the edges of the drum. The lids have crescent-shaped edges to fit over the body of the pregnant woman. A plastic or elastomeric sack is fitted over the woman from the feet up, over the body support, and to the upper part of the body. A connecting pipe fits through the drum and the plastic sack to the vacuum-inducing means, for example, a strong vacuum cleaner.

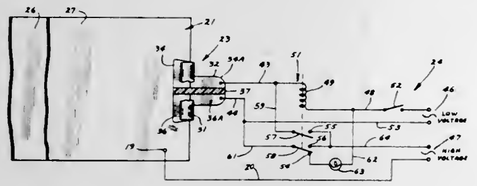
3,642,007
CONTINUOUS WAVE LASER SURGICAL DEVICE
Thomas G. Roberts, 2712 Mastin Lake Road N.W., Huntsville, Ala.; John J. Ehrlich, 207 1/2 Walker Avenue N.E., Huntsville, Ala.; Guilford J. Hutcheson, Jr., 4002 Marie Avenue N.W., Huntsville, Ala., and Charles M. Rust, 6511 Sheri Drive N.W., Huntsville, Ala.
Continuation-in-part of application Ser. No. 581,112, Sept. 21, 1966, now abandoned. This application Aug. 12, 1969, Ser. No. 858,239
Int. Cl. A61m *5/01*
U.S. Cl. 128—395 12 Claims



A laser surgical device that utilizes a continuous wave laser that has a wavelength such that the laser beam when focused

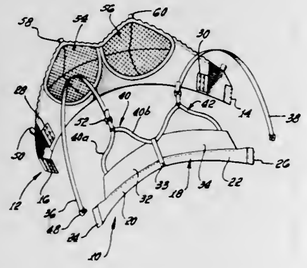
at the surface of the tissue or point of contact is nearly totally absorbed at the surface to thereby allow the device to function as a cutting instrument without having adverse effects upon other portions of the body or tissues that are beneath the surface. The laser is mounted for movement so that a physician can manually manipulate the laser beam in a back and forth motion to make an opening of desired depth. The laser also has controls for controlling the length of time the laser is on and the power that is supplied to the laser.

3,642,008
GROUND ELECTRODE AND TEST CIRCUIT
Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.
Continuation-in-part of application Ser. No. 762,582, Sept. 25, 1968. This application Oct. 15, 1969, Ser. No. 866,630
Int. Cl. A61b *17/36*; **A61n** *3/00*; **G01r** *27/02*
U.S. Cl. 128—416 **23 Claims**



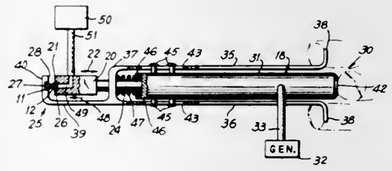
An electrical-surgical machine using high-frequency currents connected to an active electrode and a patient ground plate electrode. The ground plate electrode is a one-piece disposable flexible sheet member having an electrical conductive skin releasably attached to a clamp connected to a line leading to the electrical-surgical machine. A circuit-testing unit checks the entire circuit, including the electrical connection between the patient and ground plate electrode, as well as the electrical connection between the clamp and the ground plate. The releasable clamp has a pair of spaced flat electrical contacts in surface engagement with the electrical conductive skin of the ground electrode. One form of the clamp has a pair of plate contacts attached to and pivotally mounted on flat electrically insulative covers.

3,642,009
BRASSIERE
Mulford J. Nobbs, 3334 Hacunda Boulevard, Hacienda Heights, Calif.
Filed Feb. 20, 1970, Ser. No. 12,972
Int. Cl. A41c *3/00*
U.S. Cl. 128—484 **5 Claims**



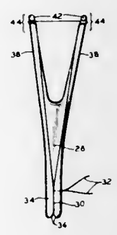
The improved brassiere includes an inner band part, the base of which is anchored immediately below the breasts of the wearer. The band has an outwardly extending flange, right and left parts of which form a curved support for the breasts. A suspension strap for each flange part is fixedly connected to the forward terminus of the corresponding shoulder strap. Parts of the suspension strap on opposite sides are individually adjustable. The relative location of the point of connection of the shoulder strap can be adjusted as well as the total length of the suspension strap. These adjustments are firmly held.

3,642,010
ULTRASONIC METHOD FOR HAIR JOINING
Arthur Kuris, Riverdale, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,830
Int. Cl. A41g *5/00*
U.S. Cl. 132—5 **23 Claims**



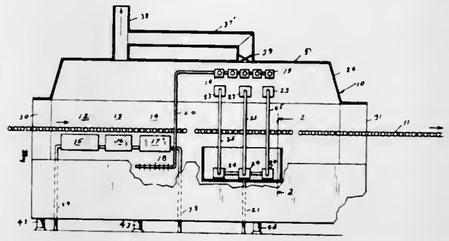
The method for joining hair together utilizing ultrasonic vibrational energy in which the overlapping portions of the commercial hair and the live hair are maintained in fixed position to each other when the energy is introduced therein. The hair may be coated internally or externally with a thermoplastic material which acts as the bonding agent.

3,642,011
DENTAL FLOSS HOLDER
Glenn H. Thompson, 323 West Main Street, Amherst, Ohio
Filed Nov. 2, 1970, Ser. No. 86,253
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **5 Claims**



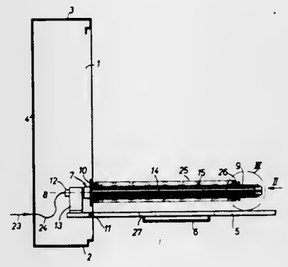
A Y-shaped dental floss holder in which the arms of the Y are flexible enough so that they can be squeezed toward each other in such a manner that a length of dental floss extending through two holes in the tips of the arms and secured to the bottom of the Y will have tension exerted on it when the pressure on the arms is released. The dental floss is strung so that it passes around the edges of the ends of the arms in substantially coplanar relationship with one surface of the Y, then through the holes from the respective outside surfaces of the arm tips and down the inside surfaces of the arms to a position on the base where it is held securely.

3,642,012
STERILIZING APPARATUS FOR CONTINUOUSLY STERILIZING ARTICLES BY FLAMES MEANS
Karl Kereluk, Fairview, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Sept. 3, 1969, Ser. No. 854,996
Int. Cl. A61l *3/00*; **B08b** *3/10*; **F27b** *9/20*
U.S. Cl. 134—83 **10 Claims**



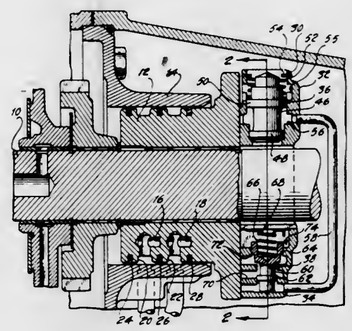
A combination dishwasher and sterilizer. The dishwasher has a conveyor for dishes which carries the dishes through a chamber having several zones which include a prime rinse zone, a wash zone and a final rinse zone. From the final rinse zone, the dishes pass through flames from two gas burners which direct the gas flames onto the dishes both from above and from below, killing bacteria on the dishes. A heat exchanger is provided which utilizes the heat from the flames to heat the rinse water for the final rinse.

3,642,013
APPARATUS FOR CLEANING HOLLOW CYLINDERS AND THE LIKE
Hans Thierstein, Holzacker, Switzerland, assignor to Fritz Bauser AG Maschinenfabrik, Wiler b. Utzenstorf, Switzerland
Filed June 1, 1970, Ser. No. 42,247
Claims priority, application Switzerland, June 11, 1969, 8908/69
Int. Cl. B08b *3/02*, *9/02*
U.S. Cl. 134—113 **5 Claims**



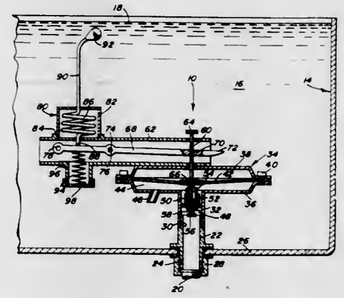
An apparatus for cleaning hollow cylindrical bodies and the like, especially the screens of rotary film or screen printing machines by spraying with a washing medium, the cleaning operation occurring with a substantially vertical position of such hollow cylindrical body. According to the invention, there is provided a cleaning compartment having a substantially vertical lengthwise axis, one wall of such cleaning compartment being downwardly tiltable in order to easily introduce the hollow cylinder body or the like into the cleaning compartment. A support structure or frame for mounting the hollow cylinder body and a spraying mechanism are secured to the inside of this tiltable wall.

3,642,014
COMPOUND GOVERNOR VALVE MECHANISM
John J. Searles, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 24, 1969, Ser. No. 879,467
Int. Cl. G05d *13/34*; **F15b** *3/00*
U.S. Cl. 137—54 **4 Claims**



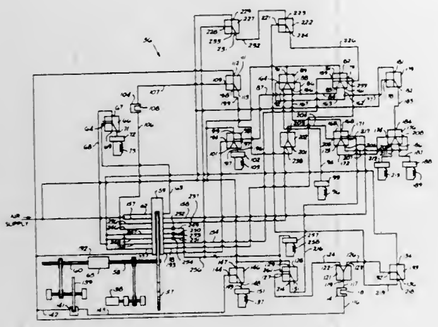
A two-stage governor valve mechanism comprising a secondary valve element for producing a governor pressure signal that is related in magnitude to the driven speed of a rotary member with a functional relationship and a primary governor valve element that produces a modulated pressure force on the secondary valve element which modifies that functional relationship at relatively low speeds of the rotary member.

3,642,015
TEMPERATURE CONTROLLING LIQUID VALVE
William R. Walters, 1300 Sunset, Pawhuska, Okla.
Filed June 27, 1969, Ser. No. 837,147
Int. Cl. E03b *7/12*
U.S. Cl. 137—59 **10 Claims**



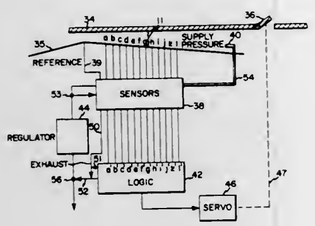
The temperature of water within a container is regulated by a valve assembly admitting controlled amounts of water at a different temperature when a certain temperature limit within the container is exceeded. The valve assembly is submerged within the container and encloses a valve element exposed only to the inflow of water from the source.

3,642,016
FLUIDIC SYSTEM FOR CONTROLLING OPERATION OF AN APPARATUS
Mieczyslaw Budzich, Dundalk, Md., and Western Electric Company, Incorporated, New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 857,735
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 9 Claims



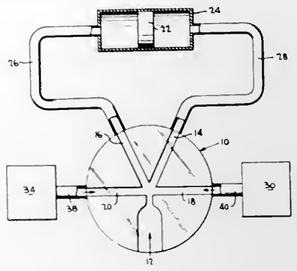
A fluidic control system includes a plurality of monostable and bistable fluidic devices arranged to control the operation of a braiding apparatus for placing several layers of braiding material over selected portions of a core.

3,642,017
SHOCK WAVE SENSOR
Allen B. Homes, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army
Continuation of application Ser. No. 751,452,, Aug. 9, 1968. This application July 23, 1970, Ser. No. 64,051
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 9 Claims



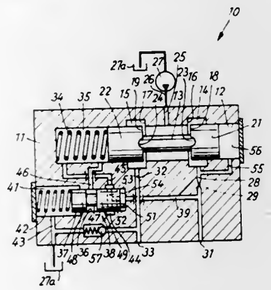
As the shock wave in a diffuser passes over a pressure sensing orifice it causes a self-biased fluid amplifier to change state. The position of the shock wave within the diffuser may be determined by detecting the outputs of a plurality of the self-biased fluid amplifiers and a logic circuit is used to translate this information into a signal which will operate a servomechanism causing a bypass valve in the diffuser to open or close to reposition the shock wave into the desired position.

3,642,018
PNEUMATIC FREQUENCY COMPARATOR AND TRANSDUCER
David P. Egolf, Falls Church, Va., and Carl J. Campagnuolo, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Army
Filed June 15, 1970, Ser. No. 46,361
Int. Cl. F15c 1/08
U.S. Cl. 137—81.5 12 Claims



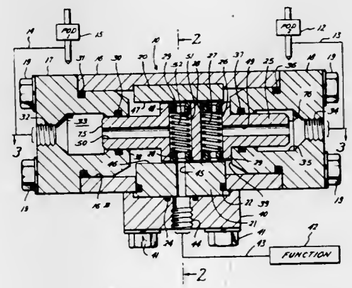
A pneumatic frequency comparator and transducer. The preferred embodiment discloses a system which yields a pneumatic readout corresponding to the beat frequency of two acoustic inputs. The acoustic generators presented herein are the electromagnetic-type and the ringtone-oscillator-type. The former provides a pneumatic indication of the beat frequency of two AC electrical input signals and thus may be utilized as an electrical frequency demodulation device or as frequency comparator. The later allows the pneumatic monitoring of the rotational or sliding motion of a machine that is mechanically coupled to the sleeve of the ringtone oscillator which varies the nozzle-to-cavity distance therein to provide a varying frequency acoustic signal for use as an input to the preferred embodiment system.

3,642,019
APPARATUS FOR CONTROLLING THE FLOW FROM TWO OUTLETS
Manfred Kramer, Fellbach-Lindle; Heinz Flaschar, Ludwigsburg, and Georg Antonulas, Stuttgart-Sillenbuch, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 28, 1970, Ser. No. 41,501
Claims priority, application Germany, June 28, 1969, P 19 32 994.3
Int. Cl. G05d 11/03
U.S. Cl. 137—101 6 Claims



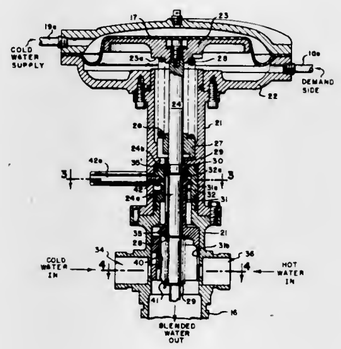
A spring-biased regulating valve directs fluid from a pump at a constant pressure to a first outlet up to a certain amount required by a consumer apparatus, and directs at the same time excess fluid to a second outlet. When the pressure in the first outlet rises above the desired constant value, a biased control valve responds to the pressure increase and causes the regulating valve to direct all the fluid from the pump to the second outlet until the pressure in the first outlet has again its desired constant value.

3,642,020
PRESSURE OPERATED—POSITIVE DISPLACEMENT SHUTTLE VALVE
Vivian H. Payne, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Nov. 17, 1969, Ser. No. 877,120
Int. Cl. F16k 31/12
U.S. Cl. 137—112 5 Claims



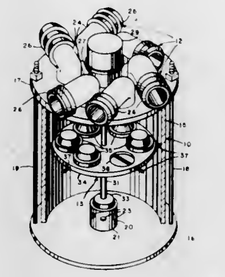
A shuttle valve which requires positive pressure to provide positive displacement thereof.

3,642,021
BLENDING VALVE
John Thomas Muller, Morris Plains; William L. Scull, Dover; James H. Cooper, Glen Rock, and Curt A. Soderberg, Lake Hiawatha, all of N.J., assignors to Leslie Co., Parsippany, N.J.
Filed Apr. 9, 1970, Ser. No. 26,826
Int. Cl. F16k 11/00
U.S. Cl. 137—114 6 Claims



There is disclosed an improved blending valve for a hot water system which provides automatic adjustment of tempered water output dependent upon the demand for water and in proportion to variations in temperature of hot water input to the blending valve.

3,642,022
FLOW-OPERATED SELECTOR VALVE FOR IRRIGATION SYSTEMS
William D. Kirby, 2121 Hamilton Court, Richland, Wash.
Filed Mar. 23, 1970, Ser. No. 21,885
Int. Cl. F16k 31/363
U.S. Cl. 137—119 2 Claims



A multiport valve, operated by flow interruption, to change flow progressively through an ordered array of outputs. A central chamber provides plural output orifices concentrically positioned therein and carries a central rotator having plural valving means for the orifices, one less in number than the number of output orifices associated therewith. The rotator is carried upon a stem that communicates within the input channel to the central chamber to cause the rotator to move axially within the chamber to a closed position upon each cyclic flow through the input channel. A spring biases the rotator to a normally open position and cam means are provided about the inner periphery of the valve chamber to communicate with dogs carried by the rotator to cause partial rotation upon each vertical motion to change output orifices.

3,642,023
DRINKING WATER SUPPLY FOR AUTOMOTIVE VEHICLES
Charles Rembert, 8946 South Essex Street, Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,751
Int. Cl. B67d 5/54
U.S. Cl. 137—209 3 Claims

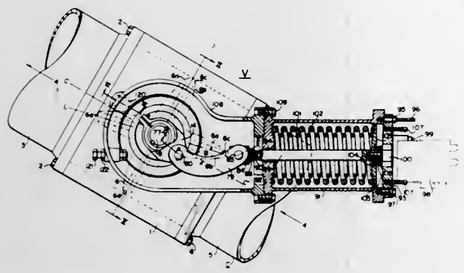


The invention disclosed relates to a drinking water supply for automotive vehicles wherein a supply of cold water is carried in a pressurized, insulated container in the trunk compartment of the vehicle and conveyed to a suitably positioned dispensing faucet within the vehicle. The invention is characterized by the provision of improved means for pressurizing the container and with improved means for mounting the dispensing faucet and an associated drain conduit at a convenient and accessible position within the vehicle body.

3,642,024
BUTTERFLY VALVE

Bernard L. La Coste, Wilmington, Del., and Suryakant K. Dawawala, Glenolden, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1970, Ser. No. 17,531
Int. Cl. F16k 49/00
U.S. Cl. 137—340 23 Claims



This invention relates to a control valve of the butterfly-type which is capable of quickly and dependably stopping the flow of steam under high temperature and pressure in a large diameter conduit, such as may be used in conjunction with a steam turbine. After stoppage of the steam flow, the valve is capable of reopening against the full steam pressure drop built up across the valve.

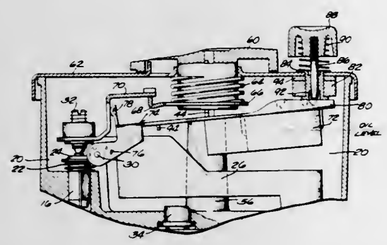
The valve comprises a valve body, a butterfly disc, and a shaft, the shaft supporting the disc within the valve body. The shaft is supported on spherical bearings located outside of the valve body. Various cooling means are used to prevent the bearings from overheating.

A self-adjusting sealing structure surrounds the shaft to prevent leakage of steam to the surrounding environment. A single-acting hydraulic actuator is provided through various linkages to open and control the butterfly disc against the full pressure drop across the disc. The disc is eccentrically connected to the shaft so that relatively small helical springs can close the disc within approximately 0.15 seconds upon loss of hydraulic actuating pressure. The valve is designed to absorb the large impact forces.

3,642,025
OIL CONTROL SAFETY FLOAT WITH MAGNETIC LATCH

Frank Breckenridge, Glenview, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed July 13, 1970, Ser. No. 54,369
Int. Cl. F16k 21/18
U.S. Cl. 137—400 3 Claims

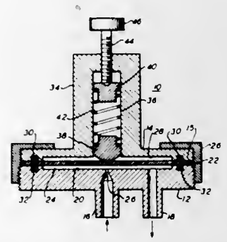


Oil flow is regulated by the main float operating the inlet valve to maintain a constant level in the float chamber. Flow from the float chamber is metered by a selected metering orifice in the rotatable disc actuated by the knob. A detent arrangement assures registry of the proper orifice. The small safety float is mounted on the same pivot as the main float and normally moves with the main float but if the inlet valve should leak, causing the oil level in the float chamber to continue to rise to an abnormally high level, the safety float will rise until the ferrous part of the float support bracket comes into the field of the permanent magnet carried by the cover. At this time the float will be lifted with a snap action and the tab standing up from the safety float bracket will strike the arm standing up from the main float bracket. This will deliver a blow to the inlet valve and will maintain the added force on the inlet valve. The control cannot subsequently be placed into operation without first manually depressing the reset button to push the safety float away from the permanent magnet.

3,642,026
METERING VALVE

Ulrich Sielaff, Mc Farland, Wis., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Apr. 8, 1970, Ser. No. 26,545
Int. Cl. F16k 7/12
U.S. Cl. 137—525 3 Claims

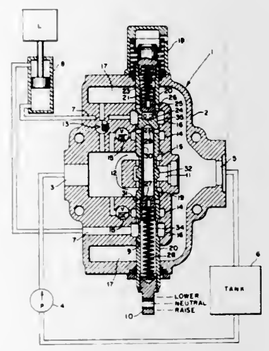


A metering valve having a high degree of resolution having a resilient disc which is movable toward and away from an orifice which conducts a fluid into a flow chamber, wherein an adjustable spring means is provided to vary the force for moving the resilient disc.

3,642,027
DIRECTIONAL CONTROL VALVE

Orval Leroy Rice, Mentor, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 9, 1970, Ser. No. 1,715
Int. Cl. F16k 11/10
U.S. Cl. 137—596.2 4 Claims

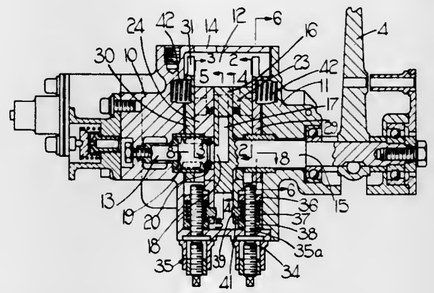


A four-way spool-type valve assembly for controlling the actuation of a double-acting fluid motor characterized in that the spool has therewithin a relief valve and a check valve respectively operative to build up back pressure in the return line from the motor during the load lowering operation and to permit return flow under such back pressure into the inlet port to prevent cavitation of the fluid motor. The spool herein is further characterized in that in the load raising position thereof both the relief valve and the check valve are bypassed so as to offer minimum restriction to fluid flow into and from the fluid motor.

3,642,028
METERING VALVES

Raymond Evan Hufton, Solihull, and George Graham Morgan, Birmingham, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 10, 1969, Ser. No. 865,318
Claims priority, application Great Britain, Oct. 17, 1968, 49,332/68
Int. Cl. F16k 47/04
U.S. Cl. 137—625.3 25 Claims

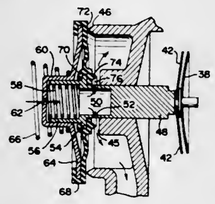


A fluid control valve has its port formed as an array of holes arranged both in radial rows and arcuate rows relative to an axis. A closure member has a platelike form and is displaceable about another axis by means of an actuator so as progressively to uncover the holes. The uncovering takes place as the actuator moves from a central position. There may be two hole arrays and the closure member is movable in either direction to uncover a respective one of the arrays. Alternatively the closure member is moved in one direction to uncover a single array, irrespective of the movement of the actuator from a central position. In either case the axis of the closure member is adjustable relative to the port, so that a desired rate of uncovering may be obtained for a given rate of actuator movement.

3,642,029
DUAL VALVE CONTROL DEVICE

Jay R. Katchka, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 9, 1970, Ser. No. 9,741
Int. Cl. F16k 1/54
U.S. Cl. 137—629 14 Claims

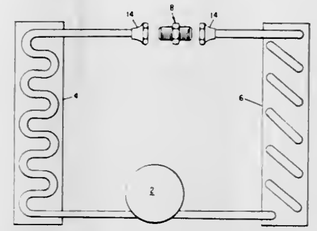


A dual valve arrangement wherein a pair of fixed valve seats are sequentially engaged by a corresponding pair of valve members, which are concentrically formed on a unitary diaphragm, a portion of which has opposite sides that are pressure equalized when both of the valve elements are in the closed position.

3,642,030
REFRIGERANT THROTTLING DEVICE

Larry D. Amick, Brownsburg, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,898
Int. Cl. F15d 1/02
U.S. Cl. 138—45 6 Claims

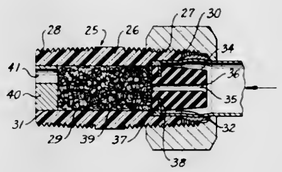


A refrigerant restriction device for use in a refrigeration system, the restriction device comprising a member having a bore of predetermined length and diameter therein with a conical inlet and a conical outlet to effect the desired pressure drop between the high and low pressure sides of the system.

3,642,031
FLOW CONTROL DEVICE

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.

Filed Jan. 22, 1970, Ser. No. 5,034
Int. Cl. F15d 1/02
U.S. Cl. 138—45 7 Claims

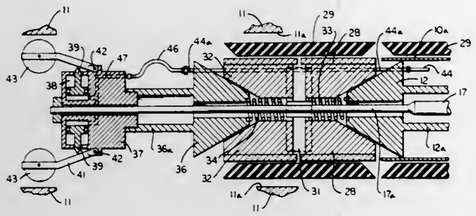


A flow control device for use with a drinking fountain or the like to maintain the volumetric flow of water thereto relatively independent of supply line pressure and to prevent surging of the water discharge from the fountain. The flow control device is disposed in the water supply conduit to the fountain, and it takes the form of a casing providing a relatively large chamber having inlet and outlet openings adjacent the opposite ends thereof. A pressure-responsive, volumetric-flow regulator is located at the chamber inlet to maintain the flow volume thereto relatively independent of supply line pressure. A turbulence-reducing means in the form of a cellular body of nonabsorbent, form-retaining material located within the chamber has open cellular interstices interconnected one with another to define myriad random flow paths through the body which tend to guide the water along smooth flow paths leading to the outlet opening of the device. In addition to preventing surging of a relatively uniform flow volume, the device also markedly reduces the noise level from that of conventional flow regulators.

3,642,032
INTERNAL PIPE CLAMP APPLYING APPARATUS AND METHOD

Robert W. Cook, Decatur, Ind.; Edmond J. Bissaillon, Atlanta, Ga., and Robert P. Dickinson, St. Louis, Mo., assignors to Fischer-Cook, Inc., Decatur, Ind.

Filed Apr. 16, 1970, Ser. No. 29,164
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 4 Claims

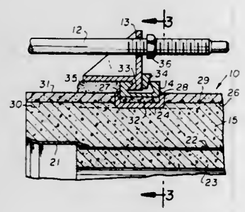


The method of the invention utilizes opening of a gas pipeline and introducing into its interior a mobile assembly which carries an array of separable, discrete leak sealing rings, moving the assembly along the interior of the conduit to the site of a leak, then expanding and disengaging one of the rings into leak sealing position, then advancing the assembly to the next leak, repeating the operation until all of the leak sealing rings in the array carried by the assembly have been thus utilized. The assembly includes air-operated positioning elements for guide wheels on which the apparatus travels, and a power operated element for advancing the sealing rings, one by one, into operative relation with a ring expander, also forming a part of the travelling assembly.

3,642,033
PRESTRESSED CONCRETE PIPE WITH ANCHORS FOR TYING JOINTS

Robert E. Bald, Roseland, N.J., assignor to Interpace Corporation, Parsippany, N.J.

Filed June 24, 1970, Ser. No. 49,470
Int. Cl. F16l *21/00, 25/00*
U.S. Cl. 138—103 8 Claims



A pipe section with a concrete core having joint-forming ends and devices for restraining bolts by which joints between connected pipes are closed and prevented from opening, the pipe core being encircled by a tensioned helical wire wrapping continuous lengthwise of the core pipe over and across the locations of anchors by which the bolt-restraining devices are mounted to the core pipe.

3,642,034
TUBULAR FIBROUS BODIES AND APPARATUS AND METHOD FOR THEIR PRODUCTION

William L. Ullman, Cherry Hill, N.J.; James C. Baxter, Minerva; Arthur J. Pearson, Granville; Robert E. Davis, Newark, and William B. Hullhorst, Rossford, all of Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 710,693, Dec. 21, 1967, which is a division of application Ser. No. 339,007, Jan. 20, 1964, now abandoned. This application Oct. 7, 1970, Ser. No. 78,953
Int. Cl. F16l *9/14, 9/16*
U.S. Cl. 138—144 4 Claims

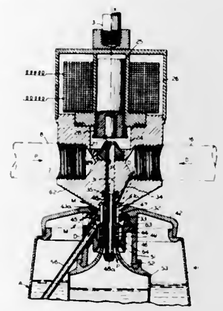


A thermal-insulating tubular body having a low-density, air-permeated, resin-bonded continuous strip of fibrous glass wound in a helical path with each turn of the strip overlapping the preceding turn less than one-half the width of the strip whereby the tubular body has alternate helical portions of single and double laminations of the strip of fibrous glass, the portions of double laminations being compressed to the same thickness as the portions of single laminations and there are helical grooves cut into the exterior surface of the tubular body.

3,642,035
DEVICE FOR THE FILLING OF DISPERSERS OF THE AEROSOL TYPE HAVING A SEPARATE SELF-CONTAINED PROPULSION UNIT

Jean Marand, L'Hermitage, St. Benoit, France, assignor to Ciba-Geigy Corporation

Continuation of application Ser. No. 764,110, Oct. 1, 1968. This application July 17, 1970, Ser. No. 55,685
Int. Cl. B65b *31/00*
U.S. Cl. 141—20 7 Claims

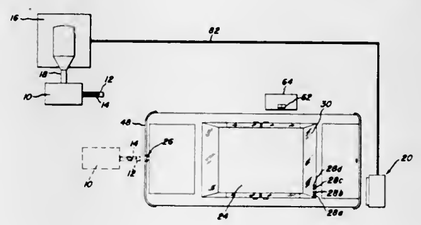


A device for the filling of a pushbutton dispenser of the aerosol type with a propelling medium and a product to be dispensed, wherein the propelling medium and the product are contained in separate receptacles, one within the other, the valve of the dispenser comprising a pushbutton removably mounted on a hollow sliding rod. The filling device comprises an adjustably mounted head traversed by an axial channel connected via transverse fittings with a line connected at one side thereof to a source of the propelling medium under pressure leading to be introduced therethrough into an axial disposed injection nozzle at the lower end of said filling head. A second oblique channel via a transverse fitting of the device operatively connects at another side to a source of the product to be distributed, with the lower end of the oblique channel also communicating with the injection nozzle. Hermetic seal members are lodged in the head for the purpose of working in conjunction with the rod of the pushbutton and defining in the injection nozzle two independent circuits intended, respectively, for the inflow of the propelling medium and of the product to be distributed.

3,642,036
AUTOMATIC FUELING SYSTEM FOR AUTOMOBILES

Irwin Ginsburgh, Morton Grove, and Eugene Runes, Chicago Heights, both of Ill.

Filed Apr. 30, 1970, Ser. No. 33,308
Int. Cl. B65b *1/30*; B67c *3/00*
U.S. Cl. 141—94 12 Claims

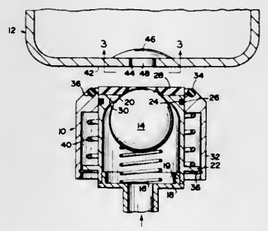


Disclosed is a system for automatically fueling an automotive vehicle, comprising a movable fuel dispenser including nozzle which is adapted to be coupled to the fuel inlet of the vehicle, and programmable moving means connected to the fuel dispenser for moving the dispenser into a position where the nozzle can be coupled with the fuel inlet. On the vehicle are means which provide a signal indicating where the fuel dispenser should be moved relative to the fuel inlet. A detector actuated by this signal programs the moving means to move the dispenser to the correct fueling position.

3,642,037
LIQUID TRANSFER SYSTEM

Ernest R. Cunningham, Libertyville, Ill., assignor to Barr-Stalfort Company, Division of Pittway Corporation, Niles, Ill.

Filed Dec. 4, 1969, Ser. No. 881,946
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—348 13 Claims



An essentially loss-free unidirectional liquid transfer system between closed containers having a pressure differential is disclosed. The liquid transfer filler and receptor nozzles have compressible material between them and a sliding sleeve to help prevent liquid loss. The check valves in the two nozzles are also of nonsimilar configuration so that fluid will flow around each valve.

3,642,038
SABRE SAW

Gunter Mannes, Remscheid-Bliedinghausen, Germany, assignor to Stichling-Werkzeugfabrik Honneknovel & Co., Burger Strasse, Germany

Filed Jan. 29, 1970, Ser. No. 6,654
Claims priority, application Germany, Sept. 30, 1969, P 19 49 215.0
Int. Cl. B27b *19/08*
U.S. Cl. 143—68 E 2 Claims

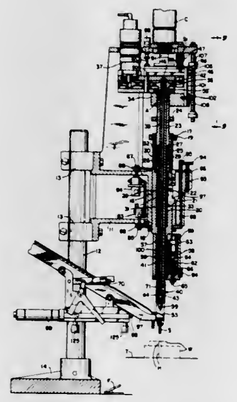


A sabre saw having helically twisted teeth extending from its attaching end to its remote end. The attached end is driven with reciprocatory motion, and the teeth are shaped to be inclined upwardly to cut as the sabre saw moves toward the attaching end.

3,642,039
POWER SCREWDRIVER

Harold McGee, Rockford, Ill., assignor to Hill-Rockford Co., Rockford, Ill.

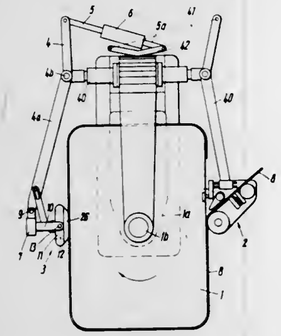
Filed June 2, 1969, Ser. No. 829,650
Int. Cl. B23p *19/06*; B25b *33/08*
U.S. Cl. 144—32 28 Claims



This screwdriver is driven pneumatically and has all pneumatic control means. The screw-gripping jaws operable pneumatically are separately controlled from the operation of the screwdriver to grip the screw first loosely as it is fed into place between the jaws, the jaws being thereafter closed for accurate positioning and guiding of the screw while the driving commences, the jaws finally opening wide as the screw is

driven home. Pneumatic limit switches or valves control the operation of the screwdriver independently of the control of the screw-holding jaws, and a mechanically operable torque measuring gauge or clutch automatically shuts off pneumatic power to the screwdriver by switch or valve control when the screw is driven home or in the event of a jam due, for example, to cross-threading. There is an adjustability feature adapting the screwdriver to operation on different lengths of screws.

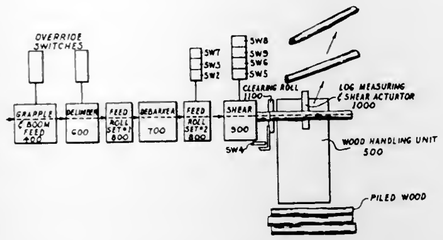
3,642,040
WORKPIECE-SENSING MILLING APPARATUS
Heinrich Brandt, Leipziger Strasse 6, 492 Lemgo/Lippe, Germany
Filed June 1, 1970, Ser. No. 42,204
Claims priority, application Germany, Mar. 20, 1970, P 20 13 309.9
Int. Cl. B27c *5/02*
U.S. Cl. 144—139 **11 Claims**



A plate, which has a rectangular rim with rounded corners, and a band bonded to the rim and projecting with edge portions from the same, is machined along the rim by a pair of coaxial milling cutters which remove the projecting edge portions of the band. The milling cutters are supported by tool carriers which are mounted on a frame which is tiltable about the axis of the cutters, and is angularly displaced at the rounded corners of the plate due to the engagement of the rim by an abutment face of an abutment member secured to the frame. Feeler rollers, mounted on the tool carriers, determine the correct working positions of the cutters by engaging opposite sides of the plate, and turn with the frame and tool carriers.

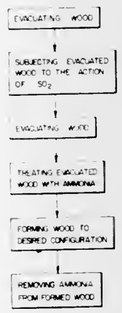
3,642,041
MOBILE TREE-PROCESSING MACHINE
Douglas D. Hamilton, Mount Royal, and Joseph J. R. Boivin, Montreal, both of Canada, assignors to Canadian Internal Paper Company; Quebec North Shore Paper Company, Montreal and Abitibi St. Anne Paper Ltd., Beaupre, Canada
Filed May 7, 1968, Ser. No. 727,316
Claims priority, application Canada, May 12, 1967, 990,351
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC **43 Claims**

A mobile tree-processing machine which includes a platform pivotally mounted on a mobile undercarriage for slewing about a vertical axis and having one or more tree-processing units mounted thereon operative to delimb, debark and/or sever whole trees fed thereto by a boom-and-grapple assembly and propelled through the processing units by feed means consisting of driven feed rollers. The leading end of the processed tree, emerging from he last of the processing units, actuates a cutter mechanism severing selected lengths which are directed by a deflector assembly onto an off-feed conveyor assembly which conveys the processed logs in sequence from the machine, depositing such processed logs at a position removed from the machine onto a suitable supporting surface. The off-feed conveyor, in



one instance, is attached to the platform on which the processing units are mounted, and in another instance is independently mounted on the undercarriage for pivotal movement about a vertical axis independent of pivotal movement of the processing assembly.

3,642,042
METHOD OF FORMING WOOD
Robert W. Davidson, 134 Somerset Road, Syracuse, N.Y., and Conrad Schuerch, 125 Concord Place, Syracuse, N.Y.
Filed June 17, 1970, Ser. No. 46,843
Int. Cl. B27h *1/00*
U.S. Cl. 144—327 **2 Claims**

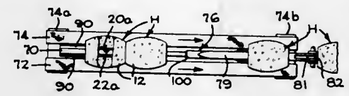


Wood is treated with sulfur dioxide prior to impregnation of the wood with ammonia and forming the impregnated wood to a desired configuration to decrease the alteration of the color of the wood by the ammonia. Preferably air is removed from the wood by evacuation prior to the supplying of sulfur dioxide thereto and unreacted sulfur dioxide is removed from the wood by evacuation prior to the supplying of ammonia thereto.

3,642,043
PINEAPPLE CORING AND RECORING
Leslie Vadas, Los Gatos, Calif., assignor to Castle & Cooke, Inc.
Filed July 13, 1970, Ser. No. 54,177
Int. Cl. A01d *43/06*; **A23n** *3/12*
U.S. Cl. 146—6 **6 Claims**

Pineapples are precored to leave a tubular backbone of core material around the precore hole, which augments the strength of the fruit. The precored pineapples are then peeled, axially slit into halves, and the halves inspected and trimmed. The semitubular backbone of the core material is

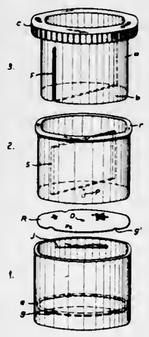
next removed from each half by a recoring operation. A rotary tubular knife is employed for recoring while the pineapples are advancing along guide bars that fit into the core recesses.



3,642,044
THE PRODUCTION OF POLYURETHANES EMPLOYING ORGANOPOLYMERCURIAL CATALYSTS
Joseph Fertig, Elizabeth, and Seymour J. Lederer, Fairlawn, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed May 5, 1969, Ser. No. 821,960
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 AC **21 Claims**

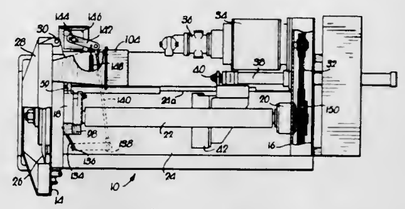
The production of polyurethanes employing organopolymercurials as the catalytic agent. The organomercuric catalyst has the formula $R\text{-}(Hg\ X)_n$ wherein R is aryl, aralkyl, alkaryl, furyl, imidazolyl, oxazolyl, straight or branched alkyl or cyclic lower alkyl, or the halo, amido, lower alkozy, carboxy or nitro substituted derivatives thereof; X is an anion derived from benzoic acid, an alkanoic acid or an inorganic acid or a hydroxyl group; *n* is an integer of 2 to 4; and the mercury atoms are bound directly to the carbon atoms of the nucleus R.

3,642,045
CHEESE-GRATING DEVICE
Jacques Buvelot, Chemin Vegrassat 12, 1180 Rolle, Switzerland
Filed Sept. 23, 1969, Ser. No. 860,238
Claims priority, application Switzerland, Oct. 5, 1968, 472241/68
Int. Cl. A47j *43/28*; **B02c** *18/00*
U.S. Cl. 146—60 **6 Claims**



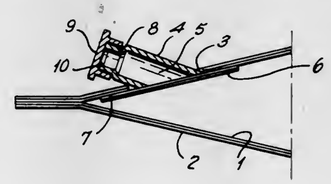
A device for grating cheese and the like is described. The device consists of a cylindrical housing containing a grating plate. Inserted into the housing above the grating plate is a rotatable cylindrical body divided by a vertical partition which serves to turn the substance to be grated in contact with the plate. A pusher element inserted in the cylindrical body drives the partition by means of slots into which the partition is engaged.

3,642,046
VARIABLE COUNT SLICING OF FOOD PRODUCTS
Victor M. Mathews, Jr., Leawood, Kans.; Richard P. Nelson, Parkville, Mo., and Eugene Brooks Lilly, Overland Park, Kans., assignors to MKC Electronics Corporation, Kansas City, Kans.
Filed Sept. 19, 1969, Ser. No. 859,514
Int. Cl. B26d *4/24*, *5/20*
U.S. Cl. 146—95 **26 Claims**



A method and apparatus for slicing a slab of a food product, such as bacon, into drafts of predetermined weight by varying the slice count in each draft while maintaining the slice thickness essentially uniform, in order to compensate for variations in the dimensions of the slab. The thickness and the width of the slab are individually sensed as the slab is advanced into a slicing blade, the slice count in each draft being varied in accordance with changes in the thickness of the slab while the rate of advancement is controlled in accordance with width variations. Rather than slicing the slab, the dimensional information derived from sensing the slab thickness may be utilized for grading purposes.

3,642,047
LAMINATED CONTAINER OF THERMOPLASTIC AND NONTHERMOPLASTIC MATERIALS WITH NIPPLES
Bard M. Waage, Knivsta, Sweden, assignor to Investrop AG, Zug, Switzerland
Filed Nov. 13, 1969, Ser. No. 876,365
Claims priority, application Sweden, Nov. 21, 1968, 15,883/68
Int. Cl. B65d *47/10*; **A61j** *1/00*
U.S. Cl. 150—8 **3 Claims**

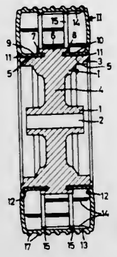


A plastic bag comprising an inner thermoplastic layer and an outer nonthermoplastic layer is disclosed having at least one connection nipple, which by means of a thermoplastic covering foil is welded to the thermoplastic inner layer of said bag so that a liquidtight connection is obtained.

3,642,048
WHEEL ASSEMBLY FOR TOY VEHICLES
Wilhelm Poweleit, Korbacher Str. 7, Brilon-Wald, Germany
Filed Mar. 26, 1970, Ser. No. 23,007
Claims priority, application Germany, Mar. 26, 1969, P 19 15 443.9
Int. Cl. B60f *9/00*
U.S. Cl. 152—323 **3 Claims**

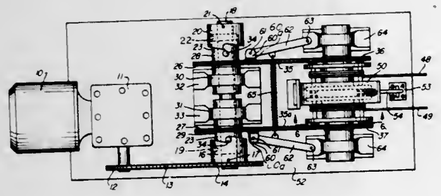
The wheel assembly described is formed of a wheel and a hollow tire held firmly on the wheel rim by cooperating

securing means including two axially outwardly open grooves extending circumferentially in a back-to-back relationship about the periphery of the wheel as an integral part thereof



and two axially inwardly projecting and circumferentially extending legs forming an integral part of the tire. The free terminus of each leg snugly fits into said grooves.

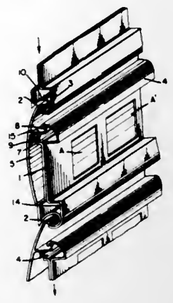
3,642,049
DRIVE MEANS FOR FOLDING OR COILABLE PARTITIONS AND THE LIKE
Hugh M. Lyman, 2352 Oakcrest Lane, Salt Lake City, Utah
Filed July 2, 1970, Ser. No. 52,005
Int. Cl. E06b *9/04*
U.S. Cl. 160—23 **14 Claims**



A drive mechanism for folding or coilable partitions and the like where one rotatable member is used to extend the partition and another is used to retract or fold the partition. In use with foldable partitions separate takeup drums are provided for the opposite ends of the same cable or for separate cables and the drums are arranged such that each can be powered while the other is in a freewheeling or controlled freewheeling condition with respect to the drive means. The powered and freewheeling conditions of the drums are changed with reversal of operation of a drive motor and the diameters of the drums can be readily changed to insure maximum effectiveness of the drive for any partition, or the like, with which it is used.

3,642,050
ROLL-TYPE BLINDS FOR WINDOWS
Renato Piana, 42 Via Beaumont, Turin, Italy
Filed June 30, 1969, Ser. No. 838,381
Int. Cl. E06b *9/08*
U.S. Cl. 160—133 **5 Claims**

Disclosed is a blind comprising a series of alternately suspended laths and slats. The upper rim of each slat is bent into a hooklike shape which is hinged in a correspondingly bent lower rim of the preceding lath. The upper rim of each lath is integral with a coupling channel having an engaging member. A shoulder projects from the upper portion of the slat and cooperates with the engaging member in such a



manner as to cause an angular displacement of the slat when a tension is applied to the laths of the blind.

3,642,051
EXTENSIBLE PANEL STRUCTURE
Richard Goldner, 1912 Washington Plaza, 1420 Centre Avenue, Pittsburgh, Pa.
Filed Oct. 23, 1970, Ser. No. 83,441
Int. Cl. E05d *15/06*
U.S. Cl. 160—197 **10 Claims**

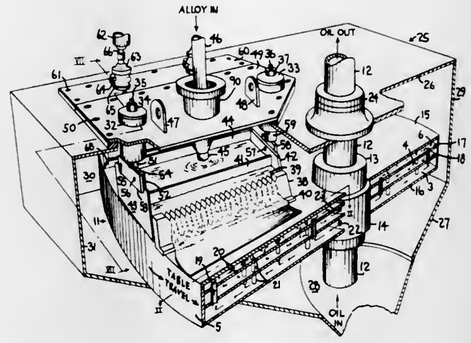


The extensible panel structure includes a plurality of planar panels having oppositely extending boxlike vertical end rib members and a generally Z-shaped configuration. The panels are positioned in parallel relation to each other and each has a support member secured in the boxlike end rib members. The support members in the end rib members of the respective panels have a spacer member abutting the adjacent panel and have a depending leg arranged to be positioned on a rail member. The other support member has a similar depending leg member that is positioned on a parallel spaced rail member and an upwardly extending slot portion in which the adjacent panel structure is positioned to maintain the adjacent panels in spaced relation to each other. Suitable spring members are secured to the support members to serve as resilient bumpers between adjacent panels when the panels are in a closed or overlapped position.

3,642,052
PROCESS OF CONTINUOUS CASTING OF STEEL
Hans Schrewe, Duisburg-Ungelsheim; Gerd Diederich, Krefeld; Peter Wahls, Buederich, and Emil Pfenning, Duisburg-Buchholz, all of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany
Filed Mar. 23, 1970, Ser. No. 22,067
Claims priority, application Germany, Mar. 21, 1969, P 19 15 303.8
Int. Cl. B22d *27/18*
U.S. Cl. 164—55 **6 Claims**

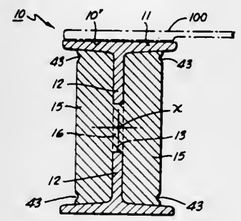
During the starting phase of continuous casting, a fast melting, slag producing powder is added and replenished subsequently by a high melting powder.

3,642,053
METHOD OF PREPARING SODIUM-LEAD ALLOY FLAKES
Daniel E. Wiley, Corpus Christi; Harmon A. McDougal, Beaumont, both of Tex., and Allan L. Turner, Denver, Colo., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 9, 1969, Ser. No. 883,516
Int. Cl. B22d *11/06, 11/12*
U.S. Cl. 164—70 **5 Claims**



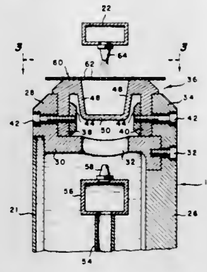
A rotary table is described for use in producing flakes of solid material from solutions or from molten metal baths. In particular the invention is described with reference to the preparation of sodium-lead alloys. In the specific embodiment molten sodium-lead alloy is deposited on the surface of a rotating flat table. An indirect heat exchange is established between the molten metal and a fluid circulating underneath the table surface. Discharge orifices are provided in a chamber below the table surface at a multiplicity of points across its width. Uniform discharge of heat exchange fluid at all points across the undersurface of the table is accomplished by an equal pressure drop being maintained across all of the orifices.

3,642,054
PROCESS FOR FORMING A MULTIMETALLIC RAIL DEVICE
Thomas A. Nowak, Veradale, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Original application July 5, 1968, Ser. No. 742,586, now Patent No. 3,544,737, dated Dec. 1, 1970, which is a continuation-in-part of application Ser. No. 666,654, Sept. 11, 1967, now abandoned. Divided and this application Feb. 6, 1970, Ser. No. 13,214
Int. Cl. B22d *11/00, 19/00*
U.S. Cl. 164—86 **12 Claims**



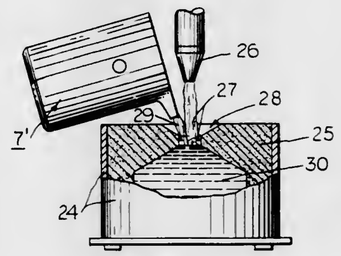
This invention relates to an improved process for producing a multimetallic rail device wherein the different metal components making up the rail device are permanently secured together in intimate interfacial and electrical contact.

3,642,055
METHOD OF AND APPARATUS FOR CONTINUOUSLY CASTING MOLTEN METAL
William Nighman, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Dec. 29, 1969, Ser. No. 888,290
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **17 Claims**



A method of and apparatus for continuously casting molten metal into a passageway wherein coolants are directed at the molten metal not only by conduction through portions of the passageway, but also by direct contact therewith through openings in a porous belt. In one form of the invention, a trough is mounted peripherally of a casting wheel, and the metal is retained in the rotating trough by means of surface tension. The coolant applied through the openings of the belt remains in intimate contact with the molten metal even as it shrinks away from the underside of the belt and from the sidewalls of the trough. In another form of the invention, a passageway is formed between a pair of travelling porous belts and suitable side guard means.

3,642,056
METHOD OF CASTING TITANIUM
Robert A. Rosenberg, Norwood, Mass., assignor to Mitron Research & Development Corporation, Waltham, Mass.
Original application Feb. 23, 1967, Ser. No. 632,127, now Patent No. 3,417,808, dated Jan. 24, 1968. Divided and this application Dec. 23, 1968, Ser. No. 786,279
Int. Cl. B22c *1/00, 3/00*
U.S. Cl. 164—138 **1 Claim**



A quantity of molten titanium is protected against embrittling contamination by containing all of the molten titanium within a receptacle and releasing along all titanium surfaces which are in contact with the receptacle the liquid and gaseous halide products of melting and decomposition (caused by heat of the molten titanium) of nonreactive flux consisting essentially of at least one halide which generates these protective products on exposure to temperatures of molten titanium.

3,642,057
CONSTRUCTION FOR COOLING A CONTINUOUSLY CAST STRING

Erwin Scheufele, Duisburg-Ungelsheim, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Vahrenwalder Strasse, Germany

Filed Feb. 9, 1970, Ser. No. 9,523
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **7 Claims**

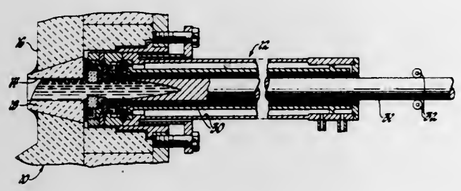


Continuously cast strings are cooled, first by spraying of water, and secondly by means of cooling rolls providing conditions for heat transfer quantitatively decreasing from the center towards the ends in axial direction, of an individual roll.

3,642,058
MOLD APPARATUS FOR CONTINUOUS CASTING

Fred J. Webbere, Orchard Lake, and Robert G. Williams, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 827,747, May 26, 1969. This application Feb. 16, 1970, Ser. No. 11,407
Int. Cl. B22d *11/00*
U.S. Cl. 164—283 **5 Claims**



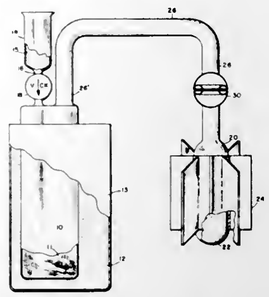
Apparatus for continuous casting including an open-ended mold with a first portion adjacent the inlet end having a low heat transfer capacity wherein no significant solidification of metal takes place, a second portion adjacent the first portion adapted to effect initial skin layer solidification and a third portion adjacent the second portion having a plurality of longitudinal grooves in its inner surface to vent gas released upon solidification from the second portion out the open end of the mold and wherein progressive solidification is accomplished to form solid bar stock.

3,642,059
HEATING AND COOLING UNIT

Leonard Greiner, 2805 Lorenzo Ave., Costa Mesa, Calif.

Filed June 30, 1969, Ser. No. 837,687
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 **8 Claims**

A heating and cooling apparatus comprising two vessels connected by a conduit, the first containing a vaporizable liquid, e.g. water, and the second containing a vapor-absorptive chemical, e.g. Na_2O, so that the liquid evaporates from the first vessel and its vapors, in effect, are drawn by the vapor-absorptive chemical through the conduit to the second vessel where they are absorbed and condensed with the consequent cooling of the first vessel through heats of vaporization and heating of the second vessel through heats of vapor absorption. Additionally, a process for heating and cooling comprising providing a vaporizable liquid and a vapor-absorptive chemical, placing said liquid and said chemical into

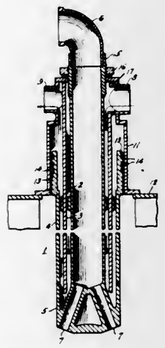


proximate relationship resulting in evaporation of said liquid with the formation of vapors and the substantially simultaneous cooling of said liquid, passing said vapors from the vicinity of said liquid to the vicinity of said chemical to permit absorption and condensation of said vapors by said chemical and substantially simultaneous heating of said chemical.

3,642,060
WATER-COOLED APPARATUS

Joseph W. Hlinka, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Mar. 16, 1970, Ser. No. 19.597
Int. Cl. C21b *7/10*
U.S. Cl. 165—47 **6 Claims**



A water-cooled multitubular lance for introducing oxygen or other materials into the interior of a heated chamber. The lance is designed so that the outermost tubular member is free to expand in an axial direction and carries practically no load. The design is applicable to water-cooled burners, probes and other similar devices.

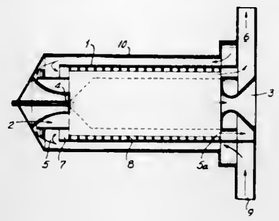
3,642,061
HEAT EXCHANGER

Raymond Waeselynck, Paris, France, assignor to Stein & Roubaix, Paris, France

Filed Apr. 4, 1969, Ser. No. 813,438
Claims priority, application France, Apr. 16, 1968, 148215
Int. Cl. F28c *3/00*
U.S. Cl. 165—111 **4 Claims**

A heat exchanger from which is absent a dividing wall between an axial flow of hot fluid, preferably a flame, and an

encircling spiral flow of fluid to be heated which is maintained separate by the centrifugal force due to its cyclonic

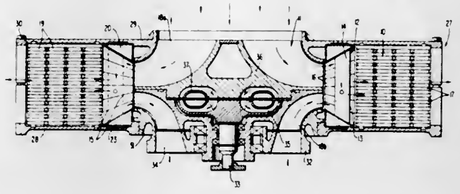


flow and is contained by a refractory-lined wall which absorbs radiant heat from the hot fluid.

3,642,062
COOLING INSTALLATION FOR LIQUID COLLED INTERNAL COMBUSTION ENGINE FOR DRIVING IN PARTICULAR COMBAT-TYPE VEHICLES

Franz Edmaier, Korb, Uber Waiblingen; Walter Stiefel, Neuhausen, and Hans Merkle, Stuttgart-Frauenkopf, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Continuation of application Ser. No. 713,350, Mar. 15, 1968, now abandoned. This application Aug. 12, 1970, Ser. No. 63,338
Int. Cl. F24h *3/00*
U.S. Cl. 165—125 **23 Claims**



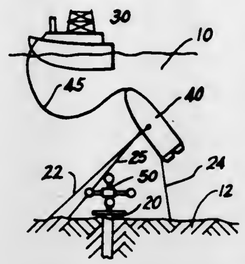
A cooling installation for liquid-cooled internal combustion engines, in particular for combat vehicles, in which an air guide apparatus is arranged between an essentially circularly shaped heat-exchanger for the heat transfer of the cooling liquid and a coaxial inner radial blower; the guide apparatus has guide blades radially enlarged in a diffusorlike manner and is subdivided into guide channels in the direction of the blower axis which are axially enlarged in a diffusorlike manner from the air discharge surface of the blower to the air inlet surface of the heat exchanger.

3,642,063
OFFSHORE DRILLING AND WELL COMPLETION METHOD

Allen A. Jergins, 900 N. E. Loop 410, San Antonio, Tex.

Original application Jan. 5, 1968, Ser. No. 696,047, now Patent No. 3,516,409, dated June 23, 1970. Divided and this application Dec. 24, 1969, Ser. No. 889,838
Int. Cl. E21b *7/12, 43/01*
U.S. Cl. 166—.5 **6 Claims**

A method is provided for drilling and completing hydrocarbon production wells in substantial depths of water. Such method includes a surface vessel and a submarine drilling vessel. After the surface vessel sets and cements at least one pipe in the formations below the floor of the body of water, the submersible drilling vessel is coupled in a watertight manner to the pipe and drilling of a well is performed from the interior of the submersible drilling vessel which houses well drilling equipment and logging and completion equipment. Such interior of the submersible drilling vessel is substantially at atmospheric pressure and is in fluid commu-

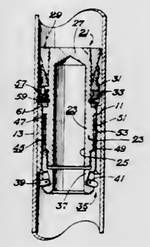


nication with the surface vessel. If the drilled well is completed as a producing well, the submersible drilling vessel installs suitable valves on a plate means which is left on the floor of the body of water when the submersible drilling vessel is moved to another location.

3,642,064
APPARATUS FOR SEALINGLY BLOCKING A CONDUIT

Wayne O. Rosenthal, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed Feb. 19, 1970, Ser. No. 12,733
Int. Cl. E21b *33/129*
U.S. Cl. 166—134 **7 Claims**

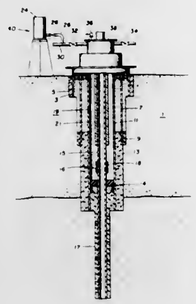


Apparatus for sealingly blocking a conduit characterized by a liner having a cylindrical annular body sealingly engaging the conduit and defining a cylindrical internal passageway and an internal sealing plug adapted to pass within the passageway, to seal it, and to provide retainer means to prevent movement of the plug from within the liner regardless of whether pressure is above or below the plug. The sealing plug is further characterized by having a body portion to pass within the passageway within the liner and substantially block the passageway; a seal extending annularly around the body portion and adapted for sealingly engaging the liner and the body portion for sealing any annular passageway therebetween; upper and lower retainers for preventing movement of the sealing plug despite a force on either side. The lower retainer may be eccentrically mounted dogs that are moved by gravity into a retaining position to protrude beyond the periphery of the sealing plug and retain the plug within the liner but adapted to cam inwardly for passage through the liner. The upper retainer may be a ring releasably connected to the body portion and adapted to engage the top of the liner to resist downward movement. Details of construction of the respective elements are also disclosed.

3,642,065
PROCESS FOR MAINTAINING THERMAL CONDUCTIVITY OF INSULATION IN PERMAFROST COMPLETION

Elmo M. Blount, Irving, Tex., assignor to Mobil Oil Corporation

Filed July 23, 1970, Ser. No. 57,637
Int. Cl. E21b *43/00*
U.S. Cl. 166—244 R 7 Claims

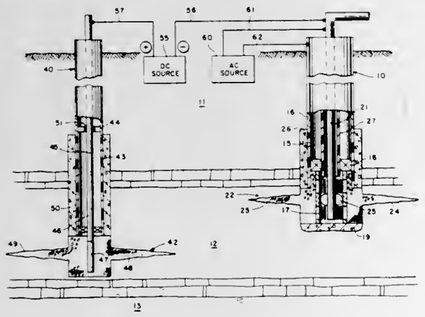


This specification discloses a process of completing a well penetrating a permafrost zone of the earth whereby the low-thermal conductivity is maintained of foam insulation installed in the well. The insulation is surrounded by gas having a lower thermal conductivity than air.

3,642,066
ELECTRICAL METHOD AND APPARATUS FOR THE RECOVERY OF OIL

William G. Gill, Corpus Christi, Tex., assignor to The Electrothermic Co., Corpus Christi, Tex.

Filed Nov. 13, 1969, Ser. No. 876,462
Int. Cl. E21b *43/16*
U.S. Cl. 166—248 15 Claims



Two well bores extend from the surface into the oil bearing formation defining a producing well and an electrode well. Electrodes in each well, contacting the formation, are connected to a unidirectional current voltage source at the surface through conductive tubing or pipe in the respective well bores to produce a unidirectional voltage gradient between the electrodes, with the producing well poled to be the cathode. Additionally, an alternating current voltage source is connected between the producing well electrode and another conductive path extending from the surface to the formation, to effect the flow of alternating current through the formation adjacent to the producing well to heat the formation.

3,642,067
INHIBITING SALT WATER INTRUSION INTO FRESH WATER AQUIFERS

Karl D. Dreher, and Robert D. Sydansk, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

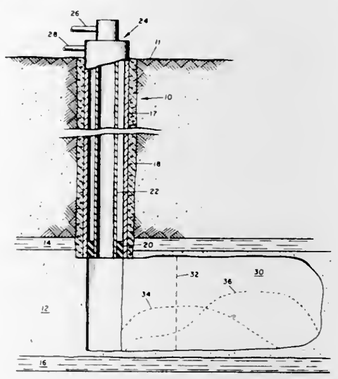
Filed July 23, 1970, Ser. No. 57,827
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 10 Claims

Intrusion of saline waters into fresh water aquifers is inhibited by injecting into the aquifer in advance of the major portion of the saline water, a micellar dispersion comprised of a surfactant containing a cation which can be replaced in situ by a major cation within the saline water. For example, a micellar dispersion (containing a sodium petroleum sulfonate) is injected into an aquifer and upon contact with magnesium cation within the intruding saline water, the magnesium cation replaces the sodium cation and, as a result, the viscosity of the micellar dispersion increases substantially. The effect of the replacement of the cation is to form a very viscous material within the aquifer to inhibit saline water intrusion.

3,642,068
FORMATION FRACTURING

John L. Fitch, and Thomas C. Vogt, Jr., both of Dallas, Tex., assignors to Mobil Oil Corporation

Filed Mar. 21, 1968, Ser. No. 715,071
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 1 Claim



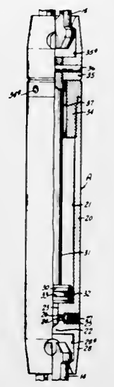
This specification discloses a fracturing process in which a fracture formed in a formation is acid etched near the well and particle propped in the more remote portions of the fracture. A fracture is formed in the formation extending from the well and an acidizing fluid is injected into the fracture in order to acid etch the walls thereof adjacent the well. A carrier fluid containing propping agent is injected into the fracture. Subsequent to injection of the propping agent, a displacing fluid is injected into the fracture. The displacing fluid is introduced under conditions such that it displaces the previously injected propping agent away from the well into the more remote portions of the fracture. The displacing fluid may have a lower viscosity than the carrier fluid and may be injected at a greater rate than the carrier fluid.

3,642,069
JAR STROKE ACCELERATOR FOR PUMPDOWN WELL TOOL

Joel E. Adkins, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sept. 28, 1970, Ser. No. 76,188
Int. Cl. E21b *23/00*
U.S. Cl. 166—301 16 Claims

A jarring stroke accelerator for pumpdown well tool operation for reducing the effect of pumpdown operating fluid on the pumpdown locomotive pistons used with hydraulic jarring tools in pumpdown well operations wherein a liquid is used as the operating fluid. The expansible and contractable chamber provides a low-pressure chamber for

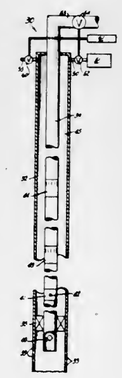


movement of a pumpdown locomotive with respect to another tool in a well in which the locomotive is manipulated by liquid operating fluid. Variable capacity accelerators are provided, as are convertible accelerators which may be modified for use to apply strokes in opposite directions.

3,642,070
SAFETY VALVE SYSTEM FOR GAS LIGHT WELLS

Frank H. Taylor, Carrollton, and Warner M. Kelly, Houston, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed May 6, 1970, Ser. No. 34,967
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 15 Claims

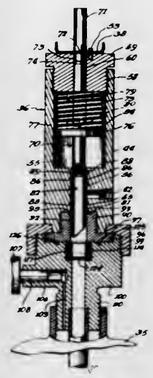


A safety valve system for wells including a valve connected in a tubing string for shutting off flow to the surface in the tubing. The valve is biased to an open position by fluid pressure in the tubing-casing annulus and is closed in response to a predetermined low pressure in the annulus. The system is particularly adapted to conversion of existing wells to gas lift by perforation of the tubing and installation of a safety valve embodying the invention at the perforation whereby the valve is responsive to lift gas pressure and closes when the lift gas pressure is reduced below a minimum value.

3,642,071
FIRE CONTROL APPARATUS

George A. Utesch, Jr., Chicago, Ill., assignor to General Fire Extinguishers Corporation

Filed Aug. 4, 1969, Ser. No. 847,172
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 11 Claims

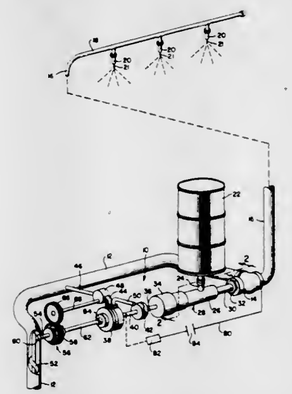


A fire control apparatus is provided particularly for use in areas where food is prepared using fats or greases. The apparatus automatically activates upon the presence of flame or excessive heat in a control zone whereupon high-volume extinguishant is flooded rapidly over the zone to extinguish the flame and rapidly reduce the heat. After a predetermined time interval or after a predetermined volume of extinguishant has been discharged, the rate of flow of extinguishant from the same source will be automatically reduced a substantial amount and will continue to be discharged over the zone for a relatively long period of time to prevent new flames from developing and to further reduce the amount of heat in the zone to below the flame autoignition point.

3,642,072
FIXED TIRE EXTINGUISHING SYSTEM WITH ADDITIVE INJECTION APPARATUS

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston, Mass.

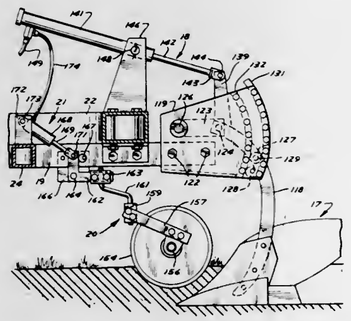
Filed Oct. 8, 1969, Ser. No. 864,757
Int. Cl. A62c *37/06*
U.S. Cl. 169—15 25 Claims



An injection apparatus for introducing a slurry of water-swellable gelling agent into a water line feeding a fixed fire-

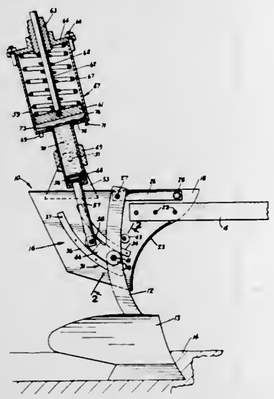
extinguishing system to form an ablative extinguishant therein. The apparatus includes a peristaltic pump driven by a hydraulic motor using water at line pressure for motive fluid and controlled by a servomechanism driven in part by a flow sensor to ensure injection rates corresponding to flow rates of water in the line. The injection apparatus is operated in a no-injection failure mode to avoid interference with normal flow of plain water to the fire-extinguishing system.

3,642,073
SEMIMOUNTED PLOW AND COLTER
Cletus J. Geurts, 530 North Melvin, Gibson City, Ill.
Continuation-in-part of application Ser. No. 486,712, Sept. 13, 1965. This application Sept. 7, 1967, Ser. No. 666,047
Int. Cl. A01b *49/02, 5/04*
U.S. Cl. 172—140 **7 Claims**



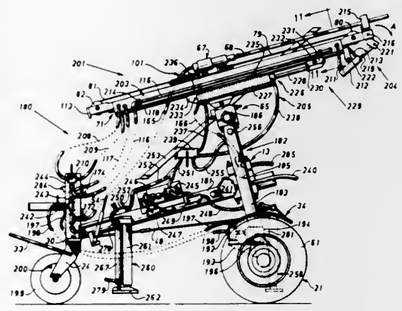
A semimounted moldboard plow connected to the draft links of a tractor by a hitch having longitudinal, upright and transverse pivotal movements with respect to the frame of the plow. The hitch is connected to a tailwheel of the plow so that the wheel turns in the direction of movement of the tractor. Each plow bottom of the plow is held in the ground working position by a hydraulic holding, release and return mechanism. Fluidly coupled with the hydraulic mechanism of each plow bottom is a fluid cylinder which yieldably holds a colter in ground-working position.

3,642,074
EARTH-WORKING IMPLEMENT
Cletus J. Geurts, Box 45, Graceville, Minn.
Filed Sept. 13, 1965, Ser. No. 486,712
Int. Cl. A01b *61/00*
U.S. Cl. 172—261 **12 Claims**



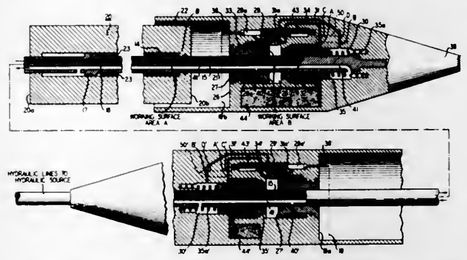
A hydraulically operated automatic plow bottom holding, release and return mechanism connecting a plow bottom to a beam of the plow frame. The mechanism has an articulated linkage coacting with a guide means to control the upward movement of the plow bottom against the hydraulic force of a cylinder so that when the plow bottom strikes an obstruction the point moves rearwardly and upwardly without going below the plowing depth. The cylinder returns and holds the plow bottom in its ground-working position.

3,642,075
VEHICLES FOR ROCK DRILL GUIDING AND SUPPORTING STRUCTURES
Mac Gordon Wills, R.R. #2, Chelmsford, Ontario, Canada
Filed Apr. 24, 1970, Ser. No. 31,699
Int. Cl. E21c *11/02*
U.S. Cl. 173—23 **12 Claims**



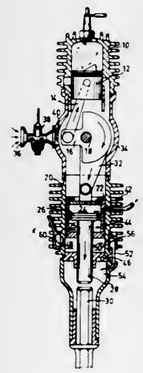
A rock-drilling vehicle adapted to have one or more rock drill guiding and supporting structures adjustably mounted thereon is formed with a T-frame structure including at least one hollow structural member in which a "vehicle operation fluid" such as compressed air, flushing water or hydraulic fluid is stored. The longitudinal structural member of the chassis structure of such a vehicle is usefully adjustably secured to a transverse structural frame to permit ready disassembly of the vehicle, as required. The "vehicle operation fluid" may be used for such purposes as operating pneumatically powered rock drill, pneumatically operated drill guiding and supporting structures, pneumatically operated drill steel centering devices, hydraulically operated drill advance-retract mechanisms, pneumatically operated vehicle drive motors and hydraulically operated stabilizing legs.

3,642,076
IMPULSE-REACTION PROPULSION CYCLE FOR MOLE
James Christopher Coyne, New Providence, and Arnold Ray Smith, Chester, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 17, 1970, Ser. No. 55,818
Int. Cl. B25d *9/00*
U.S. Cl. 173—91 **6 Claims**



This disclosure describes a propulsion cycle for a subterranean burrowing device. This cycle is characterized by the impact of an oscillating hammer upon an interior anvil, and by the return of the hammer to its starting position by force of a reaction piston acting on the hammer. While the reaction piston does work on the hammer, the opposite force thus produced on the mole nose causes a further soil penetration. The hammer eventually comes to rest and is returned to the anvil by a unidirectional constant bias force. The cycle is inherently self-timed.

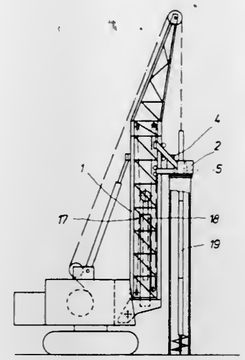
3,642,077
ARRANGEMENT IN IMPACT PISTON MACHINES FOR DRILLING AND LIKE OPERATIONS, DRIVEN BY A TWO-STROKE INTERNAL COMBUSTION ENGINE
Bo Sven Bayard, Taby, Sweden, assignor to Gustav Albert Bergman, Taby, Sweden
Filed June 26, 1970, Ser. No. 50,161
Claims priority, application Sweden, May 29, 1970, 7457/70
Int. Cl. B25d *9/10*
U.S. Cl. 173—116 **3 Claims**



In impact piston machines for drilling and similar work driven by a two-stroke internal combustion engine it is conventional to combine the machine and the engine to a unit having a lubricating system common to all elements thereof. In order to avoid lubrication of the impact piston with oil burnt in the combustion engine cylinder, as in known machines, the crank housing of said engine is now located between the engine cylinder and impact piston cylinder, whereby lubricant which enters into the crank housing together with the combustion air can be distributed directly to the impact cylinder without having first to pass the internal combustion engine cylinder.

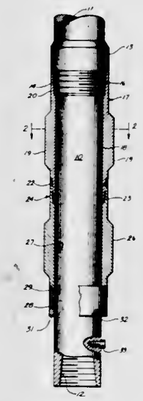
3,642,078
EARTH-DRILLING EQUIPMENT
Eberhard R. Dornfeld, Es-Wiflingshausen; Rudolf R. G. Hennecke, Buoch-Grunbach, and Achim L. Kehrberger, Nellingen, all of Germany, assignors to Deimag-Maschinenfabrik Rheinhold Dornfeld, Esslingen am Neckar, Germany
Filed Feb. 20, 1970, Ser. No. 12,952
Claims priority, application Germany, Feb. 28, 1969, P 19 10 359.4
Int. Cl. E21b *3/02*
U.S. Cl. 175—171 **6 Claims**

Earth-drilling equipment comprising a drilling table constructed for use in drilling boreholes and for use in lining boreholes with borehole lining tubes so that both operations



may be carried out employing the same drilling table.

3,642,079
MULTISLEEVE STABILIZER
Charles O. Van Note, Rolling Hills, Calif., assignor to The Servco Company, Long Beach, Calif.
Filed June 23, 1970, Ser. No. 49,076
Int. Cl. E21b *17/10*
U.S. Cl. 175—325 **4 Claims**

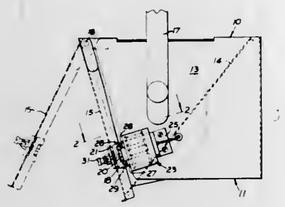


A stabilizer for stabilizing or centering a drill string in a drill bore such as employed for oil and gas wells is provided. The stabilizer comprises a plurality of sleeves having a cylindrical inside surface surrounding a mandrel and having a cylindrical outside surface for engaging a well bore. Longitudinally extending recessed portions in the outer cylindrical surface permit circulation of drilling fluids. Preferably the outer cylindrical surface is provided with a wear-resistant, hard-facing alloy. A female fitting is provided at one end of each sleeve and a complementary male fitting at the opposite end so that a plurality of sleeves can be interconnected and connected to a male fitting on the mandrel. A female sleeve protects the unused male fitting and includes a notch for engagement with a lock stud on the mandrel.

3,642,080
WEIGHING APPARATUS

Arthur Walter Forman, Northwood, Middlesex, and Mark Sitkowski, Northolt, Middlesex, both of England, assignors to Driver Southall Limited, Middlesex, England

Filed June 16, 1969, Ser. No. 833,416
Claims priority, application Great Britain, June 19, 1968, 29,086/68
Int. Cl. G01g 3/14, 19/06
U.S. Cl. 177—110 7 Claims

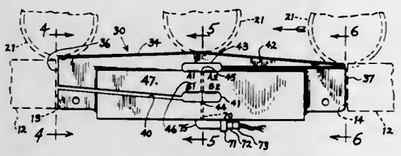


Weighing apparatus including a weigh pan, a discharge door and permanent magnetic closure means for retaining the door in a closed position, wherein electromagnetic means are provided to coact with the permanent magnet so that current passed through the electromagnet opens the door by magnetic repulsion of the permanent magnet.

3,642,081
RAIL WEIGHING DEVICE, AND SUBASSEMBLY AND COMPONENT THEREFOR

Gerald A. Hebert, Skokie, Ill., assignor to Mangood Corporation

Filed Sept. 28, 1970, Ser. No. 75,976
Int. Cl. G01g 3/14, 19/06
U.S. Cl. 177—163 23 Claims

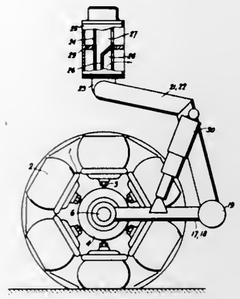


A rail weighing device for the weighing of a load on a wheeled carrier or support riding on a rail transfer system, e.g., a monorail conveyor system. The device includes a subassembly that is mounted as a section of the rail of the system. The subassembly includes a novel rail section and strain-measuring means mounted on that rail section. At least part of the rail surface of the rail section is the top surface of a cantilever that is at least a part of the uppermost portion of the rail section. The strain gage is mounted on a surface of the cantilever to generate a signal proportional to the load on the carrier moving along the cantilever part of the rail section. The device includes means to convert that signal to an indicia of the weight of the load and means responsive to the presence of a wheeled carrier on the cantilever part of the rail section to operate the converter for a predetermined period of time.

3,642,082
DRIVE WHEEL OF VEHICLE

Julius Mackerle, Prague, Czechoslovakia, assignor to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia

Filed Feb. 4, 1970, Ser. No. 8,562
Claims priority, application Czechoslovakia, Feb. 6, 1969, 775-69
Int. Cl. B62d 57/02
U.S. Cl. 180—8 F 8 Claims

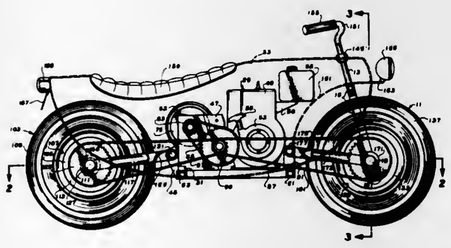


In a vehicle a compressed gas driven wheel comprising a stationary hollow axle having at least one hole formed in its wall, a body rotatably mounted about said axle, a plurality of globular resilient chambers mounted on the outer surface of said body to form a circular series of ground-engaging members, a duct leading from each of said chambers to said axle in communication with the hole in said wall, a suspension system for said axle comprising a pair of hollow arms respectively connected at one end to each end of said axle and at their other end to said vehicle, said arms communicating with a source of compressed gas and control means surrounding said axle to adjust the flow of gas into said chambers to thereby control the movement of said wheel.

3,642,083
POWERED STEERED WHEEL ASSEMBLY AND MOTOR VEHICLE EMPLOYING SAME

Waldo E. Rodler, Jr., 1488 Cherry Garden Lane, San Jose, Calif.

Filed Jan. 30, 1970, Ser. No. 7,059
Int. Cl. B62k 11/00
U.S. Cl. 180—31 8 Claims

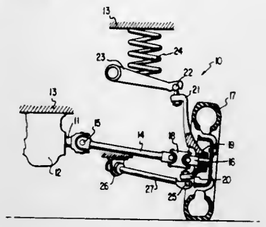


A motor vehicle and a powered steered wheel assembly therefor are described in which a rotary steered wheel is turned by a fork and steering column arrangement supported by the vehicle frame, and in which a drive train, mounted to the vehicle frame, is coupled to the axle of the steered wheel by a universal joint. The universal joint has its universal center lying in the rotational plane of the steered wheel.

3,642,084
INDEPENDENT FRONT SUSPENSION SYSTEM FOR A FRONT WHEEL DRIVE AUTOMOBILE

Mitsuo Takahashi, Ohta-shi, Gumma, Japan, assignor to Fuji Heavy Industries, Ltd., Tokyo, Japan

Filed June 26, 1969, Ser. No. 836,725
Int. Cl. B60k 17/30
U.S. Cl. 180—43 R 2 Claims

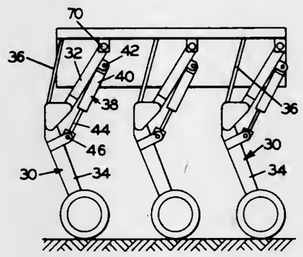


A front-wheel drive automobile has an axially nonextensible and noncontractable drive shaft connected at one end with the output shaft of a differential gear unit mounted on the vehicle body through an inboard universal joint and its other end with an axle of a wheel assembly through an outboard universal joint. A bearing housing rotatably supports the axle, a ball joint is provided on the bearing housing at a position beneath the axle and a post is connected at one end with the bearing housing ball joint and at the other end with a resilient member mounted on the vehicle body at a position rearward and inboard with respect to the ball joint and located at a position higher than that of the ball joint in the normal running state to provide a nosedown effect under vehicle acceleration.

3,642,085
VEHICLE FOR ROUGH TERRAIN

James M. Bird, 6737 East 12 Street, Tulsa, Okla.

Filed Sept. 29, 1969, Ser. No. 861,553
Int. Cl. B65k 7/00
U.S. Cl. 180—66 13 Claims



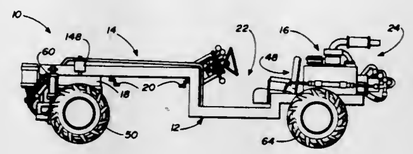
A multiple wheeled vehicle for movement over rough terrain wherein the load carrying portion or body thereof remains stabilized in a substantially horizontal position in both the longitudinal and transverse directions thereof regardless of the contour of the terrain over which the vehicle is travelling.

3,642,086
MAINTENANCE VEHICLE

James A. Andrews, Aubrey, Tex., assignor to Spyder Manufacturing Company, Inc., Lake Dallas, Tex.

Filed May 2, 1969, Ser. No. 821,370
Int. Cl. B60k 17/10
U.S. Cl. 180—66 R 14 Claims

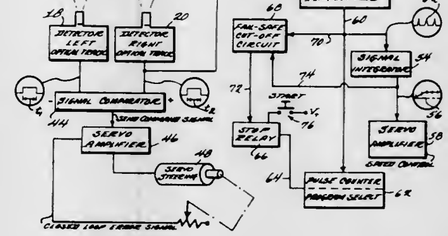
A maintenance vehicle including a frame having a front high portion and a rear low portion. The high portion supports operating accessories and a hydraulic fluid storage tank. The low portion supports an engine and a cockpit including a plurality of controls. The frame is supported on four hydraulic cylinders which extend to four wheels. The engine drives three hydraulic pumps. The pumps force hydraulic fluid from the tank to a motor which drives the vehicle, to a steering mechanism, to the cylinders which raise and lower the vehicle and to the controls which in turn direct the fluid to the accessories.



3,642,087
AUTOMATIC GUIDANCE SYSTEM

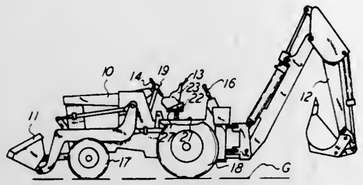
Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Electronics Corporation, Cleveland, Ohio

Filed Oct. 9, 1970, Ser. No. 79,445
Int. Cl. B60k 27/00
U.S. Cl. 180—98 16 Claims



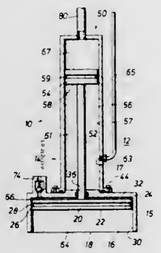
A method and apparatus for automatically guiding a vehicle over a predetermined course while at the same time controlling the vehicle speed and maintaining an indication of the total travelled distance which may, in turn, be used to program or control a sequence of vehicle maneuvers. Reflective or otherwise sensible elements are spaced along the centerline of a course with interelement spacings related to the desired vehicle speed and with each element having a shape that includes a dimension in the direction of vehicle travel that is variable with respect to lateral movements away from the centerline, the variable dimension being of equal magnitude with respect to either direction of lateral movement. In an exemplary embodiment, the elements are diamond-shaped light reflectors. Two photo detectors are laterally spaced apart and mounted on the vehicle so as to sense the same dimensional areas of the laterally extending arms of each diamond element. Lateral deviations of the vehicle cause these sensed dimensions to be unequal, which unequality is sensed and used to steer the vehicle in a corrective direction. Speed is controlled by the rate at which the elements are sensed while the total number of sensed elements is used to provide an indication of total travelled distance.

3,642,088
SELF-LOCATING VERTICALLY AND FACINGLY ADJUSTABLE SEAT
Wayne G. Smith, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Feb. 2, 1970, Ser. No. 7,578
Int. Cl. B60n *1/02*; **A61g** *15/00*
U.S. Cl. 180—77 S **5 Claims**



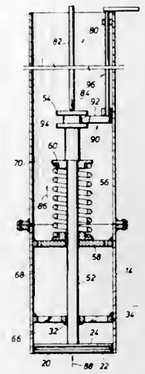
A tractor having a forwardly located control and a rearwardly located control and a seat mounted between the two controls. The seat has a seating support and a post which is telescoped within a sleeve affixed to the tractor. The post and seating support can be both raised and rotated, relative to the sleeve and the remainder of the tractor, for vertically adjusting the seat and for facing the seat toward the forward control or toward the rearward control. The post has pinholes and grooves, and the sleeve has a pin which can be received in any one of the holes for the elevating or turning of the seat in the selected position, as mentioned. The two controls are offset in the lateral direction of the tractor, and the seat is located and arranged to have its seating support offset relative to the post so that upon turning or rotating the seating support, the seating support is positioned in line with the selected one of the two controls.

3,642,089
MARINE IMPLODER-TYPE ACOUSTIC IMPULSE GENERATOR
Marion L. Parker, and Hillman Southwick, both of Houston, Tex., assignors to Western Geophysical Company of America, Houston, Tex.
Filed July 23, 1969, Ser. No. 844,011
Int. Cl. G01v *1/00*
U.S. Cl. 181—0.5 R **11 Claims**



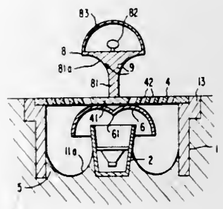
An acoustic impulse generator for producing in a liquid body acoustic impulses useful, for example, in geophysical explorations. The generator includes a housing which defines an enclosed chamber having a movable slidably mounted piston. Fluid-operated driving means including fluid spring means in one operating condition cause the piston to execute a forward stroke in the liquid body thereby storing potential energy in the liquid body and in the fluid spring means. The driving means in another operating condition allow the piston to execute a return stroke in a relatively short time interval thereby generating an acoustic impulse.

3,642,090
MARINE IMPLODER-TYPE ACOUSTIC IMPULSE GENERATOR
Grant S. Bennett, Ossineke, Mich., assignor to Western Geophysical Company of America, Houston, Tex.
Filed July 23, 1969, Ser. No. 844,019
Int. Cl. G01v *1/00*
U.S. Cl. 181—0.5 H **10 Claims**



An acoustic impulse generator for producing in a liquid body acoustic impulses useful, for example, in geophysical explorations. The generator includes a housing which defines an enclosed chamber having a movable wall. Driving means in one operating condition cause the movable wall to execute a forward stroke in the liquid body thereby storing potential energy in the liquid body and in the generator. The driving means in another operating condition allow the movable wall to execute a return stroke in a relatively short time interval thereby generating an acoustic impulse.

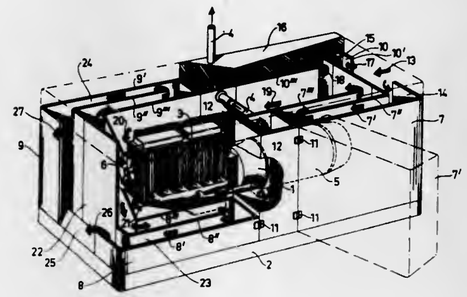
3,642,091
UNDERGROUND ACOUSTIC DEVICE
Shunji Nohara, and Hideo Watanabe, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 9, 1969, Ser. No. 865,090
Claims priority, application Japan, Oct. 9, 1968, 43/73110
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—31 B **9 Claims**



An underground acoustic device for radiating sound into the atmosphere has a casing with a folded horn within the same, the casing constituting a tubular member, for example, a cylinder, an inverse truncated cone, a prism, or an inverse truncated pyramid. The hollow tubular casing defines a cavity with a speaker and a folded horn integral therewith supported at the center of the casing bottom to radiate sound upwardly towards the atmosphere. The bottom of the casing is configured to radiate sound upwardly and outwardly through a series of holes in a cover overlying the casing

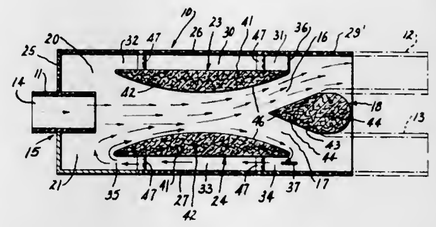
opening. In turn, the center of the cover is provided with a cover with a conical projection facing the speaker hole and acting in conjunction with a cup or cylindrical extension larger in diameter than the speaker horn for reflecting sound downwardly toward the curved reflecting surface of the bottom of the cavity. A drain pipe extends from the inside of the casing to the underground and a net lies intermediate the ends thereof for preventing rats from entering the casing.

3,642,092
NOISELESS SOFT-RUNNING POWER PLANT
Jerzy Henryk Cederbaum, Tlmragatan 41, Vallingby, Sweden
Filed Dec. 10, 1968, Ser. No. 782,658
Int. Cl. F02f *7/00*; **F01n** *1/10*
U.S. Cl. 181—33 K **2 Claims**



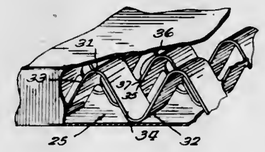
In a soft-running power plant with a power unit enclosed by a casing forming a sound-absorbing chamber with walls having an outlet for consumed air and an inlet for cooling air and combustion air as well as a number of labyrinth forming passages, there are so arranged that the cooling air is caused to travel along the power unit and is passed through a labyrinth passage in the wall opposite the inlet, thus forming an outlet for heated air.

3,642,093
SOUND ATTENUATOR WITH FLUIDIC CONTROL
Albert W. Schach, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Feb. 12, 1970, Ser. No. 10,778
Int. Cl. F24f *13/06*, *13/10*; **F01n** *1/10*
U.S. Cl. 181—50 **16 Claims**



A main flow of air passes through an inlet into a unit which serves as a sound attenuator and which also acts as a fluidic control whereby the air is divided to be discharged through two outlets in unequal amounts or is discharged through only one outlet. Areas of low pressure are created around the inlet by the flow of air through the inlet and, by creating a pressure differential between the areas, the flow of air is deflected toward the outlet on the same side of the unit as the area of lowest pressure. To create the differential, two baffles are spaced from one another to form a channel for the main flow of air through the unit and are each spaced from opposed walls of the unit to form passages which empty into the areas of low pressure. A portion of the main flow of air may flow back through the passages and into the areas of low pressure. Dampers control the amount of flow through each passage so that the pressure in one area is raided a greater amount than the pressure in the other area thereby creating the pressure differential which controls the direction of airflow. To reduce the noise level in the unit and downstream thereof, each baffle comprises a zigzag-shaped sheet of lead positioned to reflect sound waves toward the other baffle and toward the inlet, a padding of fiber glass surrounding the sheet to dampen the sound waves, and a covering of perforated sheet metal to protect the fiber glass from the eroding effect of the flow of air. With this arrangement, the sound waves pass repeatedly back and forth within the unit until they are substantially dissipated.

3,642,094
MUFFLER CONSTRUCTION
Raymond W. Yancey, 880 Oak Spring Drive, Libertyville, Ill.
Filed Nov. 26, 1969, Ser. No. 880,241
Int. Cl. F01n *1/10*, *1/12*, *7/20*
U.S. Cl. 181—50 **36 Claims**



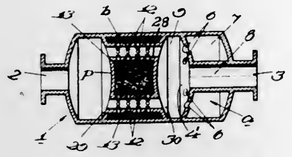
A muffler wherein a sound-attenuating member is slidably inserted within an outer shell, with the sound-attenuating member being formed from a sheet including a plurality of spaced parallel ribbons having alternating, longitudinally spaced crests and troughs, with the ribbons being interconnected by webs that are twisted throughout their length. The ribbons are positioned within the shell in a manner so as to present a substantial impediment to the flow of exhaust gases therethrough to thereby dampen the sound waves emanating from the exhaust system of an engine. Alternatively, the ribbons are arranged to produce less impediment of flow to the gases and greater sound-attenuating effect. The outer shell of the muffler may be a unitary tubular member that can be directly connected to the engine exhaust manifold.

The muffler is disclosed in various configurations which may be used as a replacement unit for mufflers in present-day automobiles or, alternatively, to replace the entire muffler system. The disclosure also contemplates a simple and inexpensive method of forming the muffler from a plurality of tubes and one or more sections of sound-attenuating members by merely arranging and deforming the tubes to produce a plurality of chambers which are interconnected by passage means.

3,642,095
MUFFLER
Shozo Fujii, Tokyo, Japan, assignor to Kabushiki Kaisha Fujii Koygo, Tokyo, Japan
Filed Mar. 6, 1969, Ser. No. 804,934
Claims priority, application Japan, Mar. 22, 1968, 43/21862
Int. Cl. F01n *1/04*, *1/10*, *1/16*
U.S. Cl. 181—57 **7 Claims**

A tubular housing is subdivided by an annular resonance wall into two compartments. One of the compartments is further subdivided into two chambers by a partition wall. A first pipe extends through one end of the housing and through one of the chambers to communicate with the other

chamber which is proximal to the other of the compartments. A second pipe extends through the other end of the housing

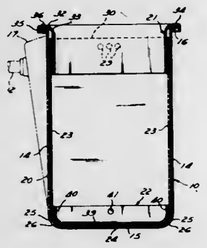


and through the other compartment and the resonance wall to communicate also with the other chamber.

ERRATUM

For Class 182—15 see:
Patent No. 3,641,619

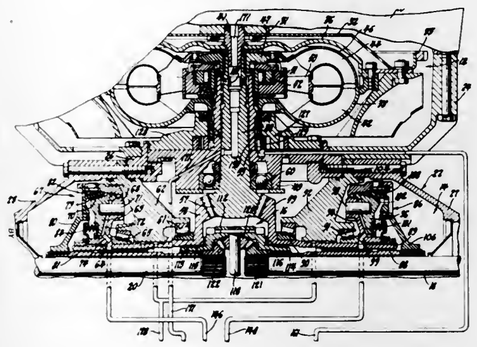
3,642,096
INSULATING LINER FOR MAN-CARRYING BUCKETS
Alan T. Valentine, Fairview Park, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio
Filed Sept. 23, 1970, Ser. No. 74,754
Int. Cl. E04g *5/08;* **B65d** *11/00*
U.S. Cl. 182—46 **7 Claims**



A man-carrying bucket for utility trucks in which a man is elevated in the bucket to work on electric powerlines, lamps and the like. The bucket is constructed of molded plastic reinforced with fiberglass and is additionally insulated by a polyethylene liner that is constructed in three pieces, a main portion covering the sidewalls and bottom of the bucket, a top portion that extends up over the top flange of the bucket, and a bottom portion additionally protecting the floor of the bucket. Economy of manufacture is attained by molding the top and bottom portions as a unitary element and then severing the element to provide the top and bottom portions of the liner. The three-piece construction is advantageous from the standpoint of economy in manufacturing and testing of the bucket, and durability and reliability in service.

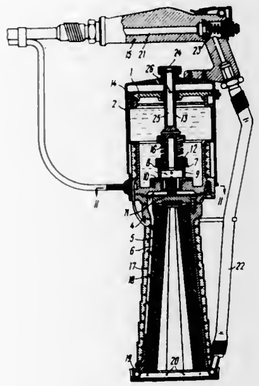
3,642,097
ENGINE AND TRANSMISSION FLUID SUPPLY SYSTEM
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 22, 1970, Ser. No. 82,893
Int. Cl. F16d *33/06;* **F16h** *47/00*
U.S. Cl. 184—6 R **3 Claims**

A vehicle power train, an engine and a transmission having a common fluid supply provided by a pump which is driven by the engine, a pressure regulator valve that regulates the pressure of the fluid supplied by the pump and delivers excess flow to a hydrodynamic torque converter in the transmission, a valve that delivers flow from the converter to lubricate the engine and prevents flow in the opposite direction and a lubricant control valve that delivers controlled fluid flow from the pump to lubricate the engine below a predetermined engine lubrication pressure and at a



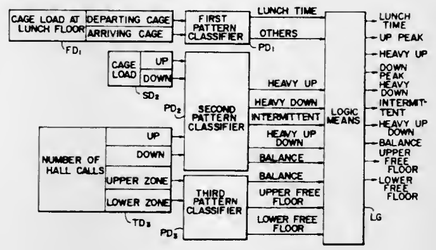
higher predetermined engine lubrication pressure blocks fluid flow from the pump to lubricate the engine and then delivers fluid from the converter to lubricate the transmission.

3,642,098
LUBRICATOR FOR OILING THE CONTACT SURFACES OF ELECTRICAL CONNECTOR ELEMENTS OF LEADING-IN CURRENT WIRES IN DRILL
Igor Alexandrovich Fomin, Mikhalkousky proezd, 20, Kopus 1, Kv. 34, Moscow, U.S.S.R.
Filed Jan. 16, 1969, Ser. No. 791,724
Int. Cl. F16n *3/00*
U.S. Cl. 184—14 **3 Claims**



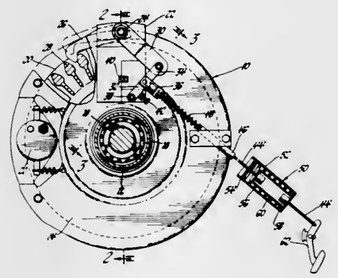
A lubricator is provided with a reservoir for containing lubricant. Connected to the reservoir is a casing in which is provided an elastic material adapted for contacting the surface of an object to be lubricated. A channel is provided to direct lubricant from the reservoir to the elastic material. Interposed between the reservoir and the elastic material is a metering device adapted for passing a predetermined quantity of lubricant to said channel and said elastic material.

3,642,099
GROUP SUPERVISORY CONTROL SYSTEM FOR ELEVATORS
Takeo Yuminaka; Tatsuo Iwasaka; Hideto Matsuzawa, all of Katsuta-shi; Koichi Kawatake, and Kotaro Hirasawa, both of Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 12, 1969, Ser. No. 849,441
Claims priority, application Japan, Aug. 21, 1968, 43/59174; Dec. 27, 1968, 43/95477; Jan. 31, 1969, 44/6677
Int. Cl. B66b *1/20*
U.S. Cl. 187—29 R **17 Claims**



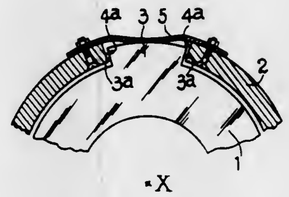
A group supervisory system for elevators includes a traffic demand detector for detecting traffic demands to provide a traffic demand signal. Also included is a pattern classifier for producing discriminant functions which are functions of the traffic demand signal and for determining an optimum traffic demand condition by selecting that discriminant function which represents a maximum value.

3,642,100
PAWL PARKING BRAKE WITH TOGGLE APPLY LINKAGE
William H. Travis, Union, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 39,832
Int. Cl. B62c *7/02*
U.S. Cl. 188—69 **2 Claims**



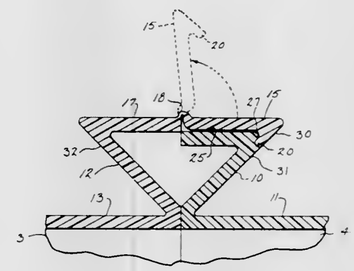
In an automotive disc brake assembly, a parking brake which consists of a pawl pivotally connected to a nonrotatable member so as to engage one of a plurality of cooling ribs between the opposed surfaces of a rotor disc, thereby locking the rotor from moving.

3,642,101
DISC BRAKES
Jean-Marc Hauth, Pont-A-Mousson, France, assignor to Centre de Recherches de Pont-A-Mousson, Pont-A-Mousson, France
Filed Mar. 31, 1970, Ser. No. 24,137
Claims priority, application France, Apr. 4, 1969, 6910408
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.3 **8 Claims**



Disc brake having a drum secured to the wheel to be braked and a brake disc connected by keying arrangements to the drum so as to be axially slidable relative to, but driven by, the drum. Each keying arrangement comprises interengaging projecting portions and recesses provided on the drum and disc and having coacting faces contained in axial radial planes containing the axis of rotation of the disc. At least one spring strip, provided in each keying arrangement, is mounted on the drum or disc and has a free end resiliently bearing against the disc or drum so as to maintain the disc concentric with the drum.

3,642,102
LOCK CONSTRUCTION FOR STORAGE BOX
William R. Furniss, Glendale, and Dominick Verga, Mequon, both of Wis., assignors to Milprint, Inc., Milwaukee, Wis.
Filed Oct. 24, 1969, Ser. No. 869,220
Int. Cl. A45c *3/00*
U.S. Cl. 190—48 **1 Claim**

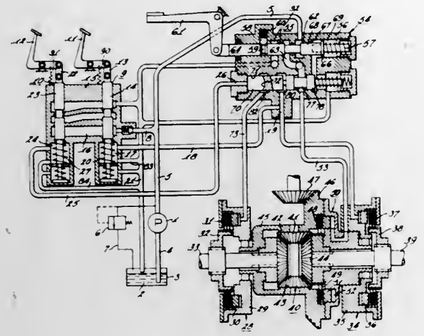


A lock construction for a storage box having a pair of complementary closure portions which complete the box enclosure comprising at least one locking tab attached to one of the closure portions and a locking recess defined in the other closure portion. The tab is inserted into and retained in the recess to effect a locked closure of the storage box.

3,642,103
DIFFERENTIAL CLUTCH RELEASED BY HYDRAULIC BRAKE APPLICATION
Robert E. Schott, New Berlin, Wis., assignor to Allis Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 16, 1970, Ser. No. 3,370
Int. Cl. B60k *29/02;* **F16h** *57/10*
U.S. Cl. 192—4 A **10 Claims**

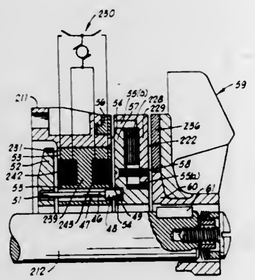
A hydraulic release for a differential lock releasing in response to actuation of a relay valve having a hydraulic ac-

tuator in the hydraulic brake system for each of the rear



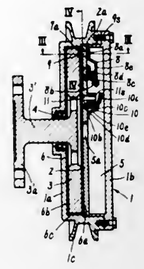
wheels.

3,642,104
ELECTRIC COUPLINGS WITH PERMANENT MAGNET
Wolfgang Schafer, Laiz/Sigmaringen, Germany
Original application Aug. 22, 1968, Ser. No. 764,002, now Patent No. 3,512,618, dated May 19, 1970, which is a continuation-in-part of Ser. No. 636,134, May 4, 1967. Divided and this application Nov. 6, 1969, Ser. No. 870,228
Int. Cl. F16d *67/06*
U.S. Cl. 192—18 B **29 Claims**



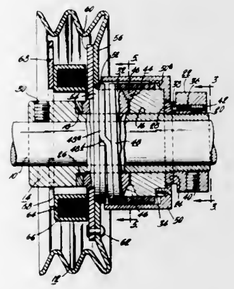
The present invention contemplates apparatus utilizing a drive assembly having at least two stable working positions in combination with one or more pulsed electromagnets for alternatively positioning the drive assembly in said stable positions to control the relative motion between a first and a second power assembly. In general, apparatus embodying this invention comprises oppositely acting electromagnetic means utilized to move a power assembly which includes a permanent magnet, alternately into engagement with a first force-transmitting assembly, such as a clutch, associated with a power source and a second force-transmitting assembly, such as a braking assembly. In a preferred embodiment, the drive assembly is shaped so as to afford a portion of a closed magnetic path for the permanent magnet when the drive assembly is in abutment with the first force-transmitting assembly and a portion of an alternate closed magnetic path when the drive assembly abuts the second force-transmitting assembly.

3,642,105
SPEED RESPONSIVE FLUID COUPLING
Yasubee Kikuchi, Shuzenjimachi, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka Prefecure, Japan
Filed Oct. 1, 1969, Ser. No. 862,748
Int. Cl. F16d *35/00, 37/00*
U.S. Cl. 192—58 B **4 Claims**



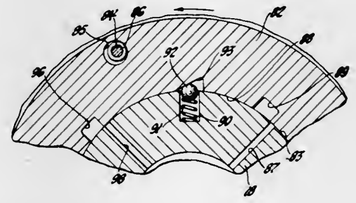
This invention is a device wherein a centrifugally operated valve operating automatically to open or close with the fluctuation of the number of revolutions of the driven side is provided for each fluid path connecting a torque transmitting chamber and a fluid pooling chamber which are component parts of a fluid coupling so that the amount of the fluid in the transmitting chamber may be automatically increased or decreased to keep the number of revolutions of the driven side substantially constant. Thus the number of revolutions of the driven side can be kept as constant as possible irrespective of the fluctuation of the load or the fluctuation of the rotation of the driving side.

3,642,106
SOFT START CLUTCH
John S. Baer, Medford Lakes, N.J., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.
Filed July 22, 1970, Ser. No. 57,172
Int. Cl. F16d *13/32, 27/10*
U.S. Cl. 192—70 **22 Claims**



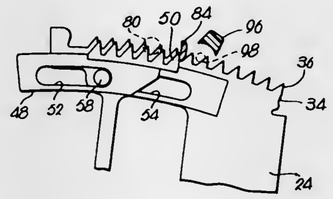
A clutch provides two pairs of friction faces between rotatable input and output hubs. One of said hubs provides a coaxial cylindrical surface for support of the other hub and a neutral hub between a pair of radially outwardly extending shoulders providing its friction faces. The other hub, and the neutral hub are rotatably supported on the cylindrical surface between the shoulders with spring means associated with one of the friction faces urging the hubs together and the friction faces into contact with one another. A ring which is wedge shaped in radial cross sections and capable of being pressed inwardly lies preferably in a wedge shaped groove between said other hub and neutral hub. A helical spring surrounds the outer face of the ring and when wrapped down urges the ring inwardly to urge the block and hub apart and their respective clutch faces into the opposed clutch faces of the other hubs with sufficient force to permit transmission of torque.

3,642,107
TRANSMISSION DRIVE ESTABLISHING CONTROL
August H. Borman, Livonia; Lawrence E. Green, Ann Arbor, and Quinby E. Wonn, Plymouth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 13, 1970, Ser. No. 36,847
Int. Cl. F16d *23/10*
U.S. Cl. 192—103 F **2 Claims**



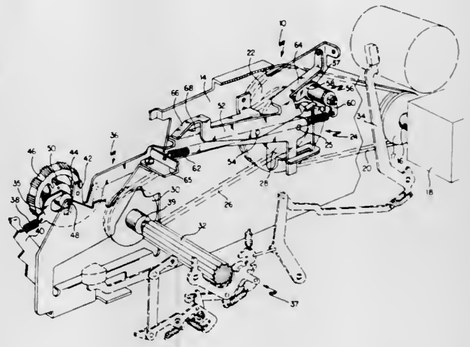
A pressure control for controlling the pressure in a fluid motor that operates a drive establishing device of a vehicle transmission. The control operates to provide smooth drive establishment by controlling the pressure in the fluid motor during drive engagement at a level that causes a transmission component whose speed changes during the drive establishment to change speed at a substantially constant rate.

3,642,108
COIN TOTALIZING APPARATUS
John A. Hennessy, Raytown, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed July 7, 1970, Ser. No. 52,805
Int. Cl. G07f *5/08*
U.S. Cl. 194—1 L **8 Claims**



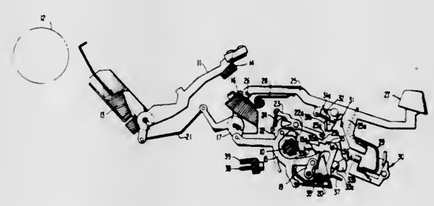
In an electromechanical coin totalizer, an escapement mechanism controls the movement of a totalizer arm in response to the deposit of coins of different denominations. The mechanism includes a first, fixed row of teeth on the arm and a second row of teeth shiftably carried by the arm for limited movement of the two rows of teeth relative to each other. The deposit of a coin of the largest denomination accommodated by the totalizer releases the totalizer arm and causes a retainer to engage and hold the second row of teeth to limit the movement of the totalizer arm, whereupon the second row is then released for return movement to its normal disposition in relation to the first row and the totalizer arm is relocked after having shifted through a displacement representing the value of such coin. When coins of lesser denomination are deposited, the first row is employed to control incremental movement of the arm.

3,642,109
BELT TENSION DEVICE
Samuel D. Cappotto, Syracuse; Herrick R. Diamond, Homer, and Aaron C. Zeamer, Groton, all of N.Y., assignors to SCM Corporation
Filed Jan. 19, 1970, Ser. No. 3,710
Int. Cl. B41j *23/08;* **F16h** *7/12*
U.S. Cl. 197—17 **5 Claims**



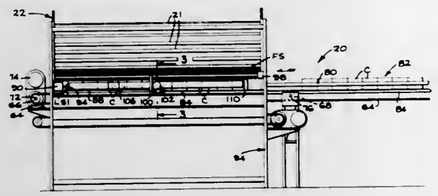
A device which increases the tension of transmission belts in response to a decrease in belt tension caused by belt wear, elongation, etc. The belts are carried on a movable pulley and a pivotal cam moves the pulley to increase the tension in the belt.

3,642,110
POWER OPERATED TYPEWRITER WITH INTERLOCK MEANS
Yukio Hishida; Takami Kato; Takashi Hirata, and Hisao Kurachi, all of Nagoya, Japan, assignors to Brother Industries Ltd., Nagoya, Japan
Filed Mar. 14, 1969, Ser. No. 807,354
Int. Cl. B41j *5/22*
U.S. Cl. 197—107 **7 Claims**



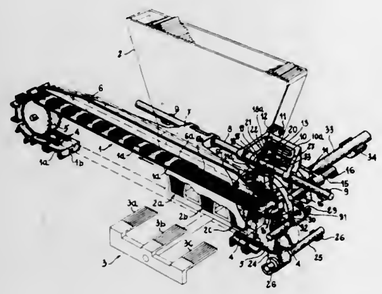
An interlocking apparatus for power operated typewriters to prevent depression of more than one key lever simultaneously comprises a number of balls located under the array of key levers and bellcrank levers corresponding to each key lever and pivotable about a fixed axis from an inoperative position to an operative position in which the lever is engaged with said balls. The lever is pivoted into the operative position by a trigger in the type actuating mechanism upon depression of the key lever and is pivoted back to the inoperative position by a reciprocating member in said type actuating mechanism after the initiation of the reciprocating movement of the member.

3,642,111
FULL ROW CONTAINER FEED SYSTEM
James Reimers, San Jose, and Audrey J. Johnson, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Mar. 18, 1970, Ser. No. 20,691
Int. Cl. B65g 47/42
U.S. Cl. 198—21 16 Claims



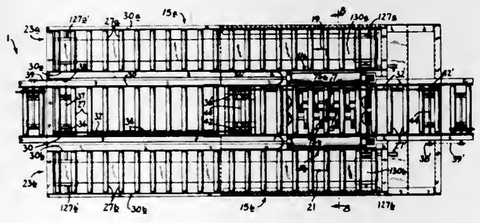
A system for forming and feeding only full rows of containers into elongated carrier bars of a hydrostatic cooker or the like. The system includes a feed conveyor which advances containers into a feed station at a high speed. A pair of container decelerating slide rods lift the containers off the feed conveyor to reduce the speed of the containers, and a pneumatic stop cylinder is disposed at the downstream end of the feed station for gently stopping the containers in the feed station. Switches and a sensing unit detect the presence of a full row of containers in the feed station and allow deflection of only full rows from the feed station into the processing conveyor of the cooker. A screw feeder upstream of the feed station is stopped when a second sensing head disposed upstream of the feed station detects the termination of movement of the containers therepast.

3,642,112
STABILIZING DEVICE FOR CIGARETTE PACKAGING MACHINES
Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Societa In Accomandita Semplice Di Enzo E Ariosto Seragnoli, Bologna, Italy
Filed June 12, 1970, Ser. No. 45,881
Claims priority, application Italy, June 23, 1969, 1672 A/69
Int. Cl. B65g 47/08
U.S. Cl. 198—24 6 Claims



A stabilizing device for cigarette packaging machines in which cigarettes to be packed are transferred in rows from a first stationary container to each of a plurality of containers movable by means of a conveyor system, each movable container having a base and an opening at an end opposite the base, wherein the movable containers are arranged in line for intermittent movement past the first container. The device comprises a stabilizing arm having a step in a surface adjacent the second container, which step defines two stabilizing surfaces. The step has a dimension which is equal to a whole number multiple of a diameter of the cigarette to be packaged. The stabilizing device is arranged to be intermittently movable with the movable containers, and also movable between a first operative position in which the surfaces define, with at least some of the bases of the movable containers, a space for occupation by a row or rows of cigarettes and a second inoperative position spaced from the second containers, the first operative position coinciding with movement of the containers.

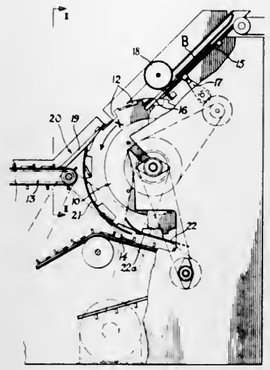
3,642,113
APPARATUS FOR DISCHARGING ARTICLES FROM A MOVING CONVEYOR
William J. Burgis, Park Ridge, Ill., assignor to Conveyor Systems, Inc., Morton Grove, Ill.
Filed Aug. 17, 1970, Ser. No. 64,201
Int. Cl. B65g 47/00
U.S. Cl. 198—25 9 Claims



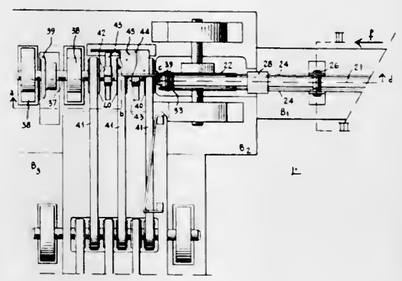
Diverting means at each of a number of articles diverting stations of a conveyor comprise a frame supported for rocking motion along an axis extending generally longitudinally of the conveyor below each diverting station. The frame carries first and second sets of continuously driven longitudinally spaced article impelling elements, such as friction wheels respectively moving in opposite directions and positioned on opposite sides of the pivot axis of the frame. Normally, the frame is balanced in a position where both sides of article impelling elements are located below the level of the conveyor. By rocking the frame in one direction or the other from the balanced position, one set or the other of article impelling elements are raised above the level of the conveyor to impel an article thereon in one direction or the other to an article receiving point on one side or the other of the conveyor.

3,642,114
BISCUIT HANDLING MACHINERY
Stanley William Crispe, Liverpool, and Henry Wood, St. Helens, both of England, assignors to T & T Vicars Limited, Lancashire, England
Filed Oct. 20, 1970, Ser. No. 82,292
Claims priority, application Great Britain, Dec. 6, 1969, 59,687/69
Int. Cl. B65g 47/08, 47/26, 47/90
U.S. Cl. 198—25 9 Claims

Biscuit handling machinery adapted to receive a stream of biscuits and to deliver biscuits from said stream alternately to each of two conveyor means respectively, the biscuits on one conveyor means being inverted relative to those on the other and comprising a drumlike member which is rotatable about a horizontal axis and which has spaced recesses around its periphery, alternate of said recesses being of greater depth than the intermediate recesses, means for feeding biscuits from a feed stream thereof into consecutive recesses as the drumlike member rotates, means for removing biscuits from the shallower recesses and placing them onto a first conveyor means, thereby leaving the biscuits in the deeper recesses to be transported by the member so as to be released therefrom under the influence of gravity in inverted condition onto a second conveyor means.

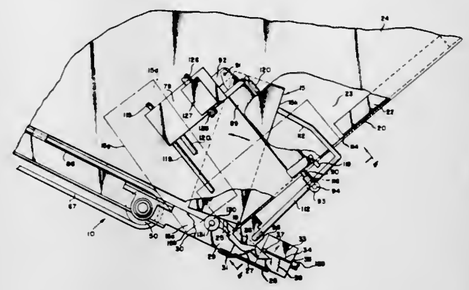


3,642,115
METHOD AND DEVICE FOR CHANGING THE DIRECTION OF MOTION OF ARTICLES
Claude Prigent, Pantin, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Filed Aug. 22, 1969, Ser. No. 852,281
Claims priority, application France, Aug. 23, 1968, 163893
Int. Cl. B65g 47/22
U.S. Cl. 198—28 6 Claims



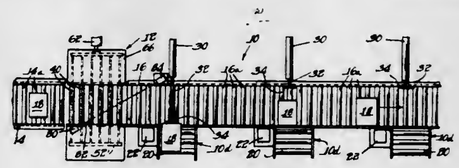
Method for changing the direction of forward motion of oblong objects and for transferring said objects from a first conveyor on which they are carried in a substantially horizontal first direction in "end-to-end" relation to a second conveyor which takes said objects "side-by-side" in a second direction which is also horizontal but substantially at right angles to the first, comprising the step of communicating an upwardly directed impulse to said objects at the end of their travel in the first direction in order that they may be upwardly inclined at a small angle and caused to follow a ballistic trajectory and then to fall back onto the second conveyor under the action of their own weight.

3,642,116
ARTICLE INVERTOR
Howard D. Phillips, Edison, N.J., assignor to National Can Corporation, Chicago, Ill.
Filed Oct. 2, 1969, Ser. No. 863,284
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AD 6 Claims



A mechanism for turning articles, for example, filled cartons, upside down as the articles are transported along a conveyor line.

3,642,117
ARTICLE POSITIONING APPARATUS FOR ROLLER CONVEYORS
Harold S. Burt, Wilmette, Ill., assignor to Conveyor Systems, Inc., Morton Grove, Ill.
Filed Jan. 15, 1970, Ser. No. 3,043
Int. Cl. B65g 43/00
U.S. Cl. 198—38 8 Claims

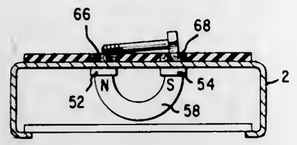


An article positioning apparatus is provided for a roller conveyor system to enable one selected side surface of each of a plurality of articles moving longitudinally in spaced relation along a conveyor to be located precisely, and with repeatable accuracy, adjacent a code reader sensitive to indicia positioned on said side surface of each of the articles. The article positioning apparatus in its preferred form includes a plurality of driven rollers which are adapted to be moved in unison while an article is still moving longitudinally therealong in a direction transverse to the conveyor, thereby to shift said one selected side surface of the article into abutting relation to article guide means positioned parallel to the path of travel of the article. The code reader, in response to the indicia on the side surface of the article, activates an article ejection mechanism which quickly moves the article off the conveyor at a selected discharge station.

3,642,118
MAGNETIC CONVEYOR
Andrew T. Kornylak, 400 Heaton Street, Hamilton, Ohio
Filed Feb. 13, 1970, Ser. No. 11,141
Int. Cl. B65g 17/46
U.S. Cl. 198—41 7 Claims

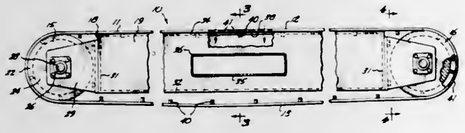
A conveyor for moving small ferrous items. An endless flexible belt is supported by one surface of a framework made of a nonmagnetic material. Parallel bars of magnetic

material are secured to the framework opposite the belt-supporting surface. Permanent magnets are secured to the bars to provide a continuous magnetic field for attracting the



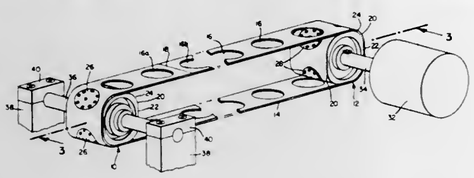
items onto the belt. The belt is provided with parallel strips of high-permeability corresponding to the underlying magnetic bars. The strength of the magnetic flux passing through the items is thus increased.

3,642,119
VACUUM CONVEYOR BEAM
Charles Herbert Warwick, Vancouver, Wash., assignor to Fibreboard Corporation, San Francisco, Calif.
Filed Aug. 12, 1970, Ser. No. 63,064
Int. Cl. B65g *15/00*
U.S. Cl. 198—184 **4 Claims**



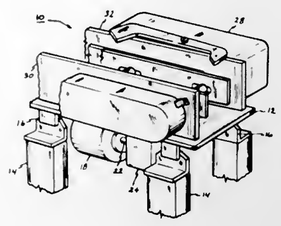
A conveyor beam including an endless, vacuum conveyor belt supported at its ends by drive pulleys and in the center by a vacuum manifold. Perforations in the belt register with an elongate slot in the manifold, in line with the direction of belt movement, to grasp and retain objects on the belt. Guide pins are secured on the inner surface of the belt, interspersed with the perforations, adapted to project into the slot and slide therealong to maintain the moving belt in alignment. The upper surface of the manifold and the edges of the slot are lined with a material having a low coefficient of friction, such as graphite impregnated nylon.

3,642,120
CONVEYING APPARATUS AND METHOD
Frederick William Duhan, Philadelphia, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed July 28, 1969, Ser. No. 845,156
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 **12 Claims**



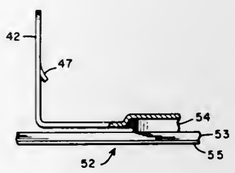
An endless conveyor belt is carried by driving and driven pulleys having belt-engaging peripheries comprising, alternately, planar and curved surfaces. Flexure of a seam of the belt and consequent breakage of the belt is avoided by causing the belt in the vicinity of the seam to be engaged by one of the planar surfaces.

3,642,121
CONVEYOR MECHANISM
James L. Furlette, Flint, and Donald A. Stadler, Fenton, both of Mich., assignors to Excel Corporation, Fenton, Mich.
Filed July 23, 1970, Ser. No. 57,727
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **25 Claims**



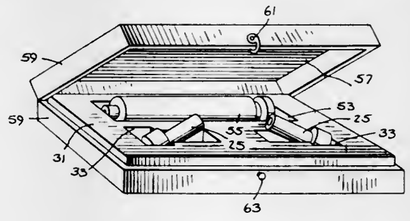
A conveyor mechanism for continuously, simultaneously conveying articles along a horizontal path. The conveyor mechanism has a plurality of transversely spaced movable beams driven by a plurality of longitudinally spaced parallel shafts rotated in a timed relation. Each shaft is provided with transversely spaced slots of a predetermined depth and so arranged that each successive slot is longitudinally aligned with each successive movable beam. A plurality of rollers, spaced below the beams, support the beams to prevent contact between the beams and the rotating shafts when the beams are within the shaft slots. The beams are elevated to a predetermined position and move in a first direction when engaged by the nonslotted portions of the rotating shafts, and are lowered to engage and be supported by the rollers and moved in an opposite direction when the beams are within the shaft slots. The slotted portions of the rotating shafts are preferably arranged so that at least one pair of beams is always in an elevated position so that workpieces conveyed thereby will always be supported in a common plane by beams moving in the same direction. The driving means between the beams and the rotating shafts for moving the beams in the first direction take the form of a frictional drive in one embodiment and of a positive gear-to-rack drive in another embodiment. The drive means between the beams and the rollers to move the beams in the opposite direction may selectively take the form of mechanical springs, a frictional drive or a positive gear-to-rack drive.

3,642,122
RECEPTACLE AND RETAINER MEANS
Robert J. Von Ende, Mound, Minn., assignor to Dennis W. Henderson; Paul Klyn, Anoka and Richard A. Miller, Hennepin, Minn., part interest to each
Filed Oct. 13, 1969, Ser. No. 865,690
Int. Cl. A45c *11/00*
U.S. Cl. 206—19.5 R **8 Claims**



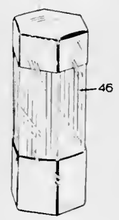
A means for mounting a receptacle device on an interior automobile surface comprising, in combination, base pad means with upper and lower major surfaces, the lower surface having an adhesive film applied and secured thereto for bonding the base pad to an interior automobile surface, the upper surface having a permanent magnet bonded thereto which is arranged to be positioned adjacent to the base of a receptacle device, the base of the receptacle device being within the field of the permanent magnet. The permanent magnet is provided with a protruding portion extending outwardly from the upper surface of the base pad. The receptacle device has a baseplate with a member having permanent magnetic properties exposed along at least a portion of the baseplate, the magnetic member being adapted to be positioned adjacent to and within the field of the permanent magnet, the baseplate further having a recessed zone formed therein and defining an inner shoulder arrangement with a configuration generally similar to the configuration of the protruding portion of the permanent magnet.

3,642,123
GUARD ENCLOSED HYPODERMIC NEEDLE AND SYRINGE RECEPTACLE
James J. Knox, Avenel, N.J., assignor to Knox Laboratories, Inc., Rahway, N.J.
Filed May 20, 1969, Ser. No. 826,142
Int. Cl. B65d *85/54*; **A45c** *11/00*
U.S. Cl. 206—43 **7 Claims**



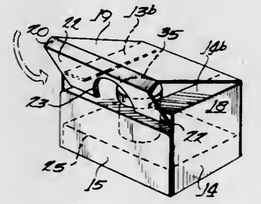
There is described a method for handling reusable hypodermic needles in which the needle does not exist as a separate entity. Rather, the needle is either attached to a hypodermic syringe or encased in an open ended tube which serves as a means for handling the needle and attaching the needle to or removing it from the syringe as well as a protection against damage to the needlepoint during sterilization. The combined needle and tube can be stored in a receptacle which normally supports the combination in a horizontal position, but which permits vertical rotation of the combination to present one end to the user with a popup action.

3,642,124
SHIPPER PACKAGE FOR DRINKING STRAWS
Robert William Brown, Burlington, Ontario, and Dorothy Wolf, Port Credit, Ontario, both of Canada, assignors to Stone Straw Corporation of Canada Limited, Toronto, Ontario, Canada
Filed Mar. 9, 1970, Ser. No. 17,711
Int. Cl. B65d *65/16, 83/02*
U.S. Cl. 206—45.33 **2 Claims**



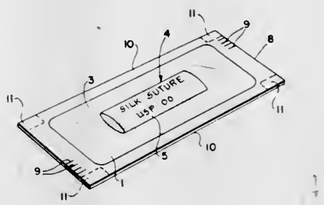
A shipper package containing straws formed from a sleeve which is loading with straws and then severed along a transverse tear line to form a pair of end caps. The caps are located opposite ends of straws and are closed at their ends. A transparent wrapper extends around the caps end straws to complete the shipper package.

3,642,125
CARTON AND PACKAGE
Gerald Frederick Johnson, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa
Filed Feb. 2, 1970, Ser. No. 7,941
Int. Cl. B65d *79/00, 5/48*
U.S. Cl. 206—47 R **4 Claims**



A carton of foldable material adapted for forming a package containing a flat object and a cylindrical object both of which are securely maintained in the finished carton.

3,642,126
SUTURE PACKAGE
Leonard D. Kurtz, Woodmere, and William H. Shave, Roosevelt, Long Island, both of N.Y., assignors to Deknatel, Inc., Long Island, N.Y.
Filed Feb. 3, 1970, Ser. No. 8,171
Int. Cl. A61l *17/02*
U.S. Cl. 206—63.3 **3 Claims**



A package which is easily opened without visualization is provided by providing a plurality of tear-initiating areas on one edge of the package and on any other edge of substantially similar shape and length. The package comprises two adjacent sheets joined at the margins to provide a sealed compartment for an object, such as a sterile suture, between the sheets. One edge of the package is provided with a plurality of tear-initiating areas, such as slots or notches, and the package is opened by tearing through that edge. By providing a plurality of notches on the edge, it is unnecessary for the user to hold the edge at a single, precise point on that edge thus rendering it virtually unnecessary to look at the edge during tearing. In order to render it unnecessary to visualize the package during tearing, all edges of the package, or at least each edge that is the same shape and length as said one edge, is provided with a plurality of tear-initiating areas in the same manner.

3,642,127
CHAIR PACK

Paul D. Bobb, High Point, N.C., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 19, 1969, Ser. No. 886,531
Int. Cl. B65d *73/00, 77/02*
U.S. Cl. 206—65 K 1 Claim

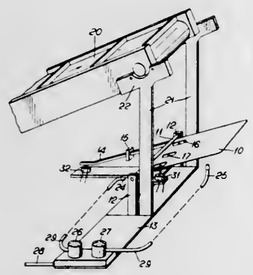


A chair pack is provided for the shipping of two chairs within one carton. Each individual chair is fastened by a heat-shrinkable film to a piece of rigid corrugated fiberboard. The fiberboard is then fastened to the end of a carton to hold the fiberboard and chair in place. The fastening of a chair at each end of the carton with the proper orientation of the chair backs provides a chair pack with two chairs therein.

3,642,128
APPARATUS USING AIR JETS FOR SORTING BY WEIGHT

Alan S. Westwood, and Donald Carmichael, both of Corby, England, assignors to Golden Wonder Limited, Corby, England

Filed June 5, 1970, Ser. No. 43,710
Claims priority, application Great Britain, July 25, 1969, 37,387/69
Int. Cl. B07c *5/20*; G01g *13/22*
U.S. Cl. 209—121 7 Claims

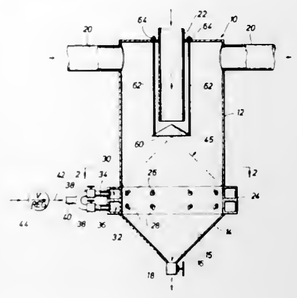


An inexpensive rapid-response check weigher for separate removal of underweight/overweight packets which may contain potato crisps for example. The packets are of light weight and after weighing are removed by air jets in one of two directions depending on their weight. The apparatus is designed for cooperation with a conveyor which feeds it with a series of packets one by one in rapid succession.

3,642,129
APPARATUS AND METHOD FOR CONTINUOUSLY SEPARATING SOLID PARTICLES IN A FLUID MEDIUM

Philip F. McDaniel, and Lonnie Dee Kirby, both of El Paso, Tex., assignors to Southwest Resources, Inc., Houston, Tex.

Filed Sept. 19, 1969, Ser. No. 859,270
Int. Cl. B03b *3/34*
U.S. Cl. 209—159 7 Claims

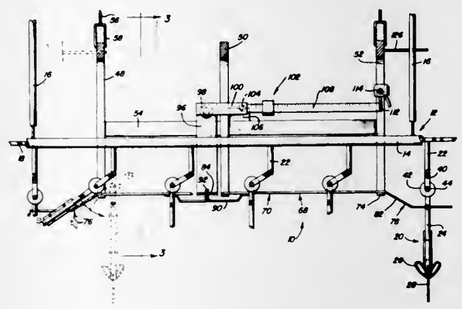


Classification apparatus for continuously separating solid particles in a fluid medium contained in a cylindrical vessel. Upwardly and downwardly spiraling vortices of turbulence are created in the fluid medium by injecting pressurized fluid streams through the sides of the vessel. A mixture of the particles and fluid medium are introduced downwardly through the top of the vessel to intercept the upwardly spiraling vortex and causing a first separation of heavy and light particles, the heavier particles falling down through the fluid medium and intercepting the downwardly spiraling vortex and effecting a second separation of heavy and light particles. The lighter particles are swept upwardly and discharged by the action of the fluid medium and the heavy particles are discharged through the bottom of the vessel.

3,642,130
MODULAR WEIGHT-SORTING ASSEMBLY FOR CONVEYORS

Paul J. Altenpohl, Bryn Mawr, Pa., assignor to W. F. Altenpohl, Inc.

Filed May 28, 1969, Ser. No. 828,606
Int. Cl. B07b *13/08*
U.S. Cl. 209—121 25 Claims

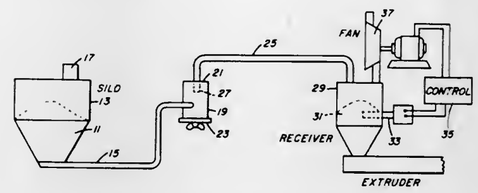


Sorting of poultry suspended by carriers from a moving overhead conveyor chain, is accomplished by weighing apparatus constituting a unitary assembly adjustably installed at any desired location in the conveyor system. A fluid-operated lifter engages the release arms on the poultry carriers to effect removal of poultry from the conveyor. The assembly is provided with facilities to maintain operational alignment and prevent malfunction because of carrier displacements.

3,642,131
METHOD OF APPARATUS FOR REMOVING TRAMP METAL FROM POLYETHYLENE

Edward C. Bartles, and William R. Matthews, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1969, Ser. No. 868,072
Int. Cl. B07b *7/01*
U.S. Cl. 209—133 3 Claims

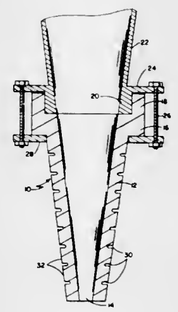


A method for separating tramp metal particles from a first stream of gas carrying polyethylene particles, which comprises delivering such first stream tangentially at high velocity into a chamber of large volume wherein all particles settle out, and withdrawing from said chamber a second stream of high-velocity gas having suspended therein only particles of polyethylene. The method has particular utility when intermittent flow is involved. The apparatus for performing the method comprises an upstanding cylindrical chamber of large volume, a first conduit having an outlet connected tangentially into the chamber at a position between the top and bottom for supplying the first stream thereto, and a second conduit leading from near the top of the chamber and having an entrance below the top and above said outlet for conducting the second stream therefrom.

3,642,132
ADJUSTABLE HARD CERAMIC UNDERFLOW OUTLET FOR HYDROCYCLONE

Robert Brendan Flaherty, Foxboro, Mass., assignor to Bird Machine Company, South Walpole, Mass.

Filed Apr. 6, 1970, Ser. No. 25,846
Int. Cl. B04c *5/14*
U.S. Cl. 209—211 1 Claim

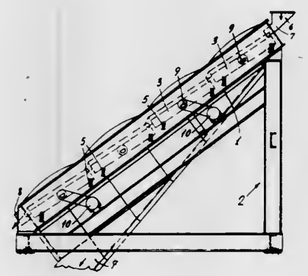


A hydrocyclone underflow outlet of hard ceramic material which is relatively strong under compression but weak under tension can be made adjustable in length by a series of grooves formed in its exterior surface permitting the member to be broken off to desired length by hammering a breaking tool wedged in the appropriate groove so that the tension at the base of the groove produced by pressure of the tool sides on the groove sides pulls the material apart at the base of the groove. The body may be frustoconical so that adjustment in length changes the size of an end opening in the body.

3,642,133
VIBRATING SCREEN WITH ONE OR MORE GROUPS OF SCREENING ELEMENTS

Michele Venanzetti, Piazza 25, Milan, Italy

Filed June 2, 1969, Ser. No. 829,166
Claims priority, application Italy, June 6, 1968, 17418 A/68
Int. Cl. B07b *1/28*
U.S. Cl. 209—314 1 Claim

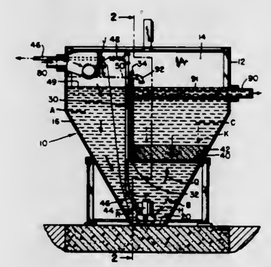


A vibrating screen comprises a main frame and at least two parallel pluralities of separate screening members. The members of each plurality feed one to another in cascade and each of the members is separately resiliently mounted on the main frame for independent vibrating movement relative to the main frame and relative to each other. Vibrating means and motor means for driving the vibrating means are provided for the screening members.

3,642,134
METHOD AND APPARATUS FOR TERTIARY TREATMENT OF EFFLUENT

Donald J. Reckers, Cincinnati, Ohio, assignor to Pollution Control, Inc., Cincinnati, Ohio

Filed July 10, 1969, Ser. No. 840,645
Int. Cl. B01d *29/38*
U.S. Cl. 210—73 22 Claims

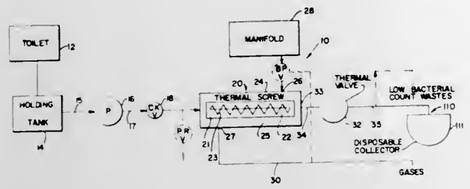


The floating and settleable solid pollutant particles in the effluent from a secondary treatment plant are separated, by reason of their different specific gravities from the effluent providing a residual effluent which contains substantially only the suspended solid pollutant particles of the original effluent and only the residual effluent is subjected to the action of a filter.

3,642,135
WASTE DISPOSAL ASSEMBLY

Abraham Gale Borden, 5 Central Drive, Port Washington, N.Y.

Continuation-in-part of application Ser. No. 724,988, Apr. 29, 1968, now abandoned. This application Aug. 25, 1969, Ser. No. 852,859
Int. Cl. C02b *3/04*
U.S. Cl. 210—97 10 Claims

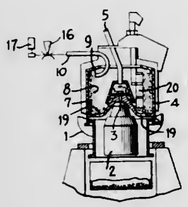


Process for the substantial reduction of bacterial count in sewage waste and assembly for treating same. The assembly comprises means for conveying sewage waste material to a treatment zone, means for retaining the waste material therein, temperature control means to insure that the contents retained in the treatment zone attain a temperature at least that of boiling water and means for passing the treated sewage waste from the treatment zone so that upon discharge of the treated waste material, substantially all of the bacteria have been destroyed.

3,642,136
AUTOMATIC SELECTOR FOR VARIOUS EVACUATION CIRCUITS OF A CENTRIFUGE

Joseph Rousselet, Annonay, France, assignor to Etablissements Rousselet, Annonay, France

Filed Dec. 4, 1969, Ser. No. 882,077
Claims priority, application France, Dec. 4, 1968, 50702
Int. Cl. B04b *11/06*
U.S. Cl. 210—109 2 Claims

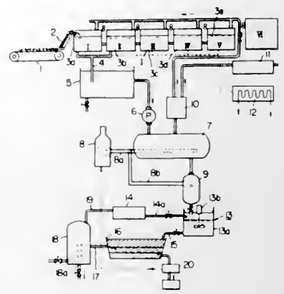


An automatic selector for various evacuation circuits from a centrifuge is constituted by an adjustable electric, pneumatic or other pressostat, positioned in the outlet pipe of the evacuation nozzle of the centrifuge. The pressostat is adapted to control the opening and closing members of the circuits conducting the liquids and/or sediments to their storage containers, as a function of the pressure in the outlet pipe. The opening and closing members may be automatic valves on branch pipes from the outlet pipe. The sediment branch pipe may be equipped with a bypass valve calibrated and adjustable for automatic operation, the liquid branch pipe having an electrovalve. The pressostat may control a scraper knife removing sediment automatically through the bottom or side of a centrifuge of vertical or horizontal axis respectively.

3,642,137
WOOL-WASHING WASTE-LIQUID TREATMENT APPARATUS

Taizo Furuta; Yuichi Otsuka, and Kiyoshi Mizukawa, all of Tokyo-to, Japan, assignors to Daito Boshoku Kabushiki Kaisha (a/k/a Daito Woolenspinning & Wearing Co., Ltd.), Tokyo-to, Japan

Filed Dec. 15, 1970, Ser. No. 98,238
Int. Cl. B01d *21/10*
U.S. Cl. 210—152 1 Claim

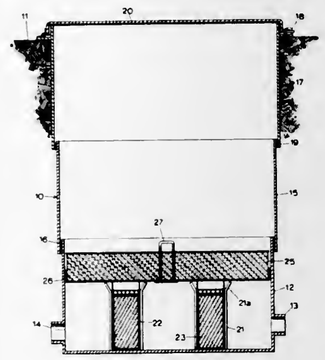


A wool-washing waste-liquid treatment apparatus, wherein waste-liquid is once stored in a precipitation vessel and is separated into wool fat, suint and sand, then the mixture liquid of said wool fat and suint is supplied into a vapor-producing device and heated there whereby said mixture liquid is separated into vapor and sludge, the vapor is circulated to said wool-washing device, the sludge is poured into an agitating vessel, a wool fat solvent is added to and agitated with the sludge, the thus-agitated sludge is transferred into a separating vessel, so that the wool grease and impurity are separated from each other.

3,642,138
FILTERING TANKS FOR WASTE DISPOSAL SYSTEMS

Raymond F. Sheda, 317 Alder Street, Black River Falls, Wis.

Filed Aug. 12, 1970, Ser. No. 63,048
Int. Cl. B01d *23/10*
U.S. Cl. 210—170 2 Claims

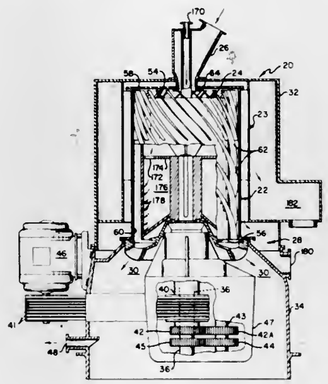


A filtering tank for waste disposal systems with extension units positioned over it in telescoping relation extending to ground level and having a cover for access to the tank. The filtering tank has removable filter cages filled with particulate filtering material positioned in the fluid flow passage in the filtering tank between the inlet and outlet. Removable insulation extends across the top of the filtering tank in spaced relation above the filtering material.

3,642,139
APPARATUS FOR CENTRIFUGALLY REMOVING LIQUID FROM A MIXTURE

Peter C. Wilson, P.O. Box 561, Route 2, Evergreen, and Robert P. Hughart, 9451 East Grand Street, Englewood, both of Colo.

Filed Aug. 12, 1968, Ser. No. 752,022
Int. Cl. B04b *3/04*
U.S. Cl. 210—213 20 Claims

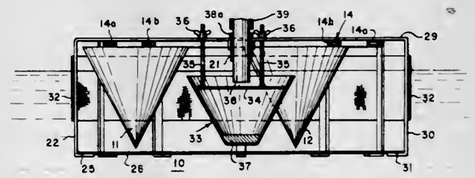


A method and apparatus for continuously removing, through a centrifuging operation, liquid from a mixture including therein a cellulose fiber pulp of organic origin which is used or could be used in the making of paper. The method involves impinging the mixture upon a rotating screen surface to form a layer of lightly compacted, relatively porous, fibrous material thereon and passing a portion of liquid through said porous layer of material and through said screen followed by effecting a further removal of the liquid from said mixture by cleaning said screen surface by moving the edge of a transporting member adjacent said screen surface while simultaneously producing and maintaining a mass of densely compacted, relatively impervious, fibrous material between said edge and said screen and using said mass to remove continuously from said screen surface fibrous material deposited thereon, and rolling, wringing and redepositing said fibrous material upon said screen surface while passing additional liquid through said screen and moving said fibrous material along said screen surface. The mixture is centrifuged at a force varying within a range between approximately 70 and 650 times the force of gravity. The fibrous material passing with the liquid through the screen is recovered by impinging the liquid-fibrous material upon the surface of a second screen. The method may also be used with a mixture containing fibers which are relatively short in length by adding to said mixture a predetermined quantity of fibers having a relatively long length. The apparatus comprises a hollow, rotatably mounted screen means, a scroll member rotatably mounted concentrically within said screen means, and means for rotating the scroll member at a predetermined angular velocity differential relative to the angular velocity of rotation of the screen means. The screen means preferably has a circularly shaped inner surface and a plurality of openings formed therethrough, the minimum dimension of said openings, taken in a direction generally normal to the longitudinal axis of said openings, varying within a range of not less than approximately 0.3 millimeters nor more than approximately 3 millimeters. The scroll member has a plurality of helical flights formed on the surface thereof so constructed and arranged to prevent fibrous material from "bridging" between adjacent flights. This construction and arrangement includes helical flights disposed to form an included angle with a plane disposed perpendicular to the longitudinal axis of the scroll member not more than approximately 65°, and perpendicularly spacing each flight from an adjacent flight by an amount equaling at least approximately 0.03 and preferably 0.04 times the inner circumference of the screen means. The clearance between the edge of each flight and the inner surface of the screen means adjacent the end into which the mixture is supplied to the apparatus equals approximately not more than 0.004 times the inner diameter of the screen means. A relationship exists between certain structural parts of the apparatus whereby, upon operation thereof, the fibrous material is retained upon the inner surface of the screen means at least approximately 1½ seconds and preferably about 3 seconds.

3,642,140
OIL RECOVERY AND CLEANUP SYSTEM

James H. Parker, P.O. Box 1652, Norfolk, Va.

Filed Mar. 23, 1970, Ser. No. 21,810
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 18 Claims



An oil recovery unit is provided for recovery of oil floating on the surface of the water in which the recovery unit has a plurality of float elements of decreasing diameter from top to bottom associated with one another to define a floating frame, oil collection means centrally positioned within the defined floating frame with the top surface of the collection chamber means being below the top surface of the float element, and oil drawoff means associated at one end with the oil collection chamber means and the opposite end thereof connected to pump means remotely located from the recovery end for drawing off the collected oil.

An oil processing unit is provided for use in association with the recovery unit in which the oil mixture collected by the recovery unit is passed continuously into a collection chamber wherein the oil mixture is permitted to settle into an oil phase and a water phase, with the oil phase being passed to a collection zone for subsequent drawoff and the water phase being passed at low velocity continuously through at least two other processing stages to remove entrained oil and to discharge the water back to where it came, or otherwise disposed of.

3,642,141
FILTER TUBE AND CONNECTION THEREOF TO TUBE SHEET

Russell B. Hobson, Jr., Montclair, N.J., assignor to Per Corporation, West Orange, N.J.

Filed July 21, 1970, Ser. No. 56,838
Int. Cl. B01d *29/14*
U.S. Cl. 210—323 10 Claims

A filter element for filters of the pressure-type includes a socklike pervious filter tube fitted over a tubular open frame which has a flange around which portions of the tube wall are folded. Portions of the frame are resilient and have exterior projections and said frame and filter tube extend through a hole in a tube sheet disposed between the inlet and the outlet of a casing with said flange and said projections abutting opposite sides of said sheet respectively. A flanged hollow plug

is frictionally fitted in the frame and engages said resilient portions to hold said projections in abutment with said tube



sheet and to clamp said folded portions of the filter tube on said flange.

3,642,142

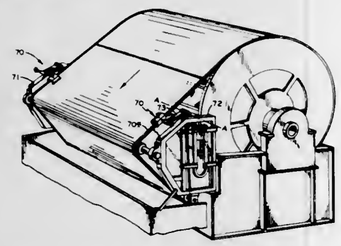
CENTERING DEVICES FOR ENDLESS FILTER BELT

August C. Barnebl, Stamford; Franz Bliem, and Ernst R. Kus, both of Norwalk, all of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation-in-part of application Ser. No. 700,579, Jan. 25, 1968, now Patent No. 3,503,517. This application Mar. 26, 1970, Ser. No. 22,801. The portion of the term of this patent subsequent to Mar. 31, 1987, has been disclaimed.

Int. Cl. B01d *33/14*

U.S. Cl. 210—401 **39 Claims**



A pair of opposedly arranged belt-centering devices for belt-type vacuum drum filter apparatus, each device engaging a respective beaded side edge portion of the filter belt, each device having an assembly of a pair of bead gripping glide shoes biased towards each other while slidably engaging opposedly arranged tracks on the associated bead, which assembly is also biased in a direction laterally away from the belt and from the associated bead.

3,642,143

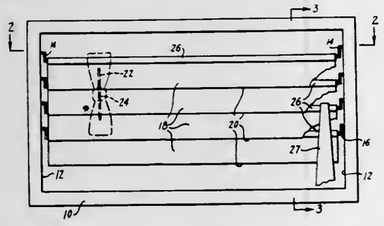
BOW TIE RACK

Joseph K. Cass, 1560 New Holland Pike, Lancaster, Pa.

Filed Aug. 21, 1970, Ser. No. 65,851

Int. Cl. A47f *7/00*

U.S. Cl. 211—13 **1 Claim**



A tie rack with overlapping bars pivotally mounted therewithin, the lower edge of each bar allowing one side of a bow tie clip to be clipped thereon and the other edge of each bar being rounded for preventing snagging and tearing of other types of ties draped thereabout.

3,642,144

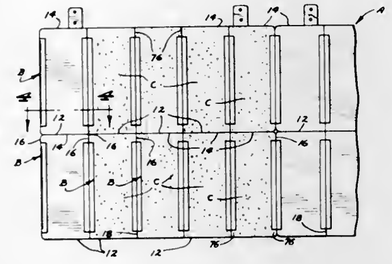
SECTIONAL DISPLAY FOR SAMPLES OF SHEET MATERIAL

Sheldon C. Brooks, Minneapolis, Minn., assignor to Tri-State Displays, Inc., Minneapolis, Minn.

Filed Aug. 11, 1969, Ser. No. 848,820

Int. Cl. A47f *7/16*

U.S. Cl. 211—45 **2 Claims**



A sectional display for a number of samples of sheet material such as carpets, linoleum and the like consisting of sections having backs, rectangular in form with spaced flanges overlying and spaced from the backs to form grooves for the reception of the samples, the sections being connected together by means of cleats having openings therein adapted to receive headed pins issuing from the backs of the sections near the edges thereof, the pins being arranged in identical groups and the holes in the cleats corresponding therewith so that all of the cleats would be identical and the sections may be connected end-to-end and/or side-to-side.

3,642,145

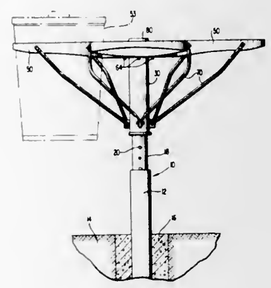
REFUSE CAN SUPPORT

Ralph Edward Shelton, Route 4, Greeneville, Tenn.

Filed Sept. 8, 1969, Ser. No. 856,025

Int. Cl. A47g *29/00*

U.S. Cl. 211—78 **5 Claims**



A support for a group of household garbage cans or the like comprises a plurality of frames normally radiating from a sleeve which is adjustable vertically on a post, each frame being adapted to hold an individual can, and each being connected to the sleeve for collapsing to a depending, inoperative position when its can is removed.

3,642,146

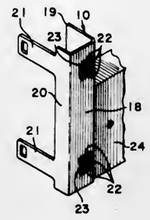
RACK

Donald Frazier, R.D. #1, Mendham Road, Far Hills, N.J.

Filed Mar. 27, 1970, Ser. No. 23,383

Int. Cl. A47f *5/10*

U.S. Cl. 211—176 **13 Claims**



A pallet rack in which the upright members have slots to receive tongues of a shelf beam connecter, and the shelf beam connecter embraces the upright by its sidewall and by integral offset fingers; the tongues are held against disengagement by pivotable latches which are engageable and disengageable from the tongues.

3,642,147

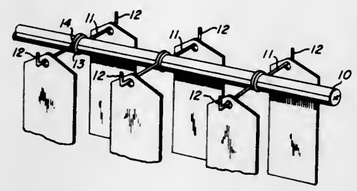
HANGER DEVICE

Gerald H. Voorhies, 1735 North Gettysburg Avenue, Dayton, Ohio

Filed May 19, 1969, Ser. No. 863,727

Int. Cl. A47f *5/01, 7/00*

U.S. Cl. 211—181 **8 Claims**



Apparatus for use in fabricating paint racks or like structures featuring a unique prestressed hanger device having an inherent capability to firmly grip a support on slip fit thereto. The hanger device of the invention is so constructed to obviate the need for special fastening or bonding means on application of the device to its base support. On suspension of articles therefrom it is inherently endowed with a supplemental and strengthened gripping action.

3,642,148

DEVICE FOR ACHIEVING PERMANENT EQUILIBRATION IN TOWER CRANES

Pierre Durand, Lyon, France, assignor to Societe Anonyme Richier, Paris, France

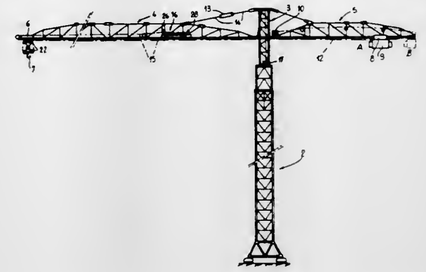
Filed May 21, 1970, Ser. No. 39,241

Claims priority, application France, May 29, 1969, 6916026

Int. Cl. B66c *23/72*

U.S. Cl. 212—48 **2 Claims**

A device for obtaining permanent equilibration in tower cranes of the type including a load jib, over which a carriage fitted with a lifting hook travels, and a jib over which a carriage carrying a counterweight is adapted to be shifted, said device including in combination: means for measuring the moment resulting from the weight of the load, on the one hand, and from the position of the load carriage on the jib, on the other hand, means for shifting the counterweight carrier on the corresponding jib, and means for increasing the duration of the loading operation in order to enable the



counterweight carrier to move only slowly and progressively as the load moment varies, without any disorderly motions.

3,642,149

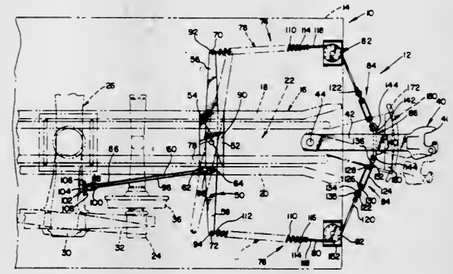
COUPLER-POSITIONING DEVICE FOR RAILROAD CAR COUPLERS

Osvaldo F. Chierici, Elmhurst, Ill., assignor to Holland Company

Filed Dec. 15, 1969, Ser. No. 885,241

Int. Cl. B61g *7/12*

U.S. Cl. 213—15 **8 Claims**



A railroad car coupler-positioning device comprising a swing lever positioned between the coupler and the car truck adjacent same and extending transversely of the car, and pivoted at its midportion for swinging movement about a vertical axis aligned with the centerline of the car, an actuating arm disposed on one side of the car and connected between the swing arm and the car truck, and cable structures extending between the respective ends of the swing lever and the coupler shank and each including preloaded tension spring devices of essentially the same preload and adjusted to bias the coupler into alignment with the centerline of track when the car is on straight track, whereby pivoting of the car track as the car rounds a curve will actuate the swing lever and cable structures to keep the coupler tangent to the track. Also disclosed is a novel resilient coupler carrier for supporting the coupler.

3,642,150

SHEETROCK SCAFFOLDING

Joseph P. Zizak, 5791-2½ Street, N.E., Minneapolis, Minn.

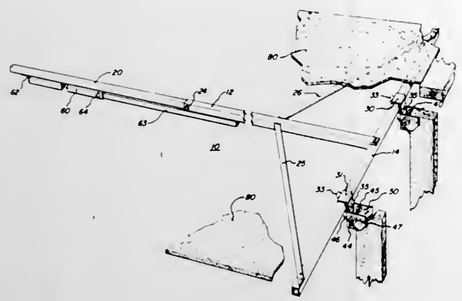
Filed Mar. 16, 1970, Ser. No. 19,743

Int. Cl. E04f *21/00;* **E04g** *21/16*

U.S. Cl. 214—1 SW **4 Claims**

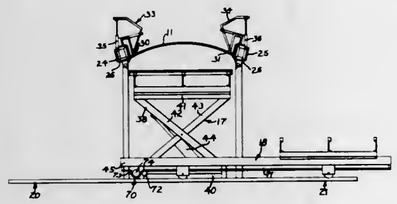
A sheetrock scaffolding is in the form of an elongated member having a brace at one extremity of the same to

which a pair of clamp means are pivotally mounted. The clamps means are adapted to mount the scaffolding on studs



on a wall framing and will permit pivoting of the scaffolding with a piece of sheetrock thereon to an elevated position so that it may be held and secured to the ceiling.

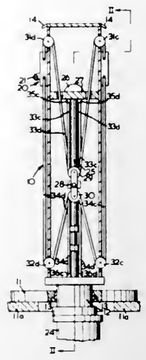
3,642,151
SHEET-HANDLING APPARATUS
Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., Lewiston, Idaho
Filed Jan. 26, 1970, Ser. No. 5,609
Int. Cl. B65g *57/02*
U.S. Cl. 214—6 H **2 Claims**



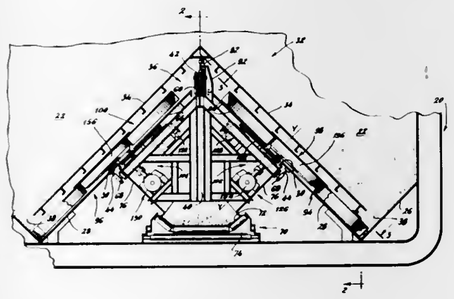
The sheet-handling apparatus has a stacking device which includes a vertically movable hoist that indexes downward as the sheets are deposited thereon. A sheet bunk is positioned on the hoist having sides that extend outward beyond the edges of the hoist. An elongated reciprocable carriage is mounted circumscribing the hoist with one end adjacent the hoist to receive a loaded bunk thereon as the hoist descends below the top of the carriage. The carriage is then reciprocated to remove the loaded bunk from the stacking device and move the other end adjacent the hoist to position an empty bunk on the hoist.

3,642,152
EQUIPMENT FOR HIGHLINE TRANSFER
Stephen G. Schneller, Laval, Quebec, Canada, assignor to Peacock Brothers Limited, La Salle, Quebec, Canada
Continuation of application Ser. No. 787,165, Dec. 26, 1968, now abandoned. This application Mar. 31, 1970, Ser. No. 22,120
Claims priority, application Canada, Oct. 28, 1968, 33725
Int. Cl. B65g *67/58*
U.S. Cl. 214—13 **14 Claims**

Apparatus for highline ship to ship transfer of loads comprises a king post with a pad eye mounted on the king post. Means are provided for moving the pad eye vertically on the king post which include a linear driving member passing over guiding means on the king post to form an arrangement providing opposing forces and wherein the pad eye is attached to the highline by connecting means. The said attachment points are situated both front and rear of the king post central axis.

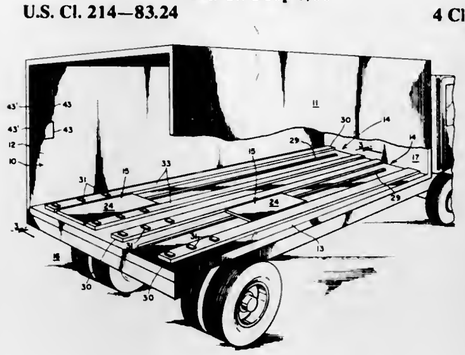


3,642,153
ROTARY PLOW FEEDER
Imre Adler, Verona; Louis Felts, Butler, and Nicholas S. Klucheff, Brick Town, all of N.J., assignors to Hewitt-Robins Incorporated, Stamford, Conn.
Filed Apr. 24, 1970, Ser. No. 31,664
Int. Cl. B65g *65/48*
U.S. Cl. 214—17 DA **18 Claims**



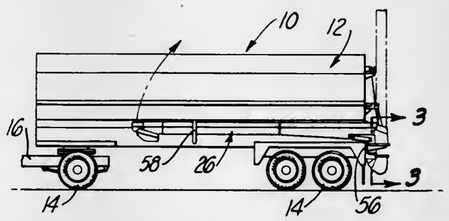
A discharge system for transferring bulk material from cargo holds onto a discharge conveyor of a self-unloading vessel comprises inclined storage shelves, which extend beneath and receive bulk material from the cargo holds, and inclined rotary plow feeders which traverse the length of the shelves to reclaim bulk material from the shelves and deposit the material onto the discharge conveyor. The rotary plow feeders are each driven by a first drive system about a central axis of rotation to reclaim material from the inclined shelves and the feeders are each provided with a second drive system for pivoting the hub of the feeder about an eccentric axis to commence, adjust, or terminate the feed of material from the shelves to the conveyor. With the rotary plow feeders in their retracted positions the feeders can be relocated along the shelves, as desired, even with material on the shelves. The hub of each feeder includes a ring gear normally driven about its central axis by an internal pinion gear for reclaiming and an annular ring gear housing that is pivoted about an eccentric axis of the feeder, coinciding with the axis of the pinion, to adjust the depth that the feeder blades extend into the bulk material on the shelves.

3,642,154
LOADING DEVICE FOR TRUCKS
Stephen Duszka, 340 New England Terrace, Orange, N.J.
Substitute for application Ser. No. 711,721, Mar. 8, 1968, now abandoned. This application Aug. 26, 1970, Ser. No. 67,078
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.24 **4 Claims**



A self-loading device built into a truck body for transferring freight from one place to another on the truck, the device, including an under floor carriage that protrudes through the body to lift freight off the floor and deposit it at another area, on the truck.

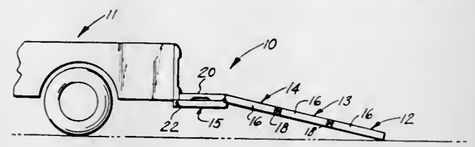
3,642,155
BULK MATERIAL HANDLING VEHICLE AND UNLOADING BOOM THEREFOR
Bernard E. Carlson, 1515 W. Arrow Highway, Apt. 18, Upland, Calif.
Filed Nov. 6, 1969, Ser. No. 874,141
Int. Cl. B60p *1/36*
U.S. Cl. 214—83.26 **11 Claims**



A bulk material handling vehicle having a bulk material storage body and an articulated unloading boom hinged to one end of the body for movement between a retracted travel position wherein the boom is folded against one side of the body and an erect service position wherein the hinged boom sections are aligned. The boom contains an endless conveyor for transporting bulk material upwardly through the boom to the upper outfeed end of the boom and is equipped with means for regulating the conveyor tension and supporting the conveyor at the hinged joint of the boom in such a way as to prevent snagging of the conveyor between the hinged boom sections as the latter are rotated to their aligned positions.

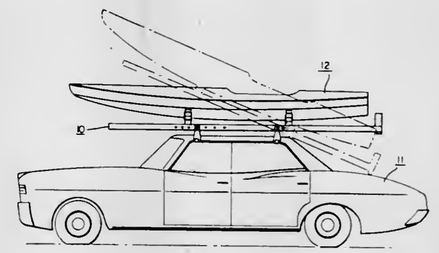
3,642,156
PICKUP TRUCK LOADING RAMP
Raymond A. Stenson, Route #2, Box 38, Rugby, N. Dak.
Filed Mar. 16, 1970, Ser. No. 19,722
Int. Cl. B60p *1/00*
U.S. Cl. 214—85 **1 Claim**

A folding ramp device for attachment to the rear gate of pickup trucks. This device is of such construction so as it may fold up while not interfering with the normal use of the endgate of the truck. The device includes a multiple number



of folding members which are hinged to make a convenient ramp for any hard to load items, such as garden tractors, snowmobiles, etc.

3,642,157
CAR TOP BOAT CARRIER
Clifford Harrison Williams, Jr., Royal Avenue at Sinkler Road, Wyncote, Pa.
Filed June 27, 1969, Ser. No. 837,209
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **3 Claims**

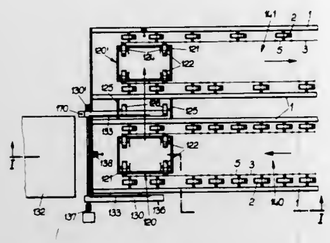


A car top boat loader including a pair of parallel spaced guide rails terminating at a stationary rest at one end of the rails. The rails are pivotally supported on the car top in such a manner that the stationary rest extends over either the hood or trunk of the car. A carriage for supporting the boat to be loaded is movable supported by the spaced guide rails and is free to move through the length of the guide rails. The boat may be easily loaded to a balanced position on the carriage by pivoting the guide rails into engagement with the hood or trunk of the car after which the boat may be sequentially rested on the carriage and moved away from the stationary rest and then pivoted on the stationary rest permitting the carriage to return to the stationary rest until the boat is balanced on the carriage. Thereafter, the boat and supporting carriage are moved up the guide rails to a point at which the guide rails pivot to a horizontal balanced position on the car top. A first locking pin is provided for maintaining the guide rails in a horizontal position and a second locking pin locks the carriage to the guide rails for transporting the boat.

3,642,158
TURNAROUND DEVICE FOR A PALLET CONVEYOR
Wolfgang Koennecke, Bad Homburg, and Reinhold Stricker, Frankfurt am Main, both of Germany, assignors to Flughafen Frankfurt am Main Aktiengesellschaft, Frankfurt am Main, Germany
Filed Aug. 22, 1969, Ser. No. 852,183
Claims priority, application Germany, Aug. 23, 1968, P 17 81 097.8
Int. Cl. B65g *47/38, 47/42*
U.S. Cl. 214—314 **8 Claims**

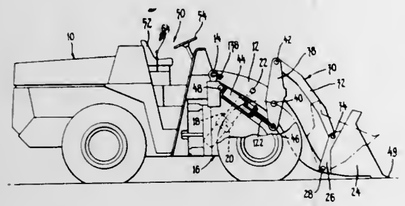
A pallet conveyor system having individual pallets supported and moved on a series of wheels rotating on horizon-

tally spaced fixed axes includes a turnaround mechanism wherein a set of supporting wheels are mounted at right an-



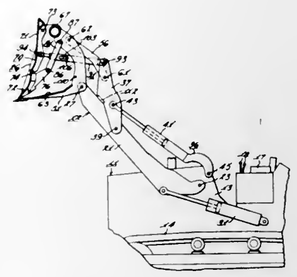
gles and are capable of being raised above the level of the first set of wheels to change the direction of movement of a pallet at that point.

3,642,159
EARTHWORKING VEHICLE
William J. Askins, Brecksville, Ohio, assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 19, 1970, Ser. No. 65,072
Int. Cl. B66f *9/00*
U.S. Cl. 214—764 **9 Claims**



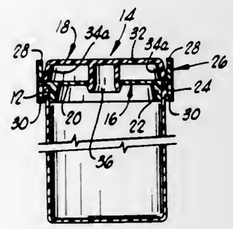
A shovel loader having a boom, a bucket pivoted thereto, and a quadrilateral linkage interconnecting the bucket and the loader has apparatus for automatically positioning the bucket in the desired digging position. The bucket control valve is provided with a pneumatic actuator which is operable to move the bucket valve from the curl to neutral position. A pneumatic circuit includes a source of air pressure and three serially connected valves, one of which is manually operated to condition the system for automatic operation. A second valve is cam operated to open position by movement of the boom control valve to the detented float position. The third valve is cam operated to open position by retraction of the bucket cylinder beyond a predetermined point. Upon opening the manual valve and raising and dumping the bucket, movement of the boom valve to the float position automatically effects movement of the bucket control valve from neutral to the curl position so the bucket is automatically curled as the boom is lowered by gravity. After the bucket cylinder has been extended beyond the predetermined point, that valve closes, deactuating the actuator to enable return of the bucket control valve to neutral position. The parallelogram linkage upon further lowering automatically positions the bucket in a digging position. Thus only one valve need be manually operated to automatically position the bucket from a raised and dumped position into a digging position at ground level. The system further includes a second pneumatic motor for closing the boom control valve when the boom is raised to a predetermined height, as controlled by another pneumatic valve.

3,642,160
LOADER WITH EJECTOR-TYPE BUCKET
Harvey W. Rockwell, and Marvin J. Carlson, both of Springfield, Ill., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 27, 1970, Ser. No. 93,354
Int. Cl. B66f *9/00*
U.S. Cl. 214—767 **9 Claims**



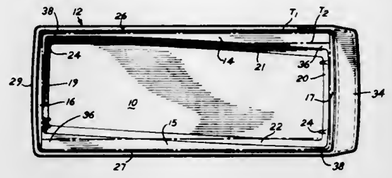
A bucket ejector with two hinged sections is automatically moved from a retracted position, in which the two sections form the rear wall of the bucket, to a forward eject position when the bucket tilt linkage causes the bucket to be moved from its loading position to its dumping position.

3,642,161
SAFETY LID
Ray D. Stroud, 2421 Northwest 59th St., Okalhoma City, Okla.
Filed July 29, 1970, Ser. No. 59,054
Int. Cl. A61j *1/00*; **B65j** *55/02*
U.S. Cl. 215—9 **14 Claims**



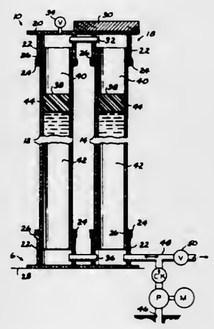
A safety lid for flanged containers including a base cap dimensioned to fit upon the upper end of the container and having a central aperture therethrough. An upper cap is rotatable mounted on the base cap and includes a downwardly extending flange having zones of depressions or relief formed therein at circumferentially spaced points. The base cap carries a pair of flexible, resilient locking fingers which project substantially parallel to the sides of the container upon which the cap is utilized. Each locking finger carries at its lower end, a locking toe adapted to engage a flange carried around the outer periphery of the upper end of the container upon which the cap is utilized. Each locking finger carries an upwardly extending portion which can be biased by digital manipulation into the relieved zones in the peripheral flange carried by the upper cap when the upper cap is rotated to a position with respect to the base cap such that the relieved zones are aligned with the locking fingers. Pivotation of the locking fingers into the zones of relief by pressing the upwardly extending portions into such zones biases the locking toes radially outwardly with respect to a container upon which the cap is mounted so that the entire cap may be removed from the container.

3,642,162
ICE CUBE BIN
Donald Wayne Doman, Jamesville, and Lawrence Kenneth Sauey, Baraboo, both of Wis., assignors to Flambeau Plastics Corporation
Filed June 27, 1969, Ser. No. 837,266
Int. Cl. B65d *1/22*
U.S. Cl. 220—1 R **4 Claims**



An ice cube bin for storing loose ice cubes including a collar portion encompassing the top of a cube storage container and oppositely inclined shoulders for the twist discharge of ice cubes from an ice cube tray. The inclined shoulders are of varying width over their length whereby ice cube trays of varied sizes may be accommodated by the bin.

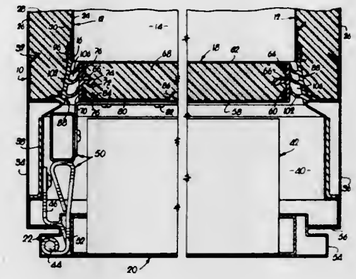
3,642,163
MULTITUBULAR PRESSURE TANK
Lorrell C. McFarland, 417 East 12, Claremore, Okla.
Filed Mar. 20, 1970, Ser. No. 21,326
Int. Cl. B65d *87/06*, *87/16*
U.S. Cl. 220—5 A **3 Claims**



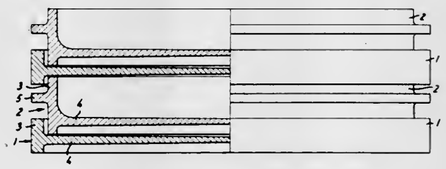
In a pressure tank a plurality of elongated tubular members are arranged in juxtaposed relation. A tank head closes the respective ends of the tubular members and provides communication therebetween. A baffle member, within each tubular member, forms an air chamber to place fluid in the tubes under a desired pressure.

3,642,164
INSULATED CABINET CONSTRUCTION FOR VENDING MACHINES OR THE LIKE
Wilbert O. O'Neal, Independence, and Warren K. Weston, Lee's Summit, both of Mo., assignors to The Vendo Company, Kansas City, Mo.
Filed July 31, 1970, Ser. No. 60,050
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 F **5 Claims**

An insulated cabinet for vending machines or the like employs an improved construction for an insulated door per se and improved means for effecting a heat seal between such door and the wall structure of the cabinet and for releasably retaining such door in a closed position relative to such wall structure. The door is formed from a pair of spaced metallic panels having an edging strip of heat insulative material extending therebetween about the periphery thereof, with the interior of such door assembly filled with heat insulative foam material suitably interlocked with both the panels and the edging strip. The wall structure is provided at the zone thereof within which the door is received when in its closed position with a sealing gasket of heat insulative material having a plurality of spaced resilient fingers extending from the wall structure toward the space to be occupied by the door when in closed condition, so that such fingers will engage the edging strip of the door along spaced areas of the latter to provide heat insulative air chambers circumscribing the peripheral edge of the door, with such fingers being deflected in a direction upwardly of the cabinet to releasably hold the door in its closed condition. The construction is particularly advantageous for use in vending machine cabinets having relatively thin insulated walls and employing an outer door as well as an inner door with the latter being insulated, of thickness substantially equal to that of the main cabinet wall structure and desirably mountable in manner such that it will clear the access opening to the cabinet when the doors are opened.



3,642,165
STACKABLE TABLE SERVICE
Henning von der Osten, Margrethevej 9, 2900 Hellerup, Denmark
Filed Sept. 29, 1969, Ser. No. 861,702
Claims priority, application Denmark, Sept. 30, 1968, 4710/68
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.83 **9 Claims**

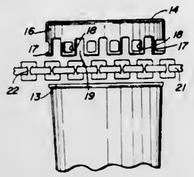


A stackable table service comprising at least two groups of mutually uniform service items, such as plates, each having an integral bottom and rim, the rims of the items of one group fitting over the rims of the items of the other group to allow alternate interlocking stacking.

3,642,166
CONTAINER AND LID CONSTRUCTION

Anthony J. Starr, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 4, 1970, Ser. No. 16,440
Int. Cl. B65d *45/32*
U.S. Cl. 220—55 AN 3 Claims

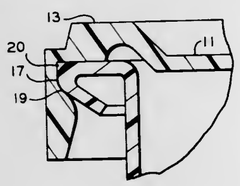


A container and lid construction. The lid has series of depending flange elements with locking members extending therethrough in locking engagement with an annular stiffening flange along the open top of the container. The locking members are connected by an adjustably tensioned belt which pulls the flange elements and the locking members into firm engagement with the annular stiffening flange. The locking members include camming members hingedly connected to the lid and having a camming action with the underside of the annular stiffening flange to draw the lid into firm locking engagement with annular flange.

3,642,167
CONTAINER CLOSURE

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed July 20, 1970, Ser. No. 56,374
Int. Cl. B65d *43/10, 41/22*
U.S. Cl. 220—60 R 5 Claims



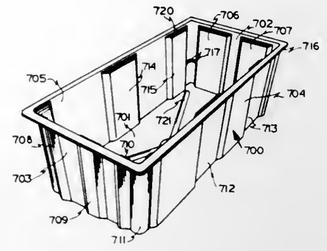
A flexible closure is provided with a flexing groove in the closure top and a sealing groove in a downwardly depending skirt adapted to conform substantially to the opposing surface of a beaded container rim to form a seal with the beaded rim although the closure is considerably flexed by a container of greater than optimum diameter.

3,642,168
NONTILT STACKING AND NESTING CONTAINER

Nathaniel C. Wiley, Jr., Weston, and Joseph R. Kazakavage, Ansonia, both of Conn., assignors to Rudkin-Wiley Corporation, Seymour, Conn.

Filed Oct. 27, 1969, Ser. No. 869,706
Int. Cl. B65d *21/04*
U.S. Cl. 220—97 D 11 Claims

Stacking and nesting containers are prevented from tilting into each other when in superposed stacking position by providing: (a) differing numbers of a plurality of tapered ribs vertically positioned and inwardly extending from top to bottom of at least one opposite pair of sidewalls; or, (b) same numbers of a plurality of tapered ribs vertically positioned and inwardly extending from top to bottom of at least one opposite pair of sidewalls, these ribs being unequally spaced one from the other and being of unequal width, but the ribs on the opposing walls forming mirror images of one another;

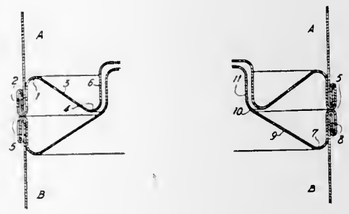


or, (c) the combination of one pair of opposing walls conforming to arrangement (a) and the second pair of opposing sidewalls conforming to arrangement (b).

3,642,169
CONTAINERS ADAPTED TO BE STACKED

Pierre A. J. Webster, 9 Roger Gobaut St, Pantin, and Andrew H. A. Langlois, Paris, 93, both of France, assignors to said Webster, by said Langlois

Filed Nov. 19, 1969, Ser. No. 878,010
Int. Cl. B65d *21/02*
U.S. Cl. 220—97 R 2 Claims



Containers adapted to be stacked, each having beaded top and bottom, characterized by the fact that the bottom of the upper container has a section providing towards the center of the container and immediately after the bead and the usual bottom cavity, an inclined portion directed towards the outside of the upper container and terminating short of the outer beaded end of the container, said inclined portion being extended by an inwardly directed portion forming a central recess. The top of the lower container is provided with a protruding portion adapted to nest within the central recess of the upper container with the beads of the two containers in abutting aligned relation.

3,642,170
COMBINATION HOLDDOWN FINGER AND PLATE SEPARATOR FOR SELF-LEVELING PLATE DISPENSERS

George R. Shelley, 4225 N.W. 72nd Ave., Miami, Fla.

Filed May 8, 1970, Ser. No. 35,771
Int. Cl. B65h *1/08*
U.S. Cl. 221—226 4 Claims

A holddown finger for use with disposable paper or plastic plates being dispensed in a self-leveling well-type plate dispenser is described. An arcuate holddown finger presses

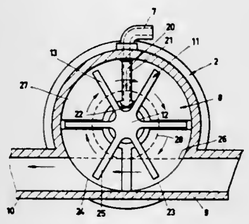
reactively against a plurality of the uppermost plates in an inverted stack in the dispenser well, at one side thereof, to separate them in fanlike fashion at the other side for easy withdrawal in a dispensing operation.



3,642,171
APPARATUS FOR INTRODUCING ADDITIVES INTO LIQUIDS

Franz Ernst, Aglasterhausen, Germany, assignor to Chemie Und Filter GmbH Verfahrenstechnik KG, Heidelberg, Germany

Filed May 28, 1969, Ser. No. 828,462
Claims priority, application Germany, May 31, 1969, P 17 67 659.4
Int. Cl. B67d *5/08*
U.S. Cl. 222—59 7 Claims



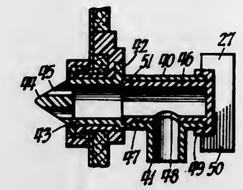
Apparatus for introducing an additive into a stream of liquid comprises a pipeline which conveys the liquid at a variable rate of flow, a flowmeter whose chamber communicates with the pipeline and accommodates a rotor rotated by liquid in the pipeline at a speed which is a function of the rate of liquid flow to thereby produce signals at a frequency which is indicative of such speed, and a pump which discharges into the chamber a unit quantity of additive in response to each signal whereby the additive is mixed with liquid in the chamber before it enters the main stream of liquid in the pipeline.

3,642,172
BULK CONTAINERS

Charles Henry Malpas, 11 Layton Crescent, Newton, Geelong, Victoria, Australia

Continuation of application Ser. No. 595,252, Nov. 17, 1966, now abandoned. This application Apr. 11, 1969, Ser. No. 845,588
Int. Cl. B67b *7/26*
U.S. Cl. 222—90 9 Claims

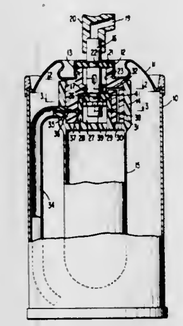
A bulk container for liquids which become contaminated or otherwise deteriorate when exposed to air, comprising an outer container having fitted to it a socket member for receiving a tap in such manner that the tap will engage therein in substantially leak-free manner, and a sealed inner container for the storage of liquid in the outer container. The socket member is so constructed and so mounted in the outer container that when the tap is engaged it will project into the sealed inner container between the tap, the socket member and the inner container.



3,642,173
PRESSURIZED DISPENSER FOR PLURAL FLUIDS

Leonard L. Marraffino, 884 Northeast 42nd St., Oakland Park, Fort Lauderdale, Fla.

Filed May 27, 1969, Ser. No. 828,166
Int. Cl. B65d *35/28, 83/14*
U.S. Cl. 222—94 8 Claims



A pressurized container has separate compartments for primary and secondary fluids which should not comingle prior to dispensing. Separate flow paths for the two fluids lead to a common exit and mixing passage. A single distortable washer valve element operates to control the flow of both fluids from their respective compartments to said common exit and mixing passage.

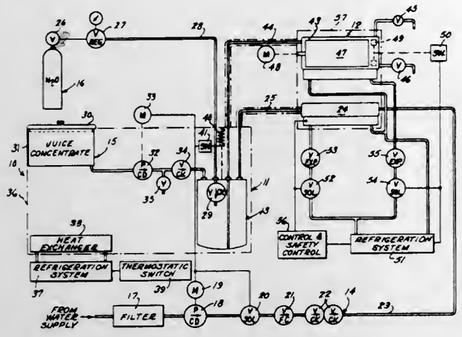
3,642,174
METHOD AND APPARATUS FOR DISPENSING A SEMIFROZEN COMESTIBLE

Richard T. Cornelius, Minneapolis, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Oct. 16, 1969, Ser. No. 866,861
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 6 Claims

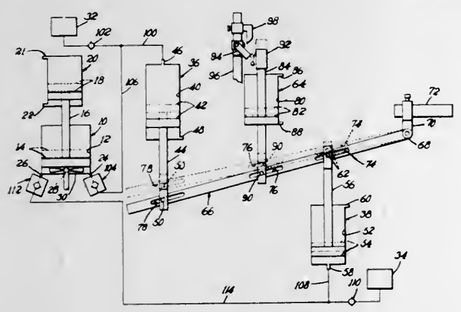
A regulated flow of water is refrigerated, and a source of concentrated orange juice at atmospheric pressure is also refrigerated and is metered and combined with the water under pressure in a refrigerated blending and storage device along with nitrous oxide gas, and the resulting mixture is transferred to a separate freezing chamber where water is

frozen from the mixture as pure ice. The mixture is dispensed from the freezing chamber to atmospheric pressure so that



the nitrous oxide gas breaks out of the semifrozen product to render it fluffy.

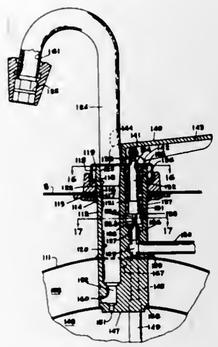
3,642,175
MULTIPLE COMPONENT MIXERS
John E. Robbins, Leicester, England, assignor to USM Corporation, Flemington, N.J.
Filed Oct. 6, 1969, Ser. No. 863,819
Claims priority, application Great Britain, Oct. 25, 1968, 50,648/68
Int. Cl. B67d *5/02*
U.S. Cl. 222—135 **7 Claims**



A device for the mixing and dispensing a multiple component composition wherein variation is made to the ratio of constituent materials fed to the mixer without having a substantial effect on the total quantity of constituent composition fed to the mixer.

3,642,176
MEANS FOR STORING AND DISPENSING HEATED LIQUID AND SYSTEM THEREFOR
Richard C. Dreibelbis, Fairlawn, and Warren E. Turner, Succasunna, both of N.J., assignors to Delta-T-Inc., Cedar Grove, N.J.
Filed Apr. 13, 1970, Ser. No. 27,759
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE **17 Claims**

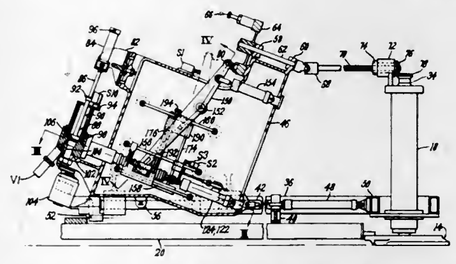
A system for dispensing a supply of instant hot fluid more particularly water wherein a hot fluid storage tank having an expansion and accumulation chamber may be operatively associated with either an adjacent or a remotely disposed dispensing and control mechanism. The dispensing and control mechanism has a first connection to a source of fluid to be heated and dispensed normally maintained at pressures above that of atmospheric pressure, a second connection with valve means therein to direct and regulate the flow of source water to the hot water storage tank for displacement of heated water therefrom, a third connection between the outlet for the hot fluid storage tank and a spout means on the dispensing and control mechanism to permit heated fluid displaced from said hot fluid storage tank outlet to be passed to and discharged from the spout means, the third connection has port means therein disposed so that the expansion and accumulation chamber will collect backflow water from the spout and the third connection when dispensing is terminated or expanded hot fluid from the hot fluid storage tank when the system is at static conditions of operation, and a fourth



connection between the upper end of the expansion and accumulation chamber and the spout means but isolated from said third connection to vent the expansion and accumulation chamber and act to maintain the entire system at atmospheric pressure.

Additionally, the system includes in the dispensing means a valve means normally biased closed to block flow of water from the source into the system and cammed to move axially against the bias to an open position by an axial-acting actuator. The valve means disposed to be removably mounted through the upper face of the dispensing means. The spout is mounted by a tapered wring fit connection to allow for easy removal along the longitudinal line of the connection whereby access to the valve means for service, repair and replacement is facilitated.

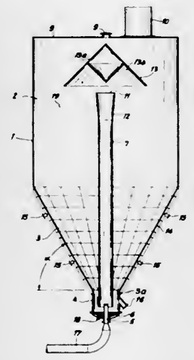
3,642,177
VOLUME CONTROL FOR MOLDING MACHINERY
Donald B. McIlvin, Danvers, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Oct. 6, 1969, Ser. No. 864,075
Int. Cl. B67d *5/64*
U.S. Cl. 222—168.5 **5 Claims**



Machinery for molding articles including a device for metering, mixing and dispensing a measured quantity of multi-

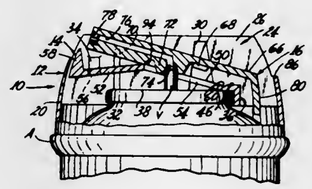
ple-component mixture to a plurality of molds. The volume of material dispensed at each mold may be varied, from one mold to another and is automatically set up in the dispensing means by movement of the device from one mold to another.

3,642,178
CONTAINER FOR HOLDING FINE MATERIAL
Gerhard Balzau, Neubeckum, and Wolfgang Fosshag, Enigerloh, both of Germany, assignors to Polysius AG, Graf-Galen-Strasse, Neubeckum, Germany
Filed Nov. 26, 1969, Ser. No. 880,181
Claims priority, application Germany, Jan. 16, 1969, P 19 02 069.0
Int. Cl. B65g *3/12, 69/06*
U.S. Cl. 222—195 **6 Claims**



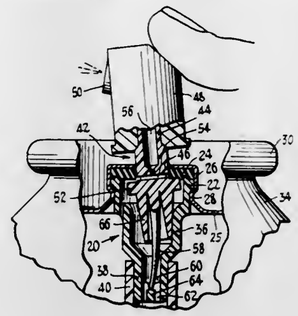
The container has a lower portion in the form of a hopper with an aerated porous wall. A pot extends centrally below the hopper, forms a continuation of the hopper and has a porous aerated base and a lateral material outlet. A central vertical standpipe in the container is provided with a nozzle for discharging compressed air into the lower end of the standpipe.

3,642,179
SELF-RESTORING DISPENSER
Lewis A. Micallef, New York, N.Y., assignor to Leeds & Micallef, New York, N.Y.
Continuation of application Ser. No. 702,058, Jan. 31, 1968, now abandoned. This application Aug. 7, 1970, Ser. No. 61,977
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.12 **14 Claims**



A self-restoring dispenser for the valve stem of a pressurized container has an actuator that cooperates with a closure member for the dispensing orifice of the actuator. The closure member is responsive to the movement of the actuator and is displaceable thereby between open and closed positions and, for the sake of safety, also an intermediate temporary position impact abutment.

3,642,180
SPRING-BIASED METERING AND NONMETERING TILT VALVE WITHOUT COIL SPRING
Kenneth G. Lehmann, 5 Kent Road, Easton, Conn.
Filed Mar. 26, 1970, Ser. No. 22,919
Int. Cl. B05b *7/32*
U.S. Cl. 222—402.23 **10 Claims**

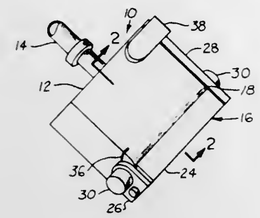


A coil-springless biased tilt valve for spray dispensers, comprising a tubular valve housing having at its upper end a transverse resilient annular valve seat which is engageable by the valving shoulder of a tiltable stem disposed in the housing and extending upward through the opening of the valve seat. An upper hollow portion of the valve stem carries a depress button which is hollow and has a discharge orifice. An inverted metal mounting cup structure receives and carries the upper portion of the valve housing and also the resilient valve seat, said mounting cup having a central aperture through which the hollow upper portion of the valve stem extends and on which the stem fulcrums. Tilting of the valve stem about the fulcrum point unseats the valve shoulder thereof, enabling a discharge to occur from the interior of the valve housing through a side passage at the bottom of the upper hollow portion of the stem, adjacent the valve shoulder (and seat). The lower end of the valve housing has a socket, and the valve stem has a long, slender depending resilient portion the bottom tip of which is received in the housing socket, said slender resilient stem portion acting as a valve return spring to bias the valve stem to a normally upright position wherein the valve shoulder thereof fully engages the seat and shuts off flow from the valve housing. Surrounding the slender resilient depending stem portion is a tubular depending skirt which is essentially rigid, and which is engageable with a sidewall of the valve housing when the stem is tilted, thereby to limit the tilting movement to a degree which is less than that which could permanently deform the slender depending stem portion. Thereby the spring action of the depending stem portion is not impaired, since the portion is never stressed beyond its elastic limit. In several metering embodiments of the invention the bottom edge of the skirt slides on a curved annular shoulder in the valve housing. When the valve stem is not tilted there is little pressure of the skirt on the shoulder, so that leakage occurs therebetween. However, when the stem is tilted there is considerable pressure of the skirt on the shoulder, providing a seal or closed valve action which seals the valve housing from the contents of the container just as the second valve does in a conventional metering valve dispenser.

3,642,181
VERTICAL ADHESIVE APPLICATOR HEAD
Buford L. Thomas, and David G. Steffens, both of Cincinnati, Ohio, assignors to Valco, Inc., Cincinnati, Ohio
Filed June 5, 1969, Ser. No. 830,692
Int. Cl. B05c *1/06*
U.S. Cl. 222—517 **7 Claims**

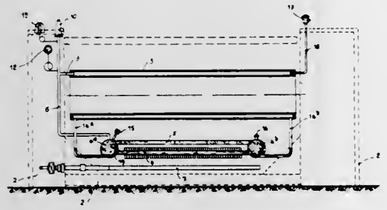
An adhesive shutoff valve mechanism for the head of an adhesive applicator comprising in part a shuttle assembly

spaced a fractional distance from the outlets in said head through which the adhesive is applied to an adjacent surface, said fractional distance being such as to form and maintain a puddle of adhesive around said outlets to prevent the admis-



sion of air thereto until said valve mechanism is activated, and an internally pivoted member adapted to align one or more passageways with said one or more outlets during the operative periods of applying said adhesive.

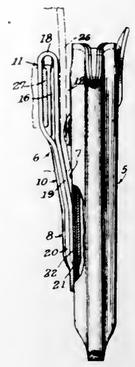
3,642,182
MACHINES FOR IRONING LAUNDRY, AND SIMILAR MACHINES
Guy Bhavsar, 68, Blvd. des Belges, Lyon, 60, France
Filed Apr. 1, 1970, Ser. No. 24,766
Claims priority, application France, Apr. 30, 1969, 6912707
Int. Cl. A41h *43/00*
U.S. Cl. 223—51 **1 Claim**



A machine for ironing laundry, or a similar machine with a working part heated by steam, such as an ironing press, ironer-dryer, dryer, or a calender, is equipped with a steam generator working in a closed circuit with the heated working part, which may be at least one double-walled cylinder an upper region of which is connected to the upper region of at least one of two evaporating vessels which are arranged parallel to each other below the cylinder and which have their upper regions connected by an equalizing tube and their lower regions connected by finned tubes disposed above a source of heat, the lower regions of the evaporating vessel also being connected to the bottom region of the cylinder, and the machine preferably being provided with a filling valve, a water level indicator, a pressure gauge and an adjustable pressure-stat, in addition to the necessary safety valve, vacuum release valve and air bleeder.

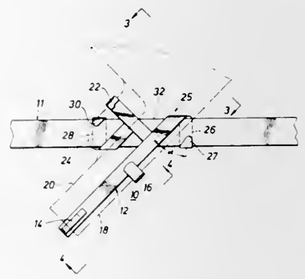
3,642,183
PISTOL HOLSTER WITH BELT LOOP
Paul D. Boren, Montebello, Calif., assignor to Safety Speed Holster, Inc., Montebello, Calif.
Filed July 13, 1970, Ser. No. 54,218
Int. Cl. F41b *13/04*
U.S. Cl. 224—2 B **5 Claims**

A pistol-carrying holster, having secured to one side thereof a loop or hanger element adapted for hanging engagement with the trousers belt of the user, said loop element having at least its upper portion spaced from the side of the holster to which it is fastened, said space being adapted to receive and freely accommodate the skirt of a tunic or jacket



worn by the user, thereby supporting the holster outside of the tunic or jacket and affording the user free and ready access to a pistol or other weapon housed in the holster.

3,642,184
LIGHT FIREARM MOUNT
Clarence E. Hendricks, 10727 Glenfield Ct., Houston, Tex.
Filed Feb. 24, 1970, Ser. No. 13,552
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 C **10 Claims**

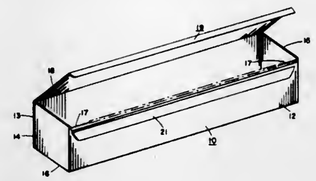


This invention relates to a light firearm mount fastened around a waistband or belt and includes an inclined pedestal having a J-shaped lip which is insertable into the gun's barrel for providing both a bottom support and vertical stabilization. Two clips extend laterally from the pedestal to provide a first lateral support for the barrel and a second lateral support for an intermediate portion of the firearm. A belt clamp having two laterally spaced clamp arms is fastened around the user's belt. The belt clamp can form integral part with the pedestal.

3,642,185
DISPENSER BOX FOR SHEET MATERIAL
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio
Filed May 7, 1970, Ser. No. 35,445
Int. Cl. B26f *3/02*
U.S. Cl. 225—48 **6 Claims**

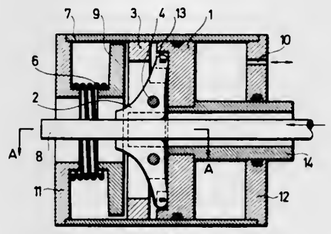
A dispenser box for sheet material in which the box has front, back and end walls and a bottom and top. A sheet cutter having a longitudinally extending cutting edge is mounted along the top edge of the front wall of the box. Hin-

gedly connected to the top of the backwall of the box, is cover means including a lid disposed to cover the top of the box and a flanged down front flap disposed to cover the cutter and the upper part of the front wall of the box. The flanged down front flap has longitudinal-extending separable means and a terminal end portion secured to the upper part



of the front wall of the box below the separable means. The separable means is below the cutting edge, whereby separation of the terminal end portion from the cover means releases the lid for hinge action and exposes the cutting edge for cutting action. The severed terminal end portion remains secured to the front wall of the box and stabilizes the cutter.

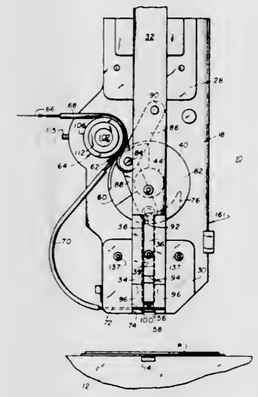
3,642,186
DEVICE FOR CLAMPING AND ADVANCING ELONGATED WORKPIECES
Jozsef Nemeth, and Erno Osovak, both of Budapest, Hungary, assignors to Gepipari Technologiai Intezet, Budapest, Hungary
Filed Feb. 24, 1970, Ser. No. 13,618
Claims priority, application Hungary, Mar. 4, 1969, GE-766
Int. Cl. B65h *17/36*
U.S. Cl. 226—164 **8 Claims**



For the advancing or feeding motion of bars, wires or the like up to now in most cases two hydraulic devices were used, one for gripping the rod and the other for moving it. According to the invention, to make the apparatus more simple, one single hydraulic cylinder is used for this purpose and according to one embodiment of the invention the piston moved in the hydraulic cylinder actuates at the beginning of its stroke the gripping means and thereafter it shifts this gripping means together with the rod or other workpiece; according to another embodiment the piston is used only for the moving or feeding but the gripping is produced by a series of rings actuated by the same hydraulic fluid which acts on the said piston.

3,642,187
STITCHING HEAD
Lauri C. Barland, West Chester, Pa., assignor to Flynn & Emrich Company, Baltimore, Md.
Filed May 14, 1970, Ser. No. 37,190
Int. Cl. B25c *5/04*
U.S. Cl. 227—84 **24 Claims**

A wire stitching head is disclosed for successively producing a series of uniformly shaped and sized stitches from a continuous length of wire and includes a reciprocating stitch-forming bar and a relatively shiftable stitch-driving bar operated by a single rotating cam wheel fitted with a first cam edge which coacts with a guide roller to feed a predetermined length of wire into stitch-forming position upon each rotation of the cam wheel. The cam wheel is further provided with a second cam surface which cooperates with a following rod to properly position a pivoting anvil into stitch-forming position during the stitch-forming operation. The guide roller is adjustable and is provided with a compressible inner core whereby the stitching head can accommodate different-dimensioned wire stock without the necessity of changing either the cam disc or the guide roller. Additionally, a dual directional clutch is utilized to selectively interconnect the

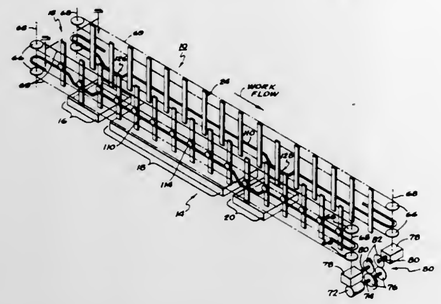


output shaft of an electric motor with the driven shaft which carries the aforementioned cam wheel at one free end thereof, the opposite end of the driven shaft carrying means for actuating electrical switch contacts utilized to synchronize the operation of the stitching head in an overall stitching machine. Finally, a drag brake assembly which cooperates directly with the aforementioned cam wheel is employed to prevent override of the cam wheel when the clutch disengages to thereby directly prevent the cam wheel from unintentionally beginning another stitch-forming operation. Finally, by employing a solid, one-piece frame, it is possible to utilize interchangeable stitch-defining lower guide members whereby the size of the ultimately defined stitch can be easily varied.

3,642,188
WORKPIECE HANDLING AND CONVEYOR APPARATUS
Thomas D. Pitzer, Birmingham, Mich.; John A. Metzger, Glenview, and John M. Lamberty, Des Plaines, both of Ill., assignors to Kaiser Aluminum & Chemical Corporation by said Pitzer and said Metzger, Oakland, Calif.
Filed May 20, 1970, Ser. No. 39,070
Int.Cl. B23k *1/08*
U.S. Cl. 228—36 **17 Claims**

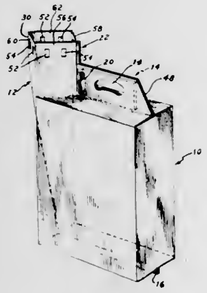
Improved workpiece handling and conveyor apparatus for transferring workpieces past a plurality of workpiece treating stations, e.g., a flux station, a preheat station and a dip-soldering station and wherein the apparatus is provided with im-

proved workpiece gripping and handling elements for effecting selective compound movements of a workpiece as the



workpiece moves progressively through the various stations and from station to station.

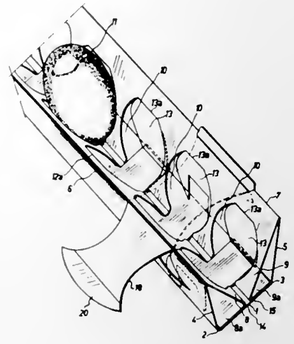
3,642,189
BAGS PROVIDED WITH CLOSING AND CARRYING DEVICE
Ralph Hugo Widenback, Stenungsund, Sweden, assignor to KemaNord AB, Stockholm, Sweden
Filed Aug. 28, 1970, Ser. No. 67,690
Claims priority, application Sweden, Aug. 29, 1969, 12017/69
Int. Cl. B65d *33/30, 33/38*
U.S. Cl. 229—7 R **5 Claims**



A bag of polyethylene or like material is provided with a valve and a pocket at its top, the valve and pocket being disposed in side-by-side relation and the valve projects beyond the pocket. The pocket receives a rigidifying insert provided with an opening so that the bag may be held, and the insert includes tabs for maintaining the valve closed when the projecting free end portion of the valve is folded over to overlie the pocket region.

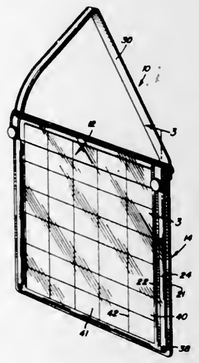
3,642,190
PACKING FOR A NUMBER OF SIMILAR ARTICLES
Jules Glaser, Ruschlikon, Zurich, Switzerland, assignor to Migros-Genossenschafts-Bond, Zurich, Switzerland
Filed July 28, 1970, Ser. No. 58,868
Claims priority, application Switzerland, July 29, 1969, 11569/69
Int. Cl. B65d *5/50*
U.S. Cl. 229—28 **4 Claims**

A packing for a plurality of similar articles, for example eggs, comprises a plurality of compartments arranged in a row and destined each to receive one egg. The packing is made from a rectangular one-piece blank of card board or the like. The blank comprises parallel folding or scoring lines



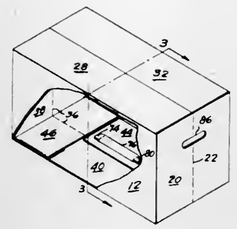
and partly cut out flaps and is so designed that no scrap is produced when preparing the blank and erecting the packing.

3,642,191
ENVELOPE CLOSURE
Carl W. Roof, South Gate, Calif., assignor to Navarm Chemical Co.
Filed Sept. 5, 1969, Ser. No. 855,534
Int. Cl. B65d *27/02*
U.S. Cl. 229—77 **12 Claims**



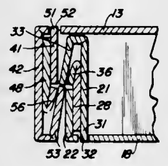
An envelope being formed by overlying sheets peripherally attached to form a material holding pocket. An extension of one sheet serves as a flap and includes a crease formed therein to establish a bias characteristic in the creased material which encourages self-closure of the flap. The flap includes a second crease formed therein which enables an outwardly extending flap section to be tucked in and form a seal for the pocket entrance. Fastener means are provided to retain the flap and sealing strip in a closed position. The envelope is fabricated from a clear plastic material and allows the insertion of a data form therein. This allows one to removably imprint indicia on the surface of the envelope in columns and rows prescribed by the data form.

3,642,192
COLLAPSIBLE REUSEABLE CARTON
Thomas L. Wilcox, Jr., and Ancil A. Jones, both of Indianapolis, Ind., assignors to Anderson Box Company, Inc., Indianapolis, Ind.
Filed Apr. 10, 1970, Ser. No. 27,345
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 **1 Claim**



A one-piece carton differing from the RSC type in that it has a score line medially of each end panel. The bottom-forming panels are defined only by score lines, without slots, and the top closure may be of the RSC type or omitted altogether. The carton is designed particularly for handling the standard lot of 30 dozen eggs.

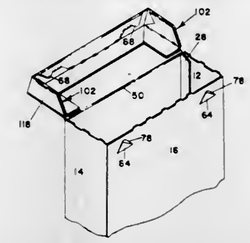
3,642,193
LOCKING CONSTRUCTION FOR TELESCOPING CONTAINER ELEMENTS
Joseph J. Rada, Country Club Hills, Ill., assignor to Container Corporation of America, Chicago, Ill.
Filed Jan. 5, 1970, Ser. No. 662
Int. Cl. B65d *45/04*
U.S. Cl. 229—45 **5 Claims**



A locking construction for telescoping container sections, each of which comprises a pair of end panel portions in folded facing relationship with a side flap panel extending therebetween. The inner of the end panel elements is Walker-locked to a main panel. A locking tab is formed by a perforated score in either the inner or outer panel element, and a forcing tab is formed in the flap, it being folded out of the plane thereof and forcing the locking tab out of the plane of the panel portion in which it is formed.

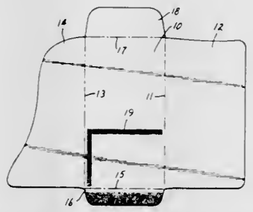
3,642,194
CARTON HAVING A HINGED END CLOSURE
John W. Scully, Raynham, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed July 15, 1970, Ser. No. 54,906
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TC **6 Claims**

A rectangular carton having a hinged top closure connected to the body portion by weakened lines along the upper edges of the front and end wall panels and adapted to be opened by tearing along the weakened lines, the carton



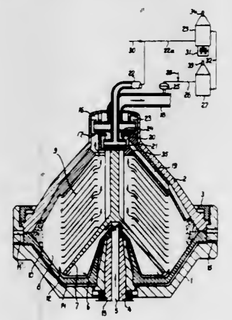
having provision for automatically locking the hinged top closure to the body portion upon reclosing the same whereby to prevent inadvertent opening thereof.

3,642,195
BANKING ENVELOPE
Karl F. Tulisalo, Atlanta, Ga., assignor to Curtis 1000 Inc., Atlanta, Ga.
Filed Apr. 6, 1970, Ser. No. 25,899
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **5 Claims**



Improved drive-in banking envelope of the type which has a side-opening currency pocket and a flap-closed end-opening coin pocket. The bottom of the coin pocket is spaced above the lower end of the envelope, thereby permitting the user to open the pocket easily, reducing the possibility of accidental opening, and virtually eliminating the tendency of coins to wedge along the bottom of the pocket.

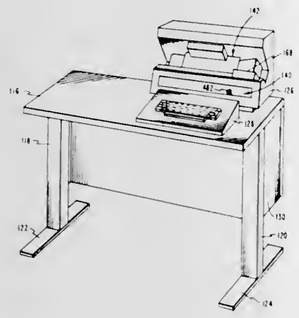
3,642,196
CENTRIFUGE WITH SLUDGE LEVEL SENSING MEANS
Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed May 4, 1970, Ser. No. 34,208
Claims priority, application Sweden, May 8, 1969, 6513/69
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **4 Claims**



The centrifugal rotor has a sludge-accumulating space from which an indicating channel extends inwardly to the re-

gion of the rotor axis. Clogging of the outer end of this channel by sludge is sensed by a device comprising a pressure signal amplifier, a pressure differential gage, a pressure-transmitting connection between one side of the amplifier and one side of the gage, a connection for transmitting a pressure of the liquid being separated, and a connection for transmitting a pressure of the liquid in the indicating channel, one of said last two connections leading to the other side of the amplifier and the other of said last two connections leading to the other side of said gage. Thus, the arrangement provides a measure of the difference between the pressure of the indicating liquid and the pressure of the separated liquid.

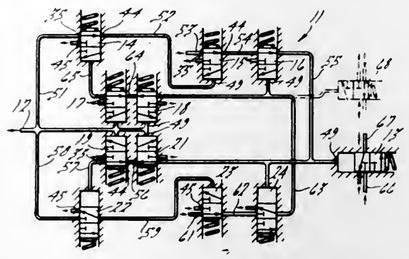
3,642,197
DATA RECORDER AND VERIFIER
Donald E. Bean; James T. Engh; James R. Hammer; John J. Igel, all of Rochester; Myron D. Schettl, Oronoco; Harry J. Tashjian; Richard J. Ullmer, both of Rochester, and John W. Kerr, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 29, 1969, Ser. No. 845,817
Int. Cl. G06k *1/20*
U.S. Cl. 234—35 **17 Claims**



A data recorder for punching document cards which are of the type having three tiers into which encoded data may be punched, the system including a keyboard on which characters are entered serially, a magnetostrictive delay line constituting a storage device for storing encoded data from the keyboard in such serial form, and circuitry for actuating punches from spaced characters in the storage device so that a plurality of aligned columns in the plurality of tiers may be punched simultaneously. The data recorder includes printing mechanism for printing the data in corresponding tiers, and the same machine includes circuitry for verifying a punched document card utilizing the same keyboard as that used for punching.

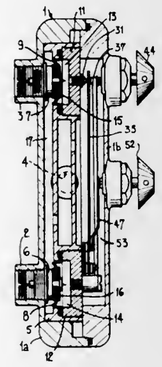
3,642,198
SHIFTABLE FLUID CONTROL CIRCUIT
Andrew B. Huntington, Waterford, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Jan. 19, 1970, Ser. No. 3,613
Int. Cl. G06m *1/12*
U.S. Cl. 235—201 **4 Claims**

A plurality of identical three-way normally open poppet valves are so interconnected between a source of momentary signal pressure and an output member or members as to shift this member or members between two alternate positions in



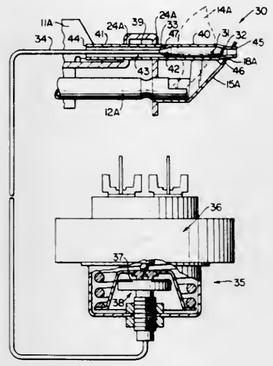
response to successive momentary applications of fluid pressure.

3,642,199
THERMOSTATIC MIXER FOR HOT AND COLD LIQUIDS
Maarten Halkema, 10, rue des Boudines, Meyrin, Switzerland
Filed Feb. 18, 1970, Ser. No. 12,306
Claims priority, application Switzerland, Mar. 4, 1969, 3249/69
Int. Cl. G05d *11/16*
U.S. Cl. 236—12 A **1 Claim**



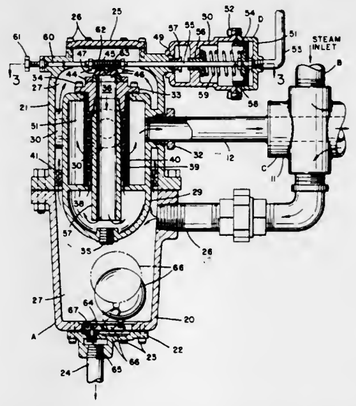
A thermostatic mixer for hot and cold liquids includes a casing to which the liquids are delivered for mixing through first and second inlets controlled by respective diaphragm-type distribution valves. A back-pressure chamber is associated with each of the distribution valves and is closed by the diaphragm of the respective valve. Liquid is supplied to each chamber from the upstream side of the respective valve and passes out of the chamber through a delivery jet. Distributing means responsive to movement of a bimetallic strip controls the delivery of liquid through the delivery jets thereby controlling the pressures in the back-pressure chambers. The intake of each chamber includes a movable intake nozzle borne by the diaphragm of the respective valve and presenting an intake orifice through which extends a needle of varying cross section for varying the effective cross section of the intake orifice in dependence on the position of the intake nozzle. The distributing means includes manual control means acting on a movable adjustment member between the delivery jets or on a movable one of the jets to provide proportional adjustment of the deliveries of the delivery jets of the back-pressure chambers, for simultaneous variation of the pressures in the chambers and adjustment of mixer delivery by means of the distribution valves.

3,642,200
FLAME-SENSING BULB CONSTRUCTION
Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 19, 1970, Ser. No. 3,818
Int. Cl. G05d *23/12*
U.S. Cl. 236—15 A **8 Claims**



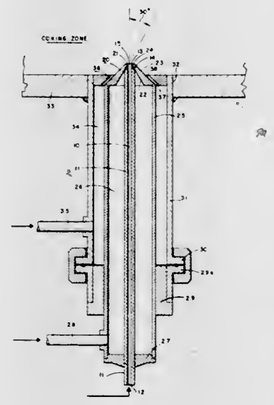
A condition sensing bulb portion interconnected to capillary tube means that provides fluid communication therethrough to the chamber of the bulb portion whereby the tube and the bulb portion define a juncture area therebetween. Insulating means is carried by the device for insulating the juncture area at the exterior thereof so that substantially no adverse wide temperature gradient can be created between the bulb portion and the juncture area when the bulb portion is subjected to relatively high temperatures provided by flames imposed on the bulb portion. Such insulating means can be a metal sleeve disposed about the juncture area to provide a dead airspace about the juncture area.

3,642,201
HUMIDIFIER CONTROL
Peter F. Potchen, Brooklyn, Ohio, assignor to The Clark-Reliance Corp., Cleveland, Ohio
Filed Aug. 5, 1969, Ser. No. 847,609
Int. Cl. B01f *3/02*
U.S. Cl. 236—44 A **7 Claims**



A control unit for a humidification system using steam as the air moistening agent. The unit includes a closed chamber for low-pressure exit steam located within a closed chamber for high-pressure entry steam to assure that the exiting steam is dry or superheated. A slide valve located in the entry steam chamber opens and closes a port between the two chambers in response to the moisture condition in a space being humidified by steam from the control unit.

3,642,202
FEED SYSTEM FOR COKING UNIT
Jake B. Angelo, Rockaway, N.J., assignor to Esso Research and Engineering Company
Filed May 13, 1970, Ser. No. 36,733
Int. Cl. A01n *17/02*
U.S. Cl. 239—8 **14 Claims**

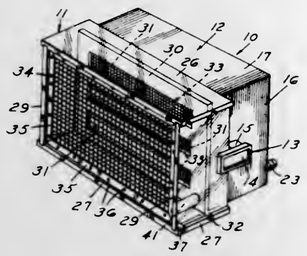


A mist of atomized hydrocarbonaceous feed material is sprayed through a nozzle into a fluid coking zone without disruption due to coke buildup in and on the nozzle by discharging the hydrocarbonaceous feed through the orifice of a temperature-regulated axial passageway into a confluence of several high-velocity gas jets issued from separate ports spaced about the periphery of the feed passageway orifice. Preferably, the several gas jets are tangentially impinged upon the feed stream so as to shearingly whirl the feed stream about the axis of the feed passageway to produce the mist. Before issuance to produce the mist, the gaseous material forming the jets are preferably deployed in an annulus stream about the axial passageway to cool the feed passageway to prevent coking of the feed in the passageway. An apertured shield coaxially surrounds the ports and orifice to peripherally protect the ports and the orifice from hot fluidized solids in the coking zone. Gaseous materials separate from the gaseous materials forming the jets are streamed along the exterior of the apertured shield to wipe the shield free of solids from the coking zone. The stream of wiping gas aids the atomization of the hydrocarbonaceous feed.

3,642,203
FIBER APPLICATOR
Vernon J. Pewtress, Farmington Township, Oakland County, Mich., assignor to Co-Polymer Chemicals, Inc., Livonia, Mich.
Filed Feb. 25, 1970, Ser. No. 14,106
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **16 Claims**

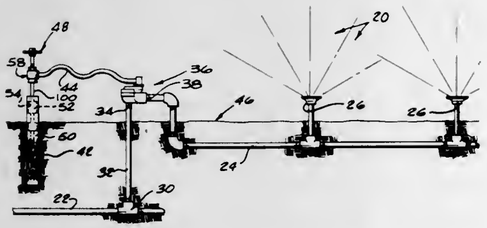
A composite applicator housing structure includes a boxlike rear, sheet metal section holding a supply of nylon or other fibers and having horizontal baffles to keep the fiber mass evenly distributed, and an electrically nonconductive front section. The latter has a rear, nonconducting fiberglass

screen of fairly small mesh disposed across the open front of the rear section and, in spaced-parallel relation to this screen, there is a conductive metal forward screen of somewhat greater mesh size, which metal screen is electri-



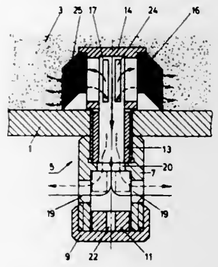
cally charged. The two housing sections are separately connected to one another, the rear section being electrically grounded and having rear hand grips for the manipulation of the applicator by an operator.

3,642,204
WATERFLOW-CONTROLLING APPARATUS FOR AN AUTOMATIC IRRIGATION SYSTEM
Edward W. McCloskey, 271 Alpine St., Pasadena, Calif.
Filed Nov. 28, 1969, Ser. No. 880,851
Int. Cl. A01g *25/00*; **B05b** *17/04*
U.S. Cl. 239—63 **18 Claims**



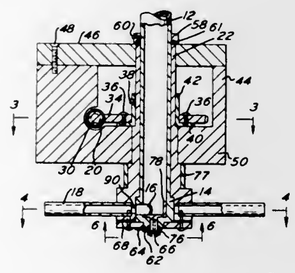
The specification discloses waterflow-controlling apparatus for an automatic irrigation system of a simple type including a single moisture-sensing means and one or more automatic sprinklers or other watering means controlled thereby or a plurality of such units together comprising a substantially larger automatic irrigation system. The waterflow-controlling apparatus includes one or more of the moisture-sensing means referred to above operatively controlling one or more waterflow-controlling means, such as valve means, in a water supply line feeding water to one or more sprinklers or other irrigating outlets, with each such moisture-sensing means comprising a hollow cell having a water-permeable wall in water-transmissive relationship with an adjacent porous medium which, in one form, includes a main medium such as a body of earth and in another form includes such a main medium and intermediate medium such as diatomaceous earth or other porous, water-holding and water-transmissive medium, which in one form is disclosed as having its water permeability controllably adjustable. The transmission of water in or out of the cell of the mositure-sensing means produces a corresponding interior pressure variation which effectively operates the water-flow-controlling valve means in a waterflow-producing direction either directly, through water pressure operated servo means, electrical servo means, or otherwise, when the moisture content of the earth adjacent to the moisture-sensing means falls below a predetermined value and, conversely operates said waterflow-controlling means in a waterflow-reducing direction when the moisture content in the earth adjacent to the moisture-sensing means rises above a predetermined value. In one form of the invention, the inverse feedback nature of the moisture-sensing and waterflow-controlling operations is of a continuous, inversely proportional nature rather than of an on-off nature.

3,642,205
NOZZLE FOR TWO OPPOSITE FLOW DIRECTIONS WITH DIFFERENT FLOW CROSS SECTIONS, AND APPLICATION THEREOF
Orlando Marty, Grundstrasse 68, 8712 Stafa, Switzerland
Filed Apr. 16, 1970, Ser. No. 29,200
Claims priority, application Switzerland, Apr. 25, 1969, 6311/69
Int. Cl. B05b *1/32*
U.S. Cl. 239—119 **3 Claims**



A nozzle, for filter tanks and for ion exchangers, having a movable body which automatically sets the flow cross section in operation according to the particular flow direction.

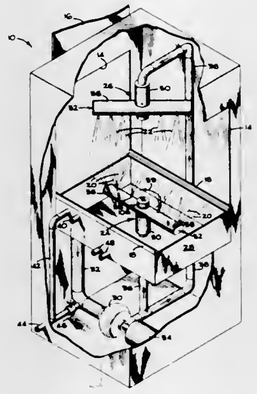
3,642,206
SECTOR SPRAY DEVICE
John E. Waldrum, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Filed Mar. 11, 1970, Ser. No. 18,578
Int. Cl. B05b *3/02*; **F23d** *11/04*
U.S. Cl. 239—214 **5 Claims**



A sector spray device comprising a stationary feedpipe having at its lower end a stationary discharge control cap, which possesses a discharge slot. The sector spray device further comprises a drive means for rotating a sleeve to which are attached discharge tubes that are from time to time during their circle of rotation in fluid communication with the discharge slot of the control cap. Thus, liquid passing through the feedpipe will be discharged through only those tubes in fluid communication with the discharge slot. In this way, the liquid is sprayed in a constant sector-shaped pattern that can be limited to 90° or less, depending upon the discharge slot.

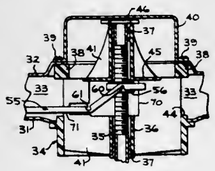
Also, where the present invention uses a control cap with a discharge slot, a selector can be employed to change the position of the discharge slot, and thereby cause the sector-shaped pattern to be moved accordingly to a new location. Furthermore, the width of the discharge slot in the cap can be varied by movement of an indicator.

3,642,207
ROTARY SPRAYER FOR WASHING MACHINE
Stanley R. Krogman, Rossville, Ill., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 30, 1969, Ser. No. 889,053
Int. Cl. B05b *3/06*
U.S. Cl. 239—251 **6 Claims**



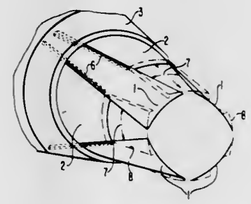
A rotary spray assembly for a utensil washer which has minimized rotary friction and can be employed in an upright or inverted position. The assembly includes a tubular open-ended manifold having a laterally extending spray arm. The manifold is mounted internally of and between a nonrotating cap and a fixed housing in opposed collar bearings. The manifold is necked down at the ends forming opposed shoulders that form a rotary sealing engagement with the end faces of ring seats loosely surrounding the necked down ends of the manifold. O-rings are employed to locate the ring seats and form a nonrotating seal between the side of the ring seat and the bearing housing.

3,642,208
WASHER WITH SELF-REVERSING SPRAY ARM ASSEMBLY
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company
Continuation of application Ser. No. 799,574, Feb. 17, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,267
Int. Cl. B05b *3/06*
U.S. Cl. 239—255 **5 Claims**



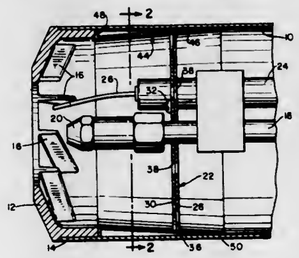
A rotatable spray arm, for a washing machine such as a dishwasher or the like, is caused to rotate by the resultant counterforce of a washing fluid conducted through the body of the spray arm and outwardly as a jetstream from a rotatable nozzle on the end of the spray arm. The spray arm is provided with a mechanical linkage that translates motion from a nut and axial screw arrangement to the rotatable nozzle assembly at the end of the spray arm. This translating action permits the nozzle to successively swivel between first and second drive positions to thereby repeatedly reverse the direction of rotation of the spray arm. Each swivel action of the nozzle, from one of its drive positions to the other, takes place after a predetermined number of revolutions of the spray arm. Rotation of the spray arm and its repeating reversal action continues as long as a pressurized flow of washing fluid is maintained in the spray arm to provide the jetstream from the rotatable nozzle.

3,642,209
THRUST NOZZLE FOR TURBOJET ENGINES
Ulli Stahl, Tutzing, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH
Filed Apr. 20, 1970, Ser. No. 30,099
Claims priority, application Germany, Apr. 22, 1969, P 19 203 40.8
Int. Cl. B63h *11/10*
U.S. Cl. 239—265.19 **26 Claims**



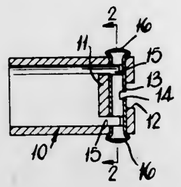
A thrust nozzle for turbojet engines in which wedge-shaped flaps are adapted to be extended from and retracted into an engine fairing, the flaps are connected with each other by ball or roller tracks and are of different lengths while the flaps of different lengths are actuated at different speeds.

3,642,210
OIL BURNER
Norman E. Fluornoy, Richmond, and Earl W. McPeak, Jr., Highland Springs, both of Va., assignors to Texaco Inc., New York, N.Y.
Filed Oct. 5, 1970, Ser. No. 78,070
Int. Cl. B05b *7/12*
U.S. Cl. 239—407 **4 Claims**



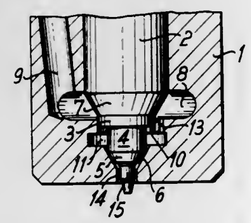
A sealing device for locating the internal assembly of a gun-type oil burner within the gun barrel, comprising a conical or tapered, thin-walled sleeve arranged coaxially on the inner surface of the gun barrel and engaged by a mating, coaxial disc associated with the internal assembly.

3,642,211
LIQUID SPRAYERS
Harold Place, Accrington, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 8, 1969, Ser. No. 840,012
Claims priority, application Great Britain, Nov. 14, 1968, 54,069/68
Int. Cl. B05b 7/08
U.S. Cl. 239—426 5 Claims



A liquid sprayer comprises a tubular body with a solid end wall. A transverse slot extends diametrically across the exterior face of the end wall and a hypodermic tube extends through a drilling intersecting the slot. The ends of the tube are seated externally of the body and it is formed adjacent its ends with openings inside the body. Within the slot a discharge slot is formed in the tube. The body is contained in an air casing with air discharge ports to create a flat fan-shaped air flow pattern enclosing the flat fan-shaped liquid spray pattern produced by the discharge of liquid from the slot.

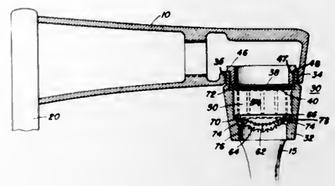
3,642,212
FUEL INJECTION VALVE FOR A SUCCESSIVE INJECTION OF AN ADVANCE AND A MAIN FUEL QUANTITY
Willi Voit, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 27, 1970, Ser. No. 14,933
Claims priority, application Germany, Mar. 8, 1969, P 19 11 914.3
Int. Cl. B05b 1/30
U.S. Cl. 239—533 3 Claims



In a fuel injection valve that includes a valve needle with two axially spaced work faces disposed in two separate pressure chambers and exposed to fuel pressure to unseat said valve, there is provided a throttle channel maintaining continuous communication between the two pressure chambers.

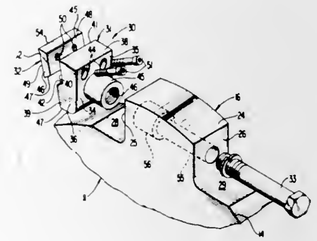
3,642,213
LAMINAR FLOW DEVICE FOR BATHTUB FILL SPOUTS
Richard G. Parkison, and Guillermo J. Vanegas, both of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.
Filed June 6, 1968, Ser. No. 734,955
Int. Cl. B05b 1/14
U.S. Cl. 239—590 3 Claims

This invention involves a fluid flow device which is in the form of a spout-end for a plumbing fixture such as a bathtub, and which is devised to establish a substantially silent, smooth clear and laminar flow of water into the plumbing fixture. The spout-end includes two adjacent flat screens of different meshes, followed in the path of flow by a fluid straightener, such as a "rosette," for establishing a plurality of paths which are substantially parallel to each other, and



then followed by another pair of screens both of which are concavely shaped at substantially different radii of curvature so that a gap or chamber is centrally formed between the two concaval screens for diverting the parallel streams into a tapered or converging stream which is substantially continuous and laminar.

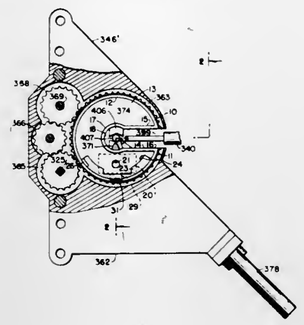
3,642,214
CUTTER TOOTH ASSEMBLY FOR GRINDER
George T. Blackwell, Jr., P.O. Box 278, Oneonta, Ala.
Filed Jan. 19, 1970, Ser. No. 3,984
Int. Cl. B02c 13/06, 13/28
U.S. Cl. 241—191 5 Claims



The cutter tooth assembly for a rotor of a grinder of the type used for grinding wood, scrap or the like. The grinder comprises a rotor having alternate large and small diameter breaker rings with at least one breaker head protruding from each breaker ring. The cutter tooth assembly comprises a holder having a boss or stem inserted into the leading surface of the breaker head. A small, relatively inexpensive cutting blade is attached to the leading surface of the holder and makes primary contact with the material being ground up in the grinder. The forces exerted on the cutting blade are primarily compressive and urge the cutting blade against the holder and the holder against the breaker head, and the cutting blade defines a sharpened ridge at its outermost edge to form a cutting edge, and the cutting edge is heat hardened.

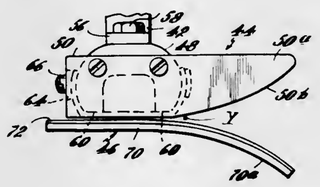
3,642,215
SECTOR GEAR FOR ROD WRAPPING MACHINE
John M. Bishop, Orange, and Emmett F. Simon, Garden Grove, both of Calif., assignors to The Conolon Corporation
Filed Mar. 2, 1970, Ser. No. 15,726
Int. Cl. B21f 17/00
U.S. Cl. 242—7.19 2 Claims

A sector gear for use in a rod wrapping machine has a wide outer rim from which narrower sector gear teeth project, a central wall extending inward from said rim forming the sides of a radial channel and curving about to form a central space, and a web extending between said rim and said central wall forming an end of said gear, said rim, web and



central wall forming an opening to receive a bobbin carried by said sector gear.

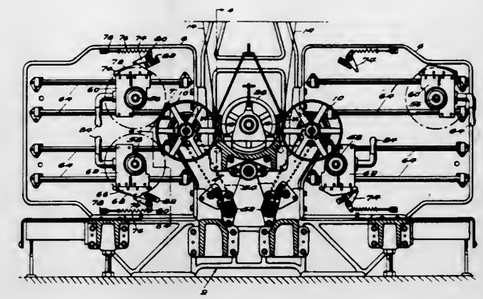
3,642,216
DEVICE FOR APPLYING TENSION TO A RUNNING YARN
Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.
Filed Aug. 20, 1969, Ser. No. 851,674
Int. Cl. B65h 54/24, 59/22
U.S. Cl. 242—35.5 R 8 Claims



A part supported adjacent the path of linear movement of a running yarn having a substantially flat yieldable surface broadside to the yarn at one side and a rigid part magnetically supported against the aforesaid yieldable surface at the opposite side of the yarn having spaced-parallel ribs transversed to the direction of linear movement of the yarn, said parts collectively applying a light tensional drag to the linear movement of the yarn while permitting the yarn to be moved laterally at right angles to its direction of linear movement.

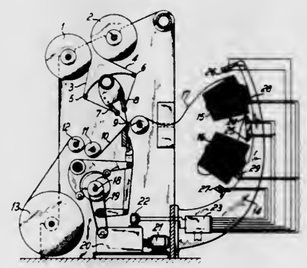
3,642,217
TANDEM YARN WINDING
Vann M. Sistare, Rome, Ga., and Kenneth Brooks, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,209
Int. Cl. B65h 54/06, 54/42
U.S. Cl. 242—35.5 R 10 Claims

Method and apparatus for tandem yarn winding filamentary structures, such as filaments or yarn, onto a plurality of bobbins in such a manner so as to substantially preclude the migration of finish from one filamentary structure to the other. A traversing guide conducts each pair of yarn onto the surface of the drive roll. The yarns pass around at least a portion of the surface of the drive roll before being wound on the bobbins which are driven by the drive roll. Each bobbin is mounted on a chuck which is movable on a carriage, preferably along a straight path toward and away from the drive roll. As the yarn package builds, the axis of rotation of each bobbin progressively moves away from the drive roll. A cam and follower associated with the carriage imposes a predetermined resistance to movement of the carriage,



thereby maintaining a suitably programmed force between the bobbin and the drive roll throughout the winding process, which force is necessary to build stable and well-formed yarn packages.

3,642,218
UNWINDING DEVICE FOR FILAMENTARY MATERIAL
Stefan Furst, Monchengladbach, Germany, assignor to Walter Reiners, Monchengladbach, Germany
Filed Aug. 15, 1969, Ser. No. 850,539
Claims priority, application Germany, Aug. 20, 1968, P 17 74 713.6
Int. Cl. B65h 49/18, 63/00
U.S. Cl. 242—36 3 Claims

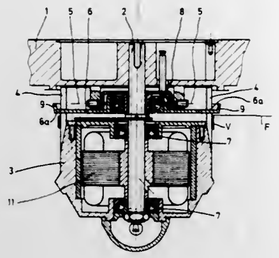


Unwinding device for filamentary material includes means for determining the extent of fullness of the thread winding on a bobbin being unwound, and means for automatically controlling, in accordance with the extent of fullness of the thread winding on the bobbin, the speed at which the thread is being withdrawn from the bobbin.

3,642,219
THREAD STORAGE AND DELIVERY DEVICE FOR TEXTILE MACHINES
Karl Isac Joel Rosen, Villa Haga, Ulricehamn, Sweden
Filed Feb. 20, 1970, Ser. No. 13,109
Claims priority, application Germany, Feb. 26, 1969, P 19 09 737.1
Int. Cl. B65h 51/20
U.S. Cl. 242—47.12 6 Claims

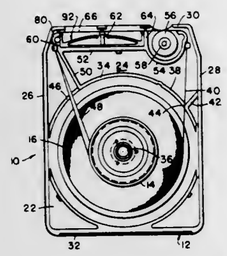
A thread storage and delivery device for conveying a thread from a spool to a working point of a textile machine. The device comprises a storage drum for receiving a thread supply and a feed disk arranged adjacent thereto. The disk is inclined to the axis of the storage drum and has arms extend-

ing radially through the openings in the drum casing for urging thread axially along the casing of the storage drum. The



free ends of the arms are connected by a closed ring which surrounds the casing of the storage drum to prevent entanglement of the thread by radial feeding arms.

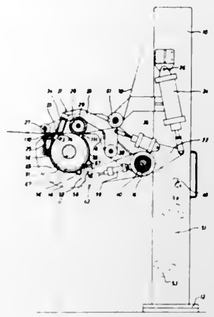
3,642,220
TAPE CARTRIDGE
Donald D. Merry, Westland, Mich., assignor to Rozinante, Inc., Plymouth, Mich.
Filed Mar. 17, 1969, Ser. No. 807,815
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **10 Claims**



The tape cartridge is of the type comprising a casing which encloses and rotatably mounts a spool having a reel of endless tape in endless array within the casing. The tape is guided past a reproducing head which is received in the casing through opening means in one end thereof. A spring structure fabricated of a resilient resinous material is provided in the casing for pressing the tape into resilient contact with the reproducing head for replay of the tape.

3,642,221
WEB-WINDING APPARATUS
Albert Joseph Hellemans, Borgerhout, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
Continuation-in-part of application Ser. No. 702,609, Feb. 2, 1968, now Patent No. 3,501,104, dated Mar. 17, 1970. This application Dec. 23, 1969, Ser. No. 887,512
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 **8 Claims**

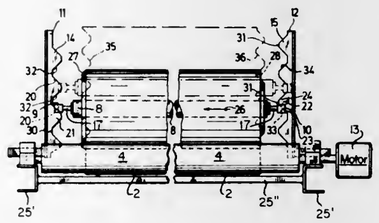
A web-winding apparatus in which the moving web is transferred from one rotating core to another without interruption. An arcuate guide plate extends partially, preferably in excess of 180°, e.g., about 240°, around the periphery of the new core to define with the core periphery a narrow passageway into which the web end is threaded after being severed from the remainder of the web. A nozzle situated adjacent the side of the web path opposite the guide plate emits a stream of air under pressure as the web end is severed, the stream of air entering the entrance of the threading passageway generally in the direction of the passageway, the



effect of the airstream being to direct the new web end into the passageway and to bias the same into contact with the rotating core periphery so that the web end becomes wound upon the core.

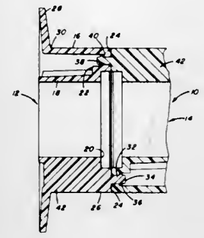
The guide plate is so formed that the narrow passageway is tapered, preferably gradually at a generally constant rate, from the inlet towards the outlet opening for the web, so that any tendency for the web to fold back while travelling around the core under the control of the air is eliminated The portion of the guide plate immediately adjacent the inlet opening may be straight, i.e., uncurved, for cooperation with a shear blade in severing the web.

3,642,222
APPARATUS FOR WINDING UP CLOTH
Hans Rudolf Leysinger, Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Sept. 28, 1970, Ser. No. 76,043
Claims priority, application Switzerland, Oct. 3, 1969, 14911/69
Int. Cl. B65h *17/12, 25/26*
U.S. Cl. 242—66 **4 Claims**



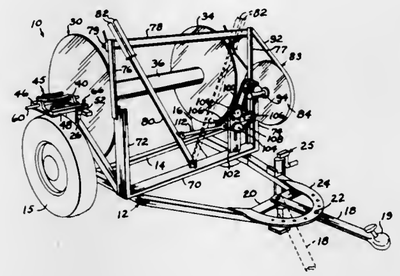
A cloth beam rests on a pair of driven spaced-parallel rollers. One or more uprights define a sinuous cam to which the cloth beam is coupled to execute reciprocating endwise motion as the axis of the cloth beam is moved away from the plane of the axes of the rollers with growth in the diameter of the roll of cloth wound up on the beam.

3,642,223
SPOOL
Carl A. Feichtinger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 24, 1970, Ser. No. 31,484
Int. Cl. B65h *75/18*
U.S. Cl. 242—71.8 **6 Claims**



A spool formed by joining two substantially identical halves. Each spool half is provided with projections which are inserted into openings in the mating half upon assembly of the spool.

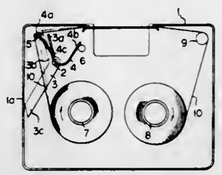
3,642,224
WIRE REELING DEVICE
John D. Taylor, Box 5, Perryton, Tex.
Continuation-in-part of application Ser. No. 771,733, Oct. 30, 1968, now abandoned. This application Jan. 22, 1970, Ser. No. 5,079
Int. Cl. B65h *75/40*
U.S. Cl. 242—86.61 **5 Claims**



A two-wheel trailer frame horizontally journals a reel in a parallel vertically spaced relation with respect to the trailer axle. The reel is rotated in response to forward movement of the trailer by a frame supported clutch frictionally engaging the periphery of one trailer wheel. Frame supported belt, pulley, chain and sprocket means, connected with the other end of the reel, reciprocate a wire guide transversely of the reel as the trailer is moved forwardly.

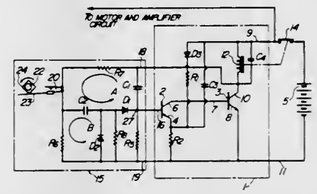
3,642,225
DEVICE FOR DETECTING THE COMPLETION OF FILM WINDING
Tokusaburo Kakichi, and Hideaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 27, 1969, Ser. No. 828,140
Claims priority, application Japan, June 3, 1968, 43/46370
Int. Cl. B65h *25/04, 63/08;* **G11b** *23/10*
U.S. Cl. 242—189 **1 Claim**

A device for detecting the film-winding completion and giving tension to the film for film cartridge in which a spring for normally imparting tension to the film extending between a pair of spools is made integral with a lever one portion of



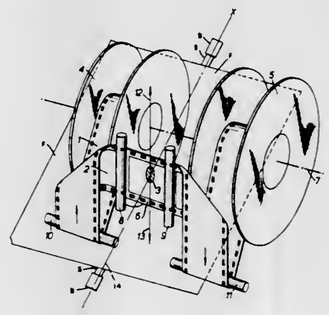
which is adapted to be extended out of the film cartridge upon completion of the film winding.

3,642,226
AUTOMATIC STOP DEVICE FOR A MAGNETIC TAPE RECORDER
Kenki Tokunaga, Ora-gun, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi-shi and Tokyo Sanyo Electric Co., Ltd., Ora-gun, Japan
Filed Nov. 18, 1969, Ser. No. 877,779
Claims priority, application Japan, Nov. 20, 1968, 43/85453; May 13, 1969, 44/36817
Int. Cl. B65h *25/32;* **G11b** *15/46*
U.S. Cl. 242—191 **10 Claims**



An automatic stop device for a magnetic tape recorder (or reproducer), wherein the end of feed of a tape is assuredly detected by a unique detecting circuit utilizing a simple current interrupter and the detected signal is amplified through a simple transistor circuit to a level sufficiently high to assuredly operate a magnetic plunger which actuates the stop mechanism.

3,642,227
FILM DISPLAY DEVICE
John Henry Reginald Lewis, Theydon Bois, England, assignor to The Marconi Company Limited, London, England
Filed Sept. 11, 1969, Ser. No. 857,129
Claims priority, application Great Britain, Sept. 12, 1968, 43,317/68
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—193 **10 Claims**



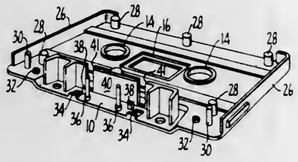
A film display device of compact design having between the usual two storage spools, a gate through which the film is

passed. The two spools are able to rotate on approximately parallel axes, and the film by means of specially positioned rollers is caused to twist so that the axes of the spools are approximately parallel with the line of movement of the film through the gate.

3,642,228
MAGNETIC TAPE CASSETTE

Arthur W. Tollkuhn, San Jose, Calif., assignor to Memorex Corporation

Filed Sept. 21, 1970, Ser. No. 73,710
Int. Cl. G03b *1/04*; **G11b** *15/32*, *23/04*
U.S. Cl. 242—199 **3 Claims**

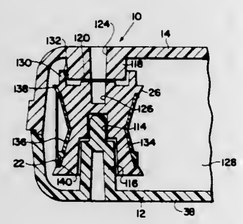


Top and bottom halves to be mated together to form a standardized magnetic cassette are provided. The design of each half facilitates the practice of a method of inserting tape into the cassette during manufacture. The structure of the bottom half has no obstructions between the tape path and the front edge of the cassette half.

3,642,229
MOTION PICTURE CASSETTE WITH SELF-ALIGNING FILM-HANDLING SYSTEM

Rogers B. Downey, Lexington, and Gerald H. Cook, Lynnfield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1969, Ser. No. 885,454
Int. Cl. G03b *1/04*; **G11b** *15/32*, *23/04*
U.S. Cl. 242—199 **18 Claims**

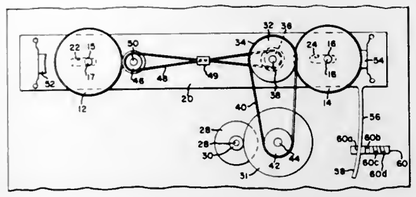


A motion-picture film-handling cassette having a pair of coplanar spools to which the opposite ends of a strip of photographic material are connected. To facilitate reversible transport of the film strip between the aforementioned spools and across a film gate of the cassette, a spur gear accessible exteriorly of the cassette is axially connected to each spool. Intermediate each spool and the film gate, the strip of photographic material is disposed around a plurality of idlers. Each idler and spool is uniquely mounted for pivotal as well as rotational movement within the cassette. Apertures are provided through the cassette housing adjacent the ends of certain such idlers whereby externally mounted force applying members may be selectively introduced into the cassette to snub such idlers. Complementary portions of the cassette housing and of the idlers adjacent such apertures form a light seal.

3,642,230
REWIND AND FAST FORWARD MECHANISM FOR TAPE TRANSPORT

Rodney A. Fleming, Remsen, N.Y., assignor to General Electric Company

Filed Mar. 2, 1970, Ser. No. 15,592
Int. Cl. G11b *15/32*
U.S. Cl. 242—201 **6 Claims**

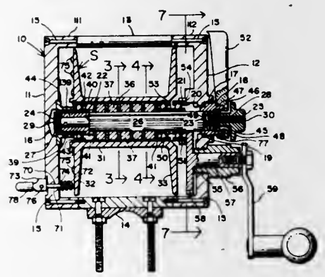


A tape transport mechanism for providing forward, rewind and fast forward functions. This mechanism consists basically of two reel carriers which are rotatable about parallel axes; a relatively movable carriage at least in part extending between the reel carriers; motor and drive means, at least part of which is mounted on the movable carriage so that by shifting the carriage, the motor will be selectively connected to one of the reel carriers to drive it; and brake-type tensioning means attached to the carriage and located adjacent to the reel carriers to provide tension on one reel carrier when the other reel carrier is drivingly connected to the motor.

3,642,231
BRAKE MECHANISM FOR FISHING REELS

Oscar Fleischer, 2610 S.W. 21st St., Miami, Fla.

Continuation of application Ser. No. 869,489, Oct. 27, 1969. This application Dec. 8, 1969, Ser. No. 883,097
Int. Cl. A01k *89/02*
U.S. Cl. 242—219 **2 Claims**

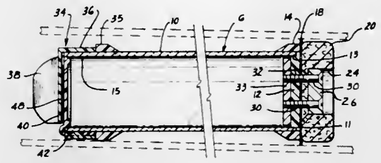


A brake mechanism for fishing reels having a splined shaft, an operating handle for rotating the shaft in one direction only there being means to prevent the reverse rotation of the shaft and a spool with a plurality of alternatingly positioned brake discs and spool driven discs mounted on the shaft and within the hub of the spool. The brake discs rotate freely of the spool but in unison with the shaft while the driven discs rotate in unison with the spool and freely of the shaft, means being provided to adjust the amount of frictional engagement of the discs upon the axial movement of the splined shaft whereby the desired amount of drag may be applied to the spool.

3,642,232
END-OPENING CARRIER FOR PNEUMATIC TUBE SYSTEM

Donald G. Kelley, Houston, Tex., assignor to C. K. Kelley & Sons, Inc., Houston, Tex.

Filed June 1, 1970, Ser. No. 41,856
Int. Cl. B65g *51/06*
U.S. Cl. 243—35 **13 Claims**



An end-opening carrier for a pneumatic tube system having an open-ended tubular body with air sealing means at the closed end; a buffer ring adjacent the open end; and a closure formed of a tubular ring having an inwardly extending closure tab, a closure plug for positioning in the open end, the closure plug having a hinge tab located between the outer wall of the body and the tubular ring, and hook-and-loop fastening means to detachably secure the closure tab to the closure plug.

3,642,233
SYSTEM FOR THE OPTICAL AUTOMATIC AND AUTONOMOUS GUIDING OF SELF-ROTATING MISSILES

Jean Pierre Bezerie, Ville D'Avray, France, assignor to Societe Anonyme De Telecommunication, Paris, Seine, France

Continuation-in-part of application Ser. No. 460,621, June 2, 1965, now abandoned. This application Dec. 29, 1969, Ser. No. 888,724
Claims priority, application France, June 4, 1964, 977052
Int. Cl. F41g *7/00*, *9/00*; **F42b** *13/30*
U.S. Cl. 244—3.16 **8 Claims**

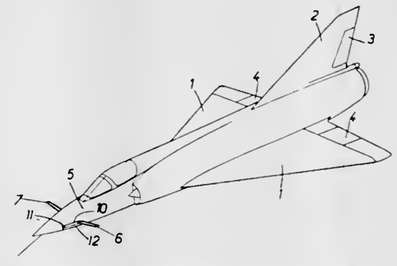


An automatic and autonomous optical guidance system for an autorotative missile to be directed towards a target emitting radiations, the missile having a single flight-control rudder operable at each revolution of the missile about its axis of rotation; comprising an optical target position detecting means for producing, at each revolution of the missile, signals which are a function of the deviation between the autorotational axis of the missile and the missile-target direction; control signal producing means connected to the optical detecting means for generating, at each revolution of the missile, a control energy; and motor means connected to the control signal producing means in order to be supplied thereby and positively coupled with the single flight-control rudder in order to guide the missile, at each revolution thereof, as a function of the deviation between its autorotational axis and the missile-target direction; the optical target position detecting means comprising an optical modulator formed of a plane support provided, radially from a point of origin, with a succession of opaque sectors and transparent sectors arranged in alternate sequence, the optical modulator being disposed in the image plane of an objective lens which projects the target image on to the image plane, and, a photoelectric cell located downstream of the optical modulator for receiving light pulses generated by a relative displacement between the target and the optical modulator, the photoelectric cell converting the light pulses into electric signals which are transmitted to a frequency discriminator producing an output voltage which is a function of the frequency of the pulses, thereby a function of the angular deviation of the target with respect to a reference direction constituted by the optical axis of the optical target position detecting means, the voltage actuating, the control signal producing means; the relative displacement between the optical modulator and the target image being produced by the autorotational movement of the missile.

3,642,234
AIRCRAFT

Heinrich Kamber, Lucerne; Werner Hausammann, Feldmeilen, both of Switzerland, and Henri Deplante, Paris, France, assignors to Avions Marcel Dassault, Vaucresson, France and Confedereration Suisse, rep. by Fabrique Federale D'Avions, Emmen, Switzerland

Filed Dec. 23, 1969, Ser. No. 887,541
Claims priority, application France, Dec. 30, 1968, 182227
Int. Cl. B64c *3/08*
U.S. Cl. 244—45 **7 Claims**

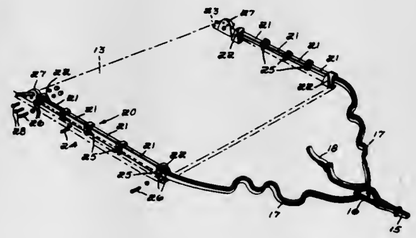


An aircraft for high-speed flight comprising a fuselage, a main plane or wing and a retractable stabilizer or empennage comprising aerofoils adapted and profiled for subsonic flight conditions and arranged to produce, when deployed, a lift-giving rise to a nose-up pitching moment.

3,642,235
EXTRACTION FORCE TRANSFER SYSTEM

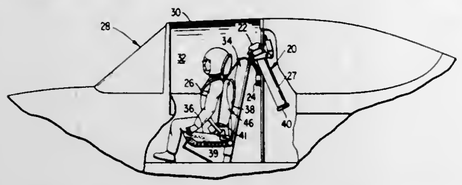
Ronald L. Criley, Conifer; Richard H. Frost, Littleton, both of Colo., and Predrag Shopalovich, Ashland, Mass., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 23, 1970, Ser. No. 91,899
Int. Cl. B64d *1/12*
U.S. Cl. 244—137 R **10 Claims**



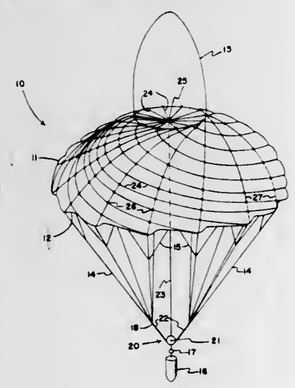
An extraction force transfer system in an airdrop system for transferring the extraction force being applied to a load by the extraction parachute from the load to the deployment line of the recovery parachutes at a predetermined time after extraction of the load from an aircraft.

3,642,236
G-FIELD PARACHUTE RECOVERY APPARATUS AND METHOD
Robert M. Stanley, Denver, Colo., assignor to Stanley Aviation Corporation, Aurora, Colo.
Filed May 8, 1970, Ser. No. 35,792
Int. Cl. B64d *25/08*
U.S. Cl. 244—138 **22 Claims**



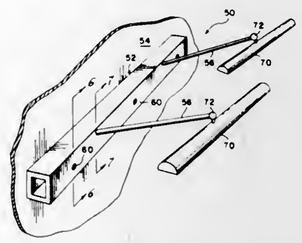
An apparatus and method for recovering a man or other load from an aircraft or other vehicle and comprising a rocket for accelerating the man away from the vehicle and a letdown parachute having a canopy stowed in a deployment bag and connected to the man by shroud and riser lines, The deployment bag is stowed in a parachute pack cover, and the parachute shroud lines emerging from the deployment bag are also stored in the pack outside of the deployment bag. The parachute pack is opened by a delay means while the rocket is accelerating the man away from the vehicle to dump the deployment bag behind the man. By being dumped into the acceleration field resulting from the ignited rocket flight away from the vehicle, the canopy-containing deployment bag remains relatively motionless as the rocket moves the man away, thereby deploying the parachute shroud and riser lines. As the shroud lines approach full-line stretch the bottom or skirt end of the deployment bag is opened to release the canopy, and upon reaching full-line stretch the shroud lines are pulled taut with a strong jerk causing the released canopy to leap forward, thereby engulfing a large bubble of air. Canopy inflation is completed by the continued motion of the man. The rocket is connected to the man by a towline so that ignited flight of the rocket pulls the man away from the vehicle while his parachute streams out behind him.

3,642,237
SPIRAL REEFED VARIABLE DRAG PARACHUTE
Stanley C. Hulteen, Minnehaha, S. Dak., assignor to The United States of America as represented by the Secretary of the Army
Filed May 14, 1970, Ser. No. 37,076
Int. Cl. B64d *17/34*
U.S. Cl. 244—152 **20 Claims**



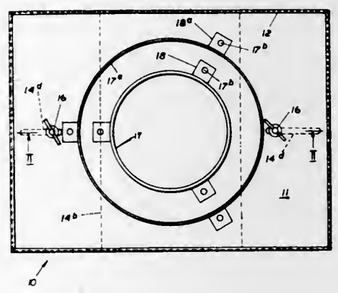
This invention relates to a parachute having reefing lines formed about the body or canopy of the parachute in a spiral configuration in such a manner as to control the opening shock and rate of descent of such parachute. The spiral reefing of the parachute effectively increases or decreases the canopy area thereby controlling the aerodynamic drag of the parachute.

3,642,238
LIGHTING ASSEMBLY
Bertram H. Kapnek, 8106 Douglas Road, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 720,617, Apr. 11, 1968. This application Apr. 14, 1969, Ser. No. 815,567
Int. Cl. F21s *9/00*
U.S. Cl. 248—205 R **5 Claims**



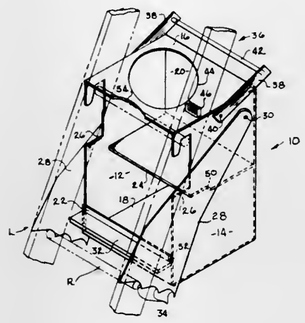
A support assembly comprising a vertical wall and a supporting bar secured to the wall. A rod is secured in the supporting bar, and the rod serves to support other items, such as a shelf or lighting fixture.

3,642,239
CONTAINER SUPPORT AND ATTACHMENT MEANS
Elmer J. Zeiler, Jr., 928 Maplewood Drive, Castle Shannon, Pa.
Filed Mar. 12, 1970, Ser. No. 18,926
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 **4 Claims**



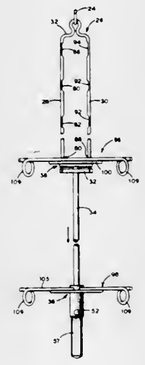
A planar rectangular base member has depending flanges on two opposite sides thereof terminating in spaced opposing inturned flanges to embrace a support for the base member, an upstanding continuous flange enclosing the top face of said base member and two spaced concentric upstanding hollow ring members secured to said top face for receiving and supporting annular containers therein, such as paint cans, the outer of said concentric ring members extending above said inner ring member and receiving an annular container to be supported upon the top face of said inner ring member. The invention is intended for detachable mounting upon the folding shelf of the conventional step ladder to securely retain paint cans in place and prevent accidental displacement thereof during painting.

3,642,240
HANDY MAN'S TOOL BOX AND LADDER ACCESSORY
Richard K. Hershey, 5694 Main St., East Petersburg, Pa.
Filed July 27, 1970, Ser. No. 58,608
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 **7 Claims**



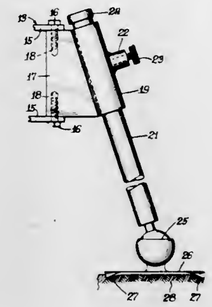
A handy man's toolbox and ladder accessory designed for use in conjunction with a rung-type ladder having a pair of arms pivotally mounted on spaced vertical sidewalls of the box structure and a handle structure for carrying the structure and for removably mounting the structure on the ladder.

3,642,241
ADJUSTABLE SUPPORT FOR BOTTLES
Philip Kaufman, Scarsdale, N.Y., assignor to Instrument Systems Corporation, West Nyack, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,352
Int. Cl. A61b *19/00*
U.S. Cl. 248—327 **10 Claims**



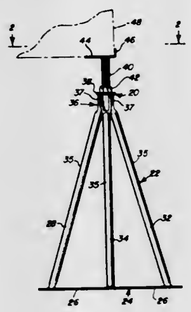
In this invention, a track adaptable to be supported by a ceiling mounted rail or hook is positioned in telescoping arrangement with intravenous fluid containing bottle support members, the bottle support members being adjustable for assuming various positions along the track and are normally locked to the track to prevent the bottle support members from being displaced relative to the track by sliding.

3,642,242
TRAVEL TRAILER SUPPORTING MEANS
Floyd E. Danekas, 1283 Sixth St., La Salle, Ill.
Filed Feb. 25, 1970, Ser. No. 13,908
Int. Cl. F16m *13/00*
U.S. Cl. 248—354 R **3 Claims**



Legs mounted adjacent corners of travel trailer swingable horizontally on vertical axis and adjustable longitudinally on an axis converging upwardly with that vertical axis.

3,642,243
VERTICALLY ADJUSTABLE SUPPORT
Smith Eugene, 329 West Park Ave., Apt. F, El Cajon, Calif.
Filed Nov. 28, 1969, Ser. No. 880,808
Int. Cl. F16m *11/00*
U.S. Cl. 248—354 S **4 Claims**

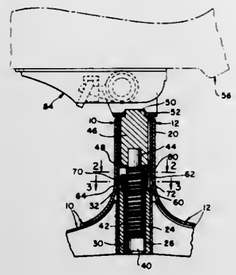


The support comprises a plurality of vertically extending, steel support members that angle upwardly toward one another to an area adjacent, but below, the upper ends thereof and angle upwardly and outwardly from that area. A threaded vertically extending, load supporting shaft extends through that area and above the upper ends of the support member. A nut on the shaft rests upon the upper ends of the support member which can be rotated for raising or lowering the shaft. The support members bend inwardly at the area to grasp the shaft when a load is placed on the top of the shaft.

3,642,244
HEIGHT ADJUSTMENT MECHANISM FOR SWIVEL CHAIRS
Melvin A. Textoris, Struthers, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio
Filed Jan. 28, 1970, Ser. No. 6,352
Int. Cl. F16m *11/00*
U.S. Cl. 248—406 **6 Claims**

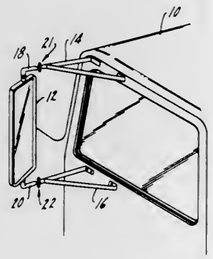
A support portion includes a sleeve having slots formed therethrough for gaining access to the interior of the sleeve.

A threaded screw portion has the upper end thereof interconnected with a seat support and is rotatably supported within the sleeve. A nut is threaded on the screw portion and includes a laterally extending projection adapted to engage a



member extending through the hole in the sleeve to prevent rotation of the nut upon rotation of the screw portion. A further screw is supported by the support portion for preventing disassembly of the mechanism.

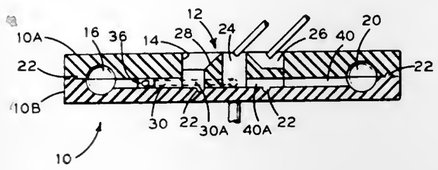
3,642,245
BREAKAWAY BRACKET
Joseph F. Wohnlich, Warren, Ind., assignor to United Filtration Corporation, Chicago, Ill.
Filed Mar. 19, 1970, Ser. No. 20,942
Int. Cl. B60r *1/06*
U.S. Cl. 248—478 **4 Claims**



This is a hinge or joint for releasably holding a rear vision mirror for use on the cab of a truck or the like in position but constructed to yield or "give" in response to a predetermined breakaway force so that the mirror will fold in to avoid breakage or bending of the supporting parts.

3,642,246
MOLD FOR MOLDING ARTICLES COMPOSED OF DIFFERENT MATERIALS
Richard Posner, East Northport, N.Y., assignor to Creative Polymer Products Corp., Long Island City, N.Y.
Filed Mar. 12, 1970, Ser. No. 18,946
Int. Cl. B29c *9/00*; **B29f** *1/12*
U.S. Cl. 249—105 **5 Claims**

A mold has at least one mold cavity and two mutually isolated sprues. Each sprue is connected via a different runner

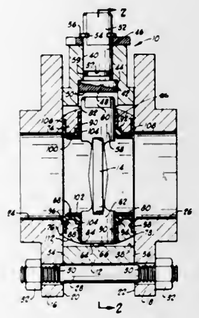


or gate to the mold cavity. A different material is fed to the mold cavity via each sprue.

ERRATUM

For Class 251—145 see:
Patent No. 3,642,252

3,642,247
DISC VALVE ASSEMBLY WITH ROCK-IN VALVE MEMBER
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Filed Dec. 29, 1969, Ser. No. 888,251
Int. Cl. F16k *5/06*
U.S. Cl. 251—148 **17 Claims**

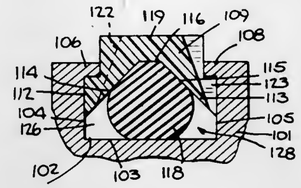


A disc valve assembly wherein the valve stems, valve member, and supports for the valve stems are sized and shaped, such that the valve member having the stems attached thereto is installed by rockingly inserting the valve member into the valve body, either individually or along with the valve stem supports.

3,642,248
SEALING MECHANISM
Robert Edgar Benware, Pawcatuck, Conn., assignor to Allen & Company FOF Proprietary Funds Ltd.; Robin Harkas and William Stix Wasserman
Continuation-in-part of application Ser. No. 568,715, July 6, 1966, now abandoned , and a continuation-in-part of 646,149, June 9, 1967. This application May 7, 1969, Ser. No. 822,593
Int. Cl. F16k *3/10*, *5/14*
U.S. Cl. 251—172 **38 Claims**

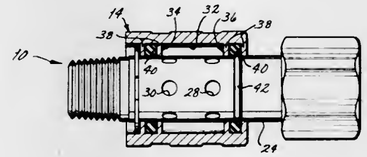
This disclosure is directed to a sealing machine for sealing a first member and a second member against the flow of system pressure. In this mechanism a wear ring is used which is comprised of a seating surface and a flange area which cooperates with the flanges of a groove located in the first member to lock said wear ring in said groove. A backing ring is generally disposed in said groove, beneath the wear ring

and is locked within said groove by said wear ring. The backing ring serves to force or preload said seating surface of said wear ring against said second member when the sealing mechanism is closed. The backing ring may be eliminated in an embodiment of the invention wherein the wear ring is so adapted to provide its own preloading force and the additional preload of the backing ring is not needed. In one embodiment of the invention the backing ring acts as a seal



against system pressure trying to leak under and around said wear ring. Furthermore, provision is made to communicate system pressure into said groove behind said wear ring to aid the backing ring in urging said wear ring against said second member. The backing ring preload and the system pressure communicated into said groove combine to create a piston action on the widest part of said wear ring which causes to amplified force on the narrower seating surface which is in contact with the second member.

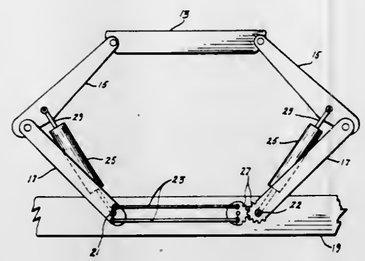
3,642,249
SLIDE VALVE
Lee H. Cruse, Springfield, Mo., assignor to Foster Manufacturing Co., Inc., Springfield, Mo.
Filed Mar. 3, 1970, Ser. No. 16,113
Int. Cl. F16k *31/60*
U.S. Cl. 251—344 **9 Claims**



A slide valve includes a cylindrical body provided internally with first and second fluid chambers and having first and second ports extending from its outer cylindrical surface into the first and second fluid chambers, respectively. A sleeve is slidably mounted on the body and includes an internal annular groove which is slidably movable from a closed position wherein the groove is axially spaced from a closed position wherein the groove is axially spaced from the second port to an open position wherein it overlies both the first and second ports. A detent ring surrounds the body and is adapted to engage the sleeve as it moves from its open to its closed position. The detent ring protrudes radially outwardly from the outer surface of the body so as to yieldably resist the sliding movement of the sleeve toward its closed position.

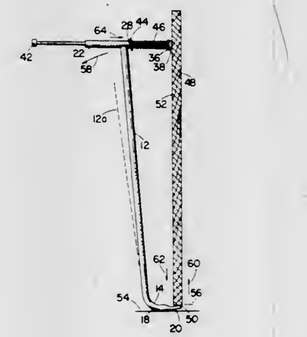
3,642,250
BOMBLIFT TRAILER LIFTING MECHANISM
John H. Klopp, Baltimore County, Md., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 16, 1969, Ser. No. 885,574
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 **1 Claim**

A four-wheel bomblift trailer chassis having a platform which is elevated by a scissors-type toggle linkage actuated by hydraulic piston-cylinder couples pivotally mounted on the linkage. Gear sectors and parallel tie rods are provided to



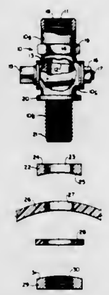
constrain the toggles and stabilize the load platform to prevent lateral tilting as it is raised and lowered.

3,642,251
DOOR JACK
F. J. Guenther Niederholtmeyer, 4814 S. Monroe St., Fort Wayne, Ind.
Filed Apr. 6, 1970, Ser. No. 26,020
Int. Cl. B66f *15/00*; **E05c** *15/00*; **B65g** *7/12*
U.S. Cl. 254—131 **10 Claims**



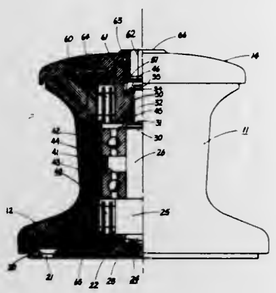
A door jack to facilitate the installation of doors. An elongated pry-bar is provided having a pry-foot at its lower end. An elongated stabilizing rod is provided having a pad on one end. A sleeve is secured to the upper end of the pry-bar and reciprocally receives the stabilizer rod which extends forwardly therefrom in the same general direction as the foot. A coil spring surrounding the stabilizer rod biases the rod and pad outwardly away from the pry-bar. A lock washer on the stabilizer rod locks the same against inward movement from a selected position. The foot may be inserted under the bottom edge of a door and the pry-bar pivoted rearwardly thus elevating the door to the desired elevation for hanging the same. In that position, the pad on the end of the stabilizer rod engages the surface of the door under the influence of the spring, the lock washer preventing rearward movement of the pad and stabilizer rod. Thus, the door is maintained in the desired elevated position for installation of hinges, etc. The jack may also be used for carrying the door to the installation site.

3,642,252
COMBINATION VALVE AND COUPLING
Robert F. Phillips, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,753
Int. Cl. F16l 5/02; F16k 5/02
U.S. Cl. 251—145 4 Claims



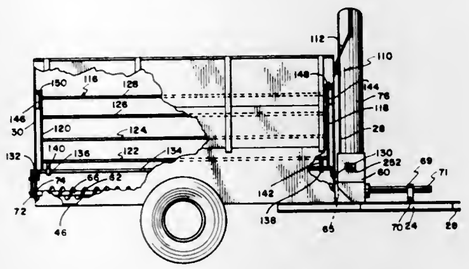
A combination valve and coupling particularly adapted for connection to plastic pipe. The valve provides a threaded lower portion which extends through a hole drilled in the plastic pipe and has a mating collar and a threaded nut receivable over the threaded portion of the pipe to couple the valve to the plastic pipe. The collar and nut have contoured surfaces approximating the shape of the wall of the plastic pipe.

3,642,253
SEALED SILENT WINCH
William C. Baldwin, Anaheim, and Theodore N. Meyer, Westminster, both of Calif., assignors to Plasmachem Inc., Newport Beach, Calif.
Filed June 23, 1969, Ser. No. 842,428
Int. Cl. B66d 1/30
U.S. Cl. 254—150 1 Claim



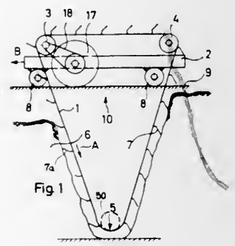
A hand-operated winch designed for marine craft and in particular for use as a sailboat sheet winch is disclosed. All braking and bearing elements are sealed and not exposed to the elements. It includes silent one way clutches as opposed to conventional pawl escapements for braking. Several different winch diameters may be produced using a common working mechanism since the drum is separable from the working mechanism. Dual thrust rings allow axial loads to be sustained.

3,642,254
MEANS FOR CONVEYING, DISCHARGING AND MIXING LIVESTOCK FEEDS
Jacob M. Ternes, 202 North Second, Conway Springs, Kans.
Filed June 16, 1970, Ser. No. 46,766
Int. Cl. B01f 7/08
U.S. Cl. 259—46 19 Claims



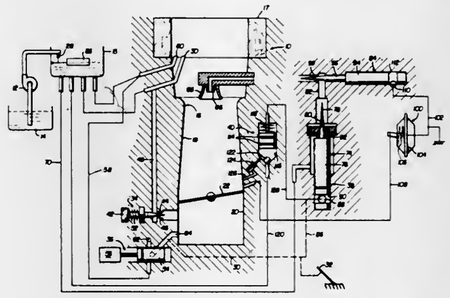
A wheeled ensilage wagon provided with a grain box detachably mounted externally thereon, with means provided for delivering from the wagon and box an adjustably proportioned mixture of the wagon and box contents. The delivery means receives contents from the wagon by wagon discharge means that includes a discharge auger in the wagon that is drivingly connected to the drive for an oscillatory agitator disposed thereabove. The delivery means also receives contents from the box by wagon discharge means that includes a box discharge auger in the box that feeds the box contents to the delivering means via a rotary metering means. The box is provided with an oscillatory agitator disposed above the auger therein. The drives of metering means, auger and agitator are interconnected for concurrent operation, and means is provided for detachably coupling the shaft of the agitator of the wagon to such drives so that the metering means is driven at a rate proportional to rate of operation of the auger in the wagon. The wagon and the auger therein are adapted to be detachably coupled respectively to the tow bar and the power takeoff of a tractor.

3,642,255
CIRCULATING DEVICE FOR LOOSE MATERIALS, ESPECIALLY AEROBIC DECOMPOSING ORGANIC WASTE MATERIALS
Hans Gujer, Glattalstrasse 149, Rumlang Zurich, Switzerland
Filed May 27, 1970, Ser. No. 40,962
Claims priority, application Switzerland, May 28, 1969, 8089/69
Int. Cl. B01f 7/00
U.S. Cl. 259—183 21 Claims



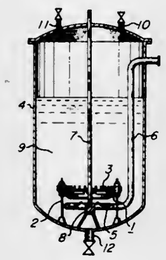
A circulating device for loose materials, especially for aerobic decomposing organic waste materials comprising a freely suspended, revolving, endless heavy link or jointed mat or conveyor structure which is guided over two upper deflecting devices arranged in spaced relationship from one another at an undercarriage, at least one of such deflecting devices being driven. The link mat is equipped at its outside surface or face with entrainment devices for the loose material, such entrainment devices being divided over its surface. The direction of rotation or revolving of the link mat occurring from the top towards the bottom at the side situated in the direction of advance of the circulation device.

3,642,256
FUEL SUPPLY SYSTEM
Harold E. Phelps, Plymouth, Mich., assignor to Harold Phelps, Inc., Plymouth, Mich.
Filed July 22, 1969, Ser. No. 843,384
Int. Cl. F02m 1/04, 7/04
U.S. Cl. 261—39 D 5 Claims



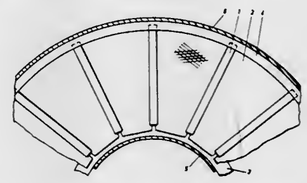
A fuel-supply system incorporating a downdraft carburetor having an idle-metering system and also an enrichment valve that causes both the engine speed to increase and an enriched air-fuel mixture to be supplied to the engine for cold engine operation. The carburetor has a main-metering system that has its main-metering valve element mechanically linked to the throttle valve and a restrictor valve that prevents overcharging during acceleration and an accelerating pump.

3,642,257
AGITATING APPARATUS
Masatami Tanaka, deceased, late of Machida-shi, Japan (by Itsuko Tanaka, administratrix), and Tadashi Hirotani, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan, by said Hirotani
Filed Mar. 5, 1969, Ser. No. 804,728
Int. Cl. B01f 3/04
U.S. Cl. 261—93 6 Claims



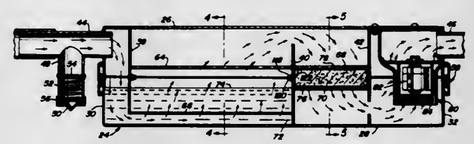
The present disclosure is directed to an agitating assembly comprising a stationary lower guide plate means provided with a centrally disposed opening, the outer, peripheral portion of said lower guide plate means being canted upwardly and containing radially extending guide blades disposed on the upper side thereof, means for supporting the lower guide plate means, blade wheel means disposed immediately above the lower guide plate means, and agitating shaft means secured to the blade wheel means, said blade wheel means being rotatably disposed with respect to the stationary lower guide plate means. The present disclosure is also directed to the use of the agitating assembly in a fermentation tank.

3,642,258
COLUMN TRAY
Gerhard Stahl, Doernigheim; Walter Spahn, Frankfurt am Main; Willi Fischer, Hanau, and Franz Auth, Frankfurt am Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Germany
Filed Oct. 6, 1969, Ser. No. 863,923
Claims priority, application Germany, Oct. 23, 1968, P 18 04 591.5
Int. Cl. B01d 3/22
U.S. Cl. 261—113 7 Claims



An improved tray for rectifying and scrubbing columns is simply constructed by providing a cylindrical member coaxially within the column shell, placing beams radially between said member and shell, attaching one end of each beam to said member or shell, supporting the opposite free end of each beam on a ring fastened to the vertical surface adjacent to said free end, and fitting tray segments in locking arrangement between the beams which are circumferentially spaced from each other. The free ends of the beams supported on the ring, together with the locked-in tray segments, can move radially to accommodate differences in thermal expansion of the components of the column.

3,642,259
AUTOMOBILE EXHAUST FILTER
Carl L. Bowden, 240 N. Ninth Ave., Oakdale, Calif.
Filed July 23, 1969, Ser. No. 843,938
Int. Cl. B01d 47/02
U.S. Cl. 261—122 6 Claims



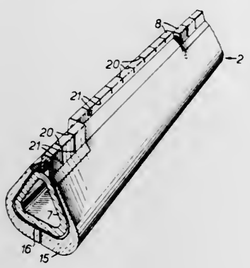
A housing including an inlet opening and an outlet opening and adapted to be interposed in an exhaust system, such as an automotive exhaust system, and including internal baffles defining a tortuous passage extending therethrough from the inlet to the outlet. The housing further includes a liquid sump through which gases moving through the housing must pass as well as a filter body of activated charcoal or the like through which the gases must also pass. In one form of the invention exhaust gases are drawn through the housing by a vehicle motor-driven vacuum pump and in a second form an electric motor-driven vacuum pump is disposed within the outlet end of the housing for drawing the exhaust gases through the housing. In the first and second form, a vacuum relief valve is disposed upstream from the liquid sump for relieving excess reduction of gas pressures above the sump.

3,642,260
DEVICE FOR AERATING SEWAGE WATER
Martin Danjes, Hermannstr. 3, Detmold, and August Schreiber, Bohnhofstr. 45, Vinnhorst, both of Germany
Filed Aug. 4, 1969, Ser. No. 847,037
Claims priority, application Germany, Aug. 3, 1968, P 17 84 398.0
Int. Cl. B01f *3/04*
U.S. Cl. 261—122 **2 Claims**



The device for aerating sewage water by means of minute bubbles consists of a flat elastic air tube which is disposed below the water surface and comprises a membranelike upper wall provided with a plurality of small air discharge ports which ports are pierced by needles with oval or triangular cross section and a lower unpierced wall of greater thickness than the upper wall. The longitudinal edges of both walls are formed as looplike pockets enclosing two parallel horizontal supporting members which are arranged with a distance from each other for prestressing the air tube in transverse direction.

3,642,261
FURNACE SKIDS AND BEAMS
William Robert Laws, Worcester Park, England, assignor to The British Iron and Steel Research Association, London, England
Filed June 17, 1970, Ser. No. 46,863
Claims priority, application Great Britain, July 16, 1969, 35,859/69
Int. Cl. F27d *3/02*
U.S. Cl. 263—6 B **12 Claims**



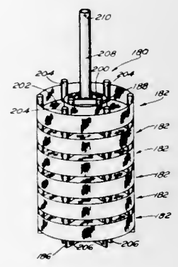
A skid or beam for a slab reheating furnace has a hollow fluid cooled pipe on which are supported a number of elongate slab engaging rail portions. The rail portions are alternately offset from the vertical symmetrical plane of the pipe. The pipe is shaped to minimize shielding of the slab from the radiant heat of the furnace and may have a triangular cross section or a rectangular cross section. The offsetting of the rail portions reduces skid marks caused by conduction from the hot slab to the cooled pipe. The rail portions are of inverted channel section.

3,642,262
METHOD FOR OPERATING A REGENERATIVE GAS HEATER, AND A GAS HEATER FOR USE IN THIS METHOD
Aart Kornelis Vroege, Beverwijk, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.
Filed Jan. 5, 1970, Ser. No. 653
Claims priority, application Netherlands, Jan. 16, 1969, 6900740
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 R **6 Claims**



In a hot blast stove for a blast furnace a method and means are provided to prevent, during the "on blast" period, overheating of the burner surface, and the occurrence of great differences in temperature in the hot blast main. The improvement consists in that during the on blast period cold air is supplied through the burner, to be mixed with the hot blast inside the stove. Preferably the supply of blast air into the stove and of mixing air through the burner is controlled to obtain a constant quantity of hot blast per unit time, of a constant temperature.

3,642,263
WORKBASKET FOR USE IN HEAT-TREATING FURNACE
Wilson C. Pine, Cranston; Herbert W. Westeren, Barrington, and William H. Kimball, Providence, all of R.I., assignors to C. I. Hayes Inc., Cranston, R.I.
Original application Feb. 3, 1969, Ser. No. 796,085, now Patent No. 3,522,357. Divided and this application Dec. 15, 1969, Ser. No. 884,961
Int. Cl. F27b *21/04*
U.S. Cl. 263—47 **5 Claims**

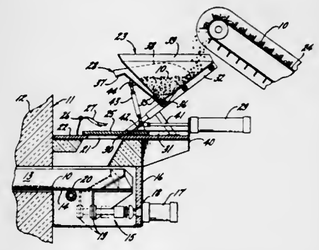


A workbasket for use in a heat-treating furnace including a plurality of trays that are mounted in spaced vertical relation, the spacing of the trays providing for free circulation of a heated atmosphere within the furnace, and thereby insuring an even distribution of heat in and around articles located in the trays.

3,642,264
PRODUCTION OF HIGH-DENSITY, DEAD-BURNED MAGNESIA IN A SHAFT KILN
Raymond P. Mayer; Ivan M. Thompson, and Walter P. Zbojniewicz, all of Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 2, 1970, Ser. No. 15,901
Int. Cl. C04b *35/04*
U.S. Cl. 263—52 **3 Claims**

Dead-burned magnesia density is improved by controlling the heating in a shaft kiln to a rate of less than about 30° C. per minute through a temperature range of from about 1,100° to 1,700° C.

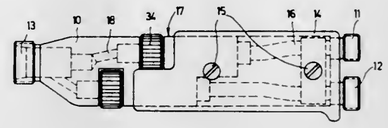
3,642,265
LOADING MECHANISM FOR A SHAKER HEARTH HEAT-TREATING FURNACE
Karl-Heinz Burmeister, Kleve; Wilhelm Hoenselaer, Kleve-Materborn, and Lothar Moes, Goch, all of Germany, assignors to Alco Standard Corporation, Valley Forge, Pa., by said Karl Heinz Burmeister and Wilhelm Hoenselaer
Filed Apr. 15, 1970, Ser. No. 28,653
Claims priority, application Germany, Apr. 26, 1969, P 19 21 407.4
Int. Cl. F27b *3/06*
U.S. Cl. 263—21 C **7 Claims**



A heat-treating furnace of the type having a hearth that is agitated endwise back and forth to advance workpieces through the heating chamber. The workpieces are delivered to one end of the hearth through an opening in the furnace above the hearth and the opening is controlled by a sliding door. Adjacent the opening is a hopper which collects workpieces and which includes a chute that may be moved to an operative position in which the workpieces in the hopper slide down the chute, through the opening and onto the hearth. A power actuator is connected to both the door and the chute and simultaneously opens the door and moves the chute to its operative position.

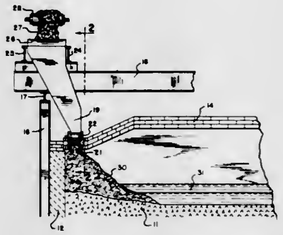
3,642,266
BURNER FOR OXYACETYLENE WELDING AND/OR CUTTING
Edmund Diehl, Frankfurt am Main, and Traugott Gutermann, **Ober-Roden, Waldacker, both of Germany, assignors to** Messer Griesheim GmbH, Frankfurt am Main, Germany
Filed Feb. 19, 1970, Ser. No. 12,668
Claims priority, application Germany, Feb. 27, 1969, P 19 09 808.9
Int. Cl. B23k *7/00*
U.S. Cl. 266—23 P **4 Claims**

The gas welding and cutting torch comprises an elongated handle having a handle body. The handle body contains axially directed bores which are coupled to a gas supply by means of replaceable conduit pieces. The outlet end of each conduit piece that projects into the bore is shaped into a valve seat and is controlled by a conical sealing disc. The sealing disc is seated in a cage which is integral with a guiding member of a movable valve stem. The valve stem is arranged for axial movement within the bore; the guiding member of the valve stem has a threaded peripheral portion



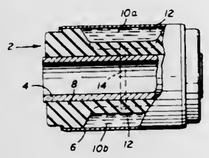
which is in engagement with a coaxially arranged hand control ring. The hand control ring is disposed in a recess intersecting the bore, and drives the valve stem and thus the sealing disc back and forth against the valve seat. The valve stem is provided with a central longitudinal passage for passing through the gas from the valve seat to a replaceable welding nozzle. The guiding member of the valve stem is sealed at each side of the recess and is spring loaded to avoid the backlash in the driving thread.

3,642,267
COPPER SMELTING METHOD AND APPARATUS
Arthur C. Bigley, Jr., White Pine, Mich., and Emil S. Kramlick, Anaconda, Mont., assignors to The Anaconda Company, New York, N.Y.
Original application Apr. 14, 1967, Ser. No. 631,066, now Patent No. 3,516,820. Divided and this application Jan. 14, 1970, Ser. No. 7,332
Int. Cl. C22b *15/00*
U.S. Cl. 266—24 **3 Claims**



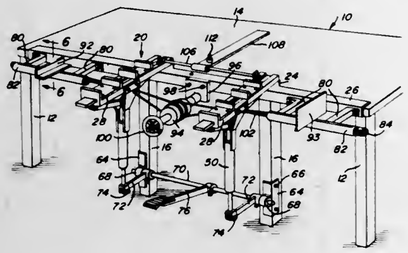
Cupriferous charge materials are introduced substantially continuously into the smelting zone of a side charging reverberatory furnace through longitudinally extending slots formed in the furnace roof adjacent the two sidewalls of the furnace. The longitudinal slots extend substantially continuously the full length of the smelting zone, and feed hoppers having unimpeded openings that coincide with the longitudinal slots are disposed above the furnace. Charge material contained in the hoppers flows by gravity directly into the furnace to form a substantially continuous sloping bank of charge material disposed against each sidewall of the furnace, the charge material substantially completely filling and thereby sealing the longitudinal slots formed in the furnace roof.

3,642,268
HIGH-DAMPING RESILIENT BUSHING
Gary L. Hipsher, Logansport, Ind., assignor to The General Tire & Rubber Company
Continuation-in-part of application Ser. No. 755,268, Aug. 26, 1968, now abandoned. This application June 12, 1970, Ser. No. 45,740
Int. Cl. B60g 11/62
U.S. Cl. 267—57.1 16 Claims



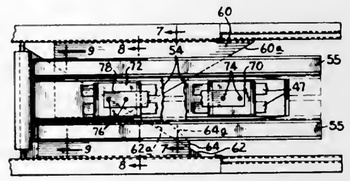
A resilient bushing is composed of inner and outer rigid concentric sleeves and a molded elastomeric insert radially compressed therebetween, said insert containing a pair of recesses that cooperate with the outer sleeve to form fluid-containing reservoirs or pockets. The reservoirs contain a fluid such as silicone oil and are in fluid communication with one another through a suitable tube or orifice. When the bushing is deflected in a radial direction through the pockets, the fluid provides high damping in that radial direction for increased vibration isolation. Various types of orifices or tubes can be used to vary the damping properties of the bushing.

3,642,269
BENCH JIG FOR SKIS
Blaine K. Ladd, R.F.D. #1, Waterville, Maine
Filed Oct. 5, 1970, Ser. No. 78,098
Int. Cl. B23q 3/18; B25b 1/20; B25h 1/10
U.S. Cl. 269—40 12 Claims



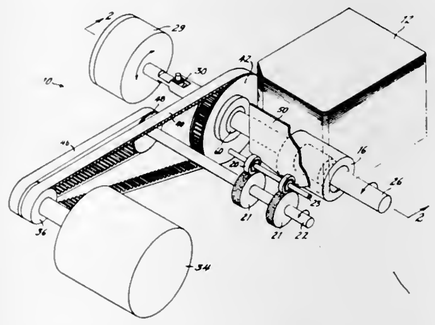
A table- or bench-type clamp including laterally spaced pairs of longitudinally aligned and spaced upstanding abutment flanges each having associated therewith an opposing laterally shiftable flange. A pair of skis are positionable on the remote sides of the pairs of abutment flanges between the latter and the corresponding laterally shiftable flanges. The laterally shiftable flanges have actuating structure operatively associated therewith for simultaneously shifting those flanges toward and away from the abutment flanges whereby the opposite side marginal edge portions of each of the associated skis may be clamped between the corresponding pairs of abutment flanges and the opposing laterally shiftable flanges. A centering structure is provided for properly longitudinally shifting the associated skis to positions with their longitudinal centers in predetermined position spaced between the pairs of longitudinally spaced abutment flanges and associated laterally shiftable flanges and in this manner proper indexing and rigid stationary support of an associated pair of skis is afforded in order that bindings may be properly anchored in exact corresponding positions on each pair of skis supported from the clamp assembly.

3,642,270
SMALL PIECE LAUNDRY FOLDING MACHINE
Charles W. Patton, Jr., Chicago, Ill., assignor to Super Laundry Machinery Company, Chicago, Ill.
Filed Sept. 26, 1969, Ser. No. 861,365
Int. Cl. B65h 45/12
U.S. Cl. 270—62 10 Claims



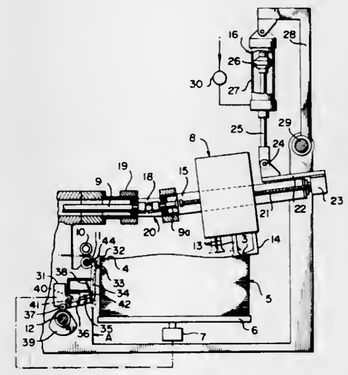
A small piece laundry folding machine including support platen means over which the laundry pieces are moved in longitudinally spaced relation, with the longitudinal marginal portions to be folded depending therefrom. A first fold plate folds one of the longitudinal marginal portions of each laundry piece beneath the support platen means and, as a second fold plate folds the other longitudinal marginal portion thereof, a tight-fold plate tightly holds said other longitudinal portion of the laundry piece involved tightly around the longitudinal edge of the support platen means so the second fold plate will form a straight tight fold. The longitudinally folded laundry pieces after being fed through a transverse folding portion of the machine are fed one at a time over confronting trapdoor-forming panels by an overhead belt conveyor. Laundry piece position sensing means are provided for effecting the stoppage of the overhead belt conveyor as each laundry piece reaches a discharge station, and the dropping of the panels to permit the laundry piece to drop by force of gravity onto a stacking surface.

3,642,271
CARD FEEDER
Cecil J. Davis, West Chester, Pa., assignor to Bridge Data Products, Inc., Philadephia, Pa.
Filed May 27, 1970, Ser. No. 41,035
Int. Cl. B65h 3/06
U.S. Cl. 271—41 5 Claims



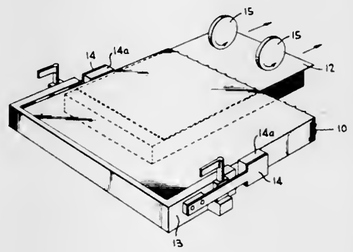
A card feeder that relies upon an actuator such as a rotary solenoid to impart intermittent driving force to a feed wheel which underlies a deck of cards. Forward motion of the feed wheel moves a card from the deck forwardly until it is engaged by transport wheels which move the card to the next working station. A velocity governor is provided for limiting the maximum velocity of the shaft and the feed wheel during response to energization of the rotary solenoid.

3,642,272
SHEET FEEDING APPARATUS
Robert Harry Arnold, London, and Cyril Borthwick Crouch, Liverpool, both of England, assignors to The Metal Box Company Limited, London, England
Filed Apr. 8, 1970, Ser. No. 26,648
Claims priority, application Great Britain, Apr. 9, 1969, 18,309/69
Int. Cl. B65h 1/18
U.S. Cl. 271—62 R 9 Claims



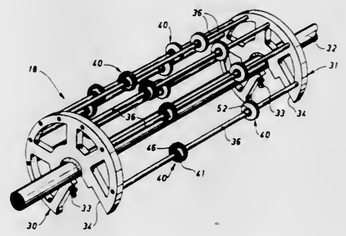
This disclosure relates to apparatus for feeding sheets from a stack wherein the stack is periodically elevated under the influence of sensing means and a feeder head feeds the topmost sheet to feeding devices. The feeder head is mounted above the stack and has associated therewith counterbalance means to permit suction means of the feeder head to lightly engage the top sheet of the stack irrespective of the height thereof.

3,642,273
CARTON WITH INNER COMPARTMENT FOR USE IN FEEDING SMALL-SIZED PAPER
James P. Baglio, Cheektowaga, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,998
Int. Cl. B65h 1/04
U.S. Cl. 271—61 6 Claims



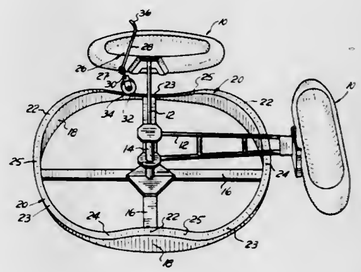
A carton having an inner compartment for containing a quantity of paper smaller in size as compared to the overall size of the carton and usable for insertion in the paper receptacle of a copying machine in a manner whereby the machine's feed rollers may successively propel the small-sized paper through the machine. The carton has a tear strip around its circumference in the vicinity of the inner compartment so that the carton may be completely separated therealong after which the quantity of small-sized paper will become fully exposed to the feed rollers.

3,642,274
SHEET-SUPPORTING ASSEMBLY FOR AN INVERTER ROLL
Francis Walter Herrington, 863 Windermere Ave., Toronto, and James D. McClure, 23 Darlington Crescent, Bramalea, Ontario, both of Canada
Filed Aug. 7, 1970, Ser. No. 62,086
Int. Cl. B65h 29/04, 29/20
U.S. Cl. 271—79 8 Claims



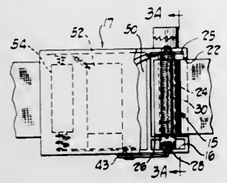
An inverter roll for an offset printing press includes a pair of axially spaced-apart spider wheels. A plurality of peripheral rods extend between the rims of the spider wheels and sheet-supporting wheels projecting beyond the cylindrical plane of the rims of the spider wheels are rotatably mounted on such rods to support the paper sheets as they pass around the inverter roll. The positions of such wheels along the rods are readily adjustable to ensure that such wheels always contact the printed surfaces of the sheets at nonprinted positions thereon.

3,642,275
RIDER PROPELLED MERRY-GO-ROUND
Patrick Ellico, L'Anse, Mich., assignor to Robert J. O'Toole, Dearborn, Mich.
Filed Mar. 27, 1970, Ser. No. 23,316
Int. Cl. A63g 1/12
U.S. Cl. 272—33 R 1 Claim



A seat secured to one end of a horizontal beam whose opposite end is secured to a vertical support column for horizontal rotation of the seat in a circular path, with propelling means in the form of a ringlike track, arranged beneath the seat, and having a curved upper surface forming peaks and valleys and interconnecting ramp portions. A propulsion wheel rides upon the track and is rotatably connected to the lower end of a lever connected between its ends to a pivot on the seat, so that rearward pulls upon the upper end of the lever, while the wheel is upon a descending ramp portion, causes a reaction to propel the seat forwardly.

3,642,276
EXERCISING DEVICE WITH SIGNALING MECHANISM
Daniel T. Kropf, 949 N. 13th St., Apt. 81, Milwaukee, Wis.
Filed May 8, 1969, Ser. No. 822,994
Int. Cl. A63b
U.S. Cl. 272—57 R **5 Claims**



An exerciser worn on a garment or other article of apparel such as a belt adapted to encircle the wearer about the waist or hips for use in performing isometric exercises therewith such that an audible tone or signal is produced by the exerciser when a preselected strain on the garment is sensed thus alerting the wearer to restore the required isometric muscle contraction in the selected exercising region.

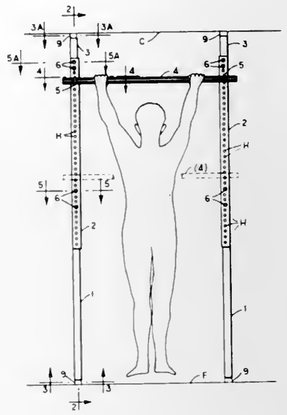
3,642,277
RECREATIONAL ROPE-TYPE ARTICLE
Harold Gersten, 92 Cumberland Road, West Hartford, Conn.
Filed Jan. 2, 1970, Ser. No. 192
Int. Cl. A63b *5/20, 7/04*
U.S. Cl. 272—60 **19 Claims**



A semiflexible rope-type article comprises a multiplicity of rigid elements spaced along substantially its entire length, with nonrigid connecting segments therebetween. In certain embodiments, sleeves provide the rigid elements, and a rope or wire cable, upon which the sleeves are mounted, provides the connecting segments. Alternatively, the rigid elements and connecting segments may be provided by relatively large and relatively small cross section portions of the article. Knots tied in a rope, end handles or parts securing the rigid and flexible portions together may be relied upon to limit axial movement of the rigid elements, and to maintain them in proximity to one another.

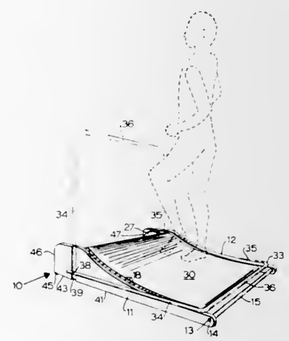
3,642,278
ADJUSTABLE FLOOR AND CEILING SUPPORTED CHINNING BAR
John D. Hinckley, 9302 Sharpcrest, Houston, Tex.
Continuation-in-part of application Ser. No. 668,135, Sept. 15, 1967. This application July 20, 1970, Ser. No. 56,395
Int. Cl. A63b *1/02*
U.S. Cl. 272—62 **5 Claims**

An exercising device for installation between a floor and ceiling comprised of two vertical members having rectangular cross sections with frictional caps engaging the floor at their lower ends and a vertical angle for each of the vertical members connected at their upper ends by bolts for longitudinally and laterally engaging with two sides of the vertical members and having a number of equally spaced holes longitudinally disposed through their frontal sides, each of the vertical angles provided with a spring, spring plunger, and spring chamber connected at their upper ends, the spring plungers being provided with frictional caps engaging the



ceiling whereby the vertical members with their frictional caps engaging the floor and the vertical angles are supported exclusively by and between the floor and ceiling; a round horizontal hand bar extending across and between the vertical angles is connected thereto by a U-shaped bolt extending through each vertical angle and secured with wing nuts, the wing nuts being removably secured to each end of the U-shaped bolts so as to allow for adjustment in the height of the horizontal bar.

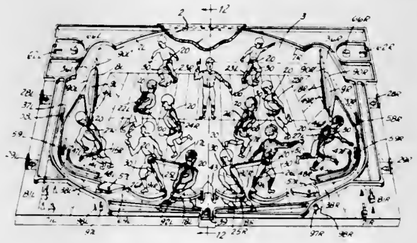
3,642,279
TREADMILL JOGGER
John W. Cutter, 70 Arroyo Ave., Piedmont, Calif.
Continuation-in-part of application Ser. No. 837,603, June 30, 1969, now abandoned. This application Feb. 11, 1970, Ser. No. 10,358
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **10 Claims**



An exerciser of the treadmill type. A pair of rigid side members support a series of rollers along a concave curve

with a forward portion higher than the rear. A continuous belt has an upper course lying above and resting on these rollers, and a lower course below them, so that a person walking, jogging, or running on them automatically locates himself fore-and-aft of the exerciser by the balance between his weight, his speed, and the variation in inclination along the curved path of the continuous belt. In addition, a foremost roller may guide the belt in front of the curved path rollers which may have a pair of identical flywheels, one on each side inboard of the frame for steadying the velocity. Further, a pair of diagonally extending and crossing turnbuckles joins the frame sides and enable adjustment of the training of the belt and the friction on the rollers. A handle, if used, can either be in a substantially vertical position for a beginner or can be put down flat and out of the way, for a more practiced user to run without any impediment. In addition, a forward roller used when moving the exerciser, is so located that when the frame is in operating position, the roller does not reduce the resistance to sliding of the exerciser.

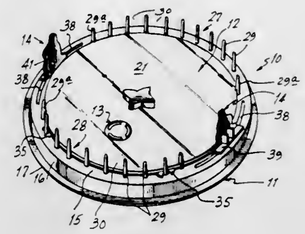
3,642,280
SIMULATED FOOTBALL GAME APPARATUS
Edouard Llorens, 69 Boulevard Ornano, Paris, France
Filed July 17, 1969, Ser. No. 842,554
Claims priority, application France, July 18, 1968, 159737
Int. Cl. A63f *7/06*
U.S. Cl. 273—94 R **9 Claims**



This invention relates to apparatus for playing a game that will simulate either American football or British rugby. The game is played on a board inclined to the horizontal with a ball free to move by gravity over the board. Curb means are provided for retaining and guiding the ball as are symmetrical propulsion means actuated by two players, for example, to propel the ball towards outlet apertures or goals. Means are provided also for removing the ball and bringing it back into play. According to the invention, there is an upper outlet aperture on the board which leads through a passage along an inclined plane and there is also a lower outlet aperture which opens below the upper aperture and leads through another passage along an inclined plane: furthermore, movable closure means are provided to control access to both these apertures, these closure means being operable by the players to take up one of two alternative positions, i.e. a raised position leaving open the lower outlet aperture and partially closing the upper aperture and a lower position in which the lower aperture is entirely closed while the upper aperture is entirely open.

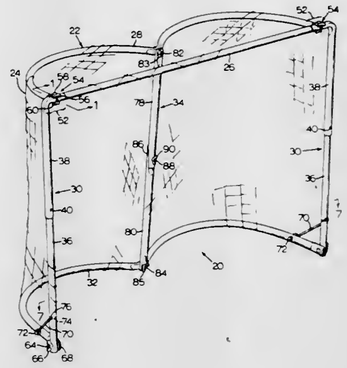
3,642,281
ROTATING GAME WITH PERIPHERAL CATCHING MEMBERS
Joseph Green, Hewlett, N.Y., assignor to Wolverine Toy Company, Inc., a subsidiary of Spang Industries, Inc., New York, N.Y.
Filed Apr. 7, 1970, Ser. No. 26,349
Int. Cl. A63f *9/00*
U.S. Cl. 273—110 **15 Claims**

In a game, at least one turntable is manually or otherwise rotated on a base having fencelike structures extending upwardly therefrom above the turntable along portions of the periphery of the latter to retain a game piece on the turntable except when the game piece is centrifugally propelled toward gaps in the fencelike structure, and a catching member is movable along one or more of the gaps associated with each



turntable for intercepting the game piece propelled toward the respective gap. Particular configurations are provided for the fencelike structures and for the hub of each turntable, by which the latter may be rotated, so as to increase the random character of the paths followed by the game piece in rebounding from such fencelike structures or the hub.

3,642,282
FOLDABLE GOAL STRUCTURE
Arnold Frischman, 43 Ridgevale Drive, Toronto, Ontario, Canada
Filed Apr. 28, 1970, Ser. No. 32,604
Int. Cl. A63b *63/00*
U.S. Cl. 273—127 B **13 Claims**

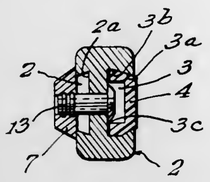


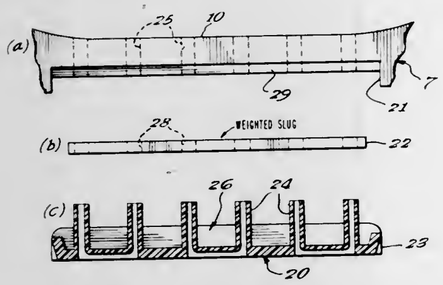
A foldable hockey goal having top front and rear bars joined by a pair of side bars to a bottom rear bar, with foldable joints between the top rear bar and the side bars, and between the bottom rear bar and the side bars. In one embodiment the top rear bar swings down, the bottom rear bar swings up, and the side bars telescope to fold the goal. In another embodiment, the side bars are hinged at their middles and fold or buckle inwardly to collapse the top bars down onto the bottom bar. In all cases the net, which is attached to the top front, side, and bottom rear bars, can be left in place during folding. A generally vertical central support member extends between the centers of the upper and lower rear members to improve the rigidity.

3,642,283
MAGNESIUM TENNIS RACKET WITH WEIGHTED THROAT PIECE

Howard John Wilkens, 8720 Woodview Drive, Cincinnati, Ohio

Filed Feb. 2, 1970, Ser. No. 7,457
Int. Cl. A63b 49/04
U.S. Cl. 273—73 G 2 Claims



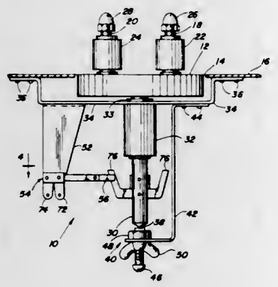


The invention is a novel configuration of a metal tennis racket characterized by an extruded magnesium frame substantially I-shaped in cross section, and having inside and outside channels. A molded grommetted string cushion strip seats in the outside channel of the bow of the frame insulating the strings from all metal contact. An inverted U-shaped element bridges the throat of the racket completing the bow and seats in the interior channel of the frame for added structural support. A separate grommetted string cushion element seats along the bridge and features a recess therein which receives balancing slugs of different weights enabling adjustment in weight and balance of the racket prior to stringing.

3,642,284
ROTATING SCORING TARGET FOR A GAME AMUSEMENT MACHINE

Steven F. Kordek, Chicago, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,044
Int. Cl. A63b 71/00
U.S. Cl. 273—127 R 10 Claims

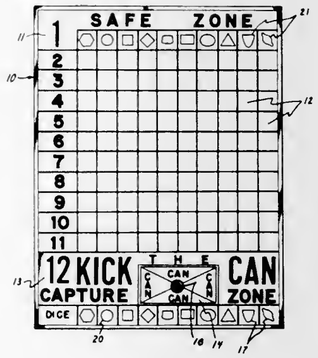


A scoring device for a game amusement machine such as a pinball machine, having a rotating element located on the playfield of the machine. Score-initiating devices (pinballs) are actuated by a player to subsequently drive the rotating element. The rotating element bears score-actuating devices to cause registration of a score dependent upon the amount of rotation thereof.

3,642,285
BOARD GAME APPARATUS

Frank Anthony Impastato, 1240 Papworth Avenue, Metairie, La.

Filed Mar. 3, 1969, Ser. No. 803,889
Int. Cl. A63f 3/02
U.S. Cl. 273—134 AD 1 Claim



Game apparatus comprising a game board which is provided with squares numbered from 2 to 12, corresponding to the available numbers that can be rolled with a pair of dice; a pair of dice; a can-shaped member; spring means to project the latter; and 10 playing pieces. Basically, the game is played by the various participants rolling the dice and moving a number of positions on the board corresponding to the number rolled on the dice. The "protector of the can" who subsequently rolls the dice captures the playing pieces of those players, if any, who rolled the same number as he did. Any player who rolls 12 releases any captured players, who again become participants. This comprises "kicking the can" which is physically performed by the player who rolled 12 placing the can-shaped member upon the spring means, depressing same, and projecting the can into the air. The game ends upon capture of all playing pieces by the "protector of the can."

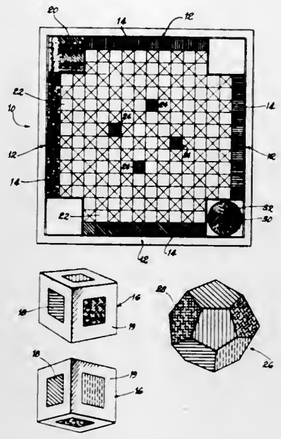
3,642,286
GAMES WITH CHANGEABLE PLAYING PIECES

Robert L. Moore, 919 Coronet Lane, La Grange, Ill.

Filed Dec. 22, 1969, Ser. No. 887,184
Int. Cl. A63f 3/02
U.S. Cl. 273—134 AD 21 Claims

A game for use by a plurality of players wherein each player has at least one playing piece for movement between positions designated on a playing surface. Identifying characteristics are provided for each piece for display on faces of the pieces with each piece having a plurality of such characteristics. Means are provided for selecting a particular characteristic for each piece during operation of the game. Depending upon the characteristic selected, the piece will

have a variety of different powers from the standpoint of the number of spaces which can be moved during one turn of a

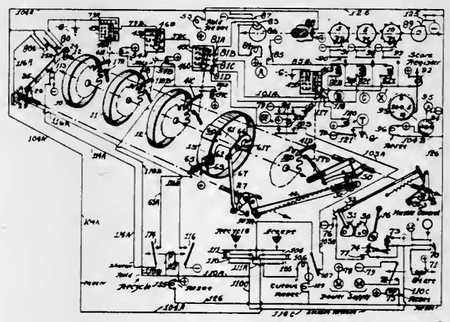


player, the direction of movement possible, and the ability of a piece to capture or be captured by another piece.

3,642,287
ROTATING REEL GAME WITH MASKING SHUTTER

Joseph E. Lally, McHenry, and Roman A. Tojza, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Jan. 7, 1969, Ser. No. 789,480
Int. Cl. A63f 5/04
U.S. Cl. 273—143 R 15 Claims

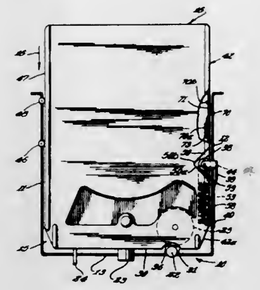


In amusement and game apparatus of the type having a set of symbol-bearing reels and mechanism for spinning and indexing the reels in changed positions presenting various arrangements of the symbols in each operating cycle to represent different score or award conditions, with shutter means operative to mask the symbols displayed by a particular one of the reels, improvements are provided in the form of control circuitry with both optional and automatic operations under certain award conditions to cause withdrawal of the shutter in timed relation to the indexing of the particular masked reel with the object of adding variant award possibilities and conditions, as well as interest and suspense in the operation of the apparatus resulting from the mode of operation of the masking means and certain recycling conditions involving both the masked and unmasked reels and award possibilities to be determined thereby.

3,642,288
TAPE CARTRIDGE WITH AUXILIARY SPRING BIASING ELEMENTS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Mar. 10, 1969, Ser. No. 806,347
Int. Cl. G11b 23/06
U.S. Cl. 274—4 B 14 Claims

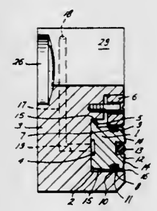


An endless loop magnetic tape cartridge compatible with existing players which have a single laterally acting retention roller, the cartridge containing an independent longitudinal bias element acting on the retention roller and forwardly biasing the cartridge by reaction. Controlled lateral bias may also be provided. Preferably the cartridge is formed in two halves of configuration to receive and retain the bias element therebetween.

3,642,289
FLOATING SEAL FOR FLANGED MEMBERS

Edgar W. Basham, London; John E. Knapman, Kingston-upon-Thames, both of England; Gordon D. Pollard, Houston, Tex.; John B. Anthony, London, and Alan C. Munro, Turnbridge Wells Kent, both of England, assignors to Oceaneering International, Inc., Houston, Tex., by said Basham, Pollard, Anthony and Munro

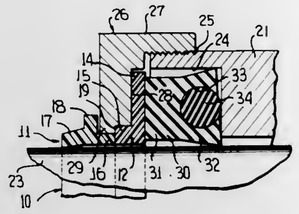
Filed May 2, 1969, Ser. No. 17,356
Int. Cl. F16j 15/08
U.S. Cl. 277—1 7 Claims



Method and apparatus for quickly establishing a seal between two flange members, not in perfect alignment. A floating annular seal ring may be provided in a recess of one of the flange members. A resilient sealing means may be mounted in a groove on the face of the sealing ring towards the other flange member. A sliding resilient sealing means may be provided between the seal ring and the flange member in which the seal ring is mounted. The surface of the seal ring adjacent at least one of the resilient sealing means may be chamfered away from the surface of the flange member toward which it faces so that even though the flange members are not perfectly aligned the resilient sealing means may contact both flange members in sealing engagement. Means are provided for urging the seal ring toward the other

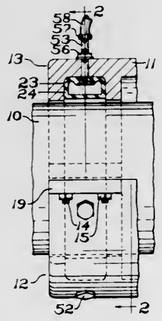
flange member. Several means of coupling on flange member to the other are disclosed.

3,642,290
COMPOSITE ROD WIPER
Norman E. Millsap, Salt Lake City, Utah, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Feb. 5, 1970, Ser. No. 8,855
Int. Cl. F16j *15/32*
U.S. Cl. 277—24 **8 Claims**



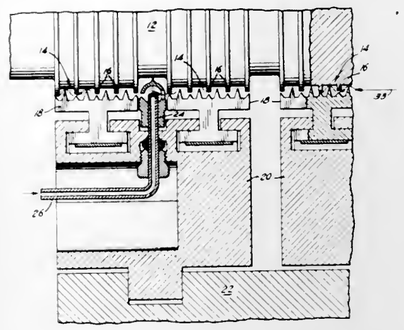
This disclosure relates to a rod wiper which is a component of a monolithic assembly including a backup washer. The backup washer is formed of relatively hard material which resists extrusion while the rod wiper is formed of a softer, more resilient abrasion-resistant material providing optimum wiping action. A bond between the backup washer and the rod wiper is no weaker than the lowest physical property of either.

3,642,291
INFLATABLE SEAL
Arthur A. Zeffer, Wadsworth, and Harry R. Weaver, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,236
Int. Cl. F16j *15/46*
U.S. Cl. 277—34 **15 Claims**



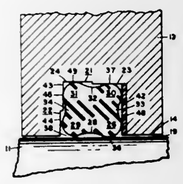
An annular, inflatable tube for installation between inner and outer members having a joint at which the tube can be split for installation around the inner member where it is difficult to slide a seal over the member. The ends of the tube are closed and beveled to overlap. A stretchable sleeve fits over the ends of the tube at the joint and has circumferential ribs inside the sleeve for engagement with circumferential grooves in the end portions of the tube. Reinforcing cords in the tube wall and in the sleeve are arranged so as to control expansion for sealing the space between the inner and outer members without increasing or decreasing the length of the tube.

3,642,292
SEALING ARRANGEMENT
Denis E. Dougherty, 1126 South Country Club Drive, Schenectady, N.Y.
Filed May 21, 1969, Ser. No. 826,461
Int. Cl. F16j *15/48*; **F02f** *11/00*
U.S. Cl. 277—56 **4 Claims**



A way of improving the efficiency of gland seals of a large steam turbine comprising injecting into the seals a sacrificial bleed of low-energy fluid. This reduces the energy leakage of the gland seals and thus increases overall power plant efficiency.

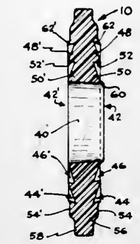
3,642,293
ROTARY SHAFT FLUID SEAL FOR HIGH PRESSURE
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio
Filed July 27, 1970, Ser. No. 58,215
Int. Cl. F16j *15/32*
U.S. Cl. 277—206 A **6 Claims**



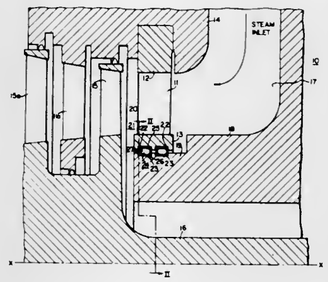
Rotary shaft seal means for effecting a fluid seal between a shaft and wall means defining a space extending outwardly of said shaft and disposed to receive said seal means. Said seal means is subject to fluid compaction and comprises an O-ring of rubberlike material having an annular crown portion sealingly engaging said shaft. Fluid blanking means seals off a portion of said O-ring which would otherwise be exposed to fluid pressure to reduce the fluid compaction of said O-ring at said crown portion.

3,642,294
WASHER
George L. Hammon, Oakland, Calif., assignor to Chemetron Corporation, Chicago, Ill.
Filed Jan. 29, 1970, Ser. No. 6,655
Int. Cl. F16j *15/10*
U.S. Cl. 277—207 **12 Claims**

A one-piece annular washer of resiliently deformable material has in at least one of its opposite faces radially outer and inner coaxial annular grooves which together with the axial opening of the washer form radially outer and inner coaxial annular skirt portions of generally triangular cross section. Preferably, the washer further has similar skirt portions formed on the other of its opposite faces and an annular fin generally axially extended from the radially inner skirt portion on one of its opposite faces.



3,642,295
SELF-ADJUSTING SEAL RING
Albert Cohen, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 15, 1970, Ser. No. 3,181
Int. Cl. F16j *15/00*
U.S. Cl. 277—226 **10 Claims**

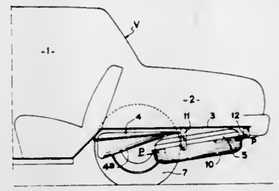


Two half-ring segments of tubing of the Bourdon type are utilized to provide a self-adjusting seal ring between two stationary surfaces, as in the first stage nozzle of a turbine. The stationary parts may be so assembled that there is compressive force on the ring segments to form a seal between the stationary surfaces. The pressure drop across the rings also forms a sealing surface.

In an alternate arrangement both ends of each ring segment are welded closed with a predetermined amount of vaporizable fluid, such as water, in the tube to form a pressure vessel. When steam is supplied to the turbine, the entrapped water is heated to generate pressure which increases the height of the Bourdon tube to form the seal.

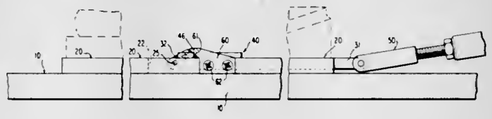
3,642,296
ARRANGEMENT OF A FUEL TANK AND A SPARE WHEEL ON AN AUTOMOBILE VEHICLES
Armand Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, France
Filed Oct. 26, 1970, Ser. No. 83,977
Claims priority, application France, Nov. 24, 1969, 6940339
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 A **4 Claims**

A vehicle in which the fuel tank and spare wheel are located under the floor of the luggage boot, the tank being nearer the center of the vehicle than the spare wheel. The tank has a bottom wall which is downwardly inclined toward



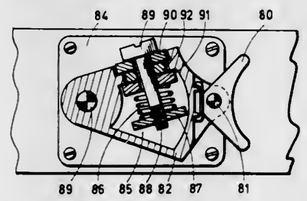
the center of the vehicle whereby, upon impact on the vehicle, the spare wheel slides under the tank along the inclined bottom wall.

3,642,297
SAFETY SKI BINDING
James Mitchell Edmund, 6404 Ridge Drive, Washington, D.C.
Filed Feb. 4, 1970, Ser. No. 8,610
Int. Cl. A63c *9/086*
U.S. Cl. 280—11.35 K **27 Claims**



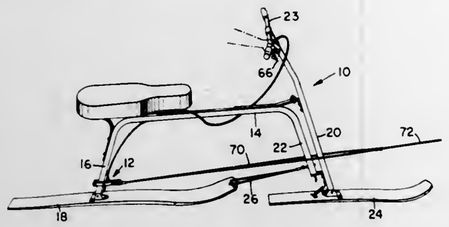
A safety ski binding in which the boot is clamped to the ski by the interaction of a ski boot plate and a ski plate; the clamping force is obtained by a rodlike actuating member extending longitudinally in a channel provided in the ski plate and forcing the boot plate rearwardly against complementary engaging surfaces of the ski plate, the complementary engaging surfaces located at a point intermediate the heel and toe of the boot.

3,642,298
RESILIENT BINDING FOR SKIS
Georges P. J. Salomon, 34, Avenue de Loverchy, Annecy, France
Filed Dec. 24, 1969, Ser. No. 887,818
Claims priority, application France, Dec. 31, 1968, 1101-74
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **4 Claims**



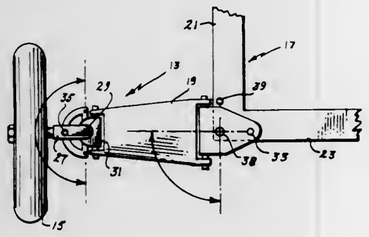
The resilient binding for skis consist of a pivoting supporting plate pivotally mounted at its front end on a baseplate fixed to the ski and of a boot-retaining jaw pivotally mounted at the rear end of the pivoting plate. The pivoting plate comprises one spring transversely mounted and in opposition with a fixed abutment or another spring having different resilient characteristics. The rotation of the pivoting plate causes the first spring to be compressed against the fixed abutment or the other spring and compels the pivoting plate to return to its normal position.

3,642,299
RELEASABLE TOWLINE CONNECTOR DEVICE FOR SKI-BOB
George E. Garcia, 987 Bel Marin Keys, Novato, Calif.
Filed Dec. 29, 1969, Ser. No. 888,442
Int. Cl. B62b *13/04*; B60d *1/00*
U.S. Cl. 280—16 9 Claims



A device for releasably connecting a vehicle such as a ski-bob to a towing line so that it can be pulled over the snow by a snowmobile or the like in a manner that will enable the rider to traverse and turn with stability and control. The device includes movable gripping members that are closed in one position to retain the towing line and are controllable by the rider's hand to release the towing line whenever desired.

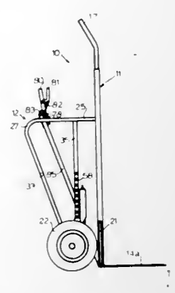
3,642,300
BOMBLIFT TRAILER SUSPENSION SYSTEM
John H. Klopp, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 26, 1969, Ser. No. 880,001
Int. Cl. B62d *21/18*
U.S. Cl. 280—34 A 2 Claims



A four-wheel bomblift trailer chassis having pivotally attached suspension arms arranged in a parallel linkage to support a vertically disposed kingpin and attached spindle. The rear suspension arms are arranged to pivot 90° around a point near each rear corner of the chassis and the wheels are pivotal around each respective kingpin. A hydraulic strut serves to stabilize the parallel linkage so that the chassis is supported. The chassis can be lowered to the ground by metering fluid from the internal cylinder which extends the hydraulic strut and can be raised by pumping fluid back into the cylinder.

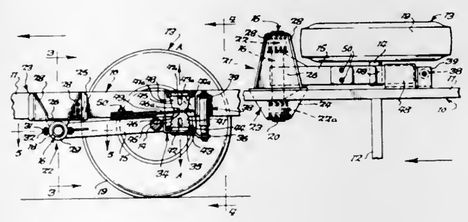
3,642,301
HANDTRUCK WITH MEANS FOR SHIFTING CENTER OF GRAVITY OF LOAD
Burdette B. Crawford, 511 Elm St., Chadbourn, N.C.
Filed Apr. 16, 1970, Ser. No. 29,028
Int. Cl. B62b *1/02*
U.S. Cl. 280—47.12 4 Claims

A two-wheel, tilt-type handtruck incorporates a spring-loaded, vertically shiftable axle and is adapted to handle a loaded pallet from a floor position, shift the load center of



gravity for transport of the load and return the load to its original position for removal of the loaded pallet.

3,642,302
COMPRESSION RUBBER VEHICLE SUSPENSION
Albert F. Hickman, 8009 Gowanda State Road, Eden, N.Y.
Continuation-in-part of application Ser. No. 634,561, Apr. 28, 1967, now Patent No. 3,511,332. This application Feb. 26, 1970, Ser. No. 14,402
Int. Cl. B60g *3/14*
U.S. Cl. 280—124 7 Claims

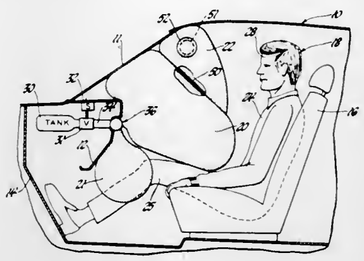


With a vehicle frame connected to each supporting wheel by an arm extending lengthwise of the vehicle travel and connected to the wheel by a stub axle and to the frame by a bearinged hub parallel with the wheel axis, substantially the entire resilient frame support is provided by a pair of compression rubber bodies separated by a guide and acting in tandem between the arm and frame. The guide is guided to move along a line of force passing centrally through the bodies which expand and contract transversely of the line of force to provide such resilient support. The guide is preferably the free end of a metal spring leaf attached at its other end to the arm between its stub axle and hub.

3,642,303
VEHICLE OCCUPANT RESTRAINT SYSTEM
Fred J. Irish, Pontiac, and Robert F. McLean, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 13, 1970, Ser. No. 11,148
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB 8 Claims

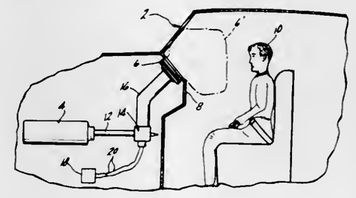
A vehicle occupant restraint system having a plurality of bags which are inflated on vehicle impact with a stationary or moving object. One of the bags receives the impact of the occupant's torso and on such impact, has controlled pressure relief to prevent excessive rebounding of the occupant. Another bag receives the impact of the occupant's head and has controlled pressure relief to prevent excessive relative

movement between the occupant's head and torso. A third bag receives the impact of the occupant's legs and remains



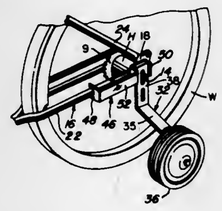
inflated on impact by the occupant to maintain the occupant in the normal seated position.

3,642,304
SAFETY BAG INFLATION SYSTEM FOR VEHICLES
James T. Johnson, and Lester E. Smith, both of Herrin, Ill., assignors to Olin Corporation
Filed June 16, 1970, Ser. No. 46,663
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB 5 Claims



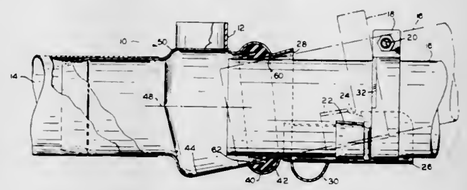
A system for inflating a safety bag in a vehicle upon a collision, wherein additional energy is supplied to a volume of pressurized gas stored in a reservoir, the additional energy being supplied by controlled combustion of a propellant charge to produce combustion gases which admix with the pressurized gas. The mixture of gases thus flows to the safety bag to inflate the latter. Energy produced by combustion of the propellant is also used to open a sealed flow path to the safety bag.

3,642,305
BICYCLE TRAINING WHEEL BRACKET
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed Jan. 16, 1970, Ser. No. 3,359
Int. Cl. B62h *1/10*
U.S. Cl. 280—293 18 Claims



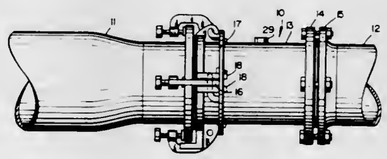
The training wheel attachment includes a wheel bracket and a torque arm so shaped and related to one another, as to avoid installation interference with the rear fork members of a bicycle frame. Eliminates the need for auxiliary spacing washers, and ensures a safe solid mounting upon the rear fork without cocking or distorting the constituent parts.

3,642,306
CANTED SEAL IRRIGATION COUPLING
Lyndle G. Gheen, and Paul J. Daniels, both of Eugene, Oreg., assignors to R.H. Pierce Manufacturing Company, Eugene, Oreg.
Filed May 4, 1970, Ser. No. 34,089
Int. Cl. B05b *15/00*
U.S. Cl. 285—5 12 Claims



A coupling body and a flexible seal permit a tube to be pivoted 12° upwardly from alignment to provide clearance for latching pawls, and also permit 6° movement of the tube downwardly and to each side horizontally. A clamping band has an inwardly formed biting lip to grip the tube and a lap joint is provided between an apron and the body.

3,642,307
QUICK-RELEASE COUPLING
Abner A. Brickhouse, and Dirk A. Schipper, both of P.O. Box 28, Sidon, Lebanon
Filed Sept. 26, 1969, Ser. No. 861,428
Int. Cl. F16l *37/12*
U.S. Cl. 285—38 4 Claims

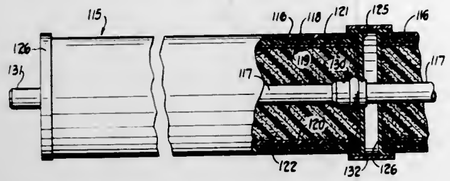


A quick-release coupling for a pair of conduits in which the base of the fastener holding the conduits joined is partible to provide rapid release of the connection between the conduits in an emergency.

3,642,308
CONDUIT SYSTEM
George D. Zeile, Jr., Medina, and Robert O. Couch, Wadsworth, both of Ohio, assignors to Anvil Industries, Inc., Brecksville, Ohio
Filed Sept. 25, 1969, Ser. No. 861,122
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 8 Claims

A conduit system constructed of prefabricated sections, each including a fluid-conducting pipe supported within and extending through a plastic casing. The pipe in each prefabricated section may be provided with bell and spigot ends to facilitate quick connection of the pipe sections in the field. In one embodiment, the pipe is insulated and is supported in spaced relation to the inner surfaces of the sections of casing by nonferrous pipe supports to form an annular air

space through the system around the insulated pipe. In another embodiment of the invention, each casing section is filled with foam insulation around the pipe and the ends of the casing are capped to form a sealed unit. The conduit

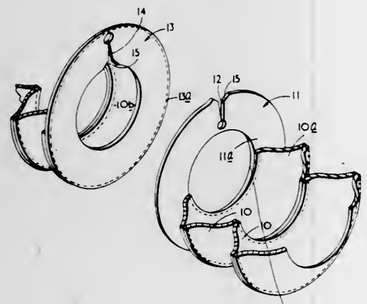


system includes anchors for restricting longitudinal movement of the pipe, seals for the ends of conduit runs, reducer structure between the ends of casing sections of different diameters, and elbow structure designed to form thrust blocks to resist longitudinal movement of the pipe.

3,642,309
COUPLINGS

Gerald V. Horrobin, Halesowen; John F. Hutton, Crowthorne, and Peter M. Knowles, Kidderminster, all of England, assignors to Henry Beakbane (Fortox) Limited, Kidderminster, Worcester, England

Filed Feb. 2, 1970, Ser. No. 7,782
Int. Cl. F16l *21/00*
U.S. Cl. 285—226 **3 Claims**



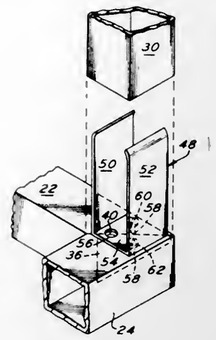
A corrugated cover is made up of a number of sections each formed from annular elements. An end element of a section is formed with a radial slot which extends inwardly from the outer periphery thereof and the other end element has a radial slot which extends outwardly from the inner periphery thereof. This slot arrangement permits rapid coupling together of the sections.

3,642,310
CORNER JOINT ASSEMBLY

Robert Hudson, Schnecksville, Pa., assignor to Keystone Lamp Manufacturing Corp., Slatington, Pa.

Filed May 4, 1970, Ser. No. 33,995
Int. Cl. F16b *7/18*
U.S. Cl. 287—54 A **4 Claims**

A corner joint assembly is disclosed wherein tubular members are joined together at a miter joint with holes provided

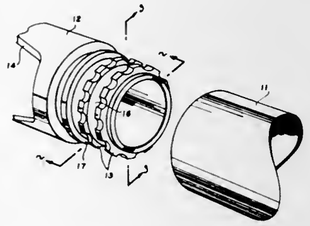


for electrical conductors which may extend in a horizontal and vertical direction through the tubular members.

3,642,311
TORQUE-TRANSMITTING JOINT

John W. Edgemond, Jr., San Diego, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

Filed May 9, 1969, Ser. No. 823,362
Int. Cl. F16b *7/00*; **F16d** *1/00*; **F16l** *21/00*
U.S. Cl. 287—109 **5 Claims**



A torque-transmitting joint, and a method for producing such a joint, are described. A rotary tube and a rotary shaft are joined by forming the tube over a plurality of teeth of short axial length projecting radially from the shaft.

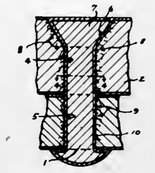
3,642,312
SMEAR CLADDING FOR SEALING AND CORROSION CONTROL IN PURE-ALUMINUM-COATED ALUMINUM ALLOY SHEETS

A. Stanley Dalton, Bellbrook, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Continuation-in-part of application Ser. No. 689,871, Dec. 12, 1967, now abandoned. This application Dec. 4, 1969, Ser. No. 882,181
Int. Cl. F16b *5/04*
U.S. Cl. 287—189.36 **1 Claim**

Means for smear cladding exposed end-grain high-strength aluminum alloy in fastener-receiving openings through pure-aluminum-coated high-strength aluminum alloy sheets by pure-aluminum-coated hard core metallic fasteners having a maximum diameter at least as great, or slightly greater, than the diameter of the openings, and forcing the fasteners through the openings to wipe off a material layer of the pure aluminum from the fastener onto the walls of the openings

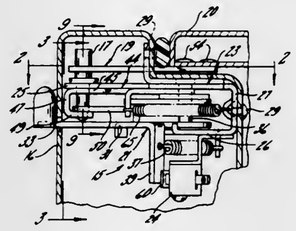
from end-to-end thereof, and secure the sheet together and to provide pure aluminum continuity from end-to-end through said openings between the pure-aluminum-coated opposite side of the sheets.



3,642,313
LATCH FOR APPLIANCE DOORS

Donald L. Anderson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed May 4, 1970, Ser. No. 34,477
Int. Cl. E05c *5/00*
U.S. Cl. 292—66 **9 Claims**



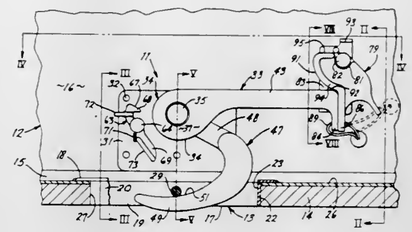
When the appliance door is open, the latching element of the latch is lodged within a pocket in a slot formed in the latch bracket and is blocked against movement from an unlatched position so as to prevent operation of the appliance. As the door is closed, a strike directly engages the latching element and forces the latching element out of the pocket to free the latching element for movement from the unlatched position. If the door is reopened before being latched but after the latching element has been moved a short distance from the unlatched position, the latching element is blocked against movement to a fully latched position and the appliance cannot be operated.

3,642,314
GRAVITY-ACTUATED LOCK

Vernon O. Smith, Ashley, and John W. Binns, Marion, both of Ohio, assignors to Overhead Door Corporation, Marion, Ohio

Continuation-in-part of application Ser. No. 690,605, Dec. 14, 1967, now Patent No. 3,510,162, dated May 5, 1970. This application Mar. 18, 1970, Ser. No. 20,565
Int. Cl. E05c *3/10*
U.S. Cl. 292—134 **10 Claims**

A lock structure for an upwardly acting door of a truck van wherein a latch bolt and a manually engageable actuating member are pivotally mounted upon the door for movement around an axis substantially perpendicular to the plane of the door when it is in the closed position. The latch bolt has an elongated, arcuate hook portion adapted to extend below the lower edge of the door for engagement with a catch pin mounted in the truck bed. The latch bolt is urged by gravity to move more securely into the latched position, and first keeper means releasably holds the bolt in its latched position.



Second keeper means releasably holds the bolt away from said latched position.

3,642,315
MAGNETIC WINDOW LOCK

Alan Alpern, 88 Remsen Street, Brooklyn, N.Y.

Filed May 27, 1970, Ser. No. 40,809
Int. Cl. E05c *1/06*
U.S. Cl. 292—144 **4 Claims**

A magnetic window lock is disclosed for a window with a sash and frame. The lock includes a first rod which is inserted in a channel through one window sash and into a recess in either the window frame or in the other window sash. In operation, the rod resides in both the channel and recess to lock the window in a closed position. In a preferred embodiment another rod magnetically attractive to the locking rod is inserted into the channel to remove the locking rod, and thereby free the window for movement.

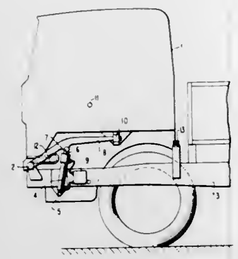
3,642,316
PIVOTED CAB WITH LOST-MOTION TILTING MECHANISM

Dieter Porth, and Hans Rinnergschwentner, both of Rotenfels, Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Mar. 3, 1970, Ser. No. 16,056
Claims priority, application Germany, Mar. 5, 1969, P 19 11 118.3
Int. Cl. B62d *33/06*
U.S. Cl. 296—28 C **9 Claims**

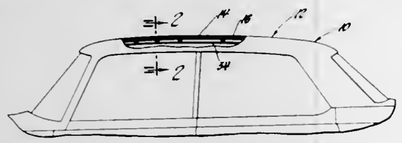
An installation for tilting the driver cab of a commercial-type motor vehicle in which the force necessary to tilt the

cab is so transmitted to the driver cab by way of a pivotally



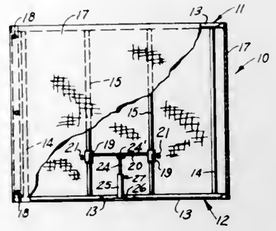
connected lever that the force is introduced into the driver cab to the rear of its center of gravity.

3,642,317
VEHICLE BODY HEADLINING
Carl P. Swindlehurst, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 28, 1970, Ser. No. 67,795
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 A **4 Claims**



A vehicle body includes a roof inner panel provided with a number of longitudinally spaced rows of laterally aligned T-shaped openings having their heads directed laterally of the body and their shanks directed longitudinally and forwardly of the body. An intermediate row of elongated openings divides the T-shaped openings into front and rear groups. The elongated openings extend laterally of the body and include elongated heads and narrower elongated shanks. The headlining is conventionally provided with listing wires received in pockets. Clips, corresponding in number and spacing to the openings in a respective row, are preassembled to each listing wire. Each clip includes a generally rectangularly shaped flat head, an intermediate integral neck, and an integral bifurcated body portion clamping the listing wire within a pocket. The listing wires respective to the rear group of openings are installed in sequence forwardly of the body by simultaneously inserting the heads of a row of clips within the heads of a row of T-shaped openings and then moving the listing wire forwardly of the body to move the necks of the clips within the shanks of such openings so that the clip heads overlie the inner panel and the clip necks engage the base edges of the shanks of the openings. At the intermediate row of openings, the heads of the clips are inserted within the elongated heads of the openings and the clips are then moved relative to the listing wire so that the clip heads overlie the shanks of such openings. This holds the necks of the preceding rows of clips against the base edges of the shanks of the T-shaped openings and tensions the headlining between the rows of installed clips. The remaining rows of clips are installed in the same manner as the rows preceding the intermediate row. The front and rear edges of the headlining are cemented to the backlite and windshield headers and the side edges are conventionally secured to the roof rails of the body.

3,642,318
HUNTER'S BLIND
Ralph L. Avant, Route #1, Gray, Ga.
Filed July 23, 1970, Ser. No. 57,567
Int. Cl. A47c *29/00*
U.S. Cl. 297—184 **2 Claims**



A device for hunters enabling them to be unobserved by the game they are hunting. This device is of a collapsible structure having hinged elements that are colored with a suitable covering. The device also includes an adjustable seat member for the hunter to sit upon.

3,642,319
DEVICE FOR ANATOMICALLY POSITIONING THE HUMAN BODY AGAINST A SEAT BACK
Emilio Berchicci, Via Roma 104, Isernia, Italy
Filed Feb. 6, 1969, Ser. No. 797,046
Claims priority, application Italy, Feb. 23, 1968, 3303A/68
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **1 Claim**

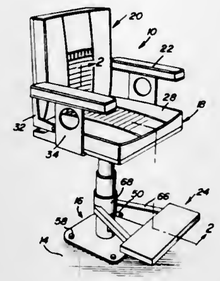


A roller located within a hollow seat back and adjacent the portion thereof normally engaged by the back of the person using the seat is pivotally mounted for swinging movement to press against and move outwardly a portion of the seat back. The roller assembly is vertically adjustable to select the position at which the back will be engaged and means are provided for clamping the device in adjusted positions.

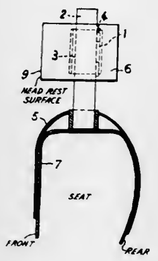
3,642,320
VERTICALLY ADJUSTABLE BOAT SEAT
Milton K. Ward, Monticello, Ark., assignor to DuraCraft Boats, Inc.
Filed Jan. 28, 1970, Ser. No. 6,502
Int. Cl. A47c *3/34*
U.S. Cl. 297—345 **3 Claims**

A swivel chair mounted on a base secured to the floor of a boat. The seat of the chair is supported by a post locked in a

vertically adjusted position to the base by a lock rod extending through the post and slots in a portion of the base telescopingly receiving the post.



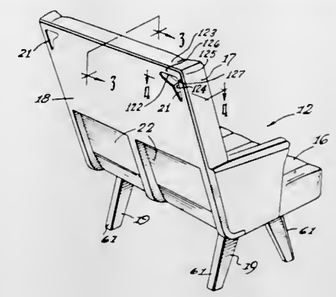
3,642,321
HEAD AND NECK REST
Bernhard Schwarz, 11 Eichenstrasse, Muri, Bern, Switzerland
Filed Jan. 27, 1970, Ser. No. 6,176
Claims priority, application Switzerland, Jan. 28, 1969, 1153/69
Int. Cl. A47c *7/38*
U.S. Cl. 297—410 **6 Claims**



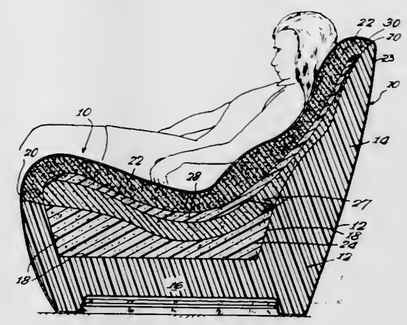
A head and neck rest for automobile or airplane seats comprises a headpiece and means for mounting the headpiece above the backrest of a seat. The mounting means include a sleeve member which is fixed within the backrest and an upright rod longitudinally traversing the sleeve. The sleeve and the headpiece are longitudinally adjustable on the rod for varying the position of height of the headpiece above the backrest. Spring means preferably consisting of rubber blocks are engaged between the internal surface of the sleeve and the rod to exert pressure on the sleeve in a direction from the front towards the back of the headpiece for frictionally arresting the headpiece in its adjusted position on the rod. Friction-increasing inserts may be arranged between the rod and the internal surface of the sleeve.

3,642,322
SEAT WITH DECORATIVE COVER ASSEMBLY
Raymond A. Bilancia, Palatine, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.
Filed July 9, 1969, Ser. No. 840,189
Int. Cl. A47c *1/12, 4/52, 31/00*
U.S. Cl. 297—445 **9 Claims**

A seat for mass transportation vehicles and a decorative cover assembly for the rear of the seat back and for the seat pedestal. The cover assembly eliminates or hides from view unsightly components or projections and prevents wearing or tearing of clothing or chafing of skin when a passenger brushes against a seat.



3,642,323
MOLDED PLASTIC FURNITURE CONSTRUCTION
William Paul Taylor, 559 Provident, Winnetka, Ill.
Filed July 2, 1969, Ser. No. 838,516
Int. Cl. A47c *7/02, 1/12*
U.S. Cl. 297—456 **6 Claims**

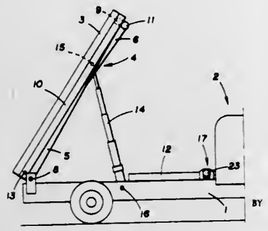


A molded plastic seating unit in which a rigid molded shell provides a base having a cavity adapted to accept a seated person. A body of elastic and resilient material is secured to the peripheral edge of the shell, and drawn tautly across the cavity. Resilient supporting materials are disposed within the enclosed space between the cavity and the elastic body. Normally, the seating unit, when unused, presents a solid contoured appearance. The support materials and elastic body are deformed when supporting a person seated on the unit, however since these materials and body return to their original shape after the user has arisen from the seat, the seating unit again presents a solid contoured appearance.

3,642,324
LOAD-SUPPORTING BED UNIT FOR A TRUCK
Tom E. Conner, Elk Grove, Calif., assignor to Tom's Hydraulic Supply, Elk Grove, Calif.
Filed Apr. 27, 1970, Ser. No. 32,085
Int. Cl. B60p *1/34*
U.S. Cl. 298—11 **3 Claims**

A load-supporting bed unit, for a truck, comprised of a normally lowered but upwardly movable frame connected between a fixed structure on the truck and a load-supporting bed thereabove, and a power device adapted to move the

frame upwardly; the frame and associated mechanism being arranged so that the bed, when moved upwardly by the power device, normally remains in its horizontal position, or-

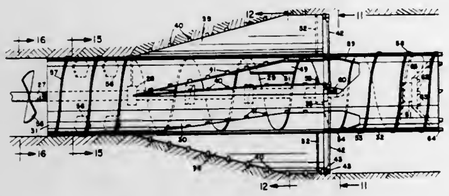


—upon nonmanual quick repositioning of certain novel means—is caused to tilt rearwardly to a back-dumping position, selectively.

3,642,325
PROCESS AND APPARATUS FOR MINING BY RETREAT REAMING

Charles S. Mulvaney, 2211 Greenleaf Avenue, Chicago, Ill.

Filed May 5, 1970, Ser. No. 34,789
Int. Cl. E21b *9/30*; **E21c** *27/22*
U.S. Cl. 299—18 **13 Claims**

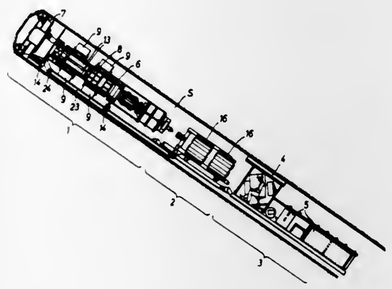


A process of mining a horizontal coal seam in an underground mine comprising first boring a hole in the middle of the seam while continuously removing the coal with an auger conveyor. Then after suitable penetration reaming wings on the conveyor are opened to span the full height of the seam. The wings have cutters on them so that as the apparatus is withdrawn the coal is broken and conveyed to the accessible face. The apparatus includes an advance mining head. A tubular enclosure for the conveyor carries the wings which are pivoted on longitudinally extending axes. A retracting movement of the shaft which drives the apparatus causes opening movement of the wings. Spiral ribs on the tubular enclosure engage the coal and urge the apparatus forwardly as it is rotated and resist rearward movement when the shaft is retracted. Doors between the wings and conveyor open to admit the cut coal into the conveyor and close to retain the coal on the conveyor. Flanges on the wings act to retain the coal. Rollers are carried by the wings to engage the coal and support the weight of the apparatus. Conveyor sections are attached to the shaft rearwardly of the reaming section. Propellers on the shaft and spiral vanes on the tubular enclosure form a transition conveying means between the reaming section and the rear conveyor sections.

3,642,326
STEPPER ADVANCING APPARATUS FOR DRILLING INCLINED TUNNELS

Willi Steufmehl, Erkelenz/Rhineland, Germany, assignor to Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co. K.G., Erkelenz/Rhineland, Germany

Filed Dec. 23, 1969, Ser. No. 887,484
Claims priority, application Germany, June 23, 1969, P 19 31 775.0
Int. Cl. E01q *3/04*
U.S. Cl. 299—31 **6 Claims**

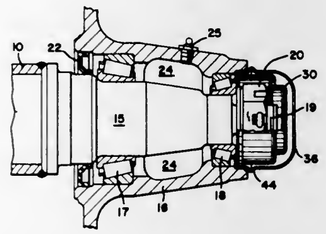


The invention relates to a machine for cutting tunnels, shafts or the like, comprising a machine frame carrying a drill head at its leading extremity and a bracing or anchoring mechanism displaceable relative to the machine frame, which comprises clamping plates arranged to be thrust against the wall of the excavation.

3,642,327
BEARING SEALS

William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed Nov. 20, 1969, Ser. No. 878,327
Int. Cl. B60b *27/00*
U.S. Cl. 301—108 R **1 Claim**

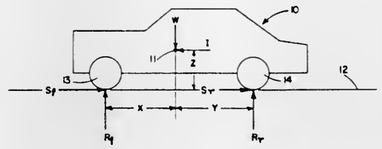


A boat trailer wheel hub is provided with a flexible diaphragm which encloses the exposed end of the spindle and which has a peripheral portion in sealing engagement with the open end of the hub. When the boat trailer hub is subjected to a sudden temperature change, such as sudden cooling by being backed into water, the diaphragm prevents water from being drawn into the hub. In one embodiment, the diaphragm is carried as a part of the hubcap and in another embodiment it is retained separate from the hubcap.

3,642,328
METHOD FOR PRODUCING MAXIMUM VEHICLE DECELERATION

Harvison C. Holland, 230 22nd Street, Santa Monica, Calif.

Filed Feb. 28, 1968, Ser. No. 708,880
Int. Cl. B60t *11/00*
U.S. Cl. 303—6 R **25 Claims**

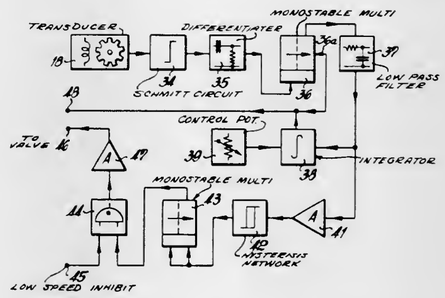


The method of producing maximum deceleration of a vehicle by (1) determining the location of the center of gravity and the weight of the vehicle, and from this information establishing the maximum stopping forces obtainable at the front and rear wheels of the vehicle at various coefficients of friction between the tire and the road surface; (2) determining the braking forces produced by the front and rear wheel brakes for various increments of hydraulic fluid displaced by the master cylinder pistons into the hydraulic lines; and (3) then displacing master cylinder hydraulic fluid into the hydraulic lines for the front and rear wheel brakes to produce the previously established maximum stopping forces at the front and rear wheels as the brake control is actuated.

3,642,329
WHEEL SLIP DETECTION DEVICE PARTICULARLY FOR MULTIWHEEL VEHICLES

Richard Zechnall, Stuttgart; Helmut Domann, Leonberg; Helmut Fleischer; Klaus Christ, both of Stuttgart, and Wolfgang Maisch, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 20, 1970, Ser. No. 29,825
Claims priority, application Germany, Apr. 19, 1969, P 19 19 929.2
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **15 Claims**



To detect transition from rolling to slipping of a wheel over a surface, a transducer coupled to the wheel provides output pulses having a repetition rate representative of wheel speed. The pulses are applied to a logic circuit, including a pair of multivibrators, one of which has a variable time circuit, controlling its unstable state in dependence on pulse repetition rate. Control of the unstable state is obtained by means of a band-pass filter coupled to an integrator, the output of the band-pass filter further controlling a comparison and coincidence network, the output from the network activating a wheel slip detector and, if desired, overriding control of braking.

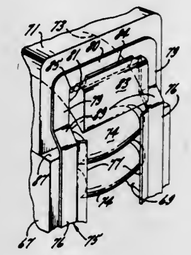
ERRATA

For Classes 305—38 and 306—1.5 see: Patent Nos. 3,642,332 and 3,642,333

3,642,330
ROLLER WAY BEARING

William G. Newman, Oak Park, Mich., assignor to Beaver Precision Products, Inc., Troy, Mich.

Filed Dec. 22, 1969, Ser. No. 886,943
Int. Cl. F16c *29/06*, *33/36*
U.S. Cl. 308—6 C **14 Claims**

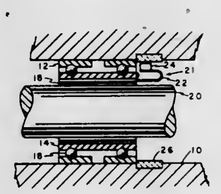


The rollers of a recirculating roller way bearing are crowned convexly to distribute the loading on each roller more uniformly across the entire length thereof and thereby increase the load-bearing capacity of the roller and to reduce skewing caused by excessive and unequal loading on the ends of the roller. Strap-type retainers hold the rollers in the race of the bearing without guiding the rollers as they circulate so as to leave the bearings free to align themselves in the race.

3,642,331
HYBRID BEARING

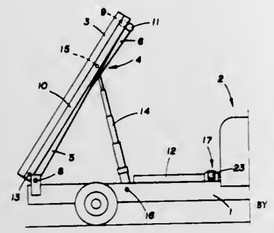
Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 12, 1969, Ser. No. 884,395
Int. Cl. F16c *21/00*
U.S. Cl. 308—35 **29 Claims**



A hybrid bearing which includes a rolling contact bearing for startup and low-speed operation, and a hydrodynamic foil bearing for high-speed operation. The hydrodynamic foil may be included between the shaft and the inner race of the rolling contact bearing or between the outer race of the rolling contact bearing and the bushing. A clutch may be included to provide the switch over between the low-speed rolling contact and the high-speed hydrodynamic foil of the hybrid bearing.

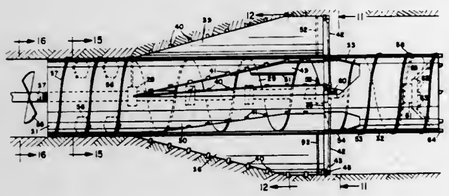
frame upwardly; the frame and associated mechanism being arranged so that the bed, when moved upwardly by the power device, normally remains in its horizontal position, or-



—upon nonmanual quick repositioning of certain novel means—is caused to tilt rearwardly to a back-dumping position, selectively.

3,642,325
PROCESS AND APPARATUS FOR MINING BY RETREAT REAMING

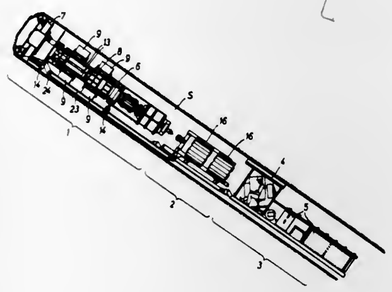
Charles S. Mulvaney, 2211 Greenleaf Avenue, Chicago, Ill.
Filed May 5, 1970, Ser. No. 34,789
Int. Cl. E21b *9/30;* **E21c** *27/22*
U.S. Cl. 299—18 **13 Claims**



A process of mining a horizontal coal seam in an underground mine comprising first boring a hole in the middle of the seam while continuously removing the coal with an auger conveyor. Then after suitable penetration reaming wings on the conveyor are opened to span the full height of the seam. The wings have cutters on them so that as the apparatus is withdrawn the coal is broken and conveyed to the accessible face. The apparatus includes an advance mining head. A tubular enclosure for the conveyor carries the wings which are pivoted on longitudinally extending axes. A retracting movement of the shaft which drives the apparatus causes opening movement of the wings. Spiral ribs on the tubular enclosure engage the coal and urge the apparatus forwardly as it is rotated and resist rearward movement when the shaft is retracted. Doors between the wings and conveyor open to admit the cut coal into the conveyor and close to retain the coal on the conveyor. Flanges on the wings act to retain the coal. Rollers are carried by the wings to engage the coal and support the weight of the apparatus. Conveyor sections are attached to the shaft rearwardly of the reaming section. Propellers on the shaft and spiral vanes on the tubular enclosure form a transition conveying means between the reaming section and the rear conveyor sections.

3,642,326
STEPPER ADVANCING APPARATUS FOR DRILLING INCLINED TUNNELS

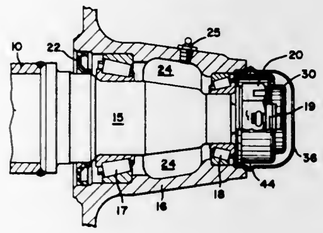
Willi Steufmehl, Erkelenz/Rhineland, Germany, assignor to Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co. K.G., Erkelenz/Rhineland, Germany
Filed Dec. 23, 1969, Ser. No. 887,484
Claims priority, application Germany, June 23, 1969, P 19 31 775.0
Int. Cl. E01q *3/04*
U.S. Cl. 299—31 **6 Claims**



The invention relates to a machine for cutting tunnels, shafts or the like, comprising a machine frame carrying a drill head at its leading extremity and a bracing or anchoring mechanism displaceable relative to the machine frame, which comprises clamping plates arranged to be thrust against the wall of the excavation.

3,642,327
BEARING SEALS

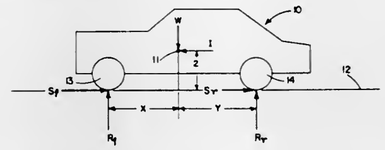
William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio
Filed Nov. 20, 1969, Ser. No. 878,327
Int. Cl. B60b *27/00*
U.S. Cl. 301—108 R **1 Claim**



A boat trailer wheel hub is provided with a flexible diaphragm which encloses the exposed end of the spindle and which has a peripheral portion in sealing engagement with the open end of the hub. When the boat trailer hub is subjected to a sudden temperature change, such as sudden cooling by being backed into water, the diaphragm prevents water from being drawn into the hub. In one embodiment, the diaphragm is carried as a part of the hubcap and in another embodiment it is retained separate from the hubcap.

3,642,328
METHOD FOR PRODUCING MAXIMUM VEHICLE DECELERATION

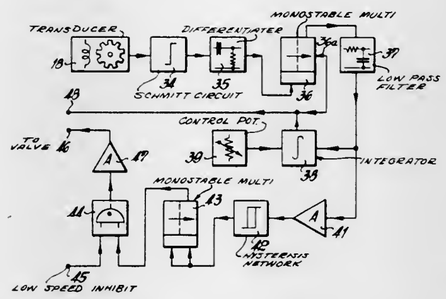
Harvison C. Holland, 230 22nd Street, Santa Monica, Calif.
Filed Feb. 28, 1968, Ser. No. 708,880
Int. Cl. B60t *11/00*
U.S. Cl. 303—6 R **25 Claims**



The method of producing maximum deceleration of a vehicle by (1) determining the location of the center of gravity and the weight of the vehicle, and from this information establishing the maximum stopping forces obtainable at the front and rear wheels of the vehicle at various coefficients of friction between the tire and the road surface; (2) determining the braking forces produced by the front and rear wheel brakes for various increments of hydraulic fluid displaced by the master cylinder pistons into the hydraulic lines; and (3) then displacing master cylinder hydraulic fluid into the hydraulic lines for the front and rear wheel brakes to produce the previously established maximum stopping forces at the front and rear wheels as the brake control is actuated.

3,642,329
WHEEL SLIP DETECTION DEVICE PARTICULARLY FOR MULTIWHEEL VEHICLES

Richard Zechnall, Stuttgart; Helmut Domann, Leonberg; Helmut Fleischer; Klaus Christ, both of Stuttgart, and Wolfgang Maisch, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Apr. 20, 1970, Ser. No. 29,825
Claims priority, application Germany, Apr. 19, 1969, P 19 19 929.2
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **15 Claims**



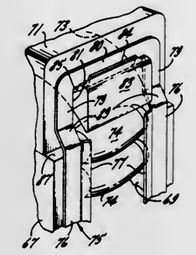
To detect transition from rolling to slipping of a wheel over a surface, a transducer coupled to the wheel provides output pulses having a repetition rate representative of wheel speed. The pulses are applied to a logic circuit, including a pair of multivibrators, one of which has a variable time circuit, controlling its unstable state in dependence on pulse repetition rate. Control of the unstable state is obtained by means of a band-pass filter coupled to an integrator, the output of the band-pass filter further controlling a comparison and coincidence network, the output from the network activating a wheel slip detector and, if desired, overriding control of braking.

ERRATA

For Classes 305—38 and 306—1.5 see: Patent Nos. 3,642,332 and 3,642,333

3,642,330
ROLLER WAY BEARING

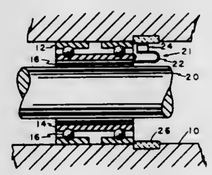
William G. Newman, Oak Park, Mich., assignor to Beaver Precision Products, Inc., Troy, Mich.
Filed Dec. 22, 1969, Ser. No. 886,943
Int. Cl. F16c *29/06, 33/36*
U.S. Cl. 308—6 C **14 Claims**



The rollers of a recirculating roller way bearing are crowned convexly to distribute the loading on each roller more uniformly across the entire length thereof and thereby increase the load-bearing capacity of the roller and to reduce skewing caused by excessive and unequal loading on the ends of the roller. Strap-type retainers hold the rollers in the race of the bearing without guiding the rollers as they circulate so as to leave the bearings free to align themselves in the race.

3,642,331
HYBRID BEARING

Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 12, 1969, Ser. No. 884,395
Int. Cl. F16c *21/00*
U.S. Cl. 308—35 **29 Claims**

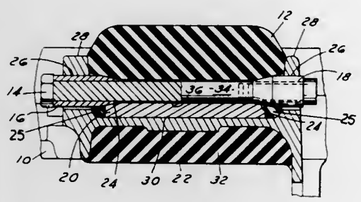


A hybrid bearing which includes a rolling contact bearing for startup and low-speed operation, and a hydrodynamic foil bearing for high-speed operation. The hydrodynamic foil may be included between the shaft and the inner race of the rolling contact bearing or between the outer race of the rolling contact bearing and the bushing. A clutch may be included to provide the switch over between the low-speed rolling contact and the high-speed hydrodynamic foil of the hybrid bearing.

3,642,332
TRACK PAD RETENTION DEVICE

Alex H. Sinclair, Southfield; Ted Kozowyk, Detroit, both of Mich.; Ralph K. Reynolds, Saratoga; Robert F. Neargarder, San Jose, and Robert H. Edson, Monte Sereno, all of Calif., assignors to The United States of America as represented by the Secretary of the Army

Filed Feb. 24, 1970, Ser. No. 13,404
Int. Cl. B62d 55/26
U.S. Cl. 305—38 3 Claims

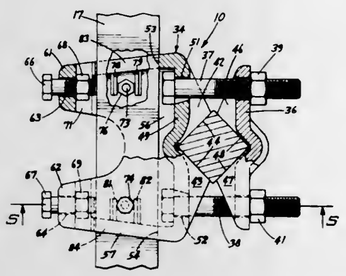


This invention relates to the field of tracks for tracked vehicles and more particularly to tracks having removable track pads.

3,642,333
CLAMP

Fred W. Eisenhardt, and Hartley N. Ellingson, both of Fargo, N. Dak., assignors to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed June 22, 1970, Ser. No. 48,258
Int. Cl. A01b 15/12
U.S. Cl. 306—1.5 15 Claims



A tool bar clamp for connecting a standard of an earth-working toolholder to a support, as a tool bar of a cultivator. The clamp has a body with a passageway for receiving a portion of the standard. A first pair of nut and bolt assemblies, engageable with the forward edge of the standard, clamp the standard against the back of the body. A second pair of nut and bolt assemblies, mounted on the side of the body, clamp the side of the standard in the body to fix the lateral and perpendicular position of the standard in the clamp. The body is mounted on the support with a retainer and a pair of nut and bolt assemblies.

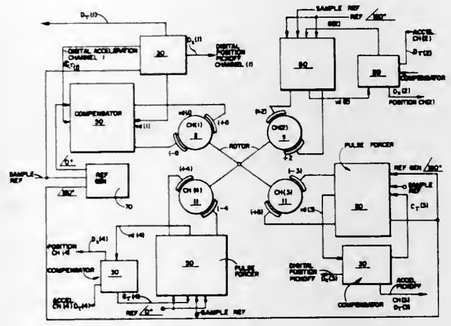
3,642,334
ELECTROSTATIC SUPPORT SYSTEM

James L. Atkinson, La Mirada, Calif., assignor to North American Rockwell Corporation

Filed June 29, 1970, Ser. No. 50,604
Int. Cl. F16c 39/06
U.S. Cl. 308—10 8 Claims

An electrostatic support for supporting an electrically conductive member, for example, a spherically shaped gyroscope rotor.

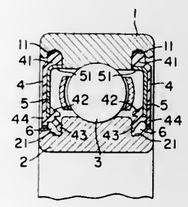
A plurality of electrode pairs are positioned around the conductive member, with one electrode of a pair positioned opposite the other electrode of a pair. A periodic signal source provides a square wave reference signal. A pair of amplifiers are connected to the electrodes of a pair with each amplifier receiving the periodic signal as an input. A differential amplifier is connected across the pair of electrodes to provide an output signal proportional to the voltage difference between the electrodes and the supported conductive member. Switch means are provided for increasing or decreasing the gain of one amplifier while decreasing or increasing, respectively, the gain of the other amplifier in response to the difference signal so as to increase the magnitude of the periodic signal applied to one electrode and to decrease the magnitude of the periodic signal applied to the other electrode so as to coerce the electrically supported conductive member towards a centered position.



3,642,335
SEALED BEARING

Tadanobu Takahashi, and Yoshiro Kan, both of Fujisawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Marunouchi, Chiyoda-ku, Japan

Filed Sept. 11, 1970, Ser. No. 71,509
Claims priority, application Japan, Sept. 12, 1969, 44/86234
Int. Cl. F16c 33/76, 33/80
U.S. Cl. 308—187.1 3 Claims

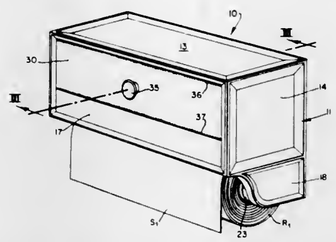


A sealed ball or roller bearing which comprises a pair of seal plates interposed between an outer and inner race, the inner race having a seal groove of a substantially U- or L-shaped cross section formed in the outer surface thereof, each of the seal plates having its outer edge hermetically secured to the outer race, the inner edge portion of the seal plate being formed with an inner seal lip facing the seal groove of the inner race in spaced relationship therewith to provide a reduced clearance therebetween, an intermediate seal lip contacting the seal groove, and an outer seal lip out of contact with the seal groove to provide a labyrinth clearance therebetween, thus forming a seal portion of the bearing which is suitable for low-torque high-speed rotation.

3,642,336
DISPENSING DEVICE

Wilfred G. Harvey, Sr., Green Brook, N.J., assignor to Globe Rubber Products Corp., Philadelphia, Pa.

Filed Oct. 10, 1968, Ser. No. 766,459
Int. Cl. B65h 19/04
U.S. Cl. 312—37 7 Claims

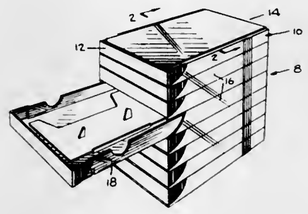


A cabinetlike dispensing device is provided, for containing rolls of wrapping products, such as metal foil, plastic wrap, waxed paper and the like. The cabinet also has provisions for carrying an additional roll, for example of paper towels suspended therebeneath.

3,642,337
CASSETTE CONTAINER

Jay Manheim, 860 United Nations Plaza, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,975
Int. Cl. A16b 12/00; A47b 53/02
U.S. Cl. 312—111 10 Claims



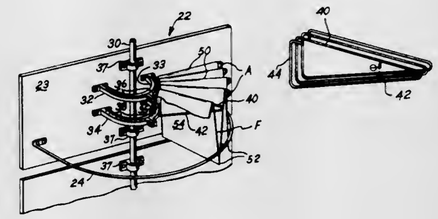
A cassette container which may be releasably secured to identical, other containers to form a filelike storage assembly for cassettes. The container includes a housing with a drawer slidably mounted for longitudinal motion within the housing between exposed and enclosed positions. Tongue and groove members formed at upper and lower ends of the housing enable the upper end of the container to be releasably secured to the lower end of another identical container. Numerous containers can be assembled one upon another to form a connected vertical stack.

3,642,338
CONTINUOUS WIRE SUPPORT

David H. Humphrey, San Juan, P.R., assignor to Orbit International, Inc.

Filed June 1, 1970, Ser. No. 41,822
Int. Cl. A47b 17/00
U.S. Cl. 312—184 3 Claims

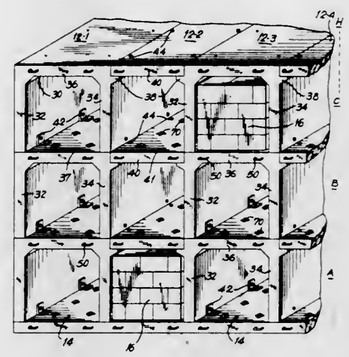
A filing mechanism includes improved cantilever support means and accordion-folded filing folders carried on the support means. The cantilever support means are comprised of a continuous wire element formed in a manner to facilitate easy installation and shaped as adjacent triangles comprised of a horizontal arm, an angular support arm extending forwardly at an angle θ from the rear end of the horizontal arm, and a vertical arm extending upwardly from the front end of the angular arm to the plane of the horizontal arm where it is then bent to begin a second triangle of the same configuration and dimensions as the first, such pattern continuing to form a series of triangles in a vertical offset relationship for supporting an accordion-folded-type filing folder. The cantilever support arms are supported by two brackets located at the top and bottom of the vertical arms, with each bracket having slots for receiving the vertical arms and having a detachable portion for locking the vertical arms in place so as to secure the support arms to the brackets. By swinging the cantilever arms open, access is permitted to the material filed in the accordion fold between the said arms.



3,642,339
WAREHOUSING STORAGE SYSTEM

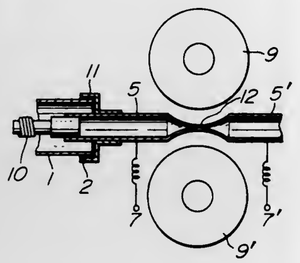
Walter A. Ruderfer, 101 Monmouth, Brookline, Mass.

Filed May 28, 1970, Ser. No. 41,212
Int. Cl. A47b 81/00, 97/00
U.S. Cl. 312—283 10 Claims



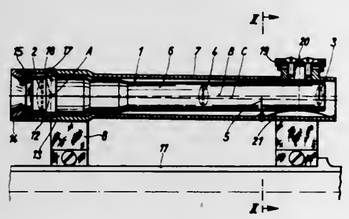
In a warehousing storage system wherein the products are grouped into unit loads, a storage structure is disclosed which includes vertical and horizontal rows of individually isolated compartments, each intended to accommodate a substantial number (e.g., 50) of unit loads along its length. The compartments are preferably constructed from modular elements formed of concrete or other suitable fireproof material to provide a dimensionally stable storage structure compatible with automated order selection arrangements and demonstrating efficient space utilization.

3,642,340
HIGH-PRESSURE METAL VAPOR DISCHARGE LAMP
Mikiya Yamane, Kunitachi-shi; Akira Saito; Katsuyoshi Matsumoto; Kenichi Kawasumi; Kazuo Murayama, and Hiroshi Sugiyama, all of Ome-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1969, Ser. No. 872,165
Claims priority, application Japan, Nov. 1, 1968, 43/79293
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 2 Claims



An improved method of sealing off exhaust tubes in the manufacture of high-pressure metal vapor discharge lamps comprising a translucent ceramic tube containing therein Na, Hg or like metal.

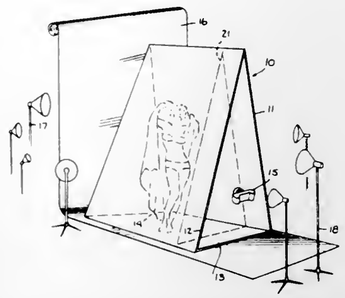
3,642,341
OPTICAL AIMING DEVICE FOR RIFLES
Paul Seifried, Badenweiler, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed Apr. 30, 1970, Ser. No. 33,427
Claims priority, application Germany, May 14, 1969, P 19 24 606.1
Int. Cl. F41g *1/38*
U.S. Cl. 350—10 6 Claims



An optical aiming device for rifles, which comprises a telescopic sight equipped with an aiming member, and a tubular carrying-grip. The telescopic sight is mounted swingably to all sides, as well as screwable inside of the substantially cylindrical carrying-grip provided on the rifles.

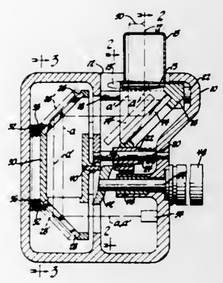
3,642,342
METHOD AND APPARATUS FOR MAKING A REPRODUCTION
Raymundo De Larrain, Westbury Hotel, Madison Ave. & 69th Street, New York, N.Y.
Filed Mar. 20, 1969, Ser. No. 808,944
Int. Cl. G02b *27/08*
U.S. Cl. 350—4 10 Claims

The disclosure relates to making a reproduction such as a photographic record of multiple or kaleidoscopic-type images with extreme clarity and little or no distortion of the subject. The subject is positioned preferably within and adjacent one end portion of an elongated enclosure which includes at least two intersecting reflective surfaces which generate the kaleidoscopic images. In making a photographic record, a camera is positioned adjacent or in the other end



portion of the enclosure at a point where it views and records the subject as well as at least a portion of the subject's kaleidoscopic images.

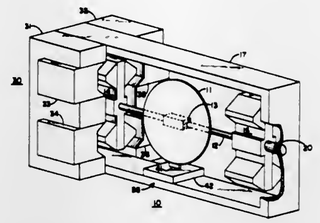
3,642,343
LINEAR OPTICAL SCANNING DEVICE
Sarkis K. Tchejeyan, South Milwaukee, and James A. Repinski, Milwaukee, both of Wis., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,238
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 1 Claim



A linearly oscillating mirror and an objective lens movable therewith transversely scan an incident light beam and reflect the beam sequentially to a pair of mutually perpendicular mirrors mounted together for linear oscillation in the same direction as the first mirror. A motor driven cam drives the pair of mirrors in phase with and at one-half the amplitude of the first mirror such that the optical path length through the scanning device remains constant.

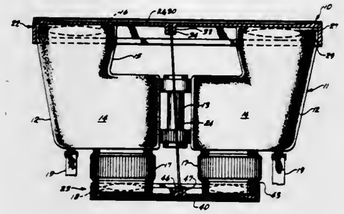
3,642,344
OPTICAL SCANNER HAVING HIGH-FREQUENCY TORSIONAL OSCILLATOR
William R. Corker, Waltham, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Nov. 27, 1970, Ser. No. 93,080
Int. Cl. G02b *17/06*
U.S. Cl. 350—6 3 Claims

A high-frequency torsional oscillator for use in an optical scanner assembly, including a torsion rod whose ends are connected to a frame through a pair of flexural members which have lower torsional spring constants than the torsion rod. A mirror is attached to the torsion rod near its center, and a pair of rotors are attached to the torsion rod near its ends. Electromagnetic drivers are positioned near the rotors for imparting oscillatory motion thereto when the drivers are energized with a sinusoidally varying current. A phase-lock



loop feedback system is used to drive the torsion rod assembly at a resonant frequency so that the mirror and the rotors oscillate with opposite phase, causing a pair of nodes to appear on the torsion rod between the mirror and the rotors.

3,642,345
SKELETAL CASE FOR BINOCULARS
Alfred A. Akin, Jr., West Covina, and Russell E. Prentice, Pasadena, both of Calif., assignors to Bushnell Optical Corporation, Pasadena, Calif.
Filed Apr. 6, 1970, Ser. No. 25,965
Int. Cl. G02b *23/18*
U.S. Cl. 350—65 1 Claim

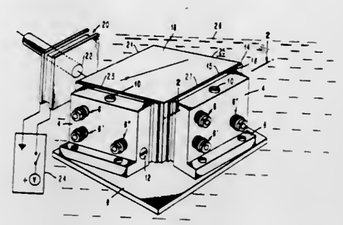


A skeletal open-frame case providing protective covers for objective and ocular lenses of a binocular. The case has lens-covering caps or panels which are connected by a flexible strap, or which are made of magnetic material to be attracted to the binocular and to each other. The case collapses into a compact pocket-storable configuration when not in use.

3,642,346
PICTORIAL PARALLAX PANORAMAGRAM INCLUDING A CELLULOSE ESTER HOT MELT THERMOPLASTIC VIEWING SCREEN
John H. Dittmar, Masonville, N.J., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 8, 1969, Ser. No. 848,728
Int. Cl. B44c *1/20*; B44d *1/16*; G02b *27/22*
U.S. Cl. 350—131 12 Claims

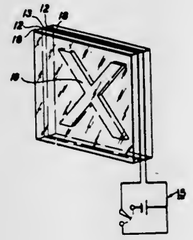
A pictorial parallax panoramagram comprising a lineiform image layer, a lenticular screen formed from a cellulose ester hot melt thermoplastic composition, said screen having a base face and a lenticulated forward face, there being a transparent layer of a primer composition between said image layer and said lenticulated screen base face, said image layer being in alignment with said lenticulated forward face, and said transparent layer comprising at least about 55 percent by weight of a tall oil fatty acid alkyd varnish.

3,642,347
IMPROVED EXTERNAL LIGHT DEFLECTION APPARATUS
James Lipp, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,574
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 12 Claims



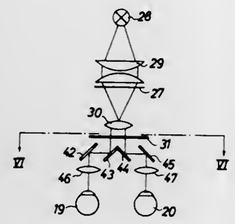
Light deflection apparatus, operative under electro-optic control, employing a birefringent deflecting element in spaced-apart, parallel, substantially coextensive relationship with an isotropic alignment element and including a refractive index-matching liquid filling the space between the birefringent and isotropic elements. The preferred liquid, a polychlorinated polyphenyl oil, has a tendency to break down when exposed to high potentials generated in the electro-optic switches. To eliminate the breakdown, the liquid is confined between the birefringent and isotropic elements within a container and insulated from the switching voltages. The container structure includes adjustment means for precisely varying the distance and angle of the isotropic element with respect to the birefringent element.

3,642,348
IMAGING SYSTEM
Joseph J. Wysocki; James E. Adams, both of Webster, and Robert W. Madrid, Macedon, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,593
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 6 Claims



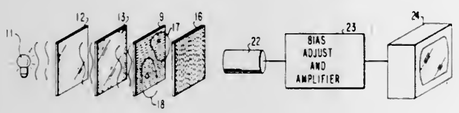
A system which transforms a cholesteric liquid crystalline material from its Grandjean or "disturbed" texture state to its focal-conic or "undisturbed" texture state by an applied electrical field, and an imaging system wherein a cholesteric liquid crystalline member is imaged in a desired image configuration by the electric field-induced texture transition system.

3,642,349
METHOD OF REPRODUCING X-RAY PICTURES
Friedrich Bestenreiner, Gruenwald, Germany; Silvaan Rene Lambeir, Bonheiden, and Louis Achilles Meeussen, Mortsel, both of Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 21, 1970, Ser. No. 4,627
Claims priority, application Germany, Jan. 21, 1969, P 19 02 748.6
Int. Cl. G02b *27/22, 27/38*
U.S. Cl. 350—162 SF **10 Claims**



Stereoscopic X-ray photographs form photographic pictures on one or two record carriers on which also gratings are formed. When the pictures are projected through apertures of a diaphragm, positive and negative images having different diffraction orders are produced whose intensities are simultaneously decreased and increased by grey wedges so that the combined image is varied between positive and negative conditions.

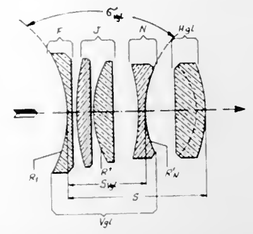
3,642,350
COMPUTER-GENERATED FILTERING METHOD
Peter M. Hirsch; James A. Jordan, Jr., and Louis B. Lesem, all of Houston, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,260
Int. Cl. G06g *9/00;* **G02b** *27/38*
U.S. Cl. 350—162 SF **7 Claims**



A method of optical filtering in which a phase object is constructed in accordance with the desired convolutional filter operator and during the filtering operation incoherent light is used. This type of incoherent filtering method is made applicable to filter operators having negative portions which would require negative intensities by biasing the phase object to make is everywhere nonnegative. The bias is then removed during display by means of a vidicon system.

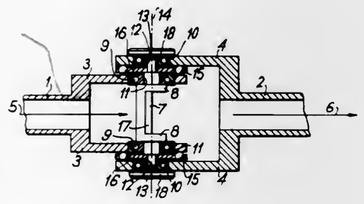
3,642,351
EXPANDED TRIPLET OBJECTIVE HAVING AT LEAST FOUR ELEMENTS
Albrecht W. Tronnier, Gottingen; Joachim Eggert, and Fritz Uberhagen, both of Braunschweig, all of Germany, assignors to Voigtlander A.G.
Filed June 16, 1969, Ser. No. 836,690
Claims priority, application Switzerland, June 14, 1968, 8,895/68
Int. Cl. G02b *9/34, 9/60, 9/62*
U.S. Cl. 350—215 **11 Claims**

A relatively powerful objective of relatively wide aperture having at least four elements of the expanded triplet-type situated in air. The objective includes a forward component made up of three elements and including a rear negative element which is followed by a rear component. The front element of the forward component has a concave hollow front surface directed forwardly toward the object and this front surface has an overcorrecting action. The various elements of



the forward component provide it in its entirety with a biconcave configuration, and the limits of the ranges used for the various parts and groups of parts of the objective enable it to achieve a highly efficient optical action for an objective which has a relatively wide aperture in the range of from approximately *f*/4 up to *f*/1.8 or greater.

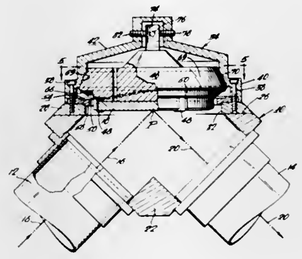
3,642,352
PIVOTED MIRROR FOR ELBOW JOINT IN LIGHT TUBE
Allan David Beach, Newbury, England, assignor to National Research Development Corporation, London, England
Filed Dec. 9, 1969, Ser. No. 883,451
Claims priority, application Great Britain, Dec. 10, 1968, 58,687/68
Int. Cl. G02b *5/08;* **A61b** *17/36*
U.S. Cl. 350—288 **7 Claims**



A mirror is mounted so that a light beam directed on to it with a given alignment relative to one of two relatively rotatable members is reflected with a fixed alignment relative to the other member as the two members are rotated. This requires half-rate relative rotation of the mirror, which is achieved by connecting it to balls or like rollable bodies arranged to roll in circular paths between surfaces on the two members. The device may be used in a laser beam manipulator, for example for surgery.

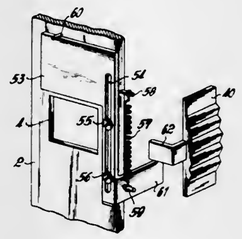
3,642,353
ADJUSTABLE MIRROR ASSEMBLY
Richard H. Field, Broomall, Pa., assignor to Lasermation, Inc., Philadelphia, Pa.
Filed Oct. 2, 1970, Ser. No. 77,435
Int. Cl. G02b *7/18*
U.S. Cl. 350—310 **5 Claims**

A mirror assembly suitable for use in reflecting a laser beam or any other light beam, in which the mirror can be positioned to rotate about a pair of orthogonal axes to the plane of the reflective surface of the mirror. The mirror is mounted on the front of a trunnion having spherical peripheral side surfaces which are journaled in the corresponding spherical bearing surfaces of a surrounding cap. The center of the sphere along which the spherical trunnion surfaces and the bearing surfaces lie is located at the intersection of the orthogonal axes at the reflecting surface of the mirror about which rotation of the mirror is desired. The spherical trunnion surfaces and the spherical bearing surfaces are urged together by means of a partially compressed wave spring acting between a shoulder on the trunnion and a capture ring secured to the front of the cap. The trunnion has a rearward extension within the cap which can be adjustably



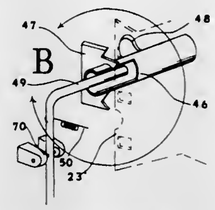
positioned rotationally about the center of the spherical surfaces by means of set screws extending through the cap and bearing against the sides of the extension of 90° from each other. The above-described unit is preferably secured together as an integral module, which in turn can be removably secured to a baseplate on a mirror corner support, with the mirror extending through an opening in the baseplate and corner support so as to be exposed to the laser beam. The front of the mirror is positioned forwardly of the remainder of the module so that it can readily be cleaned.

3,642,354
MOTION PICTURE CAMERA
Rolf Heinzmann, Schmiden, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany
Filed Aug. 19, 1969, Ser. No. 851,234
Claims priority, application Germany, Aug. 20, 1968, P 17 97 131.2
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **7 Claims**



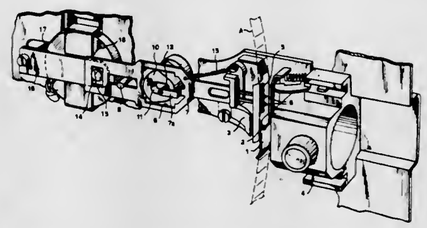
A motion picture camera with dissolving shutter for fadeout and fade-in effects includes a mask which overlies a light-admitting opening in front of the film gate when the motor is operated in reverse following the fadeout. The mask prevents exposure of the film during rewinding preparatory to fade-in in the event that the operator fails to fully close the shutter during fadeout.

3,642,355
VIDEO FILM PROJECTOR
Earl Chamberlain, P.O. Box 603, Mount Hermon, Calif.
Filed Nov. 12, 1969, Ser. No. 875,896
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **2 Claims**



A film-coding and code-reading device for a motion picture projector comprises a film-edge-notching punch and a film edge notch sensor. The punch and sensor are disposed in coaxial relationship within the projector gate whereby any desired film frame may be editorily marked.

3,642,356
CINEMATOGRAPHIC PROJECTORS
Mario Carignano, Turin, Italy, assignor to Silma S.P.A., Turin, Italy
Filed Jan. 27, 1970, Ser. No. 6,083
Claims priority, application Italy, Jan. 29, 1969, 50343-A/69; Feb. 22, 1969, 50695-A/69
Int. Cl. G03b *21/48*
U.S. Cl. 352—180 **10 Claims**

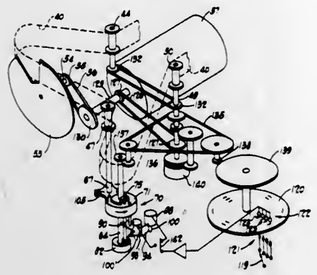


A projector for cinematograph film of reduced gauge is provided with locking means for locking the film-driving element in a position of disengagement from the film, while the projector film drive mechanism for displacing the film-driving element remains in operation. The locking means are rendered inoperable at intervals by electrical impulses synchronized with the projector drive mechanism to cause the driving element to engage the film intermittently at intervals determined by the frequency of the impulses.

3,642,357
MOTION PICTURE PROJECTOR
Fred H. Meyer, Huntington, N.Y., assignor to Picker Corporation, White Plains, N.Y.
Continuation of application Ser. No. 787,684, Dec., 1968, now abandoned. This application Sept. 4, 1970, Ser. No. 69,973
Int. Cl. G03b *1/38*
U.S. Cl. 352—189 **23 Claims**

A movie projector has flickerless forward and reverse film advance at speeds determined by a Geneva intermittent drive mechanism controlled by a rotary timing disc driven at a rate proportional to the film feed rate. Independent servo-driven film supply and takeup reels are each controlled by a swinging arm which senses the length of film stored in the film

supply and takeup loops allowing film buildup or excess to discharge to maintain the proper film loop length for gentle handling. Excessive arm movement is minimized by employ-



ing a reverse drive pulse of the reel drive motor to dampen oscillations. Photocell sensing of the primary film loops insures smooth film transport without damage to the film.

3,642,358

FILM PRESSURE DEVICE FOR CARTRIDGE

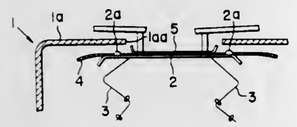
Tokusaburo Kakiuchi, and Hideaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Ota-ku, Tokyo, Japan

Filed July 15, 1969, Ser. No. 841,748

Claims priority, application Japan, July 18, 1968, 43/50780

Int. Cl. G03b *1/48*

U.S. Cl. 352—227 **1 Claim**



A film pressure device for use in a cineprojector or camera having an insertable film cartridge. When the cartridge is inserted for projection or photographing, a gate plate forces a pressure plate against a bias spring so that the film is tightly pressed against the pressure plate. When the cartridge is displaced for rewinding, the pressure plate has projections which abut a wall of the cartridge so that the film can travel freely adjacent the pressure plate.

3,642,359

TRANSPARENCY DISPLAY APPARATUS

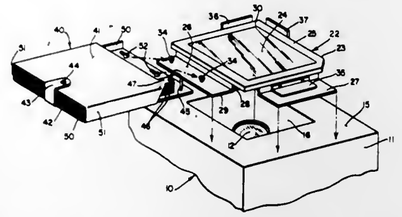
Paul E. Kitch, West Springfield, Mass., assignor to Scott Paper Company, Delaware, Pa.

Original application Mar. 24, 1967, Ser. No. 625,841, now Patent No. 3,536,393. Divided and this application Jan. 9, 1970, Ser. No. 10,118

Int. Cl. G03b *21/00*

U.S. Cl. 353—23 **10 Claims**

Transparency display apparatus is disclosed including a transparency storage device for protecting transparencies during transport and for facilitating display of transparencies upon an overhead projector and a staging assembly mountable on the stage of an overhead projector and cooperating with the storage device for transparency display. The storage device is separable from the staging assembly during transport of the transparencies and is constructed in a manner which fully protects the transparencies by providing covers and sides which form a package for holding the transparencies. When utilized for displaying transparencies, the storage device may be opened up and the covers pivoted out of place into a position where they support transparencies before and after display. The staging assembly includes fastener means which cooperate with fasteners on the storage device so that the storage device is supported while the transparencies are being displayed. The staging assembly has a transparent panel positioned above a light source and relative to the storage device so that transparencies carried in the storage device can be pivoted about their point of attachment to the storage device for selective display over the



transparent panel on the overhead projector. The staging assembly also includes supports adjacent the transparent panel for supporting the covers of the storage device in a position where transparencies can be collected and disposed upon one of them before and after display. Individual transparencies retained in the apparatus may be moved about an axis lying in the plane of the transparency as well as about an axis intersecting the plane of the transparency, generally one perpendicular thereto.

3,642,360

MICROPHOTOGRAPH PROJECTION SYSTEM

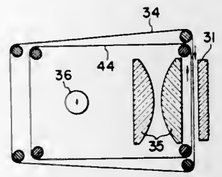
Hisanori Ataka, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Ota-ku, Tokyo, Japan

Filed July 7, 1969, Ser. No. 839,561

Claims priority, application Japan, July 25, 1968, 43/52688

Int. Cl. G03b *21/00*

U.S. Cl. 353—38 **5 Claims**



A microphotograph projection system comprising a substantially planar microlens plate having a plurality of microlenses arranged in intimately contacted relation with each other upon the front surface thereof. A plurality of objects or originals to be projected are disposed in one-to-one relation with said microlenses and selected for projecting by aligning a moving elongated slot with an aperture moving in the opposite direction.

3,642,361

ILLUMINATION OF PROJECTING APPARATUS

Benno Streu, Freiburg Im Breisgau, Germany, assignor to Fritz Hellige & Co., GmbH, Freiburg im Breisgau, Germany

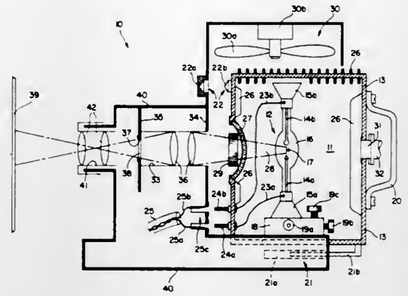
Filed Nov. 15, 1968, Ser. No. 776,144

Claims priority, application Germany, Nov. 17, 1967, P 15 72 675.7

Int. Cl. G03b *21/18*

U.S. Cl. 353—57 **3 Claims**

Projecting apparatus which provides a unit which includes an airtight, rigidly constructed metallic housing that houses an illuminating source so that such unit may be interchanged within the projecting apparatus with a like unit. The illuminating source may be a high-pressure mercury vapor lamp



and evacuation capabilities may be connected to the airtight housing to lower the pressure within such housing in order to minimize the extent of any explosion of the illuminating source.

3,642,362

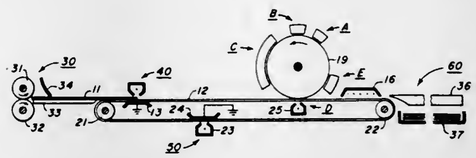
APPARATUS FOR CONVEYING SHEET MATERIAL

Daniel L. Mueller, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,636

Int. Cl. G03g *15/00; B65h 17/28*

U.S. Cl. 355—3 **1 Claim**



An apparatus for electrostatically tacking sheet material such as paper onto a moving dielectric belt and conveying it to a remote location having a ground plate in contact with the undersurface of the belt, and a tacking corona device over the upper surface of the belt opposite the ground plate and a control device to activate the tacking corona device only when a sheet of paper is between it and the belt. The tacking corona device in combination with the ground plate introduces a current flow through the paper sheet and belt which enhances the electrostatic attraction between the paper and belt. The conveying apparatus has an additional corona-charging device of a polarity opposite that of the tacking corona device which neutralizes any residue charge on the upper surface of the belt after the sheet has been conveyed to the remote location and removed from the belt.

3,642,363

MANIFOLD IMAGING SYSTEM

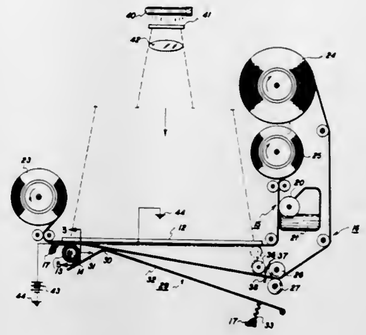
James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,850

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **12 Claims**

A manifold set of donor layer, imaging material layer and receiver layer is formed between a backing electrode and a tape electrode. The tape electrode is initially wound on a spool and is laid out over the various layers of the manifold set by unwinding it from the spool. The imaging material is exposed to electromagnetic radiation and subjected to electric field. The donor and receiver layers are separated when the tape electrode is wound back onto the spool yielding



complementary images formed from the imaging material on the donor and receiver layers.

3,642,364

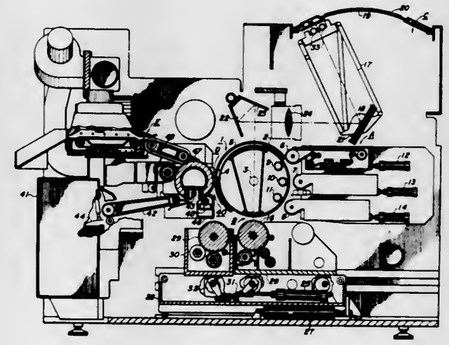
TRANSFER APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,929

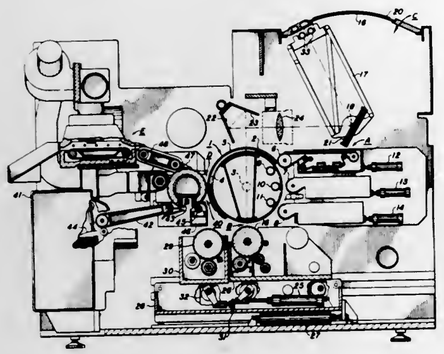
Int. Cl. G03g *15/00, 15/10*

U.S. Cl. 355—3 **17 Claims**



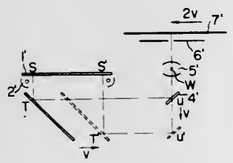
A mechanism for carrying sheets of support material past a wetting station and an electrophoretic image transfer station using grippers and lifter fingers to engage and disengage the sheet. The mechanism includes a roller capable of holding an electrical potential and a brush to contact and clean contaminating material from the roller. The entire mechanism can be moved into and out of contact with the member from which images will be electrophoretically transferred. Optionally, the image-bearing support material passes a fixer to heat the image for drying it and bonding it to the support material.

3,642,365
AUTOMATED IMAGING MACHINE
Raymond K. Egnaczak, Williamson, and Gino F. Squassoni, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,976
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 20 Claims



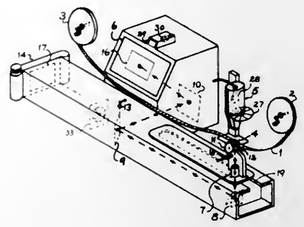
A machine for automatically producing images from photoelectrophoretic suspensions using a transparent conductive cylindrical electrode section which interacts with an imaging electrode in the presence of an electric field and electromagnetic radiation in image configuration. The image on the transparent cylindrical electrode interfaces with a transfer member which, under the influence of an electric field, transfers the image particles from the transparent electrode to a support material. The transparent electrode is cleaned under the influence of flood illumination readying it for repetitive cycles.

3,642,366
COPYING MACHINE
Kazuo Kawakubo, Kawasaki-shi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1969, Ser. No. 886,989
Claims priority, application Japan, Dec. 28, 1968, 43/96021
Int. Cl. G03b *27/70*
U.S. Cl. 355—8 12 Claims



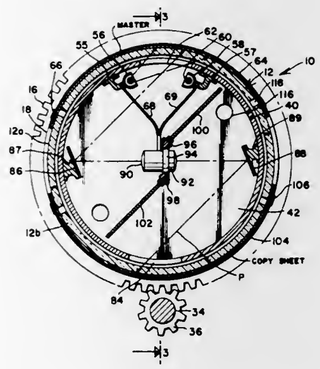
A copying machine having a slit for exposure of an original to be copied, a fixed copy stand on which the original is placed, and a pair of movable mirrors for scanning said original. The two mirrors are moved perpendicular to each other with the same speed so that the machine becomes compact in size and light in weight and the driving means is also simple.

3,642,367
MOVIE VIEWING AND STILL COPY CAMERA
John Denis Ruff, 206 Birch Street, Alexandria, Va.
Filed Dec. 19, 1969, Ser. No. 886,438
Int. Cl. G03b *27/70*
U.S. Cl. 355—45 2 Claims



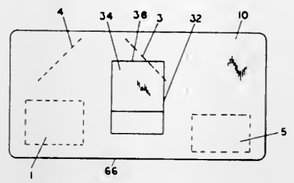
A movie-viewing machine with the added feature of being able to expose an enlarged still copy of all, or part of a movie frame, and with a variable degree of enlargement so that the area being copied can be framed suitably on a standard frame of photosensitive material, thus giving a properly framed copy without further enlargement and cropping.

3,642,368
CYLINDRICAL EXPOSURE DEVICE FOR TRANSFERRING AN IMAGE OF A MASTER SHEET TO A COPY MEMBER
Mortimer Moss, 133-01 Booth Memorial Ave., Flushing, N.Y.
Filed Sept. 24, 1970, Ser. No. 74,971
Int. Cl. G03b *27/58*
U.S. Cl. 355—47 10 Claims



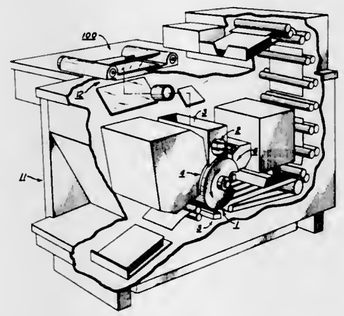
A device for optically transferring a graphic image from a master sheet to a copy member includes a transparent cylindrical drum. An opaque cylinder is rotatably mounted inside the drum and has diametrically opposed slots at ends of an optical path including mirrors and a lens system inside the cylinder. A slight shielding partition separates ends of the optical path. Lamps in the cylinder at one slot illuminate the master sheet on the drum. Suction can be applied to the master sheet and copy member to hold it on the drum. A blower can ventilate the cylinder. The blower and lamps are energized via sliprings and brushes in bearing sleeves at one end of the drum and cylinder.

3,642,369
DOCUMENT RECORDING APPARATUS
Charles Don Wells, 136 West Stafford Road, Worthington, Ohio
Filed Feb. 19, 1969, Ser. No. 800,915
Int. Cl. G03b *27/70*
U.S. Cl. 355—64 11 Claims



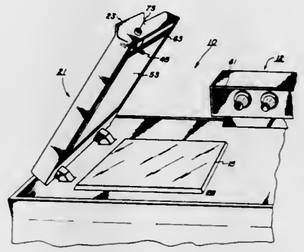
An apparatus is disclosed for permitting a seated operator to microfilm documents. A structure similar to an office desk has a central aperture in its top in which a transparent exposure plate is mounted and beneath which lighting tubes are mounted. A microfilm camera is mounted in an upper drawer to one side of the knee hole. Mirrors are provided to reflect the image rays toward the rear of the structure, then beside the knee hole, and ultimately to the camera. A hinged removable panel is mounted in the aperture flush with the top surface of the structure. When the panel is removed, the exposure plate moves upwardly to a flush position for receipt of the documents to be recorded.

3,642,370
DOCUMENT PRESENTATION DEVICE
William Henry Palmer Meredith, 25 Higher Green, Ewell, England, and Andre Vandeput, 151, Avenue Latinis, Brussels 3, Belgium
Filed June 26, 1968, Ser. No. 740,142
Claims priority, application Great Britain, June 30, 1967, 30,213/67
Int. Cl. G03b *27/62*
U.S. Cl. 355—75 6 Claims



Apparatus for forming composite images on a copy sheet for use with a document-copying machine having a light-emitting aperture over which a data-bearing overlay is automatically placed, the document presentation device comprising a transparent support for an original document and a web of graphic information containing overlays one of which is to be copied with the original document to form a composite image of the overlay and the original document. A portion of the overlay web is supported between the aperture of the copying machine and the original document for forming the composite image and is automatically programmed for moving the selected portion of the overlay into superposed position with the face of the original document.

3,642,371
PLATEN COVER FOR COPYING MACHINE
Hugh L. Jones, Rochester, and George E. Marshall, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed June 29, 1970, Ser. No. 50,488
Int. Cl. G03b *27/04*
U.S. Cl. 355—128 6 Claims

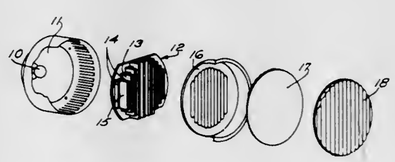


A platen cover for a copying machine in which a top housing is formed by contiguous walls with an opened bottom overlying a platen glass on which document material to be reproduced is placed. A diaphragm assembly under tension is secured to the bottom of the top housing to ensure lighttight covering of the platen glass to prevent radiation from emanating beyond the cover.

ERRATA

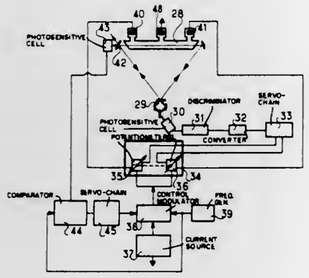
For Classes 355—128 and 355—88 see: Patent Nos. 3,642,376 and 3,642,377

3,642,372
WARNING LIGHT
John H. Rittenhouse, 20 Wildflower Road, Barrington, R.I.
Filed Dec. 17, 1969, Ser. No. 885,839
Int. Cl. B60g *1/26*; G01c *3/00*
U.S. Cl. 356—3 4 Claims



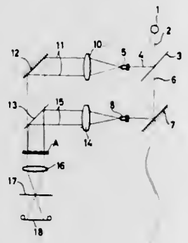
A distance indicating lens system mounted on the rear of a motor vehicle to give a visual warning to automobiles following behind. The visual signal being a projected light whose viewable color changes as the vehicle following approaches the advance vehicle.

3,642,373
RING-SHAPED LASER WITH MEANS FOR CANCELLING THE FIZEAU EFFECT
Jean-Michel Catherin, Savigny-sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed May 11, 1970, Ser. No. 36,327
Claims priority, application France, May 9, 1969, 6915091
Int. Cl. G01b 9/02; H01g 3/00
U.S. Cl. 356—106 LR 8 Claims



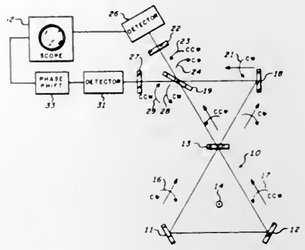
A device for cancelling the Fizeau effect in a ring-shaped laser. A mixing device mixes the two progressive waves of said ring-shaped laser, a detecting device coupled to the output of said mixing device detects the beat frequency of the two progressive waves and a control device coupled between the output of detecting device and the current inputs of the ring-shaped laser and responsive to the beat frequency causes the input current to the ring-shaped laser to create an effect therein equal to, in magnitude, and opposite to, in direction, to the Fizeau effect.

3,642,374
OPTICAL INSPECTING METHOD
Kazuya Matsumoto, and Takashi Susuki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Shimomaruko, Ota-ku, Tokyo, Japan
Filed Mar. 26, 1970, Ser. No. 22,776
Claims priority, application Japan, Mar. 31, 1969, 44/24648
Int. Cl. G01b 9/02; G02b 1/05
U.S. Cl. 356—107 11 Claims



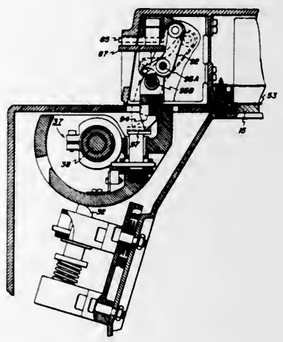
An optical inspecting method described in the illuminating wave and a wave under inspection onto an artificially prepared a holographic test plate, and filtering waves coming through the plate to obtain desirable waves.

3,642,375
OPTICAL COMBINER
Warren M. Macek, Huntington Station, N.Y., assignor to Sperry Rand Corporation
Filed Oct. 2, 1969, Ser. No. 863,191
Int. Cl. G01n 21/40
U.S. Cl. 356—114 7 Claims



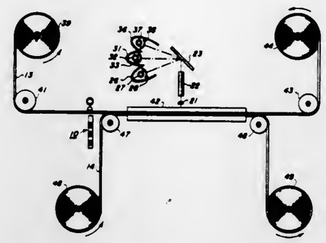
Apparatus for determining the magnitude and sense of the frequency difference between two identically sensed circularly polarized light beams comprising a beam splitter and respective pairs of analyzers and photodetectors. The light beams impinge on the beam splitter such that the transmitted component of one beam and the reflected component of the other beam are directed through one analyzer onto a related photodetector while the reflected component of the one beam and the transmitted component of the other are directed through the other analyzer and its related photodetector, the transmission axes of the analyzers being angularly displaced relative to one another whereby electrical signals provided by the photodetectors are proportionately phase-shifted relative to one another.

3,642,376
REMOVABLE PLATEN COVER
Ivar N. Halvorsen, Rochester, and George E. Marshall, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed June 29, 1970, Ser. No. 50,496
Int. Cl. G03b 27/04
U.S. Cl. 355—128 4 Claims



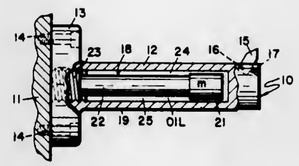
A removable platen cover for a copying machine in which a top housing overlying a platen glass is releasable from the machine frame by a machine operator. Hook members extending from said housing are received in the machine frame and adapted for release independently or together to provide a hinged-cover arrangement or complete removal of the cover from the machine frame.

3,642,377
COLOR PRINTING SYSTEM
James E. Young, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 2, 1969, Ser. No. 789,090
Int. Cl. G03b 27/04
U.S. Cl. 355—88 9 Claims



An exposure control system having application in a color contact printer wherein the master film is sampled on a line at a time basis by a detecting head. The detecting head may comprise a continuous light source, a cylindrical lens, a light pipe and a plurality of photodetectors. Each photodetector furnishes an output representing the sensed light which has been modulated in color and intensity as the result of its passage through the master film. This detected or sensed light is thereafter applied to an analog computer for processing. The computer furnishes control data to a plurality of phosphor-excited printing light sources which are modulated in color and intensity thereby. Concurrently, the printing light sources expose duplicating material or film while in contact with the master film.

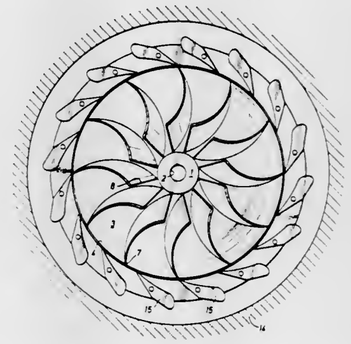
3,642,378
BORING BAR
Robert S. Hahn, Northboro, and Arthur F. St. Andre, Shrewsbury, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed Nov. 3, 1969, Ser. No. 873,380
Int. Cl. B23b 29/03
U.S. Cl. 408—143 5 Claims



This invention relates to a boring bar and, more particularly, to apparatus for the generation of an internal surface of revolution, which apparatus contains a weight located at the end of a rod extending through a recess extending the length of the apparatus and filled with a viscous fluid.

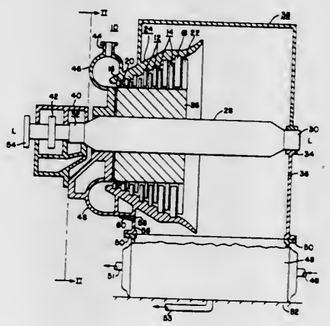
3,642,379
ROTARY GAS-HANDLING MACHINE AND ROTOR THEREFOR FREE OF VIBRATION WAVES IN OPERATION
Judson S. Swearingen, 500 Bel Air Road, Los Angeles, Calif.
Filed June 27, 1969, Ser. No. 837,178
Int. Cl. F04b 39/00; F04d 29/00
U.S. Cl. 415—119 9 Claims

A rotary gas-handling machine and rotor therefor in which the number of puffs of gas affecting the rotor so as to tend to excite vibrations therein on each revolution will be such that for the designed speed of operation of the rotor the resulting frequency of excitation puffs will be different from each of the resonant frequencies of the rotor, such as the resonant frequency for "saddle" vibration, blade vibration, rotational and outer edge vibration of the shroud, etc. The excitation frequency is also made to differ from one-half of each of the resonant frequencies. In the case of such a machine in the form of a turbine the number of excitation puffs per revolution is determined by the number of circumferentially spaced nozzles carried by the housing to direct the gas against the rotor, while in the case of a compressor rotor the number of excitation puffs per revolution is determined by the number



of blades. The blades and the shroud are preferably made thicker adjacent their inner extremities both to deter vibration by inherent stiffness of such thicker members and to change their natural frequencies by the mass of the thickened members. The same sort of structure makes the shroud more resistant to vibration by stiffening an important component of the "spring" of the resonant mode while strengthening it against shear. Another expedient is to cause the blades to protrude from the wheel outwardly past the plane of the eye of the shroud and be joined to the hub out beyond such plane so as to provide bracing for both the shroud and the disk of the rotor against axial vibration.

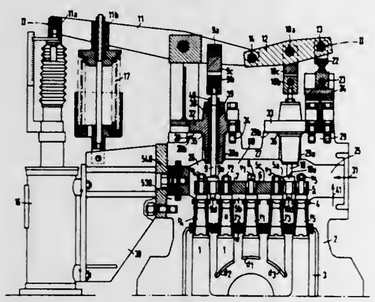
3,642,380
TURBINE SUPPORT STRUCTURE
Paul D. Saunders, Mountain View, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1970, Ser. No. 26,232
Int. Cl. F01d 25/26
U.S. Cl. 415—136 7 Claims



In a turbine of the type in which the cylinder or stator casing is supported by a vertical wall, vertical motion at the rotor centerline, due to thermal expansion, is caused mainly

by expansion of the stator casing. If the casing is effectively fixed at the bottom, as in prior structures, the thermal expansion of the casing adds to the expansion of the rest of the supporting structure. The disclosed support structure introduces flexibility into the supporting wall along the lower portion of the casing, thereby causing the expansion of the casing to be subtracted from the expansion of the rest of the supporting structure.

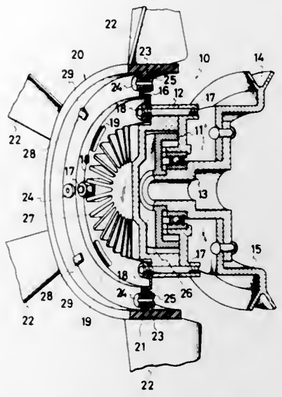
3,642,381
TURBINE, ESPECIALLY STEAM TURBINE, WITH NOZZLE GROUP CONTROL AND FLOW ADMISSION CREST
Rudolf Wickl, Hamminkeln, Blumenkamp, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 25, 1970, Ser. No. 22,629
Claims priority, application Germany, Mar. 26, 1969, P 19 15 267.1
Int. Cl. F01b *25/02*
U.S. Cl. 415—151 **10 Claims**



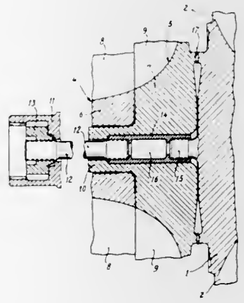
Turbine, having a plurality of nozzles, including means for supplying working fluid to the nozzles in common through a tubular inlet chest, means for controlling groups of the nozzles comprising control valves respectively coordinated with the individual nozzle groups, a traverse insertable in the tubular inlet chest in longitudinal direction thereof, through openings formed in the ends thereof, the control valves comprising valve tappets carried by the traverse, the tubular inlet chest having shaped tubular portions provided thereon, the shaped portions being formed with respective bores, control spindles vaportightly extending through the bores formed in the shaped portions and coupled with the traverse, the spindles being displaceable by a drive mechanism for actuating the traverse to selectively control closing and opening sequences of the valves.

3,642,382
FAN ASSEMBLY
Masaharu Hayashi, Ichinomiya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan
Filed May 5, 1970, Ser. No. 34,678
Claims priority, application Japan, May 11, 1969, 44/42739
Int. Cl. F04d *29/34*
U.S. Cl. 416—169 **6 Claims**

A fan assembly all made from a plastics material and combined to a fluid drive coupling for use in automobiles wherein a fitting member made from a metal material is provided between the drive coupling assembly and the fan thereby obstructing the heat flow from the coupling to the assembly.

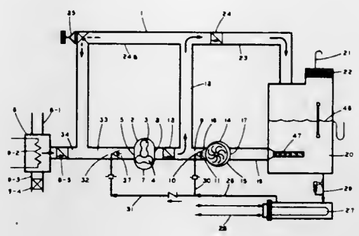


3,642,383
ARRANGEMENT FOR HOLDING TOGETHER A TURBINE ROTOR AND OTHER ALIGNED MEMBERS OF A GAS TURBINE
Tore Anton Andvig, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway
Filed Nov. 25, 1969, Ser. No. 879,817
Claims priority, application Norway, Nov. 25, 1968, 4691/68
Int. Cl. F01d *5/04, 5/06*
U.S. Cl. 416—183 **3 Claims**



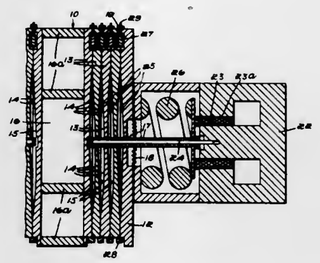
The invention comprises an improved design of a radial gas turbine assembly that is held together by a bolt secured to the turbine rotor and extending through a bore in members aligned with the rotor, the bolt having no centering contact with the walls of the bore, at least in the portion adjacent the turbine rotor. The connection between the bolt and the turbine rotor comprises a hollow sleeve of a heat resistant material that is a relatively poor conductor of heat, said sleeve having a clearance with respect to the bore in the order of 0.05 mm. The sleeve is connected to the bolt and to a pin protruding from the turbine rotor in such a way that the ends of the pin and the bolt respectively are kept a substantial distance apart.

3,642,384
MULTISTAGE VACUUM PUMPING SYSTEM
Henry Huse, 135 South Porter Ave., Waukesha, Wis.
Filed Nov. 19, 1969, Ser. No. 877,906
Int. Cl. F04b *23/08, 23/00*
U.S. Cl. 417—205 **13 Claims**



A self-regulating vacuum pumping system comprising a first stage positive displacement pump arranged in series with a second stage liquid ring pump. The high volumetric efficiency of the positive displacement pump is substantially improved by the combination compression, cooling and condensing action of the liquid ring pump.

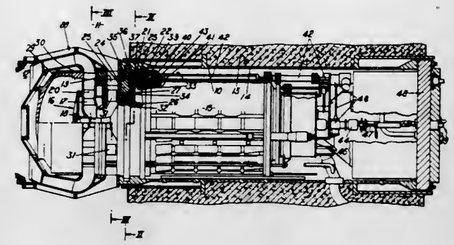
3,642,385
FLUID PUMP APPARATUS
Eugene A. McMahon, Judy Farm Road, Carlisle, Mass.
Filed Mar. 10, 1969, Ser. No. 805,579
Int. Cl. F04b *43/00*
U.S. Cl. 417—411 **25 Claims**



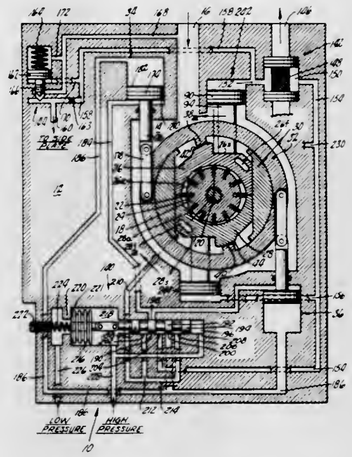
A fluid pump utilizing a transducer excited elastic membrane. Resonant wave motion generated in the membrane serves as the fluid-pumping mechanism. Energy not used to produce fluid movement is extracted from the membrane by an output transducer and returned to the input transducer thereby creating unidirectional wave motion and insuring efficient operation.

3,642,386
COOLING-GAS CIRCULATORS FOR NUCLEAR-REACTOR POWER STATIONS
Walter John Cairns, Bearsden, Glasgow, and Ian Norman MacDonald, Largs, both of Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland
Filed Oct. 9, 1968, Ser. No. 766,057
Claims priority, application Great Britain, Oct. 12, 1967, 46,803/67
Int. Cl. F04d *25/06, 27/00*
U.S. Cl. 417—423 **2 Claims**

A circulator for pressurized gas in the cooling circuit of a nuclear-reactor power station is of a kind having an electric motor mounted in a wall-mounted pressure vessel, and a motor-driven blower in the gas space at the inner end of the vessel and including guide vanes pivotally mounted in a gas passage of the impeller casing and adjustable to vary gas flow through the cooling circuit. Vane-adjusting gearing is afforded protection from the gas in the gas space by disposing said gas passage adjacent to the inner end of the vessel and mounting the gearing to extend within the vessel and through the vessel's inner end.



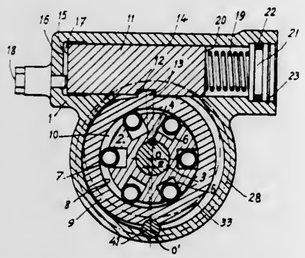
3,642,387
CAM-ACTUATION SYSTEM FOR VARIABLE DISPLACEMENT VANE PUMP
Jack G. Sundberg, Meriden, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Apr. 14, 1970, Ser. No. 28,392
Int. Cl. F01c *21/16*; **F03c** *3/00*; **F04c** *15/04*
U.S. Cl. 418—16 **3 Claims**



A variable displacement vane pump has a plurality of vanes slidably fitted in slots formed substantially radially in a rotor. Two identical track elements are movably arranged around the rotor to provide a track for the vanes. The positions of the track elements determines the displacement of the pump. Each track element includes a radial inlet passage and a radial outlet passage. The inlet passage of one of the track elements is diametrically opposed from the inlet passage of the other of the track elements and the outlet passage of one of the track elements is diametrically opposed from the outlet passage of the other of the track elements in order to pressure balance the rotor. The track elements are slidably mounted within a frame around which is rotatably disposed a cam actuation ring. Cam follower members are

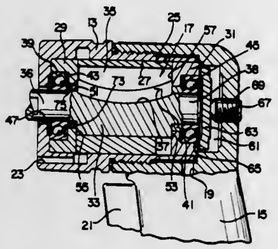
provided on the cam ring to contact respective cam surfaces on the track elements and control the position of the track elements with respect to the rotor. The cam ring is rotated about the frame by means of pistons.

3,642,388
VARIABLE-CAPACITY VANE PUMPS
Roger Maistrelli, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Emile Zola, Billancourt and Automobiles Peugeot, Paris, France
Filed Mar. 30, 1970, Ser. No. 23,780
Claims priority, application France, Apr. 9, 1969, 6910967
Int. Cl. F01c *21/16, 19/08;* **F04c** *27/00*
U.S. Cl. 418—30 **1 Claim**



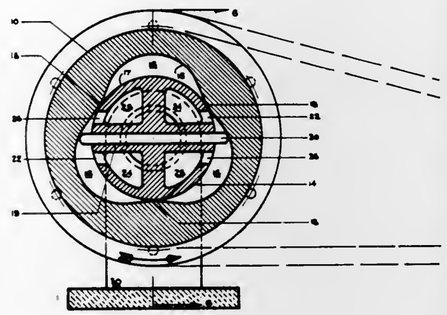
Variable-capacity pump wherein the movable radial vanes engage the inner surface of a ring receiving the pressure exerted by a sealing member coacting with the pump casing and with the cover to form a chamber communicating through an orifice with the high-pressure side of the pump, the active surface of this chamber corresponding to a valve whereat the force resulting from the pressure exerted on said surface is substantially equal to but higher than the sum of the efforts due to the fluid which tend to separate said sealing member from said ring.

3,642,389
AIR MOTOR ROTOR ASSEMBLY
William W. Chambers, Baltimore, and David J. Heston, Glen Arm, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Oct. 1, 1969, Ser. No. 862,901
Int. Cl. F01c *19/00*
U.S. Cl. 418—107 **9 Claims**



A portable pneumatic tool including a rigid housing and pendant handle. A rotary vane-type motor including a rotor is disposed within the housing and is powered by compressed air delivered through the handle. A trigger on the handle controls the flow of air to the motor and an output spindle, driven by the motor, is adapted to have rotary tool means secured thereto, an external member is used to adjust rotor clearance within the motor.

3,642,390
VANE-TYPE ROTARY FLUID-DISPLACING MACHINE
Bernhard Nils Ostberg, Temple St., Heyfield, Victoria, Australia
Filed Sept. 8, 1969, Ser. No. 855,996
Claims priority, application Australia, Sept. 12, 1968, 43,288/68; Nov. 8, 1968, 46,002/68
Int. Cl. F04f *3/00, 5/16, 5/00*
U.S. Cl. 418—133 **12 Claims**



A fluid-displacing machine has a rotor member and a stator member relatively rotatable about a common axis. One of the members has an internal peripheral profile that is sinuous, opposed to which the other of the members has a peripheral profile that is circular. The contour of the sinuous profile generates an odd number of evenly spaced chambers interposed by cam surfaces and is developed so that the diametral distance between its opposite profile surfaces is constant. At least one diametrally disposed vane is slidably mounted in the circular member and adapted to continuously contact and sweep the sinuous profile surface of the other member, there being inlet and discharge passages leading into and out of each chamber respectively whereby upon relative rotation of the members pumping and/or compressing action is promoted.

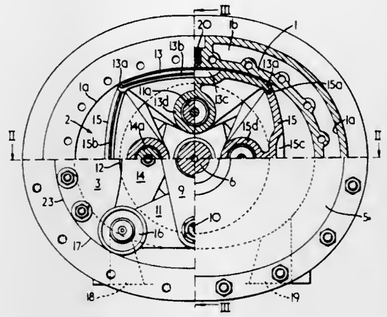
Subordinately, novel sealing means between the vane and the sinuous profile, and pressure-assisted sealing and automatic wear takeup means for the relatively moving lateral surfaces of the machine, are provided.

Disclosed also is a mathematical formula for developing the contour of the sinuous profile.

3,642,391
ROTARY ENGINES
Gordon Shirley Wilson, Coventry, England, assignor to Corporation of The City of Coventry, Coventry, England
Filed Dec. 16, 1969, Ser. No. 885,481
Claims priority, application Great Britain, Dec. 18, 1968, 60,249/68
Int. Cl. F01c *1/00, 19/00;* **F04c** *15/00*
U.S. Cl. 418—145 **9 Claims**

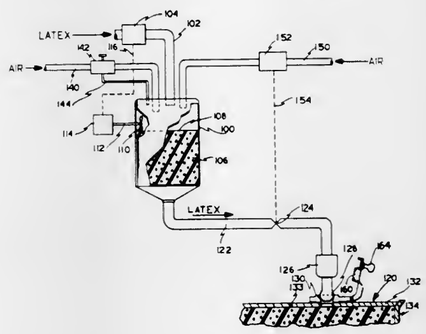
A rotary engine such as an internal combustion engine or pump or compressor is disclosed in which pistons pivotally interlinked with crank members of the engine shaft are arranged to follow with oscillatory movement a path of approximately elliptical form in leading and trailing transverse sealing contact with an inner peripheral wall of the engine chamber of corresponding profile wherein the pistons are externally interconnected through openings in sidewall members of the engine chamber with follower members such as rollers cooperating with cam track means outside the engine

chamber, the formation of the cam track means being of corresponding approximate elliptical form to that of the inner peripheral wall of the engine chamber whereby the pistons



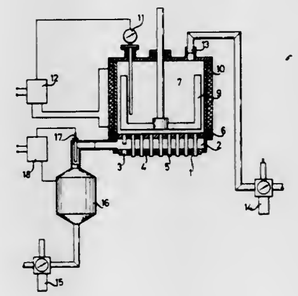
are supported during their travelling and oscillatory movement in the engine chamber especially for the purpose of minimizing piston seal wear.

3,642,392
MOLDING SYSTEM
Lawrence P. Vanderhagen, Mishawaka, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Filed Mar. 18, 1969, Ser. No. 808,101
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 **1 Claim**



Low-density foam objects are made from a material so highly frothed that it is difficult to pour into a mold. It is therefore delivered to the mold under pressure by means of system having a holding tank with appropriate foam inlet and outlet means, a mechanism for maintaining constant pressure in the tank, a mechanism for preventing overfilling of the tank, and a control which allows air to enter the tank to replace the foam material displaced during filling of the mold. The foam delivery hose has a special nozzle which rapidly couples to and decouples from the mold filling port. The mold has special provision for preventing leakage of foam between the mold cavity and its top plate.

3,642,393
APPARATUS FOR THE MANUFACTURE OF GRANULES
Gerhard Ross, Niederhofheim Taunus; Bernhard Reul, Schneidhain Taunus; Walter Tillmann, Frankfurt am Main, and Reinhardt Liebenhoff, Kelkheim Taunus, all of Germany, **assignors to Farbwerke Hoechst Aktiengesellschaft** vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Apr. 9, 1970, Ser. No. 28,658
Claims priority, application Germany, Apr. 12, 1969, P 19 18 685.7
Int. Cl. B29c *23/00*
U.S. Cl. 425—6 **3 Claims**

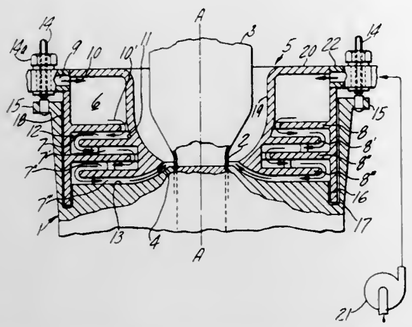


An apparatus has been provided for the manufacture of bead-shaped granules from melts. It comprises a melt-containing vessel with a distributing bottom and a heating chamber for heating the distributing bottom, wherein the outlet apertures of the heating chamber have the shape of annular gaps which are formed by borings in the external wall of the heating chamber and by small tubes inserted into the distributing bottom and protruding through the bottom of the heating chamber.

3,642,394
GAS EJECTING DEVICE FOR COOLING EXTRUDED TUBING
Walter Gell, Remscheid-Lennep, Germany, assignor to Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany
Filed Dec. 2, 1969, Ser. No. 881,538
Claims priority, application Germany, Dec. 2, 1968, P 18 12 078.0
Int. Cl. B29d *23/04*
U.S. Cl. 425—72 **9 Claims**

A device for applying cooling gas in an annular stream to the exterior of a tubing of plastic material as it issues from an extruding machine. The device normally will be of annular configuration and, as usually arranged, is attached to the machine in concentric exterior relation with the extrusion nozzle or die of the machine. The apparatus is interiorly baffled in an essentially radial direction with respect to move-

ment of the tubing to provide uniformity in the temperature, density, and velocity of the gaseous stream as it issues from the device.

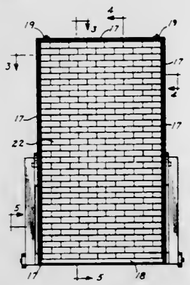


3,642,395

PREFORMED WALL SECTION MOLDING APPARATUS

Edward J. Dreher, 5841 East 67th Ave., Commerce City, Colo.

Filed Jan. 26, 1970, Ser. No. 5,774
Int. Cl. B28b *7/08*
U.S. Cl. 425—109 **4 Claims**



Molding apparatus for producing preformed brick wall sections including a tiltable flat table structure including a horizontal position for molding brick wall sections thereon and a vertical position for selectively depositing erect brick wall sections at selected locations. Detachable stay means are mounted on the table structure for maintaining the shape of the molded wall sections during erection and curing. Elongated strips are laterally positioned on the table structure for spacing the bricks and forming a mortar joint. A plastic sheet may be laid on the table to provide parting of the panel from the table. Wheels are provided for mobility, and power means are disclosed in one embodiment of the apparatus for tilting the table structure from one position to another.

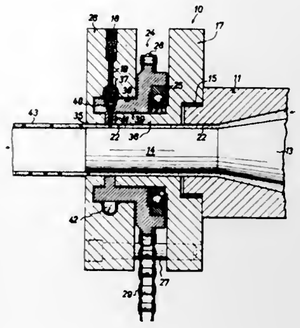
3,642,396

EXTRUSION HEAD FOR CONTINUOUSLY EXTRUDING A COMPOUND STRAND OF PLASTIC MATERIALS

Petros G. Meneidis, Aharnae, Greece, assignor to Lavreotiki Societe Industrielle Anonyme, Athens, Greece

Filed Feb. 4, 1969, Ser. No. 796,509
Claims priority, application Greece, Feb. 14, 1968, 34082/68; Aug. 21, 1968, 35413/68
Int. Cl. B29f *3/01, 3/12*; **B32b** *31/30*
U.S. Cl. 425—109 **4 Claims**

Apparatus for manufacturing a strongly integrated compound strand formed by pressing together at least two different plastic materials. A first extruded plastic strand is pressed through a hollow cylindrical die and a second extruded plastic strand is pressed through a generally radial passageway into an annular portion. A rotary part rotated about the axis of the cylindrical die includes a portion of the passageway for helically winding the second plastic strand into the first plastic strand.

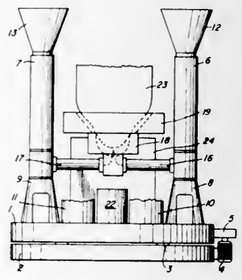


3,642,397

EXTRUSION MACHINES AND DIES FOR PRODUCING MULTILAYER TUBES OR FILMS

Heinz Schippers; Walter Geil; Gerd Albrecht, all of Remscheid-Lennep, and Reinhold Jung, Wermelskirchen, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Feb. 28, 1969, Ser. No. 803,207
Claims priority, application Germany, Nov. 14, 1968, P 18 08 883.0; Aug. 8, 1968, P 17 79 410.4
Int. Cl. B29d *23/04*
U.S. Cl. 425—109 **8 Claims**



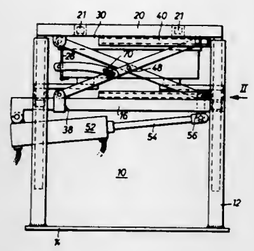
Apparatus for producing tubular films, especially multilayer blown films, of two or more layers of the same or different plastics material, said apparatus embodying two or more screw extruders mounted on a turntable and die with at least two concentric, juxtaposed annular nozzles substantially coaxial with the axis of rotation of the turntable. Also, improved extrusion dies for production of multilayer tubes or films wherein the feed lines or passages for the plastic composition to be extruded terminate at points situated one behind the other in the axial center portion of the die. The plastic composition is fed through a plurality of radially connecting lines from said points to annular passages and ultimately to annular nozzle means in the die.

3,642,398

MOLDING APPARATUS

Edgar Von Rudgisch, 10 Chinkelstrasse, 5 Cologne 41, Germany

Filed June 17, 1970, Ser. No. 46,971
Claims priority, application Germany, June 19, 1969, P 19 30 983.2
Int. Cl. B29c *3/02*
U.S. Cl. 425—117 **28 Claims**



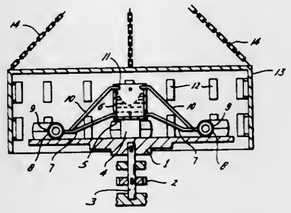
A mold, which can be advantageously used for foam molding articles, has a bottom box with a cover. Means, such as locating pins are provided for supporting profiled bars which remain in and reinforce the molded article, drive means being provided for moving the mold box cover between a first position in which the cover closes said mold box and a second position in which the mold box cover lies displaced from said mold box in a mold open position.

3,642,399

CENTRIFUGALLY CAST PIPE FITTINGS

Rudolf F. Barainsky, Bardenberg-Pley; Richard Kiefer, Bergisch-Gladbach; Hartmut Pankuweit, Liblar, and Alfred G. Esser, Eschweiler, all of Germany, assignors to Deutsche Fibercast GmbH, Aachen, Germany

Filed Oct. 9, 1969, Ser. No. 864,999
Int. Cl. B29c *5/04*
U.S. Cl. 425—117 **6 Claims**



An apparatus for centrifugally casting wherein a plurality of molds surround a resin tank on a centrifuge table. Feed lines communicate between each mold and the lower portion of the tank. Vent lines communicate between each mold and the upper part of the tank.

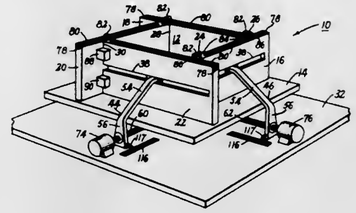
3,642,400

APPARATUS FOR ENCAPSULATING AN ARTICLE WITHIN MOLDED POLYURETHANE

Theodore E. Theodorsen, Manhasset, N.Y., assignor to Kurt Salmon Associates, Inc., New York, N.Y.

Filed Nov. 6, 1969, Ser. No. 874,563
Int. Cl. B29c *3/04*
U.S. Cl. 425—129 **9 Claims**

An apparatus for encapsulating an article within a plastic foam material, such as polyurethane, wherein the article to be packaged is placed within a mold cavity of an adjustable mold, the walls of the mold are adjusted according to the size of the article and a liquid polymeric-isocyanate mix is injected into the mold cavity and allowed to react to form an insoluble, flexible, polyurethane foam which completely encapsulates the article. After the urethane has set, the mold walls are retracted and the encapsulated article is removed. The apparatus consists of a mold form having a baseplate and four upstanding movable sidewalls which define a mold cavity. Each upstanding wall is movable with respect to the other walls thereby to allow for a wide variation in the size of the mold cavity to accommodate wide variations in article size. In addition, a plurality of similar mold forms are provided to rotate on a carousel about a central, liquid polymeric-isocyanate distribution system so that after the liquid has been injected into a mold, the mold may be moved away and the polyurethane allowed to set while liquid is injected into the remaining molds. In this manner, a continuous production line operation may be maintained.

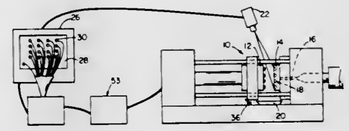


3,642,401

MOLDING MACHINE MONITORING SYSTEM

Warren Thomas Wilson, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed July 15, 1969, Ser. No. 841,885
Int. Cl. B29f *1/00*; **B30b** *15/28*
U.S. Cl. 425—137 **4 Claims**



A monitoring system for detecting molded material in molding machines with two platens, one of which has a plurality of die recesses and the other of which is removable from the first, has an array of photoelectric cells, each corresponding to a die recess, arranged to sense the condition of one of the recesses when the platens are separated and having different outputs corresponding to differences in conditions of the recesses, and has a switch arranged to prevent operation of the machine if the cells indicate the presence of molded material in any of the die recesses when the platens are separated. A television camera transmits an image of the recesses to a television receiver and the sensors are mounted on the screen of the receiver.

3,642,402

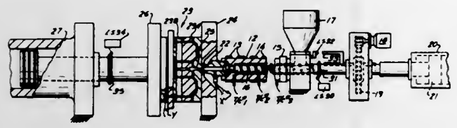
INJECTION MOLDING PROCESS CONTROL

Herman R. Hutchinson, Wyncote; Vasken F. Arpajian, Huntingdon Valley, and Robert S. Malcomson, Lansdale, all of Pa., assignors to Pennwalt Corporation

Filed Mar. 10, 1970, Ser. No. 18,142
Int. Cl. B29f *1/06*
U.S. Cl. 425—144 **21 Claims**

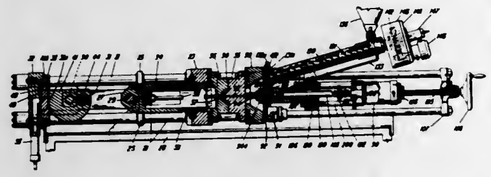
Process control for an injection molding machine measures the viscosity characteristics of the plasticized material by

monitoring pressure in the melt stream being injected at a predetermined position of the forward stroke of the ram during flow of the material into the mold. If the pressure-viscosity exceeds or falls below the previously determined band



limits set, the heat input to subsequent shots being prepared is respectively raised or lowered by (1) increasing or decreasing barrel temperature, (2) increasing or decreasing speed of screw rotation, or (3) increasing or decreasing back pressure on the screw during rotation thereof.

3,642,403
INJECTION MOLDING MACHINE
Jaroslav J. Havlik, P.O. Box 430, Preston, Ontario, Canada
Continuation-in-part of application Ser. No. 672,232, Oct. 2, 1967, now abandoned. This application June 2, 1969, Ser. No. 839,765
Int. Cl. B29f *1/06*
U.S. Cl. 425—145 **13 Claims**



An injection molding machine which uses hydraulic pressure fluid for

a. opening and closing the platens which carry the mold cavity,

b. continuously driving the plasticizer screw which incorporates an automatic cutoff,

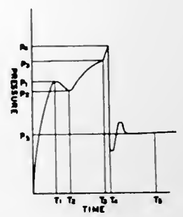
c. actuating the iniection plunger.

The platens are opened and closed without pressure by means of a high-speed low-volume hydraulic actuator. The high pressure required for mold clamping is applied hydraulically after the platens close and the pressure is released before the platens open. The mold opening and closing is accomplished at high speeds, so that cycle speeds are largely dependent on the solidification time of the injected material. Thin-walled plastic cups for example, may be produced at a rate of about 30 per minute with single-cavity mold. The cycle may be initiated either manually, or automatically with a simple electrically operating timing system which actuates the hydraulic system.

The mold clamping pressure can be regulated and varied while the machine is operating. The injection nozzle can be adjusted through 360° relative to the sprue channel in the platens and this can be done with the machine in operation.

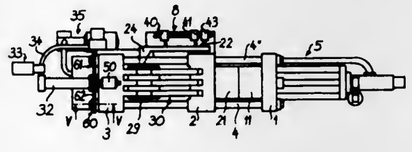
The measured amount of plasticized material which can be injected into the die at each stroke of the injection piston can be altered while the machine is running. This makes it possible to quickly calibrate the machine to the requirements of each article being molded.

3,642,404
INJECTION-MOLDING MACHINE
Keizo Nagawa, Nagoya-shi, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho, Nagoya, Japan
Filed Nov. 14, 1969, Ser. No. 876,858
Claims priority, application Japan, Nov. 21, 1968, 43/86012
Int. Cl. B29c *3/06*
U.S. Cl. 425—145 **13 Claims**



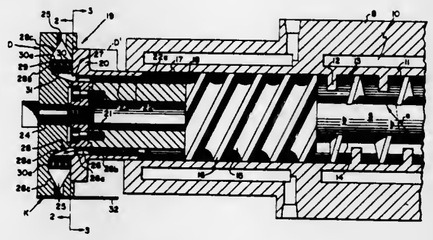
An injection molding machine provided with a sensing device for sensing the instant mold becomes filled completely with a molten material. Such time of mold filling is sensed either through a sudden or steep increase in the oil pressure of a hydraulic cylinder which receives a ram connected to a screw plunger for forcing a molten plasticized material into the mold cavity or through a sudden increase in the pressure of the molten material in the vicinity of the injection gate. Such increase in oil pressure or melt pressure is sensed in the form of a time derivative or of a rate of change of injection or oil pressure with respect to time, viz, a differential dP/dT in which P stands for injection pressure or back oil pressure and T stands for the time of injection; the derivative is converted into a signal, which acts for triggering certain operating members of the machine for operating in response to the time of mold filling.

3,642,405
APPARATUS FOR CONTROLLING OPERATION OF A PRESS
Ulrich Eggenberger, Oberuzwil, and Josef Zehnder, Niederuzwil, both of Switzerland, assignors to Gebruder Buhler AG, St. Gall, Switzerland
Filed May 5, 1969, Ser. No. 821,822
Claims priority, application Switzerland, May 9, 1968, 6956/68
Int. Cl. B29f *1/00, 1/06*
U.S. Cl. 425—149 **20 Claims**



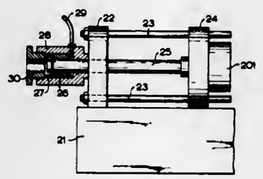
In a press, of the type including at least two mold parts arranged to be closed, to define a mold cavity, and opened relative to each other, relatively movable carrier plates each mounting a mold part, a toggle mechanism operable by a driving motor to displace one carrier plate relative to a stationary carrier plate, a joint plate engaged with the toggle mechanism, beams extending between the stationary carrier plate and the joint plate, and laterally of the one carrier plate, the beams constituting tension members interconnecting the stationary carrier plate and the joint plate, and a shifting mechanism for adjusting the effective length of the beams between the stationary carrier plate and the joint plate, a method of operating the press comprises predetermining the range of values of the power required by the driving motor to close the mold parts and, responsive to the power required by the driving motor, during a preselected range of the closing movement of the mold parts, deviating from the predetermined value range, operating the shifting mechanism to adjust the effective length of the beams in a direction to restore the required power to the predetermined value range. A dynamometer is included in the apparatus to measure the required power, and may be in the form of a pressure responsive switch means. The shifting mechanism includes adjusting means interposed between a common driving means and plural nuts threaded on the beam and driven by the common driving means.

3,642,406
MIXING, EXTRUDING, AND SEVERING APPARATUS
Henry F. Irving, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Continuation-in-part of application Ser. No. 688,398, Dec. 6, 1967, now Patent No. 3,564,650, dated Feb. 23, 1971, which is a continuation-in-part of application Ser. No. 461,840, June 7, 1965, now Patent No. 3,362,044, dated Jan. 9, 1968. This application Jan. 7, 1971, Ser. No. 104,666
Int. Cl. B29f *3/04*
U.S. Cl. 425—198 **9 Claims**



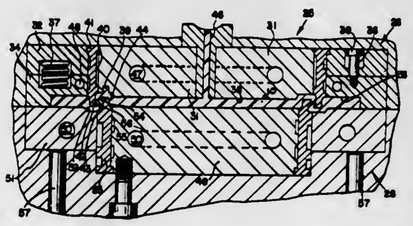
A mixer and extruder of the type employing a reciprocating and revolving material advancing shaft in a mixing chamber has a die mounted on its front end for reciprocation and rotation with the shaft, there being generally radially extending extrusion ports provided in the die and a cutter for severing the material extruded in strands radially from the die.

3,642,407
MOVING MECHANISM FOR INJECTION MOLDING MACHINES OR THE LIKE
Alfred Fischbach, Am Scheffert, Ruenderoth, Germany
Original application Aug. 30, 1967, Ser. No. 664,566, now abandoned. Divided and this application May 1, 1970, Ser. No. 33,585
Int. Cl. B29f *1/00*
U.S. Cl. 425—242 **7 Claims**



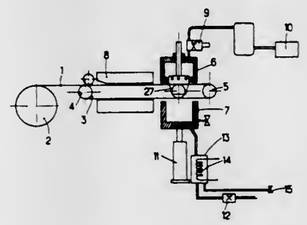
A moving mechanism for an injection molding machine comprising a main drive for moving the movable mold section into and away from sealing engagement with the stationary mold section and an auxiliary drive for initial disengagement of the movable mold section from the stationary section against the opposition of the molded article in the mold cavity. The auxiliary drive is arranged to operate between a stationary support member and a platen carrying the movable mold section. The main drive and the auxiliary drive are both connected to the movable mold section and by effecting initial opening of the mold by the auxiliary drive, the main drive, which has to carry out a longer stroke than the auxiliary drive, can be constructed relatively weak.

3,642,408
APPARATUS FOR MAKING PLASTIC CLOSURE HAVING WEAKENING LINE
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,710
Int. Cl. B29c *1/00*
U.S. Cl. 425—242 **3 Claims**



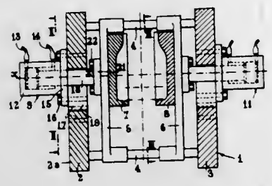
A plastic closure having a weakening line along which the closure is separable. The closure is formed in a mold which includes means for forming the weakening line of a predetermined thickness. The weakening line is initially molded to a thickness in excess of a predetermined thickness. The predetermined thickness of the weakening line is achieved by removal of the excess thickness during opening of the mold.

3,642,409
APPARATUS FOR MAKING MOLDED OBJECTS
Jacques Palencher, Troyes, France, assignor to Labocey Industrie, Troyes, France
Filed Aug. 20, 1969, Ser. No. 851,546
Claims priority, application France, Oct. 29, 1968, 171709
Int. Cl. B29c *3/00, 17/03*
U.S. Cl. 425—305 **4 Claims**



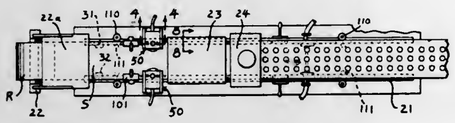
The invention relates to a process and device for making eventually expanded objects of synthetic material in which the material for molding is kept at a temperature for facilitating molding and accentuating the increase of volume of the synthetic material when it is expanded.

3,642,410
MACHINE FOR MOULDING HOLLOW PLASTIC ARTICLES BY BLOWING
Jacques Bourgeois, Lyon, France, assignor to Lesieur-Cotelle, Societe Anonyme, Seine, France
Filed Mar. 17, 1969, Ser. No. 807,596
Claims priority, application France, Mar. 18, 1968, 144213
Int. Cl. B29d 23/03
U.S. Cl. 425—326 1 Claim



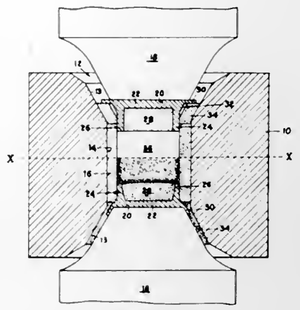
Machine for moulding plastic hollow articles by blowing, which comprises a movable support on which at least one mould consisting of two sections is mounted, at least one of said mould sections being detachably mounted on a mould carrier tray slidably mounted on said movable support and adapted to cooperate with the other mould section fixedly or movably mounted on said support, each tray provided with a movable mould section being operatively connected to the piston rod of a fluid-actuated clamping cylinder mounted on said support so as to control the opening and closing of the two mould sections, characterized in that the position of each clamping cylinder on said movable support is adjustable transversely, that is to say in a direction parallel to the joint plane of the two mould halves in order to vary the axis of application of the thrust exerted by the clamping cylinder on the movable mould carrier as a function of the dimension and/or shape of the mould impression.

3,642,411
THERMOFORMING APPARATUS FOR MOVING SHEET MATERIAL
Mandel L. Desnick, St. Louis Park; Jesse A. Willcox, Excelsior, and Jay A. Christensen, Bloomington, all of Minn., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.
Filed May 26, 1970, Ser. No. 40,676
Int. Cl. B29c 17/03
U.S. Cl. 425—343 18 Claims



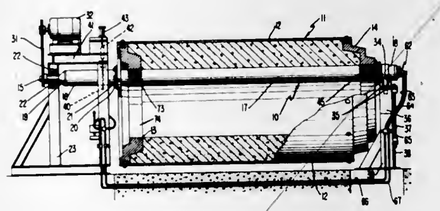
A method and apparatus for conveying a sheet of thermoplastic material at least through the heating zone of a thermoforming machine in which the sheet margins are attached to laterally spaced conveyors by pressing and permanently deforming portions of the sheet margins into longitudinally spaced openings in the conveyors, prior to advance of the sheet through the heating zone. A sheet forming press is operated in timed relation with the conveyors to press and permanently deform portions of the sheet margins into the openings in the conveyor.

3,642,412
HIGH-PRESSURE DEVICE
Noel C. Pope; Edward B. Kempis, and Kevin H. J. O'-Donovan, all of Johannesburg, Republic of South Africa, assignors to Adamant Laboratories (Proprietary) Limited
Filed Sept. 30, 1969, Ser. No. 862,415
Int. Cl. B29c 3/00
U.S. Cl. 425—356 7 Claims



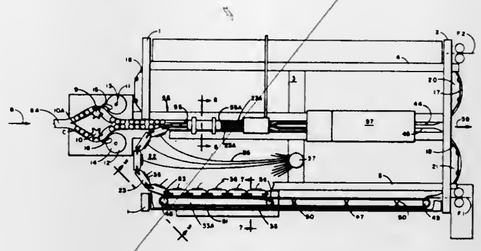
This invention relates to high-pressure dies normally used for use in the synthesis of diamonds. The die comprises a die ring having a through cavity within which there is formed a pressure chamber that is lined with a pyrophyllite sleeve. Respectively entering the ends of the sleeve are two plungers. These plungers are capable of sliding in the sleeve until near the end of their compressive strokes so that little or no axial pressure is applied to the ends of the sleeve.

3,642,413
METHOD AND APPARATUS FOR MAKING HOLLOW BODIES OF CONCRETE OR THE LIKE
Nicholas S. Danko, Livingston, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Oct. 8, 1968, Ser. No. 765,798
Int. Cl. B28b 21/28
U.S. Cl. 425—365 9 Claims



Pipes having dense, watertight concrete walls are produced by vibrating a rotating mould suspended on a roller shaft as the mold is being filled, and continuing its rotation without vibration for a short time after the mold is filled. Vibration is attained by ridges or fingers which can be made effective, or not, to vibrate the mold as it is rotating. In one form, fingers on a roller shaft are slidable between ineffective positions and positions where they serially engage a smooth running surface on the mold. In other forms, a mold is movable from a position where it is supported by engagement of a ridged running surface on either the roller shaft or the mold with a cylindrical surface on the other to a position where the cylindrical surface on the mold runs on the roller shaft or on an auxiliary sleeve without vibration.

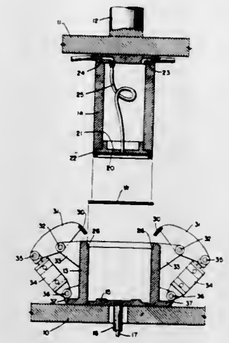
3,642,414
MECHANISM FOR LINING A SERIES OF SHELLS
Rodney K. Calvert, Dunwoody; Arthur B. Viescas, Decatur, and Alton J. Fishback, Austell, all of Ga., assignors to The Mead Corporation
Filed Apr. 24, 1970, Ser. No. 31,687
Int. Cl. B29c 17/04
U.S. Cl. 425—388 4 Claims



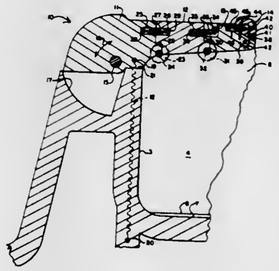
Two series of endless chains each comprising a plurality of traylike open half-shells pivotally interconnected at their ends are arranged in close proximity to each other so that the working reaches of the chains are parallel and so that the open shells of one chain are disposed in opposed relation to the open shells of the other chain to form a series of cavities along the working reaches of the chains. A strip of heat sealable shrink film is disposed along and held against the open faces of the half shells of each of the chains by articulated force applying structure arranged to impart uniform force thereto and vacuum means is employed to draw the film into lining relation with each of the half shells. An assembly of items to be packaged is inserted into the space between two opposed half-shells adjacent the entry end of the working reaches of both chains. After the half-shells of one reach come into biased engagement with the open half-shells of the other reach to envelope as assembly of items to be packaged, a jet of heated air is applied along the top and bottom edges of the shells to form top and bottom seals between the strips thereby to form a series of interconnected packages. After the packages are formed by heat sealing, the mating shells are moved in opposite directions away from each other and heated air is subsequently applied to each package so as to shrink the film somewhat thereby to preserve the integrity of the package. Preferably the film is of the nonoriented type and is preheated before being drawn into the half shells.

3,642,415
PLUNGER-AND-DIAPHRAGM PLASTIC SHEET FORMING APPARATUS
Herbert G. Johnson, Havertown, Pa., assignor to Shell Oil Company, New York, N.Y.
Continuation of application Ser. No. 693,525, Dec. 26, 1967, now abandoned. This application Aug. 10, 1970, Ser. No. 62,603
Int. Cl. B29d 17/00; B29c 3/00
U.S. Cl. 425—389 10 Claims

This application discloses plunger-and-diaphragm plastic sheet forming apparatus and method for forming plastic sheet blank material into hollow or cupped articles. The apparatus comprises a die-mold device, means for clamping a blank in the opening of the die-mold device, and a plunger-diaphragm device for forming the blank into a shaped article in the die-mold device by plunger action or by diaphragm action or by combined plunger and diaphragm action. In one embodiment of the invention, blank-holding means are associated with the die-mold device to leave the space between the die-mold device and the plunger-diaphragm device clear for the insertion of blanks and the removal of formed articles with a minimum of apparatus on the plunger side of the assembly, this being especially applicable to the formation of nonround articles. In another embodiment the blank holding means is associated with the blank-cutting means on the plunger or ram side of the assembly.

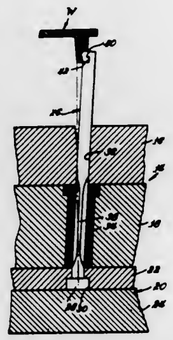


3,642,416
MOLDING APPARATUS
Frederick O. Miller, Saginaw, Mich., assignor to Miller Mold Company, Saginaw, Mich.
Filed July 26, 1968, Ser. No. 748,075
Int. Cl. B29c 17/00
U.S. Cl. 425—438 12 Claims



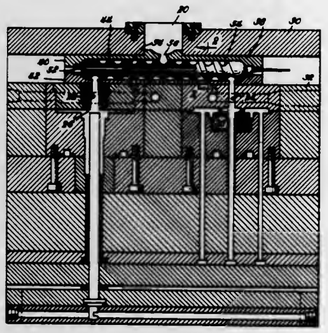
Apparatus for molding plastic articles comprising a mold having a cavity defined in part by an upstanding wall at one end of the cavity, the apparatus including a core member normally projecting from the end wall in a position to overhang the cavity. The core member is composed of a plurality of parallel slats pivoted to one another for relative movement and the slat adjacent the end wall is pivoted to the mold for rocking movement to enable the core member to be swung from its cavity-overlying position to a position substantially in prolongation of the end wall. Springs react between the end wall and the adjacent slat to urge the core member to its cavity-overlying position and springs react between each of the other slats to urge them into confronting, parallel relation.

3,642,417
RELEASE APPARATUS FOR DIECASTING ASSEMBLY
John W. Von Holdt, 7430 N. Croname Road, Niles, Ill.
Filed Apr. 29, 1970, Ser. No. 32,910
Int. Cl. B29c 7/00
U.S. Cl. 425—443 4 Claims



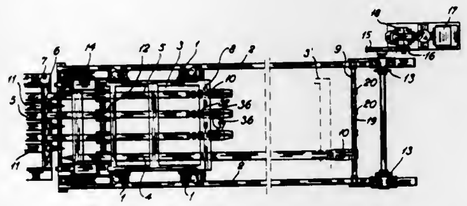
An improved release device for a diecasting assembly including a flexible pin one end of which is moved in a first direction parallel to the direction of die movement while the opposite end thereof is guided for movement along a path inclined to said first direction, the inclined movement of said opposite end of said pin serving to effect release of a plastic part subsequent to a diecasting operation.

3,642,418
HEATED FEEDER SYSTEM FOR DIECASTING APPARATUS
John W. Von Holdt, 7430 N. Croname Road, Niles, Ill.
Filed Apr. 29, 1970, Ser. No. 32,911
Int. Cl. B29f 1/03
U.S. Cl. 425—447 11 Claims



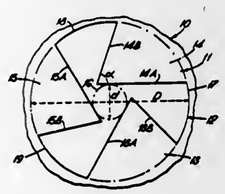
The present invention relates to a heated feeder system for feeding molten plastic material through a die to one or more mold cavities therein, including a heated feeder device in the nature of a screw comprising a rod having one or more spiral feeder passages formed on the outer surface thereof.

3,642,419
OPERATING MECHANISM FOR CORE TUBES IN CONCRETE MOLDS
Peter K. Toksvig, Karlebo, Denmark, assignor to A. Jespersen & Son International A/S
Filed Aug. 14, 1968, Ser. No. 752,630
Claims priority, application Denmark, Aug. 14, 1967, 4120/67
Int. Cl. B28b 7/30
U.S. Cl. 425—457 9 Claims



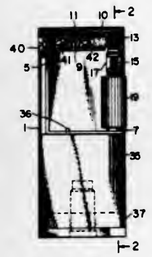
An operating mechanism for core tubes in concrete molds wherein a plurality of core tubes of different cross section are releasably supported on a movable truck at either end of the mold, said core tubes having coupling means for readily selectively coupling and uncoupling core tubes of different cross section to the trucks to move therewith or to a stationary frame.

3,642,420
SPINNERET FOR PRODUCING TRILOBAL YARNS
Jean-Louis Jacquinet, Rhone, France, assignor to Societe Rhodiaceta
Original application Sept. 27, 1967, Ser. No. 670,862, now Patent No. 3,579,625. Divided and this application May 25, 1970, Ser. No. 41,162
Claims priority, application France, Sept. 29, 1966, 78186; Aug. 11, 1967, 117816
Int. Cl. D01d 3/00
U.S. Cl. 425—465 1 Claim



The invention discloses a spinneret for producing a trilobal filament, and filaments produced using such spinneret. The shape of each orifice of the spinneret can be considered as being produced by a circular aperture, diameter D into which project at 120° intervals, three identical triangular portions, sides of the triangles being tangent to one or more coaxial circles having a diameter between one-sixth and one-third of D, the angle at the apex of each triangle being between 60° and 100°.

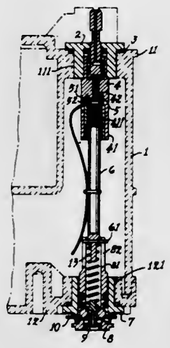
3,642,421
GAS-FUELED LIGHTER
Tsuneo Okabe, Tokyo, Japan, assignor to Yugen-Kaisha Fukunaga Seisakusho, Tokyo, Japan
Filed Mar. 4, 1970, Ser. No. 16,090
Claims priority, application Japan, Mar. 14, 1969, 44/19913
Int. Cl. F23q 2/16
U.S. Cl. 431—254 9 Claims



A gas-fueled lighter having ignition means simultaneously operatively correlated with fuel feed means.

3,642,422
LIQUEFIED GAS LIGHTER HAVING COMBINATION BURNER AND FILLING
Walter Schafer, Frankfurt am Main, Germany, assignor to Braun AG, Frankfurt am Main, Germany
Filed Dec. 1, 1970, Ser. No. 94,133
Claims priority, application Luxembourg, Dec. 19, 1969, 60054
Int. Cl. F23d 13/04
U.S. Cl. 431—344 3 Claims

A liquefied gas lighter of the type having a combination burner and filling valve. The burner valve is provided with an adjustment mechanism for the flame disposed at the bottom of the liquefied gas tank. The adjustment mechanism includes a rotatable adjusting device which, in turn, serves to receive the filling valve. The adjusting mechanism acts on a

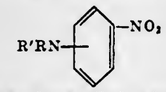


rotatable interconnecting control member which serves to throttle the flow of gas by means of a fleece that may be squeezed by the rotation of the control member thus regulating the size of the flame.

CHEMICAL

3,642,423
DYEING HUMAN HAIR WITH HYDROXYALKYL NITROANILINE DYES
Milos S. Bil, Forest Hills, N.Y., and Walter H. Brunner, Easton, Pa., assignors to Clairol Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 527,405, Dec. 29, 1965, now abandoned. This application Mar. 21, 1966, Ser. No. 535,687
Int. Cl. A61k 7/12
U.S. Cl. 8—10.1 8 Claims

An aqueous dyeing composition particularly suitable for dyeing hair having incorporated therein a tinctorially effective amount of hydroxyalkyl nitroaniline dye of the formula:



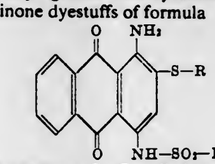
wherein R is hydrogen, lower alkyl or hydroxyalkyl and R′ is hydroxyalkyl.

3,642,424
PROCESS FOR DYEING TEXTILE MATERIAL OF MIXTURES OF POLYESTER AND CELLULOSE FIBERS
Rudolf Lowenfeld, Buchschlag, and Uwe Kosubek, Offenbach/Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed July 7, 1969, Ser. No. 839,647
Claims priority, application Germany, July 11, 1968, P 17 69 775.5
Int. Cl. D06p 3/82
U.S. Cl. 8—21 5 Claims

Textile materials consisting of mixtures of polyester and cellulose fibers are dyed equal shades by (a) impregnation with an alkaline solution containing a coupling component, and wetting or dispersing agents, (b) drying the material, (c) impregnation with an acid solution containing a diazotized aromatic or heterocyclic amine and a disperse dye, (d) drying the material and (e) subjecting it to a heat treatment.

3,642,425
PROCESS FOR THE CONTINUOUS DYEING OF SYNTHETIC FIBER MATERIALS WITH ANTHRAQUINOUS DYESTUFFS AND MIXTURES THEREOF
Gunter Gehrke, and Volker Hederich, both of Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 21, 1970, Ser. No. 66,065
Claims priority, application Germany, Aug. 27, 1969, P 19 43 536.0
Int. Cl. D06p 1/20
U.S. Cl. 8—25 3 Claims

Process for the continuous dyeing of synthetic fiber materials from organic solvents, characterized in that the fiber materials are impregnated with dyestuffs liquors which contain anthraquinone dyestuffs of formula



in which R represents a C_1–C_{16}–alkyl radical and R_1 denotes a C_1–C_{16}–alkyl, cycloalkyl or aralkyl radical or an optionally substituted phenyl radical, with the provisco that the sum of

the carbon atoms present in total in R and R_1 is at least 6 and at most 36, and that the fiber materials are subsequently subjected to a heat treatment.

The dyeings obtained are distinguished by high dyestuff yield, very good buildup and excellent fastness properties, especially very good fastness to thermofixing, washing, rubbing and light.

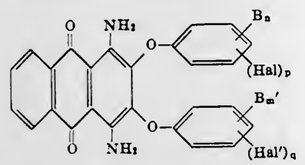
3,642,426

PROCESS FOR THE CONTINUOUS DYEING OF SYNTHETIC FIBER MATERIALS WITH DIPHENOXY ANTHRAQUINONE DYESTUFFS

Peter Wegner, Cologne; Rutger Neeff, Leverkusen, and Robert Kuth, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1970, Ser. No. 60,738
Claims priority, application Germany, Aug. 7, 1969, P 19 40 184.4
Int. Cl. D06p 1/20
U.S. Cl. 8—39 7 Claims

The process for the continuous dyeing of synthetic fiber materials in which the fiber materials are impregnated with a dyeing liquor comprising an organic solvent and an anthraquinone dyestuff of formula



in which B and B′ independently of one another represent a C_1—C_9 alkyl, cycloalkyl or aralkyl radical, Hal and Hal′ denote a halogen atom, each of m and n is a number from 0–3, with the proviso that the sum of $m+n$ is at least 1, and each of p and q is a number from 0–2; and the dyed materials are subsequently subjected to a heat treatment.

The dyeings obtained are distinguished by high dyestuff yield, very good buildup and excellent fastness properties, especially very good fastness to thermofixing, washing, rubbing and light.

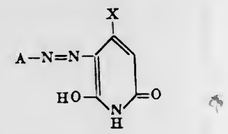
3,642,427

COLORATION PROCESS

Alistair Howard Berrie, and Nigel Hughes, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 23, 1969, Ser. No. 835,750
Claims priority, application Great Britain, June 27, 1968, 30,762/68
Int. Cl. C09b 27/00
U.S. Cl. 8—41 B 2 Claims

Process for coloring polyamide, cellulose acetate and polyester textile materials with an aqueous dispersion of a disperse monoazo dyestuff of the formula:



wherein A is an optionally substituted phenyl or naphthyl radical and X is a hydrogen atom, an optionally substituted alkyl or phenyl radical or a cyano, carboxylic acid ester or carbonamido group.

3,642,428

VAPOR PHASE RESIN FIXATION PROCESS FOR CELLULOSIC MATERIAL PERMITTING SUBSEQUENT CURE

Nelson F. Getchell, Great Falls, Va.; Julian Berch, Silver Spring, and Norman R. S. Hollies, Bethesda, both of Md., assignors to Cotton Incorporated, New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,370
Int. Cl. D06m 13/14, 13/38, 1/16
U.S. Cl. 8—116.3 11 Claims

Improved crease resistance and smooth drying characteristics are imparted to cellulosic fiber-containing materials, such as cotton fabric, with a minimum sacrifice in physical properties by a process including (1) applying an aqueous solution comprising at least one water-soluble polymer-forming compound possessing reactive N-methylol groups and a latent curing catalyst to the cellulosic material, (2) exposing the material in a water swollen state in the presence of formaldehyde to a reactive vapor atmosphere containing a gaseous acidic catalyst such as sulfur dioxide, and (3) drying the material in preparation for the manufacture of a durable press article therefrom. The latent curing catalyst is conveniently applied to the material from the same bath as the polymer-forming compound, but as an alternative it may be applied to the material from a separate bath, e.g., after the reactive vapor treatment and prior to the final cure. The durable press article may be made by first making the dry uncured material into an article such as a garment having hot pressed creases therein and then curing the article (delayed cure), or by first curing the material and then making the cured material into a final product (precure).

3,642,429

COSMETIC COMPOSITION FOR TREATING HAIR

Gregoire Kalopissis, Paris; Jean-Louis Abegg, le Perreaux; Guiliana Ghilardi, and Henri Philippe de Beaulieu, both of Paris, all of France, assignors to Societe Anonyme dite: L'Oreal

Filed Oct. 23, 1968, Ser. No. 770,089
Claims priority, application France, Oct. 26, 1967, 54741
Int. Cl. A61k 7/08, 7/10
U.S. Cl. 8—127.51 6 Claims

A cosmetic composition for treating hair comprising an electrophile methylol amine and a urein compound, one or both of which contain a chemical group which has cosmetic properties; and a method of treating hair with this composition.

The compounds having the formula

$$Y(NH-\underset{\underset{X}{\|}}{C}-NH_2)_n$$

in which n=1 or 2, X is O, S or NH and Y is a disulfide, carboxylic acid, tertiary or quaternary amine or —SH group which has cosmetic properties.

ERRATUM

For Class 21—2.5 see:
Patent No. 3,642,998

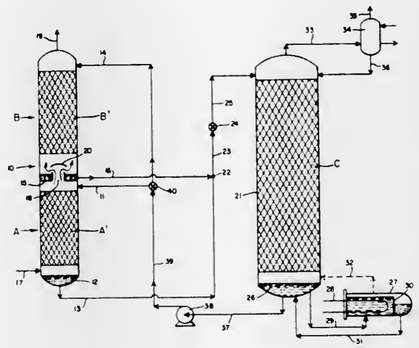
3,642,430

SEPARATION OF CARBON DIOXIDE AND HYDROGEN SULFIDE FROM GAS MIXTURES

Homer E. Benson, Pittsburgh, Pa., assignor to Benson, Field and Epes

Filed Sept. 19, 1969, Ser. No. 859,324
Int. Cl. B01d 53/34
U.S. Cl. 23—2 R 6 Claims

A method permitting the reduction of absorber cross-sectional area when removing CO_2 and/or H_2S from gas mixtures containing a high partial pressure of such acid gases by means of regenerable aqueous alkaline scrubbing solutions. The gas mixture is contacted with the scrubbing solution in an absorption stage maintained under substantial superatmospheric pressure and containing at least two absorption zones. Each absorption zone is separately supplied with approximately equal, separate streams of regenerated scrubbing solution, and separate streams of spent scrubbing solution are withdrawn from the bottom of each absorption zone. The gas mixture to be purified passes successively through the separate absorption zones with approximately equal quantities of acid gas being absorbed in each zone. The scrubbing solution is regenerated at reduced pressure and recycled to the absorption zone.

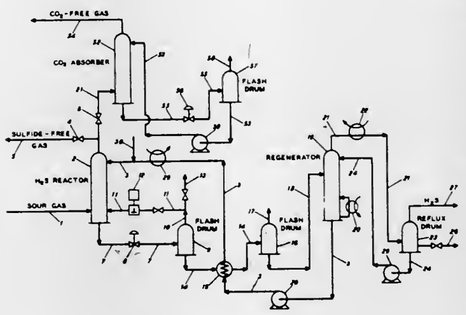


3,642,431

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASEOUS MIXTURES

Shigeto Suzuki, San Francisco; Karl H. Kilgren, La Habra, and Giok H. Tjoa, Placentia, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 19, 1969, Ser. No. 859,414
Int. Cl. B01d 53/16, 53/34
U.S. Cl. 23—2 R 9 Claims



The process for selectively removing H_2S and like sulfides from fluids containing them by contact with a substantially hydroxyl-free solvent such as N-methyl-2-pyrrolidone, a dicarboxylic acid anhydride soluble in said solvent and an alkali hydrosulfide. Preferably, in the process an admixture of H_2S and CO_2 in natural gas is contacted with the contacting solution to react the H_2S with said anhydride, the CO_2 and/or like hydrocarbons are rejected from the contacting solution by mild heating and/or pressure reduction and thereafter H_2S is regenerated by heating the remaining solution.

3,642,432

PROCESSES FOR OBTAINING VANADIUM SUBOXIDES

Robert O. Teeg, Grosse Pointe, and Robert W. Hallman, Utica, both of Mich., assignors to Teeg Research, Inc., Detroit, Mich.

Continuation-in-part of application Ser. No. 447,546, Apr. 12, 1965, which is a continuation-in-part of application Ser. No. 358,065, Apr. 7, 1964, now Patent No. 3,455,724, dated July 15, 1969. This application Nov. 21, 1969, Ser. No. 878,881. The portion of the term of this patent subsequent to July 15, 1986, has been disclaimed.
Int. Cl. C22b 59/00; C01g 31/00
U.S. Cl. 23—19 V 4 Claims

Method for obtaining vanadium suboxide of the general formula VO_x, wherein x is comprised between 1.5 and 2.02, and preferably between 1.88 and 2.02, consisting in heating vanadium pentoxide, contained in an inert boat, in a reduced atmosphere in the presence of a stoichiometric amount of vanadium sesquioxide, and recovering the vanadium suboxide in a bulk or crystalline form remaining in the boat.

3,642,433

PROCESS FOR EXTRACTING ALUMINUM COMPOUNDS FROM DAWSONITE AND DAWSONITIC OIL SHALE

John R. Dyni, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior

Filed Aug. 5, 1968, Ser. No. 749,968
Int. Cl. C01f 7/02
U.S. Cl. 23—52 10 Claims

Dawsonite and dawsonitic oil shales are heated to decompose the dawsonite into sodium aluminate. Water is then employed to dissolve and form an aluminate solution from which alumina can be recovered by known methods.

3,642,434

PRODUCTION OF SYNTHETIC FAUJASITE

Francis G. Dwyer, Cherry Hill, N.J., assignor to Mobil Oil Corporation

Filed Jan. 10, 1969, Ser. No. 790,454
Int. Cl. C01b 33/28
U.S. Cl. 23—113 6 Claims

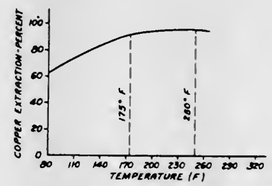
Crystallization of synthetic faujasite from an aqueous reaction mixture comprising alkali metal oxide, silica, alumina, and water in specified molar ratios and tetramethyl ammonium ions which hasten the crystallization of the synthetic faujasite. Zeolite ZSM-4 is crystallized from the same reaction mixture by employing a longer crystallization time period.

3,642,435

METHOD OF RECOVERING WATER-SOLUBLE NONFERROUS METAL SULFATES FROM SULFUR-BEARING ORES

Eugene S. Allen, Santa Monica, Calif., and Royce S. Gavrias, Skouriotissa, Cyprus, assignors to Cyprus Mines Corporation, Los Angeles, Calif.

Filed Nov. 10, 1969, Ser. No. 875,256
Int. Cl. C01g 1/10, 3/10
U.S. Cl. 23—117 12 Claims



Ore with a relatively high sulfur content, containing various amounts of ferrous and nonferrous sulfides, and particularly a relatively small amount of copper sulfide, is subjected to a controlled oxidation leach in an aqueous medium at

elevated temperatures and pressures, to convert the nonferrous sulfides into water-soluble sulfates with only slight concomitant oxidation of the ferrous sulfides.

3,642,436
METHOD FOR PREPARING LITHIUM SULFIDE COMPOUNDS

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

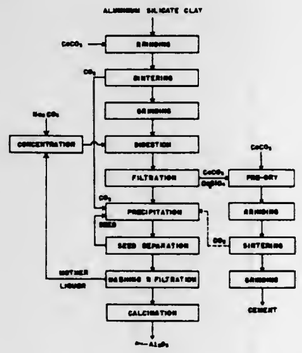
Filed Nov. 14, 1969, Ser. No. 877,009
Int. Cl. C01b 17/22, 17/16, 1/02
U.S. Cl. 23—134 12 Claims

A lithium reactant selected from the group consisting of lithium metal or lithium hydride is reacted with hydrogen sulfide in the proportion from about one-half mol to about 1 mol of hydrogen sulfide per mol of lithium reactant, in the presence of a strong coordinating ether solvent to produce at least one lithium sulfide compound selected from the group consisting of lithium sulfide and lithium hydrosulfide.

3,642,437
PRODUCTION OF ALUMINA AND PORTLAND CEMENT FROM CLAY AND LIMESTONE

Richard L. Angstadt, Armonk, and Russell N. Bell, Ardsley, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 9, 1968, Ser. No. 758,485
Int. Cl. C01f 7/02, 7/30, 7/34
U.S. Cl. 23—143 5 Claims



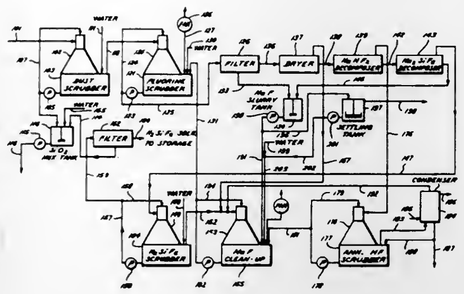
Alumina is extracted from kaolin-type clays by admixing the clay with calcium oxide in an amount sufficient to obtain the mole ratios of $CaO:Al_2O_3$ within the range of from about 0.8/1 to about 1.2/1, and of $CaO:SiO_2$ from about 1.8/1 to about 2.2/1; calcining the mixture at about 1,300° C.; digesting the clinker with sodium carbonate; following the removing of the solid residue from the digestion solution, aluminum trihydrate is precipitated in the crystalline form of Gibbsite by treatment of the solution with carbon dioxide at elevated temperatures; and the precipitate is calcined to recover the desired alumina. The residue from the digestion step is used to form low-aluminate-containing portland cement.

3,642,438
METHODS FOR PREVENTION OF SURFACE WATER CONTAMINATION AND AIR POLLUTION BY FLUORINE COMPOUNDS FROM PHOSPHATE PLANTS

Rufus G. Hartig, 230 Hillsboro, Dover, Fla.

Filed Apr. 15, 1969, Ser. No. 816,206. The portion of the term of the patent subsequent to Apr. 13, 1988, has been disclaimed.
Int. Cl. C01b 7/22, 33/00
U.S. Cl. 23—153 5 Claims

Processes for eliminating fluorine contamination of surface waters, and other pollution, by fluorine compounds from phosphate plants, and for recovery of fluorine as hydrofluosilicic acid. The processes involve the separation of



fluorine compounds from waste gases by absorption-desorption with NaF, BaF_2, or KF, and absorption of SiF_4 in water. HF may also be recovered.

3,642,439
METHOD OF SEPARATING MAGNESIUM FROM WET-PROCESS PHOSPHORIC ACID

William P. Moore, Chester; Rob R. MacGregor, Prince George, and William C. Sierichs, Hopewell, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,752
Int. Cl. C01b 25/22
U.S. Cl. 23—165 8 Claims

A method of separating magnesium from wet-process phosphoric acid characterized in that the magnesium is separated as a readily filterable fluoride-phosphate complex compound containing magnesium and aluminum. The fluoride ion required for formation of the magnesium-containing precipitate is preferably formed by hydrolysis of fluorine compounds normally in the crude acid. In the case of insufficient quantities of any of said precipitation components, additions of such components are made to the acid or to the reaction components from which the acid is produced. The wet-process phosphoric acid low in magnesium is especially useful for production of stable ammonium polyphosphate fertilizer solutions.

3,642,440
PROCESS FOR NICKEL-COBALT SEPARATION

Tunis L. Holmes, 1410 Warrington Road, Deerfield, Ill., and Robert N. Moore, 791 Beau Drive, Des Plaines, Ill.

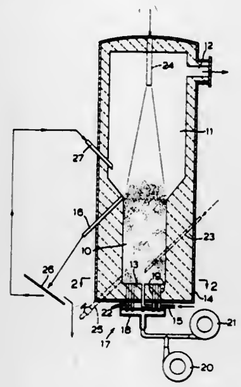
Continuation-in-part of application Ser. No. 809,943, Mar. 24, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 721,615, Apr. 16, 1968, now abandoned. This application Jan. 11, 1971, Ser. No. 105,657
Int. Cl. C01g 51/04, 53/04
U.S. Cl. 23—183 13 Claims

A method for the separation of cobalt from a mixture of certain cobalt compounds and the corresponding nickel compounds wherein the cobalt is in the cobaltous state, e.g., a mixture of cobaltous hydroxide and nickel hydroxide. The mixture is treated with a hot (above 150° F.) aqueous solution of an alkali metal hydroxide, e.g., sodium hydroxide or potassium hydroxide, containing at least 10 percent hydroxide. The cobalt compound goes into solution while the nickel compound stays in the solid phase.

3,642,441
TREATMENT OF METAL CHLORIDES IN FLUIDIZED BEDS

Gezinus Van Weert, Richmond Hill, Ontario, Canada, assignor to Falconbridge Nickel Mines Limited, Toronto, Ontario, Canada

Filed Sept. 14, 1967, Ser. No. 667,695
Int. Cl. C01b 13/14; C01g 53/04, 49/02
U.S. Cl. 23—183 17 Claims

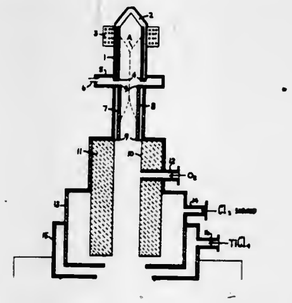


A method and apparatus for thermal treatment of solid particles in fluidized beds and carrying out of heat treatments and other reactions therein at elevated temperatures such as formation of metal oxides by the endothermic reaction of metal chlorides with water. An explosive mixture of gases is supplied to a fluidized bed of solid particles in a reactor as a multiplicity of separated streams, each stream is maintained at a temperature below the ignition temperature of the mixture by cooling a portion thereof outside the reactor, and at a velocity greater than the ignition velocity of the mixture by supplying the mixture under sufficient pressure, and the mixture is then combusted in the bed to produce hot fluidizing gases, thereby maintaining the bed in a fluidized condition at an elevated temperature and providing a suitable environment for the conduct of heat treatments and other reactions.

3,642,442
PROCESS FOR PREPARING PIGMENTARY METAL OXIDE

Howard H. Hoekje, Akron; Franklin Strain, and William L. Wilson, both of Barberton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1964, Ser. No. 354,597
Int. Cl. C01g 23/04; C01b 33/18; C01g 1/02
U.S. Cl. 23—202 V 12 Claims

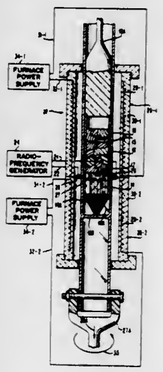


Metal oxides, such as titanium dioxide, are prepared by vapor phase oxidation of corresponding metal halides in a reaction zone supplied with heat energy from a gaseous stream heated by electrical energy. A gaseous plasma is generated by passing said gaseous stream through a discharge being conducted between electrodes and providing in path of said gaseous plasma a further electrode containing a white oxide forming metallic element for nucleation of the oxidation reaction.

3,642,443
GROUP III–V SEMICONDUCTOR TWINNED CRYSTALS AND THEIR PREPARATION BY SOLUTION GROWTH

Samuel E. Blum, New York; Luther M. Foster, Chappaqua, and Thomas S. Plaskett, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1968, Ser. No. 753,522
Int. Cl. C01b 25/08; B01d 9/00; B01j 17/02
U.S. Cl. 23—204 R 12 Claims



The disclosure presents a method of growing large crystals of GaP from solution in which a zone of liquid gallium saturated with GaP is passed upward through a GaP feed ingot. In order to grow large crystals, it was found necessary to initiate growth onto a twinned seed crystal in which all of the twin planes are parallel to each other and parallel to a <211> growth direction. Wafers cut parallel to the twin planes exhibit a (111) surface which are suitable for electroluminescent devices.

3,642,444
ANALYTICAL REAGENT AND METHOD FOR CARBOHYDRATE ANALYSIS IN BODY FLUIDS

Paul F. Guehler, White Bear Lake Township, Ramsey County, and John Joseph Neumayer, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1969, Ser. No. 821,470
Int. Cl. G01n 21/24, 31/22, 33/16
U.S. Cl. 23—230 B 12 Claims

An analytical reagent and a method for its use in the determination of aldopentoses, aldohexoses, and their derivatives in a body fluid sample. The reagent comprises an acid component, an aromatic amine component, and dimethylsulfoxide.

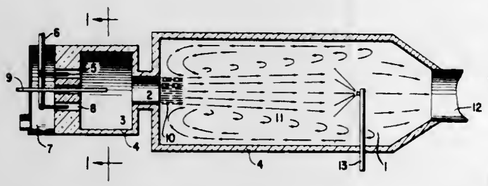
3,642,445
UTILIZATION OF COAL-BURNING POWER PLANT BY-PRODUCTS
Richard B. Muter, and William F. Lawrence, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior
Filed Apr. 30, 1970, Ser. No. 33,463
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 SQ **8 Claims**

An aqueous slurry is formed from modified fly ash, i.e., a mixture of alkaline earth sulfates or sulfites, unreacted alkaline earth oxides and fly ash from coal-burning power plant ash collection devices. The slurry, which may contain suitable modifiers, is carbonated with CO_2-containing gases, e.g., power plant stack gases, and the resulting carbonates are separated by flotation methods. The separated carbonates are dewatered and dried and may then be reinjected above the combustion zone of the furnace or mixed with the coal to be burned.

The flotation reject is dewatered and dried and may then be fired in reverberatory furnaces to form a molten ash suitable for processing into mineral wool.

Sulfur gases from the flotation reject may also be processed into useful sulfur compounds, such as sulfuric acid by the contact process.

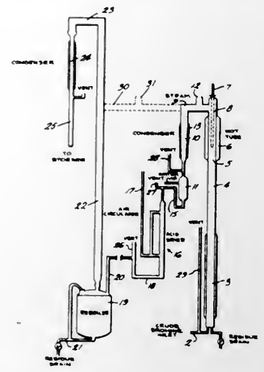
3,642,446
PROCESS AND APPARATUS FOR THE MANUFACTURE OF CARBON BLACKS HAVING IMPROVED DISPERSION AND PLATEWEAR CHARACTERISTICS
George L. Heller, Monroe, La.; Frank J. Eckert, Morrisville, Pa.; Charles L. De Land, West Monroe, and Robert W. Dingman, Monroe, both of La., assignors to Columbian Carbon Company, New York, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,491
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 **20 Claims**



A reaction mixture is formed of a feedstock hydrocarbon and hot combustion gases, the mixture having a composition and sufficient heat content for formation of a carbon black of specific particle size and structure characteristics upon decomposition of the hydrocarbon within the mixture. Before the carbon black is completely formed, the mixture is diluted with a gas which is substantially nonreactive with the carbon black and cooler than the mixture. Agglomeration of the particles of carbon black within the mixture is reduced, and the resultant dispersion and platewear characteristics of the carbon black in printing inks are greatly improved.

3,642,447
BROMINE PURIFICATION PROCESS BY ADDITION OF STEAM TO THE VAPOR PHASE
Lynn Harold Hahn, 1208 Pine Street, Alma, Mich., and Clarence Wendell Dunbar, 308 Wilson Drive, St. Louis, Mich.
Filed July 23, 1969, Ser. No. 844,060
Int. Cl. B01d *3/38*
U.S. Cl. 23—218 **3 Claims**

A process for removing impurities from bromine, especially water-soluble impurities, comprising introducing steam into the impure bromine in the vapor phase and thereafter condensing the bromine and steam to the liquid phase, followed by separating the bromine from the water, and drying. If desired the impure bromine may be heated, as in a hot tube, prior to the steam treatment and distilled.



3,642,448
PROCESS FOR REMOVAL OF HYDROGEN SULFIDE FROM GAS STREAMS
David K. Beavon, Long Beach, Calif., assignor to The Ralph M. Parsons Company, Los Angeles, Calif.
Filed Oct. 10, 1969, Ser. No. 865,464
Int. Cl. C01b *17/04*
U.S. Cl. 23—255 R **8 Claims**

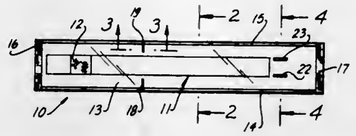
Removal of oxygen from regenerative alkaline hydrogen sulfide absorption solutions before contacting the solution with a hydrogen sulfide containing process gas stream eliminates the formation of thiosulfate impurities.

3,642,449
DETECTOR COMPOSITION AND METHOD
Thaddeus J. Novak, Edgewood, and Edward J. Poziomek, Bel Air, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed July 2, 1969, Ser. No. 838,674
Int. Cl. G01n *21/06, 21/24*
U.S. Cl. 23—232 R **13 Claims**

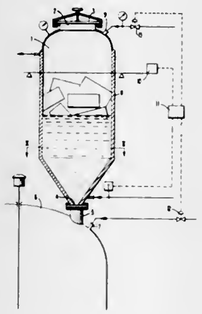
A colorimetric method and composition for detecting compounds containing halogens or aldehyde groups comprising the steps of contacting the compounds with an inert absorbent impregnated with a detecting composition comprising an amine, heating the absorbent with its contents and observing the visible color change in the absorbent.

3,642,450
TEST STRIP PACKAGED-UNIT
Sven Axel Eriksson, Sodertalje, Sweden, assignor to AB Kabi, Stockholm, Sweden
Filed Jan. 6, 1970, Ser. No. 879
Claims priority, application Sweden, Jan. 16, 1969, 585/69
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 TP **5 Claims**

A packaged-unit comprising a sealed envelope of partible thermoplastic film material within which is enclosed an elongated absorbent test strip having an indicator portion subject to change in color by interaction with a sample to be tested. The envelope has an empty finger-gripping part extending beyond one end of the test strip and stopping means for it in the inner end of that part to restrain the strip from slipping into the empty end. The indicator part of the test strip is remote from the finger-grip part of the envelope. Intermediate the outer ends of the envelope and disposed in substantially oppositely aligned spaced-apart relationship with respect to each other are sealed welded parting lines each separately extending inwardly from its respective one of the elongated sides of the envelope. The parting lines enable the different parts of the envelope defined thereby to be pulled apart from one another along a line running through the parting lines when the end portions of the envelope are tightly gripped and pulled in opposite directions.



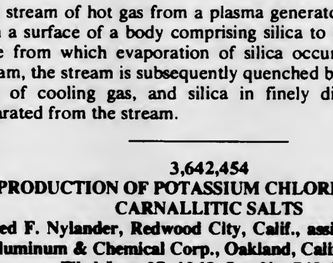
3,642,451
APPARATUS FOR THE DISSOLUTION OF RUBBER
Josef Heinz Feja, Recklinghausen, and Karl-Heinz Landskroner, Marl, both of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed Nov. 19, 1968, Ser. No. 776,977
Claims priority, application Germany, Nov. 30, 1967, C 43994
Int. Cl. B01d *11/02, 11/04*
U.S. Cl. 23—267 **1 Claim**



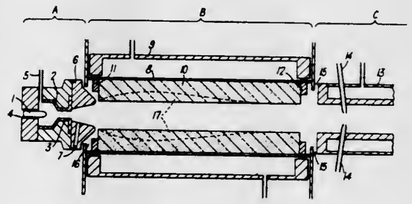
The present disclosure is directed to an apparatus for the dissolution of materials, for example rubber, which comprises a feeding tank provided with a heat exchange means, said feeding tank containing an inlet means for introducing the material to be treated thereto, and a dissolving vessel disposed below the feeding tank and provided with an inlet means for introducing a solvent thereto, said feeding tank and dissolving vessel being interconnected by a connecting means which is provided with at least one opening which partially interrupts the flow from the feeding tank to the dissolving vessel. The feeding tank can be provided with a means for introducing a pressurized fluid thereto and the entire system can be automatized by providing a transmitter means for synchronizing all of the elements of the apparatus.

3,642,452
MULTISTAGE REACTORS
Jean Roget, and Philippe Tarbouriech, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Nov. 26, 1969, Ser. No. 880,238
Claims priority, application France, Nov. 26, 1968, 175376
Int. Cl. B01j *1/00, 1/14*
U.S. Cl. 23—283 **6 Claims**

A multistage reactor including a vertical column divided into stages by horizontal separation plates. Each stage includes a bundle of vertical tubes, supported by upper and lower horizontal support plates, the tubes serving for the ascent and descent of liquid within such stage. The ascent tubes extend above the upper support plates by between 0.5 and 10 times their diameter. Through pipes in each separation plate, coaxial with the ascent tubes of the stage above, carry up-flowing gas or vapor and a down tube extends through each separation plate partially into the space above the upper support plate of the stage below.



3,642,453
PROCESS FOR THE PRODUCTION OF FINELY DIVIDED SILICA
Henry Thomas Joseph Chilton, Llangollen, Wales; David Anthony Everest, Middlesex, and Ian George Sayce, Teddington, Middlesex, both of England, assignors to Monsanto Chemicals Limited, London, England
Filed Aug. 8, 1969, Ser. No. 848,659
Claims priority, application Great Britain, Aug. 13, 1968, 38,674/68
Int. Cl. C01b *33/18*
U.S. Cl. 23—294 **4 Claims**

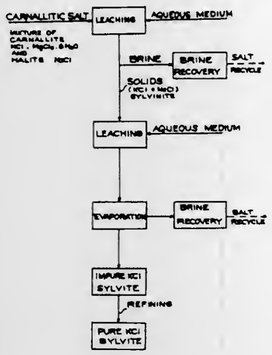


A stream of hot gas from a plasma generator is contacted with a surface of a body comprising silica to form a molten zone from which evaporation of silica occurs into the gas stream, the stream is subsequently quenched by the introduction of cooling gas, and silica in finely divided form is separated from the stream.

3,642,454
PRODUCTION OF POTASSIUM CHLORIDE FROM CARNALLITIC SALTS
Alfred F. Nylander, Redwood City, Calif., assignor to Kaiser Aluminum & Chemical Corp., Oakland, Calif.
Filed June 27, 1968, Ser. No. 740,497
Int. Cl. C01d *3/08, 3/16*
U.S. Cl. 23—297 **2 Claims**

Potassium chloride is produced from carnallitic salts consisting essentially of carnallite $KCl{\cdot}MgCl_2{\cdot}6H_2O$) and halite (NaCl). The salt is contacted with an aqueous medium to dissolve selectively the magnesium chloride, leaving a solid phase of KCl–NaCl mixture. This mixture is admixed with an amount of aqueous medium at least sufficient to dissolve sub-

stantially all of the NaCl and then the admixture is subjected to evaporation. The KCl will crystallize from the system and

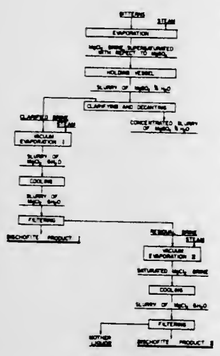


the crystals are washed to recover fertilizer grade KCl of at least 95 percent purity.

3,642,455
PROCESS FOR RECOVERING LOW-SULFATE BISCHOFITE

Burkhard J. Hahn, Ronnenberg; Rolf M. E. Reise, and Walter R. Raschka, both of Bad Salzdetfurth, all of Germany, assignors to Salzdetfurth A.G., Hannover, Germany

Filed Apr. 12, 1968, Ser. No. 720,959
Int. Cl. C01f *5/30*
U.S. Cl. 23—304 **14 Claims**



Aqueous brines containing both magnesium chloride and magnesium sulfate are treated to recover a low-sulfate bischofite ($MgCl_2 \cdot 6H_2$). The brines are subjected to evaporation, as required, to produce a brine which is substantially supersaturated with respect to magnesium sulfate. The evaporation is conducted at high temperatures to avoid crystallization of magnesium chloride. The supersaturated magnesium sulfate brine is then held at high temperature under conditions which maintain the magnesium chloride in solution for a sufficiently long duration to permit the crystallization of magnesium sulfate as $MgSO_4 \cdot 5/4\ H_2O$. Clarified brine recovered from the resulting sulfate-crystal slurry is subjected to evaporation under vacuum and at low temperature, preferably below about 90° C., at sufficient rate to produce a low-sulfate bischofite crystal crop.

3,642,456
PROCESS FOR PURIFYING GYPSUM USING FLUOSILICIC ACID

John T. Brent, Jr., Glen Burnie, Md., and Jack S. Page, Tampa, Fla., assignors to W. R. Grace & Co., New York, N.Y.

Filed July 29, 1969, Ser. No. 845,871
Int. Cl. B01d *9/02*; **C01f** *11/46*
U.S. Cl. 23—304 **6 Claims**

In abstract, this invention is directed to a process for purifying crude gypsum, comprising dissolving the gypsum in a hot aqueous fluosilicic acid solution, separating the resulting gypsum containing solution from insoluble impurities, cooling the separated gypsum solution to precipitate purified gypsum therefrom, separating the purified gypsum from the mother liquor from which it (the purified gypsum) was precipitated, washing the separated gypsum, and recovering the washed gypsum, all as recited hereinafter.

3,642,457
MULTIMETAL CORROSION-RESISTANT DIFFUSION COATINGS

Harry Brill-Edwards, San Antonio, Tex., assignor to Chromalloy American Corporation, West Nyack, N.Y.

Filed May 31, 1968, Ser. No. 733,303
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.5 **3 Claims**

Methods and compositions are provided herewith for the production of multimetal diffusion coatings on metal articles providing prolonged protection against chemical or galvanic corrosion of the surface of the coated article during prolonged exposure to corrosive conditions, and particularly high-saline content marine atmospheres, especially where the protective coating is also subjected to mechanically erosive and abrasive environments, with the multiplicity of coating metals being selected so that the combination thereof provides a coating varying through the thickness thereof from outer surface toward the interface of coating layer and coated article so that the mechanical resistance to chemical corrosion is greatest at the outer surface but decreases as the coating thickness is eroded away, while the components of the coating offering sacrificial or cathodic protection are more concentrated adjacent the coating-article interface so that cathodic protection of the coated articles increases as the coating is removed by abrasion or erosion. As illustrative, the outer coating surface includes a high concentration of metallic components inherently resistant to saline corrosion and/or abrasion, although offering less cathodic protection for the coated article; while inner layers of the coating are rich in metallic components offering high sacrificial or cathodic protection, although less erosion or saline corrosion resistance.

3,642,458
COKE-MAKING PROCESS AND COKE FUEL PRODUCED BY SAME

Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 780,078, Nov. 29, 1968. This application Aug. 22, 1969, Ser. No. 852,436
Int. Cl. C10l *5/12*
U.S. Cl. 44—15 **4 Claims**

Coke is made from wastes such as fruit and vegetable peels, sawdust, straw, newsprint and whey liquid by decarboxylating and carbonizing these materials in the liquid aqueous phase under pressure. The coke produced is light and fluffy, easy to ignite and has a sulfur content below 0.5 percent by weight, a density of about 1.3 percent, a hydrogen content of at least 4.9 percent weight percent, a high-oxygen content, and a surface area ranging from 8 to 26 sq. meters per gram. These properties make the coke particularly useful in the manufacture of charcoal briquets, as fuel for orchard heating and wherever it is desired to avoid air pollution.

3,642,459
COPOLYMERS OF ETHYLENE WITH UNSATURATED ESTERS AND OIL COMPOSITIONS CONTAINING SAID COPOLYMERS

Stephan Ilnyckyj, Islington, Ontario, Canada, assignor to Esso Research and Engineering Company

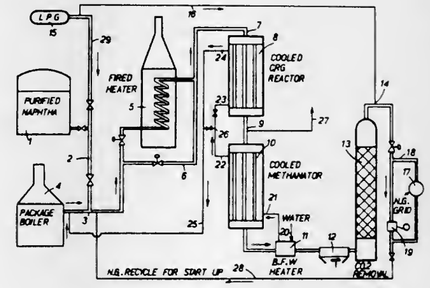
Filed Apr. 1, 1968, Ser. No. 717,915
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 **3 Claims**

Copolymers comprising within the range of 40 to 89 wt. percent ethylene, 10 to 40 wt. percent of vinyl ester of C_2 to C_4 monocarboxylic acid, and 1 to 30 wt. percent of unsaturated ester having a C_{10} to C_{22} alkyl group and having number average molecular weights within the range of 1,000 to 50,000, are useful in oil, e.g., as pour point depressants in distillate petroleum fuels and as dewaxing aids.

3,642,460
PROCESS FOR THE PRODUCTION OF A METHANE-CONTAINING GAS

Brian Hoyle Thompson, Solihull, England, assignor to The Gas Council, London, England

Filed Apr. 25, 1969, Ser. No. 819,375
Claims priority, application Great Britain, May 3, 1968, 21,186/68
Int. Cl. C07c *9/04*
U.S. Cl. 48—214 **7 Claims**



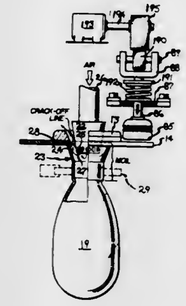
A gas containing a high proportion of methane (e.g. 90 percent or more) is produced by (i) reacting a preheated mixture of steam and the vapor of a predominantly paraffinic hydrocarbon feedstock having a final boiling point of not more than 300° C. in the presence of a steam-reforming catalyst to give a gas containing methane, hydrogen, carbon oxides and undecomposed steam, the reaction zone being cooled by a heat exchanger; (ii) reacting the stage (i) product gas in the presence of a methanation catalyst to increase the methane concentration, the reaction zone being cooled by a heat exchanger, and (iii) removing steam and optionally carbon dioxide from the gas leaving stage (ii). Both stages are operated at as low a temperature as possible to maximize the production of methane. The heat exchangers are preferably fluid-cooled internal heat exchangers. The fluid coolant may be water or steam. Water may be used in stage (iii) to remove (by cooling) steam; passed into the stage (ii) heat exchanger and converted into steam; passed into the stage (i) heat exchanger; and then used as the process steam.

3,642,461
METHOD OF TREATING BOTTLES DURING RIBBON SEPARATION

Richard A. Heaton, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 2, 1970, Ser. No. 245
Int. Cl. C03b *9/12*
U.S. Cl. 65—112 **6 Claims**

The invention pertains to ribbon machine manufacture of glass articles and employs a pressurizer machine inserting pressurizer nozzle into the formed articles attached to the ribbon. The nozzles direct a flow of air under pressure from within the neck region of the article in a upwardly direction toward the mouth of the article. Simultaneously with such airflow, a crackoff device severs the article from the ribbon and any glass chips or particles are expelled by the pressurizer airflow. The invention includes novel vibration

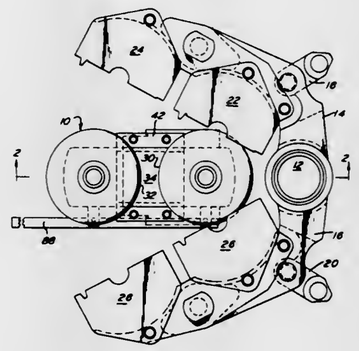


crackoff technique on the ribbon machine. As the article is severed, it drops by gravity a short distance onto individual transfer tongs traveling with the ribbon and just previous to crackoff is inserted around the article neck region. Upon severance, the articles are individually delivered in succession by the tongs to a further processing machine unit, such as a burnoff machine.

3,642,462
GLASSWARE-FORMING MACHINE BLOW MOLD STATION

Joseph Thomas, Millville, N.J., assignor to Maul Bros., Inc., Millville, N.J.

Filed Feb. 20, 1970, Ser. No. 13,252
Int. Cl. C03b *9/00*
U.S. Cl. 65—242 **6 Claims**



The bottom plate adapter at a blow molding station of a glassware-forming machine is selectively movable toward and away from the longitudinal axis of the post on which mold arms are rotatably supported. Mold halves are pivotably supported on the mold arms and adapted to cooperate with the bottom plate adapter. The adapter moves toward and away from the post after the mold arms rotate to a mold open position.

3,642,463
PURIFICATION OF BERYLLIUM

Kenneth A. Walsh, Fremont, and Andrew J. Sandor, Perrysburg, both of Ohio, assignors to The Brush Beryllium Company, Cleveland, Ohio

Continuation-in-part of application Ser. No. 573,874, Aug. 22, 1966, now abandoned. This application Aug. 8, 1969, Ser. No. 848,750

Int. Cl. C22b *9/00, 9/08, 9/14*

U.S. Cl. 75—0.5 **14 Claims**

There is provided a process for reducing the impurity content of particulate beryllium characterized by forming a slurry with an acidic solution, agitating the slurry at a temperature below the boiling point of the solution while maintaining the acidity below a pH of about 3.5 until impurities are dissolved in the solution, and separating the beryllium from the impurity-containing solution.

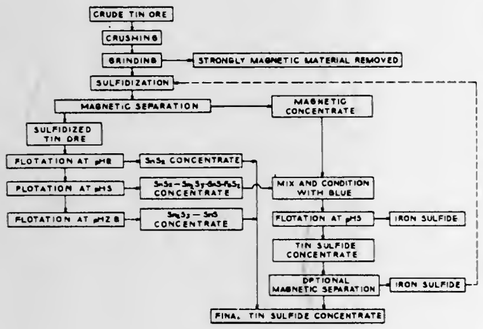
3,642,464
TIN ORE TREATING PROCESS

Adrian C. Dorenfeld, Brooklyn Center, Minn.; Fernando Jorge Dick, Oruro, Bolivia, South America; and Strathmore R. B. Cooke, Robbinsdale, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Dec. 9, 1968, Ser. No. 782,064

Int. Cl. C22b *1/02;* **B03c** *1/36*

U.S. Cl. 75—2 **18 Claims**



A method of beneficiating crushed and ground tin oxide ores, including concentrates, by first sulfidizing to produce stable tin sulfides SnS_2, Sn_2S_3 and SnS, and then, after initial separation of magnetic iron sulfide constituents, subjecting to progressive and selective flotation to remove the several tin sulfides formed. Flotation is ordinarily first carried out under alkaline conditions and then under conditions of increasing acidity. Nonmagnetic iron sulfide may be removed by flotation under mildly acid conditions and any residual magnetic iron sulfide may be removed by further magnetic separation. When elemental sulfur is used as the sulfidizing agent, as when pyrite is used as the sulfur source, iron oxide minerals in the tin ore or concentrates are preferentially sulfidized to form magnetic and nonmagnetic iron sulfide components. This characteristic enables the iron oxide minerals to be separated from the tin oxide ore by magnetic separation and progressive flotation.

3,642,465
PROCESS FOR THE PRODUCTION OF HIGHLY PREREDUCED OXIDE PELLETS

Morgan C. Sze, Upper Montclair, N.J.; William V. Bauer, New York, N.Y.; Raymond H. Long, Morristown; Ward J. Bloomer, and Richard T. Whitehead, both of Westfield, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed June 16, 1969, Ser. No. 833,761

Int. Cl. C21b *1/28;* **C22b** *1/24*

U.S. Cl. 75—4 **9 Claims**

The present invention discloses a process for producing strong, highly prereduced iron oxide pellets characterized by controlled size and degree of prereduction. Production of such pellets by known processes has failed to achieve economical commercial application. Pelletizing of finely divided ore, carbon, and inexpensive liquid carbonaceous binder is disclosed. The resulting green pellets are heated under conditions leading to coking of the binder and recovery of the cracked vapors which are subsequently fractionated into gaseous fuel and marketable byproduct liquid distillates. The coked pellets are then further heated to achieve the desired degree of reduction. The solid carbon introduced into the pelletizing step is preferably generated from the same liquid carbonaceous binder by spraying same onto hot powder under nonpelletizing conditions.

3,642,466
METHOD FOR THE PRODUCTION OF CAST IRON

James L. McCaulay, and Joseph B. Hollis, both of Melrion House, Albert Road North, Reigate, Surrey, England

Filed Nov. 26, 1968, Ser. No. 779,227

Claims priority, application Great Britain, Nov. 27, 1967, 53,777/67; May 31, 1968, 26,137/68

Int. Cl. C21c *7/00*

U.S. Cl. 75—51 **16 Claims**

The invention relates to a process for incorporating additives in molten metal by bottom addition so as to ensure exposure of the additive to the molten metal at a predetermined time and to avoid premature and possibly dangerously violent reaction between the metal and the additive. The additive is placed in the bottom of the ladle which is to contain the metal and is covered with a layer of an inert material which protects the additive until the cover is disturbed.

3,642,467
TREATMENT OF MATERIALS CONTAINING LEAD SULPHIDE

Geoffrey Charles Bratt, Moonah, Tasmania, and Roderick James Sinclair, Mont Albert, Victoria, both of Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Melbourne, Victoria, Australia

Filed Feb. 13, 1969, Ser. No. 799,081

Claims priority, application Australia, Feb. 29, 1968, 34388/68

Int. Cl. C22b *13/04*

U.S. Cl. 75—101 **1 Claim**

A process for recovery of lead values from a material containing lead sulphide and an iron compound by treatment with sulphuric acid in the presence of oxygen and a compound containing Na, K and/or NH_4.

3,642,468
STEEL SHEET FOR PRESS FORMING

Shinichi Nagashima; Hiroshi Takechi; Youichi Matsuo; Hiroshi Kato; Mineo Shimizu, and Nobuyuki Takahashi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of application Ser. No. 601,373, Dec. 13, 1966, now abandoned. This application Aug. 19, 1969, Ser. No. 858,244

Claims priority, application Japan, Dec. 17, 1965, 40/77319

Int. Cl. C22c *39/26, 39/50*

U.S. Cl. 75—123 J **4 Claims**

A steel sheet for press forming having excellent deep drawability and stretchability, the steel of the sheet having W

in an amount of from about 0.007 and up to about 0.15 percent. The steel can also have one element selected from the group consisting of Cr and V in an amount of 0.02 to 0.3 percent. It has less than 0.1% C and 0.01 to 0.50% Mn.

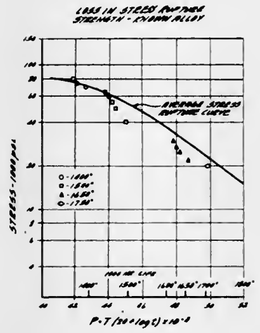
3,642,469
HIGH-STABILITY NICKEL BASE ALLOY

Earl Warren Ross, and Howard Thomas McHenry, both of Cincinnati, Ohio, assignors to General Electric Company

Continuation-in-part of application Ser. No. 745,717, July 18, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 362,945, Apr. 27, 1964, now abandoned. This application Aug. 29, 1969, Ser. No. 859,240

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **3 Claims**



An improved nickel base alloy is provided long time stability with respect to high rupture and tensile strength and adequate ductility at high temperatures through the avoidance of sigma phase. This is accomplished through the careful balance and coordination of Ti, Al and Cr in a Ni base alloy including, in addition, Co, Mo, Zr, V, B and C.

3,642,470
METHOD OF IMPROVING THE COLOR TONE OF A RECORDING LAYER CONTAINING PHOTOCONDUCTIVE LEAD (II) OXIDE

Bernard Hippoliet Tavernier, Edegem; Alfons Jozef De Meyer, Schelle, and Johannes Josephus Vanheertum, Hallezandhoven, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Nov. 12, 1969, Ser. No. 876,062

Claims priority, application Great Britain, Nov. 12, 1968, 53,672/68

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.5 **5 Claims**

The color tone of a recording layer containing photoconductive lead (II) oxide is improved by treatment with an alkali metal halide, alkaline earth metal halide or onium halide salt.

3,642,471
LIQUID DEVELOPING PROCESS IN AN ELECTROSTATOGRAPHIC IMAGING SYSTEM

Masamichi Sato, and Osamu Fukushima, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,551

Claims priority, application Japan, Sept. 19, 1969, 44/74406

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 96—1.8 **9 Claims**

An electrostatographic imaging system employing liquid development of an electrostatic latent image present on an electrophotographic sheet wherein prior to development at least the nonimage bearing surface of said sheet is contacted with an insulating liquid having a boiling point not exceeding 100° C. and subsequently both surfaces of said sheet are contacted with an insulating liquid having a boiling point greater than about 150° C. The electrophotographic sheet is dried immediately after immersion in the liquid developer.

3,642,472
BLEACHING OF HOLOGRAMS

Edmund S. Mayo, Wilmington, Del., assignor to Holotron Corporation, Wilmington, Del.

Filed Aug. 30, 1967, Ser. No. 664,330

Int. Cl. G03c *5/44*

U.S. Cl. 96—27 H **9 Claims**

A method for increasing the brightness and quality of a pictorial hologram made from photographic emulsions is disclosed. A critical range of average transmittance of the developed emulsion for an overexposed hologram has been discovered which gives a good-quality image after being bleached. A method for coating a bleached hologram is also disclosed which further improves its image.

3,642,473
SILVER DIFFUSION TRANSFER PROCESS WITH MERCAPTO-PURINE ANTIFOGGANT

Edward J. Johnson, Jr., Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 18, 1968, Ser. No. 698,716

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **12 Claims**

Mercapto-substituted purines are utilized in diffusion transfer photographic processes to give positive transfer prints of high quality over a very broad ange of processing temperatures.

3,642,474
METHOD FOR PRODUCING HALFTONE MULTICOLOR IMAGES

Johan Lodewijk Verelst, and Albert August Reyniers, both of Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed May 15, 1969, Ser. No. 825,056

Claims priority, application Great Britain, May 15, 1968, 23,077/68

Int. Cl. G03c *1/64*

U.S. Cl. 96—30 **27 Claims**

A colored image or pattern formed of one or more colored hydrophilic colloid layers is produced on a permanent support by transferring onto such support in the presence of an aqueous liquid from a temporary support carrying the same, an unhardened colored hydrophilic colloid layer containing a photosensitive iron (III) complex which yields iron (II) ions on exposure to active electromagnetic radiation, exposing the thus-transferred colloid layer while in a substantially dry state to imagewise modulated active electromagnetic radiation, treating the exposed layer with an aqueous liquid comprising hydrogen peroxide or containing dichromate ions so as to effect hardening of the exposed regions of the colloid layer, and removing the nonexposed regions of such layer from the permanent support by washing with an aqueous liquid, these steps being repeated in sequence for each colored colloid layer transferred to the permanent support to constitute the ultimate colored image or pattern.

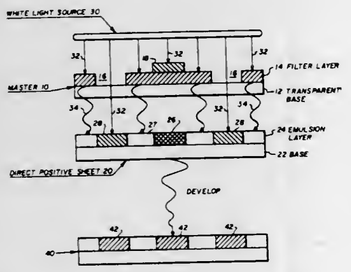
3,642,475
METHOD OF RECORDING AND REPRODUCING INFORMATION
Marcel Nicolas Vrancken, Hove, and Daniel Alois Claeys, Mortsel both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Oct. 2, 1968, Ser. No. 764,622
Claims priority, application Great Britain, Oct. 2, 1967, 44,765/67
Int. Cl. G03f *7/10*; **G03c** *5/00*
U.S. Cl. 96—35 **11 Claims**

A heat-sensitive recording material of the type covered by U.S. Pat. No. 3,476,937 and including a recording layer formed of a dispersion of solid hydrophobic thermoplastic polymer particles in a water-soluble hydrophilic binder is modified to include a diffusion-resistant colorant material and a visible finely divided material absorbing radiation and converting the same into heat, such material being either chemically bleachable or soluble in an aqueous liquid. The resultant heat-sensitive material is exposed to radiation pattern and then contacted with at least one liquid to bleach or dissolve the radiation absorbing and converting material and to remove by washing the water-soluble portions of the recording layer, the portions corresponding to the radiation pattern having been rendered water-insoluble by the exposure step but remain water-permeable to permit the radiation absorbing and converting material to be bleached or dissolved by penetration of the liquid.

3,642,476
METHOD OF PREPARING GLASS MASTERS
Nimrod N. Mesley, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 21, 1970, Ser. No. 39,412
Int. Cl. G03c *5/00*, *11/00*
U.S. Cl. 96—38 **8 Claims**

A method of preparing glass masters for use in the mass production of printed circuitry is provided. A transparent glass substrate is coated with a polyvinyl alcohol-catalytic agent complex, dried and immersed into an electroless metal bath. The metal coated substrate is coated with a conventional photoresist, exposed to actinic radiation, developed and the exposed metal is subsequently etched to provide a desired metal pattern. The deposited metal adheres very strongly to the substrate without the prior mechanical or chemical roughening thereof.

3,642,477
IMAGING METHOD
Frank M. Trusheim, Oakhurst, and Walter C. Zaniewski, Boonton, both of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.
Filed Apr. 24, 1969, Ser. No. 819,067
Int. Cl. G03c *5/32*
U.S. Cl. 96—45.2 **4 Claims**



Images are formed on direct positive photographic material in a single white-light exposure through the use of a master sheet which consists essentially of a selectively transmissive filter layer which allows transmission only of longer wave length light which is effective in reversing the prefogged direct positive material, and indicia disposed with respect to the filter layer to form in the master substantially totally opaque elements and substantially totally white light transmissive elements. Normal photographic development of the direct positive material after exposure provides positive images of equal intensity corresponding to the opaque and transparent indicia elements.

3,642,478
PROCESSES AND COMPOSITIONS FOR CONVERTING ZERO VALENT METALS PHOTOGRAPHIC IMAGES TO FORMAZAN DYE IMAGES
Albert T. Brault, Rochester, and Vernon L. Bissonette, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 25, 1970, Ser. No. 14,228
Int. Cl. G03c *5/24*, *5/44*
U.S. Cl. 96—48 **20 Claims**

A zero valent metal image in which the metal has a standard oxidation potential more positive than −0.98 volt is advantageously replaced by a formazan dye by the single process step of contacting the metal image with a solution of a ligand in the presence of a tetrazolium salt when the combination of tetrazolium salt and ligand with water and zero valent metal produces a solution reaction potential E greater than +0.01 volt, the process forming a good dye image when the formazan dye is nondiffusible and the process blixing the metal image when the formazan dye is diffusible and the metal-ligand complex is diffusible. Compositions of tetrazolium salt and ligand are advantageously used in this single step process for dye image formation or for blixing a metal image.

3,642,479
PHOTOGRAPHIC ELEMENT AND PROCESS
James A. Van Allan; Dennis E. De Meyer, both of Rochester, N.Y., and Frank D. Allen, deceased, late of Rochester, N.Y. (by Mona Armstrong Allen, executrix), assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,867
Int. Cl. G03c *5/24*, *1/72*
U.S. Cl. 96—48 R **9 Claims**

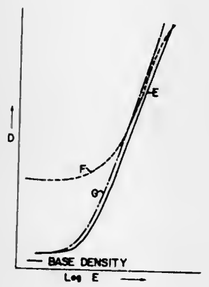
Photographic elements having a support on which is coated a layer including a light-sensitive halocarbon and a 1,4-pyran derivative like 1-(p-N,N-dimethylaminophenyl)-1H-3-(p-ethoxyphenyl)naphtho[2,1-b]pyran or 4-(p-N,N-dimethylaminophenyl)-2-phenyl-4H-1-benzo[b]pyran yield printout images in exposed areas on exposure to actinic rays. The resultant printout image can be intensified by heating.

3,642,480
PHOTOGRAPHIC PROCESS AND MATERIALS USED THEREIN
Marcel Nicolas Vrancken, Hove, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Apr. 24, 1969, Ser. No. 819,086
Claims priority, application Great Britain, Apr. 24, 1968, 19,457/68
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **17 Claims**

A method of and material for recording information using a recording material having a water-permeable recording layer consisting essentially in one embodiment of a continuous phase of film-forming hydrophilic colloid binder having uniformly distributed therethrough finely divided particles of a hydrophobic oil, wax, or thermoplastic polymer, together with finely divided particles of an inorganic photoconductive compound, and in another embodiment of a continuous phase of a film-forming hydrophilic colloid binder having uniformly distributed therethrough finely divided particles of

a hydrophobic oil, wax, or thermoplastic polymer, together with a water-soluble organic photoconductive dye, wherein such recording layer is imagewise exposed to active electromagnetic radiation to render the exposed areas substantially impermeable to water, while the unexposed areas remain permeable but without significantly increasing the temperature of such layer and is thereafter developed by contacting the same with an aqueous liquid to produce a visible change by penetration or removal of the unexposed regions of the layer by such liquid. The binder should be present in a ratio of about 1:1 to 1:10 relative to the hydrophobic particles, while the photoconductor is present in a ratio of 1:3 to 5:3 in the case of an inorganic photoconductor and at least about 0.05 percent by weight in the case of the organic photoconductive dye, both relative to the hydrophobic particles.

3,642,481
PROCESSING OF PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS
Hikoharu Hara; Reiichi Ohi; Masatoshi Sugiyama, and Tadao Hatano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 1, 1969, Ser. No. 846,787
Claims priority, application Japan, Aug. 3, 1968, 43/55017
Int. Cl. G03c *5/26*, *5/30*
U.S. Cl. 96—50 PT **24 Claims**



Processing silver halide, light-sensitive photographic materials employing solutions containing aldehyde hardening agents and certain phenazine oxides or dioxides in order to maintain the mechanical strength of the emulsion layers thereof during processing without impairing the photographic characteristics of the processed materials.

3,642,482
PHOTOGRAPHIC ELEMENT AND PROCESS
Carl J. Williams, Jr., Pittsford, and William F. Knechel, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 655,758, July 25, 1967, now abandoned. This application Apr. 21, 1969, Ser. No. 818,085
Int. Cl. G03c *7/00*
U.S. Cl. 96—53 **12 Claims**

Photographic elements incorporating anionic azo dyes and poly(styrene-maleimide) cationic mordants can be exposed and processed by dye bleach means to yield improved positive dye images. The scope of the present invention is defined by the following specification and claims.

3,642,483
THERMALLY DEVELOPABLE DIAZOTYPE COPYING MATERIALS
Keishi Kubo, Tokyo, and Sadao Matsumura, Yokohama-shi, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 26, 1967, Ser. No. 678,183
Claims priority, application Japan, Nov. 7, 1966, 41/72900; Nov. 18, 1966, 41/75823
Int. Cl. G03c *1/60*, *1/54*, *1/58*
U.S. Cl. 96—75 **2 Claims**

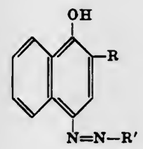
A thermally developable diazotype copying material is manufactured which comprises a supporting sheet and a light-sensitive copying layer coated on said supporting sheet, said layer consisting of a water soluble light-sensitive diazo compound, a water soluble heat fugitive acidic salt (base generating agent) and a water insoluble coupler. Another thermally developable diazotype copying material is also obtained, which is of a similar structure but said copying layer further contains an additional component consisting of an agent for lowering the melting point of said coupler besides said diazo compound, said salt and said coupler.

3,642,484
UNSATURATED PHOTOCHROMIC INDOLINO-SPIROPYRAN MONOMERS AND POLYMERS PREPARED THEREFROM
Albert Lucien Poot, Kontich, and Gerard Albert Delzenne, 'S-Gravenwezel, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Sept. 11, 1969, Ser. No. 857,226
Claims priority, application Great Britain, Oct. 3, 1968, 46,948/68
Int. Cl. F21v *9/10*; **G02b** *5/20*
U.S. Cl. 96—90 **9 Claims**

Photochromic unsaturated monomeric indolino-spiropyrans and the polymers and copolymers prepared therefrom are described. These photochromic materials in a light-sensitive photographic system containing a photohardening polymeric system provide nonfading photographic images.

3,642,485
COLOR-PHOTOGRAPHIC SILVER HALIDE MATERIALS CONTAINING COLORED AND UNCOLORED COUPLERS
Yasushi Oishi; Yoshinobu Yoshida, and Kazuya Sano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 26, 1969, Ser. No. 853,027
Claims priority, application Japan, Aug. 26, 1968, 43/60991
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **10 Claims**

In a color-photographic material a silver halide emulsion layer thereon contains an azo compound represented by the formula:



and a phenol or α-naphthol derivative substituted by an iodine atom at the paraposition to the hydroxyl group. The moieties utilized and additional parameters are defined in the specification.

3,642,486
VINYLSULFONYL-CONTAINING COMPOUNDS AS HARDENING AGENTS

Donald M. Burness, and Charles J. Wright, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original application Nov. 13, 1969, Ser. No. 682,525. Divided and this application Mar. 19, 1970, Ser. No. 24,979
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **9 Claims**

Compositions of matter comprising certain compounds containing two vinylsulfonylalkyl groups attached to a single heteroatom are disclosed as effective hardening agents for hardenable material. Photographic elements comprising said compounds are also disclosed.

3,642,487
PHOTOPOLYMERIZABLE COMPOSITION USEFUL IN HEAT FIXATION PROCESS

John B. Rust, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Original application Oct. 3, 1966, Ser. No. 583,649, now Patent No. 3,531,281. Divided and this application Dec. 12, 1969, Ser. No. 884,716. The portion of the term of this patent subsequent to Sept. 29, 1987, has been disclaimed.
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—115 P **16 Claims**

Fixation process for a polymerization effecting photo-oxidant and catalyst system contained in a photopolymerizable monomer system, compositions therefore and products, utilizing a silver compound as the fixing agent of said catalyst system after activation thereof.

3,642,488
PROTEIN SUPPLEMENTS FOR RUMINANT FEEDING STUFFS

Noel Watchorn, Norton-on-Tees, and Arthur William James Broome, Macclesfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 14, 1968, Ser. No. 767,482
Claims priority, application England, Nov. 14, 1967, 51,780/67
Int. Cl. A23k *1/22*
U.S. Cl. 99—2 **2 Claims**

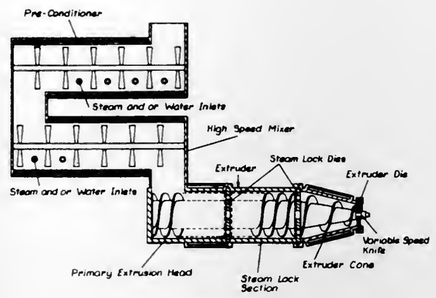
A ruminant feedstuff comprising, as a supplementary source of nitrogen, at least one alkylidene diurea, in particular isobutylidene diurea and crotonylidene diurea; said alkylidene diurea may be admixed with at least one conventional feedstuff.

3,642,489
FEED PRODUCT CONTAINING NONPROTEIN NITROGEN COMPOUNDS AND METHOD FOR PRODUCING SAME

Erle E. Bartley, and Charles W. Deyoe, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of application Ser. No. 517,074, Dec. 28, 1965, now abandoned. This application Apr. 18, 1969, Ser. No. 817,499
Int. Cl. A23k *1/00*
U.S. Cl. 99—2 R **5 Claims**

A reacted, palatable, nontoxic, processed food product for ruminant animals comprising a protein and energy producing composition having modified interacted protein and energy producing constituents wherein the energy producing constituent is derived from a starch bearing material such as initially ungelatinized grains, grasses, roughage, or vegetable starches and the protein producing constituent is derived form a nonprotein nitrogenous substance such as urea, other amides or ammonium salts. The material and substance are admixed and then processed in an extruder-cooker in the presence of sufficient moisture and under conditions of heat and pressure to assure gelatinization of a major proportion of the starch in the starch bearing material while intimately intermingled with the nonprotein nitrogenous substance to produce the reacted composition. The processed product is characterized by slower ammonia release from the non-



protein nitrogenous substance, increased synthesis of rumen microbial protein, reduced toxicity, and avoidance of the problem of constituent segregation often encountered with mixed feed compositions.

3,642,490
METHOD OF TREATING VEGETABLE PROTEIN

Robert L. Hawley, Webster Groves; Christopher W. Frederiksen, St. Louis, and Ralph A. Hoer, Ballivin, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Mar. 27, 1967, Ser. No. 625,980
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **14 Claims**

The preparation of a bland flavored, vegetable protein food product, preferably a soy protein food product, having excellent and controlled water dispersibility, by forming a slurry of the protein in water, preferably after separating the carbohydrates, sugars, and other nonproteins from the material, heating the slurried material practically instantaneously to elevated temperatures and severely physically working it, preferably by ejecting the slurry material from a nozzle while injecting steam into it, retaining the slurried material at elevated temperatures and under an elevated positive pressure for a brief, controlled time interval, and then suddenly releasing the pressure, volatilizing some moisture along with entrained, objectionable flavor and odor substances, and thereby causing partial cooling, removing the volatilized products and leaving a slurry of sterilized, bland flavored, highly water dispersible protein material, and then preferably drying the slurry to a bland tasting powder which is highly redispersible.

3,642,491
ARTIFICIALLY SWEETENED CONSUMABLE PRODUCTS

James M. Schlatter, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 543,054, Apr. 18, 1966, now Patent No. 3,492,131, and a continuation-in-part of 841,582, July 14, 1969. This application Jan. 12, 1970, Ser. No. 2,393. The portion of the term of this patent subsequent to Jan. 27, 1987, has been disclaimed.
Int. Cl. A23l *1/26*
U.S. Cl. 99—28 **10 Claims**

Artificially sweetened consumable products having low-caloric content and lacking in unpleasant aftertaste are obtained by incorporating a sweetening agent of the class consisting of the lower alkyl esters of aspartylphenylalanine and aspartylhexahydrophenylalanine.

3,642,492
METHOD OF PREPARING A SIMULATED SKIM MILK

Robert H. Arndt, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed June 1, 1967, Ser. No. 642,676
Int. Cl. A23c *11/00*; A23j *1/14*
U.S. Cl. 99—64 **9 Claims**

A method of preparing a commercially acceptable, nutritious substitute for dry skim milk as a food additive, comprising the basic steps of pretreating sweet dairy whey, separately pretreating isolated vegetable protein, particularly soy protein, by a dynamic physico-thermo-vapor flash treatment to remove objectionable flavors and odors, blending these pretreated ingredients in a certain controlled ratio, and adjusting the hydrogen ion content to a specific controlled range. The product is preferably flash dried to a powder.

3,642,493
METHOD OF PREPARING A SIMULATED MILK PRODUCT

Robert H. Arndt, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed June 1, 1967, Ser. No. 642,737
Int. Cl. A23c *11/00*; A23j *1/14*
U.S. Cl. 99—64 **14 Claims**

A method of preparing a simulated whole milk beverage product by physico-thermo-vapor flash pretreating isolated vegetable protein, preferably isolated soy protein, and combining it with sweet diary whey and special vegetable oil or fat formed by hydrogenating oil in a special procedure, and in controlled proportions, involving mixing of the isolated protein and vegetable oil together while reliquifying or suspending them in water, reliquifying the whey separately, if in dry form, blending the materials, adjusting the pH to a certain range, and homogenizing the materials in a special multiple stage manner.

3,642,494
METHOD OF COMMINUTING LEGUMES

Joseph R. Wagner, Moraga, Calif., assignor to The United States of America as represented by the Secretary of Agriculture

Filed Oct. 23, 1968, Ser. No. 770,070
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 **4 Claims**

Processes for preparing bean-milk, purees, and other food products of improved flavor from edible legume seeds, which include the feature that raw legume seeds are comminuted in the presence of added acid, e.g., HCl or H_3PO_4.

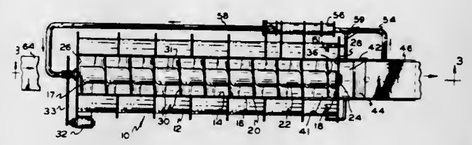
3,642,495
METHOD FOR PROCESSING EDIBLE FOODSTUFFS

Arthur R. Davidson, Lake Oswego, Oreg.; John E. Haubner, Vancouver, and George A. White, Quincy, both of Wash., assignors to Lamb-Weston, Inc., Portland, Oreg.

Filed May 17, 1968, Ser. No. 730,087
Int. Cl. A23l *1/00, 1/12, 3/18*
U.S. Cl. 99—100 **3 Claims**

An apparatus for processing edible foodstuffs having a cylindrical casing and a screw conveyor coaxially disposed within the casing for transporting a food product from one end to a point adjacent the other. A vertical discharge flue is positioned adjacent the discharge end of the casing and is in communication with an opening at the bottom thereof. Heat-exchanging liquid is introduced into the casing through orifices in the bottom to heat or cool the product, as the case may be, and in an amount sufficient to fill the casing to a level above that of the screw conveyor. The liquid entrains the product at a point adjacent the discharge end of the casing causing it to flow through the bottom opening thereof and vertically up through the discharge flue from which it passes over a weir at the top thereof at a level substantially equal to the elevation of the liquid in the casing. The liquid assisted transport thereby achieves elevation of the product without risk of damage thereto.

The method of processing a food product involves mechanically moving it horizontally from a first point to a second point during a prescribed period of time, during which time a heat-exchanging liquid is passed upwardly



through the product from a position beneath it to a position thereabove. Thereafter, the heat-exchanging liquid is moved parallel to the horizontally moving product until the product reaches the second point, whereupon the liquid entrains the product and lifts it from the second point to a liquid separation point above the second point.

3,642,496
METHOD OF MAKING A BACON-CONTAINING FOOD PRODUCT

Lloyd R. Gibson, Zanesville, Ohio, assignor to Food Methods, Inc., Zanesville, Ohio

Filed July 29, 1969, Ser. No. 845,909
Int. Cl. A22c *11/00, 18/00*
U.S. Cl. 99—107 **4 Claims**

A food product in which bacon ends are utilized, and method for making the same. Bacon ends lack natural cohesion when cooked in a pattie or other similar form. The invention involves grinding or chipping the bacon ends, and adding to the bacon end pieces a meat addition which is high in protein content, an edible food substance which is high in albumin content, and a protein filler. Water also is added, and the above are mixed and shaped into a suitable form, while maintained at a temperature in the range of about 10° F. to about 45° F. The amount of meat addition, albumin containing food substance, and filler added to the bacon end pieces is sufficient to prevent disintegration of the food product during cooking.

3,642,497
FLAVORING COMPOSITIONS PRODUCED BY REACTING HYDROGEN SULFIDE WITH A PENTOSE

Roland Gunther, Princeton Junction, N.J., assignor to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 730,665, May 20, 1968, now abandoned , Continuation-in-part of application Ser. No. 746,240, July 22, 1968, now abandoned. This application July 26, 1971, Ser. No. 161,500
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **36 Claims**

The flavoring compositions produced by the reaction of a pentose with hydrogen sulfide possess potent flavoring characteristics even though the reactants from which they are produced are markedly different from such compositions. For example, certain such compositions possess a characteristic meat flavor in a concentration as low as one part in 10,000 notwithstanding that one of the components for producing such compositions has an obnoxious odor. Such meat flavoring compositions significantly increase the degree of palatability of nonmeat protein.

3,642,498
METHOD OF PREPARING KERATIN-CONTAINING FILMS AND COATINGS

Charles A. Anker, Minneapolis, Minn., assignor to General Mills, Inc.

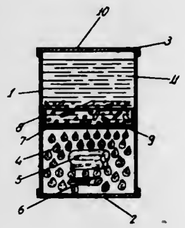
Filed Sept. 18, 1969, Ser. No. 859,198
Int. Cl. A23b *1/10*; **C08r** *7/04*
U.S. Cl. 99—166 **14 Claims**

Isolated keratin is dispersed in an alkaline medium consisting of alcohol and water. The dispersion is applied to solid substrates including food and dried to form an edible coating. The coating can be stripped from the substrate as a continuous film. A portion of a second proteinaceous substance and a plasticizer can be included in the dispersion.

3,642,499
METHOD OF PACKING COOKED FOOD PRODUCTS

Juan Morato Castell, 8 Merced St., Barcelona 8, Spain

Filed June 26, 1969, Ser. No. 836,854
Int. Cl. B65b *3/00*
U.S. Cl. 99—171 CP **3 Claims**



A method of packing food having a liquid component and a solid component in a heatable container compartmented by a perforate wall to enable evacuation of the liquid component selectively and independently of the solid component.

3,642,500
PROCESS FOR STABILIZING STRUCTURE OF GROUND MEAT

Gary W. Shults, Milford, and Eugen Wierbicki, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Army

Filed July 17, 1969, Ser. No. 842,703
Int. Cl. A22c *18/00*; **A23b** *1/00*
U.S. Cl. 99—108 **5 Claims**

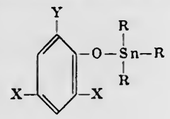
Stabilization of the structure of shaped, cooked, ground meat which is to be sterilized with high energy ionizing radiation is accomplished by incorporating within raw, ground meat from 0.5 percent to 1.5 percent by weight of sodium chloride and from 0.25 to 1.0 percent by weight of a food grade phosphate.

3,642,501
SURFACE-COATING COMPOSITIONS CONTAINING ORGANOTIN FUNGICIDES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

Continuation-in-part of application Ser. No. 708,802, Feb. 28, 1968, now Patent No. 3,524,869. This application Jan. 15, 1970, Ser. No. 3,194
Int. Cl. C08f *45/64*; **C09d** *5/14*
U.S. Cl. 106—15 AF **2 Claims**

Organotin compounds that have the structural formula



wherein each R represents an alkyl group having from four to eight carbon atoms or a phenyl group; one of the X substituents represents an alkyl group having from four to eight carbon atoms, phenyl, or menthyl; the other X substituent represents hydrogen, halogen, nitro, or an alkyl group having from one to four carbon atoms; and Y represents hydrogen, halogen, or nitro, are used to protect surface-coating compositions from deterioration resulting from attack by fungi and other micro-organisms.

3,642,502
BLEED RESISTANT INK

Donald J. Schneider, Green Bay, Wis., assignor to Fort Howard Paper Company

Filed Apr. 25, 1969, Ser. No. 819,420
Int. Cl. C09d *11/00*, *11/06*
U.S. Cl. 106—23 **6 Claims**

A bleed resistant ink for printing on paper products which is likely to come into contact with common solvents such as water, alcohol, etc. The bleed resistant ink comprises a coloring material, polyamide epichlorohydrin, talc and a solvent.

3,642,503
PROCESS FOR BONDING PARTICULATE MATERIALS

Peter Austin Beaney, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Continuation of application Ser. No. 815,976, Apr. 14, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 611,232, Jan. 24, 1967, now abandoned. This application June 8, 1970, Ser. No. 44,637
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.35 **8 Claims**

Silicate—bonded sand mixtures may be hardened by several known different methods. This application describes a further method of hardening the mixture by the incorporation therein of mixture of diacetin and triacetin.

3,642,504
GLASS CONVERTIBLE TO TRANSPARENT GLASS CERAMICS CONTAINING ALPO

Jurgen Petzold, and Herwig Scheidler, both of Mainz-Mombach, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz/Hattenbergstrasse, Germany

Filed July 1, 1968, Ser. No. 743,580
Claims priority, application Germany, July 1, 1967, P 15 96 860.2; Nov. 22, 1967, P 15 96 865.7; Jan. 3, 1968, P 16 96 062.6
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 DV **13 Claims**

Glass ceramics made from an initial glass composition, in weight percent, of

SiO_2	35–20
Al_2O_3	42–32
P_2O_5	5–17
Li_2O	2–5
MgO	0–4
ZnO	0–5
TiO_2	1-5–6
ZrO_2	0.5–3
Na_2O	traces–0.6
As_2O_3	0.5–1.0,

where the P_2O_5 to TiO_2 ratio is up to about 4, and where the sum of ZrO_2 and TiO_2 is at least about 3 weight percent.

3,642,505
MANUFACTURE OF MULLITE REFRACTORY GRAIN AND PRODUCT

Wate Thewis Bakker, Severna Park, Md., assignor to General Refractories Company, Philadelphia, Pa.

Filed July 11, 1968, Ser. No. 743,935
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **12 Claims**

A process for manufacturing a mullite refractory grain from raw bauxite ore which comprises subjecting minute particles of the dry finely, crushed ore to a high pressure and

calcining the product at relatively moderate temperatures for a short period of time. The refractory grain product obtained has a high density and a low porosity; it consists essentially of interlocking mullite crystals with only very minor amounts of siliceous glass and alpha-alumina crystals.

3,642,506
METHOD FOR IMPROVING THE PROPERTIES OF HYDRAULIC CEMENTITIOUS MIXTURES

Keith L. Johnson, Matteson, Ill., assignor to Swift & Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 565,482, July 15, 1966, now abandoned. This application Nov. 28, 1969, Ser. No. 880,928
Int. Cl. C04b *13/26*
U.S. Cl. 106—90 **16 Claims**

A method of improving the workability and compressive strength of concrete by the addition of from about one-half to about 1½ fluid ounces per 94 pound sack of cement of a cementitious admixture including a surface active agent made up of primary polyglycolamides, tertiary amide oxides and mixtures thereof; an anionic detergent; and a solvent.

3,642,507
COMPOSITIONS OF NITROCELLULOSE AND CYCLIC ESTER POLYMERS

Gary Vernon Olhoft, Charleston, W. Va.; Nelson Richard Eldred, Memphis, Tenn., and Joseph Victor Koleske, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,384
Int. Cl. C08b *21/14*
U.S. Cl. 106—182 **8 Claims**

Cyclic ester polymers as plasticizers for nitrocellulose, as in printing inks, lacquer coatings, adhesives, films and moldable plastics. Flexographic and gravure printing inks employing cyclic ester polymers as binder, particularly with dyes as coloring agents.

3,642,508
SAND CONSOLIDATION COMPOSITION CONTAINING 2-HYDROXY ADIPALDEHYDE, WATER AND AN ORGANIC SOLVENT

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 835,225, June 20, 1969, Pat. No. 3,563,314
Filed June 1, 1970, Ser. No. 54,064
Int. Cl. C09k *3/00*
U.S. Cl. 106—287 **2 Claims**

Composition for the treatment of unconsolidated sandy formations to stabilize the formation comprising an aqueous solution containing from about 15 to about 50 percent by volume of 2-hydroxyadiapaldehyde and an oxygenated lower aliphatic hydrocarbon.

3,642,509
HYDRAULIC COMPOSITION

Jiro Fujimasu, Tokyo, Japan, assignor to Fujimasu Industries International

Filed Aug. 14, 1969, Ser. No. 850,255
Int. Cl. C08h *17/88*
U.S. Cl. 106—287 SS **17 Claims**

An hydraulic composition for setting or hardening soils comprising 100 parts by weight of a component A and 6 to 10 parts by weight of a component B. Component A is the product obtained by calcining a mixture of the following constituents: 100 parts by weight of limestone; 3 to 6 parts by weight of alumina; 15 to 30 parts by weight of silica; 4 to 10 parts by weight of magnesium oxide; 5 to 10 parts by weight of iron oxides; and 5 to 10 parts by weight of magnesium chloride. This mixture is preferably calcined at a temperature between about 1,000° and about 1,300° C. and is thereafter rapidly cooled to a temperature below about 100° C. The calcined granules so produced are pulverized and mixed with component B having the following preferred composition: 79 parts by weight of calcium sulphate; 55 to 75 parts by weight of an alkaline earth metal chloride; 5 to 10 parts by weight of an alkali metal silicofluoride; 10 to 20 parts by weight of an alkali metal carbonate; 10 to 20 parts by weight of a buffering agent; 30 to 50 parts by weight of lignin sulfonate.

A further improvement can be made by adding a component C to the mixture of components A and B. Component C has the following composition: 100 parts by weight of at least one member selected from the group consisting of weathered granite soil calcined at 700° to 900° C., decomposed basalt soil calcined at 300° to 500° C., and volcanic ashes or decomposed andesite soil calcined at 300° to 500° C.; and 40 to 60 parts by weight of at least one member selected from the group consisting of sand or pozzolan gravel calcined at 200° to 300° C., limestone residue which comprises overheated calcined residue which is not returned to slaked lime in the presence of water, calcined at 200° to 300° C., calcium hydroxide calcined at 200° to 300° C., nickel blast furnace slag calcined at 200° to 300° C., and the residue of electrolytic refining of aluminum calcined at 200° to 300° C. Component C is preferably employed in the range of about 10 parts by weight to about 20 parts by weight per 100 parts by weight of component A.

3,642,510
PROCESS FOR PREPARING TITANIUM OXIDE PIGMENT HAVING HIGH DISPERSIBILITY IN HYDROPHOBIC SYSTEMS

Iwakichi Suglyama, Narashino-shi, and Haruki Tomozuka, Tokyo, both of Japan, assignors to Matsumoto Chemical Industry Co., Ltd., Minamiyawata, Ichikawa-shi, Chiba-ken, Japan

Filed Aug. 16, 1968, Ser. No. 753,073
Claims priority, application Japan, Feb. 1, 1968, 43/5831
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **12 Claims**

Titanium oxide pigments having a high dispersibility in hydrophobic systems are prepared by adding an alkali metal salt of a high molecular weight carboxyl compound to a titanium oxide slurry finely dispersed in water or an alcohol containing an aluminum salt or zinc salt to form a soap of aluminum or zinc on the surface of said titanium oxide.

3,642,511
METHOD OF TREATING WOLLASTONITE WITH ACID AND THE PIGMENT PRODUCT FORMED THEREBY

Morris I. Cohn, Brookline; Roy D. Perdue, Andover, and Elliot E. Rosenberg, Trustee of Mica Trust, Boston, all of Mass.

Continuation of application Ser. No. 766,453, Oct. 10, 1968, now abandoned. This application Mar. 12, 1970, Ser. No. 18,366
Int. Cl. C09c *1/02*, *1/30*
U.S. Cl. 106—306 **12 Claims**

A novel method of producing from wollastonite finely divided pigments and fillers of unusually high opacifying power, high brightness, low bulk density and low abrasiveness for use in paper, paint and other products by reacting the wollastonite in the form of a slurry with sulfuric acid, preferably at an elevated temperature, to form calcium sulfate pigment particles and to solubilize at least part of the silica in the wollastonite, followed by raising the pH of the slurry to gelate the solubilized silica and form agglomerates or aggregates of the calcium sulfate particles and the silica gel, followed by dewatering and drying under noncalcining conditions. The final state of pigment particle aggregation and stabilization of the pigment aggregates is important in imparting high surface hiding power. In a preferred embodiment, the wollastonite slurry is reacted with less than stoichiometric quantities of phosphoric acid at an elevated temperature prior to reaction with the sulfuric acid.

Preferably, the reaction product is subjected to high shear, e.g. by passage through a homogenizing valve, and/or a hydroclassifying step, e.g. a hydrocyclone, to complete reaction and hydration and to reduce abrasiveness.

3,642,512
METHOD OF COATING FINELY GROUND CARBON WITH OILS

William W. Gotshall, 3081 Walma Drive, Orchard Lake, Mich.

Filed Mar. 25, 1970, Ser. No. 22,645
Int. Cl. C09c *1/44*
U.S. Cl. 106—307 10 Claims

Carbon particles are covered with an organic liquid barrier against oxygenation by dissolving the barrier liquid in methanol to form a solution and mixing the solution into the carbon in a blender. The methanol is then evaporated off leaving a uniform film of the barrier liquid.

3,642,513
OXIDATIVE HEAT TREATMENT OF CARBON FIBERS

Roger Stuart Sach, Wantage, and John Bromley, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 2, 1969, Ser. No. 788,609
Claims priority, application Great Britain, Jan. 3, 1968, 524/68
Int. Cl. C09c *1/44*; C08g *51/10*; C01b *31/07*
U.S. Cl. 106—307 6 Claims

Carbon fibers are heat treated in an oxygen-containing atmosphere including a gaseous inhibitor which inhibits the reaction between carbon and oxygen by reducing the activation energy of the carbon for oxidation to improve the surface characteristics of the carbon fibers for bonding purposes in a fiber-resin composite. Example of inhibitors are halogens, sulfur dioxide, and halogenated hydrocarbons such as carbon tetrachloride, chlorine being preferred.

3,642,514
PRESSURE-SENSITIVE COPYING SHEET UTILIZING STABILIZED CRYSTAL VIOLET LACTONE, METHOD OF MAKING AND METHOD OF MAKING COMPOSITION

Michio Orita, and Masakichi Yahagi, both of Tokyo, Japan, assignors to Nisso Kako Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1970, Ser. No. 32,373
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 7 Claims

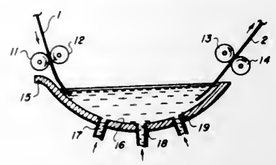
A chlorinated diphenyl solvent solution of Crystal Violet Lactone as well as an emulsion for use in pressure-sensitive copying papers which contain microcapsules wherein said solvent solution is encapsulated as an internal liquid phase may be substantially prevented from becoming blue stained by the action of light by incorporating at least 0.5 percent, preferably 2.5–10 percent by weight based on the amount of Crystal Violet Lactone of 2-[p,p'-bis(dimethylamino)benzhydrol]-5-dimethylaminobenzoic acid in said solvent solution. In a pressure-sensitive copying paper, the rear surface of a writing sheet being intended to be brought into contact with the clay-coated surface of a recording sheet, which has been coated with the aforesaid emulsion, does not substantially tend to become blue stained on exposure to the sunlight even for a considerably long period of time, and hence is of great commercial usefulness.

3,642,515
LIQUID DEVELOPMENT UTILIZING A CURVILINEAR DEVELOPMENT ELECTRODE

Masamichi Sato; Yasuo Tamai; Seiji Matsumoto, all of Asakishi, Saitama-ken, and Satoru Honjo, Suginami-ku, Tokyo, all of Japan, assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 19, 1968, Ser. No. 753,485
Claims priority, application Japan, Aug. 24, 1967, 42/54379
Int. Cl. G03g *13/10*
U.S. Cl. 117—37 LE 4 Claims

Images are formed by transporting a photoconductive sheet member bearing an electrostatic latent image on its recording surface through or into contact with a liquid developer along a conductive arcuate surface provided with



one or more apertures through which the liquid developer is applied to the recording surface.

3,642,516
CARPET BACKING

Glen P. Gasaway, Buford, and Thomas Render Holbrook, Cornelia, both of Ga., assignors to Johnson & Johnson

Filed Mar. 18, 1969, Ser. No. 808,196
Int. Cl. B32b *17/04*; B44d *1/16*; C03c *25/02*
U.S. Cl. 117—65.2 17 Claims



An improved heat and dimensionally stable carpet backing comprising crossing fiberglass yarns with each of the yarns coated with a vinyl plastisol and a substantially uniform adherable and noncompatible second coating of acrylic-acetate resin uniformly distributed over the vinyl coated yarns with the bond strength of the second coating to the vinyl coating on the yarns being less than the bond strength of the vinyl coating to the fiberglass.

3,642,517
PROCESS FOR INCREASING THE STABILITY OF PROTECTIVE CHROMIUM LAYERS ON METAL

Guy Faber, Ober-Rohrdorf, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 5, 1968, Ser. No. 734,570
Claims priority, application Switzerland, Sept. 6, 1967, 12392/67
Int. Cl. B44d *1/14*
U.S. Cl. 117—71 M 6 Claims

A process for increasing the stability of a protective chromium layer on metal used in a nitrogen-containing atmosphere at high temperatures, the chromium layer being coated with a layer of a metal having less affinity than chromium such as unalloyed iron, nickel or cobalt, and in which the chromium is soluble, the whole then being diffusion annealed in a neutral atmosphere at a temperature above 1,000° C. until the thickness of the chromium-alloyed portion of the metal coating is at least 0.01 mm.

3,642,518
TREATMENT OF POLYESTER MATERIALS

Masakazu Miki; Yasuhiro Takeuchi, and Hisaharu Kuwahara, all of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 20, 1970, Ser. No. 21,483
Claims priority, application Japan, Mar. 20, 1969, 44/21438
Int. Cl. B44d *1/14*; B32l *27/36*
U.S. Cl. 117—72 8 Claims

Polyester materials are treated to increase their adhesion to rubber by contacting the polyester material with a treating liquor containing a silane of the formula:

$$R'-(CH_2)_m-Si(OR^2)_{3-n}$$
$$\quad\quad\quad

perpendicularly (or at a small angle to the vertical) copper or a copper alloy wire through a heated zone after passing a tin bath. This heated zone is within a heated gas chamber which is traversed by the wire with the wire at such a distance from the chamber wall that the oscillating wire is not contacted by the wall. In accordance with the present invention, a wire with 0.2 to 1 mm. and preferably 0.5 mm. diameter is led, after passing the tin bath, through a heating zone of a round or a square cross section, with a length of 30 to 100 cm. and a temperature of 200° to 430° C. Adhesion forces as well as surface tension forces are active in the development of a uniformly thick tin coating. The present invention also relates to a device used to perform the above method.

3,642,524
PROCESS FOR THE PRODUCTION OF POLYHYDANTOINS

Rudolf Merten; Willi Dunwald, both of Leverkusen, and Karl-Heinz Mielke, Cologne-Stammheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 24, 1969, Ser. No. 869,349
Claims priority, application Germany, Nov. 8, 1968, P 18 07 742.4
Int. Cl. C08g *22/02*
U.S. Cl. 117—128.4 **1 Claim**

Improvement of the process for producing polyhydantoin coatings by heat treating polyhydantoin solutions according to U.S. Pat. Nos. 3,397,253 and 3,448,170 comprising the addition of a metal catalyst, which is soluble in the polyhydantoin solution.

3,642,525
FIRE-RESISTANT FIBERS AND FABRIC

Jay C. Chapin, Chicago, Ill., assignor to Ventron Instruments Corp., Scientific Chemicals Division

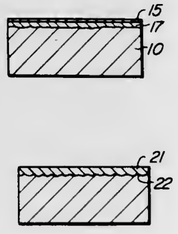
Filed Aug. 8, 1968, Ser. No. 751,053
Int. Cl. B32b *27/08*; **C09d** *5/18*
U.S. Cl. 117—136 **4 Claims**

Fibers, such as natural fibers wool and silk and synthetic fibers, for example, polyesters, such as dacron, and polyamides such as nylon are coated with a reaction product of polyhalogenated acids having a cyclic nucleus such as chlorendic acid with thiourea to render the fibers fire-resistant and self-extinguishing after removal of the initiating flame.

3,642,526
SEMICONDUCTOR SURFACE BARRIER DIODE OF SCHOTTKY TYPE AND METHOD OF MAKING SAME

Yokichi Itoh, and Norikazu Hashimoto, both of Hachioji-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1969, Ser. No. 804,757
Int. Cl. H01l *7/44*, *7/50*
U.S. Cl. 117—200 **25 Claims**



A semiconductor surface barrier diode of Schottky type comprising a contact of semiconductor and metal or a compound of the metal and the semiconductor, wherein the contact surface forming a barrier is formed remarkably uneven so as to adjust the barrier height.

3,642,527
METHOD OF MODIFYING ELECTRICAL RESISTIVITY CHARACTERISTICS OF DIELECTRIC SUBSTRATES

Andrew J. Purdes, Pawtucket, R.I., and Ernest M. Jost, Plainville, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

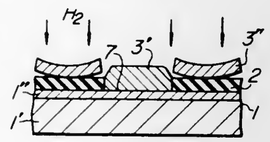
Filed Dec. 30, 1968, Ser. No. 787,989
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **12 Claims**

The electrical resistivity characteristics of selected portions of a dielectric substrate, such as barium titanate, may be modified by first forming a relatively porous substrate which may be handled without breaking, as by prefiring the substrate, masking selected portions of the substrate with a material such as a photoresist material which will vaporize during final firing of the substrate, contacting the substrate with a solution of a first reactant, immersing at least a portion of the substrate in a solution of a second reactant which will react with the first reactant to precipitate in situ in a portion of the substrate a compound which is insoluble in the solutions and which is adapted to modify the electrical resistivity characteristics of the substrate, and thereafter firing the substrate at a temperature on the order of 1,400°–1,450° C. to reduce the porosity of the substrate and to incorporate the insoluble compound into the lattice of selected portions of the substrate. Where it is desired to dope selected portions of an undoped substrate to the desired thickness and form thick-film positive temperature coefficient (PTC) thermistors, the starting material may be an undoped barium titanate, for example, the solution of the first reactant may be an aqueous solution of a compound such as ammonium hydroxide, and the solution of the second reactant may be an aqueous solution of a compound such as lanthanum acetate which reacts with the ammonium hydroxide to precipitate lanthanum hydroxide in situ and thereby dope selected portions of the substrate. Where it is desired to produce areas of high-electrical resistivity in selected portions of the substrate, the starting material is a doped barium titanate, for example, the solution of the first reactant may be an aqueous solution of a compound such as ammonium hydroxide, and the solution of the second reactant may be an aqueous solution of a ferric compound such as ferric chloride which reacts with the ammonium hydroxide to precipitate in situ ferric hydroxide which, when fired, produces a high-resistivity area.

3,642,528
SEMICONDUCTOR DEVICE AND METHOD OF MAKING SAME

Akihiro Kimura, Takatsuki-shi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed May 27, 1969, Ser. No. 828,301
Claims priority, application Japan, June 5, 1968, 43/39252; Aug. 12, 1968, 43/57738; 43/57739
Int. Cl. H01l *3/16*
U.S. Cl. 117—212 **7 Claims**

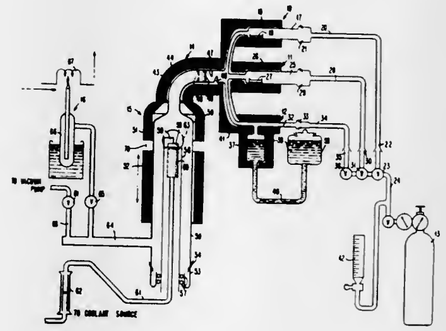


A palladium film deposited on a silicon oxide layer peels off when subjected to a gas containing hydrogen. A palladium film of a predetermined shape can be formed on a semiconductor body by forming a silicon oxide film on the body, making a contact window of desired shape in the oxide film to expose the semiconductor body, then depositing palladium on the body and the oxide film and then subjecting the assembly to a gas containing hydrogen thereby to peel off that part of the palladium film which is on the silicon oxide film leaving the palladium film which is on the contact window.

3,642,529
METHOD FOR MAKING AN INFRARED SENSOR

Robert E. Lee, Essex Junction, Vt.; Philip S. McDermott, Athens, Pa., and Edward S. Pan, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,312
Int. Cl. H01l *7/36*
U.S. Cl. 117—212 **11 Claims**



An infrared sensitive photoconductive material is produced by growing a ternary compound of the formulation $Hg_{(1-x)}Cd_xTe$ from a gaseous mixture of mercury, cadmium and tellurium onto a substrate which promotes polycrystalline growth and is chemically inert vis-a-vis the constituent gases. Suitable substrate materials are quartz, sapphire, and certain types of glass which are nonmeltable at growth temperatures of the ternary compound. The method preferably grows the polycrystalline material from a gaseous mixture of mercury, cadmium and tellurium heated to a temperature which inhibits binary combinations and then is rapidly cooled to supersaturation very close to the surface of a solid amorphous substrate material although crystalline substrates may be used provided the lattice structure in growth is incompatible with the lattice of the ternary compound.

3,642,530
METHOD FOR FORMING AN ELECTRICALLY INSULATING COATING

Alan E. Webb, Bristol, England, assignor to Rolls-Royce Limited, Derby, England

Filed Nov. 17, 1969, Ser. No. 877,458
Claims priority, application Great Britain, Nov. 20, 1968, 55,090/68
Int. Cl. B44d *1/09*, *1/16*
U.S. Cl. 117—217 **9 Claims**

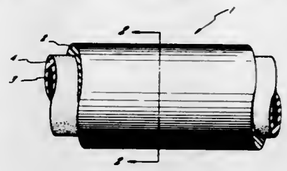
Processes are described for forming electrically insulating coatings and which comprise applying an epoxy coating containing a thixotropic filler and oxide pigment and applying over this an epoxy coating containing a thixotropic filler, an oxide pigment and a powder of inert metal.

3,642,531
WATER BASED FIRE PROTECTIVE COMPOSITION APPLIED TO ELECTRICAL CABLE

Roger L. Peterson, Los Angeles, Calif., assignor to Dyna-Therm Corporation, Los Angeles, Calif.

Filed Nov. 28, 1969, Ser. No. 880,813
Int. Cl. B44d *1/16*, *1/18*; **C09k** *3/28*
U.S. Cl. 117—218 **16 Claims**

A self-extinguishing fire protective composition and cables coated with such composition are disclosed. The composition includes a water based resinous emulsion, a chlorinated

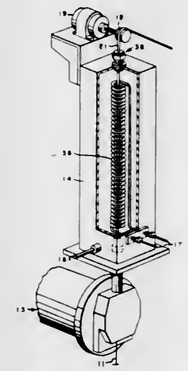


hydrocarbon and inorganic noncombustible fibers.

3,642,532
VULCANIZING RUBBER COVERED WIRE

Charles W. Greene, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 15, 1970, Ser. No. 46,415
Int. Cl. B44d *1/34*; **C08c** *17/06*
U.S. Cl. 117—233 **5 Claims**

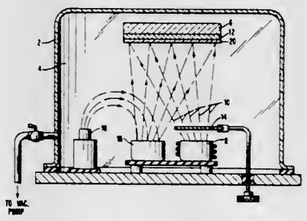


A method which comprises applying unvulcanized rubber to a continuous metal wire cord and subjecting the coated cord to high-frequency induction heating as the cord is advanced from a cord supply source to a collection station; the heating step vulcanizing the rubber coating to a high degree adjacent the cord and a low degree at the outer surface of the coating.

3,642,533
MAGNETO-OPTICAL ELEMENTS

Kie Y. Ahn, RFD No. 1, Bedford, N.Y., and Siegfried Methfessel, College Hill, Montrose, N.Y.

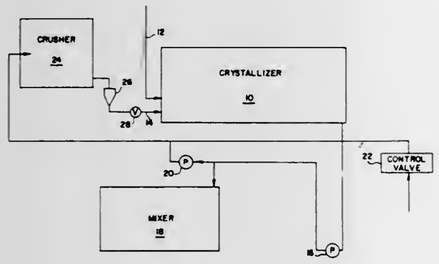
Original application Dec. 22, 1966, Ser. No. 603,933. Divided and this application Apr. 28, 1970, Ser. No. 48,581
Int. Cl. H01f *10/02*
U.S. Cl. 117—237 **3 Claims**



The present invention relates to a novel magneto-optical device composed of a rare-earth chalcogenide and to a method for making such device.

When such rare-earth chalcogenides are made in the form of crystals or of thin layers, they are subject to deterioration by exposure to the atmosphere. The use of a thin overlying protective layer having optical and magnetic properties compatible with the underlying rare-earth chalcogenide is highly desirable. In one example, Eu_2O_3 is employed as the protective layer for EuO.

3,642,534
SUGAR-CRYSTALLIZING METHOD AND APPARATUS
Jacques De Cremoux, Lille, France, assignor to Fives Lille-Cail, Paris, France
Filed Dec. 5, 1969, Ser. No. 882,604
Claims priority, application France, Dec. 6, 1968, 176907
Int. Cl. C13f *1/02*; C13g *1/04*
U.S. Cl. 127—15 **8 Claims**

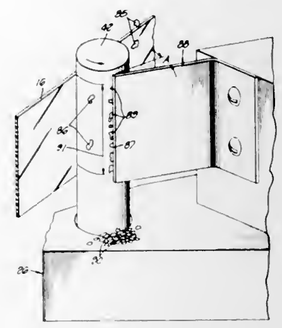


A magma of sugar seed crystals is prepared by grinding the massecuite continuously withdrawn from a crystallizer in a ball mill until the crystalline, particulate sugar in the mother liquor of the massecuite is reduced to the necessary grain size of seed crystals and a suitable magma is thereby formed which is fed continuously to the crystallizer simultaneously with a body of concentrated syrup.

3,642,535
TABLETTING SUGAR, METHOD OF PREPARING COMPOSITIONS CONTAINING SAME
Charles P. Graham, Hicksville; Louis Fonti, Jr., and Arnold M. Martinez, both of Brooklyn, all of N.Y., assignors to American Sugar Company, New York, N.Y.
Filed Jan. 21, 1970, Ser. No. 4,593
Int. Cl. C13f *3/00*
U.S. Cl. 127—29 **3 Claims**

A tabletting sugar made up of agglomerates of fondant-size sucrose crystals having a crystal size in the range 3–50 microns and containing sucrose and from about 0.5 to about 7.5 percent by weight malto-dextrin based on the sucrose content is prepared by concentrating a sugar syrup containing sucrose and malto-dextrin, the sucrose and malto-dextrin being present in the above-indicated proportions. The concentration of the syrup is carried out to a temperature in the range from about 120° to about 130° C. to a solids content in the range about 91–97 percent by weight solids. The resulting concentrated sugar syrup is then subjected to impact beating within a crystallizing zone while at the same time a gas, such as air, flows through said crystallizing zone to prevent an increase in the temperature of said syrup and any sugar product resulting therefrom and to carry off water vapor produced within said crystallizing zone. Within the crystallizing zone the gas flowing therethrough, the syrup and the resulting sugar product are in intimate admixture. There is then recovered from the crystallizing zone a granular sugar product comprising agglomerates of fondant-size sucrose crystals and having less than about 2.5–3.0 percent by weight moisture. The granular sugar product is then dried to a moisture content below about 1 percent by weight, cooled, milled and screened to a desired size range so as to produce a useful tabletting sugar. Tabletted sugar-containing products comprising a major amount of a sugar product produced as described hereinabove can be manufactured.

3,642,536
CAPSTAN SCRAPER
Edward Robak, Garden Grove, Calif., assignor to Technicolor, Inc., Hollywood, Calif.
Filed Jan. 7, 1970, Ser. No. 1,183
Int. Cl. B65h *27/00*
U.S. Cl. 134—6 **5 Claims**



There is disclosed herein a motion picture projector, such as a cartridge loaded projector, as a cartridge loaded projector, including a sound pickup assembly for picking up and reproducing sound recorded on the film. The sound pickup assembly includes a capstan for driving the film past a pickup transducer at an appropriate speed. A scraper assembly engages the capstan in such a manner that the edge of the scraper bears against the periphery of the capstan at all times. Not only does the scraper clean the capstan, but also the film is cleaned by the capstan.

3,642,537
RUBBER PRINTING BLANKETS AND PROCESS FOR REMOVING AND CLEANING GLAZES THEREFROM
Frederick L. Garms, 961 Avenue "A", Battle Creek, Mich.
Filed Feb. 2, 1970, Ser. No. 8,075
Int. Cl. B08b *3/08*, *3/10*
U.S. Cl. 134—28 **17 Claims**

A process of removing glaze from printing blankets, preferably comprising the steps of (a) placing the blankets in a saturated water solution of a mineral acid salt in combination with either potassium sodium tartrate or an organic acid; (b) maintaining the temperature of the solution with the blankets therein just under 212° F. for a period of approximately 45 minutes to one hour; (c) then removing the blankets from the solution and rinsing them with water; (d) removing water spots from the facing of the blankets; and (e) then drying the blankets.

3,642,538
METAL HALIDE BATTERY
Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.
Filed Oct. 31, 1969, Ser. No. 872,993
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 **22 Claims**

A rechargeable metal halide battery, in which a salt of an electroplatable metal and a halogen selected from the class consisting of chlorine, bromine and iodine is electrolyzed from solution in a liquid medium during the charging cycle and reformed during the discharging cycle, the battery comprising at least one electrode for making an external electrical connection to the battery, adapted to be immersed in the liquid medium, and a total interface resistance, per square inch of the extended surface, not greater than about 0.10 ohm, the electrode comprising a conductive layer including an electroconductive carbon mass, the mass having a polymeric reinforcing agent in intimate contact therewith to render the mass stable to the liquid medium, the polymeric reinforcing agent being substantially inert to halogen in concentrations present in the battery, and the conductive layer being at least coextensive with the extended electrolyte-contacting surface and having a resistivity, ρ, not greater than $(0.10\times d)/|B\gamma|^2$ ohm-in., where d is the thickness of the conducting layer and l is the longest electrical flow path through the conductive layer from the liquid medium.

3,642,539
SECONDARY BATTERY WITH INDATE ION IN THE ELECTROLYTE
Akira Kawakami, Ibaraki-shi, Japan, assignor to Hitachi Maxell, Ltd., Ibaraki-shi, Japan
Filed Dec. 31, 1969, Ser. No. 889,358
Claims priority, application Japan, May 16, 1969, 44/38127
Int. Cl. H01m *41/02*
U.S. Cl. 136—30 **9 Claims**

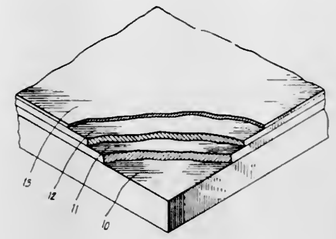
In a secondary battery (e.g., a zinc-alkali storage battery or secondary air battery) of conventional structure using zinc as an anode-active substance, the improvement wherein the electrolyte contains indate ion. Such a battery prevents the development in dendritic or spongy form of zinc metal during the charging state of the battery and maintains the electric capacity materially unchanged for a long duration of time.

3,642,540
METHOD FOR MAKING METAL-AIR CELL
Edwin John Argent, Pyrford, near Woking, and Peter J. Gillespie, Basingstoke, both of England, assignors to Energy Conversion Limited, London, England
Filed Apr. 8, 1969, Ser. No. 814,367
Claims priority, application Great Britain, Apr. 25, 1968, 19,740/68
Int. Cl. H01m *29/04*, *43/00*
U.S. Cl. 136—175 **2 Claims**

A process for making a metal/air oxygen (air) battery is provided comprising the steps of applying two spaced-apart cathode layers, one adjacent one edge and one generally centrally disposed on one face of an air permeable sheet-form member of electrically conductive material, applying an anode layer on each surface adjacent the other edge of the sheet-form member, applying electrolyte-resistant absorbent material to the outer surfaces of the anode, folding the sheet-form member into a generally S-form configuration and interleaving with another similarly folded sheet-form member so that the two cathode layers which face one another have the anode layers of said other member therebetween and locating an air permeable electrically insulating separator between the adjacent uncoated surfaces of the sheet-form members.

3,642,541
METHOD FOR APPLYING CORROSION-RESISTANT COMPOSITE COATING TO FERROUS METALS AND PRODUCT RESULTING THEREFROM
George A. Shepard, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed Feb. 12, 1969, Ser. No. 798,696
Int. Cl. C23c *1/08*; C23f *7/12*
U.S. Cl. 148—6.15 **20 Claims**

A method for the manufacture of a corrosion-resistant aluminum metal-coated ferrous product and particularly a product composed of a zinc-coated ferrous metal substrate having superimposed thereon a coating of aluminum metal. The product prepared therefrom is characterized by having an intermediate layer of phosphate crystals of a minimum thickness sufficient to prevent interaction between the zinc undercoating on the ferrous metal substrate and water passing through the superimposed aluminum metal surface coating. The interposing layer of phosphate crystals has a critical maximum thickness such that not more than 100 milligrams of phosphate crystals is distributed over each square foot of surface area of the zinc ferrous metal substrate. Optimally, the interposing crystalline phosphate layer has a thickness such that 10 to 30 milligrams of phosphate crystals

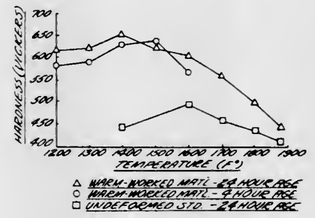


are distributed over each square foot of zinc ferrous metal substrate. The method of applying the said corrosion-resistant aluminum coating to the zinc ferrous metal substrate comprises: (a) contacting said zinc-coated ferrous metal substrate with a solution containing phosphate ion for about 2 to 15 seconds at a processing temperature of about 70° to 100° F. and (b) subsequently applying thereto a superimposed overcoat of an aluminum metal and bonding the composite coatings and substrate into a corrosion-resistant product.

3,642,542
PROCESS FOR PREPARING ALUMINUM BASE ALLOYS
Philip R. Sperry, North Haven, and Damian V. Guliotti, West Haven, both of Conn., assignors to Olin Corporation
Filed Feb. 25, 1970, Ser. No. 14,189
Int. Cl. C22f *1/04*
U.S. Cl. 148—12.7 **11 Claims**

A process for preparing aluminum base alloys containing silicon and magnesium comprising the steps of hot working, quenching and aging and to improved hot-worked aluminum-based alloys having high-strength and high-impact properties.

3,642,543
THERMOMECHANICAL STRENGTHENING OF THE SUPERALLOYS
William A. Owczarski, Cheshire, and John M. Oblak, Rocky Hill, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation-in-part of application Ser. No. 746,013, July 19, 1968, now abandoned. This application Sept. 26, 1969, Ser. No. 864,268
Int. Cl. C22f *1/10*
U.S. Cl. 148—12.7 **16 Claims**



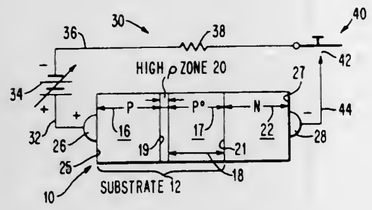
The superalloys are strengthened in a process involving both thermal and deformational treatments under controlled

conditions. The method is particularly effective for the nickel-base superalloys of the γ-γ'-type having a volume fraction of the γ' phase exceeding about 25 percent at room temperature, and for the superalloys precipitating the topologically close-packed phases such as the sigma phase. It relies on the establishment of a microstructure wherein the γ' phase is precipitated in a uniformly distributed array having an interparticle spacing not exceeding about 5 microns; warm working the alloy to effect an area reduction of at least 15 percent; and subjecting the alloy to a stabilization heat treatment. The strength increase is attributable to a particular thermally and mechanically stable array of microcrystalline imperfections thus established and, in those alloys precipitating the sigma phase, also by an altered sigma phase morphology.

ERRATUM

For Class 148—143 see:
Patent No. 3,642,595

3,642,544
METHOD OF FABRICATING SOLID-STATE DEVICES
Robert W. Keyes, White Plains, and Kurt Weiser, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Original application Aug. 2, 1965, Ser. No. 476,275, now Patent No. 3,440,497. Divided and this application Oct. 7, 1968, Ser. No. 798,504
Int. Cl. H01l *7/36, 7/44*
U.S. Cl. 148—175 **8 Claims**



An electroluminescent diode with a negative resistance characteristic at room temperature is obtained by establishing a host semiconductor substrate of gallium arsenide crystal with a deep level acceptor impurity such as manganese as the dominant dopant thereby obtaining a P-type semiconductor. On a surface of the gallium arsenide there is epitaxially grown, e.g., by vapor epitaxy, a region of gallium arsenide doped with an N-type dopant, e.g., tellurium. The latter region provides injection of electrons, the minority carriers, into the high-resistivity region when suitable voltage is applied across the diode. On another surface of the host gallium arsenide substrate removed from the tellurium doped region, a shallow level impurity such as zinc is diffused therein to obtain a region dominated thereby. The diffusion produces a high-resistivity zone bounded by the zinc and manganese dominant regions.

At room temperature, e.g., 20° C., and below, the diode shows a high-series resistance at voltages beyond approximately 1 volt. When a critical breakdown voltage is reached, a negative resistance is obtained in which the current goes up with decreasing voltage. The switching speed of the diode from low- to high-current operations is less than 10 nanoseconds for an overvoltage of the order of 1 volt.

3,642,545
METHOD OF PRODUCING GALLIUM DIFFUSED REGIONS IN SEMICONDUCTOR CRYSTALS
Erich Pammer, and Horst Panholzer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Apr. 13, 1970, Ser. No. 27,751
Claims priority, application Germany, Apr. 17, 1969, P 19 19 563.2
Int. Cl. C23c *11/08;* **H01l** *7/50*
U.S. Cl. 148—187 **9 Claims**

Process for the production of *p*-doped zones in semiconductor crystals through diffusion of gallium using the planar technique. The process comprises: Forming an aluminum oxide masking layer on the semiconductor crystal surface through the pyrolytic precipitation from an aluminum and oxygen containing organic compound. Producing windows in the aluminum oxide layer using the photoetch technique, with phosphoric acid etchant. Indiffusing gallium into the semiconductor crystal and removing the aluminum oxide masking layer by hot phosphoric acid.

3,642,546
NITRIDED VANADIUM, COLUMBIUM AND TANTALUM BASE ALLOYS
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, both of Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
Filed Mar. 4, 1970, Ser. No. 16,570
Int. Cl. C22c *27/00;* **C23c** *11/14*
U.S. Cl. 148—31.5 **5 Claims**

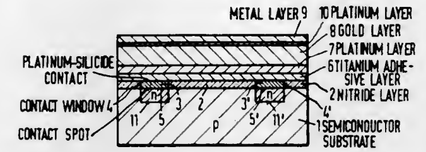
A novel group of nitrided alloys having excellent wear and abrasion resistance containing as their major constituent at least two metals of the group columbium, tantalum and vanadium alloyed with titanium and/or zirconium. Such alloys are fabricated to shape and are then nitrided to produce high-surface hardness thereon. The nitrided alloys have utility as cutting tool materials and other areas of use where excellent wear and abrasion resistance are desired.

3,642,547
METHOD OF CONTROLLING DENSITY IN GAS-SENSITIZED AQUEOUS EXPLOSIVES
Keith L. Conrad, Tamaqua, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
Filed June 10, 1969, Ser. No. 831,895
Int. Cl. C06b *19/00*
U.S. Cl. 149—2 **14 Claims**

A process for controlling the density of a gas-sensitized aqueous explosive. The components of the explosive are intermixed to form a continuous stream, one of the components being a gas-retaining component. The portion of the stream containing the gas-retaining component is passed through a mixing zone across which there is a pressure drop of at least 5 p.s.i. The gas is added to the mixing zone and is homogeneously dispersed into the stream.

3,642,548
METHOD OF PRODUCING INTEGRATED CIRCUITS
Helmut Eger, Olching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed July 15, 1970, Ser. No. 55,149
Claims priority, application Germany, Aug. 20, 1969, P 19 42 455.6
Int. Cl. C23f *1/00;* **C23c** *15/00*
U.S. Cl. 156—3 **9 Claims**

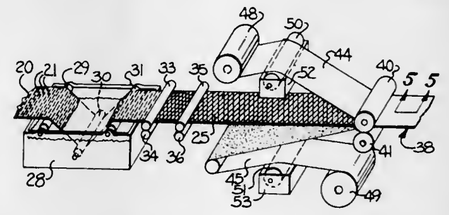
A semiconductor substrate has platinum contact spots at one surface, a layer of insulating material covering the surface except the contact spots, a titanium layer covers the insulating layer and the contact spots, a platinum layer covers the titanium layer and a gold layer covers a platinum layer. To produce an integrated circuit, a chemically easily etchable metal masking layer is applied to the gold layer. The metal masking layer is chemically etched away except for a desired conductor pattern. The gold layer is etched away and the platinum layer is etched away, other than the desired conductor pattern, by cathode sputtering. The metal masking layer remaining on the desired conductor pattern is etched away and the titanium layer other than the desired conductor pattern is etched away.



3,642,549
ETCHING COMPOSITION INDICATION
Roger A. Couture, Richmond, and John J. Lajza, Jr., Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,521
Int. Cl. C03c *15/00;* **C09k** *3/00;* **G01n** *31/22*
U.S. Cl. 156—24 **18 Claims**

In the etching through a protective glass coating to expose an underlying metal, overetching is prevented by adding a polyhydric alcohol, for example glycerin, to a glass etchant, which causes a color change on a metal, for example aluminum or molybdenum, indicating that etching through the glass coating has been completed.

3,642,550
METHOD OF PRODUCING LAMINATED STOCK MATERIALS AND PRODUCTS
Martin E. Doll, Patterson, N.C.
Filed Sept. 30, 1969, Ser. No. 862,252
Int. Cl. B32b *5/18*
U.S. Cl. 156—78 **8 Claims**

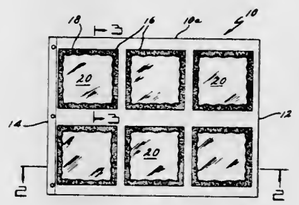


Liquid-resistant shipping cartons and the like, and liquid-resistant materials particularly adapted for construction of such cartons, are produced in accordance with methods wherein sheet thermoplastic material is formed into a generally planar, foraminous web having openings therethrough perpendicular to opposing faces thereof and webs of paper are adhered to the opposing faces of the thermoplastic material web.

3,642,551
PROCESS FOR DECORATING POTTERY
Rodolfo L. Laconich, and Horacio N. Schoijett, both of Malpu Street N. 497, Solado De La Independencia, Buenos Aires, Argentina
Filed Aug. 27, 1968, Ser. No. 755,690
Int. Cl. C03b *29/00*
U.S. Cl. 156—89 **3 Claims**

A process for decorating ceramic bodies, consisting in applying a decalcomania of the desired picture, having a heat-drying or heat-setting adhesive layer, upon a preferably hot, raw and unprepared ceramic body, exerting a mild pressure thereon, applying over the ceramic body and decalcomania an overall glazing mass, and firing the thus decorated ceramic body and glazing mass.

3,642,552
METHOD OF PRODUCING PHOTOGRAPH ALBUM LEAF OF CLOSED POCKET CONSTRUCTION
William J. Sibley, South Hadley, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.
Original application July 13, 1968, Ser. No. 783,672, now Patent No. 3,587,187, dated June 28, 1971. Divided and this application June 24, 1970, Ser. No. 59,832
Int. Cl. E06b *3/30*
U.S. Cl. 156—108 **3 Claims**



Photograph album leaf and method of making same. Leaf is sheet with heat sealable outer surface folded to form pages back-to-back, spaced photoprint window pockets being peripherally sealed thereon. Slots underlying pockets provide access for inserting prints through reverse side of sheet between pages. Method includes steps of die cutting slots in flat sheet, overlaying transparent heat sealable sheet (preferably preprinted with decorative borders defining window pocket frames); sealing the pocket margins and simultaneously forming peripheral tear lines; peeling off overlay material around pockets; folding the sheet and forming a binding strip along marginal portions at the free end edges of the sheet.

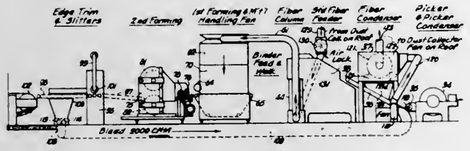
3,642,553
BONDING CORDS WITH BLOCKED ISOCYANATES
Louis W. Georges, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jan. 9, 1970, Ser. No. 1,896
Int. Cl. C09j *5/02*
U.S. Cl. 156—308 **6 Claims**

Adhesion of cord fabric, especially polyester cord fabric, to elastomer compounds is achieved using an adhesive made from blocked isocyanates. The blocked isocyanates are dissolved in an organic solvent, and then dispersed into water to form an aqueous mixture. The cord fabric is dipped into the aqueous mixture and heated to dry the cord and dissociate the blocked isocyanate. Cord fabric thus treated is calendered to coat it with an elastomer compound, and the coated fabric is assembled into composite articles of cord and elastomers (such as tires or belts) which are vulcanized with heat and pressure.

3,642,554
CLOSED MAT FORMING SYSTEM
Billy R. Hensley, Kansas City, Mo., assignor to Certain-Teed Products Corporation, Ardmore, Pa.
Filed Feb. 16, 1970, Ser. No. 11,703
Int. Cl. B29j *5/08*
U.S. Cl. 425—83 **19 Claims**

Method and apparatus to form, dust free, an organic fiber pad, typically using short staple fiber and dry powder binder.

Methods and apparatus for forming an organic (or glass, or mixture of organic and glass) fiber pad wherein all binder, fiber and additives, if any, are handled closed cycle except for the dust collector discharge to atmosphere with all blow-by, edge trim and dust, from the picker to the oven, including dust fly, floor drop and binder from the dust collector bags fed back into the closed cycle system. Method and means for feeding fiber into the process piping at a constant rate that can be varied, including blend line feeders which feed a feed apron, suitable blend segments, a picker which assures fine opening of the fibers with fine blends of coarse reclaim, a fiber feeder which operates as a surge area for the blend line, tumbling, lifting, combing and doffing the fiber into a fiber column, and a fiber feeder column which stacks the fiber and

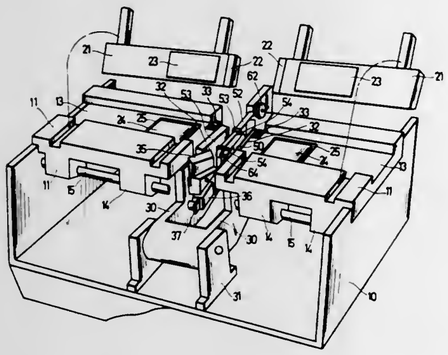


feeds it into the process piping at a constant rate that can be varied. A binder feed system and dust condenser recycle system of fiber and binder which cooperates with the fiber column. A first forming section to open and blend the input for a second forming section, as well as present the second forming section with a uniform feed at a constant feed rate. A second forming section which opens the fiber and finish forms the mat under very stable conditions with no process changes required. An air recycle system which handles bleed streams of airborne fiber and binder from the first and second forming sections and also edge trim from the slitter section in recycle to the fiber condenser and from there into the fiber feed system. An air recycle system handling binder input and recycle of binder and fiber from the dust collector system into the first forming section air system.

3,642,555
AUTOMATIC TAPE SPLICER

Kazuhiro Nagoshi, and Yoshimasa Yagi, both of Sonezakikami, Kita-ku, Osaka-shi, Osaka-fu, Japan, assignors to Kabushiki Kaisha Satomi Denki Shokai, Osaka-shi, Osaka-fu, Japan

Filed Apr. 18, 1969, Ser. No. 817,421
Claims priority, application Japan, Apr. 20, 1968, 43/26479; 43/26480
Int. Cl. B31f *5/06*; **B65h** *69/06*; **G03f** *15/04*
U.S. Cl. 156—505 **6 Claims**

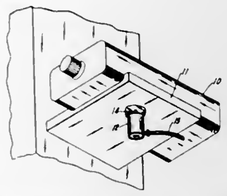


An automatic tape splicer in which the tape-splicing operation to connect or joint two lengths of tape, film or the like together end-to-end may be fully automated, including five steps of determining particular positions of each tape to be connected, cutting away the lugs of each tape at the connecting positions, butting the cut end of the tapes against each other so as to adhere to each other, bonding a splice tape on the butted end of the tapes, and finally cutting away the lugs of the splice tape at both sides of the tape.

3,642,556
LABELING MACHINE

Theodore Maniaci, Milwaukee, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,733
Int. Cl. B05c *11/10*; **B32b** *31/12*
U.S. Cl. 156—556 **3 Claims**

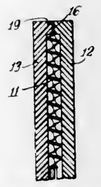


The labeling machine and method are for attaching brochures or similar materials to containers, such as bottles. The machine is provided with an improved container supporting member which automatically deposits a measured amount of glue or adhesive to an unlabeled portion of the container, so that a brochure or similar article may be placed in contact with said glue or adhesive and thereby attached to the container.

3,642,557
LIGHT CONTROL STRUCTURE

Harold Warp, Chicago, Ill., assignor to Flex-O-Glass, Inc.

Filed June 17, 1968, Ser. No. 737,496
Int. Cl. E06b *7/08*
U.S. Cl. 161—3.5 **13 Claims**



A light control structure having a louver screen embedded between two flat plastic sheets providing a sealed light-transmitting unit. The louver screen may be formed of a material such as plastic, and is sealingly embedded in the plastic sheets. The screen includes one or more flat portions and reinforcing elements are provided for extending between the frame portions and one or both of the screens for rigidifying the structure. One, or both, of the plastic sheets may be provided with a suitable light transmission reducing coating, if desired.

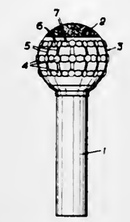
3,642,558
DECORATIVE ARRANGEMENT FOR MICROPHONE ASSEMBLIES

Rudolf Gorike, Vienna, Austria, assignor to Akustische u. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria

Filed Aug. 25, 1969, Ser. No. 852,672
Claims priority, application Austria, Aug. 28, 1968, 8365/68; Apr. 21, 1969, 3851/69
Int. Cl. B44f *1/00*; **D04d** *17/04*
U.S. Cl. 161—5 **4 Claims**

A decorative arrangement for microphone assemblies comprises light-reflecting bodies fastened on a separate,

preferably flexible, expansible, or elastic normally flat support forming a carrier for the light-reflecting bodies. The support has a conforming fit with that part of the microphone as-

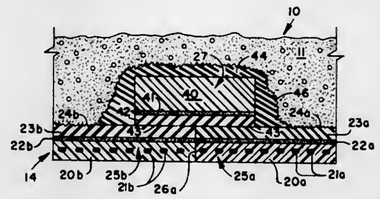


sembly to be provided with the reflective bodies, and is permeable to sound. The support may have a meshlike structure formed of various materials and may also be used as a wind protection for the microphone assembly.

3,642,559
MEMBRANE-LINED STRUCTURAL PANEL

William S. Stokes, 941 N. Placentia Ave., Fullerton, Calif., assignor to William S. Stokes, Westminster, Calif.

Filed Feb. 20, 1970, Ser. No. 13,014
Int. Cl. B32b *13/12, 25/08*; **E04c** *1/24*
U.S. Cl. 161—38 **9 Claims**

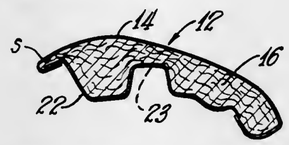


A membrane-lined structural panel comprising a laminated membrane bonded to a surface of a concrete structural panel. The membrane itself comprises an outer sheet of fluid-impervious, synthetic polymer resin adhesively bonded to a rubber elastomeric layer. The membrane rubber layer is cold-flow bonded to the concrete panel. The article may be fabricated by placing the membrane system resin sheet down on a pouring platform, tackifying the rubber layer, placing a pouring frame atop the membrane, and pouring wet concrete in the frame over the membrane. As the concrete hardens, the tackified rubber cold-flows into the concrete to bind the membrane to the panel. The resultant structural panel readily can be removed from the pouring platform without the need for a release compound.

3,642,560
COMPOSITE ARTICLES INCLUDING BONDED FIBROUS GLASS WITH SAID ARTICLES HAVING DENSITY GRADIENTS

Henry N. Marsh, Jr., and Barclay P. Gano, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Apr. 1, 1968, Ser. No. 717,494
Int. Cl. B32b *1/00, 5/14*
U.S. Cl. 161—39 **7 Claims**



Articles including molded bodies of bonded fibrous glass integrated with more rigid members with comparatively rigid areas of the bodies coextensive with the rigid members and methods utilizing heat and pressure for simultaneously shaping the fibrous glass bodies and integrating the rigid members therewith.

3,642,561
LAMINATED FABRIC HAVING DIFFERENT PROPERTIES IN DIFFERENT DIRECTIONS

Wayne W. Grobner, West Springfield, Mass., assignor to Johnson & Johnson

Filed Oct. 10, 1969, Ser. No. 865,337
Int. Cl. B32b *7/08*
U.S. Cl. 161—50 **12 Claims**

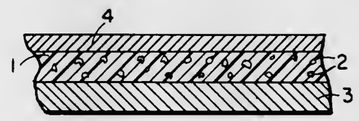


A stitch-bonded backing fabric having excellent stiffness and resilience in one direction and excellent drape and the ability to form soft curves with less resilience in another direction comprising (1) relatively stiff, resilient yarns, or a combination of relatively stiff, resilient yarns and relatively soft, nonresilient yarns in one direction, and (2) stitched thread rows of nonresilient loops progressing generally in the other direction which stitch or sew the relatively stiff, resilient yarns and the relatively soft, nonresilient yarns (if they are present) into a self-sustaining fabric; and heat-fusible adhesive materials adhered to the self-sustaining fabric, whereby it is capable of being heat fused and adhered to facing or other fabrics to yield laminated fabrics having excellent stiffness and resilience in one direction and excellent drape and the ability to form soft curves with less resilience in another direction.

3,642,562
MATERIAL FOR BLACKBOARDS COMPRISING SYNTHETIC RESIN AND PROCESS FOR MAKING THE SAME

Ryuzo Kawaguchi, Tokyo, Japan, assignor to Kawaguchi Rubber Industrial Co., Ltd., Tokyo, Japan

Filed May 28, 1969, Ser. No. 828,475
Claims priority, application Japan, Sept. 10, 1968, 43/64832
Int. Cl. B43l *11/10*
U.S. Cl. 161—88 **9 Claims**



A composite material for blackboards essentially consisting of a layer of synthetic resin containing fine grains of an inorganic material distributed therein, said layer being deposited on a flexible carrier body and having a top coating of an antistatic agent. The composite material may be used as such or mounted on a stiff board.

The invention also relates to a process for preparing the composite material which comprises the steps of mixing fine grains of inorganic material evenly into the synthetic resin, depositing the mixture on a flexible carrier and applying on top a coating of an antistatic agent.

3,642,563
A LAMINATED FABRIC FOR USE AS THE FABRIC UPPER OF SHOES

Delbert A. Davis, Kernersville; Samuel R. Averette, Wilson, both of N.C., and Gary Dwight Voss, El Paso, Tex., assignors to Burlington Industries, Inc., Greensboro, N.C.

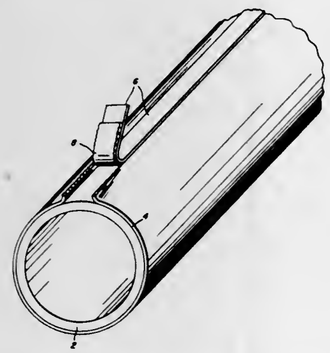
Filed Sept. 23, 1969, Ser. No. 860,421
Int. Cl. B32b *5/18*
U.S. Cl. 161—88 **2 Claims**

A laminated fabric, suitable for use as the fabric upper of shoes, is prepared by bonding a layer of foam to the woven fabric, which will form the shell or outer covering of the shoe and, while the foam is still wet, bonding a second layer of fabric, which will form the inner lining or sock, to the foam and curing the thus-formed laminate. In a preferred embodiment a tiecoat which can be, for example, a solution of an aliphatic isocyanate, is applied to the woven shell fabric to also improve adhesion of the foam to that fabric and also to the thermoplastic sole and heel material used to make the shoe.

3,642,564
STRIPPABLE PROTECTIVE FILM

Robert R. Walker, and James J. Pepin, both of Wallingford, Conn., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,275
Int. Cl. B32b *7/10, 27/08;* **B65d** *5/54*
U.S. Cl. 161—145 **1 Claim**



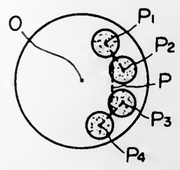
A temporary, protective plastic coating for an article, such as ornamental tubing, which may be sprayed on the tubing becoming adhered thereto and, upon nominal drying, a strip of material such as adbesive-backed tape is placed in contact with the coating over a full length in one dimension. The strip and the coating are bonded together with a strength at least as great as the film strength of the coating such that upon tearing off the strip, the plastic film directly in contact with the strip is also removed, enabling rapid removal of the remaining film on the article.

3,642,565
COMPOSITE FILAMENTS HAVING AN ELASTIC CRIMPING PROPERTY

Fumimaro Ogata, Joto-ku, Osaka; Tsutomu Naruse, Settsu, Osaka-fu, and Torazo Itoh, Hirakata, Osaka-fu, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and SNIA Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Mar. 17, 1969, Ser. No. 807,863
Claims priority, application Japan, Mar. 21, 1968, 43/18565; Apr. 20, 1968, 43/26434; Apr. 17, 1968, 43/25756
Int. Cl. D01d *5/28*
U.S. Cl. 161—173 **18 Claims**

Composite filament having an elastic crimping property, comprised of at least two components disposed in an eccentric sheath-core relation along the longitudinal axis of the filament, in which one component is composed of a polyester consisting mainly of polyethylene terephthalate and another component or components comprise highly shrinkable polyamide having a shrinking percentage of 15–80 percent and the

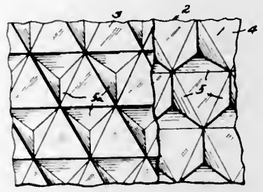


percent by weight of the core or cores in the filament is 5–50. It is preferable that the core component is composed of the polyester and the sheath component is composed of the polyamide. Furthermore, the eccentricity of the sheath-core relation is preferably at least 5. The core component may be constituted with a plurality number of cores.

3,642,566
QUASI-ISOTROPIC SANDWICH CORE

Irving E. Figge, 183 Revelle Drive, Newport News, Va.

Filed May 20, 1970, Ser. No. 39,598
Int. Cl. B32b *3/28*
U.S. Cl. 161—131 **8 Claims**



A structural core consisting of upper and lower sheets of a fiberglas or like material. Each sheet defines parallel rows of raised, tetrahedronal-shaped, hollow knobs. The upper sheet is inverted over the lower one so that the edges of the tetrahedrons abut whereby all tetrahedrons on the bottom sheet point up and all tetrahedrons on the upper sheet point down in alternating sequence along the rows. Each sheet is formed by placing it over a male mold having upstanding tetrahedron shaped raised knobs, folding the sheet between the tetrahedrons to produce puckers, applying bands in the fold lines to hold the sheet on the male mold, coating the sheet with an epoxy resin, cutting the bands and removing them, inverting a female mold over the male mold and applying pressure thereto, allowing the resin to cure, then removing the sheet from the molds. The core is then formed by coating all edges of the tetrahedrons on both sheets with a resin-type bonding material, inverting the upper sheet and nesting it in the lower sheet so that the edges of the upper tetrahedrons abut the edges of the lower tetrahedrons and then bonded together, the core is then allowed to cure.

3,642,567
NOVEL COMPOSITE ARTICLE AND METHOD FOR THE PROTECTION OF ARTICLES OF COMMERCE

William A. Rogers, Jr., Lake Jackson, Tex., assignor to The Dow-Chemical Company, Midland, Mich.

Filed Nov. 21, 1969, Ser. No. 878,902
Int. Cl. B32b *15/08;* **B60j** *7/10;* **C09j** *7/02*
U.S. Cl. 161—165 **4 Claims**

A novel composite article protected from the forces of nature and manmade hazards, during exposure to outdoor weather. The novel article comprising a weather resistant film adhered to the surface of an article of commerce with a water-soluble adhesive and having the characteristics of ease of application, maximum weather resistance and ease of removal. A method for the protection of articles of commerce which comprises adhering a weather resistant film to the surface of the article with a water-soluble adhesive for protection from outdoor weather and removal of the film and adhesive with water when protection is no longer desired.

3,642,568
POLYAMIDE COMPOSITE FILAMENTS HAVING AN IMPROVED LATENT CRIMPABILITY

Satoshi Ando; Yusaku Tanaka, both of Osaka; Sadao Onuma, Kobe, and Fumimaro Ogata, Osaka, all of Japan, assignors to SNIA UISCOSA Societa Nazionale Industria Applicazioni Viscosa, S.p.A., Milan, Italy and Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 625,985, Mar. 27, 1967, now abandoned. This application July 17, 1969, Ser. No. 842,736
Int. Cl. D02g *3/04*
U.S. Cl. 161—173 **1 Claim**

Polyamide composite filaments having an improved latent crimpability wherein two different fiber-forming polyamide components are mutually bonded and eccentrically disposed over the cross section of the filament, one of the components being a homopolyamide selected from the group consisting of polycaproamide and hexamethylene adipamide and the other of the components being a copolyamide which contains in its main molecular chain at least one polymeric structural unit derived from equimolar amounts of a dibasic acid and a diamine, at least one of said dibasic acid and said diamine having not more than four carbon atoms, the average number of moles of amide-linkages in the main molecular chain of said copolyamide being 5 to 15 per kilogram of polymer.

3,642,569
LAMINAR STRUCTURES OF POLYIMIDES

Clare William Gerow, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 3, 1969, Ser. No. 839,056
Int. Cl. H01b *3/30;* **B32b** *27/28*
U.S. Cl. 161—189 **9 Claims**

A laminar article is provided of a layer of a polyimide and a layer of a fluorinated polymer, which structure is suitable in the form of narrow tapes for electrical insulation uses, the laminated article is characterized by improved bond strength achieved by using alpha-chloromethylphenyltrialkoxysilane as either a priming solution on the polyimide or in the layer of the fluorinated polymer.

3,642,570
LAMINATE OF CHLORINATED POLYVINYLIDENE FLUORIDE

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Original application Nov. 13, 1967, Ser. No. 682,594, now Patent No. 3,558,582. Divided and this application Aug. 5, 1970, Ser. No. 62,232
Int. Cl. B32b *27/30;* **C08f** *3/22*
U.S. Cl. 161—189 **3 Claims**

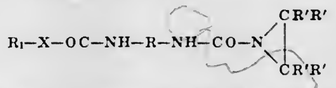
Laminate of metal and chlorinated polyvinylidene fluoride homopolymer containing about 2 to 20 percent by weight chlorine.

3,642,571
METHOD OF SIZING CELLULOSIC FIBERS USING AN N,N,-(X-ALKYL)-N-CARBAMATE–(N_1',N_1'-ALKYLEN)UREA

Gerhard Ewald Sprenger, Carlstadt, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,276
Int. Cl. D21h *3/02*
U.S. Cl. 162—158 **3 Claims**

Aqueous sizing compositions are prepared by combining an alkyl-N-substituted carbamate containing an isocyanate group with an alpha, beta-alkylenimine to form an N,N_1-(X-alkyl)-N-carbamate, (N_1',N_1'-alkylen)urea of a divalent organic radical having the formula:



which is in situ or subsequently, with the aid of an emulsifying agent, dispersed in water.

In the formula each R' is hydrogen or methyl or ethyl so that their combined number of carbon atoms totals from zero to not more than two and R is a divalent organic radical, namely an arylene, alkylarylene, arylalkylene, cycloalkylene or alkylene radical, which may or may not contain ethylenic double bonds.

R_1 is alkyl, alkenyl, aralkyl, cycloalkyl or cycloalkenyl which may also contain other groups which are inert to isocyanate. The carbon atoms of R and R_1 combined should total at least eight and preferably be not more than 54 carbon atoms. X is oxygen or divalent sulfur.

3,642,572
CROSS-LINKED POLYAMIDE-IMINE POLYMER FOR PAPERMAKING

Horst Endres; Rolf Fikentscher; Walter Maurer; Emil Scharf, and Uwe Soenksen, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhineland, Rhineland-Pfalz, Germany

Filed Mar. 6, 1969, Ser. No. 864,216
Claims priority, application Germany, Oct. 11, 1968, P 18 02 435.6
Int. Cl. D21h *3/36*
U.S. Cl. 162—164 **15 Claims**

Cross-linked reaction products obtained by (a) reacting 1 mole of a dicarboxylic acid such as adipic acid with 0.8 to 1.5 moles of a polyalkylene-polyamine such as diethylenetriamine and/or up to 0.4 mole of an ω-aminocarboxylic acid such as W-amino-caproic acid or a lactam thereof, (b) reacting the reaction product of step (a) with 1 to 30 moles of a 1,2-alkylenimine compound such as ethyleneimine per mole of basic nitrogen in the reaction product of step (a) in the presence of a small amount of acid or alkylating agent such as sulfuric acid as catalyst and (c) cross-linking the reaction product of step (b) with 1 to 20 parts of a bifunctional compound such as epichlorohydrin per 100 parts of reaction product. Twenty-five percent solutions of the new products have a viscosity of from 300 to 4,000 centipoises at 25° C.

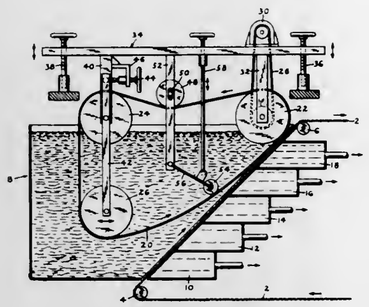
3,642,573
WET PROCESS APPARATUS FOR MAKING NONWOVEN FABRICS

Heinz Genz, Willich; Dieter Berger; Horst Seeliger, both of Lahnstein, and Karl Schmidt, Dusseldorf, all of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed July 11, 1969, Ser. No. 840,940
Claims priority, application Germany, July 15, 1968, P 17 61 855.2
Int. Cl. D21f *1/00*
U.S. Cl. 162—311 **4 Claims**

Apparatus for the manufacture of nonwoven fabrics on papermaking or papermaking type of machines in which

fibers are deposited on an endless wire screen passing on an incline through a stock tank containing a water-fiber stock, the apparatus including an endless belt of a width substantially the same as the width of the screen in the stock tank,



support elements for adjustably mounting the belt in the stock tank, a variable speed drive for the belt and adjustable rolls for adjusting the curve of the belt along the fiber-receiving face of the wire screen.

3,642,574

METHOD FOR PRODUCING VACCINE FOR IMMUNIZATION OF POULTRY AGAINST MAREK'S DISEASE

William Okazaki, East Lansing; H. Graham Purchase; Richard L. Witter, both of Okemos, all of Mich., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Apr. 29, 1970, Ser. No. 33,060
Int. Cl. C12k *5/00, 7/00, 9/00*
U.S. Cl. 195—1.5 **3 Claims**

A vaccine is produced from a turkey herpesvirus which is nonpathogenic in chickens but immunizes against Marek's disease.

3,642,575

PROCESS FOR PRODUCING SUGARS BY FERMENTATION

Katsunobu Tanaka, and Takeo Suzuki, both of Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 610,745, Jan. 23, 1967, now abandoned. This application June 17, 1968, Ser. No. 737,384
Int. Cl. C12d *13/04*
U.S. Cl. 195—28 R **13 Claims**

The present disclosure relates to a fermentation process for the production of sugars. Hydrocarbons such as n-paraffins are used as the main source of carbon and micro-organisms capable of assimilating hydrocarbons are cultured therewith under aerobic conditions in an aqueous nutrient medium to produce the sugars. Typical sugars produced are glucose, mannose, galactose, arabinose, rhamnose, fructose, ribose and the like as well as the polymers thereof.

3,642,576

PROCESS FOR PRODUCING L-GLUTAMIC ACID AND ALPHA-KETOGLUTARIC ACID

Katsunobu Tanaka; Kazuo Kimura, both of Machida-shi, and Ken Yamaguchi, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 478,725, Aug. 10, 1965, now abandoned. This application July 10, 1968, Ser. No. 743,644
Claims priority, application Japan, Aug. 18, 1964, 39/45851; 39/45852; 39/45853; 39/45854
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **35 Claims**

A process for producing L-glutamic acid and alpha-ketoglutaric acid. A micro-organism of *Micrococcus paraffinolyticus, Brevibacterium ketoglutamicum, Arthrobacter roseoparaffinus, or Arthrobacter hydrocarboglutamicus* is cultured under aerobic conditions in an aqueous nutrient medium containing one or more of the normal-paraffins as the major source of carbon.

3,642,577

GROWING HYDROCARBON-UTILIZING MICROORGANISMS

Robert L. Gorring, Princeton, N.J., assignor to Mobil Oil Corporation

Filed Sept. 4, 1968, Ser. No. 757,286
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **2 Claims**

Hydrocarbon-utilizing micro-organisms are grown in increased yields by incubating them in a water-in-oil emulsion containing a hemochromogen wherein the oil is a hydrocarbon and the hemochromogen takes up and releases air thus presenting a greater amount of oxygen for utilization by the micro-organisms.

3,642,578

MICROBIAL SYNTHESIS FROM ALDEHYDE-CONTAINING HYDROCARBONoDERIVED PRODUCTS

Donald O. Hitzman, and Henry E. Alquist, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 12, 1968, Ser. No. 751,926
Int. Cl. C12d *13/00, 13/06*
U.S. Cl. 195—28 **16 Claims**

Proteins, amino acids, gums, and other valuable fermentation products are efficiently biosynthesized from hydrocarbon-derived feedstocks containing aldehydes which have been admixed with a nitrogen-containing compound before being passed to a fermentor.

3,642,579

PROCESS FOR PRODUCING L-PROLINE

Yuichi Noguchi; Junichi Nakajima; Tetsuo Uno, and Kazumi Araki, all of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 531,775, Mar. 4, 1966, now abandoned. This application July 12, 1968, Ser. No. 744,294
Claims priority, application Japan, Mar. 6, 1965, 40/12692
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **9 Claims**

A process for producing L-proline by fermentation which comprises culturing a strain of *Micrococcus glutamicus* which requires isoleucine, arginine, citrulline, orithine, methionine or vitamin B_{12} for its growth in an aqueous nutrient medium under aerobic conditions. The addition of at least 0.4 percent by weight of magnesium sulfate to the medium greatly improves the yield of L-proline.

3,642,580

ENZYMATIC SACCHARIFICATION OF CELLULOSE

Tarun K. Ghose, Ashland, Mass., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 8, 1970, Ser. No. 1,478
Int. Cl. C12d *13/04*
U.S. Cl. 195—33 R **6 Claims**

A method of enzymatically converting cellulose to simple sugars wherein finely divided dry cellulose, less than 150 micron particle size, is combined with a concentrated cellulase enzyme solution obtained from *Trichoderma viride* QM 9123 to form a slurry having a cellulose solids content of 10 to 30 percent, and after hydrolysis the soluble sugar components are removed by pressure filtration through a molecular sieve membrane without any enzyme passing in the effluent.

3,642,581

FERMENTATION PROCESS

Hugh A. Risley, and Charles T. Goodhue, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,713
Int. Cl. C12c *1/00*
U.S. Cl. 195—49 **17 Claims**

An improved method for the microbiological oxidation of organic compounds such as alcohols and aldehydes, for example, pentaerythritol, by organisms such as *Flavobacterium oxydans* ATCC No. 21,245, on nutrient medium in the presence of formate ions, such as formic acid or compounds capable of providing formate ions, is disclosed.

3,642,582

PURIFICATION OF ALPHA AMYLASE

Joseph E. McClary, Fulton, Mo., assignor to Standard Brands Incorporated, New York, N.Y.

Filed July 14, 1969, Ser. No. 841,626
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **8 Claims**

Aqueous alpha-amylase preparations may be purified by removing the polyvalent anions therefrom, and contacting the preparations with a fibrous alumina of the kind described in U.S. Pat. No. 2,915,475. The alpha-amylase will be adsorbed on the alumina and may subsequently be recovered therefrom by washing the same with a salt solution containing polyvalent anions. In the case where the alpha-amylase preparation is derived from fermentation of B. subtilis, protease is present in large quantities and when such a preparation is contacted with fibrous alumina the protease will remain in the effluent and can be recovered therefrom by well-known methods.

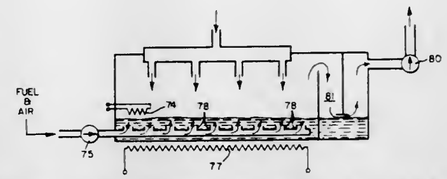
3,642,583

TREATMENT OF SEWAGE AND OTHER CONTAMINATED LIQUIDS WITH RECOVERY OF WATER BY DISTILLATION AND OXIDATION

Jacob Greenberg, Ventnor City, N.J., and Douglas C. Whitaker, Wyncote, Pa., assignors to Anti-Pollution Systems, Inc., Pleasantville, N.J.

Filed Aug. 3, 1970, Ser. No. 60,270
Int. Cl. B01d *3/06*
U.S. Cl. 203—11 **16 Claims**

In a process for distillation of water and combustion of waste and other contaminants in liquids, the contaminated liquid is introduced onto the surface of a molten salt bath which acts as an efficient heat transfer mechanism for producing flash distillation of the water and as a catalyst in promoting efficient oxidation of the organic contaminants. In one form, the salt bath may be a mixture of neutral salts; in another form, the salt bath contains a chemical oxidizer which continuously releases nascent oxygen and retakes ambient oxygen, thereby maintaining an equilibrium pressure of oxygen gas which aids the oxidation process. Where the liquid contains only salty residues, the water is evaporated off



while the salt residue remains and adds to the molten bath without impairment of the heat transfer capability of the bath.

3,642,584

PROCESS FOR METAL PLATING OF SUBSTRATES

Edward J. Quinn, Tonawanda, N.Y., and John K. MacKay, Niagara Falls, Ontario, Canada, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed June 19, 1970, Ser. No. 47,887
Int. Cl. C23b *5/60;* **B44d** *1/092;* **C23c** *3/02*
U.S. Cl. 204—30 **11 Claims**

Substrates, particularly plastics, are plated with metals by pretreatment of the substrate with phosphorus sesquisulfide in an organic solvent to deposit phosphorus sesquisulfide at the surface, followed by contacting the treated surface with a metal salt or complex thereof, to form a metal-phosphorus-sulfur compound and then with a solution of an alkali metal hydroxide or carbonate or ammonium hydroxide or a nonoxidizing mineral acid. The resulting treated surface is either conductive or is capable of catalyzing the reduction of a metal salt to produce a conductive surface. Such conductive surfaces are readily electroplated by conventional techniques.

3,642,585

DOUBLE-DIP PROCESS FOR METAL PLATING OF SUBSTRATES

Kingso C. Lin, Niagara Falls; Edward J. Quinn, Tonawanda, both of N.Y., and John K. MacKay, Niagara Falls, Ontario, Canada, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 15, 1969, Ser. No. 841,992
Int. Cl. C23b *5/60*
U.S. Cl. 204—30 **14 Claims**

There is provided an improved process for the metal plating of substrates which comprises contacting a substrate with a solution of phosphorus in an organic solvent having a layer on the surface thereof of water and/or a surfactant to deposit phosphorus at the surface of the substrate; exposing said substrate to the atmosphere for a period of time sufficient to oxidize a portion of said phosphorus; returning said substrate to the layer of water and/or surfactant; and thereafter contacting said substrate with a metal salt or complex thereof so as to form a metal phosphide. The resulting treated substrate can be electroless plated and/or electroplated by conventional techniques.

3,642,586

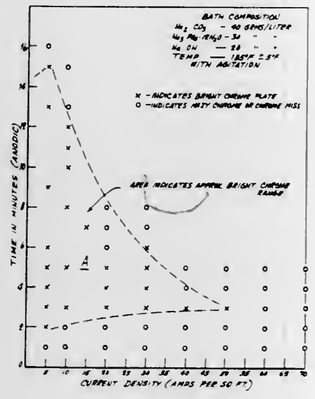
ANODIC TREATMENT FOR STAINLESS STEEL

George A. Shepard, Parma, and Richard J. Mould, Cleveland Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed May 12, 1970, Ser. No. 36,597
Int. Cl. C23b *1/00*
U.S. Cl. 204—34 **19 Claims**

A method of treating bright-annealed stainless steel of the AISI-type 400 series. The treatment method is particularly

suitable for preparing the steel for subsequent plating with chromium while obviating the need for buffing prior to the chromium plating step. The article is treated in an electrolytic bath maintained above about 180° F. with an electrical current for a time of at least about 1 minute and at a current density which ranges below about 50 amperes per



square foot of article surface (current density varies inversely with treatment time). The article is rendered anodic during the electrical treatment, and the bath consists essentially of an aqueous solution of alkali metal hydroxide or hydroxides and an agent or agents of the class consisting of alkali metal phosphates and carbonates so that pH is maintained between about 12 and 13.5.

3,642,587
CHROMIUM ELECTROPLATING PROCESS AND PRODUCT THEREOF

William S. Allen, Baldwin Borough, and Guy Serra, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation

Continuation-in-part of application Ser. No. 680,313, Nov. 3, 1967, now abandoned. This application July 6, 1970, Ser. No. 52,775
Int. Cl. C23f 17/00
U.S. Cl. 204—35 N **11 Claims**

A process for producing a duplex coating made up of a chromium containing oxide (0.5 to 2 mg./ft. ^{2}) overlying a metallic chromium layer (1.5 to 20 mg./ft.^{2}), which is adherent to the base material. After the stock is plated in a first stage, it is passed through an electrolyte containing 40–100 g./l. CrO_3 plus sulfate and/or fluoride catalyst to effect a dissolution and control of the overlying oxide layer. It is subsequently passed to a third stage (which may be omitted) where it is cathodically treated at a current density of less than 500 a./ft^2 to effect further control of the oxide layer. To reduce costs and simplify the process, all three stages may be accomplished in the same electrolyte bath.

3,642,588
ADDITION COMPOSITIONS FOR ACID ELECTROPLATING BATHS

Rene Charrier, 4 Avenue des Saules, 77, Gretz-Armainvilliers, France

Filed Jan. 12, 1970, Ser. No. 2,406
Claims priority, application France, Jan. 10, 1969, 6900327
Int. Cl. C23b 5/46
U.S. Cl. 204—44 **8 Claims**

An addition composition for obtaining electrodeposited metallic coatings of high quality is prepared in accordance with the following method:

a. Cellulose is degraded in a strong acid (such as H_2SO_4 or HCl in the presence of glycocoll and an alkali halide is added such as NaCl or NaF;

b. A ketone (such as acetone) is mixed in an anhydrous medium having an alkaline pH value with a cyclic aldehyde (such as furfural) and with at least one-third compound selected from the group comprising the unsaturated alcohols, amyl aldehyde, cinnamic aldehyde and amylcinnamic aldehyde; an alkali sulphide or a thiol is then added in the presence of a mercury salt followed by halogenation and stabilization by addition of an oxidizing agent;

c. The two products are mixed, then filtered and the clear liquor is retained.

3,642,589
GOLD ALLOY ELECTROPLATING BATHS

Fred I. Nobel, 75 Fern Drive, and Barnet D. Ostrow, 125 Redwood Drive, both of Roslyn, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,985
Int. Cl. C23b 5/42
U.S. Cl. 204—44 **9 Claims**

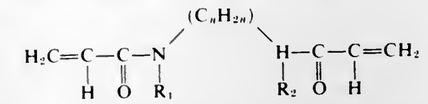
An electroplating bath solution for depositing gold-base alloys containing soluble gold and silver salts as well as a soluble polymeric condensate of an epihalohydrin and an alkylene polyamine. The solution also contains free alkali metal cyanide. Optional components include a different metal salt, such as nickel or cobalt salts; a wetting agent; buffers or conductive salts; and alkylene-, alkanol-, and alkylolamines, polymers thereof, or mixtures thereof.

3,642,590
ACID ELECTROPLATING BATH FOR DEPOSITING TIN

Jan Johannes Engelsman, and Cornelis Johannes Schoot, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,596
Claims priority, application Netherlands, July 16, 1969, 6910903
Int. Cl. C23b 5/14
U.S. Cl. 204—54 R **4 Claims**

An electroplating bath for depositing lustrous tin which bath contains bivalent tin ions, sulphate, sulphonate, sulphamate or fluoborate anions, a surface-active substance, a lustering agent of an unsaturated character having aldehyde or ketone groups and a compound of the type



in which n=1, 2 or 3 and R_1 and R_2 represent hydrogen, alkyl, or combined represent a ring system.

3,642,591
ELECTRO ZINC PLATING SOLUTION

Cesar Adrianus Boose, The Hague, and Maarten Johan Reidt, Voorburg, both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurweten-Schappelijk Onderzoek Ten Behoeve Van Nijverheid Handel en Verkeer, The Hague, Netherlands

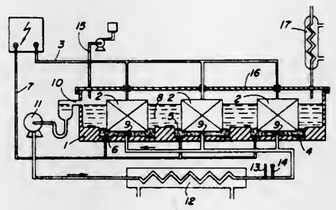
Filed Mar. 9, 1970, Ser. No. 17,978
Claims priority, application Netherlands, Mar. 11, 1969, 69/03711
Int. Cl. C23b 5/10, 5/12, 5/46
U.S. Cl. 204—55 R **6 Claims**

A cyanide-free zinc plating bath is described. Besides a zinc salt in the usual concentration range and possible brighteners, it comprises a polyhydroxy acid or salt and boric acid and/or borate in a molar ratio of between about 1(zinc):1½(polyhydroxy):3(boric) and 1:2:4, depending on the zinc content of the solution.

3,642,592
PRODUCTION OF ADIPONITRILE

Fritz Beck, Ludwigshafen; Harald Guthke, Frankenthal, and Hans Leitner, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Rhineland-Pfalz, Germany

Filed Mar. 17, 1969, Ser. No. 807,895
Claims priority, application Germany, Mar. 16, 1968, P 16 93 005.5
Int. Cl. C07b 29/06
U.S. Cl. 204—73 **8 Claims**

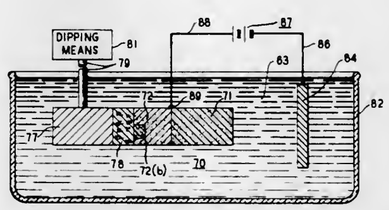


Process for the production of adiponitrile by direct electrochemical hydrodimerization of acrylonitrile using a medium containing acrylonitrile, an electrolyte salt, water and, if desired, a solvent at a temperature of from 10° to 60° C. at a pH of from 1 to 10. In the process, electrolysis is carried out in a cell having a liquid cathode which is contacted by a solid anode which is not wetted by the liquid cathode or into which the solid anode is immersed to a depth of up to 20 mm. Adiponitrile is an important intermediate for synthetic fiber manufacture.

3,642,593
METHOD OF PREPARING SLICES OF A SEMICONDUCTOR MATERIAL HAVING DISCRETE DOPED REGIONS

Ronald Lee Meek, Pottersville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 31, 1970, Ser. No. 59,977
Int. Cl. B23p 1/00
U.S. Cl. 204—143 GE **4 Claims**

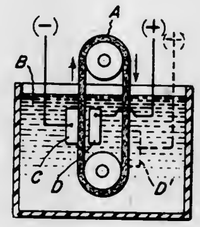


A method of preparing slices of semiconductor material, having a first type of conductivity, which slice has discrete doped regions, is disclosed. The method consists of preparing or selecting a block of semiconductive material having at least one first region of the first conductivity type and at least one second region of a different conductivity which is more rapidly electroetched than the first conductivity type region. The block is exposed to an ion implantation source which implants suitable ions in at least one discrete portion of the first region. The ion-implanted block is then subjected to an electroetching treatment whereby the second region is selectively etched thereby resulting in the formation of a slice of the first conductivity type material, having suitable ions implanted therein. The slice is then subjected to an annealing or heat treatment whereby the implanted ions are activated resulting in a slice having discrete regions having different conductivity.

3,642,594
ELECTROCHEMICAL RECOVERY OF SILVER AND REGENERATION OF USED PHOTOGRAPHIC FIXING SOLUTIONS

Terry M. Crellin, Wheaton, Md., assignor to Norton Company, Troy, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,571
Int. Cl. B01k 3/00, 3/04
U.S. Cl. 204—149 **7 Claims**



An improved method for recovering silver and regenerating used photographic fixing solutions electrochemically is disclosed whereby silver is electroplated from used fixing solutions using high-current densities, e.g. 300 a./ft.^{2}, without decomposing the fixing solution. The fixing solution is then capable of being reused in the photographic process.

3,642,595
THERMAL GRAIN REFINEMENT OF MARAGING STEEL

George Saul, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 23, 1969, Ser. No. 860,399
Int. Cl. C21d 1/00
U.S. Cl. 148—143 **3 Claims**

Coarse grained maraging steel is refined by first heating the steel to a temperature between 1,700° and 1,900° F. and then cooling the heated steel to a temperature below that at which the martensite transformation is completed. A steel having a substantially uniform grain size of ASTM No. 7 is obtained when the heating and cooling steps are repeated a total of three times.

This invention relates to the thermal grain refinement of maraging steel. In one aspect it relates to a method for thermally treating a course grained maraging steel so that its grain size is reduced.

3,642,596
PROCESS FOR PREPARING ORGANOCHLOROSILANES

Minoru Takamizawa; Takayoshi Hayashi; Kazumoto Uzawa; Masatoshi Takita, and Yoshiaki Kudo, all of Gunma-ken, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Sept. 2, 1969, Ser. No. 854,716
Claims priority, application Japan, Sept. 6, 1968, 43/64131
Int. Cl. B01j 1/10
U.S. Cl. 204—158 **7 Claims**

Aromatic group containing organochlorosilanes are prepared by irradiating, in the presence of chlorine, a mixture of chlorosilanes of the formula

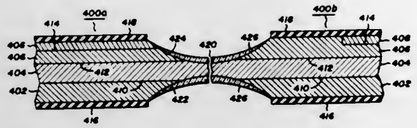
$$(CH_3)_{3-x}Cl_xSiH,$$

wherein n is 2 or 3 and aromatic compounds. The irradiation is carried out with light, at least 30 percent of the light having a wavelength not exceeding 3,800 A. A wide variety of aromatic group containing organochlorosilanes are selectively obtained by the inventive process with high yields. Further, the formation of byproducts, which are difficult to separate and/or which have no utility, is effectively prevented.

3,642,597
SEMICONDUCTOR PASSIVATING PROCESS

Gary S. Sheldon, Union Springs, N.Y., assignor to General Electric Company

Original application Dec. 9, 1968, Ser. No. 782,093, now abandoned. Divided and this application Mar. 20, 1970, Ser. No. 21,373
Int. Cl. B01k 5/02
U.S. Cl. 204—181 10 Claims

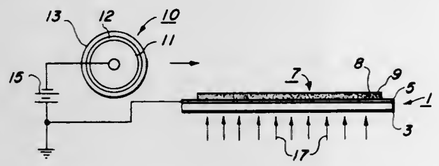


A semiconductive wafer is selectively protected and etched so that a grid of intersecting grooves is formed on one or both major surfaces. The grooves extend below junction depth. Oxide lip portions overhanging the grooves may be removed and the grooves may be treated to enhance wettability. A passivant is then selectively electrophoretically deposited into the grooves. Where glass is employed as the passivant it is fired after deposition. The wafer may be subdivided into pellets before or after contacts are applied. A pliant supplemental passivant encapsulates the semiconductive pellet, and a casement is molded thereabout to complete the device. One semiconductive element that may be obtained by the passivation process is characterized by a passivant coating on a beveled periphery that progressively increases in thickness as it approaches a major surface intersecting the beveled periphery.

3,642,598
PHOTOELECTROPHORETIC IMAGING METHOD AND APPARATUS

Robert W. Gundlach, Webster; Leon C. Lot, Victor, and Christopher Snelling, Penfield, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,347
Int. Cl. B01k 5/02
U.S. Cl. 204—181 7 Claims



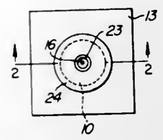
Electrically photosensitive particles dispersed in a carrier liquid are subjected to an electric field and exposed to imagewise light by reflection from an opaque document in a reflex exposure mode. A transparent material is positioned between the carrier liquid and the document.

3,642,599
SOLID ELECTROLYTE PROBE FOR DETERMINING THE OXYGEN CONTENT OF MOLTEN MATERIALS

Henry W. Franz, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed May 12, 1969, Ser. No. 823,701
Int. Cl. G01n 27/30
U.S. Cl. 204—195 7 Claims

A solid electrolyte probe for direct immersion into a molten material, such as molten copper, to determine the oxygen content thereof. A tubular receptacle fabricated from a solid electrolyte, such as stabilized zirconia, and adapted to hold an oxygen-containing material, has its open upper end protectively closed by a vertically elongate, relatively massive, refractory cap which has a longitudinal passage therethrough to accommodate the electrical lead for the probe electrode

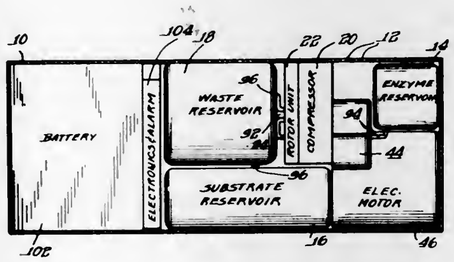


and is long enough to protect the tubular receptacle against both unrepresentative, high-oxygen molten material and the molten material-air interface, and to protect both the tubular receptacle and the electrical conductor against splash of the molten material that could otherwise lead to short circuiting of the electrical signals.

3,642,600
GAS DETECTION ANNUNCIATOR APPARATUS

Harvey N. Seiger, East Brunswick, and Robert J. Dagnall, Bound Brook, both of N.J., assignors to Gulton Industries, Inc., Metuchen, N.Y.

Original application Oct. 11, 1966, Ser. No. 585,805, now Patent No. 3,451,901. Divided and this application Apr. 3, 1969, Ser. No. 842,745
Int. Cl. G01n 27/28
U.S. Cl. 204—195 13 Claims



An apparatus for the detection of nerve gases comprising reservoirs for enzyme and substrate, electrochemical cell means, air-conveying means and sensing and annunciator means.

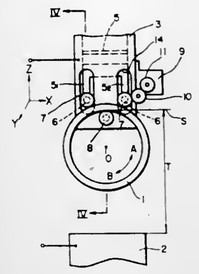
3,642,601
MACHINE FOR PROCESSING A PIECE OF WORK BY ELECTRIC CURRENT

Iwao Kondo, 39-9 Kita-machi 1-chome, Nerima-ku, Tokyo, Japan

Filed Dec. 3, 1969, Ser. No. 881,728
Claims priority, application Japan, Dec. 3, 1968, 43/88571
Int. Cl. B01k 3/04; B23p 1/04
U.S. Cl. 204—206 6 Claims

A device for processing a workpiece by electric current, comprising an electrode carried by an electrode holder, and a work holder holding the work stationary. The electrode holder moves the electrode relative to the workpiece, while providing electric current therethrough, preferably in three directions. The electrode holder also moves the electrode

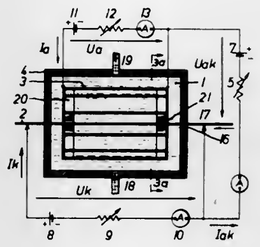
relative to the holder itself, so as to bring fresh portions of the electrode into operative contact with the work. For electrolytic processing, the electrode includes a means for continuously ejecting electrolyte to the working area.



3,642,602
ELECTROPLATING APPARATUS

Sigfrid Schweizerhof, Backnang, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Apr. 13, 1970, Ser. No. 27,974
Claims priority, application Germany, Apr. 11, 1969, P 19 18 354.1
Int. Cl. C23b 5/74
U.S. Cl. 204—211 4 Claims



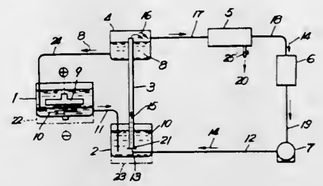
In electroplating an anisotropic magnetic film onto wires, current through the wires during the plating process is used to create the magnetic anisotropy in the film. The resulting voltage drop along the length of the cathodic wires results in nonuniform chemical composition in the film along the length of the wires. Such nonuniform compositions are eliminated in the apparatus and method of the present invention by providing an equal voltage drop along the length of the anode.

3,642,603
METHOD OF AND APPARATUS FOR CIRCULATING LIQUID METALS IN FUSED SALT ELECTROLYSIS

Hidetami Sakai, Room No. 501, Building No. 182, 2-2, 3-chome, Takanedai-Danchi, Takanedai-cho, Funabashi-shi, and Muneyoshi Arita, 68-556, Joza, Sakura-shi, both of Japan

Filed Mar. 10, 1970, Ser. No. 18,103
Int. Cl. C22d 3/02, 1/04
U.S. Cl. 204—247 2 Claims

A method of and an apparatus for circulating a liquid metal in fused salt electrolysis comprising passing the fused alloy of the cathode liquid metal and the electrolytically liberated metal both coming out of the cell and the liquid metal for controlling the temperature of the cell through a lift pipe by making a mixture of an inert gas and the liquid metals by the jetting force of the gas, said mixture being small in specific gravity, lifting said liquid metals into a head tank positioned at a level high enough for recirculating the liquid metals into the electrolytic cell by gravity, separating

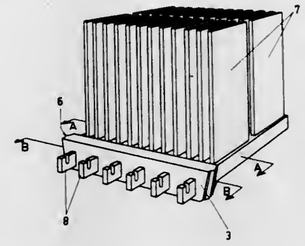


the liquid metals from the inert gas in said head tank, recirculating the liquid metal necessary for electrolysis into the cell, condensing and separating the electrolytically liberated metal contained in the inert gas from the gas, and returning the inert gas into the lift pipe for further use by circulation.

3,642,604
ANODIC ASSEMBLY FOR ELECTROLYSIS CELLS

Umberto Giacopelli, Via Pravi, Rosignano-Solvay, (Livorno), Italy

Filed Dec. 23, 1969, Ser. No. 887,527
Claims priority, application Belgium, Dec. 30, 1968, 68156
Int. Cl. B01k 3/04; C23b 5/68; C22d 1/02
U.S. Cl. 204—286 8 Claims



An assembly for use in electrolysis cells including a permanent, rigid, inert and reusable base which has the form of a square open tank with only three sidewalls; and, an anodic aggregate set down on this base without an fastening means. This aggregate is composed of graphite anodic plates, anodic bars and the fourth sidewall of the base. All metallic parts of the assembly are protected by a covering which also embodies the fourth sidewall. The tightness between the fourth sidewall and the base is insured by a flexible seal.

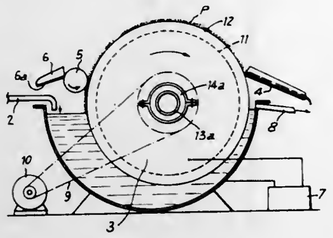
3,642,605
APPARATUS FOR THE EXTRACTION AND DEHYDRATION OF A SOLID PHASE FROM A LIQUID DISPERSION

Francois Chenel, Le Cateau, and Richard Louis Swinnen, Gennevilliers, both of France, assignors to Societe Generale Ceramique du Batiment, Luxembourg

Filed Jan. 23, 1968, Ser. No. 699,918
Claims priority, application France, Jan. 24, 1967, 92303; 92304
Int. Cl. B01k 5/00
U.S. Cl. 204—300 10 Claims

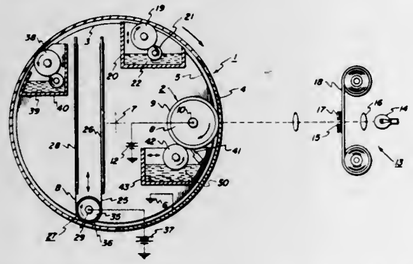
Apparatus for the removal of a solid phase from its dispersion by electrophoretic deposition and heat using an electrically charged vessel for the dispersion and a moving electrode or rotating drum emerging from the dispersion is disclosed. An aqueous layer is removed from the surface of the

deposited solid phase by a satellite roller in contact with the rotating drum, the drum continues to rotate, then a scraper



removes the deposited solid phase from the drum before it again enters the dispersion.

3,642,606
APPARATUS FOR IMAGE FORMATION ON THE INSIDE OF A CYLINDER
Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,545
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—300 **17 Claims**



A roller electrode is positioned in contact with the inside surface of a transparent cylindrical electrode forming a nip. Photoelectrophoretic ink in the vicinity of the nip is exposed to light through the transparent cylinder while a voltage gradient is applied between the electrodes. The image formed on the inside of the electrode is viewed and/or transferred to a web fed axially into the cylinder and deflected toward the image.

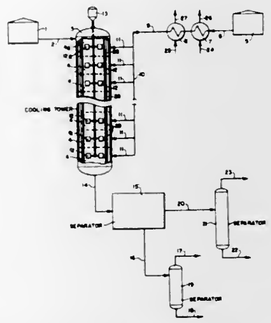
3,642,607
COAL DISSOLUTION PROCESS
Walter H. Seitzer, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Aug. 12, 1970, Ser. No. 63,334
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **8 Claims**

Process for dissolving bituminous coal by heating a mixture of said coal, a hydrogen donor oil, carbon monoxide, water, and an alkali metal hydroxide or its precursor at a temperature of about 400°–450° C. and under a total pressure of at least about 4,000 p.s.i.g.

3,642,608
SOLVATION OF COAL IN BYPRODUCT STREAMS
Jack W. Roach, and Leo Garwin, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.
Filed Jan. 9, 1970, Ser. No. 1,688
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **17 Claims**

Coal is solubilized in highly aromatic petroleum byproduct streams such as catalytic cracker recycle oil and slurry oil to produce a coal solution having a low viscosity which is readily deashed by settling and/or filtering. The coal solution has a low sulfur and mineral ash content and it may be used in the preparation of fuels or as a feedstock to a furnace process for producing carbon black. All or part of the solvent content of the coal solution may be recovered and recycled in the process as a solvent, and the deashed and desulfurized coal thus produced may be used as a solid or molten fuel, or it may be blended with petroleum refinery streams to produce liquid fuels having desired specifications and a feedstock for producing furnace carbon black.

3,642,609
DEWAXING WAXY OIL BY DILUTION CHILLING
Ivan Mayer, Summit, and Stephen F. Perry, Westfield, both of N.J., assignors to Esso Research and Engineering Company
Filed Nov. 13, 1969, Ser. No. 876,366
Int. Cl. C10g *43/08*
U.S. Cl. 208—33 **14 Claims**



Waxy oil is dewaxed by shock chilling with prechilled solvent under conditions of agitation sufficient to obtain substantially instantaneous mixing at a plurality of points along the length of a vertical tower wherein the velocity of solvent injection is at least 5 to 10 times that of the peripheral velocity of the mixer blades.

3,642,610
TWO-STAGE HYDROCRACKING-HYDROTREATING PROCESS TO MAKE LUBE OIL
Joseph M. Divijak, Jr., Griffith, Ind., and Maurice K. Rausch, South Holland, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,737
Int. Cl. C10g *23/02*, *13/06*, *37/00*
U.S. Cl. 260—58 **12 Claims**

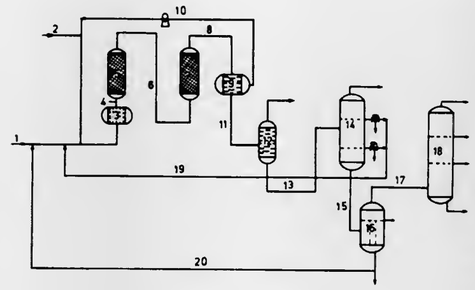
A high-viscosity-index mineral lubricating oil is produced by treating, for instance, a deasphalted residuum or a raw, heavy lubricating distillate oil in a two-stage process. The feedstock is first catalytically hydrocracked, then catalytically hydrogenated and can be fractionated and dewaxed to produce a finished product. Catalysts such as nickel-tungstate on boria-alumina and nickel-molybdate on alumina are employed in the two stages, respectively. The catalysts are preferably used in sulfided form.

3,642,611
PRODUCTION OF MOTOR AND JET FUELS
Odes B. Robertson, Groves; Thomas A. Cooper, Port Arthur, both of Tex., and Henry D. Moorer, Richmond, Va., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,720
Int. Cl. C10g *13/02*
U.S. Cl. 208—87 **9 Claims**

Good yields of high-quality motor fuel and jet fuel are obtained by solvent extracting a gas oil to produce a paraffin-

rich raffinate and an aromatic-rich extract, hydrocracking the raffinate using a catalyst having an amorphous support, separately hydrocracking the extract using a catalyst containing a crystalline zeolitic support and recovering jet and motor fuels from the respective hydrocracker effluents.

3,642,612
PROCESS FOR THE CATALYTIC HYDROGENATION OF HYDROCARBONS FOR THE PRODUCTION OF HIGH-VISCOSITY-INDEX LUBRICATING OILS
Pierleona Girotti; Telemaco Floris, both of Donato Milanese, and Giancarlo Pecci, Milano, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed Feb. 14, 1969, Ser. No. 799,341
Claims priority, application Italy, Feb. 14, 1968, 12716 A/68
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 **10 Claims**

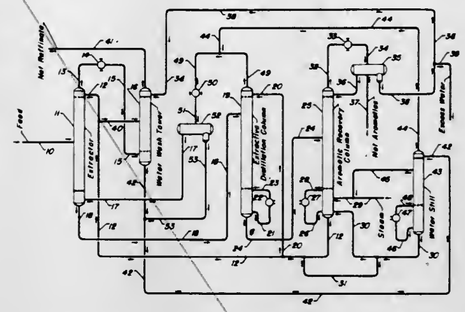


A novel two-stage hydrogenation process for producing lubricating oils is disclosed which comprises passing a deasphalted vacuum residue and/or vacuum distillate feedstock through a preheater, contacting the resulting feedstock with a catalyst consisting of sulfides and/or oxides of the VI and VIII group metals on a slightly acid support in the presence of hydrogen at certain temperature, pressure, space velocity and hydrogen flow conditions (first stage), contacting the resulting product under the same temperature, pressure, space velocity and hydrogen flow conditions as in the first stage with a catalyst consisting of sulfides and/or oxides of the VI and VIII group metals on an acid support, conveying the resulting products to a high-pressure separator where hydrogen is removed, purified and recycled, conveying the resulting product to a low-pressure separator where undesirable gases are removed, introducing the resulting product into a stripping column, where certain useful byproducts are removed, transferring the bottom products to a deparaffination unit wherein paraffins removed therein are recycled to the first reaction stage and then conveying the deparaffinated product to a vacuum-fractionating column where the desired lubricating oils are obtained.

3,642,613
BLACK OIL CONVERSION PROCESS STARTUP PROCEDURE
Garl J. Nagl, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 19, 1970, Ser. No. 47,905
Int. Cl. C10g *23/00*
U.S. Cl. 208—213 **3 Claims**

A startup method for a process designed to effect the conversion of hydrocarbonaceous black oils. Applicable to a fixed-bed catalytic system, the method involves (1) prewetting the catalyst with a hydrocarbon mixture and (2) low-temperature reduction and sulfiding using circulating (recycle) hydrogen and a sulfurous hydrocarbon mixture.

3,642,614
REDUCTION OF SOLUBLE CONTAMINANTS IN LEAN SOLVENT
Harry M. Van Tassell, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 18, 1970, Ser. No. 47,501
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 **15 Claims**

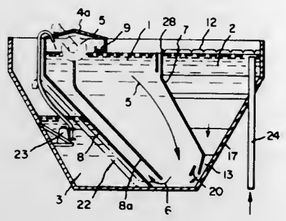


In a solvent extraction process wherein a mixed hydrocarbon feed is contacted in a primary extraction zone under extraction conditions with a specified water soluble primary solvent selective for aromatic hydrocarbons thereby producing a nonaromatic raffinate stream and an aromatic-rich solvent stream, the aromatic-rich solvent stream is separated in a separation zone to provide an aromatic product and a lean primary solvent stream containing hydrocarbon contaminant having a boiling point greater than the end boiling point of the aromatic product, and the lean primary solvent stream is passed to the extraction zone as the specified primary solvent, a method for reducing the concentration of soluble hydrocarbon contaminant in the lean solvent which comprises contacting a portion of lean primary solvent and at least a portion of the nonaromatic raffinate in a secondary extraction zone under extraction conditions including the presence of a secondary aqueous solvent. The secondary extraction zone produces a nonaromatic raffinate containing the hydrocarbon contaminant having substantial freedom from the primary solvent. The secondary extraction zone further produces a stream of rich secondary aqueous solvent containing the primary solvent having reduced concentration of the hydrocarbon contaminant, and the rich secondary aqueous solvent is separated to produce a lean primary solvent having reduced hydrocarbon contaminant concentration. The method has particular application to aromatic extraction processing wherein the primary solvent is a sulfolane-type chemical solvent, or a polyalkylene glycol solvent, or any other typically utilized water soluble solvent selective for aromatic hydrocarbons.

3,642,615
METHOD AND APPARATUS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER
Theodor Wieferig, Vechta/Oldb., Germany, assignor to Passavant-Werke, Hutte, Germany
Filed May 22, 1970, Ser. No. 39,745
Claims priority, application Germany, Sept. 2, 1969, P 19 44 558.0
Int. Cl. C02c *1/10*
U.S. Cl. 210—7 **12 Claims**

A system for active sludge waste water treatment comprises an aerating chamber and a clarifying chamber. Raw water is introduced into the aerating chamber where liquid is circulated in a path in the aerating chamber and the liquid is aerated. A portion of the circulating liquid is conveyed to the clarifying chamber where the sludge settles to the bottom.

Settled sludge is conveyed from the bottom of the clarifying chamber and introduced into the aerating chamber in a direction substantially the same as the direction of motion of



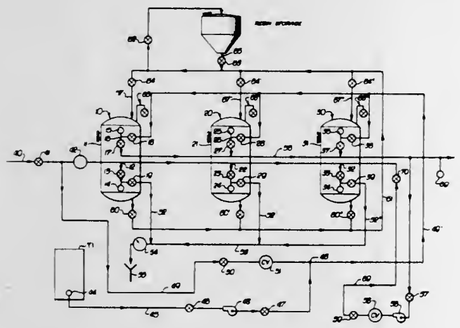
the liquid in the path of circulation in the clarifying chamber. Clarified water is removed from the top of the clarifier and sludge is withdrawn from the aerating chamber.

3,642,616

CONTINUOUS METHOD FOR TREATING LIQUIDS

William C. Burns, Fullerton, Calif., assignor to Water Treatment Corporation, City of Industry, Calif.

Filed Aug. 16, 1968, Ser. No. 753,160
Int. Cl. B01d *15/06;* **C02b** *1/76*
U.S. Cl. 210—32 **7 Claims**



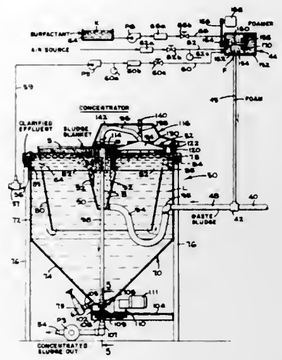
A continuous method for producing treated water by utilizing at least three zones containing ion-exchange material in which one zone is utilized as a treating or deionization unit, another zone is utilized for regenerating exhausted ion-exchange material and a third zone is utilized for rinsing the regeneration solution from the ion-exchange material, all three zones being operated simultaneously, and when the ion-exchange material in the deionization zone is exhausted the influent water is then transferred to the rinsing zone and the ion-exchange material in the original deionization zone is then regenerated with a regeneration solution while the ion-exchange material in the original regeneration zone is rinsed. Preferably the rinsing operation is conducted by passing a portion of the deionized water through the regenerated ion-exchange material to rinse the salt solution therefrom. It is also preferred to deionize the water by passing the influent water upwardly through the ion-exchange material and to regenerate the ion-exchange material by passing regeneration solution downwardly through said material. Moreover, very good results are obtained if each zone has a freeboard sufficient to allow for expansion of the ion-exchange material and the water to be treated is passed through the ion-exchange material at a flow rate sufficient to force and hold the ion-exchange material against the top of the zone and in the freeboard space, thereby preventing said ion-exchange material from being mixed.

3,642,617

FOAM FLOTATION CONCENTRATOR

Edwin H. Brink, San Jose, and Warren G. Palmer, Saratoga, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 29, 1970, Ser. No. 6,868
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **8 Claims**



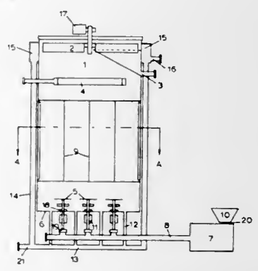
A suspension of activated sludge from a secondary settling tank is concentrated by a bubble flotation process. Air is forced through a mixture of water and a surfactant in a shear-type foamer at low pressure to produce a stable foam of small air bubbles in water. The foam is pumped into the suspension entering the concentrator and the bubbles attach to the solids in the suspension. The mixture of foam and suspension is released within a baffle in the concentrator tank, causing the surfactant shielded air bubbles to lift the solids to which they have become attached and form a blanket of concentrated sludge. A rotating skimmer head removes an upper layer of the sludge blanket whereas the clarified effluent flows under the baffle and out over an annular weir for discharge. The concentrated sludge removed from the concentrator is introduced into an anaerobic digester, along with primary sludge from the primary settling tank of the system. One overall effect is to reduce the size required for the digester.

3,642,618

CONTINUOUS CLARIFICATION-FILTRATION METHOD

Rene Narcisco Silva, 614 Albert Place, Ridgewood, N.J.

Filed Oct. 7, 1968, Ser. No. 765,507
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **4 Claims**



Method and apparatus to improve the adhesion between the air or gas bubbles used in a flotation clarifier and the floc already formed with the use of one or more chemicals or coagulant aids, by adding the necessary electrical charge to

said air or gas bubbles in order to make them adhere more efficiently to said floc.

3,642,619

CONDITIONING SEWAGE WASTE SLUDGES FOR DEWATERING

Ronald Alfred Lo Sasso, and Emerson G. Rausch, both of Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1970, Ser. No. 68,545
Int. Cl. C02c *3/00*
U.S. Cl. 210—52 **6 Claims**

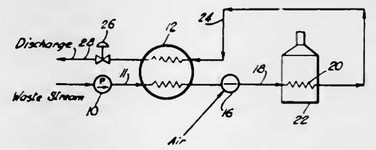
Waste sludges are conditioned for dewatering by intermixing with the waste sludge prior to dewatering an admixture of a water-soluble high-molecular weight nonionic polyacrylamide and a water-soluble salt containing ferric ions.

3,642,620

PROCESS FOR TREATING WASTES FROM OXIDATION PROCESSES

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 780,080, Nov. 29, 1968, now Patent No. 3,507,788. This application Oct. 14, 1969, Ser. No. 866,215
Int. Cl. C02c *5/04*
U.S. Cl. 210—63 **8 Claims**



A process for treating a waste feed stream containing essentially water-soluble organic wastes is described as involving heating the stream under turbulent flow conditions to temperatures of 400° to 700° F. and pressures of 300 to 3100 p.s.i. in the presence of air or of oxygen thereby splitting off carbon dioxide. The oxidized waste stream, which has a considerably reduced chemical oxygen demand, is continuously fed to a hot contacting zone and is in heat-exchange relationship with the incoming effluent stream.

3,642,621

PREPARATION OF FIRE-EXTINGUISHING MATERIAL COMPRISING HEATING BIURET WITH SODIUM OR POTASSIUM HYDROXIDE

Frank Brian Hollows, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 3, 1969, Ser. No. 796,156
Claims priority, application Great Britain, Feb. 16, 1968, 7,768/68
Int. Cl. A62d *1/00*
U.S. Cl. 252—5 **3 Claims**

Fire-extinguishing compositions containing the compound having the empirical formula $MC_2N_3H_3O_3$ where M represents sodium or potassium, are made by heating biuret with sodium hydroxide or potassium hydroxide under anhydrous conditions.

3,642,622

DRILLING FLUID

Mahmoud S. Kablaoui, and Jack H. Kolaian, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,514
Int. Cl. C10m *3/14*
U.S. Cl. 252—8.5 C **5 Claims**

An aqueous drilling fluid dispersant and a method of drilling wells using as the drilling fluid dispersant 4-allyldihydroxybenzene.

3,642,623

OIL BASE WELL DRILLING FLUID COMPOSITION AND METHOD

Robert B. Bennett and Warren C. McMordie, Jr., Houston, Tex., assignors to Oil Base, Inc., Houston, Tex.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,492
Int. Cl. C09k *3/00;* **B01f** *17/42*
U.S. Cl. 252—8.5 M **19 Claims**

Stabilization of oil continuous phase well fluids, particularly oil base drilling fluids, against contamination with water-soluble alkaline earth salts, e.g., calcium chloride, is accomplished by addition of a novel additive system comprising a water-soluble acid-blocked alkanolamide nonionic surfactant, a sulfonated acid anionic surfactant and an oil-soluble nonionic ethoxylated alkyl phenol. The additive system controls the water wettable solids in an oil base well fluid system in the presence of alkaline earth salts for extended periods at high temperature keeping such solids in the oil-wet state.

3,642,624

THERMAL INSULATING FLUID

John W. Howland, Puerto La Cruz, Venezuela, and Juan C. Rosso, deceased, late of Puerto La Cruz, Venezuela, by Elsa Vich de Rosso, Buenos Aires, Argentina; said Howland assignor to Gulf Oil Corporation, Pittsburgh, Pa.

No Drawing. Filed Dec. 12, 1968, Ser. No. 786,543
Int. Cl. E21b *21/04;* **C04b** *43/04*
U.S. Cl. 252—8.55 **8 Claims**

A thermal insulating fluid for use in the tubing-casing annulus of a steam injection well. The fluid contains as a major ingredient a heavy mineral oil, preferably having an API gravity less than 30°. The fluid contains ingredients which will form a water-insoluble soap when the fluid is heated. The viscosity and insulation properties of the fluid are increased by the incorporation of 2 to 6 percent water, a bentonite-organic base compound, and finely divided asbestos fibers.

3,642,625

ANTICORROSION LUBRICATING COMPOUND

Stanley J. Caplan, Northridge, Calif., assignor to Accralube Company, Northridge, Calif.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,930
Int. Cl. C10m *5/02*
U.S. Cl. 252—25 **7 Claims**

An improved heavy duty coating composition for protection against corrosion of metallic substrates and for lubrication of metallic parts comprises a substantially uniform mixture of from about 40 to about 70 weight percent of lead oxide in particulate form having an average particle diameter size of from about 30–45 microns and an essentially homogeneous grease-containing vehicle. The vehicle comprises a major proportion of grease, preferably heavy duty grease, and a minor proportion of lubricating oil, preferably high pressure lubricating oil. The grease-containing vehicle is non-separating and preferably the grease is present in the vehicle in a weight ratio to the oil of about 5:1. The lead oxide preferably comprises at least one of PbO and Pb_3O_4.

3,642,626
GREASE COMPOSITION COMPRISING POLYFLUOROALKYL-POLYSILOXANE
John B. Christian, Yellow Springs, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed May 9, 1969, Ser. No. 823,475
Int. Cl. C10m *7/48*
U.S. Cl. 252—33.6 10 Claims
This invention comprises an improved grease having improved wear, improved extreme pressure characteristics and improved temperature range utility comprising a polyfluoroalkyl-alkyl polysiloxane as a base, fluorinated copolymer of ethylene and propylene as a thickener and antimony dialkyl dithiocarbamate. The improved grease of this invention has particular utility in aircraft and other equipment where heavy loads are prevalent and little or no wear can be tolerated.

3,642,627
LUBRICATING GREASE
Roy L. Waring, Moore, Okla., assignor to Cato Oil and Grease Co.
No Drawing. Filed May 31, 1968, Ser. No. 733,240
Int. Cl. C10m *5/16*
U.S. Cl. 252—39 9 Claims
A lubricating grease having a calcium soap/salt complex thickener and characterized by outstanding adhesive qualities, low bleeding rate, and stability at temperatures above 400° F. The ingredients from which the grease is formed comprise lubricating oil, a source of calcium (such as hydrated lime), 12-hydroxy stearic acid, a low molecular weight organic acid, or a salt thereof, and isobutylene polymer having an average molecular weight of from about 8,000 to about 19,000 (Staudinger).

3,642,628
INSOLUBLE ORGANOTIN SALT STABILIZERS FOR ACRYLONITRILE POLYMERS
George Palethorpe, 44–C Colonial Apts., Durham, N.C. 27707
No Drawing. Filed Dec. 30, 1968, Ser. No. 788,104
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K 7 Claims
Insoluble organotin salts of organic and inorganic oxygen-containing acids are effective stabilizers against color initiated by heat and light in halogen-containing acrylonitrile polymer fibers. Unlike the soluble tin compounds, the insoluble organotin salts are well-retained within these fibers when they are produced by wet spinning techniques.

3,642,629
CHEMICAL COMPOUNDS AND COMPOSITIONS
Donald R. Randell, Stockport, England, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Division of application Ser. No. 753,321, Apr. 26, 1968, now Patent No. 3,536,706, which is a division of application Ser. No. 526,401, Feb. 10, 1966, now Patent No. 3,414,618, which in turn is a division of application Ser. No. 431,709, Feb. 10, 1965. Divided and this application Jan. 27, 1970, Ser. No. 6,308
Claims priority, application Great Britain, Feb. 11, 1964, 5,593/64; Feb. 29, 1964, 8,579/64
Int. Cl. C10m *1/38, 1/34*
U.S. Cl. 252—47.5 7 Claims
Chemical compositions are composed of synthetic lubricant and antioxidant compound of the formula:

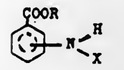


wherein A and B are the same or different and each is an aryl group, and one of the aryl groups A and B contains a tertiary alkyl substituent group having from 4 to 12 carbon atoms.

3,642,630
LUBRICANT COMPOSITIONS
Alexander C. B. MacPhail, Wood River, Ill., and Ian Keddle, Pensby, Wirral, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,785
Claims priority, application Great Britain, Feb. 22, 1968, 8,660/68
Int. Cl. C10m *1/38*
U.S. Cl. 252—47.5 7 Claims
Synthetic ester based lubricant compositions containing minor amounts each of an N-substituted phenothiazine and a symmetrical or asymmetrical substituted triazine have good oxidation stability over a wide range of temperatures.

3,642,631
SUBSTITUTED BITHIOPHENES
Henry Gisser and Seymour Portnoy, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Division of application Ser. No. 8,386, Feb. 3, 1970. Continuation-in-part of application Ser. No. 690,403, Dec. 14, 1967. This application Nov. 24, 1970, Ser. No. 92,521
Int. Cl. C10m *1/30, 1/38*
U.S. Cl. 252—48.4 3 Claims
A new heat-stable compound, 5,5′-diheptafluobutyryl-2,2′-bithiophene, and methods for its preparation which involves the use of ethyl bromide in an uncatalyzed Grignard coupling reaction, as well as methods for preparing other related bithiophenes having at least one substituent in each thiophene ring. Lubricating oils and hydraulic fluids containing this compound as a friction reducing agent are also described.

3,642,632
ANTHRANILIC ACID ESTERS AS LUBRICANT ADDITIVES
John F. Coburn, 7 Franklin Ave., Cranford, N.J. 07016, and Stephen J. Metro, 1822 Lamberts Mill Road, Scotch Plains, N.J. 07076
No Drawing. Filed May 24, 1968, Ser. No. 731,735
Int. Cl. C10m *1/26, 1/32*
U.S. Cl. 252—51.5 A 4 Claims
An ester of anthranilic acid or an ester of a derivative such acid having the general structural formula:

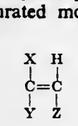


where R is a C_1 to C_{10} alkyl group and X is hydrogen, alkyl or a phenyl group, has been found to be an effective oxidation and corrosion inhibitor in lubricating oils, especially synthetic ester oils.

3,642,633
LUBRICANT COMPOSITIONS
Rudolf J. A. Eckert and Johannes M. Wortel, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 31, 1969, Ser. No. 889,704
Claims priority, application Great Britain, Jan. 1, 1969, 26/69
Int. Cl. C10m *1/28, 1/34*
U.S. Cl. 252—57 4 Claims
Lubricant composition containing copolymers having free hydroxyl groups and derived from a compound comprising a single polymerizable C=C group and at least one aromatic ring which is incorporated into the monomer mixture from which the copolymers are polymerized have improved pour points, viscosity indices and dispersant properties.

3,642,634
REFRIGERATION LUBRICATING OIL
Sven A. Olund, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Jan. 16, 1970, Ser. No. 3,523
Int. Cl. C10m *1/16, 1/18*
U.S. Cl. 252—59 4 Claims
Lubricating oil for refrigeration equipment based on the combination of alkylbenzenes containing from 10 to 25 carbon atoms in the alkyl groups and from about 2 to about 50% by weight of polyisobutylene having a viscosity in the range of about 3000 to about 1,000,000 SUS at 100° F.

3,642,635
SYNTHETIC PETROLATUM COMPOSITIONS
David M. MacLeod, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company
No Drawing. Filed Mar. 5, 1970, Ser. No. 16,980
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 4 Claims
Petrolatum-like products are prepared by combining a distillate lubricating oil, a slack wax derived from a distillation lubricating oil and a wax crystal modifying additive having an intrinsic viscosity in the range of about 0.05 to about 0.3 dl./g. and selected from the group consisting of amorphous polyethylene, amorphous polypropylene, copolymers thereof, halogenated homopolymers and copolymers thereof, and copolymers of 3 to 40 molar proportions of ethylene per molar proportion of an ethylenically unsaturated monomer having the general formula:



wherein X is selected from the group consisting of hydrogen, halogens and C_1 to C_5 alkyl groups; Y is selected from the group consisting of —OOCR, —OOCR and —COR groups; Z is selected from the group consisting of —COOR and —R; and R is selected from the group consisting of hydrogen and C_1 to C_{10} alkyl groups.

3,642,636
LUBRICATING OIL CONTAINING PARA-t-BUTYL-ALPHA-METHYLSTYRENE POLYMERS
Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,382
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 3 Claims
High molecular weight homopolymers of t-butyl-alpha-methylstyrene and lubricating oil containing them.

3,642,637
PIEZOELECTRIC CERAMIC COMPOSITION
Seiji Ikegami, Osaka-fu, and Ichiro Ueda, Hyogo-ken, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Nov. 24, 1970, Ser. No. 92,382
Claims priority, application Japan, Dec. 26, 1969, 44/623
Int. Cl. C04b *35/46*
U.S. Cl. 252—62.9 1 Claim
The present invention is directed to a novel piezoelectric ceramic consisting essentially of lead titanate and a combined additive of 0.22 to 0.36 weight percent of manganese oxide and 1.08 to 2.43 weight percent of lanthanum oxide having an electromechanical coupling factor k_{33} of 42 to 50%, a mechanical quality factor of about 1000, a dielectric constant of about 200 and Vicker's hardness of 500. The novel ceramic is suitable for making a high frequency ceramic filter of wide pass band and low transmission loss.

3,642,638
INSULATING IMPREGNATION COMPOSITION OF WAXY AND GREASY ETHYLENE POLYMERS
Motoi Kitano, Settsu-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
No Drawing. Filed Nov. 13, 1967, Ser. No. 682,508
Claims priority, application Japan, Dec. 7, 1966, 41/80,700; June 30, 1967, 42/42,716
Int. Cl. H01b *3/30*
U.S. Cl. 252—63 3 Claims
An insulating impregnation composition for electrical equipment, composed of polymers which are low molecular weight polyethylenes produced along with high molecular weight polyethylenes in the polymerization of ethylene by the high pressure process, medium pressure process or low pressure process, and which have an average molecular weight of 250 to 2000 and which have 0.05 to 3 C=C unsaturated grounds in every molecular chain.

3,642,639
PROCESS OF REFRIGERATION USING MIXTURE SF_6 AND $CHClF_2$
Kevin P. Murphy, Bernardsville, and Richard F. Stahl, Madison, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Nov. 21, 1968, Ser. No. 777,897
Int. Cl. C09k *3/02*
U.S. Cl. 252—67 4 Claims
Monochlorodifluoromethane ($CHClF_2$) and sulfur hexafluoride (SF_6), in certain proportions, form mixtures having unusually high refrigeration capacity and which are therefore especially adapted for use as refrigerants in high capacity, low temperature refrigeration systems.

3,642,640
SYSTEM FOR CORROSION INHIBITION
Robert J. Tedeschi, Whitehouse Station, and Paul W. Natali, Middletown, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Filed Dec. 31, 1968, Ser. No. 789,017
Int. Cl. C11d *7/32*
U.S. Cl. 252—146 7 Claims
Aqueous acid solutions are inhibited against corrosion of metals, especially ferrous metals, by incorporation of a corrosion-inhibiting system composed of a combination of 1-hexyn-3-ol, 5-decyn-4,7-diol, and 3-methyl-1-butyn-3-ol.

3,642,641
CORROSION INHIBITION
Robert J. Tedeschi, Whitehouse Station, and Paul W. Natali, Middletown, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Filed Dec. 31, 1968, Ser. No. 789,020
Int. Cl. C11d *7/32*
U.S. Cl. 252—148 9 Claims
Aqueous acid solutions are inhibited against corrosion of metals, especially ferrous metals, by incorporation of a corrosion inhibiting system composed of a mixture of a major amount of 3-methyl-1-butyne-3-ol, and a minor amount of n-hexynol, preferably in the presence of ethylene diamine or urea.

3,642,642

DETERGENT COMPOSITIONS CONTAINING QUATERNARY AMMONIUM DERIVATIVES OF N,N'-SUBSTITUTED 4,4'-BIS(BENZIMIDAZOL-2-YL)STILBENES

Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Original application Aug. 1, 1967, Ser. No. 657,515, now Patent No. 3,583,984. Divided and this application Sept. 23, 1970, Ser. No. 74,938

Int. Cl. C11d *1/18, 3/26*

U.S. Cl. 252—543 10 Claims

N,N' - substituted 4,4' - bis(benzimidazol - 2 - yl)stilbenes are interacted with alkylating agents to produce quaternary ammonium compounds which are useful, particularly for incorporation in detergent compositions, for concomitantly disinfecting and whitening or brightening textile materials.

3,642,643

REGENERATION OF COPPER OXIDE AND COPPER CHROMITE CATALYSTS

Clarence E. Habermann, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,324

Int. Cl. B01j *11/30, 11/66*

U.S. Cl. 252—412 8 Claims

The activity of a copper oxide or copper chromite catalyst deactivated while being used to convert a nitrile to the corresponding amide may be regenerated by oxidizing the catalyst, and then contacting the oxidized cuprous catalyst with a reducing agent at an elevated temperature.

3,642,644

STABLE DRY CLEANING COMPOSITIONS

Herbert E. Grote and Wilbur G. Henry, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,651

Int. Cl. C11d *1/18, 3/24;* D06l *1/04*

U.S. Cl. 252—153 8 Claims

Concentrated dry cleaning compositions, having a pH of from about 6.5 to about 9 and consisting essentially of a dry cleaning solvent containing from about 0.25% to about 0.75% by weight of a coupling agent and from about 20% to about 60% by weight of an anionic detergent comprising the monoethanolamine salt of an essentially pure, broad cut, linear C_8 to C_{18} alkyl benzene sulfonic acid; weight ratios of detergent to coupling agent are at least about 80:1. The concentrated compositions herein exhibit satisfactory stability against phase separation and, when diluted with additional solvent and employed in conventional dry cleaning operations, achieve improved dry cleaning performance.

3,642,645

METAL DEGREASING AGENTS

Ludwig Schmidhammer, Burghausen, Upper Bavaria, Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,402

Claims priority, application Germany, Feb. 11, 1969, P 19 06 758.4

Int. Cl. C09d *9/00;* C11d *7/22*

U.S. Cl. 252—162 4 Claims

Metal degreasing agents comprising trichlorethylene or perchlorethylene containing 1,3,5-cycloheptatriene as a stabilizer which is effective in the liquid as well as the vapor phase. In addition, the degreasing agent may also contain a tertiary amine in which at least one of the three aliphatic groups is unsaturated.

3,642,646

CARBOXY-BEARING ADDUCT POLYOL COMPOSITION CONTAINING TETRABROMOPHTHALIC ANHYDRIDE

Sheldon H. Marcus, Skokie, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,594

Int. Cl. C09k *3/28;* C08g *51/00*

U.S. Cl. 252—182 5 Claims

Polyol compositions useful in preparing rigid foam compositions are disclosed. These polyols comprise the reaction adducts of polyfunctional aromatic carboxylic acid anhydrides and polyether polyols. Adduct polyols which additionally contain a polyethyleneglycol are also disclosed.

3,642,647

PRODUCTION OF ANHYDROUS STANNIC CHLORIDE FROM AQUEOUS SOLUTION

Peter Derrick Goulden, Ancaster, Ontario, Canada, assignor to M & T Products of Canada Limited, Hamilton, Ontario, Canada

Filed Jan. 17, 1969, Ser. No. 791,994

Int. Cl. C01g *19/08*

U.S. Cl. 252—182 9 Claims

A process for the dehydrating of aqueous solutions containing tetravalent tin and chloride ions by treatment thereof with sulfuric acid or oleum to form an upper phase containing sulfuric acid and a lower phase consisting of anhydrous stannic chloride and removing and recovering the lower phase as an anhydrous stannic chloride product.

3,642,648

PREPARATION OF DISPERSIONS OF FINELY DIVIDED ALKALI METALS

Gerald J. Orazem and Kenneth R. Martin, Gastonia, Matthew H. Dellinger, Cherryville, and William S. Leonhardt, Bessemer, N.C., assignors to Lithium Corporation of America, New York, N.Y.

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,614

Int. Cl. C09k *3/00*

U.S. Cl. 252—182 10 Claims

Dispersions of finely divided alkali metals in inert liquid hydrocarbons are made by utilizing as the dispersing agent a polyhydrocarbon resin, such as a cross-linked polystyrene resin, which is soluble or colloidally dispersible in said iner liquid hydrocarbon.

3,642,649

LOW TEMPERATURE TERTIARY AMINE ACCELERATORS

Harold A. Green, Havertown, and Robert G. Petrella, Philadelphia, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed Apr. 18, 1969, Ser. No. 818,470

Int. Cl. C08f *45/72;* C08g *51/84*

U.S. Cl. 252—182 9 Claims

Low temperature epoxy curing accelerators are prepared from tertiary amine salts of hydrobromic acid, paratoluene sulfonic acid, 2-ethylhexoic acid or thiocyanic acid, wherein the tertiary amine is either triethylene diamine, methyl triethylene diamine or 2 - ethyl - 4 - methyl imidazole.

3,642,650

PIGMENT PARTICLES AND METHOD OF PRODUCING THE SAME

Maurice Dwight McIntosh, deceased, late of Willoughby, Ohio, by Central National Bank, executor, Cleveland, Ohio, assignor to Day-Glo Color Corp., Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 767,531, Oct. 14, 1968. This application Aug. 28, 1969, Ser. No. 855,462

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R 30 Claims

A method of separating finely particulated discrete pigment particles from a continuous phase film forming base vehicle comprising admixing an amidealdehyde condensation product with a liquefied continuous phase film forming vehicle that is immiscible with such product and may contain a light-absorbing agent that is absorbed by the product and retained therein. The resultant mixture is subjected to agitation and time-temperature conditions sufficient to produce discrete, finely divided generally rounded and uniformly sized coalescent-resistant pigment particles. An agglutination-inducing liquefied vehicle having an effective Kauri-Butanol value of about 25 to 40 which is soluble in the liquefied vehicle and non-soluble with the pigment particles is then intermixed in an amount sufficient to produce a mixture of vehicles and revertibly-agglutinated particles. The particles are then separated from the mixture and are produced as a free-flowing powder or as wet pigment cakes. The separated particles can be readily re-dispersed in various ink and paint vehicles to regain their coalescent-resistance and other desirable characteristics.

3,642,651

PHOTOLUMINESCENT GLASS AND METHOD OF MAKING THE SAME

Evelyn C. Marboe and Woldemar A. Weyl, State College, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Apr. 7, 1969, Ser. No. 813,986

Int. Cl. C09k *1/54;* C03c *3/28*

U.S. Cl. 252—301.4 R 5 Claims

Borate, phosphate or silicate glasses, or combinations thereof, are melted with a germanium compound, such as germanium dioxide, under suitable reducing conditions. The amount of germanium dioxide is in the range of 1% to 20% by weight of the mixture, and suitable reducing agents are azides, nitrides, aluminum powder or some form of carbonaceous material. The reaction is sensitive to the time and temperature of melting which, in turn, is dependent on the type of glass and reducing agent employed. The glass composition formed upon cooling exhibits fluorescence when irradiated by ultraviolet light having a wavelength approximately in the range of 2500–3700 A.

3,642,652

DIETHANOLAMINE BORIC ESTERS RUST INHIBITORS

Léon Antoine Jean Birgy, 42 Avenue de Suffren, Paris, France

No Drawing. Filed June 19, 1968, Ser. No. 738,073

Claims priority, application France, Dec. 5, 1967, 130,959

Int. Cl. C23f *11/14, 11/10*

U.S. Cl. 252—389 3 Claims

A mixture of boric esters of diethanolamine having the formula $(C_4H_{10}O_3BN)_n$, wherein n designates an integer of 1 to 6, used as a water-soluble rust preventing agent in media contacting ferrous metals, at a concentration of 0.8% to 5% by weight of said media.

3,642,653

WATER DISPLACING CORROSION PREVENTIVE

Barbara J. Northan and David B. Boles, Chicago, Ill., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 2, 1969, Ser. No. 789,067

Int. Cl. C23f *11/16*

U.S. Cl. 252—389 5 Claims

An effective corrosion preventive composition comprising in general a combination of an alkylaryl sulfonate with a surface active agent such as partial organic phosphate esters neutralized with ethylenediamine or barium. A microcrystalline wax may be added to the composition to enhance durability characteristics thereof.

3,642,654

DEVELOPER COMPOSITION CONTAINING SOLVENT REMOVABLE ORGANIC PIGMENT AND METHOD OF FLAW DETECTION

Richard S. Brusko, Skokie, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 619,000, Feb. 27, 1969. This application Dec. 29, 1969, Ser. No. 888,917

Int. Cl. G01n *19/08, 21/16*

U.S. Cl. 252—408 7 Claims

The use, in the colored liquid penetrant method for detecting surface discontinuities in a workpiece, of a developer composition comprising a dispersion in a liquid vehicle of finely divided discrete particles of an organic pigment that is insoluble in said liquid vehicle but that is soluble in chlorinated and fluorinated hydrocarbon solvents. After application of the developer composition to the penetrant-treated surface and the dissipation of the liquid vehicle, the remaining layer of pigment particles forms, with any residual colored penetrant color, indications that are visible to the operator under appropriate radiation to indicate the location and extent of any surface discontinuities. Thereafter, the residual developed colored indications are completely removed by dissolution in a chlorinated or fluorinated hydrocarbon solvent, as by the use of a solvent degreaser.

3,642,655

HIGH SENSITIVITY SOLVENT SOLUBLE DEVELOPER OF WATER-SOLUBLE CRYSTALLINE MATERIAL IN A WATER-SOLVENT VEHICLE

James S. Borucki, Chicago, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,432

Int. Cl. G01n *31/22*

U.S. Cl. 252—408 3 Claims

A method for detecting flaws and other surface discontinuities by the liquid penetrant technique wherein the developer composition for the development of color indications is a liquid vehicle comprising water and a water-miscible organic solvent, and contains water-soluble crystalline substances dissolved therein. Upon evaporation of the liquid vehicle, the solute crystallizes out to form a layer of fine crystals on the surface undergoing test. The penetrant used in connection with my method preferably contains a visible or fluorescent dye dissolved therein and is of an oily-type which preferably is not self-emulsifying and is substantially free of any added emulsifying agent but my method is applicable where the penetrants are water-washable. The developer composition can optionally include surfactants and film-forming ingredients, sequestering agents for use with hard water, and corrosion inhibiting agents, but in the absence of these optional ingredients the liquid developer composition upon evaporation of the liquid vehicle forms a penetrant permeable layer of fine crystals that cause the penetrant to be drawn by capillarity or otherwise into the crystal layer to form flaw indications of high fidelity

and resolution that can easily be detected upon inspection. The remaining layer after inspection can be adequately cleaned off by the use of water alone. An advantage of my liquid developer composition is that it can be sprayed on to the surface undergoing test and due to its relatively greater volatility than water, it evaporates more quickly.

3,642,656

REGENERATION OF A COKE-DEACTIVATED CATALYST CONTAINING PLATINUM AND RHENIUM

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 797,272, Feb. 6, 1969, and Ser. No. 815,183, Apr. 10, 1969. This application Oct. 16, 1969, Ser. No. 867,077

Int. Cl. B01j *11/18, 11/04*

U.S. Cl. 252—419 **13 Claims**

A deactivated hydrocarbon conversion catalyst—which is a combination of a platinum group component, a rhenium component, a halogen component and a sulfur component with an alumina carrier material, which contains the platinum group component and the rhenium component in amounts sufficient to result in the atomic ratio of platinum group metal to rhenium metal being greater than 1:1 and which has been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at hydrocarbon conversion conditions—is regenerated by the sequential steps of: (a) stripping sulfur therefrom at a relatively high temperature with a substantially sulfur-free hydrogen stream; (b) purging hydrogen from contact with the catalyst; (c) burning coke from the resulting catalyst at relatively low temperatures with a substantially sulfur-free gas stream containing a relatively small amount of O_2; (d) treating the resulting substantially carbon-free catalyst with oxygen at a relatively high temperature; (e) purging oxygen and water from contact with the catalyst with an inert gas stream; and (f) reducing the resulting catalyst by contacting same with a substantially sulfur-free and water-free hydrogen stream at an elevated temperature.

3,642,657

PRODUCTION OF ACTIVE CARBONS FROM AROMATIC CARBOXYLIC ACIDS, PETROLEUM COKE ACID OR FROM POROUS CARBONS

Arnold N. Wennerberg, Chicago, Ill., and John T. Bukvich, Whiting, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,693

Int. Cl. C01b *31/08*

U.S. Cl. 252—425 **9 Claims**

Improved process for the production of active carbons by treating porous carbon with the oxide or hydroxide of an alkali metal or alkaline earth metal, and subjecting said treated carbon to a suitable acid anhydride and heat to form high surface carbons.

3,642,658

SELECTIVE HYDROGENATION CATALYSTS

Keith George Allum, Bagshot, Christopher John Leonard Metcalfe, Sunbury, and Daniel John Thomasson, Hanworth, Feltham, England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 19, 1968, Ser. No. 785,219

Claims priority, application Great Britain, Dec. 21, 1967, 58,033/67

Int. Cl. C07c *11/00*

U.S. Cl. 252—431 P **11 Claims**

Catalysts suitable for the selective hydrogenation of diolefins to mono-olefins are prepared by contacting a Group VIII metal surface e.g., Ni or Pt, with a Group V compound of formula X_3M, where X is an organic radical, H or Cl and M is an atom of phosphorus, arsenic or antimony so that the Group V element or compound is absorbed onto the metal surface. Preferred Group V compounds are: $(C_6H_5)_3P$, Et_3P, $(nC_4H_9)_3P$, trioctyl phosphine, tricyclohexyl phosphine and triisopropyl phosphine. In a modification a compound of formula

$$\phi_2P—(CH_2)xCH_2—P\phi_2$$

where x is 0 or an integer and ϕ is phenyl group may be employed.

3,642,659

PROCESS FOR THE PRODUCTION OF BEAD-LIKE CATALYST SUPPORTS FOR HIGH MECHANICAL STRESSING

Ludwig Dorn, Cologne-Stammheim, Gerhard Heinze, Schildgen, and Ernst Podschus, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 21, 1969, Ser. No. 826,710

Claims priority, application Germany, June 12, 1968, P 17 67 754.2

Int. Cl. B01j *11/82, 11/44, 11/40*

U.S. Cl. 252—435 **7 Claims**

Porous, abrasion-resistant bead-like catalyst supports for reactions in fluidised beds containing in a matrix of a silicon dioxide gel mixed with 0.1 to 3% by weight of magnesium oxide, a silicon dioxide filler with a specific surface area of 20 to 200 m.²/g. according to BET in quantities of from 20 to 60% by weight and an argillaceous mineral from the group comprising kaolinite, montmorillonite and attapulgite in quantities of from 5 to 30% by weight, both quantities being related to the dry granulated material. The catalyst supports are obtained by suspending the silicon dioxide filler and the argillaceous mineral in the aforesaid quantities in an aqueous, stable silicon dioxide sol with a specific surface area of 150 to 400 m.²/g. according to BET and gelling the liquid suspension by the addition of hydrated finally divided magnesium oxide in quantities of 0.1 to 3% by weight and feeding this gellable mixture in droplet form into a liquid which is immiscible with water and finally separating the sulphated granulated material from the liquid and driving and hardening the bead-like granulated material for at least 10 minutes at a temperature of from 500 to 1000° C.

3,642,660

PREPARATION OF A CATALYTIC COMPOSITE COMPRISING A COMBINATION OF GERMANIUM AND HALOGEN WITH ALUMINA

Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 20, 1969, Ser. No. 851,724

Int. Cl. B01j *11/78, 11/44, 11/16*

U.S. Cl. 252—442 **11 Claims**

A germanium component is uniformly dispersed throughout an alumina carrier material by the steps of: first, uniformly distributing finely divided germanium dioxide particles throughout an aluminum hydroxyl halide sol to form an intimate mixture thereof; second, gelling the resulting mixture to obtain a hydrogel; and, finally, treating and calcining the resulting hydrogel to produce a solid composite having a germanium component uniformly dispersed therein. Key feature of this method involves the preparation of the catalyst from an aluminum hydroxyl halide sol to which finely divided particles of germanium dioxide are added, thereby achieving uniform dispersion of the germanium component in the alumina carrier material and also causing some beneficial interaction between the sol and the germanium dioxide particles. Resulting composite is typically combined with a platinum

group component and utilized to accelerate a wide variety of reactions in processes such as hydrocracking, reforming, isomerization, etc.

3,642,661

SiO_2-Al_2O_3-NiO CATALYST AND ITS PREPARATION

Gordon B. Jolley and Durward T. Roberts, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Oct. 21, 1969, Ser. No. 868,210

Int. Cl. B01j *11/40*

U.S. Cl. 252—453 **6 Claims**

This invention relates to a method for preparing a catalyst complex especially useful in the selective codimerization of n-butenes with propylene to form lightly branched C_7 heptenes, said preparation comprising the step of forming a dispersion of colloidal alumina in an aqueous solution containing nickel salt and a hydrous silica sol, coprecipitating said nickel salt and said hydrous silica sol with a suitable anion such as carbonate whereby a slurry of precipitated nickel salt and alumina silica gel is formed; decomposing the precipitated nickel salt under conditions such that substantially all combined carbon oxides are removed and activating the resulting nickel oxide by heating in an oxygen-containing atmosphere at a temperature ranging from between 800° F. and 1400° F. for a period of time ranging from 0.1 to 50 hours to form said catalyst complex.

3,642,662

SYNTHESIS OF SODIUM FAUJASITE

David P. Macarus and Lawrence L. Upson, Wallingford, Pa., and Ronald T. Wood, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,418

Int. Cl. B01j *11/40;* **C10b** *33/28*

U.S. Cl. 252—455 Z **4 Claims**

A composite containing more than about 20% sodium faujasite is prepared from a precursor containing about 19% alumina alpha trihydrate in combination with 81% de-exothermed kaolin that is, kaolin calcined at a temperature low enough that no significant amount of mullite is formed but high enough that the product exhibits, upon analysis by Differential Thermal Analysis, a DTA exotherm which is less than about 8% of the DTA exotherm of a raw kaolin or metakaolin. The mixture of alumina trihydrate and de-exothermed kaolin has a silica to alumina ratio of about 1.5 to 1. The mixture is dispersed in an aqueous solution of sodium hydroxide (about 4.2 to about 5 molar) to provide proportions suitable for faujasite production such as 4.5 to 5 to 1 for the aluminosilicate to water to sodium hydroxide weight ratios. The thus prepared batter is aged at ambient temperature for about 5 hours, and thereafter heated to about 100° C., and maintained at such temperature to provide sodium faujasite.

3,642,663

SOLUBLE QUATERNIZED CONDENSATION PRODUCTS OF EPIHALOHYDRINS AND POLYAMINES

Albert H. Greer, 228 Warwick Road, Haddonfield, N.J. 08033

No Drawing. Continuation of application Ser. No. 699,023, Jan. 19, 1968, which is a continuation-in-part of application Ser. No. 353,227, Mar. 19, 1964. This application Feb. 6, 1969, Ser. No. 797,256

Int. Cl. C07c *85/00;* **H01b** *1/00*

U.S. Cl. 252—500 **18 Claims**

A polar solvent soluble electroconductive quaternized condensation product is provided by reacting an alkylenepolyamine, a polyalkylenepolyamine or mixtures thereof with an epihalohydrin in a polar solvent to such an extent that there is little or no crosslinking in the condensation product and by quaternizing the condensation product with a quaternizing agent. Typical useful epihalohydrins are epibromohydrin and epichlorohydrin. Typical useful alkylenepolyamines are those having at least one tertiary amino group and at least one primary or secondary amino group and include dimethylaminopropylamine, N-aminopropyldiethanolamine and N-aminopropylmorpholine. The solutions of the quaternized condensation products are useful as impregnating and coating agents for making electroconductive paper, liquid ion exchangers in non-aqueous systems, coagulant acids, acid corrosion inhibitors and anti-static agents.

3,642,664

VOLTAGE VARIABLE RESISTOR

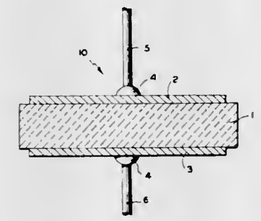
Takeshi Masuyama, Takatsuki-shi, Mikio Matsuura, Neyagawa-shi, Yoshio Ilda, Suita-shi, and Toshioki Amemiya, Tokyo-to, Japan, assignors to Matsushita Electric Industries Co., Ltd., Kadoma, Osaka, Japan

Filed Apr. 17, 1970, Ser. No. 29,415

Claims priority, application Japan, May 2, 1969, 44/34,928

Int. Cl. H01b *1/06*

U.S. Cl. 252—519 **6 Claims**



A voltage variable resistor comprises a sintered body, electrodes on opposite major surfaces of the body and leads connected to the electrodes. The sintered body comprises zinc oxide, and as an additive, 0.05 to 15.0 mole percent of at least one member selected from the group consisting of manganese fluoride, magnesium fluoride, calcium fluoride, cadmium fluoride, potassium fluoride, chromium fluoride, sodium fluoride, cobalt fluoride, copper fluoride, ferric fluoride, lanthanum fluoride and lithium fluoride.

3,642,665

PROCESS FOR THE PRODUCTION OF POLYETHERS OF HIGH MOLECULAR WEIGHT

Robert Gehm, Limburgerhof, Germany, and Ernst-Guenther Kastning, deceased, late of Assenheim, Germany, by Marie-Louise Hermine Kastning, heiress-at-law and legal representative of minor heirs, Assenheim, and Kurt Schneider, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,529

Claims priority, application Austria, Aug. 12, 1968, A 7,877/68

Int. Cl. C08g *23/06, 23/14*

U.S. Cl. 260—2 **4 Claims**

A process for the production of high-molecular-weight polymers of 1,2-alkylene oxides using a catalyst prepared by reacting 1 mole of an alkaline earth metal hexaammoniate and/or an alkaline earth metal amide in liquid ammonia with 0.1 to 1 mole of a 1,2-alkylene oxide and 0.1

to 2 moles of guanidine and/or a guanidine salt and/or a mixture of substances which will form a guanidine salt under the reaction conditions.

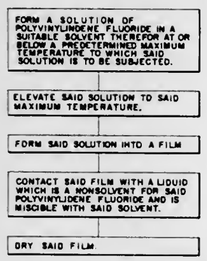
3,642,666
PROCESS OF MAKING HOLLOW BEADS OF A COPOLYMER OF VINYL CHLORIDE AND AN OLEFIN
Herbert Bartl and Frank Wingler, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Original application Nov. 22, 1967, Ser. No. 684,943. Divided and this application Sept. 14, 1970, Ser. No. 72,212
Claims priority, application Germany, Dec. 7, 1966, F 50,864; Aug. 7, 1967, F 53,160
Int. Cl. C08j *1/14;* **B01j** *13/02*
U.S. Cl. 260—2.5 B **4 Claims**

Hollow beads of a copolymer containing 70–92 parts by weight of polymerized vinyl chloride and 30–8 parts by weight of polymerized ethylene, propylene or a mixture thereof bonded together with an adhesive for said copolymer, said product being useful as packaging material and as insulating material.

3,642,667
POLYMERIZATION CATALYSTS
Kenneth E. Steller, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Dec. 31, 1968, Ser. No. 789,016
Int. Cl. B01f *15/00*
U.S. Cl. 260—2 A **15 Claims**

Epoxides and oxetanes can be polymerized in the presence of trialkylaluminum compounds that have been complexed with tetrahydrofuran and then reacted with ether alcohol and diketone chelating agents and water. The thus complexed and chelated trialkylaluminum compounds are disclosed as new and useful.

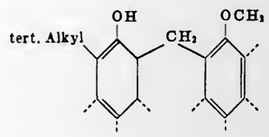
3,642,668
MICROPOROUS VINYLIDENE FLUORIDE POLYMER AND PROCESS OF MAKING SAME
James L. Bailey and Robert F. McCune, Dover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 557,993, June 16, 1966. This application Jan. 3, 1969, Ser. No. 790,192
Int. Cl. C08f *47/08;* **C08j** *1/14*
U.S. Cl. 260—2.5 M **18 Claims**



The pore size distribution range of polyvinylidene fluoride membranes may be governed by the maximum temperature to which the polyvinylidene fluoride solution has been subjected prior to being cast into a membrane.

3,642,669
STABILIZED POLYURETHANES
Roland Nast, Cologne-Buchheim, and Harald Oertel and Kurt Ley, Odenthal-Globusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 4, 1969, Ser. No. 855,372
Claims priority, application Germany, Sept. 14, 1968, P 17 94 108.1, P 17 94 144.5
Int. Cl. C08g *41/00, 51/58, 51/60*
U.S. Cl. 260—2.5 BB **13 Claims**

The invention relates to stabilized polyurethanes, especially polyurethane elastomer threads and foils, against degradation and discoloration caused by the action of light or UV radiation, oxygen, substances present in the atmosphere, such as nitrogen oxides, and heat by the addition of alkoxy substituted, sterically hindered phenols which have a 2-(2′-hydroxy-3′-tertiary alkyl benzyl)-anisole unit:



as stabilizers and furthermore to stabilized polyurethanes being stabilized with a synergistic mixture consisting of a) an anisole and b) a 2-(2′-hydroxyphenyl)-benzotriazole.

3,642,670
CATIONIC SILICONE SURFACTANTS FOR FLEXIBLE POLYESTER URETHANE FOAMS
Bernard Kanner, West Nyack, and Bela Prokai, Mahopac, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,429
Int. Cl. C08g *22/44, 51/00*
U.S. Cl. 260—2.5 AH **11 Claims**

The production of flexible polyester urethane foams using as stabilizing agents cationic silicone surfactants having the formula:

$$MD_xM \qquad (a)$$

wherein M is the trimethylsiloxy unit, $Me_3SiO_{1/2}$, x is an integer of 1 to 3, and D is a cationic difunctional siloxy unit of the formula:

$$X\text{-}[R_1\overset{+}{N}R^\circ Si(Me)O] \qquad (1)$$

wherein R° is a divalent organic having 2 to 18 carbon atoms and selected from the class consisting of divalent hydrocarbon groups, hydroxy-substituted divalent hydrocarbon groups and —R″OR″— groups wherein R″ is selected from the class consisting of divalent hydrocarbon groups and hydroxy-substituted divalent hydrocarbon groups and may be the same or different in each occurrence; R is selected from the class consisting of a monovalent hydrocarbon group when taken individually, and, when two R groups are taken together with N of said formula, a divalent group containing a five to six member heterocyclic ring in which N is bonded to the remaining R group and said R° group which is selected from the class consisting of hydroxy-substituted divalent hydrocarbon groups and said —R″OR″— groups; and X is an inorganic anion. The cationic silicone surfactants permit the production of flexible polyester urethane foams having fine, uniform cell structure, low compression set and freedom from large voids and splits.

3,642,671
POLYETHYLENIMINE-DEXTROSE AND/OR PRECURSORS OF DEXTROSE ADHESIVE COMPOSITION
Chester A. Lesinski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 14, 1969, Ser. No. 816,099
Int. Cl. C08b *25/02, 25/04*
U.S. Cl. 260—9 **8 Claims**

A novel adhesive composition for cellulosic materials is described which comprises polyethylenimine in combination with dextrose. The composition is particularly useful as an adhesive for wood in the preparation of plywood, chipboard, and other wood laminates.

3,642,672
UNSATURATED POLYESTER RESINOUS COMPOSITIONS CONTAINING CELLULOSE ESTERS AND MOLDED ARTICLES THEREFROM
Charles Henry Kroekel, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 566,580, July 20, 1966. This application Nov. 21, 1969, Ser. No. 878,920
Int. Cl. C08g *39/10, 51/10*
U.S. Cl. 260—16 **21 Claims**

This invention provides a liquid, polymerizable composition of matter, suitable for molding fibrous reinforced articles with exceptionally smooth surfaces, said composition being curable under heat and pressure to form a rigid, cured product which is characterized by an optically heterogeneous appearance. The composition comprises a thermoplastic cellulose ester, and α,β-ethylenically unsaturated polymerizable polyester having a molecular weight per double bond factor of 150 to 186, and a monomer containing a $CH_2{=}C<$ group copolymerizable with the unsaturated polyester.

3,642,673
NON-COLD-FLOWABLE UNSATURATED POLYESTER RESIN COMPOSITION
Wilhelm Muhlelsen, 8264 Waldkraiburg, 3 Munchner Platz, Germany
Claims priority, application Germany, May 16, 1968, P 17 69 309.3
Int. Cl. C08g *17/06*
U.S. Cl. 260—22 CB **4 Claims**

A composition of matter comprising 100 parts by weight of a linear unsaturated polyester dissolved in a monoolefinic vinyl monomer copolymerizable therewith; 0.04 to 0.2 part by weight thereof of a first peroxide of low-temperature type; 0.2 to 0.6 parts by weight thereof of a cobalt accelerator; 0.15 to 0.6 part by weight thereof of a second peroxide, a hydroperoxide of low-temperature type; 0.3 to 0.7 part by weight thereof of a third peroxide of high-temperature type, 0.05 to 0.3 part by weight thereof of an alkaline earth oxide; and 0.1 to 1.5 parts by weight thereof of water.

3,642,674
ADDUCTS, CONTAINING EPOXIDE GROUPS, FROM POLYEPOXIDE COMPOUNDS AND ACID POLYESTERS OF ALIPHATIC CYCLOALIPHATIC DICARBOXYLIC ACIDS
Rolf Schmid, Reinach, Basel-Land, Friedrich Lohse, Allschwil, Willy Fisch, Binningen, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed June 10, 1969, Ser. No. 832,004
Claims priority, application Switzerland, June 19, 1968, 9,097/68; July 19, 1968, 10,813/68
Int. Cl. C08f *21/04;* **C08g** *17/16;* **C08h** *9/00;* **C09d** *3/64*
U.S. Cl. 260—22 EP **16 Claims**

New adducts containing epoxide groups are formed when (1) cycloaliphatic polyepoxide compounds which possess at least one 1,2-epoxide group located on a carbocyclic five-membered or six-membered ring, and (2) acid polyesters, obtained by esterification with aliphatic diols, of aliphatic-cycloaliphatic higher dicarboxylic acids (prepared by dimerization of unsaturated monomeric fatty acid having 14 to 24 carbon atoms in the molecule, preferably 16 to 18, and, if desired or required, subsequent hydrogenation of such a dimeric fatty acid), are reacted at an elevated temperature to form an adduct 0.1 to 0.5 carboxyl group equivalents of the acid polyester are used per 1 epoxide group equivalent of the polyepoxide compound. Curing of these advanced epoxide compounds with carboxylic acid anhydrides gives flexible, impact-resistant shaped bodies the mechanical properties of which are largely independent of the temperature.

3,642,675
GLARE-FREE COATING COMPOSITIONS COMPRISING HOLLOW MICROSPHERES AND SOLID CRUSH-RESISTANT PARTICLES
Eugene L. McKenzie, 2501 Hudson Road, North St. Paul, Minn. 55109
Filed Sept. 2, 1970, Ser. No. 68,852
Int. Cl. C09d *3/26, 3/64, 5/22*
U.S. Cl. 260—22 A **4 Claims**

A coating composition for forming paint-like films that have lasting glare-free properties. The coating composition includes a liquid, film-forming vehicle, and two types of flattening agent particles: (1) hollow microspheres and (2) smaller, solid, crush-resistant particles that prevent an object that is scraped or rubbed against an applied film of the composition from totally collapsing or crushing the hollow microspheres.

3,642,676
PREPARATION OF ARTIFICIAL LATEXES OF OLEFIN POLYMERS
Frank L. Saunders, Midland, and Ronald R. Pelletier, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,441
Int. Cl. C08f *3/04, 47/18*
U.S. Cl. 260—23 EM **8 Claims**

Latexes of olefin polymers having improved stability to creaming or sedimentation and to coagulation are prepared by an improved emulsion process wherein (1) a solution of an olefin polymer in a water-insoluble polymer solvent and an aqueous medium are emulsified with the aid of an emulsifier system having a hydrophile-lipophile balance (HLB) of 7, (2) the polymer solvent is stripped from resulting emulsion to form a latex of the polymer and (3) the HLB of the latex is adjusted to 18.

3,642,677
POLYVINYL CHLORIDE RESIN AND STABILIZER COMBINATIONS COMPRISING A DIORGANOTIN OXIDE, A TETRAVALENT ORGANOTIN MERCAPTOCARBOXYLIC ACID COMPOUND AND A DIVALENT STANNOUS TIN SALT
Lawrence R. Brecker, Brooklyn, and Alfred Thee, Long Beach, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.
No Drawing. Filed Jan. 10, 1969, Ser. No. 790,430
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 X **24 Claims**

This invention provides a polyvinyl chloride resin stabilizer combination which decreases discoloration of the resin when heated to 350° F. comprising a diorganotin oxide, a tetravalent di(alkyl and/or cycloalkyl)-tin-alpha- or beta-mercapto carboxylic acid ester composition and a synergizing amount of a bivalent stannous tin salt. This invention further provides polyvinyl chloride resin compo-

sitions containing the above stabilizer composition and having as a result increased resistance to discoloration when heated.

3,642,678
OLEFIN POLYMER/WAX COATING COMPOSITION

Thomas H. Shepherd, Hopewell, and Murray H. Reich, Princeton, N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 671,568, Sept. 29, 1967. This application Aug. 19, 1969, Ser. No. 851,492
Int. Cl. C08c *11/70;* **C08f** *15/40, 45/52*
U.S. Cl. 260—28.5 **9 Claims**

Olefin polymer/wax blends as coating compositions for paperboard or other paper stock materials. The olefin polymer, which comprises from 5% to 50% by weight of the blend, is a terpolymer of butene-1 with propylene and an alpha-olefin having a chain length of from 5 to 20 carbon atoms.

3,642,679
COATING FOR MULTI-WALL BAGS

Buck R. Young, Palatka, Fla., assignor to Hudson Pulp & Paper Corporation, New York, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,506
Int. Cl. C08f *29/12;* **C09j** *3/14, 3/26*
U.S. Cl. 260—23.3 **6 Claims**

Multi-wall bags are surface coated with strips of "hot melt" coating for friction control. The coating becomes adhesive and cohesive when subjected to either heat or pressure, or both, but the cohesion and adhesion decreases greatly when there is no pressure. The amount present when the coating is at normal ambient temperatures is determined by varying the components in the "hot melt" coating composition, so that the desired friction control is achieved. While the coating has other uses, it is particularly desirable for preventing the slippage of multi-wall bags, for example of the type which are filled with products and stacked on pallets for storage and shipping.

3,642,680
ETHYLENE-VINYL ACETATE COPOLYMER LATEX PREPARED WITH ACRYLIC SEED

Brian Edmund Jennings, Digswell, Welwyn, William Louis Wallet Ludekens, Bracknell, and Robert Edward Slater, Welwyn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,455
Claims priority, application Great Britain, Sept. 8, 1967, 41,181/67
Int. Cl. C09d *5/02*
U.S. Cl. 260—29.6 **4 Claims**

Vinyl acetate and ethylene are polymerised in an emulsion of a small amount of a seed polymer obtained by copolymerising an ester or nitrile of methacrylic or acrylic acid, optionally with a polymerisable carboxylic acid.

3,642,681
POLYSILICIC ACID COATING COMPOSITION

Matthew Edward Hermes, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,170
Int. Cl. B44d *1/24;* **C08g** *31/32, 47/08*
U.S. Cl. 260—29.6 **8 Claims**

A coating composition especially useful to render polymethyl methacrylate mar resistant. Said composition contains polysilicic acid, a silane containing ester in which at least two radicals attached to the silicon atom are OR^4, where R^4 is 1 to 6 carbon atoms, and sufficient water to hydrolyze some of the groups on the silane containing ester. The coating composition also preferably contains an organic acid.

3,642,682
LACQUERS CONTAINING GUANAMINE-BASED POLYIMIDE RESINS

Gerald G. Vincent, Barrington, and Thomas E. Anderson, Palatine, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,768
Int. Cl. C08g *20/32, 51/34, 51/44*
U.S. Cl. 260—30.4 N **10 Claims**

Organic solvent-soluble polyimides are provided based on guanamine compounds such as benzoguanamine which are reacted with a stoichiometric proportion of a tetracarboxylic acid dianhydride such as pyromellitic dianhydride. Solubility of the polymer is maintained despite extensive imidization.

3,642,683
POLYMER COMPOSITIONS CONTAINING UNSATURATED POLYESTER, VINYL MONOMER, POLYESTER PLASTICIZER, AND THERMOPLASTIC POLYMER

David Philip Fry, Cardiff, Glamorgan, Wales, assignor to British Resin Products Limited, London, England

No Drawing. Filed Jan. 9, 1969, Ser. No. 790,176
Claims priority, application Great Britain, Jan. 25, 1968, 3,907/68
Int. Cl. C08g *51/68*
U.S. Cl. 260—31.6 **8 Claims**

Thermosetting molding compositions based on unsaturated polyester resins containing a saturated liquid polyester and a thermoplastic polymer which is not capable of being plasticized by said liquid polyester, in order to prevent exudation of the liquid polyester when the molding compositions are set by the action of heat.

3,642,684
DISPERSION-TYPE PAINT OF VINYLIDENE-FLUORIDE-CONTAINING POLYMERS

Hideaki Kusuno and Miyoji Uchida, Hyogo-ken, and Masahiro Segawa and Yukichika Kawakami, Fukushima-ken, Japan, assignors to Nihon Paint Kabushiki Kaisha, Osaka-shi, Osaka-fu, and Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed July 24, 1969, Ser. No. 844,626
Claims priority, application Japan, July 29, 1968, 43/53,467
Int. Cl. C08f *45/36, 45/44*
U.S. Cl. 260—31.8 F **5 Claims**

A dispersion-type paint of vinylidene-fluoride-containing polymer principally composed of vinylidene fluoride polymer particles uniformly dispersed in a mixture of a high boiling point organic solvent and a low boiling point organic solvent, both being capable of lowering the crystal melting point of polyvinylidene fluoride to specific upper and lower temperature ranges.

3,642,685
FLOWABLE FILLED VINYL SILOXANES CONTAINING HEXAMETHYLDISILAZANES

James E. Matherly, Elizabethtown, Ky., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 9, 1970, Ser. No. 53,693
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **18 Claims**

A mixture of 100 parts by weight of a homogeneous mixture of 50 to 85 weight percent of a vinyl containing organosiloxane polymer, 10 to 35 weight percent hexamethyldisilazane and 4 to 30 weight percent water, and from 125 to 250 parts by weight of a metal oxide filler,

such as aluminum oxide is flowable after the volatiles have been removed and is useful as a base for the preparation of flowable silicone rubber compositions. The mixtures are prepared by mixing the polymer, hexamethyldisilazane and water into a homogeneous mixture and thereafter adding the metal oxide filler and removing the volatiles under reduced pressure.

3,642,686
PIGMENT PREPARATIONS

Guenther Zwahlen, Dornach, Ernst Reich, Bettingen, and Albert Riegler, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,769
Claims priority, application Switzerland, Jan. 4, 1968, 80/68
Int. Cl. C08g *51/04, 51/14;* **C08b** *21/04*
U.S. Cl. 260—37 **3 Claims**

Preparations containing a pigment and/or an optical brightener and a polyterpene resin are useful for pigmenting high molecular weight organic materials, especially thermoplastics, lacquers, printing inks and spinning melts or solutions.

3,642,687
CURABLE SHAPE-RETAINING MOLDING MATERIALS

Herbert Naarmann and Benedikt Georgii, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,900
Claims priority, application Germany, Dec. 13, 1968, P 18 14 494.0
Int. Cl. C08c *11/00;* **C08d** *9/02*
U.S. Cl. 260—41.5 R **3 Claims**

Shape-retaining molding material comprising high molecular weight and low molecular weight diene polymers, gypsum and free-radical-forming crosslinking agents. The material may be cured by means of heat or light. It may be used as a sealing material in the building industry and as a modeling material in the toy industry.

3,642,688
STABILIZATION OF RIGID POLY(VINYL CHLORIDE)

Matthew Peter Di Giaimo, Old Bridge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 647,350, June 20, 1967, which is a continuation-in-part of application Ser. No. 386,383, July 30, 1964. This application Feb. 24, 1969, Ser. No. 801,787
Int. Cl. C08f *45/60, 45/62*
U.S. Cl. 260—45.8 NZ **2 Claims**

The stabilization of rigid poly(vinyl chloride) by incorporation therein of a stabilizer comprising (a) a phosporic triamide and (b) an ultraviolet light absorber, each of (a) and (b) being present in a concentration of 0.1 to 2.0% based on the weight of the rigid poly(vinyl chloride). In the preferred embodiments, a heat stabilizer is also used.

3,642,689
MELT STABILIZATION OF POLYESTERS

Mary J. Stewart, Riddlewood, Media, and Otto K. Carlson, Marcus Hook, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed July 30, 1969, Ser. No. 846,219
Int. Cl. C08g *51/56*
U.S. Cl. 260—45.7 P **3 Claims**

A thermal stabilized polyester resin comprising a saturated polyester containing a minor amount of boron phosphate.

ERRATUM

For Class 260—45.75 see:
Patent No. 3,642,628

3,642,690
STABILIZED ALPHA-MONOOLEFINS

Kenneth R. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,597
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.75 N **9 Claims**

Stabilized polymers from alpha-monoolefins are provided by employing a stabilizer composition containing 2-hydroxybenzophenone, or derivatives thereof, as an ultraviolet stabilizer, at least one antioxidant and nickel phosphate.

3,642,691
TETRAKIS (HINDERED PHENOLIC)PHOSPHONIUM HALIDE ANTIOXIDANTS

Calvin J. Worrel, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Original application Oct. 27, 1967, Ser. No. 678,511, now Patent No. 3,483,260, dated Dec. 6, 1969. Divided and this application Sept. 19, 1969, Ser. No. 859,564
Int. Cl. C08c *27/66;* **C08d** *11/104;* **C08f** *45/58*
U.S. Cl. 260—45.85 **11 Claims**

Tetrakis-hydroxybenzyl phosphonium halides are made by reacting a hydroxybenzyl halide with one of the following: (1) tetrakis-hydroxyalkyl phosphonium halide, (2) tris-hydroxyalkyl phosphine oxide, or (3) tris-hydroxyalkyl phosphine. The compounds are antioxidants either alone or in combination with a dialkylthiodialkanoate synergist.

3,642,692
ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER WITH IMPROVED CLEANABILITY

James V. Hartlage, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,169
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **4 Claims**

A mixture of a polydiorganosiloxane having hydroxyl, acetoxy or alkoxy terminating groups, an organotriacetoxysilane and tetraethoxysilane or ethylpolysilicate cure to a silicone rubber at room temperature which is easier to clean than similar compositions without the tetraethoxysilane or ethylpolysilicate. This silicone rubber is useful as caulking compounds, sealants, encapsulants and electrical insulation.

3,642,693
METHODS FOR PREPARING ORGANOPOLYSILOXANES USING GROUP II-A METAL HYDROLYSIS CATALYSTS

Amy L. Jasinski, Reston, Va., assignor to Owens-Illinois, Inc.

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,709
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 R **16 Claims**

Methods for hydrolyzing trifunctional organic silanes such as methyltrialkoxysilane, phenyltrialkoxysilane, or mixtures thereof using a Group II-A metal-containing hydrolysis catalyst such as barium hydroxide or calcium hydroxide. The resultant heat curable, solvent-soluble prepolymer is used to prepare excellent laminates, high temperature stable electric insulations, moldings, and hard, clear, flexible coatings.

3,642,694

ROOM TEMPERATURE VULCANIZING SILICONE COMPOSITION CONTAINING A CHELATE OF SILICON AS A CURING AGENT

Terry G. Selin, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,948
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 3 Claims

New organosilicon chelates are formed from diketones and derivatives of diketones, where the silicon atom has functional substituents other than the diketone compound residue. The materials are useful as curing agents for room temperature vulcanizing materials.

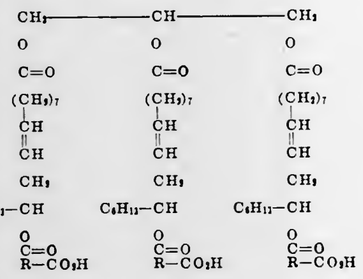
3,642,695

CURING AGENT FOR A LOW RESILIENCE DIEPOXIDE RESIN COMPOSITION

Buford F. Barnett, Anaheim, and Gilbert M. Knaus, Fullerton, Calif., assignors to North American Rockwell Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 715,714, Mar. 22, 1968. This application Aug. 27, 1970, Ser. No. 67,614
Int. Cl. C08g *30/12*
U.S. Cl. 260—47 EA 3 Claims

A low resilience composition which is cured under a temperature range of 180° F. to 250° F. within the period of from 16 to 24 hours. The composition comprises the reaction product of a bisphenol A-epichlorohydrin type epoxy having the epoxy equivalent of between 120 and 1000, and a curing agent consisting of the reaction product of glyceryl triricinoleate and a cyclic anhydride of dicarboxylic acid having the following chemical structure:



The ratio of the epoxy equivalent to the curing agent carboxyl equivalent is 1/.5 to 1/.8 R in the above formula represents an alkylene.

Principal utility of the invention is to enable encapsulation of individual electronic components or systems in a low resilience, energy-absorbing potting or encapsulating compound, to provide structural and environmental protection for the encapsulated product.

3,642,696

METHOD OF PREPARING POLYBENZIMIDAZOLE-AMIDES

Guy Rabilloud, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, Hauts-de-Seine, France

No Drawing. Filed July 5, 1966, Ser. No. 562,529
Claims priority, application France, July 7, 1965, 23,853
Int. Cl. C08g *20/20, 33/02*
U.S. Cl. 260—47 CP 6 Claims

For producing benzimidazole-type polymers and composite products of inert solid material with said polymers, there are provided two alternative processes comprising the reaction of an aromatic tetramine with either

(A) a bis-ester of the formula:

$$R_1O_2C—Ar—NH—CO—Ar'—CO—NH—Ar—CO_2R_1$$

or (B) a primary diamide of the formula:

$$H_2N—CO—Ar—NH—CO—Ar'—CO—NH—Ar—CO—NH_2,$$

wherein

Ar and Ar' represent aryl of 6 to 18 carbon atoms containing 0 to 3 heterocyclic atoms selected from the group consisting of nitrogen, oxygen, and sulfur, said Ar and Ar' having their two free valences in separate positions of the aromatic nucleus; and

R_1 represents a monovalent hydrocarbon radical.

For producing the impregnated products, a two stage system is employed wherein a prepolymer in an inert organic solvent is used to impregnate solids, and the resultant impregnated solid is cured at a higher temperature to complete polymerization.

3,642,697

PREPARATION OF POLYETHYLENE 1,2-DIPHENOXYETHANE - 4,4'-DICARBOXYLATE USING STRONTIUM, CALCIUM AND BARIUM COMPOUNDS AS AN ESTER INTERCHANGE CATALYST AND ANTIMONY COMPOUND AS A POLYMERIZATION CATALYST

Hidehiko Kobayashi, Tokyo, and Hiroshi Komoto, Tsurugashima-machi, Iruma-gun, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed May 28, 1969, Ser. No. 828,785
Claims priority, application Japan, June 3, 1968, 43/37,544
Int. Cl. C08g *17/013*
U.S. Cl. 260—47 C 2 Claims

This invention discloses a process for the preparation of polyethylene 1,2-diphenoxyethane - 4,4' - dicarboxylate which comprises ester interchanging 1,2-bis(p-carbomethoxyphenoxy)ethane and ethylene glycol in the presence of a strontium, calcium or barium salt of a monocarboxylic acid having 2 to 5 carbon atoms or an orthoborate until methanol no longer evolves, and subsequently polycondensing the resulting ester interchange reaction product in the presence of an antimony compound. Thereby there can be obtained a polyethylene 1,2 - diphenoxyethane-4,4' - dicarboxylate having a remarkedly high crystallization velocity, as compared with the conventionally prepared one. The polyethylene 1,2 - diphenoxyethane - 4,4' - dicarboxylate thus obtained is useful particularly as a material for manufacturing synthetic fibers which are excellent in tenacity, elongation and Young's modulus.

3,642,698

EPOXY RESIN CURING WITH IMIDAZOLE ALKYL ACID PHOSPHATE SALT CATALYST

Harold A. Green, Havertown, Pa., assignor to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 662,593, Aug. 23, 1967. This application May 15, 1970, Ser. No. 37,921
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 11 Claims

Polyepoxide resin curing is effected with a curing agent comprising the salt of an imidazole and an alkyl acid phosphate. Such a curing agent in the presence of curable resin exhibits excellent shelf-life characteristics and responds favorably at elevated temperature curing conditions to yield high quality cured resin product.

3,642,699

FORMATION OF POLYPHENYLENE ETHERS

Glenn D. Cooper, Delmar, and James G. Bennett, Menands, N.Y., assignors to General Electric Company

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,508
Int. Cl. C08g *23/18*
U.S. Cl. 260—47 ET 21 Claims

A process for the formation of high molecular weight polyphenylene ethers by the oxidative coupling of a phenolic precursor in a reaction system containing a low molecular weight alcohol and a complex catalyst formed from a cuprous salt and a primary, secondary or tertiary amine. The process is characterized by the addition of the alcohol to the reaction system which results in the formation of higher molecular weight polymer in a given reaction time or polymer of comparable molecular weight in substantially decreased reaction time.

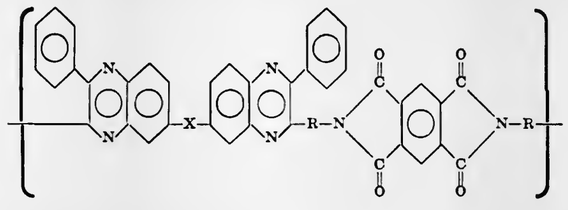
3,642,700

PHENYLATED IMIDE-QUINOXALINE COPOLYMERS

Joseph M. Augl, Sterling Park, Va., assignor to the United States of America as represented by the Secretary of the Navy

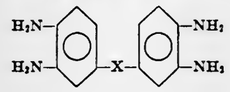
No Drawing. Filed Sept. 24, 1970, Ser. No. 75,248
Int. Cl. C08g *15/00, 33/02*
U.S. Cl. 260—50 6 Claims

Phenylated imide-quinoxaline copolymers consisting essentially of units of the formula

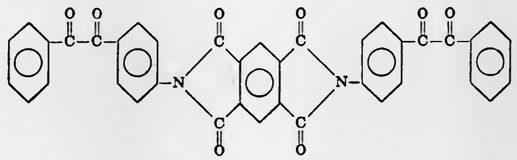


wherein X is a direct bond,

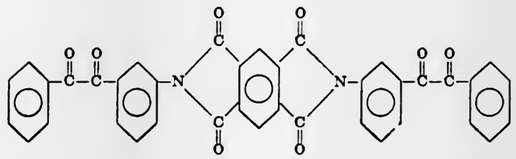
and R is m or p-phenylene which are useful as coatings for fibers, graphite precursors, films and laminating materials are prepared by contacting



with



or



3,642,701

COPOLYMERS OF TRIOXANE AND PROCESS FOR THEIR MANUFACTURE

Karl-Heinz Häfner, Bad Orb, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 7, 1969, Ser. No. 839,639
Claims priority, application Germany, July 10, 1968, P 17 70 835.9
Int. Cl. C08g *1/18*
U.S. Cl. 260—67 S 6 Claims

Modified copolymers of trioxane which are a suitable basis for polyacetal dispersions, are manufactured by cationic polymerization of trioxane, and bifunctional aromatic glycide-oxy-sulfonic acid esters, if desired in the presence of cyclic ethers or cyclic or linear acetals.

3,642,702

STIBINIC AND STIBONIC CATALYSTS FOR POLYETHYLENE TEREPHTHALATE

John J. Ventura, Eatontown, and Joseph G. Natoli, Old Bridge, N.J., assignors to M & T Chemicals Inc., New York, N.Y.

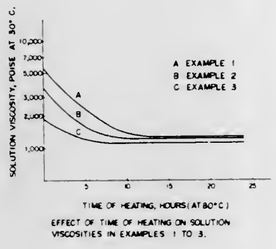
No Drawing. Filed June 23, 1969, Ser. No. 835,742
Int. Cl. C08g *17/015;* C07c *67/00*
U.S. Cl. 260—75 R 4 Claims

A process for preparing polyethylene terephthalate wherein dimethyl terephthalate is reacted with ethylene glycol to form an ester of ethylene glycol and terephthalic acid or where terephthalic acid is reacted with ethylene glycol to form an ester of terephthalic acid and ethylene glycol where the resulting ester is polycondensed in the presence of a polycondensation catalyst, the improvement comprising carrying out the condensation or polymerization of the ester in the presence of a catalytic amount of an antimony compound exhibiting at least one direct bond from carbon to antimony and exhibiting both a double bond from antimony to oxygen or sulfur and, in addition, at least one bond from antimony to a halogen atom or to a hydroxyl group.

ERRATUM

For Class 260—77 see:
Patent No. 3,642,044

3,642,703
METHOD OF IMPROVING THE STABILITY OF POLYURETHANE SOLUTIONS
Isamu Suzuki, Kiyoshi Ichikawa, Jyukichi Ohmura, and Hidemaro Iwashita, Shizuokaken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha
Filed Aug. 7, 1968, Ser. No. 750,785
Claims priority, application Japan, Aug. 29, 1967, 42/54,998
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 AM **11 Claims**



EFFECT OF TIME OF HEATING ON SOLUTION VISCOSITIES IN EXAMPLES 1 TO 3.

Highly concentrated polyurethane solutions, which are stable for a long period and have improved properties, are prepared (a) by reacting isocyanate-terminated prepolymers with specified chain extenders consisting of non-aromatic diprimary diamines and water in an organic solvent, the mole ratio of said diamines being 0.80 to 0.96 based on one mole of said prepolymers, while the mole ratio of water being equal to at least two times as much as 1 minus the mole ratio of said diamines, namely 0.08 to 0.40, based on one mole of said prepolymers, the chain extending reaction being effected by adding the prepolymer solution into the solution of chain extenders, and after the content of isocyanate groups in the reaction medium has fallen substantially to zero (b) by heating the reaction mixture at 60° C. to 85° C. for 5 to 30 hours with stirring.

The elastic polyurethane products prepared from the solutions have good mechanical properties, high elastic recovery and improved stabilities against light, bleaching agents and strong hydrolytic media.

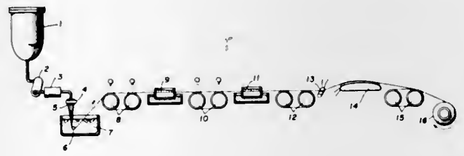
3,642,704
POLYMERIC COMPLEXES OF SACCHRIN AND CYCLOHEXANESULFAMIC ACID
Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 573,488, Aug. 19, 1966, which is a continuation-in-part of application Ser. No. 12,254, Mar. 2, 1960. This application Feb. 4, 1969, Ser. No. 796,602
Int. Cl. C08g *19/00;* **A23l** *1/26*
U.S. Cl. 260—77.5 BB **1 Claim**

Saccharin or cyclamate or a mixture of them in the acid or salt form, is combined with a polymeric cyclic carbamate such as the copolymer of N-vinyl oxazolidinone and an ethylenically unsaturated comonomer to obtain a stable resonance complex of improved properties as a sweetening agent.

3,642,705
FLUORINE-CONTAINING POLYURETHANE RUBBERS
Joseph La Mar Zollinger, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,404
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AP **12 Claims**

Methylol-terminated polyperfluoroalkylene oxide is reacted with a polyisocyanate to form a fluorine-containing polyurethane rubber, which can be formed in the shape of a seal or gasket or can be used as a structural adhesive or a solid propellant binder.

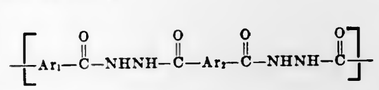
3,642,706
PROCESS FOR SPINNING WHOLLY AROMATIC POLYAMIDE FILAMENTS
Herbert S. Morgan, Jr., Apex, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Mar. 3, 1970, Ser. No. 16,265
Int. Cl. C08g *20/00;* **D01f** *1/02*
U.S. Cl. 260—78 S **15 Claims**



An improved process for preparing filaments, films and the like shaped objects from wholly aromatic polyamides is provided. A spinning solution of such polyamide is extruded into at least one stream that passes through a coagulating bath. The resulting filaments are withdrawn from the bath and then washed, dried, and drawn. Improvements result from incorporating in the solution a small but effective amount of a wax having a melting point above 25° C. and being retained at least in part in the filaments at least until the filaments are drawn.

3,642,707
FIBERS PREPARED FROM AROMATIC POLYHYDRAZIDES
August Henry Frazer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Oct. 4, 1967, Ser. No. 672,735, now Patent No. 3,536,651, dated Oct. 27, 1970. Divided and this application June 30, 1970, Ser. No. 51,391
Int. Cl. C08g *33/04*
U.S. Cl. 260—78 TF **3 Claims**

Film- and fiber-forming solutions comprised of aromatic polyhydrazides having recurring structural units of units of the formula:

(I) 

wherein Ar_1 and Ar_2 individually are either p-phenylene or m-phenylene with the proviso that at least 80 mole percent of these radicals be p-phenylene, dissolved in dimethyl sulfoxide containing lithium chloride. These solutions are utilized to form shaped articles of the polyhydrazide. Fibers which are so produced have usually high initial modulus values and the tensile properties of these fibers are further enhanced by heat treating them for 1–2 seconds in a nitrogen atmosphere maintained at 350–450° C.

3,642,708
OXADIAZOLE-N-METHYLHYDRAZIDE CO-POLYMERIC RESIN AND A METHOD OF PRODUCING THEREOF
Hideo Sekiguchi, Yokohama, and Kazuo Sadamitsu, Tokyo, Japan, assignors to The Furukawa Electric Company Limited, Chiyoda-ku, Tokyo, Japan
Filed Feb. 15, 1968, Ser. No. 705,718
Claims priority, application Japan, Feb. 22, 1967, 42/11,270; Aug. 21, 1967, 42/53,670; Sept. 22, 1967, 42/60,926
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **12 Claims**

Polyoxadiazole series resin having solubility in addition to a high heat resistance is prepared by reacting polyoxadiazole with methyl sulfate in sulfuric acid, whereby the oxadiazole ring is opened and N-methylhydrazide structural unit is formed and introduced into the resulting product to form copolymeric resin having N-methylhydrazide structural unit and polyoxadiazole structural unit.

3,642,709
AZOXY CONTAINING POLYAMIDE POLYMERS
Franco Agolini, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 31, 1968, Ser. No. 733,290
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **4 Claims**

Polyamides derived from aromatic monomers containing azoxy groups, the polyamides having an inherent viscosity of at least 0.1, having good high temperature properties and which contract upon heating.

3,642,710
MANUFACTURE OF POLYDODECAMETHYLENE TEREPHTHALAMIDE
William Ernest Keen and David Kirkaldy, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,795
Claims priority, application Great Britain, Nov. 13, 1967, 51,537/67
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **5 Claims**

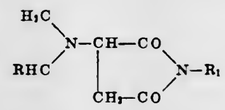
A process for the manufacture of polydodecamethylene terephthalamide wherein dodecamethylene diammonium terephthalate is heated in the presence of a lower fatty acid viscosity stabilizer at a temperature of about 255 to 275° so that the reaction mass remains solid. The polyamide thus produced can be melt-spun into filaments.

3,642,711
AMIDE OXADIAZOLE POLYMERS AND POLYMER PRECURSORS
Billy M. Culbertson, Burnsville, Minn., assignor to Ashland Oil & Refining Company, Ashland, Ky.
No Drawing. Continuation-in-part of application Ser. No. 502,322, Oct. 22, 1965. This application Sept. 20, 1968, Ser. No. 761,306
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 **6 Claims**

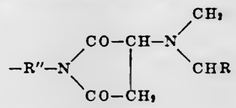
Thermally stable fibers and films have been prepared by reaction of equimolar quantities of an amino aroyl hydrazide and an acid dichloride. The polymers can be converted to the corresponding amide-oxadiazole polymers by dehydration.

3,642,712
RETICULATED POLYMERS PREPARED FROM AZIRIDINE DERIVATIVES AND METHOD OF PREPARATION
Joerg Sambeth, Carouge, Geneva, and Friedrich Grundschober, Confignon, Geneva, Switzerland, assignors to Societe Rhodiaceta, Paris, France
No Drawing. Continuation-in-part of applications Ser. No. 552,388 and Ser. No. 552,403, both May 24, 1966. This application Oct. 30, 1968, Ser. No. 771,986
Claims priority, application Switzerland, May 28, 1965, 7,463/65, 7,464/65
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 UA **8 Claims**

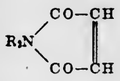
Novel aziridine derivatives of the formula:



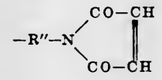
wherein R is hydrogen or methyl and R_1 is hydrogen, methyl, phenyl or a radical of the formula:



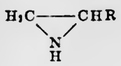
wherein R is as defined above and R'' is an alkylene radical of 2 to 12 carbon atoms or two phenylene residues bonded to one another by —CH_2—, —SO_2— or —O— are produced by reacting stoichiometric amounts of an unsaturated dicarboxylic acid imide of the formula:



wherein R_2 is hydrogen, methyl, phenyl or a radical of the formula:

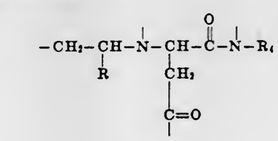


wherein R'' is as defined above with an aziridine of the formula:

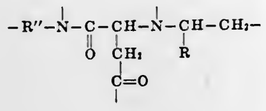


wherein R is as defined above at a temperature of 20 to 200° C. for 10 minutes to 10 hours in the presence or absence of a solvent.

Novel reticulated polymers are prepared from these novel aziridine derivatives by polymerizing said aziridine derivatives. The polymerization process comprises heating the aziridine derivative to a temperature between 50 to 200° C. and the reticulated polymer produced thereby is characterized by recurring structural units which are connected to one another through amide linkages and having the formula:



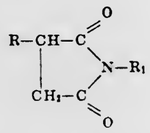
wherein R is as defined above and R_4 is hydrogen, methyl, phenyl or a pentavalent radical of the formula:



wherein R and R'' are as defined above; and when R_4 is said pentavalent radical it is attached to the rest of the recurring structural unit through the R'' portion thereof.

3,642,713
POLYAMIDE COMPOSITION CONTAINING SUCCINIC IMIDE COMPOUND
August Böckmann, Krefeld, Karl-August Essig, Karlheinz Feltgen, and Herbert Gröschel, Dormagen, and Hans Rudolph, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 20, 1968, Ser. No. 785,753
Claims priority, application Germany, Jan. 2, 1968, P 16 94 238.4
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **6 Claims**

An antielectrostatic polyamide composition comprising a polyamide and a succinic acid imide compound of the formula



wherein R is an alkyl, alkenyl, alkylaryl, cycloalkyl or an aryl radical and R_1 is a polyoxyalkylen-moiety.

3,642,714
LIGHT STABLE POLYAMIDE HAVING AN IMPROVED RETENTION FOR ACID DYES
Gene C. Weedon and Robert A. Lofquist, Richmond, Va., and Robin B. Mumford, Middletown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed May 14, 1969, Ser. No. 824,692
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 R **16 Claims**

Acid dye receptive polycarbonamide filaments are prepared by polymerizing the polycarbonamide-forming materials in the presence of 10–50 moles of p-toluenesulfonic acid per 10^6 gms. of polymer and less than about 50 moles per 10^6 gms. of a primary-tertiary diamine.

3,642,715
PROCESS FOR THE PREPARATION OF AROMATIC POLYAMIDES
Pierre Allard, Cailloux-sur-Fontaines, France, assignor to Societe Rhodiaceta, Paris, France
No Drawing. Filed May 21, 1969, Ser. No. 826,664
Claims priority, application France, May 22, 1968, 50,045
Int. Cl. C08g *20/20, 51/44*
U.S. Cl. 260—78 R **15 Claims**

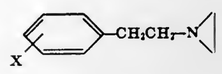
The invention relates to a process for the preparation of solutions of aromatic polyamides which comprises reacting one or more dicarboxylic acids with one or more diisocyanates, at least one of which is aromatic, in a polar liquid at a temperature which is raised progressively from a lower temperature superior to ambient to a higher temperature of 120° to 250° C.

3,642,716
CONTROLLING MOLECULAR WEIGHT IN LACTONE POLYMERIZATION
Pieter A. Gautier and Herman Verbrugge, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,301
Claims priority, application Netherlands, Nov. 20, 1967, 6715750
Int. Cl. C08g *17/07*
U.S. Cl. 260—78.3 **6 Claims**

A process for preparing polyesters having controlled molecular weight comprising (1) reacting a β-lactone with 0.014–2.2 mol percent of water and (2) in the presence of the reaction products thus obtained, polymerizing the unreacted β-lactone with an anionic initiator.

3,642,717
COPOLYMERS OF β-LACTONES AND N-PHENETHYLAZIRIDINES
Laurence I. Peterson, Framingham, Mass., and Louisa J. Sauro, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 30, 1968, Ser. No. 787,993
Int. Cl. C08g *20/00, 33/02*
U.S. Cl. 260—78.3 **5 Claims**

Novel copolymers are prepared in the reaction between (a) β-propiolactone, β-isobutyrolactone or β-neopentanolactone and (b) an N-phenethylaziridine of the formula



wherein X is hydrogen, halogen, cyano, or alkyl, aryl or aralkyl having 1 to about 10 carbon atoms. The copolymers are useful as antioxidants and cure rate accelerators in elastomer compositions.

3,642,718
POLYMERS CONTAINING HYDROXYL GROUPS
Herbert Naarmann, Ludwigshafen, and Hans Kiefer, Wachenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,203
Claims priority, application Germany, Sept. 11, 1968, P 17 95 312.7
Int. Cl. C08f *3/42, 15/14, 15/36*
U.S. Cl. 260—78.3 U **9 Claims**

Polymers containing tertiary hydroxyl groups, and their production by polymerizing unsaturated lactic acids or copolymerizing such acids with other olefinically unsaturated monomers.

3,642,719
PRODUCT AND PROCESS FOR THE PREPARATION OF ACRYLONITRILE AND X-METHYLENE GLUTARIC ACID ANHYDRIDE COPOLYMERS
Bernard C. Roest, Geleen, and Jozef L. M. van der Loos and Peter J. M. W. Claassen, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,342
Claims priority, application Netherlands, Dec. 31, 1968, 6818848
Int. Cl. C08f *15/02, 15/40, 27/14*
U.S. Cl. 260—78.5 R **13 Claims**

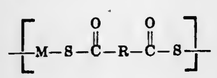
Copolymer containing at least 35 weight percent of acrylonitrile and the cyclic anhydride of α-methylene glutaric acid, preferably ranging from 0.1 to 10 weight percent, said copolymer having an intrinsic viscosity between 0.1 and 20; and process for preparing same.

3,642,720
TRIAZINE BASED POLYBENZIMIDAZOLE
Raymond J. Kray, Berkeley Heights, N.J., and Roland A. E. Winter, Armonk, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,528
Int. Cl. C08g *33/02*
U.S. Cl. 260—78.4 R **15 Claims**

Triazine based polybenzimidazoles are prepared by reacting aromatic tetramines with s-triazine compounds containing at least two alkyl or aryl carboxylic acid groups or their alkyl or aryl esters. The triazine based polybenzimidazoles can be molded and their solutions can be used to form stiff and tough coatings, films and fibers. These polymers possess high temperature oxidative stability and good mechanical properties.

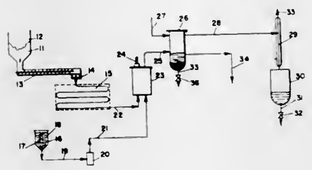
3,642,721
METAL-CONTAINING POLYMERS OF ORGANIC DITHIOLIC ACID AND METHODS OF MAKING THE SAME
Judith A. Walmsley, Sylvania, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Jan. 22, 1968, Ser. No. 699,338
Int. Cl. C08g *17/00*
U.S. Cl. 260—78.4 R **9 Claims**

Polymers are prepared from divalent metal salts such as nickel chloride and organic dithiol acids such as dithiolterephthalic acid to provide a polymer having the following recurring unit:



where M is a metal such as nickel, zinc and tin and R is an organic hydrocarbon radical. The polymers are useful as fillers and modifiers for other polymers and for forming films and coatings on bases such as glass.

3,642,722
PROCESS FOR PREPARING MODIFIED POLYOLEFINS
M. B. Knowles and Charles S. Winebarger, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of abandoned application Ser. No. 643,872, June 6, 1967. This application Nov. 29, 1967, Ser. No. 691,099
Int. Cl. C08f *27/00*
U.S. Cl. 260—78.4 D **15 Claims**



A process for continuously introducing a mixture of low-molecular-weight polyolefin and an ethylenically unsaturated polycarboxylic compound, e.g. maleic anhydride, into an agitated, multistaged reaction zone in which the mixture is intimately mixed under conditions of essentially plug-type flow during the reaction. A high molecular weight polyolefin may be continuously, thermally degraded and introduced into the reaction zone while still hot, in lieu of employing a previously thermally degraded, low molecular weight polyolefin. An improved modified polyolefin product is separately recovered, while the unreacted polycarboxylic compounds may be recycled to the reactor for further conversion. The modified product, especially in the form of a thin film at an elevated temperature, is improved further by vacuum stripping, preferably at less than 10 mm. of Hg pressure. This novel improved product has a saponification number essentially all accounted for by acid groups chemically associated with the polymeric molecules.

3,642,723
COPOLYMERS OF SUBSTITUTED ALKYL ETHERS AND MALEIC ANHYDRIDE
Seizo Okamura, Kyoto, Koichiro Hayashi, Osaka, and Yasuharu Nakayama, Kyoto, Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed July 16, 1969, Ser. No. 842,368
Claims priority, application Japan, July 20, 1968, 43/51,347
Int. Cl. C08f *17/00*
U.S. Cl. 260—78.4 R **10 Claims**

Copolymers of substituted alkyl ethers and maleic anhydride prepared by the copolymerization of a ketal with maleic anhydride in the presence of a free radical initiator are useful as dispersion and emulsion stabilizers, textile finishing agents or leather treatment agents.

3,642,724
PROCESS OF MAKING UNSATURATED POLYESTERS OF LOW FLAMMABILITY AND PRODUCT OBTAINED THEREBY
Karl Schmidt, Wiesbaden, and Gerhard Boockmann, Hamburg, Germany, assignors to Dr. Beck & Co., A.G., Hamburg, Germany
No Drawing. Filed Aug. 7, 1969, Ser. No. 849,296
Claims priority, application Germany, Aug. 8, 1968, P 17 95 094.6
Int. Cl. C08g *17/12, 17/133*
U.S. Cl. 260—78.4 EP **12 Claims**

Unsaturated polyesters containing tetrabromophthalic acid or -anhydride as a flammability-reducing element are made by reacting a dicarboxylic acid anhydride with an alkylene oxide in the presence of a polymerization initiator and an alkaline catalyst for the reaction, the reaction mass including an α,β-unsaturated dicarboxylic acid or -anhydride together with tetrabromophthalic acid or -anhydride. The α,β-unsaturated dicarboxylic acid and the tetrabromo acid may form all or part of the dicarboxylic acid anhydride component or all or part of the polymerization initiator. The amount of the tetrabromophthalic acid or -anhydride must be in excess of 5% by weight relative to the weight of the total composition.

The polyesters have an extremely low flammability, are of a clear color and can be made in the ordinary alloy steel apparatus without danger of decomposition or discoloration of the reaction products.

3,642,725
POLYMERS OF POLYFUNCTIONAL CYANAMIDES OF SECONDARY AMINES
Hans Dieter Schminke, Cologne-Mulheim, Ernst Grigat, Cologne-Stammheim, and Rolf Putter, Dusseldorf, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of application Ser. No. 629,893, Apr. 11, 1967. This application Nov. 5, 1969, Ser. No. 874,417
Int. Cl. C08g *33/02*
U.S. Cl. 260—78.4 N **10 Claims**

New polymers are formed by heating polyfunctional cyanamides of secondary amines together with catalyti-

cal quantities or up to more than molar quantities of mono- or polyvalent hydroxyl and/or thiol compounds to higher temperatures.

3,642,726
THERMOPLASTIC CROSSLINKED POLYESTER MATERIAL AND METHOD OF MOLDING
William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,180
Int. Cl. C08f *27/12*
U.S. Cl. 260—78.5 T **11 Claims**

A polyanhydride, such as a copolymer of maleic anhydride and an alpha-olefin, when heated together with a polyhydroxylated compound, such as polyvinyl alcohol, yields a polyester crosslinked material. When heated to a temperature in excess of 80° C., this crosslinked polyester material flows and can be molded. On slow cooling, this material may again become crosslinked and insoluble in solvents such as acetone.

3,642,727
VULCANISATION PROCESS
Brian Thomas Ashworth, Donald Harper, and Peter Hill, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 11, 1969, Ser. No. 841,109
Claims priority, application Great Britain, July 19, 1968, 34,539/68
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 A **12 Claims**

Vulcanised rubbers having improved resistance to heat are obtained by heating unvulcanised rubber with bis(dihydrocarbylthiophosphoryl) tri- or tetra-sulphides, preferably in presence of elemental sulphur and a conventional sulphur-curing accelerator.

3,642,728
SULFONATED POLYMERS
Nathan H. Canter, Edison, N.J., assignor to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 804,318, Mar. 4, 1969, which is a continuation-in-part of application Ser. No. 765,695, Oct. 7, 1968, both now abandoned. This application Nov. 18, 1969, Ser. No. 877,849
Int. Cl. C08f *27/06;* **C08d** *11/02, 13/30*
U.S. Cl. 260—79.3 R **8 Claims**

Polymers containing —SO_3H groups and salts thereof are found to have improved physical properties. The sulfonated polymers are prepared by selective sulfonation of sites of olefinic unsaturation utilizing a sulfonating agent comprising a complex of a Lewis base with a sulfur trioxide donor. The sulfonic acid containing polymers and their sulfonate salts exhibit improved physical properties compared to the unsulfonated products.

3,642,729
PRINTING INKS FOR POLYOLEFINS
Marco Wismer, Gibsonia, and Paul J. Prucnal, Monroeville, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 689,251, Dec. 11, 1967, now Patent No. 3,551,182, which is a continuation-in-part of application Ser. No. 473,146, July 19, 1965, now Patent No. 3,484,335, dated Dec. 16, 1969. This application Apr. 20, 1970, Ser. No. 30,211
Int. Cl. C09d *11/00*
U.S. Cl. 260—80.7 **10 Claims**

This invention relates to printed thermoplastic polymer substrates and preferably to olefin high polymer substrates coated with an adherent ink composition comprising an interpolymer containing a substantial portion of a polyunsaturated hydrocarbon and at least one monoolefin having a single copolymerizable ethylenic group, said interpolymers having been obtained by the polymerization in the presence of a transition metal catalyst and characterized by the fact that they contain sufficient remaining ethylenic unsaturation in the polymer molecule to permit substantial curing of the films thereof by oxidative mechanism.

3,642,730
COPOLYMERS OF OLEFINE AND N-UNSATURATED DERIVATIVES OF CARBAZOLE
Yves Amiard, Jean-Paul Bellissent, and Gilbert Marie, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevole, France
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,446
Claims priority, application France, Sept. 29, 1969, 168,369
Int. Cl. C08f *17/00*
U.S. Cl. 260—80.72 **18 Claims**

A process for the preparation of amorphous copolymers of olefins with N-unsaturated carbazole derivatives consists in copolymerising in the presence of a coordination catalyst, at least two olefins, particularly ethylene and propylene, together with one or more N-unsaturated carbazole derivatives, in particular one or more N-alkenyl carbazole derivatives. New amorphous copolymers are obtained by this process, in particular new ethylene-propylene-N-vinyl carbazole terpolymers.

3,642,731
NOVEL PROCESS FOR SOLVENT PURIFICATION AND RECOVERY
Bruce R. Tegge and William L. Telser, Madison, James H. Love, Parsippany, and Barry M. Rosenbaum, Morris Plains, N.J., assignors to Esso Research and Engineering Company
Filed July 18, 1969, Ser. No. 842,907
Int. Cl. C08f *15/04*
U.S. Cl. 260—80.78 **8 Claims**

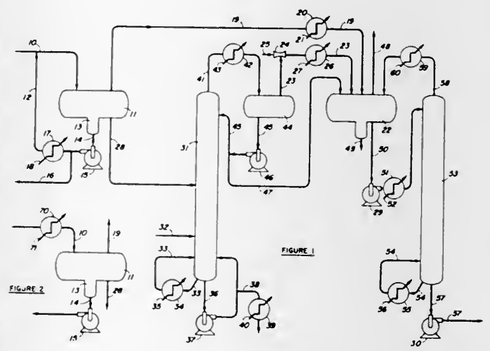


FIGURE 1

FIGURE 2

In the production of polymers of ethylene, higher alpha olefins and optionally a third monomer, the reactants may leave the polymerization reaction as a cement which may be steam-flashed to yield a flash overhead gas containing inter alia diluent-solvent and heavy impurities. Recovery and recycling of a major portion of pure diluent-solvent, substantially free of heavy impurities, is effected

by partial condensation of the flash overhead gas to form (i) a partial condensate containing a substantial portion of the heavy impurities and a minor portion of diluent-solvent and (ii) a non-condensed gas containing a major portion of diluent solvent (substantially free of heavy impurities) which major portion may be recycled.

3,642,732
TERPOLYMERS OF VINYL CHLORIDE, PROPYLENE AND THIRD VINYL MONOMER AND PROCESS FOR PREPARATION THEREOF
Takashi Yasumura and Kimiaki Matsuoka, Tokyo, Japan, assignors to Central Glass Co., Ltd., Yamaguchi-ken, Japan
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,496
Claims priority, application Japan, Aug. 16, 1967, 42/52,254
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.81 **2 Claims**

A terpolymer of vinyl chloride, propylene and at least one third comonomer of the formula

$$CH_2=CR—COOR'$$

wherein R represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms, and R' represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms

in which 99.8 to 60 molar percent of units derived from the vinyl chloride, 0.1 to 20 molar percent of units derived from the propylene and 0.1 to 20 molar percent of units derived from the third comonomer are present, and process for their preparation.

3,642,733
BEAD POLYMERIZATION PROCESS AND PRODUCT
Carl S. Anderson, Bethlehem, Pa., and David F. Bittle, Thomas M. Veazey, and Robert G. Wooten, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 398,047, Sept. 21, 1964. This application Oct. 23, 1968, Ser. No. 770,110
Int. Cl. C08f *3/76, 15/40*
U.S. Cl. 260—80.81 **7 Claims**

Bead polymers containing acrylonitrile and having considerably enhanced receptivity for basic dyestuffs are produced by a redox catalyzed suspension polymerization process wherein small quantities of long chain fatty acids or fatty acid salts are used.

3,642,734
POLYMERIZATION PROCESS
Tai Chun Cheng, Akron, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 27, 1969, Ser. No. 869,880
Int. Cl. C08d *1/32;* **C08f** *15/04, 1/28*
U.S. Cl. 260—83.7 **22 Claims**

Conjugated dienes are polymerized by a new catalyst system which is more economically and more easily prepared and used than present catalyst systems used for similar purpose. This catalyst system comprises a combination of a free radical anion component modified by a potassium salt selected from the class of sulfate, phosphate, sulfide, cyanide, carbonate and carboxylate. The free radical anionic component is made in an appropriate solvent, form an alkali metal and an anion forming compound such as naphthalene. The catalyst system is used to polymerize conjugated dienes to polymer products of controlled molecular weight, suitable for easy processing and having properties desirable for ultimate use in tires and other molded products. The molecular weights of the products are increased by virtue of the modifier as compared to the molecular weights obtained with the radical anion component alone.

3,642,735
RAPIDLY CRYSTALLIZING VINYLIDENE CHLORIDE-ACRYLONITRILE COPOLYMER PREPARED IN THE PRESENCE OF CERIC SALT/ALCOHOL INITIATOR FOLLOWED BY STEPS OF HEATING AND COOLING
Dudley Gibson Woodard, Columbia, Md., assignor to W. R. Grace & Co., Clarksville, Md.
No Drawing. Filed Feb. 5, 1970, Ser. No. 9,045
Int. Cl. C08f *15/06, 15/22*
U.S. Cl. 260—85.5 **10 Claims**

Vinylidene chloride-acrylonitrile copolymers having an acrylonitrile content of up to about 20 percent by weight, are rapidly crystallizing when prepared using a combination ceric salt-organic alcohol initiator. Diol alcohols are the preferred alcohol species and yield the better results. These copolymers may also contain a stabilizer.

3,642,736
METHOD FOR RECOVERING VENTED MONOMERS
Arley L. Downs, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.
Filed May 13, 1969, Ser. No. 824,099
Int. Cl. C08f *15/22*
U.S. Cl. 260—85.5 **5 Claims**

A method is herein described for effectively recovering volatile, unreacted monomers which are ordinarily lost to the atmosphere during copolymerization of acrylonitrile and unsaturated organics, which comprises dehumidifying the vapor mixture and thereafter absorbing the vapor mixture in absorbing liquids.

3,642,737
PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE
Luigi Patron and Alberto Moretti, Venice, and Renato Pasqualetto, Porto Marghera, Italy, assignors to Chatilon Società Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy
No Drawing. Filed June 24, 1969, Ser. No.836,166
Claims priority, application Italy, June 28, 1968, 18,362/68
Int. Cl. C08f *1/62, 3/30*
U.S. Cl. 260—85.5 **19 Claims**

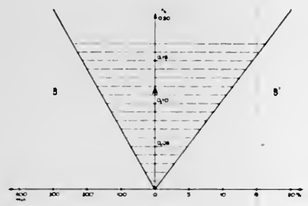
A process is disclosed for obtaining highly syndiotactic, white and heat-stable polyvinyl chloride (particularly suited for conversion into fibers) by bulk polymerization at low temperature of vinyl chloride, the polymerization being conducted in the presence of a catalytic system consisting essentially of an organic hydroperoxide, such as cumene hydroperoxide or t-butylhydroperoxide, activated by an alcoholic solution of sulphur dioxide and of at least one oxide or hydroxide of an alkali metal or of magnesium or of magnesium sulphite, and in which the ratio: SO_2/Me is lower than 1.5 where SO_2 is the concentration in gram-moles/liter of the total sulphur dioxide and Me is the concentration of the metal in gram-equivalent/liter. The polymerization may be short-stopped at the desired level by treating the polymerization mixture with an aqueous solution of a hydroxylamine salt such as the hydrochloride or sulphate. At least one other ethylenically unsaturated monomer copolymerizable with vinyl chloride may also be present, thereby resulting in a copolymer.

3,642,738

PROCESS FOR THE CONTINUOUS BULK POLYMERIZATION OF VINYL CHLORIDE AT LOW TEMPERATURE

Luigi Patron and Alberto Moretti, Venice, and Gian Paolo Sinatora, Mestre, Venice, Italy, assignors to Chatillon Societa Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy

Filed Oct. 14, 1969, Ser. No. 866,241
Claims priority, application Italy, Oct. 17, 1968, 22,600/68
Int. Cl. C08f *1/04, 1/61, 3/30*
U.S. Cl. 260—85.5 9 Claims



A process is disclosed for the continuous low-temperature bulk polymerization of vinyl chloride with conversions greater than 18%, in the presence of a catalyst system consisting either of (1) an organic hydroperoxide, sulphur dioxide and an alcoholate of a metal of the first or second group of the Periodic System or of aluminum or (2) an organic hydroperoxide activated by an alcoholic solution of sulphur dioxide and of at least one oxide or hydroxide of an alkaline metal or of magnesium or of magnesium sulphite, the improved features residing in:

(a) pre-charging the reactor with vinyl chloride to at least ⅓ of its useful holding capacity;
(b) starting the polymerization with one of the above-described catalysts until a degree of conversion of at least 10% is attained in the presence of a mercapto-compound having a maximum of 4 carbon atoms, which compound is fed to the reaction medium in a concentration of at least 1.3 times that provided in steady conditions of polymerization;
(c) maintaining during the starting phase of the polymerization a conversion increase below 2.5%/hr. and a viscosity of the polymer obtained below 1.5 dl./g.; and
(d) carrying on the polymerization in a continuous way according to the predetermined formulation for the steady conditions, with a quantity of mercapto-compound of at least $1.5.10^{-3}$ moles/kg. of monomer.

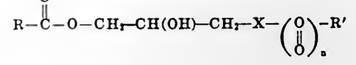
3,642,739

PROCESS FOR PRODUCTION OF HYDROXYL-CONTAINING COPOLYMERS

Johan van Gogh and Jan H. de Kruif, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,168
Claims priority, application Great Britain, Oct. 15, 1968, 48,867/68
Int. Cl. C08f *15/26*
U.S. Cl. 260—86.3 7 Claims

Hydroxyl-containing copolymers which have low acid values and which when cured with conventional resins such as melamine-formaldehyde and urea-formaldehyde resins produce films which exhibit good mechanical and chemical properties, good gloss and whiteness retention as well as polishability, are prepared by copolymerizing, in an aqueous dispersion, (A) an olefinically unsaturated hydroxyl-containing ester having the general formula



wherein R is an alpha, beta-ethylenically unsaturated group, R′ is a group free of olefinic unsaturation, *n* is 0 or 1, and X is O or S and (B) at least one other olefinically unsaturated monomer.

3,642,740

PROCESS FOR PREPARING HOMO- AND COPOLYMERS OF VINYL CHLORIDE IN AQUEOUS EMULSION

John K. Pierce, Jr., Baytown, Tex., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,861
Int. Cl. C08f *1/13, 1/88, 3/30*
U.S. Cl. 260—87.5 11 Claims

Vinyl chloride homo- and copolymers are prepared in aqueous emulsion, utilizing as the emulsifier system therein, from 0.25 percent to 0.45 percent of an alkali metal salt of a sulfated fatty alcohol having from 8–18 C atoms per molecule or an ether derivative thereof; from 0.15 percent to 2.0 percent of a tallow fatty alcohol or an epoxidized unsaturated fatty acid oil; and from 0.10 percent to 0.20 percent of a complex organic phosphate ester or salt derivative thereof, the percentages of these ingredients being based on the weight of the monomer. The paste resin products obtained find particular utility as molding resins, being characterized by excellent clarity, thermal stability, and negligible moisture-sensitivity. Plastisols of these products exhibit excellent dispersion rheology and air-release properties.

3,642,741

COPOLYMERS OF VINYL CHLORIDE AND EPOXY-α-OLEFINS

Robert Bacskai, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,379
Int. Cl. C08f *5/00*
U.S. Cl. 260—87.5 5 Claims

Copolymers of vinyl chloride and ω-epoxy-α-olefins of 5 or more carbon atoms are provided having improved resistance to heat degradation and which are clear and uncolored.

3,642,742

TOUGH, STABLE TETRAFLUOROETHYLENE-FLUOROALKYL PERFLUOROVINYL ETHER COPOLYMERS

Dana Peter Carlson, Wilmington, Del., assignor to E. I du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,391
Int. Cl. C08f *15/02*
U.S. Cl. 260—87.5 A 8 Claims

Tough, stable copolymers of tetrafluoroethylene monomer and fluorovinyl ether monomers can be produced by polymerizing the monomers in perfluorinated or suitable non-perfluorinated hydrogen and chlorine containing fluorocarbon solvents by a process that requires that the reaction be carried out at from about 30 to about 75° C. in the presence of a low temperature initiator such as bis(perfluoro propionyl) peroxide and a hydrogen containing chain transfer agent such as methanol.

3,642,743

CONTROLLED POLYMERIZATION OF MIXTURES OF VINYLIDENE CHLORIDE AND VINYL CHLORIDE IN AQUEOUS SUSPENSION

James E. Schuetz, Midland, and William D. Shelburg, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 586,651, Oct. 14, 1966. This application Oct. 17, 1968, Ser. No. 768,547
Int. Cl. C08f *1/11, 15/08*
U.S. Cl. 260—87.7 3 Claims

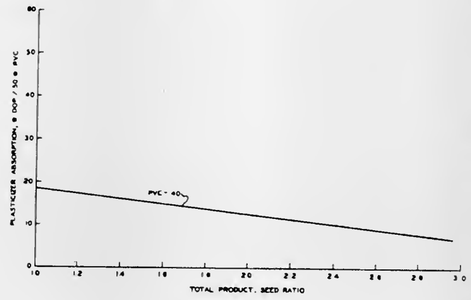
This invention is directed to a process for preparing inherently processable substantially heterogeneous interpolymers of vinylidene chloride and vinyl chloride in aqueous suspension by polymerizing a monomeric mixture comprising essentially from about 70 to 90 weight percent vinylidene chloride and from about 30 to 10 weight percent vinyl chloride in a completely closed reaction vessel while controlling the temperature of such reaction vessel to maintain a constant pressure therein until a conversion of monomer to polymer of at least about 40 percent is achieved.

3,642,744

VINYL MONOMER POLYMERIZATION PROCESS

Charles W. Moberly and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 1, 1970, Ser. No. 42,093
Int. Cl. C08f *1/04, 3/30*
U.S. Cl. 260—87.5 14 Claims



Vinyl polymers having improved porosity are obtained by vapor phase polymerization of vinyl monomer in the presence of a polymerization initiator, seed polymer and a minor amount of certain porosity modifiers.

3,642,745

PROCEDURE FOR THE POLYMERIZATION AND COPOLYMERIZATION OF VINYL CHLORIDE

Jean Golstein, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

No Drawing. Filed June 5, 1969, Ser. No. 830,876
Claims priority, application Belgium, June 7, 1968, 56,220
Int. Cl. C08f *3/30*
U.S. Cl. 260—87.5 C 12 Claims

Vinyl chloride is polymerized and copolymerized in the absence of a dispersing agent and in the presence of a dispersion of an inert solid and a catalyst in a liquid which is not a solvent for the monomeric compounds undergoing polymerization or copolymerization, at a pressure and below the saturated vapor pressure of the monomeric compounds. Crusting on the polymerization reactor is avoided and a product of high purity is produced by means of the present process.

3,642,746

PROCESS FOR THE POLYMERIZATION AND/OR COPOLYMERIZATION OF OLEFINS WITH THE USE OF ZIEGLER-TYPE CATALYSTS SUPPORTED ON CARRIER

Norio Kashiwa and Tadaichi Tokuzumi, Otake-shi, and Hiroshi Fujimura, Iwakuni-shi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed July 25, 1969, Ser. No. 845,031
Claims priority, application Japan, Aug. 1, 1968, 43/53,933; Aug. 5, 1968, 43/54,963; Dec. 30, 1968, 44/96,490
Int. Cl. C08f *1/56, 3/02*
U.S. Cl. 260—88.2 12 Claims

A process for polymerizing and/or copolymerizing olefins by using an improved catalyst consisting of a transition metal compound supported on electrondonor-pretreated inorganic solid particles the transition metal compound being a component of a Ziegler-type catalyst, and an organometallic compound, whereby the polymerization activity of the catalyst per unit weight both of the transition metal and organometallic component remarkably increases, thus making it possible to reduce an amount of a carrier which remains in the resultant polymer causing increased ash content, and also possible to easily control the melt-index of the resultant polymer.

3,642,747

PRODUCTION OF ETHYLENE HOMOPOLYMERS OR COPOLYMERS WITH 2-HYDROPEROXY-2-ISO-PROPYLPHENYLPROPANE

Hans Gropper and Franz Georg Mietzner, Ludwigshafen (Rhine), and Friedrich Urban, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,493
Claims priority, application Germany, Sept. 6, 1968, P 17 95 294.2
Int. Cl. C08f *3/04, 1/60*
U.S. Cl. 260—88.2 B 9 Claims

Production of ethylene homopolymers or copolymers by polymerization of ethylene or of mixtures of major amounts of ethylene and minor amounts of other monomers at superatmospheric pressure and elevated temperature using a polymerization initiator. It is characteristic of the process according to the invention that a 2-hydroperoxy-2-isopropylphenylpropane is used as polymerization initiator.

3,642,748

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Koichiro Iwasaki, Kazuo Yamaguchi, and Genjiro Kakogawa, Tokyo, Yasuo Ohtsuka, Kawasaki-shi, and Kanji Kasahara, Tokyo, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,271
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—88.2 5 Claims

A process for polymerizing ethylene or a mixture of ethylene and other copolymerizable α-olefins, wherein polymerization is carried out at 0–110° C. under atmospheric or superatmospheric pressure in the absence of a liquid hydrocarbon diluent, and in the presence of a catalyst which is a mixture of two portions of finely granular ethylene polymer impregnated with an organoaluminum compound of the general formula $AlR_{3-n}X_n$ wherein R is an alkyl group, X may be the same or different and is a halogen atom or an alkoxy or trialkylsiloxy group and *n* is a number of 0–2, and a vanadium compound of the general formula VOY_3 wherein Y may be the same or different and is a halogen atom, an alkoxy or trialkylsiloxy group, with the proviso that at least one Y is an alkoxy group or trialkylsiloxy group.

3,642,749

OLEFIN POLYMERIZATION USING DI-TERTIARY POLYALICYCLIC CHROMATE ESTER CATALYST SYSTEMS

Robert Norman Johnson, Basking Ridge, and Frederick John Karol and Louis Anthony Pilato, Somerset, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,210
Int. Cl. C08f 1/30, 3/04, 15/04
U.S. Cl. 260—88.2 R 29 Claims

Ethylene polymers of broad molecular weight distribution are obtained from a catalyst system comprising a supported hindered di-tertiary polyalicyclic chromate ester treated with an organometallic reducing agent.

3,642,750

ADHESIVES OR SEALING AGENTS WHICH HARDEN ON EXCLUSION OF OXYGEN COMPRISING ESTERS OF ACRYLIC ACIDS AND DICYCLOPENTADIENOLS

Bernd Wegemund, Hilden-Rhineland, and Joachim Galinke, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,493
Claims priority, application Germany, Nov. 2, 1967, H 64,338
Int. Cl. C08f 3/42, 15/16
U.S. Cl. 260—89.5 5 Claims

The invention relates to adhesive compositions hardenable under exclusion of oxygen comprising liquid esters of acids of the formula



wherein R is a member selected from the group consisting of hydrogen, lower alkyl and halogen, with a cycloaliphatic monohydric alcohol derived from cyclopentadienes selected from the group consisting of dimerized cyclopentadiene and polymerized cyclopentadiene, and an organic percompound selected from the group consisting of organic peroxides and organic hydroperoxides.

3,642,751

ACYL AZO COMPOUNDS AS POLYMERISATION CATALYSTS

Heino Logemann, Leverkusen, Walter Meckel, Dusseldorf, and Erwin Muller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 14, 1969, Ser. No. 841,554
Claims priority, application Germany, July 30, 1968, P 17 95 015.1
Int. Cl. C08f 3/64, 3/66, 15/18
U.S. Cl. 260—89.5 5 Claims

Catalysts for the polymerisation of vinyl- and divinyl compounds containing as an active ingredient an acyl azo compound.

3,642,752

APPARATUS AND PROCESS FOR PRODUCING NOVEL EXTRUDED ACRYLIC SHEET

David Lord Sutter, Kennebunkport, Maine, assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1969, Ser. No. 848,591
Int. Cl. C08f 3/68, 15/18
U.S. Cl. 260—89.5 2 Claims

An apparatus for extruding and devolatilizing thermoplastic materials comprising a pair of cylinders each containing an extruder screw for processing polymeric thermoplastic materials and a link joining the cylinders. This invention also discloses a process for making the extruded polymeric thermoplastic sheet, and discloses a novel product produced according to the process of the present invention. Finally, there is disclosed a screw for use in the barrel of a screw extruder for forwarding material from the inlet end to the discharge end thereof.

3,642,753

PROCESS FOR THE PREPARATION OF POLYPERFLUOROCYCLOBUTENE

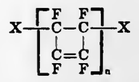
Richard W. Anderson and Hughie R. Frick, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 14, 1969, Ser. No. 876,997
Int. Cl. C08f 3/20
U.S. Cl. 260—91.5 10 Claims

Disclosed is a process for the preparation of polyperfluorocyclobutene corresponding to the formula:



wherein n is a number greater than 1 representing the average degree of polymerization. The process involves reacting polyperfluorocyclobutadiene corresponding to the formula:



wherein X is halogen and n is as defined above with CoF_3, PbF_4, SbF_5, AgF_2, MnF_3, CeF_4, BiF_5, ClF_3, BrF_3, or IF_7. The reaction is carried out at a temperature greater than 100° C. when CoF_3, PbF_4, SbF_5, AgF_2, MnF_3, CeF_4, or BiF_5 is the fluorinating agent.

3,642,754

PROCESS FOR POLYMERIZING FLUORO-OLEFINS IN THE PRESENCE OF ISOBUTYRYL PEROXIDE

Yutaka Kometani, Nishinomiya-shi, Masayoshi Tatemoto, Takatsuki-shi, Masahiro Okuda, Amagasaki-shi, Chuzo Okuno, Osaka-shi, and Shinsuke Sakata, Shoji Sakai, and Masahiko Oka, Settsu-shi, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-shi, Japan

No Drawing. Filed Aug. 12, 1968, Ser. No. 751,738
Claims priority, application Japan, Aug. 23, 1967, 42/54,328
Int. Cl. C08f 3/20, 3/22, 3/24
U.S. Cl. 260—92.1 6 Claims

Process for manufacturing fluoro-olefin polymers by polymerization of fluoro-olefins in the presence of isobutyryl peroxide as a catalyst. The polymerization reaction of the present invention proceeds with a higher polymerization velocity at a lower polymerization temperature to give a polymer of a higher polymerization degree than those polymerizations hitherto known. It is also characterized in the fact that the fluoro-olefin polymers obtained by the present process are superior in the properties to those hitherto produced.

3,642,755

CATALYST COMPOSITION

James A. Barter, Akron, Clifford O. Eddy, Independence, and Henry C. Stevens, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Sept. 26, 1968, Ser. No. 762,996
Int. Cl. C08f 3/22
U.S. Cl. 260—92.1 9 Claims

3-methyl-3-tertiarybutylperoxy butyric acid, salts and esters thereof its preparation and use as a polymerization initiator for ethylenically unsaturated monomers is described.

3,642,756

METHOD FOR INCREASING THE CAPACITY OF A POLYMERIZATION VESSEL DURING POLYMERIZATION OF VINYL CHLORIDE MONOMER IN AQUEOUS SUSPENSION

Merritt R. Meeks, Midland, and Joseph L. Garner, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,486
Int. Cl. C08f 1/82, 3/30, 1/11
U.S. Cl. 260—92.8 W 3 Claims

The present invention is directed to a method of effectively eliminating the rapid polymerization or "hot-spot" normally encountered near the end of the suspension polymerization reaction of vinyl chloride monomer. This result is obtained by the addition to the aqueous suspension of vinyl chloride monomer to be polymerized of small but effective amounts of one or more compounds capable of effectively inhibiting the polymerization reaction under normal polymerization temperatures and pressures. The addition of such polymerization inhibitors effectively eliminate such polymerization "hot-spot" and additionally, unexpectedly permits the utilization of increased amounts of polymerization initiators with resultant increased overall rates of polymerization, without exceeding the cooling capacity of a given reaction vessel.

3,642,757

POLY-CIS-1,2-DIVINYLCYCLOHEXANE AND METHOD FOR PREPARING THE SAME

Chuji Aso and Toyoki Kunitake, Fukuoka-shi, and Hakaru Uchio, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1969, Ser. No. 871,890
Claims priority, application Japan, Nov. 5, 1968, 43/80,832
Int. Cl. C08f 7/02
U.S. Cl. 260—93.1 5 Claims

Poly-cis-1,2-divinylcyclohexane having excellent thermal stability and chemical resistance comprising recurring units of the formula



wherein n is polymerization degree, which is a novel polymer and can be fabricated into films and other shaped articles, is prepared by contacting cis-1,2-divinylcyclohexane with at least one acidic metal halide with optional addition of lower alkyl aluminium compounds, lower alkyl zinc compounds, protonic acids or active halides such as chloromethyl ether, epichlorohydrin, t-butyl chloride and benzyl chloride.

3,642,758

BUTADIENE POLYMERIZATION CATALYST COMPRISING $TiX_3 \cdot nAlI_3$ + ORGANOALUMINUM COMPOUND AND LEWIS ACID

Charles Cozewith, Westfield, and Erik G. M. Tornqvist, Roselle, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,908
Int. Cl. C08d 3/06
U.S. Cl. 260—94.3 7 Claims

Process utilizing Ziegler-type catalyst system for polymerizing butadiene to high molecular weight polybutadienes possessing varying proportions of trans-1,4 units, in the range of 50–90%, comprising: an organoaluminum compound, a Lewis base, and a $Ti(halogen)_3 \cdot nAlI_3$ composition. The polymers thus obtained exhibit outstanding properties as elastomers when cross-linked and as thermoelastic polymers in the uncured state.

3,642,759

BUTADIENE POLYMERIZATION PROCESS AND CATALYST SYSTEM COMPRISING TITANIUM TETRAHALIDE - ORGANOMAGNESIUM COMPOUND AND H_2 GAS

Stephen John Bodnar, Beaumont, and Chuck Linwell McHargue and Larn Carnell Anglin, Jr., Nederland, Tex., assignors to Texas-U.S. Chemical Company, Port Neches, Tex.

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,155
Int. Cl. C08d 3/06
U.S. Cl. 260—94.3 12 Claims

A polymerization process for preparing homo- and copolymers of butadiene characterized by a high cis-1,4 content, said process being conducted in solvent solution utilizing an ether-free organomagnesium compound-titanium tetrahalide catalyst having the titanium in the tetravalent state and in the presence of hydrogen gas.

3,642,760

POLYMERIZATION AND COPOLYMERIZATION OF DIOLEFINS

Paul Baekelmans and Emile Leblon, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,483
Claims priority, application France, Oct. 14, 1968, 169,890; Sept. 9, 1968, 6930725; Sept. 23, 1969, 6932507
Int. Cl. C08d 3/06, 1/14, 3/04
U.S. Cl. 260—94.3 4 Claims

Diolefins are polymerized and copolymerized in the presence of a catalyst which is obtained by reacting a transition metal compound with a solid compound of a bivalent metal containing hydroxyl and/or oxygen groups or with a polymer which contains electron donor groups and then activating the thus obtained produce with an organometallic compound.

3,642,761

DEGRADATIVE POLYOLEFIN COMPOSITION

Fukuichi Ohira, Ichiharashi, Toshikazu Matsumura, Yokohamashi, and Chuji Shiode, Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 778,762, Nov. 25, 1968. This application Nov. 2, 1970, Ser. No. 86,279
Claims priority, application Japan, Dec. 6, 1967, 42/78,325
Int. Cl. C08f 3/02
U.S. Cl. 260—93.7 3 Claims

Polypropylene composition with added aldol-alpha-naphthylamine so as to facilitate degradation.

3,642,762

PROCESS FOR THE PREPARATION OF GEL-CONTAINING SYNTHETIC CONJUGATED DIENE SOLUTION POLYMERS

Gerardus E. La Heij and Gerrit J. van Amerongen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,712
Claims priority, application Great Britain, Mar. 15, 1968, 12,779/68
Int. Cl. C08d 5/02, 7/00
U.S. Cl. 260—94.7 6 Claims

Conjugated diene solution rubber compositions having improved green strength combined with satisfactory processability are obtained by treatment of a solution diene rubber, in aqueous dispersion, with a redox hydroperoxide system to produce a composition having 5–60 weight percent toluene-insoluble gel.

3,642,763
PROTECTED GLUCAGON AND ITS HYDROBROMIDE SALTS

Erich Wunsch, Tutzing, and Gerhard Wendlberger, Munich, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,129
Claims priority, application Germany, Aug. 19, 1967, F 53,291
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 1 Claim

Process for the manufacture of the peptide Glucagon by means of carbodiimides in the presence of N-hydroxysuccinimide or N-hydroxyphthalimide starting from protected glucagon-peptides of the glucagon sequences 1–6 and 7–29. A protected glucagon derivative and its hydrobromide salts.

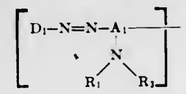
3,642,764
DISAZO DYESTUFFS

René de Montmollin, Riehen, Gerd Hoelzle, Liestal, and Hans-Joerg Angliker and Richard Peter, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Aug. 20, 1968, Ser. No. 753,901
Claims priority, application Switzerland, Aug. 25, 1967, 11,938/67; July 17, 1968, 10,745/68
Int. Cl. C09b *35/24, 35/28, 62/08*
U.S. Cl. 260—153 17 Claims

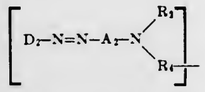
Disazo or polyazo dyestuffs, in which two of the same or different azo dyestuff residues of the general formula

(II)



or

(III)



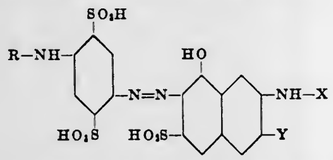
are linked through a divalent bridge member Z, in which formulae R_1, R_2 and R_3 each represents a hydrogen atom or preferably a low-molecular alkyl group, which may be linked with the residue A_1 or A_2 in the ortho-position to the group $—NR_1R_3$ or $—NR_2R_4$ to form a ring; R_4 represents a low-molecular alkylene group; A_1 and A_2 each represents a benzene or naphthalene residue. The dyestuffs are suitable for dyeing and printing materials of animal origin, polyamide fibers, polyurethanes and other such materials. The dyestuffs exhibit excellent light and wet fastness.

3,642,765
MONO AZO DYESTUFFS CONTAINING A FIBER-REACTIVE GROUP

Fritz Oesterlein, Basel, and Henry Riat, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,390
Int. Cl. C09d *62/08*
U.S. Cl. 260—153 6 Claims

Fibre-reactive azo dyestuffs of the formula



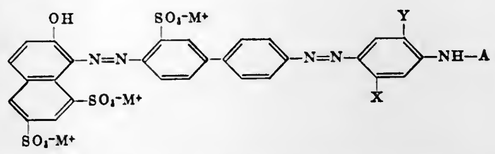
wherein X is an aryl radical of the benzene or naphthalene series, Y is a hydrogen atom or a sulfonic acid group and R is a fibre-reactive substituent.

3,642,766
FIBER-REACTIVE DISAZODYESTUFFS CONTAINING A PYRIMIDINE RADICAL

Werner Bossard, Riehen, near Basel, Switzerland, assignor to J. R. Geigy AG, Basel, Switzerland

No Drawing. Filed Apr. 3, 1968, Ser. No. 718,383
Claims priority, application Switzerland, Apr. 20, 1967, 5,664/67
Int. Cl. C07c *107/00;* C09b *35/20, 43/12*
U.S. Cl. 260—154 7 Claims

Disazo dyestuffs of the formula



wherein A represents a fiber-reactive acyl radical capable of forming at least one covalent bond with a cellulosic or polyamide substrate, and wherein X represents hydrogen or lower alkyl and Y represents hydrogen, lower alkyl or lower alkoxy, are disclosed as useful for the dyeing of the aforesaid fiber materials, affording dyeings of good wet-fastness properties.

3,642,767
WATER-INSOLUBLE DISPERSE MONOAZO DYES

Erwin Hahn, Viernheim, and Hans Guenter Wippel, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,317
Claims priority, application Germany, Sept. 20, 1967, P 16 44 069.0
Int. Cl. C09b *29/00, 29/08;* D06p *1/04*
U.S. Cl. 260—158 2 Claims

Water-insoluble disperse monoazo dyes having an aromatic or heterocyclic diazo component and a para-aminophenyl coupling component in which the amino nitrogen atom is substituted by phenylethyl and by an ethyl or propyl group substituted by hydroxy, methoxy, ethoxy, acetoxy or propionyloxy groups. These dispersion dyes are useful as applied to hydrophobic fibers, especially polyester fibers such as polyethylene terephthalate and exhibit good fastness to light, wetting and the effect of high temperatures.

3,642,768
WATER-INSOLUBLE PHENYL-AZO-NAPHTHOL DYESTUFFS

Joachim Ribka, Offenbach (Main), Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 349,142, Mar. 3, 1964. This application Jan. 8, 1969, Ser. No. 789,962
Int. Cl. C07c *107/08;* C09b *29/20*
U.S. Cl. 260—204 3 Claims

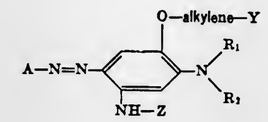
Water-insoluble monazo dyestuffs consisting of 1-aminobenzene-4-carboxylic acid amide as diazo component and 1-(2',3'-hydroxynaphthoylamino)-2-methoxybenzene or -2-ethoxybenzene as coupling component. Said dyestuffs can be prepared in substance or on a substratum. The dyestuffs prepared in substance are valuable pigments which, for example, can be used for dyeing and printing textile materials and paper. The pigments are especially suitable for dyeing lacquers and natural or synthetic resins.

3,642,769
ARYLAZODIALKYLAMINOALKYL(2 - AMINO-4-ACETYLALKINOPHENYL) ETHER DYESTUFFS

Karl-Ludwig Moritz, Cologne-Stammheim, and Carl Taube, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 5, 1968, Ser. No. 742,706
Claims priority, application Germany, July 15, 1967, F 52,979
Int. Cl. C09b *43/12;* D06p *1/06*
U.S. Cl. 260—207 11 Claims

Azo dyestuffs of the formula



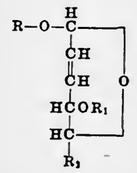
wherein A, Z, Y, R_1, R_2 and alkylene as defined hereinbelow are prepared particularly for use in dyeing and printing of tannin treated cotton and polymers or copolymers of acrylonitrile or a symmetrical dicyanoethylene, or acid modified polyester fibers, as well as condensation products from sulfoterephthalic acid and ethylene glycol wherein the dyestuffs exhibit good fastness properties.

3,642,770
STEROID GLYCOSIDES AND PROCESS FOR PREPARING THEM

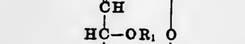
Werner Haede and Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, and Kurt Radscheit, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,358
Claims priority, application Germany, Apr. 6, 1968, P 17 68 165.1
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 10 Claims

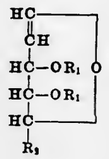
Steroid glycosides of the formula



useful for the treatment of cardiac and renal diseases, wherein R is a steroid group of the 3-hydroxy-cardenolide or 3-hydroxybufadienolide series, R_1 is aliphatic or aromatic acyl, and R_2 is hydrogen, methyl, ethyl, or



and methods of making the same by reacting a steroid alcohol ROH, with a glycal of the formula



3,642,771
5-BENZYL - (2'-DESOXYRIBOSYL) URACIL COMPOUNDS, COMPOSITIONS CONTAINING SAME, AND PROCESS OF MAKING AND USING SAME

Kailash Kumar Gauri, Lentfohrden, Holstein, Germany, assignor to Robugen G.m.b.H., Esslingen, Germany

No Drawing. Continuation-in-part of application Ser. No. 744,957, July 15, 1968. This application July 11, 1969, Ser. No. 841,143
Claims priority, application Austria, July 11, 1968, A 6,706/68
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 3 Claims

5 - benzyl substituted 3-(2'-deoxyribosyl) uracil compounds have a surprisingly high virostatic activity. The compounds are used in the treatment of virus diseases and have proved of considerable value in the treatment of herpes infections by topical administration, for instance, in the form of solutions, ointments, powders, sprays, plasters, and others.

3,642,772
PROCESS FOR PREPARING S-ADENOSYL HOMOCYSTEINE

Erich Haid, Weilheim, and Günter Weimann, Percha, Upper Bavaria, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

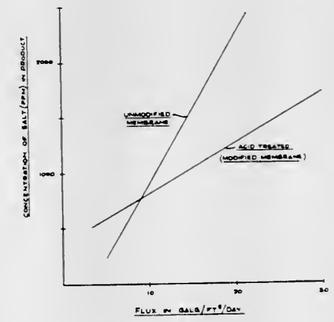
No Drawing. Filed Aug. 29, 1969, Ser. No. 854,315
Claims priority, application Germany, Sept. 4, 1968, P 17 95 282.8
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R 10 Claims

Process for preparing S-adenosyl homocysteine by demethylation of S-adenosyl methionine which comprises reactng an S-adenosyl methionine salt in a polar organic solvent therefor with an alkali metal or alkaline earth metal halide or pseudohalide at a temperature of about 10 to 100° C.

3,642,773
MODIFIED CELLULOSE ESTER SEMIPERMEABLE MEMBRANE

Fred E. Littman, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 29, 1967, Ser. No. 694,524
Int. Cl. B29d *27/04;* C08b *3/24, 21/04*
U.S. Cl. 260—229 11 Claims



Cellulose ester, especially cellulose acetate, semipermeable membranes having superior permeation properties of flux and solute rejection which are particularly suited

for desalination of aqueous salt solutions by reverse osmosis, produced by a method which includes pre-treatment of the cellulose ester material in the form of an aqueous slurry with catalytic amounts of a strong acid prior to casting the cellulose ester material into a film. Method for producing the above described membrane, and method for desalination of salt water employing the above described membrane.

3,642,774

HIGHLY WATER SOLUBLE DEXTRIN PHOSPHATE

Ulrich Schobinger, Zug, Cla Christoffel, Waedenswil, and Kurt Berner, Pfaeffikon, Schwyz, Switzerland, assignors to Blattmann & Co., Waedenswil, Switzerland

No Drawing. Filed May 21, 1969, Ser. No. 826,707
Claims priority, application Switzerland, May 21, 1968, 7,533/68
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.5 R 12 Claims

Finely divided starch products classified as dextrin phosphate, having extremely light color, high cold water solubility and low and relatively stable viscosity in aqueous solution are provided by heating under low vacuum to 80–90° C., for 2 to 4 hours, a finely divided mixture of powdered starch and an aqueous solution of alkali metal phosphate and phosphoric acid having a pH between 2 and 5, such as a pH of about 3; then heating the mixture under high vacuum to and at a temperature between 125° and 140° C. for 1 to 3 hours to complete the dehydration and reaction of the material; and then cooling it with exclusion of oxygen, as under high vacuum. A water soluble aldehyde reacted in the mixture further enhances the stability of the product. The dextrin phosphate contains 0.3 to 3% of molecularly bound phosphorus. It is especially useful in mixtures with high molecular starch products and/or water soluble synthetic polymers for sizing textiles, and in mixtures with ketene dimers for surface sizing paper to inhibit ink penetration.

3,642,775

10-OXO-10,11-DIHYDRO-DIBENZAZEPINE DERIVATIVE

Walter Schindler, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,552
Claims priority, application Switzerland, Mar. 10, 1969, 3,583/69
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D 1 Claim

10 - oxo - 10,11-dihydro-5H-dibenz[b,f]azepine-5-carboxamide has a depressant effect on the central nervous system; the compound is the active ingredient of pharmaceutical compositions and is useful for the treatment of psychosomatic disturbances, of epilepsy and of trigeminal neuralgia.

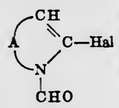
3,642,776

1-FORMYL-2-HALOGENO-AZACYCLOALKENES AND PROCESS FOR THEIR PRODUCTION

Verena R. Foitl, Dobbs Ferry, N.Y., and Walter Traber, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,165
Claims priority, application Switzerland, Jan. 22, 1968, 939/68
Int. Cl. C07d *27/16, 29/38, 41/08*
U.S. Cl. 260—239 BE 13 Claims

1-formyl-2-halogeno-azacycloalkenes of the formula



wherein A represents a straight-chained or branched alkylene radical of from 4 to 10 carbon atoms and Hal represents halogen, are disclosed as important intermediates for the production of amino acids such as lysine and agricultural chemicals, e.g. certain fungicides; a process for producing these intermediates in good yields from corresponding azacycloalkanones is also described.

3,642,777

3-ALKYL BENZAZONINES

William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Mar. 15, 1967, Ser. No. 623,239, now Patent No. 3,498,988, dated Mar. 3, 1970. Divided and this application Nov. 17, 1969, Ser. No. 877,426
Int. Cl. C07d *41/00, 99/04*
U.S. Cl. 260—239 D 5 Claims

The compounds and certain intermediates are useful as central nervous system stimulants and anti-inflammatories. They are prepared by converting an isoindolo[1,2-a]isoquinoline to its quaternary ammonium salt by treatment with a lower alkyl halide, e.g. methyl iodide, and reducing the salt by sodium in liquid ammonia to cleave the bond common to the five membered ring of the isoindolo moiety and six membered ring to the isoquinolino moiety, thus forming the nine membered N-heterocyclic ring of dibenz[c,f]azonine. For example, 2,3-dimethoxy-7-methyl-5,6,7,8-tetrahydrodibenz[c,f]azonine can thus be prepared from 2,3-dimethoxy-5,6,8,12b-tetrahydroisoindolo [1,2-a]isoquinoline.

3,642,778

BENZIMIDAZO[1,2-d][1,4]BENZODIAZEPIN-6(5H)-ONES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,643
Int. Cl. C07d *57/02*
U.S. Cl. 260—239.3 5 Claims

Benzimidazo[1,2-d][1,4]benzodiazepin - 6(5H) - ones substituted in the 2 and 5 positions and useful as antidepressants are disclosed. The compounds are prepared by reacting [1,2-d][1,4]benzodiazepin - 6(5H) - ones with compounds having a replaceable halogen atom.

3,642,779

INDOLO[1,2-d][1,4]BENZODIAZEPIN-6-ONES

Robert Louis Duncan, Jr., and Grover Cleveland Helsley, Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,574
Int. Cl. C07d *57/02*
U.S. Cl. 260—239.3 10 Claims

Novel indolo[1,2-d][1,4]benzodiazepin-6-ones having pharmacodynamic activity as antidepressants and anticonvulsants are disclosed. The compounds are prepared by acylation of 2-(2-aminophenyl)indoles with haloacetylhalides followed by cyclization under basic conditions. Compounds substituted in the 5-position are prepared by reaction with compounds having displaceable halogens and with isocyanates.

3,642,780

PREPARATION OF 9,11-DICHLORO STEROIDS

Francisco Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Republic of Panama

No Drawing. Filed Dec. 19, 1969, Ser. No. 886,768
Int. Cl. C07c *169/00*
U.S. Cl. 260—239.55 16 Claims

A process for preparing 9,11-dichloro steroids which involves the step of treating a 9α-unsubstituted-11β-hydroxy steroid with thionyl chloride and chlorine optionally in inert liquid reaction media containing a tertiary amine. The 9,11-dichloro steroid products are known, useful anti-inflammatory agents.

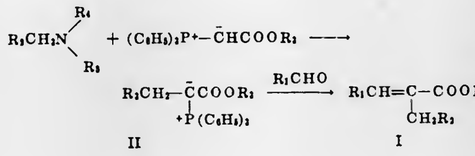
3,642,781

SUBSTITUTED ACRYLIC ACIDS AND PROCESS FOR THEIR PRODUCTION

Maximilian von Strandtmann, Rockway, Chester Puchalski, Dover, Marvin Cohen, New Milford, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Oct. 15, 1968, Ser. No. 767,854
Int. Cl. C07d *27/56*
U.S. Cl. 260—240 D 1 Claim

Substituted acrylic esters or acids of type I are prepared by reaction of phosphonium ylids with a Mannich base followed by a Wittig reaction of the resulting substituted phosphorane (II) with aldehydes.



In the above scheme R_1 is a substituted or an unsubstituted aromatic nucleus, alkylidene or aralkylidene group, R_2 is a hydroxylated aromatic or heteroaromatic nucleus, substituted or unsubstituted indole, methyl aryl or methyl heteroaryl ketone, R_3 is H or lower alkyl. R_4 and R_5 are lower alkyl or taken together with the nitrogen atom to which they are attached form a piperidine, pyrrolidine, morpholine or piperazine ring. Claimed are compounds of type I, reduction products thereof, intermediates of type II and the process involving alkylation of phosphonium ylids with Mannich bases. These compounds are useful as anti-inflammatory agents.

3,642,782

SCHIFF BASES OF PYRIDOXAL

Yasuo Fujimoto, Tokyo-to, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,282
Claims priority, application Japan, May 2, 1968, 43/29,121; May 25, 1968, 43/35,045; May 29, 1968, 43/35,991; June 1, 1968, 43/37,074; June 3, 1968, 43/37,541; June 4, 1968, 43/37,770
Int. Cl. C07d *49/06*
U.S. Cl. 260—240 G 11 Claims

Schiff bases prepared from pyridoxal and process for their preparation.

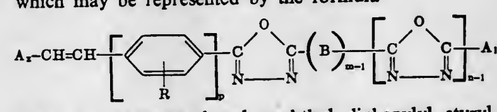
3,642,783

METHENE STILBENYL-1,3,4-OXDIAZOLE DERIVATIVES

Adolf Emil Siegrist, Basel, Peter Liechti, Binningen, Erwin Maeder, Aesch, and Leonardo Guglielmetti, Birsfelden, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 247,187, May 3, 1966. This application July 11, 1969, Ser. No. 841,106
Claims priority, application Switzerland, May 10, 1965, 6,468/65
Int. Cl. C09b *23/10*
U.S. Cl. 260—240 CA 13 Claims

New stilbenyl-1,3,4-oxdiazole compounds are provided which may be represented by the formula



where A_1 represents phenyl, naphthyl, diphenylyl, styryl, stilbenyl, thienyl, 2-benzoxazolyl or 2-naphthoxazolyl; B represents a divalent bridge member such as phenylene, furoylene or thienylene; A_2 represents phenyl, diphenylyl or naphthyl, R hydrogen, halogen, alkyl, phenyl, carboxyl, sulphonic acid group, hydroxyl or amino and their substitutive or functional derivatives. The terminal phenyl nuclei of the compounds of the above formula may contain 1 or 2 substituents R. The letters *m*, *n* and *p* represent 1 or 2.

The compounds of this invention are especially useful for optically brightening organic materials.

3,642,784

ALPHA,ALPHA,ALPHA-TRIFLUORO - 6 - SUBSTITUTED - 5 - NITRO-5-TOLUIC ACID, 5'-NITROFURFURYLIDENE HYDRAZIDE COMPOUNDS

Dean E. Welch, Harry S. Nakaue, and Robert D. Vatne, Charles City, Iowa, assignors to Salsbury Laboratories

No Drawing. Filed June 17, 1969, Ser. No. 841,182
Int. Cl. C07d *5/30*
U.S. Cl. 260—240 A 6 Claims

The compounds of this invention are alpha,alpha,alpha-trifluoro-6-substituted-5-nitro-m-toluic acid, 5' - nitrofurfurylidene hydrazides. These compounds possess useful animal growth-promoting properties and are useful in the control and treatment of blackhead in poultry.

3,642,785

INDENYL-3-ALIPHATIC AMINES

Tsung-Ying Shen, Westfield, and Richard B. Greenwald, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,194
Int. Cl. C07c *103/19*
U.S. Cl. 260—240 R 2 Claims

New substituted 1-alkylidenylindenyl-3-aliphatic amines and non-toxic pharmaceutically acceptable acid addition salts and hydrates. The substituted aliphatic amines described herein are useful as anti-inflammatory compounds and bactericides.

3,642,786

MEROCYANINE DYES

Donald W. Heseltine and Lewis L. Lincoln, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application May 29, 1967, Ser. No. 642,156, now Patent No. 3,519,430, dated July 7, 1970. Divided and this application Sept. 25, 1969, Ser. No. 870,856
Int. Cl. C09b *23/10*
U.S. Cl. 260—240.4 12 Claims

Merocyanine dyes derived from β,β-naphthothiazole have been found to be excellent spectral sensitizers for

silver halide emulsions. These dyes have substantially the same sensitization properties as known corresponding α-naphthothiazole dyes. However, the β,β-naphthothiazole nucleus does not require the use of a carcinogenic intermediate (β-naphthylamine) in its synthesis.

3,642,787

QUATERNIZED REACTIVE PHTHALOCYANINE DYESTUFFS CONTAINING TRIAZINE AND NICOTINIC ACID GROUPS

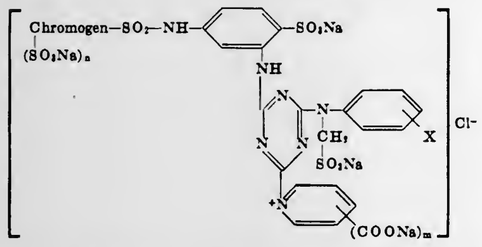
Sandro Ponzini, Saronno, Paolo Castelli, Monza, and Jean Stanislao Lawendel, Milan, Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

No Drawing. Original application June 5, 1968, Ser. No. 749,899. Divided and this application Mar. 19, 1970, Ser. No. 21,221

Int. Cl. C07d *55/22*

U.S. Cl. 260—242 **5 Claims**

Reactive triazine dyestuffs having the formula:



wherein chromogen is a phthalocyanine dyestuff residue, X is selected from the group consisting of H, CH_3, OCH_3 and OC_2H_5, *n* is an integer from 1 to 4, and *m* is 1 or 2, are effective for dyeing cellulose fibers. The dyestuffs may be absorbed and fixed onto the cellulose fibers by known hot or cold dyeing techniques. Intense dyeings having very good fastness to washing are obtained.

3,642,788

RACEMIC AND OPTICALLY ACTIVE 6H,7H-CIS-7-AMINO-DESACETYLCEPHALOSPORANIC ACID DERIVATIVES AND PROCESS

René Heymes, Romainville, and Gaston Amiard, Thorigny, France, assignors to Roussel-UCLAF, Paris, France

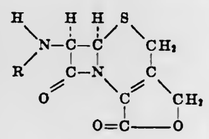
No Drawing. Filed Mar. 13, 1967, Ser. No. 622,440

Claims priority, application France, Mar. 15, 1966, 53,488; Sept. 30, 1966, 78,320

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **16 Claims**

This invention relates to a compound selected from the group consisting of (1) a racemic 6H,7H-cis-7-amino-desacetylcephalosporanic acid derivative of the formula



wherein R is selected from the group consisting of hydrogen and triphenylmethyl, (2) its optically active antipodes and (3) when R is hydrogen their acid addition salts. The invention also relates to the process of preparing these compounds. These compounds are intermediates useful in the preparation of cephalosporin antibiotics and the 7-thienylacetylamino derivative possesses an antibiotic activity.

3,642,789

INDENO[1,2-b]-1,4-OXAZINES

Herman Eldridge Faith and Donald L. Trepanier, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,285

Int. Cl. C07d *87/22*

U.S. Cl. 260—244 R **10 Claims**

Indeno[1,2-b]-1,4-oxazine compounds and their pharmaceutically-acceptable salts such as 4,4a,5,9b-tetrahydro-indeno[1,2-b]-1,4-oxazine-3(2H)-one, are prepared by the reaction of 2-amino-1-indanol with a substituted acetyl compound such as ethyl chloroacetate or α-bromophenylacetyl chloride. The compounds are useful as antidepressants as indicated by their antagonism of reserpine and their potentiation of amphetamine.

3,642,790

PROCESS FOR PREPARING 1,1'-DISUBSTITUTED-1,1'-DIHYDRO-BIPYRIDYLS

John Francis Cairns, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,045

Claims priority, application Great Britain, Apr. 2, 1968, 15,785/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—247.2 A **20 Claims**

A process for the production of a 1,1'-disubstituted-1,1'-dihydro-bipyridyl which comprises reacting the corresponding 1,1'-disubstituted-4,4'-(or 2,2'-) tetrahydro-bipyridyl with sulphur or an organic compound containing at least one —S—S— linkage.

3,642,791

MORPHOLINO-1-SUBSTITUTED-2(1H)-QUINAZOLINONES

Hans Ott, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,863

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 **12 Claims**

Disclosed are compounds of the class of morpholino-substituted 1 - substituted - 4-aryl-2(1H)-quinazolinones useful as pharmaceutical agents, e.g., as anti-inflammatory agents.

3,642,792

PYRIDAZINE DERIVATIVES

Elvio Bellasio, Albate, Como, and Giulio Maffii, Milan, Italy, assignors to Lepetit S.p.A., Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmaceutica, Milan, Italy

No Drawing. Filed Feb. 26, 1968, Ser. No. 707,950

Int. Cl. C07d *51/04*

U.S. Cl. 260—247.5 R **4 Claims**

Pyridazines, having in positions 3 and 6 respectively a hydrazino and an amino group variously substituted, are described. The compounds have pharmacological interest because of their hypotensive activity.

3,642,793

3-HYDROCARBON-4-TERTIARY AMINO METHYL SYDNONES

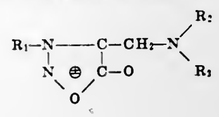
Yoshio Imashiro, Suita, and Katsutada Masuda, Ashiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,306

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.5 R **9 Claims**

Sydnone derivatives of the formula



and pharmaceutically acceptable salts thereof, wherein R_1 is a hydrocarbon radical of 1 to 6 C-atoms; each of R_2 and R_3 is C_1–C_5 alkyl, C_2–C_5 alkenyl or C_7–C_9 aralkyl; or where



can be a 5- to 7-membered heterocyclic ring, are analgesics of low toxicity in mammals.

3,642,794

OXOCYCLOPENTA[c]PYRROLES

Irwin J. Pachter, Woodbury, and Karl Schoen, Kew Gardens, N.Y., assignors to Endo Laboratories Inc., Garden City, N.Y.

No Drawing. Application Sept. 1, 1967, Ser. No. 664,942, which is a continuation-in-part of applications Ser. No. 575,303, Aug. 26, 1966, and Ser. No. 599,387, Dec. 6, 1966. Divided and this application July 15, 1968, Ser. No. 768,564

Int. Cl. C07d *27/54*

U.S. Cl. 260—247.5 B **4 Claims**

Process for preparing 2 - aminoalkylpyrrol - 3 - yl ketones and derivatives thereof, and oxocyclopenta[c]pyrroles thus produced. The process is carried out by quaternizing 2-dimethylamino- or 2-piperidino-alkyl-pyrrol-3-yl ketones or derivatives thereof, including those having bi- and tricyclic nuclei, and reacting the quaternary salts either with a base and an amine, or, alternatively, with an amine only.

3,642,795

TRIAZINYL-ANTHRAQUINONE DYESTUFFS

Paul Ulrich, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

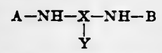
No Drawing. Filed Jan. 28, 1969, Ser. No. 794,765

Claims priority, application Switzerland, Feb. 19, 1968, 2,383/68; Nov. 19, 1968, 17,234/68

Int. Cl. C07d *55/20*

U.S. Cl. 260—249 **8 Claims**

Dyestuffs of the formula



wherein A and B each represent a vattable residue, X represents a triazine or pyrimidine residue and Y represents a benzthiazole, benzoxazole or benzimidazole residue which is bound in the 2-position via an NH— group, a sulphur or oxygen atom to a ring carbon atom of the residue X, are valuable vat dyestuffs distinguished by good properties of wet fastness and very good properties of light fastness.

3,642,796

PROCESS FOR THE PREPARATION OF QUINOXALINE-DI-N-OXIDE-ALDEHYDE

Florin Seng, Cologne, and Kurt Ley, Odenthal-Globusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

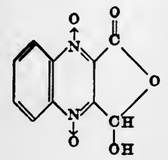
No Drawing. Filed June 16, 1970, Ser. No. 46,814

Claims priority, application Germany, July 10, 1969, P 19 34 887.9

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 **7 Claims**

Quinoxaline-di-N-oxide-aldehyde is produced by heating quinoxaline-di-N-oxide-hydroxy-lactone of the formula:



in an aqueous or organic diluent or in a mixture thereof to a temperature of from about 50° C. to about 150° C. until evolution of carbon dioxide has substantially ended.

3,642,797

4H-PYRIDO[1,2-a]PYRIMIDIN-4-ONES

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 640,359, May 22, 1967. This application June 10, 1968, Ser. No. 735,566

Int. Cl. C07d *51/56*

U.S. Cl. 260—251 A **7 Claims**

4H-pyrido[1,2-a]pyrimidin-4-ones, which can be substituted at position 6, 7, 8, or 9 of the pyridopyrimidine nucleus by a substituent selected from the group consisting of hydroxy, lower-alkanoylamino, lower alkylamino, benzyl, lower-alkoxy, lower - alkylmercapto, lower - alkylsulfinyl, lower-alkylsulfonyl and trihalomethyl. The compounds are used as anti-inflammatory agents.

3,642,798

CERTAIN 7-[β-OXY-γ-(N'-BENZYL-PIPERAZINO)-PROPYL-THEOPHYLLINES

Yoshihiro Nitta, Yoshiaki Ikeda, Toshiyuki Furue, and Takeshi Shimizu, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

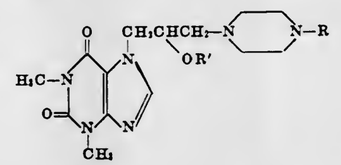
No Drawing. Continuation of application Ser. No. 510,099, Nov. 26, 1965. This application Oct. 3, 1967, Ser. No. 672,644

Claims priority, application Japan, Dec. 8, 1964, 39/68,651; May 14, 1965, 40/27,910; June 26, 1965, 40/37,851; Oct. 6, 1965, 40/60,767

Int. Cl. C07d *57/36*

U.S. Cl. 260—254 **21 Claims**

1. A compound selected from the group consisting of:



the acid-addition salts and quaternary ammonium salts thereof, wherein R is selected from the group consisting of benzyl, methylbenzyl, isopropylbenzyl, chlorobenzyl and phenylethyl, and R' is selected from the group consisting of hydrogen, acetyl and benzyl.

3,642,799

SULPHONIUM NAPHTHALIMIDES

Georges Raymond Henry Mingasson, Paris, Annick Marthe Suzanne Simone Domergue, Eaubonne, and Robert Frederic Michel Sureau, Enghien les Baines, France, assignors to Ugine Kuhlmann, Paris, France

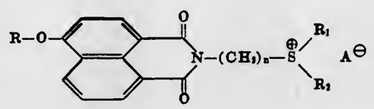
No Drawing. Filed July 29, 1969, Ser. No. 846,999

Claims priority, application France, Aug. 16, 1968, 161,965

Int. Cl. C07d *35/30*

U.S. Cl. 260—270 R **10 Claims**

This invention relates to new salts of sulphonium derivatives of naphthalimide. These salts have the general formula:



(1)

in which R and R_1 each represent the same or different lower alkyl radicals, preferably methyl or ethyl, R_2 represents a lower alkyl radical which may be substituted by a non-ionic and non-chromophoric substituent such as for example a lower alkoxy group, *n* represents a whole number greater than 1, preferably 2 or 3, and $A^{\ominus}$ represents a monovalent anion.

3,642,800

DIBENZO[de,g]QUINOLINE 9(10H) ONES

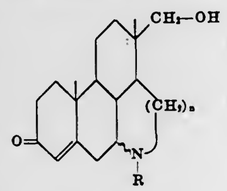
Norman A. Nelson, Galesburg, and Robert W. Jackson, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed July 28, 1969, Ser. No. 845,565

Int. Cl. C07d *33/02*

U.S. Cl. 260—286 R **5 Claims**

This invention relates to novel nitrogen containing ring-D seco steroid transformation products of the following formula and to processes for their preparation:



(XI)

wherein *n* is the whole number 2 or 3 and R is hydrogen or lower-alkyl, and the pharmacologically acceptable acid addition salts thereof. The compounds of the above structural Formula XI are central nervous system stimulants.

3,642,801

N-SUBSTITUTED 1-(PYRIDYL-2')-1,2,3,4-TETRAHYDRO-ISOQUINOLINES AND SALTS

Ernst Seeger, Wolfhard Engel, Helmut Teufel, Hans Machleidt, Heinrich Ueberberg, and Hanns Ihrig, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

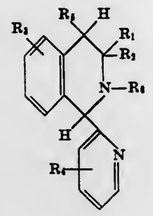
No Drawing. Filed Feb. 26, 1969, Ser. No. 802,657

Claims priority, application Germany, Feb. 27, 1968, P 16 95 922.1

Int. Cl. C07d *35/10*

U.S. Cl. 260—287 R **4 Claims**

Compounds of the formula



wherein

R_1 and R_2 are each alkyl of 1 to 5 carbon atoms,
R_3 is hydrogen, alkyl of 1 to 3 carbon atoms or halogen,
R_4 and R_5 are each hydrogen or alkyl of 1 to 3 carbon atoms, and
R_6 is methyl or formyl,

and their non-toxic, pharmacologically acceptable acid addition salts, useful as activators of the liver ferments in warm-blooded animals as indicated by increase in liver weight.

3,642,802

FURO[2,3-b]QUINOLINE COMPOUNDS

Hajime Fujimura, Kyoto-shi, Tadasu Tanaka, Oomiya-shi, Ikuo Iijima, Toda-shi, Michihiko Miyazaki, Kawaguchi-shi, and Masao Masaki, Tokyo-to, Japan, assignors to Tanabe Seiyaku Co., Ltd.

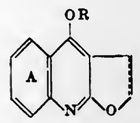
No Drawing. Filed Aug. 29, 1969, Ser. No. 854,311

Claims priority, application Japan, Sept. 4, 1968, 43/63,605, 43/63,606, 43/63,607, 43/63,608; Sept. 27, 1968, 43/70,057

Int. Cl. C07d *33/40*

U.S. Cl. 260—289 **5 Claims**

A furo[2,3-b]quinoline compounds of the formula:



wherein R is lower alkyl, the ring A is substituted with 1 to 4 halogen atoms and a double bond may be present at the place shown by a dotted line, i.e. between the 2 and 3-positions, which is useful as an antiinflammatory, analgesic and/or antipyretic agent.

3,642,803

3-(OMEGA-SUBSTITUTED ALKYL)-INDOLES

William J. Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 504,087, Oct. 23, 1965. This application June 13, 1966, Ser. No. 556,879

Int. Cl. C07d *29/38*

U.S. Cl. 260—293.61 **24 Claims**

3-(omega-substituted alkyl)-indoles are disclosed which are useful in ameliorating the tremors of Parkinsonism. The compounds are prepared by metal hydride reduction of the precursor indole glyoxyloyl compounds.

3,642,804

ALKYLENEPIPERIDINOTHIO BENZOTHIAZOLES

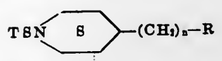
John Joseph D'Amico, Akron, and Darrell Dexter Mullins, Norton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,635

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.57 **5 Claims**

Sulfenamides of the formula



wherein R is aryl, —NHST, or 1-R'-4-piperidinyl where R' is lower alkyl, lower hydroxyalkyl, or —ST, and T is 2-benzothiazolyl or substituted 2-benzothiazolyl where the substituents are chloro, bromo, fluoro, iodo, hydroxy, nitro, alkyl, or lower alkoxy, and *n* is an integer of one to three. The compounds are biological toxicants and also accelerators for the vulcanization of sulfur-vulcanizable diene rubber.

3,642,805

CERTAIN ARALKYL DERIVATIVES OF N-ACYLATED HYDROXYLAMINES

Lajos Kisfaludy, Agnes Patty nee Lukats, Lajos Dancsi, Livio Dömök nee Kis-Vigh, Egon Karpati, and Laszlo Szporny, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyra Rt, Budapest, Hungary

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,822

Claims priority, application Hungary, Mar. 30, 1968, RI-343

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 AM **6 Claims**

New N-acylated hydroxylamine derivatives of the formula

Ac—NH—O—X

wherein Ac is an acyl group of a carboxylic acid containing one or more basic nitrogen atoms with the exception of the aliphatic amino acids leucine, valine and alanine and X is an aralkyl group unsubstituted or substituted by halogen, lower alkyl, lower alkoxy or the nitro group, and the pharmaceutically acceptable acid addition salts thereof, having hypotensive and sedative effect. The new compounds are prepared by N-acylating an O-substituted hydroxylamine of the formula H_2N—OX with the corresponding amino acid or a reactive derivative thereof or by O-aralkylating N-acylated hydroxylamines

Ac—NH—OH

with an aralkyl halide Hal—X.

3,642,806

5-PROPARGYLOXYMETHYL-2-SUBSTITUTED OXAZOLIDINONES

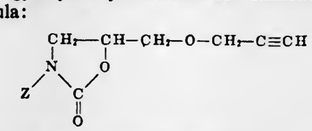
Claude P. Fauran and Guy M. Raynaud, Paris, Claude J. Gouret, Meudon, and Colette A. Douzon, Paris, France, assignors to Delalande S.A., Courbevole, Hauts-de-Seine, France

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,826

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 CA **3 Claims**

5-propargyloxymethyl-2-substituted oxazolidinones of the formula:



wherein Z represents a heterocyclic radical,

are prepared by cyclising, in an alkaline medium, the corresponding 2-N-substituted carbamoyloxy-1-propargyloxy-3-chloro propanes. The compounds have sedative, myorelaxant, analgesic, antiinflammatory and hypotensive properties.

3,642,807

CERTAIN 1-/DILOWER-ALKYL AMINO-LOWER-ALKYL/-2-PHENYL INDOLIZINES AND QUATERNARY SALTS THEREOF

Lewis A. Walter, Madison, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 854,015, Aug. 11, 1969, which is a continuation of application Ser. No. 571,426, Aug. 10, 1966. This application June 18, 1970, Ser. No. 47,636

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 B **8 Claims**

The tangible embodiments of this invention involve the tertiary amino-1-diloweralkylamino lower alkyl-2-phenyl indolizines. These compounds are of pharmacological importance in that they exert valuable influence on the central nervous system of animals, varying from depressants to stimulants, depending on the embodiment under test, the dose administered and the animal species used. These amines may be administered orally as the free base form or in the form of their non-toxic acid addition salt.

The tertiary amines of this invention are intermediates for preparing the corresponding lower alkyl or phenyl lower alkyl quaternary salts wherein the latter exhibit antimicrobial action against a broad spectrum of organisms in standard vitro tests. The quaternaries, additionally are effective against the mouse pinworm *Syphacia obvelata*, and are, therefore, suited for disinfection of cages, laboratory, equipment, floors and tables.

3,642,808

(DIBENZO[a,d]-CYCLOHEPTENE-5'-YLIDENE)-1-HYDROXY PIPERIDINE

Herbert Schroter, Reinach, and Daniel A. Prins, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application July 6, 1967, Ser. No. 662,234, which is a division of application Ser. No. 452,872, May 3, 1965, now Patent No. 3,358,026. Divided and this application Mar. 2, 1970, Ser. No. 15,909

Claims priority, application Switzerland, May 6, 1964, 5,963/64

Int. Cl. C07d *29/16*

U.S. Cl. 260—293.62 **4 Claims**

4 - (5'H-dibenzo[a,d]cyclohepten-5'-ylidene) - 1 - hydroxy-piperidine, the 10',11'-dihydro derivative thereof, as well as their pharmaceutically acceptable acid addition salts, have serotonin antagonistic activity.

3,642,809

METHOD FOR PRODUCING 2,3,5,6-TETRA HYDROIMIDAZO[2,1-b]THIAZOLES

Milon Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 493,231, Oct. 5, 1965. This application Mar. 27, 1968, Ser. No. 716,353

Int. Cl. C07d *91/42, 99/10*

U.S. Cl. 260—306.7 **3 Claims**

The preparation of phenyl tetrahydroimidazo[2,1-b] thiazoles from phenyl haloethyliminothiazolidines by cyclization with alkali, is described. These compounds are useful as anthelmintics.

3,642,810

PENICILLANIC ACID ESTERS

Peter Bamberg, Enhorna, Germany, and Bertil Åke Ekström, Berndt Olof Harald Sjöberg, and Lars Sölve Nathorst-Westfelt, Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

No Drawing. Filed July 2, 1968, Ser. No. 741,839

Claims priority, application Great Britain, July 21, 1967, 33,734/67; Mar. 18, 1968, 13,102/68

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **9 Claims**

A new class of compounds is disclosed which compounds are nitro- or halogen-substituted benzyl or monocarbocyclic arylsulphonylethyl esters of 6-aminopenicillanic acid. Methods for their preparation and conversion into penicillins are described.

3,642,811

PROCESS FOR THE PREPARATION OF 3-AMINO-4-BROMO-1,2,5-THIADIAZOLE

Hans-Klaus Vorreither, Werner Obendorf, Kurt Menzl, and Harald Hofer, Linz (Danube), Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,235

Claims priority, application Austria, Apr. 3, 1968, A 3,222/68

Int. Cl. C07d *91/68*

U.S. Cl. 260—306.8 D **3 Claims**

3-amino-4-bromo-1,2,5-thiadiazole is prepared by reacting an alkalimetal salt of 3-amino-1,2,5-thiadiazole-(4)-carboxylic acid in aqueous suspension with bromine at a temperature below 65° C.

3,642,812
HALOGENOPHENYL-ISOXAZOLYL-ALKANOIC ACID DERIVATIVES

Peter Fulton Southern, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 27, 1968, Ser. No. 732,034
Claims priority, application Great Britain, June 15, 1967, 27,731/67
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **5 Claims**

This disclosure relates to halogenophenyl-isoxazole-alkanoic acids and derivatives which posses anti-inflammatory, analgesic and antipyretic activity. A representative of the compounds is 5-(4-chlorophenyl)isoxazol-3-yl-2-propionic acid.

3,642,813
1,2,3-TRIAZOLES AS UV ABSORBERS

Rudolf Kirchmayr, Binningen, Hans-Jörg Heller, Riehen, and Jean Rody, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,554
Claims priority, application Switzerland, Feb. 7, 1967, 1,893/67
Int. Cl. C07d *55/02, 99/02, 99/04*
U.S. Cl. 260—308 A **6 Claims**

1,2,3-triazole derivatives (so-called "v-triazoles") are described which are substituted in 1-position by an o-hydroxyphenyl or o-hydroxynaphthyl radical and which are useful as ultraviolet light-absorbing agents in the stabilization of organic materials especially synthetic polymeric materials which deteriorate under prolonged exposure to ultraviolet radiation; methods for using these compounds as UV-absorbing components, and organic materials stabilized therewith are also disclosed.

3,642,814
SUBSTITUTED TETRAZOLOISOINDOLES

William J. Houlihan, Mountain Lakes, and Marcel K. Eberle, Madison, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,285
Int. Cl. C07d *57/26, 99/02*
U.S. Cl. 260—308 D **8 Claims**

Substituted tetrazoloisoindoles, e.g., 5-(p-chlorophenyl)-5-methyl-5H-tetrazolo[5,1-a]isoindoles, are useful as CNS depressants.

3,642,815
PROCESS FOR PREPARING COPPER PHTHALOCYANINE

Ernst Spietschka, Oberauroff, and Walter Deucker, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,187
Claims priority, application Germany, Nov. 30, 1967, P 16 44 679.0
Int. Cl. C09b *47/04*
U.S. Cl. 260—314.5 **2 Claims**

Improved process for the preparation of copper phthalocyanine by heating phthalodinitrile with copper-I-chloride, the improvement consisting of carrying out the reaction in the presence of urea.

3,642,816
3-ACETAMIDO-1,2,3,5 TETRAHYDROCARBAZOLE

Aram Mooradian, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Aug. 10, 1967, Ser. No. 659,606
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 **1 Claim**

3 - substituted -amino - 1,2,3,4 - tetrahydrocarbazoles are prepared by reacting appropriate 4-aminocyclohexanones with a phenyl hydrazine or by reacting a 3-sulfonyloxy-1,2,3,4-tetrahydrocarbazole with an appropriate amine. These compounds have useful antihistaminic or psychotropic activities, or both.

3,642,817
PERFLUOROALKYLSULFONAMIDOCARBAZOLES

Joseph Kenneth Harrington, Edina, Donald C. Kvam, North Oaks, Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 588,338, Oct. 21 1966. This application June 30, 1969, Ser. No. 837,900
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 **2 Claims**

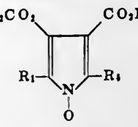
N-substituted perfluoroalkanesulfonamides in which the sulfonamide nitrogen substituent is selected from the group consisting of benzothiazolyl, carbazolyl and (2-aminothiazolyl) phenyl. Also included are processes for the preparation and use of said compounds. The compounds are active as anti-microbial agents and polymerization catalysts.

3,642,818
FREE RADICALS

André Rassat and René Ramasseul, Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,794
Claims priority, application France, Apr. 4, 1968, 146,947
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.3 **5 Claims**

New free radicals having the formula:



in which R_1, R_2, R_3 and R_4 are C_1–C_4 alkyl radicals (methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl, and tertbutyl) may be prepared from an alkyl alkanoylacetate. The alkanoylacetate is dimerized or reacted with another alkyl alkoylacetate to give dialkyl (α,β-dialkanoyl) succinate which, after cyclisation with hydroxylamine gives 1-hydroxy-2,5-dialkyl-3,4-di (alkoxycarbonyl) pyrrole which is oxidised to 1-oxyl-2,5-dialkyl-3,4-di (alkoxycarbonyl) pyrrole among the radicals of the above group, 1-oxyl-2,5-diterbutyl-3,4-diethoxycarbonyl pyrrole is particularly suitable for use in nuclear magnetic reasonance magnetometry.

3,642,819
OXOCYCLOHEPTA[c]PYRROLES

Irwin J. Pachter, 42 Juneau Blvd., Woodbury, N.Y. 11797, and Karl Schoen, 83—36 Beverly Road, Kew Gardens, N.Y. 11415

No Drawing. Application Sept. 1, 1967, Ser. No. 664,942, which is a continuation-in-part of applications Ser. No. 575,303, Aug. 26, 1966, and Ser. No. 599,387, Dec. 6, 1966. Divided and this application July 15, 1968, Ser. No. 768,567
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.5 J **3 Claims**

Process for preparing 2-aminoalkyl pyrrol-3-yl ketones and derivatives thereof, and oxocyclohepta[c]pyrroles thus produced. The process is carried out by quaternizing 2-dimethylamino- or 2 - piperidino - alkyl-pyrrol - 3 - yl ketones or derivatives thereof, including those having bi- and tricyclic nuclei, and reacting the quaternary salts either with a base and an amine, or, alternatively, with an amine only.

3,642,820
4,5-DIHYDROPYRROLO[3,2,1-jk][1,4] BEZODIAZEPINES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,692
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.5 B **10 Claims**

4,5 - dihydropyrrolo[3,2,1 - jk][1,4]benzodiazepines, processes for preparing the same and novel intermediates prepared by said processes. The novel benzodiazepines exhibit tranquilizing and anticonvulsant activity in animals.

3,642,821
TETRAHYDROPYRROLOBENZODIAZEPINES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,693
Int. Cl. C07d *53/02*
U.S. Cl. 260—326.9 **16 Claims**

4,5,6,7 - tetrahydropyrrolo[3,2,1 - jk][1,4]benzodiazepines, 4,5,6,7 - tetrahydropyrrolo[1,2,3 - ef][1,5]benzodiazepines, 4,5 - dihydropyrrolo[3,2,1 - jk][1,4]benzodiazepin - 7(6H) - ones, 4,5-dihydropyrrolo[1,2,3 - ef][1,5] benzodiazepin-6(7H)-ones and processes for preparing the same. Said compounds exhibit tranquilizing and anticonvulsant activity.

3,642,822
HEXAHYDROPYRROLOBENZODIAZEPINES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,720
Int. Cl. C07d *53/02*
U.S. Cl. 260—326.9 **8 Claims**

1,2,4,5,6,7 - Hexahydropyrrolo[3,2,1-jk][1,4]benzodiazepines, 1,2,4,5,6,7 - hexahydropyrrolo[1,2,3-ef][1,5] benzodiazepines, processes for preparing the same and intermediates used to prepare said benzodiazepines. The benzodiazepines have central nervous system stimulant and depressant activity.

3,642,823
AMINODIPHENYL-INDOLYL-METHANE DYESTUFFS AND DYEING AND PRINTING OF POLYMERS AND COPOLYMERS OF ACRYLONITRILE OR ASYMMETRIC DICYANOETHYLENE OR OF ACID-MODIFIED AROMATIC POLYESTERS

Roderich Raue and Hans Peter Kühlthau, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 1, 1967, Ser. No. 657,500
Claims priority, application Germany, Aug. 3, 1966, F 49,865, F 49,866; May 22, 1967, F 52,475
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **13 Claims**

This invention relates to aminodiphenyl-indolylmethane dyestuffs being free of sulphonic acid and carboxylic acid groups. These dyestuffs can be used in the dyeing and printing of certain polymeric products.

3,642,824
N,N',N''-TRICHLOROSUCCINIMIDINE

Clifford L. Coon, Fremont, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,385
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.85 **1 Claim**

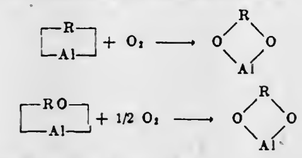
N,N',N''-trichlorosuccinimidine is prepared by the reaction of succinamidine with an excess of hypochlorite under acid conditions, said compound having a high content of available chlorine and being useful as a chlorinating agent, bleach and disinfectant.

3,642,825
HETEROCYCLIC ORGANIC ALUMINUM COMPOUNDS AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 821,954 and Ser. No. 822,046, both May 5, 1969. This application Dec. 31, 1969, Ser. No. 889,741
Int. Cl. C07f *5/06*
U.S. Cl. 260—340.6 **20 Claims**

Heterocyclic organic aluminum compounds in which an aluminum atom and two adjacent oxygen atoms are part of a ring system are described. They are prepared by either or both of the following oxidation processes:



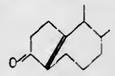
On hydrolysis, diols are liberated.

3,642,826
3-OXO-A,19-BIS-NOR-HOMO-STEROID-5(10)-ENES AND PROCESS FOR THEIR MANUFACTURE

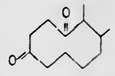
Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,259
Claims priority, application Switzerland, Dec. 18, 1967, 17,732/67
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **9 Claims**

Steroid compounds of the partial formula



especially of the androstane series. They are obtained by reacting a compound of the partial formula



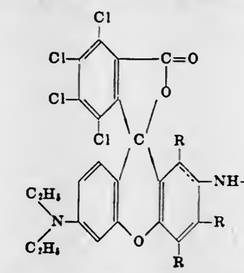
or a tautomer thereof with a strong base. Use: anabolics or ovulation inhibitors.

3,642,827
TETRACHLORINATED CHROMOGENIC COMPOUNDS

Sheldon Farber and Arthur John Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,642
Int. Cl. C07d *5/34*
U.S. Cl. 260—343.3 **2 Claims**

A chromogenic material of normally colorless form is disclosed having the structural formula:

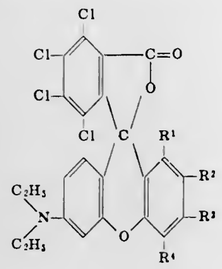


wherein R is hydrogen, an alkyl radical having 1 to 4 carbon atoms per R group or chlorine and R^1 is hydrogen,

an alkyl radical having 1 to 4 carbon atoms per R^1 group or phenyl.

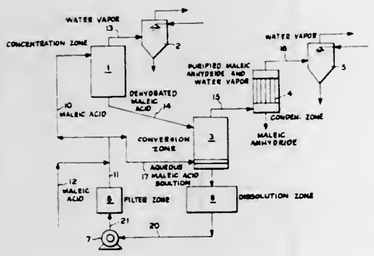
3,642,828
ALKYL OR HALO SUBSTITUTED TETRAHALOFLUORANS
Sheldon Farber and Arthur John Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Nov. 3, 1970, Ser. No. 86,641
Int. Cl. C07d *5/34*
U.S. Cl. 260—343.3 **2 Claims**

A chromogenic material of normally colorless form is disclosed having the structural formula:



wherein each R^1, R^2, R^3 or R^4 is hydrogen, an alkyl radical having 1 to 4 carbon atoms or chlorine and at least one of said R groups is an alkyl radical or chlorine.

3,642,829
CONTINUOUS PROCESS FOR THE PREPARATION OF MALEIC ANHYDRIDE FROM AN AQUEOUS SOLUTION OF MALEIC ACID BY DISTILLATION
Ernest Weyens, Berchem-Ste.-Agathe, Belgium, assignor to UCB, Société Anonyme, Saint-Gilles-lez-Brussels, Belgium
Filed Jan. 27, 1970, Ser. No. 6,224
Claims priority, application Great Britain, Jan. 30, 1969, 5,221/69
Int. Cl. B01d *3/34;* **C07c** *51/56, 57/14*
U.S. Cl. 260—346.8 **12 Claims**



Continuous process for the preparation of maleic anhydride which comprises:

(a) concentrating a maleic acid solution (e.g. from washing effluent of catalytic oxidation of benzene) at 100–150° C. and 400–760 mm. Hg;

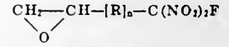
(b) converting the dehydrated maleic acid from (a) at 150–200° C. and 40–300 mm. Hg into a liquid phase of impure maleic acid and a purified gaseous phase of maleic anhydride and water vapour;

(c) treating the liquid phase from (b) with maleic acid, filtering off the impurities including any fumaric acid and either recycling the purified maleic acid filtrate partly to (a) and partly to (b) or removing said filtrate from the system;

(d) condensing the gaseous phase from (b) at a temperature above the dewpoint of water giving substantially pure maleic anhydride and washing the residual vapour with water and eventually recycling the solution containing maleic acid to (a).

3,642,830
DINITROFLUOROALKYL EPOXIDES
Milton B. Frankel, Tarzana, Michael G. Warner, Camarillo, and Edward F. Witucki, Sepulveda, Calif., assignors to North American Rockwell Corporation
No Drawing. Continuation-in-part of application Ser. No. 634,023, Apr. 13, 1967. This application Aug. 26, 1968, Ser. No. 755,468
Int. Cl. C07d *1/00*
U.S. Cl. 260—348 **4 Claims**

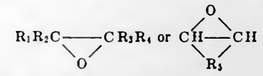
Dinitrofluoroalkyl epoxides having the general formula:



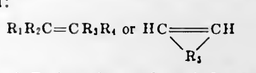
wherein R is a lower alkylene radical containing from 1 through 5 carbon atoms and *n* is 0 or 1.

3,642,831
HYDROCARBYL EPOXIDE MANUFACTURE
Richard D. Smetana, Beacon, Harry Chafetz, Poughkeepsie, and Alfred Arkell and Matthew A. McMahon, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,346
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 L **13 Claims**

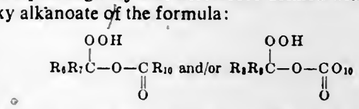
A method of producing an epoxide of the formula:



where R_1, R_2, R_3 and R_4 are hydrogen or hydrocarbyl and R_5 is α,Ω-alkylene, comprising contacting a first olefin of the formula:



where R_1 through R_5 is as heretofore defined with a hydroperoxy alkanoate of the formula:



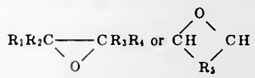
where R_6, R_7, R_8 and R_9 are hydrogen or hydrocarbyl and R_{10} is alkyl of from 1 to 20 carbons in the presence of a molybdenum, tungsten or vanadium epoxide producing catalyst, said alkanoate prepared by contacting with ozone a mixture of a second olefin of the formula:



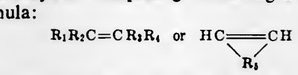
where R_6, R_7, R_8 and R_9 are as heretofore defined with an alkanoic acid of the formula $R_{10}COOH$ where R_{10} is as heretofore defined.

3,642,832
EPOXIDE PREPARATION
Richard Denis Smetana, Beacon, Harry Chafetz, Poughkeepsie, and Alfred Arkell, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,347
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 L **5 Claims**

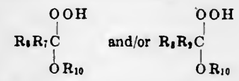
A method of producing an epoxide of the formula:



where R_1, R_2, R_3 and R_4 are hydrogen or hydrocarbyl and R_5 is α,Ω-alkylene comprising contacting a first olefin of the formula:



where R_1 through R_5 is as heretofore defined with an alkoxyhydroperoxide of the formula:



where R_6, R_7, R_8 and R_9 are hydrogen or hydrocarbyl in the presence of a molybdenum, tungsten or vanadium epoxide producing catalyst, said hydroperoxide prepared by contacting a mixture of a second olefin of the formula:

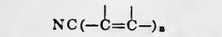
where R_6 R_7, R_8 and R_9 are as heretofore defined, and an alkanol of the formula $R_{10}OH$ where R_{10} is alkyl with ozone.

3,642,833
OLEFIN EPOXIDATION
Harald Wulff, Alameda, and Peter Haynes, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,921
Int. Cl. C07d *1/08*
U.S. Cl. 260—348.5 L **11 Claims**

Olefin oxides are produced by the reaction of an organic hydroperoxide and an olefinically unsaturated compound in the presence of an inorganic siliceous solid having a high surface-to-mass ratio and having a surface of silanol groups as catalyst.

3,642,834
PREPARATION OF OLEFIN OXIDE
Yoshiaki Suzuki, Tokyo, and Akira Yamura and Kenichiro Fukasawa, Kanagawa-ken, Japan, assignors to Mitsubishi Chemical Industries Limited
No Drawing. Filed Aug. 7, 1969, Ser. No. 848,348
Claims priority, application Japan, Aug. 23, 1968, 43/60,385; Sept. 14, 1968, 43/65,947
Int. Cl. C07d *1/08*
U.S. Cl. 260—348.5 V **10 Claims**

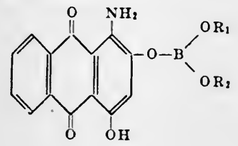
An olefin is oxidized with molecular oxygen in a liquid reaction medium. The oxidation is conducted in the presence of an arsenic catalyst. A polycyano compound having the formula



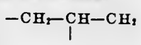
CN may be used in conjunction with the arsenic catalyst. The olefin oxide yield is greatly increased while the decomposition of the reaction medium is greatly decreased.

3,642,835
PROCESS FOR THE PRODUCTION OF ANTHRAQUINONE DYESTUFFS
Volker Hederich and Gunter Gehrke, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,205
Claims priority, application Germany, Dec. 5, 1967, P 16 44 621.2
Int. Cl. C09b *1/54*
U.S. Cl. 260—376 **3 Claims**

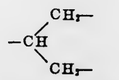
Synthetic fiber materials, particularly polyesters, may be dyed and printed with anthraquinone dyestuffs corresponding to the formula:



in which B stands for the radical



or for the radical



wherein R_1 stands for hydrogen or for an optionally substituted aryl radical, and R_2 stands for an optionally substituted aryl radical or for an optionally substituted hydroaromatic radical.

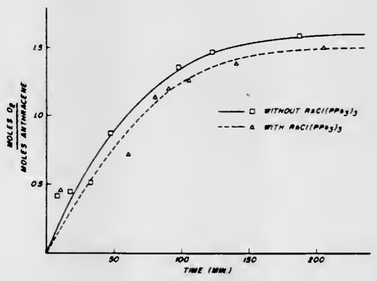
3,642,836
N-[2-(2-METHYL-5-NITRO-1-IMIDAZOLYL) ETHYL]IMIDES
John W. Cusic, Skokie, and Ernest F. Levon, Evanston, Ill., assignors to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,225
Int. Cl. C07d *29/20*
U.S. Cl. 260—281 **3 Claims**

Imides having a nitroimidazolyethyl group as a N-substituent are described herein. They are anti-bacterial and anti-protozoal agents. The compounds are prepared by the reaction of the appropriate imide with the chloroethylimidazole or with the tosylate of the corresponding hydroxyethyl compound.

3,642,837
ANTHRAQUINONE COMPOUNDS
Colin William Greenhalgh and David Francis Newton, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Mar. 6, 1969, Ser. No. 805,027
Claims priority, application Great Britain, Feb. 27, 1968, 14,270/68
Int. Cl. C09b *1/22, 1/32, 1/50*
U.S. Cl. 260—381 **4 Claims**

Anthraquinone compounds which contain one or two chloromethyl or bromomethyl groups each of which is in ortho position to an amino group which is attached to an α-position of the anthraquinone nucleus which may contain additional substituents, the preparation of the said compounds from the corresponding hydroxymethyl derivatives, and the use of the said compounds as intermediates in the manufacture of dyestuffs.

3,642,838
UNCATALYZED OXIDATION OF ANTHRACENE TO 9,10-ANTHRAQUINONE BY MOLECULAR OXYGEN
Fausto Calderazzo, Pescia, Italy, assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 30, 1969, Ser. No. 820,514
Int. Cl. C07c *49/68*
U.S. Cl. 260—385 **6 Claims**



Anthracene is oxidized to anthraquinone by molecular oxygen in a medium of acetone, or acetic acid, or acetic

anhydride, or mixtures of the acid and anhydride. The oxygen is under pressure, for example 70 to 100 atmospheres, and the temperature is elevated, preferably between 70° and 105° C. No oxidation catalyst is needed.

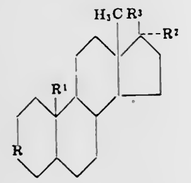
3,642,839

19-HOMO-STEROIDS

Andor Furst, Basel, Marcel Muller, Frenkendorf, and Peter Muller, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,570
Claims priority, application Switzerland, Jan. 16, 1969, 637/69
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **25 Claims**

The invention comprises 19-homo-steroids of the formula



Formula I

having unsaturated A and/or B rings, wherein R is a keto, alkoxy, hydroxy or acyloxy; R^1 is lower alkyl having at least 2 carbon atoms or lower alken-1'-yl; R^2 is halo-lower-alkenyl or halo-lower-alkynyl; and R^3 is hydroxy, acyloxy or alkoxy which compounds are useful as antigonadotrophic agents.

3,642,840

PROCESS FOR THE CONVERSION OF 3-ENOL ETHERS OF 3-KETO-Δ^4-STEROIDS UNSUBSTITUTED AT C_4 AND C_6 TO THE CORRESPONDING 3-KETO-Δ^4-6-METHYLENE COMPOUNDS

Verlan H. van Rheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,218
Int. Cl. C07c *167/00*
U.S. Cl. 260—397.1 **20 Claims**

This invention relates to novel and general processes for the conversion of the 3-enol ethers (I) of 3-keto-Δ^4-steroids, unsubstituted at the 4 and 6 positions, of the androstane, 19-norandrostane, pregnane, 19-norpregnane, stigmastane and spirostane series into the corresponding 3-keto-Δ^4-6β-(N,N-disubstituted) aminomethyl derivatives (II), and thence to their 6-methylene counterparts (III). The compounds of Formula III have anabolic, androgenic, anti-fertility, anti-inflammatory and estrogenic activities, and are consequently useful in treating mammals, including humans, birds and other animals in those conditions and/or ailments where such activities are desired. For example, in preventing pregnancy, increasing pelt size in female mink, treating arthritis, osteoporosis, etc. The compounds of Formula III are additionally useful as intermediates in the preparation, by known methods, of the physiologically active and therapeutically useful 6-methyl steroids, such as medroxyprogesterone acetate (6α-methyl-17α-hydroxy-4-pregnene-3,20-dione - 17 - acetate), dimethisterone [6α-methyl - 17β - hydroxy - 17α - (1-propynyl)-4-androsten-3-one], methylprednisolone (6α-methyl-11β,17α,21-trihydroxy-1,4-pregnadiene-3,20 - dione), fluoromethylone (6α-methyl-9α-fluoro-11β,17α-dihydroxy-1,4-pregnadiene-3,20-dione), etc.

3,642,841

17α-SUBSTITUTED 13 - ALKYL - 17β - HYDROXYGONA-4,9-DIEN-3-ONES AND 17β-ALKANOATES

Thomas B. Windholz, Westfield, Arthur A. Patchett, Metuchen, and John Fried, Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Oct. 1, 1962, Ser. No. 227,596
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **2 Claims**

Described are 17-hydroxygona-4,9-dien-3-ones their 17α-substitution products, esters thereof and process of preparation. The steroid final products possess anabolic and/or progestational activity.

3,642,842

SEMICARBAZONES AND THIOSEMICARBAZONES OF 17α-SUBSTITUTED 3-KETO-STEROIDS

Albert J. Begany, Perkiomenville, Kurt W. Ledig, Philadelphia, Donald W. Oliver, West Chester, and Gerhard R. Wendt, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,373
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **11 Claims**

13-alkyl-17α-substituted - 17 - hydroxygon-4-en-3-one, semicarbazones and thiosemicarbazones, $\Delta^{4,6,8(14),9 \text{ and } 11}$ dehydro analogs, and D-homo analogs thereof, optionally substituted by methyl at positions 1, 2, 4, 6, 7 and 11, alkanoyl at position 17, by alkyl, aryl, arylalkyl and alkylaryl in the semicarbazone or thiosemicarbazone group, and by a 17α-alkyl group or by methyl or halogen in a 17α-ethynyl group (I) are provided by condensing the corresponding 3-ketosteroid (II) with the corresponding semicarbazide or thiosemicarbazide (III). Compounds (I) are pharmacologically active in warm blooded lower animals as bronchodilators and as anti-inflammatory agents.

3,642,843

METHOD OF PRODUCING UNSATURATED NITRILE AND ESTER COMPOUNDS

Joseph W. Nemec, Rydal, and Donald R. Hoffer, Glenside, Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 183,753, Mar. 30, 1962. This application Sept. 26, 1966, Ser. No. 581,726
Int. Cl. C07c *64/52, 121/02, 121/30*
U.S. Cl. 260—405.5 **4 Claims**

A method of producing unsaturated compounds which comprises heating certain nitroalkanes and substituted nitroalkanes at about 200° to 240° C. in a batch process or at about 300° to 600° C. in a continuous vapor phase process.

3,642,844

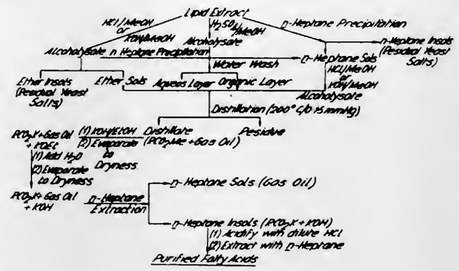
METHOD OF PREPARING CARBOXYLIC ACIDS AND THEIR ESTERS FROM LIPID EXTRACTS

Alan David Forbes, Hampton Wick, Surrey, England, assignor to The British Petroleum Company Limited, London, England

Filed Aug. 6, 1969, Ser. No. 847,942
Claims priority, application Great Britain, Aug. 30, 1968, 41,539/68
Int. Cl. C11c *1/04, 3/04*
U.S. Cl. 260—410.9 R **7 Claims**

Fatty acids can be prepared from the lipid extracts obtained by the solvent extraction of the yeast grown on a hydrocarbon substrate by separating the esters of the fatty acids contaminated with hydrocarbon from the rest

of the lipid extract; saponifying the esters, solvent extracting the hydrocarbons and hydrolysing the saponified esters.



3,642,845

HYDROCARBYLENE BIS(TRIALKYL TIN) COMPOUNDS

Hugh E. Ramsden, Scotch Plains, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Jan. 2, 1969, Ser. No. 788,640
Int. Cl. C07f *7/22;* **A01n** *9/00*
U.S. Cl. 260—429.7 **5 Claims**

Bis-trialkyltin compounds of the formula

$$(R)_3SnR'Sn(R)_3$$

where R is an alkyl group such as CH_3 or C_2H_5, and R' is a diradical selected from the group of precursor complexes with magnesium e.g.,



resulting from the reaction of magnesium with: (1) conjugated diolefins, (2) mixtures of conjugated diolefins, (3) mixtures of conjugated diolefins and olefins, (4) mixtures of conjugated diolefins and condensed ring aromatic hydrocarbons, (5) mixtures of conjugated diolefins and cyclic-enes, (6) styrenes, (7) mixtures of styrenes and olefins, (8) mixtures of styrenes and condensed ring aromatic hydrocarbons, and (9) condensed ring hydrocarbons, etc., and formulations of such compounds with inert diluents are effective systemic pesticides against lepidopterus insect larvae, such as, e.g., Southern army worm, cotton boll worm, etc.

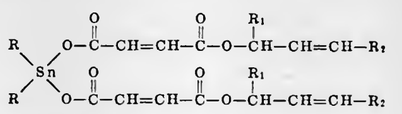
3,642,846

ORGANOTIN BIS(MONOALKENYL MALEATES)

Samuel Hoch, Brooklyn, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,901
Int. Cl. C07f *7/22;* **C08f** *45/56*
U.S. Cl. 260—429.7 **4 Claims**

Polyvinyl chloride resin compositions that contain as stabilizer an organotin compound having the structural formula



wherein each R represents an alkyl group having from 4 to 8 carbon atoms or a phenyl group; each R_1 represents hydrogen or an alkyl group having from 1 to 4 carbon atoms; and each R_2 represents methyl or phenyl are characterized by excellent heat stability, resistance to degradation resulting from exposure to ultraviolet radiation, color, and clarity. Illustrative of these organotin compounds is di-n-butyltin bis (monobutenyl maleate).

3,642,847

COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 585,253, Oct. 10, 1966. This application Mar. 24, 1970, Ser. No. 22,398
Int. Cl. C10m *1/40;* **C07f** *3/06, 15/04*
U.S. Cl. 260—429.9 **14 Claims**

Metal complexes useful as additives in industrial fluids to improve the detergency and neutralizing characteristics thereof are produced by reacting a metal salt of an acid with an organic nitrogen compound. The specific metal complexes of the invention are formed by reacting an alkylene polyamine with an aldehyde, followed by reacting this product with (1) the metal salt and (2) an alkenylsuccinic acid or aldehyde in the order 1, 2 or 2, 1.

3,642,848

REACTION PRODUCTS OF DIALKYLTIN OXIDES AND HIGHER DIALKYLTIN MONOHYDRIC ALIPHATIC SATURATED ALCOHOL ESTERS OF THIOMALIC AND THIOLACTIC ACIDS

Lawrence R. Brecker, Brooklyn, and Alfred Thee, Long Beach, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,916
Int. Cl. C07f *7/22;* **C08f** *45/62*
U.S. Cl. 260—429.7 **10 Claims**

Reaction products of higher dialkyltin oxides and higher dialkyltin monohydric aliphatic saturated alcohol esters of thiomalic and thiolactic acid are provided, that are excellent stabilizers for polyvinyl chloride resins.

3,642,849

METHOD OF PREPARING TETRAMETHYLLEAD

Edward G. Newyear, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,693
Int. Cl. C07f *7/24*
U.S. Cl. 260—437 R **13 Claims**

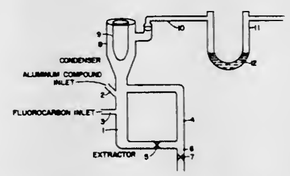
A method of preparing tetramethyllead utilizing a novel catalyst consisting of methanol and diglyme with or without anthracene is described. The catalyst is used in quantities of at least 0.02 mole of methanol and diglyme per mole of sodium-lead alloy employed. Catalyst compositions, one comprising 14 to 20 weight percent methanol, 58 to 79.9 percent diglyme and 0.1 to 28 percent anthracene and a second one comprising 30 to 10 percent methanol and 79 to 90 percent diglyme basis the mixture, are claimed.

3,642,850

METHOD OF OBTAINING SOLVENT FREE ALUMINUM ALKYLS AND ALKOXIDES

Gifford G. McClaflin, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 16, 1968, Ser. No. 784,155
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **14 Claims**



Fluorocarbons are disclosed as selective solvents for separating aluminum organo compounds from hydrocarbon solvents.

3,642,851

PREPARATION OF LINEAR HALOSILOXANES AND COMPOUNDS DERIVED THEREFROM

Everett W. Bennett, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,544
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 N 37 Claims

A process for preparing linear halosiloxane polymers by the redistribution of halosiloxanes or a halosiloxane with cyclotrisiloxane or cyclotetrasiloxane in the presence of a basic catalyst such as the phosphine oxides or amine oxides as well as novel linear halo endblocked siloxane polymers. The linear halosiloxane polymers find utility in the preparation of heat curable resins and elastomers.

3,642,852

PROCESS OF PRODUCING HALOSILOXANES

Gerd Rossmy, Essen-Werden, and Gotz Koerner, Essen, Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany

No Drawing. Filed Jan. 16, 1969, Ser. No. 791,788
Claims priority, application France, Jan. 16, 1968, 136,129
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E 6 Claims

Process of producing certain halosiloxanes by reacting the corresponding alkylhalosilane with an excess of trimethylhalosilane in the presence of tertiary aliphatic alcohols at temperatures below 40° C. The process is advantageously carried out in the presence of a hydrogen halide.

3,642,853

SYNTHESIS OF ALUMINUM HYDRIDE AND TERTIARY AMINE ADDUCTS THEREOF

Jawad H. Murib and David Horvitz, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,881
Int. Cl. C01b 6/06; C07f 5/06
U.S. Cl. 260—448 35 Claims

A process is provided for the stepwise preparation of aluminum hydride and its tertiary amine adducts by

(1) synthesizing the trimethylamine-alane adduct from aluminum, hydrogen and trimethylamine in the presence of a Group I–A or Group II–A metal catalyst,
(2) transaminating the trimethylamine-alane adduct with another tertiary amine to form another tertiary amine-alane adduct, and
(3) thermally decomposing the tertiary amine-alane adduct in the presence of a Group I–A or Group II–A metal hydride or organometallic compound catalyst to form alane and the tertiary amine.

A process is also provided for synthesizing relatively stable tertiary amine-alane adducts from aluminum, hydrogen and the corresponding tertiary amine in the presence of a Group I–A or Group II–A metal catalyst.

3,642,854

METHOD FOR PRODUCTION OF ISOCYANATES

Vladimir Petrovich Kozjukov, Ulitsa Dimitrova 15/20, kv. 45; Vladimir Florovich Mironov, Ulitsa Gubkina 4, kv. 13; and Viktor Dmitrievich Sheludyakov, Ulitsa Metallurgov 32, korpus 1, kv. 64, all of Moscow, U.S.S.R.

No Drawing. Filed Apr. 24, 1968, Ser. No. 729,488
Claims priority, application U.S.S.R., Apr. 26, 1967, 1,152,087; June 16, 1967, 1,164,045
Int. Cl. C07f 7/08, 7/10; C07c 119/04
U.S. Cl. 260—448.2 E 7 Claims

A process of producing isocyanates of the formula $R(NCO)_a$, wherein R is a silyl substituted alkyl, alkenyl, alkinyl, aryl, alkaryl or aralkyl group or an alkyl, alkenyl, alkinyl or aryl group having no more than six carbon atoms and *a* is an integer from 1 to 4, comprising subjecting a silyl-substituted amine to phosgenation at −80° to +250° C.

3,642,855

SILYL-CONTAINING DITHIOCARBAMATES WITH FUNCTIONAL GROUPS ON SULFURALKYL ESTER SIDE CHAIN

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,960
Int. Cl. C07f 7/04, 7/18
U.S. Cl. 260—448.8 R 7 Claims

New compositions of matter are prepared by forming functional substituents on the sulfur-alkyl ester side chain of a dithiocarbamate substituent formed on an organosilicon compound. The new compositions are prepared by reacting an organosilicon compound, substituted with an alkyl amine, with carbon disulfide in the presence of a tertiary amine and reacting the reaction product with a compound having a meta-directing group attached to a carbon atom having an olefinic double bond.

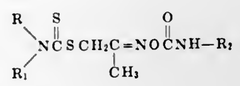
3,642,856

DITHIOCARBAMYLACETONEOXIME CARBAMATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,342
Int. Cl. C07c 155/08
U.S. Cl. 260—455 A 3 Claims

Dithiocarbamylacetoneoxime carbamates having the general formula



in which R and R_1 are independently methyl or ethyl, and R_2 is lower alkyl, preferably methyl. The compounds are useful as acaricides and insecticides.

3,642,857

1,1,1-TRICHLORO-2-PROPYL 2,2,2-TRICHLOROETHYL CARBONATE

Jorge Pengman Li and John Hans Biel, Milwaukee, Wis., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.

No Drawing. Filed Dec. 12, 1968, Ser. No. 783,441
Int. Cl. C07c 69/62, 69/64; A61k 27/00
U.S. Cl. 260—463 1 Claim

1,1,1 - trichloro - 2 - propyl 2,2,2 - trichloroethyl carbonate exhibits sedative activity and is useful as a sedative in mammals.

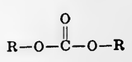
3,642,858

CARBONATE SYNTHESIS FROM ALKYLENE CARBONATES

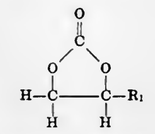
Ludo K. Frevel and Jo Ann Gilpin, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 12, 1969, Ser. No. 798,765
Int. Cl. C07c 69/00; C10m 3/20
U.S. Cl. 260—463 9 Claims

Carbonates having the formula



are made by reacting an alkylene carbonate having the formula



with a non-tertiary hydroxy-containing compound having the formula

R—OH

while in the presence of a catalytic amount of an alkali metal or a derivative thereof wherein R is an alkyl or alkoxyalkyl and R_1 is H, alkyl or alkoxyalkyl. These carbonates are useful as synthetic lubricants, solvents for cellulosic compounds, e.g. cellulosic ethers, and in lacquer fixation.

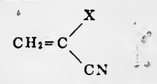
3,642,859

PREPARATION OF MONO- AND DICHLOROCYCLOBUTANECARBONITRILES BY CYCLOADDITION OF VINYL CHLORIDE AND AN ACRYLONITRILE

David M. Gale, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,454
Int. Cl. C07c 121/46
U.S. Cl. 260—464 6 Claims

A method for the preparation of chlorocyclobutanecarbonitriles by the cycloaddition of vinyl chloride and an acrylonitrile of the formula



wherein X is H, Cl, Br or I. The compounds prepared by the method of this invention are dehydrohalogenated in strong base to form cyanocyclobutanes which can be employed in the preparation of useful polymeric and copolymeric films and fibers.

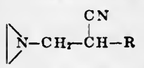
3,642,860

COPLYMERS OF N-(2-CYANOETHYL) AZIRIDINES AND β-LACTONES

Laurence I. Peterson, Framingham, Mass., and Louisa J. Sauro, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 30, 1968, Ser. No. 787,992
Int. Cl. C07c 121/00, 121/28
U.S. Cl. 260—465.4 8 Claims

Novel copolymers are prepared in the reaction between (a) β-propiolactone, β-isobutyrolactone, or β-neopentanolactone, and (b) a compound of the formula



wherein R is hydrogen or lower alkyl. The copolymers are fungicides.

3,642,861

HYDRAZONE DERIVATIVES OF BENZOYL CYANIDES

Werner Meiser, Wuppertal-Elberfeld, Ludwig Eue, Cologne-Stammheim, Helmuth Hack, Cologne-Buchheim, Helmut Timmler, Wuppertal-Vohwinkel, and Richard Wegler, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 23, 1969, Ser. No. 827,159
Claims priority, application Germany, May 30, 1968, P 17 68 574.4
Int. Cl. A01n 9/12, 9/20; C07c 121/78
U.S. Cl. 260—465 E 10 Claims

Hydrazone derivatives of benzoyl cyanides, i.e. (optionally chloro and alkyl substituted)-benzoyl cyanide-[N¹-alkyl-N²-(alkyl and alkenyl)-amidino]-hydrazones and (optionally chloro and alkyl substituted)-benzoyl cyanide-1-(2,3-dialkyl- and -1-(2-alkenyl-3-alkyl isothioureido)-imines, which possess herbicidal properties, and which may be produced by conventional methods.

3,642,862

β-(DIMETHYLAMINO)ETHYLESTERS OF 3-O-(CARBAMOYL) CASSENIC ACIDS

Dietrich Stauffacher, Reinach, Basel-Land, and Hartmut Hauth, Riehen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Aug. 22, 1968, Ser. No. 754,737
Claims priority, application Switzerland, Aug. 31, 1967, 12,217/67
Int. Cl. C07c 125/06
U.S. Cl. 260—468.5 13 Claims

β-(Dimethylamino)ethyl esters of 3-O-(carbamoyl)-cassenic acids. These compounds are useful as cardiotonic agents with a positive inotropic effect.

3,642,863

ALKYL N-(2-NITROBENZOYL) CARBAMATES

Angelo John Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 454,209, May 7, 1965, now Patent No. 3,450,747, which is a continuation-in-part of application Ser. No. 221,302, Sept. 4, 1962. This application Apr. 12, 1968, Ser. No. 721,062
Int. Cl. C07c 125/06
U.S. Cl. 260—471 C 4 Claims

Compounds of the class of alkyl esters of N-(2-nitrobenzoyl) carbamic acid. These materials are herbicidally active.

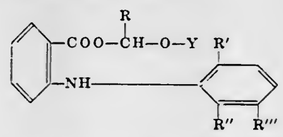
3,642,864

ESTERS OF N-ARYL-ANTHRANILIC ACIDS WITH MONOSUBSTITUTED GEM-DIOLS

Elso Manghisi, Milan, Italy, assignor to Istituto Luso Farmaco d'Italia S.r.L., Milan, Italy

No Drawing. Filed Oct. 23, 1968, Ser. No. 770,060
Claims priority, application Italy, Apr. 12, 1968, 15,229/68
Int. Cl. C07c 101/54
U.S. Cl. 260—471 R 8 Claims

Various methods of preparation of novel N-aryl-anthranilic acid esters having the formula



are described. These products have very good therapeutical properties, such as anti-inflammatory, antipyretic and analgesic action, and administration forms are given.

3,642,865

AMINO-BENZOIC ESTERS

Julius Diamond, Plymouth Meeting, Pa., and Gustav J. Martin, deceased, late of Philadelphia, Pa., by Dorothy Patricia Martin, administratrix, Philadelphia, Pa.; said Diamond assignor to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Continuation-in-part of application Ser. No. 599,381, Dec. 6, 1966. This application Dec. 16, 1968, Ser. No. 791,533
Int. Cl. C07c 79/46, 101/62
U.S. Cl. 260—471 R 9 Claims

The amino-benzoic acid derivatives of this invention are useful in the treatment of pain and inflammation in mam-

mals. Such derivatives manifest a particularly low degree of hemorrhage and ulceration while maintaining adequate salicylate blood levels for relatively high analgesic and anti-inflammatory activity.

3,642,866

PROCESS FOR THE PREPARATION OF SUBSTITUTED DIARYL ETHERS

Harro Witt, Cologne-Buchheim, Hans Holtschmidt, Leverkusen-Steinbuechel, and Erwin Muller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 13, 1968, Ser. No. 728,841
Claims priority, application Germany, May 13, 1967, F 52,407
Int. Cl. C07c *69/76, 43/20*
U.S. Cl. 260—473 G **8 Claims**

Heating a diaryl carbonate having at least one second order substituent positioned on the aryl moiety ortho or para to the carbonate moiety in the presence of a catalytic amount of a basic to neutral alkali metal compound at a temperature of from about 100 to 300° C. to produce the corresponding diaryl ether.

3,642,867

PROCESS FOR THE PREPARATION OF A 1,2-BIS(4-CARBOALKOXYPHENOXY)ETHANE

Saburo Senoo, Tokyo, Toshio Kato, Omiya, Norio Imai, Tokyo, and Masakazu Kurihara, Ageo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,014
Claims priority, application Japan, Apr. 26, 1968, 43/27,669; May 8, 1968, 43/30,275
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 S **8 Claims**

This invention discloses a process for the preparation of a 1,2-bis(4-carboalkoxyphenoxy)ethane by the reaction of an alkali metal salt of a p-hydroxybenzoic acid alkyl ester with ethylene dichloride characterized in that said reaction is initiated in the absence of a solvent or said reaction is initiated in the presence of a solvent selected from the group consisting of a p-hydroxybenzoic acid alkyl ester (2-chloroethoxy)benzoic acid alkyl ester and 1,2-bis(4-carboalkoxyphenoxy)ethane, said solvent being employed alone or in combination. The rate of said reaction as well as the yield is improved by additionally employing copper as a catalyst. Thereby, it is possible to obtain 1,2-bis(4-carboalkoxyphenoxy)ethane in high yield with high selectivity, as compared with the conventional process in which an alcoholic solvent is employed. The 1,2-bis(4-carboalkoxyphenoxy)ethane is used for the production of a polyester or polyamide useful for a synthetic fibre or plastics.

3,642,868

DIALKYLHYDROXYPHENYLALKANOIC ACID ESTERS OF DI- AND TRIPENTAERYTHRITOL

Martin Dexter, Briarcliff Manor, John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 502,587, Oct. 22, 1965, which is a continuation-in-part of application Ser. No. 359,460, Apr. 13, 1964, which is a continuation-in-part of application Ser. No. 276,192, Apr. 29, 1963, which is a continuation-in-part of application Ser. No. 164,618, Jan. 5, 1962, which in turn is a continuation-in-part of application Ser. No. 148,738, Oct. 30, 1961, all now abandoned. This application June 30, 1969, Ser. No. 837,958
Int. Cl. C07c *69/26*
U.S. Cl. 260—473 R **9 Claims**

Esters of dipentaerythritol or tripentaerythritol and 4-hydroxy-5-alkylphenylalkanoic acids having a second alkyl group in the 2 or 3 position of the phenyl ring are stabilizers of organic material. The compounds are obtained through transesterification techniques.

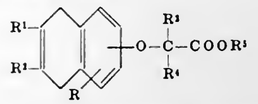
3,642,869

5,8-DIHYDRONAPHTHYLOXY ACETIC ACIDS

Venkatachala Lakshmi Narayanan, North Brunswick, Frederic Peter Hauck, Somerville, and Frank Lee Welsenborn, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 30, 1969, Ser. No. 846,233
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 F **10 Claims**

This invention relates to new 5,8-dihydronaphthyloxy acetic acids of the formula



and the salts of such compounds, products which are useful as anti-inflammatory and hypocholesteremic agents.

3,642,870

2,3-DIHALOALKYL COMPOUNDS

James C. Wygant, Creve Coeur, Richard M. Anderson, St. Louis, and Erhard J. Prill, Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Division of application Ser. No. 437,258, Mar. 4, 1965, now Patent No. 3,317,568, which is a continuation-in-part of application Ser. No. 405,819, Oct. 22, 1964, which in turn is a continuation-in-part of applications Ser. No. 248,853, Jan. 2, 1963, and Ser. No. 267,783, Mar. 25, 1963, now Patent No. 3,236,659. This application July 15, 1966, Ser. No. 620,191
Int. Cl. C07c *69/76, 69/80*
U.S. Cl. 260—475 R **3 Claims**

As new compounds, the 2,3-dibromopropyl esters of benzenedi- or polycarboxylic acids. The said esters are flame retardants for polymer systems.

3,642,871

ORGANIC ESTER COMPOSITIONS HAVING ENHANCED COLOR STABILITY

Clarence E. Tholstrup and Sarah J. Rush, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 473,234, July 19, 1965, now Patent No. 3,461,153. This application Jan. 6, 1969, Ser. No. 789,412
The portion of the term of the patent subsequent to Aug. 12, 1986, has been disclaimed
Int. Cl. C07c *69/80, 69/82*
U.S. Cl. 260—475 R **9 Claims**

Organic esters may be provided with enhanced color stability upon prolonged exposure to elevated temperatures by incorporating therein a combination of (A) alkali metal atoms provided by at least one alkali metal carboxylate having 2 to 18 carbon atoms or alkali metal alkoxide having 1 to 6 carbon atoms, and (B) phosphorus atoms provided by phosphorous acid. The organic esters include aliphatic esters of aliphatic and aromatic carboxylic acids and fatty glycerides.

3,642,872

ESTERS OF HALOGENATED HYDROXY-DIPHENYL ETHERS

Ernst Model, Basel, and Jakob Bindler, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Application Aug. 8, 1966, Ser. No. 570,742, now Patent No. 3,506,720, dated Apr. 14, 1970, which is a continuation-in-part of application Ser. No. 345,080, Feb. 17, 1964. Divided and this application Jan. 21, 1970, Ser. No. 8,115
Claims priority, application Switzerland, Feb. 22, 1963, 2,250/63
Int. Cl. C07c *69/16, 69/78, 125/06*
U.S. Cl. 260—479 R **6 Claims**

Halogenated 2-hydroxy-diphenyl ethers and esters thereof, useful as bactericides.

3,642,873

PROCESS FOR THE MANUFACTURE OF PHENYL ESTERS AND PHENOL FROM BENZENE

Lothar Hörnig, Frankfurt am Main, and Therese Quadflieg, Kelkheim, Taunus, Germany (both % Farbwerke Hoechst AG., Frankfurt am Main, Germany)

No Drawing. Filed Apr. 3, 1967, Ser. No. 627,679
Claims priority, application Germany, Apr. 9, 1966, F 48,917
Int. Cl. C07c *69/14, 69/24, 69/00*
U.S. Cl. 260—479 R **14 Claims**

Preparation of phenylesters and if desired phenol by reaction of benzene, carboxylic acids and molecular oxygen in the presence of a noble metal of group VIII of the Mendeleeff Periodic Table as catalyst.

3,642,874

β-HALOGENOALKYL ISOCYANATES

Klaus-Dieter Kampe, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 12, 1969, Ser. No. 858,256
Claims priority, application Germany, Sept. 20, 1968, P 17 93 460.0
Int. Cl. C07c *119/04*
U.S. Cl. 260—487 **5 Claims**

α-Carboalkoxy-β-halogenoalkyl isocyanates are obtained by rearrangement of N-halogeno - 4-carboalkoxy-azetidinones-(2) effected by radical-forming catalysts in the presence of unsaturated compounds as co-catalysts. Due to their three groups of different degrees of reactivity the products are useful intermediates for the synthesis of heterocyclic compounds.

3,642,875

β-ACETOXYPIVALIC ANHYDRIDE AND PROCESS FOR MAKING SAME

Hans-Jurgen Arpe, Fischbach, Taunus, Germany, and Lothar Heinz Hornig, deceased, late of Frankfurt am Main-Schwanheim, Germany, by Anneliese Hornig nee Munich, co-heiress, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 28, 1970, Ser. No. 59,009
Claims priority, application Germany, Aug. 7, 1969, P 19 40 206.3
Int. Cl. C07c *67/00, 69/16*
U.S. Cl. 260—488 J **2 Claims**

β-Acetoxypivalic anhydride, a novel compound particularly suitable for the manufacture of pivalolactone, and a process for making same by reaction of β-acetoxypivalic acid with an excess amount of acetic anhydride.

The present invention relates to β-acetoxypivalic anhydride and a process for making same.

3,642,876

PREPARATION OF TELOMERS OF VINYL ESTERS

Joseph K. Hoffman, Oldwick, and James P. Russell, Berkeley Heights, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original application July 31, 1964, Ser. No. 386,593. Divided and this application Dec. 22, 1969, Ser. No. 887,022
Int. Cl. C07c *67/00, 69/16, 69/22*
U.S. Cl. 260—491 **2 Claims**

Telomers of vinyl esters of lower alkanoic acids, such as vinyl acetate, wherein the telogen is a lower alkane glycol, are produced by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7500 p.s.i. in the presence of a free-radical-forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,642,877

PROCESS FOR THE PREPARATION OF DIMETHYLAMINOETHYL METHACRYLATE

Madhusudan D. Jayawant, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,609
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **3 Claims**

A process for preparing dimethylaminoethyl methacrylate from dimethylaminoethanol and an alkyl methacrylate is provided. Di-n-butyltin oxide is used as a catalyst which can be added at one time after water is removed by distillation. The dimethylaminoethanol and alkyl methacrylate in certain proportions along with an inhibitor are mixed; heated to reflux and any water in the system removed by distillation. After a slight cooling, the catalyst is added, the reaction mixture heated to reflux and the azeotrope of alkyl methacrylate and alkanol formed is removed by distillation. After the alkanol is removed, heating is stopped and a gradual vacuum is applied to the receiver and unreacted alkyl methacrylate and dimethylaminoethanol are distilled off and then dimethylaminoethyl methacrylate distilled off at the reduced pressure.

3,642,878

METHOD OF PRODUCING UNSATURATED ESTERS

Henry O. Mottern, Far Hills, and James P. Russell, Berkeley Heights, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation of application Ser. No. 649,844, June 29, 1967. This application Dec. 22, 1969, Ser. No. 883,674
Int. Cl. C07c *69/52*
U.S. Cl. 260—497 A **9 Claims**

Unsaturated esters of organic acids are produced by contacting a lower alkene and an organic acid in the vapor phase in admixture with oxygen in the presence of a Group VIII or a Group 1–B metal chloride, cupric chloride, and an alkali metal bromide or chloride at a temperature of 100 to 160° C.

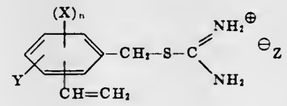
3,642,879

S-(VINYLBENZYL)ISOTHIOURONIUM SALTS

David P. Sheetz and Edwin C. Steiner, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 9, 1965, Ser. No. 431,441
Int. Cl. C07c *123/00, 129/00*
U.S. Cl. 260—501.14 **6 Claims**

S-(vinylbenzyl)isothiouronium compounds of the general formula



wherein X and Y are conventional substituents and *n* is 0–3. The compounds have biological uses and are monomers to be polymerized.

3,642,880
NOVEL POLYFLUOROSULFONATE SALTS
Richard F. Sweeney, Randolph Township, Morris County, and Alson K. Price, Mine Hill, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Mar. 24, 1966, Ser. No. 536,981
Int. Cl. C07c *143/00*
U.S. Cl. 260—503 18 Claims

Compounds of the formula:

$$Q—O—R—SO_3M$$

wherein

M represents an alkali metal atom;

R represents a divalent radical such that the oxygen and sulphur atoms are linked by a chain of three or four carbon atoms which are joined to each other by single bonds or by bonds forming part of an aromatic ring and each of whose remaining valencies is satisfied by a hydrogen or halogen atom, an alkoxy radical or an unsubstituted, alkoxy-substituted or halogen substituted hydrocarbyl radical or by a divalent unsubstituted, alkoxy-substituted or halogen-substituted hydrocarblene radical which also satisfies another of the said remaining valencies; and

Q represents a saturated radical consisting of carbon, hydrogen and fluorine atoms and containing at least three fluorine atoms in which the carbon atom linked to the oxygen atom is not linked to a fluorine atom, may be prepared by reacting an alkali metal salt of a polyfluoro alcohol with an appropriate sultone. These compounds are useful as surface active agents, as intermediates in the preparation of textile treating agents and in the preparation of modifiers for plastic materials.

3,642,881
ALKENYL SULFONIC ACIDS
Joseph Rubinfeld, Brooklyn, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Jan. 16, 1967, Ser. No. 609,307
Int. Cl. C07c *143/16*
U.S. Cl. 260—513 12 Claims

Conversion of hydroxyalkane sulfonates to the corresponding alkenyl sulfonates by heating in aqueous acidic medium at pH below 3 and temperature at least about 150° C.

3,642,882
PROCESS FOR THE PRODUCTION OF NITRO-ARYLETHERMONOCARBOXYLIC ACIDS AND THEIR ESTERS
Heinrich Gilch, Krefeld, Gerhard Darsow, Krefeld-Uerdingen, Ludwig Bottenbruch, Krefeld-Bockum, Günter Lorenz, Hans Egon Künzel, and Günther Nischk, Dormagen, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 22, 1968, Ser. No. 746,257
Claims priority, application Germany, July 28, 1967, F 53,088; June 7, 1968, P 17 68 619.0
Int. Cl. C07c *79/46*
U.S. Cl. 260—520 6 Claims

Nitroaryl ether monocarboxylic acids and their esters and a process for producing them by reacting

(A)

(1) a dialkali metal salt of a m- or p-hydroxy aryl carboxylic acid or
(2) monoalkali metal salt of a m- or p-hydroxy aryl carboxylic acid ester with

(B)

an aromatic mononitro-halo-substituted compound wherein the halogen atom or atoms and nitro substituent are ring attached;
and effecting the reaction at an elevated temperature utilizing molar amounts of the reactants at 50–160° C. in the presence of a strongly polar organic solvent.

3,642,883
PROCESS FOR REMOVAL OF AROMATIC BROMINE IN BENZOIC ACID PRODUCTION
James A. Jackson, Fords, N.J., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,207
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 4 Claims

Bromobenzoic acid produced as a byproduct in the bromide promoted liquid phase air oxidation of monoalkylbenzenes to benzoic acid is converted to benzoic acid by reaction with zinc or iron.

3,642,884
PROCESS FOR PURIFYING TEREPHTHALIC ACID
Fridolin A. Hoyer, East Aurora, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,749
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 11 Claims

Process for removing color-forming impurities from crude terephthalic acid whereby the crude acid is dissolved in an aqueous solution of a sulfite salt of a β-hydroxy primary aliphatic amine, and the purified acid recovered by precipitation with a strong acid. The solvent solution can be recycled. This process provides rapid and complete dissolution of the terephthalic acid.

3,642,885
ISOMERIZATION OF CIS-CIS OR CIS-TRANS-2,4-HEXADIENOIC ACIDS TO SORBIC ACID
Lothar Heinz Hornig, deceased, late of Frankfurt am Main-Schwanheim, Germany, by Anneliese Hornig, nee Munich, heiress, Frankfurt am Main, Hermann Neu, Neu-Isenburg, and Otto Probst, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation-in-part of application Ser. No. 431,446, Feb. 9, 1965. This application Mar. 30, 1970, Ser. No. 25,574
Claims priority, application Germany, Feb. 15, 1964, F 42,014
Int. Cl. C07c *51/00*
U.S. Cl. 260—526 N 9 Claims

The use of sulfur or hydrogen chloride as a catalyst in the isomerization of cis-cis and cis-trans hexadiene (2:4) acids to yield sorbic acid.

3,642,886
OXIDATION PROCESS
Dhafir Yusuf Waddan and Derek Williams, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,200
Claims priority, application Great Britain, Dec. 22, 1967, 58,294/67
Int. Cl. C07c *55/04, 55/14, 55/16*
U.S. Cl. 260—533 C 11 Claims

Oxidising cycloalkene with ozonised oxygen in a medium comprising at least 60% of water, preferably in two stages, resulting in the production of a carboxylic acid.

3,642,887
PREPARATION OF AMINO-SUBSTITUTED CARBOXYLIC ACIDS
Philip F. Jackisch, Livonia, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Dec. 19, 1966, Ser. No. 602,533
Int. Cl. C07c *101/20, 101/26*
U.S. Cl. 260—534 E 4 Claims

Dimethyl sulfoxide catalyzes the reaction between α-halosubstituted carboxylic acids and nitrogen compounds selected from ammonia, primary, and secondary amines. For example, high yields of nitrilotriacetic acid are obtained when ammonia is reacted with chloroacetic acid in the presence of promoter quantities of dimethyl sulfoxide.

3,642,888
PROCESS FOR PREPARING β-ALANINE
Yoshinari Matsui, Tokyo, and Minoru Hara and Yoshioki Komachiya, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Jan. 9, 1969, Ser. No. 790,167
Claims priority, application Japan, Jan. 11, 1968, 43/1,116
Int. Cl. C07c *101/08*
U.S. Cl. 260—534 C 3 Claims

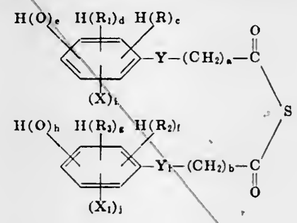
β-Alanine is obtained in good yield from bis-(carboxyethyl)amine by the reaction with aqueous ammonia in the presence of an alkali or alkaline earth metal hydroxide at an elevated temperature in a pressure vessel. It is also obtained in good yield by treating the reaction mixture resulting from the reaction of bis-(carboxyethyl) amine and aqueous ammonia with an alkali or alkaline earth metal hydroxide under heating.

3,642,889
PRODUCTION OF LACTIC ACID
Rolf Platz, Mannheim, Heinz Nohe, Ludwigshafen (Rhine), and Toni Dockner, Meckenheim, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Nov. 1, 1966, Ser. No. 591,130
Claims priority, application Germany, Nov. 12, 1965, B 84,477
Int. Cl. C07c *59/08*
U.S. Cl. 260—535 R 6 Claims

Process for producing lactic acid by the hydrolysis of lactic acid nitrate in which the lactic acid nitrate is reacted with more than twice its weight of water. It has been found that high yields of lactic acid can be obtained either from pure lactic acid nitrate or from the reaction product containing impurities as well as lactic acid nitrate.

3,642,890
ARYL ETHER THIOANHYDRIDES
Stanley B. Mirviss, Stamford, Conn., and Carl C. Greco, Garnerville, and Walter Stamm, Tarrytown, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,403
Int. Cl. C07c *153/01*
U.S. Cl. 260—545 R 12 Claims

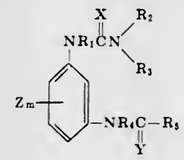
Vinyl polymer compositions are stabilized against degradation and discolorization due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein Y and Y_1 are independently selected chalcogens with a molecular weight between 13 and 38, R, R_1, R_2, and R_3 are independently selected divalent hydrocarbon groups consisting essentially of carbon and hydrogen containing from 1 to about 12 carbon atoms. X and X_1 are halogen, *a* and *b* are independently selected integers having a value from 1 to about 4 inclusive, *c*, *d*, *e*, *f*, *g*, and *h* are integers having a value zero or 1, *i* is an interger having a value of from zero to $[4-(c+d+e)]$ inclusive and *j* is an integer having a value of from zero to $[4-(f+g+h)]$ inclusive.

3,642,891
META-ANILIDE UREA COMPOSITIONS AND THEIR UTILITY AS HERBICIDES
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 746,007, July 19, 1968, which is a continuation-in-part of application Ser. No. 662,573, Aug. 23, 1967. This application Mar. 26, 1970, Ser. No. 23,021
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 A 25 Claims

Meta-anilide urea compositions have the formula:



in which X and Y are, independently, oxygen and sulfur; R_1 is hydrogen or lower alkyl; R_2 and R_3 are, independently, hydrogen, alkyl, lower alkoxy, haloalkyl, lower alkenyl, cycloalkyl having from 3 to 6 carbon atoms, inclusive, carbalkoxyalkyl, furfuryl, naphthyl, phenyl or substituted-phenyl, inclusive, in which the substituents are halogen, nitro, or lower alkoxy; R_4 is hydrogen or lower alkyl; R_5 is hydrogen, alkyl, ethyl cycloalkyl, lower alkenyl, halogenated lower alkyl, cycloalkyl having 3 to 6 carbon atoms, inclusive, pinonoyl 2,4-dichlorophenoxymethylene, benzyl, phenyl, or substituted-phenyl in which the substituents are halogen, nitro, lower alkyl, lower alkoxy or trihalomethyl; Z is halogen, lower alkyl, nitro, amino or trifluoromethyl, and *m* is an integer having a value from 0 to 4, inclusive, provided that when R_1, R_2, R_3 and R_4 are each hydrogen, X and Y are each oxygen and *m* is 0, then R_5 is other than methyl or ethyl. The compounds are useful as herbicides and they exhibit both pre-emergence and post-emergence activity. Representative compounds are:

1-(3′-isobutyramidophenyl)-3-methyl urea,
1-cyclohexyl-3-(3′-propionamidophenyl)urea,
1-butyl-3-(3′-propionamidophenyl)urea,
1-butyl-3-(3′-isobutyramidophenyl)urea,
1-(3′-nitrophenyl)-3-(3′-isobutyramidophenyl)urea,
1-N,N-dimethyl-3-(pivalamidophenyl)urea,
1-(3′-propionamidophenyl)-3-n-butyl thiourea, and
1-(3′-pestafluoropropionamidophenyl)-3,3-dimethyl urea.

3,642,892
N,N-DIALLYL-3,4-DICHLOROBENZENE-SULFONAMIDE
Joseph Willard Baker, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,390
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 AR 1 Claim

N,N-di(lower 2-alkenyl)benzenesulfonamides are described which are useful as herbicides.

3,642,893
PHYTOCIDALLY ACTIVE COMPOUNDS
Angelo John Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 24, 1968, Ser. No. 739,204
Int. Cl. C07c *103/44*
U.S. Cl. 260—558 D 2 Claims

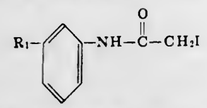
Compounds of the class N,N-disubstituted-N'-(chloro and/or nitro substituted benzoyl) formamidines, which compounds are phytocidally active.

3,642,894
CATALYSTS FOR THE HYDRATION OF NITRILES TO AMIDES
Clarence E. Habermann, Ralph E. Friedrich, and Ben A. Tefertiller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 835,765, June 23, 1969. This application Dec. 5, 1969, Ser. No. 882,716
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N 6 Claims

Catalyst life and product quality in the catalytic hydration of nitriles to amides using reduced copper oxide or reduced copper chromite catalysts are improved by at least partially protecting the reduced catalysts from contact with oxygen after reduction.

3,642,895
2,5-DISUBSTITUTED α-IODOACETANILIDES
John S. Adams, Jr., Centerville, Ohio, and David L. Gerwitz, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Original application Aug. 1, 1966, Ser. No. 569,070. Divided and this application Aug. 22, 1969, Ser. No. 870,693
Int. Cl. C07c *103/30*
U.S. Cl. 260—562 B 4 Claims

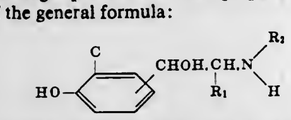
2,5-disubstituted-α-iodoacetanilides of the formula



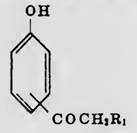
wherein R and R^1 are chlorine, nitro, hydroxy, alkyl of not more than 4 carbon atoms and alkoxy of not more than 4 carbon atoms useful as fungicides.

3,642,896
PROCESS FOR THE PREPARATION OF α^1-TERTIARY BUTYLAMINOMETHYL - 4 - HYDROXY-m-XYLENE-α^1,α^3-DIOL
David Trevor Collin, London, England, assignor to Allen & Hanburys Limited, London, England
No Drawing. Filed Apr. 15, 1968, Ser. No. 721,214
Claims priority, application Great Britain, Apr. 21, 1967, 18,383/67
Int. Cl. C07c *85/02*
U.S. Cl. 260—570.6 3 Claims

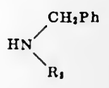
A multi-stage process for the preparation of compounds of the general formula:



is disclosed from the parent ketone of the formula



by steps including chloromethylation, acetylation, bromination, amination with a compound of the formula



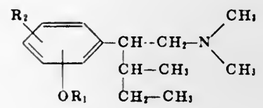
deacetylation and reduction. The product may be isolated as a pharmaceutically acceptable salt.

3,642,897
PREPARATION OF 2-ALKYLAMINOBENZOPHENONES
Goetz E. Hardtmann, Florham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Dec. 26, 1968, Ser. No. 787,255
Int. Cl. C07c *85/00*
U.S. Cl. 260—570 8 Claims

The invention discloses preparation of 2-alkylaminobenzophenones involving reaction of a 3-aryl-2,1-benzisoxazole with an alkyl halide.

3,642,898
1-DIMETHYLAMINO - 3 - METHYL-[2' (OR 4')-ALKOXY-3' (OR 5')-HALOGENO] - 2-PHENYL PENTANES
Jeannine A. Eberle, Chatou, Micheline Y. Sergant, Clamart, Claude P. Fauran, Paris, and Gerard J. Huguet, Malesherbes, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France
No Drawing. Continuation-in-part of applications Ser. No. 686,722, Nov. 29, 1967, and Ser. No. 780,914, Dec. 3, 1968, now Patent No. 3,573,304, dated Mar. 30, 1971. This application May 28, 1969, Ser. No. 828,790
Claims priority, application France, Jan. 28, 1969, 6901604
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.8 R 3 Claims

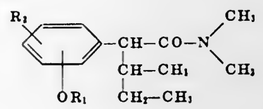
A compound of the formula:



in which

R_1 is an alkyl radical having 1 to 5 carbon atoms, and R_2 is a halogen,

having diuretic and hypotensive properties. It is prepared by reacting $LiAlH_4$ in anhydrous ether or tetrahydrofuran with an amide of the formula:



in which R_1 and R_2 have the same meaning as above.

3,642,899
2-PHENYL-4-(1-ADAMANTYL)-6-DIMETHYLAMINOMETHYLPHENOL
David W. Henry, Menlo Park, Calif., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,431
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 1 Claim

The disclosure describes three compounds, 2-phenyl-4-(1-adamantyl)-6-dimethylaminomethylphenol, 2-phenyl-4 - t - butyl - 6 - [N - methyl - N - (2 - cyanoethyl)]aminomethylphenol and 2-phenyl-4-t-butyl-6-[N-methyl-N-(n-octyl)aminomethyl]phenol hydrochloride. The compounds are useful in the prevention and treatment of malaria.

3,642,900
DITHIO AMINO ALKANES
Michihiko Sakai and Masayuki Kato, Kyoto, Japan, and Hikoichi Hagiwara, deceased, late of Osaka, Japan, by Reiko Hagiwara, executor, Osaka, and Kazuo Konishi, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Division of application Ser. No. 612,059, Sept. 22, 1966, now Patent No. 3,501,502, which is a division of application Ser. No. 205,088, June 25, 1962, now Patent No. 3,318,936. This application Feb. 13, 1970, Ser. No. 11,318
Claims priority, application Japan, June 27, 1961, 36/23,009
Int. Cl. C07c *149/24*
U.S. Cl. 260—583 EE 2 Claims

The compounds 1,2 - dimercapto - 3 - dimethylaminopropane and 1,3-dimercapto-2-dimethylaminopropane are useful as pesticides.

3,642,901
BORON TRIFLUORIDE ETHERATE-AMINE REACTION PRODUCTS
Abraham M. Herbsman, 9721 3rd Ave., Los Angeles, Calif. 90305
No Drawing. Application Sept. 13, 1968, Ser. No. 759,780, now Patent No. 3,488,169, dated Jan. 6, 1970, which is a continuation-in-part of application Ser. No. 283,550, May 27, 1963. Divided and this application July 31, 1969, Ser. No. 864,241
Int. Cl. C07c *35/00, 87/00, 87/06*
U.S. Cl. 260—583 A 4 Claims

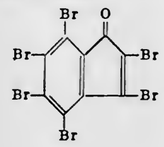
A composition of matter, which is soluble in gasoline and in liquid aliphatic hydrocarbons, and which consists of the product, produced by reacting boron trifluoride ethyl ether complex with an amine reagent, selected from the group consisting of tertiary nonyl amine, a mixture of tertiary-alkyl primary amines, ranging from t-$C_{12}H_{25}NH_2$ to t-$C_{15}H_{31}NH_2$, a mixture of tertiary-alkyl primary amines, ranging from t-$C_{18}H_{37}NH_2$ to t-$C_{24}H_{49}NH_2$, and primary alkyl aryl amines in which the alkyl radical is large enough to impart solubility to the reaction product in gasoline and liquid aliphatic hydrocarbons.

3,642,902
ALLYLAMINES FROM π-ALLYLPALLADIUM COMPLEXES
Hartwig C. Bach and Helmuth E. Hinderer, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 24, 1968, Ser. No. 786,768
Int. Cl. C07c *85/00, 85/02*
U.S. Cl. 260—585 R 4 Claims

Allylic amines have been prepared by a synthesis which involves the reaction of ammonia, primary or secondary amines with π-allyl palladium complexes.

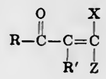
3,642,903
HEXABROMOINDONE AND METHOD OF MAKING THE SAME
Richard Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,492
Int. Cl. C07c *45/00, 49/00*
U.S. Cl. 260—586 R 2 Claims

The invention concerns hexabromoindone, a compound having the structural formula



3,642,904
α,β-UNSATURATED KETONES
Carl M. Langkammerer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application May 17, 1966, Ser. No. 551,843. Divided and this application Nov. 16, 1967, Ser. No. 684,600
Int. Cl. C07c *49/20, 49/76*
U.S. Cl. 260—590 4 Claims

α,β-Unsaturated ketones of the formula:



wherein
R is t-butyl, phenyl, substituted phenyl, naphthyl, chloronaphthyl, furyl, thienyl, or β-phenylethenyl;
R' is hydrogen or alkyl;
R and R' can be joined;
X and Z are separately either chlorodifluoromethyl or trifluoromethyl.

Typical is 1 - (3-chlorophenyl)-4,4,4-trifluoro-3-trifluoromethyl-2-buten-1-one useful in riot control.

3,642,905
PREPARATION OF CYCLOHEXANE-1,4-DIONES
Donald M. Fenton, 2861 Alden Place, Anaheim, Calif. 92806
No Drawing. Filed Mar. 27, 1968, Ser. No. 716,338
Int. Cl. C07c *49/76*
U.S. Cl. 260—590 5 Claims

The invention relates to the preparation of aromatic-substituted cyclohexane-1,4-diones by oxidative dimerization of acetone derivatives in the presence of a mercuric salt. The products are useful as intermediates in the preparation of substituted quinones and hydroquinones which find utility in manufacture of dyes, as photographic developers, medicines, antioxidants or inhibitors in coating compounds for rubber, stone, textiles, etc. and in paints, varnishes, motor fuels and oils, fats and oils and as polymerization inhibitors.

3,642,906
MANUFACTURE OF BENZOPHENONE
Samuel Kahn, Rutherford, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,412
Int. Cl. C07c *49/76*
U.S. Cl. 260—591 8 Claims

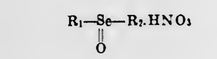
Manufacture of a benzophenone by the oxidation of a diphenylmethane in contact with a catalyst consisting of a naphthenic acid salt or a C_6–C_{20} aliphatic acid salt

of certain metals. The invention is exemplified by the oxidation of diphenylmethane to benzophenone in contact with copper naphthenate catalyst.

3,642,907
ACETONYLACETONE AND PARA-CRESOL BY OXIDATION OF METHACROLEIN DIMER
Thomas A. Schenach, Dana Point, and David L. Trimble, Westminster, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Filed Oct. 1, 1968, Ser. No. 764,295
Int. Cl. C07c *49/12, 39/06*
U.S. Cl. 260—593 R **4 Claims**
A process comprising the catalytic air oxidation of methacrolein dimer (3,4-dihydro-2,5-dimethyl-2H-pyran-2-carboxaldehyde) to produce acetonylacetone (2,5-hexanedione) and p-cresol is disclosed. Conventional transition metal oxidation catalysts are used.

3,642,908
VINYL AND ETHER CONTAINING SULFONES
Donald M. Burnes, Stanley W. Cowan, and Charles J. Wright, all of Kodak Park Works, Rochester, N.Y. 14650
No Drawing. Application Nov. 13, 1967. Ser. No. 682,641, now Patent No. 3,490,911, dated Jan. 20, 1970, which is a continuation-in-part of application Ser. No. 488,797, Sept. 20, 1965. Divided and this application Aug. 22, 1969, Ser. No. 862,144
Int. Cl. C07c *147/02*
U.S. Cl. 260—607 A **2 Claims**
Certain compounds containing two or more vinylsulfonylalkyl groups attached to a plurality of tertiary or quaternary nitrogen atoms and/or to a plurality of ether oxygen atoms are effective gelatin hardeners.

3,642,909
DIALKYL SELENOXIDE HYDRONITRATES
Hill M. Priestley, North Bergen, N.J., assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 656,325, July 27, 1967. This application Dec. 15, 1969, Ser. No. 885,298
Int. Cl. C07c *163/00*
U.S. Cl. 260—607 R **11 Claims**
Dialkyl selenoxide hydronitrates having the structural formula



wherein R_1 is an alkyl radical having from 8 to 18 carbon atoms, R_2 is an alkyl radical having from 1 to 14 carbon atoms and the sum of R_1 plus R_2 is not greater than 28 carbon atoms, are useful germicides in detergent compositions.

3,642,910
1,1-DI(p-SUBSTITUTED PHENYL)-2,2-DICHLOROCYCLOPROPANES
George Holan, Brighton, Victoria, Australia, assignor to Monsanto Australia Limited, Melbourne, Victoria, Australia
No Drawing. Continuation-in-part of application Ser. No. 684,554, Nov. 20, 1967, which is a continuation of application Ser. No. 402,949, Oct. 9, 1964, both now abandoned. This application June 17, 1969, Ser. No. 834,177
Claims priority, application Australia, Oct. 24, 1963, 36,877/63
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R **3 Claims**
1,1-Di(p-substituted phenyl) - 2,2 - dichlorocyclopropanes, wherein the phenyl substituents are alkyl or alkoxy, as new compounds and insecticides.

3,642,911
PROCESS FOR PREPARING ARYLOXYALKANOLS
Heinz Schulze, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Original application Apr. 1, 1968, Ser. No. 717,949, now Patent No. 3,525,773, dated Aug. 25, 1970. Divided and this application Dec. 15, 1969, Ser. No. 885,318
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 D **4 Claims**
Aryloxyalkanols are prepared by reacting a phenol or polyphenol with an alkylene oxide in the presence of urea. The compounds prepared by the process of this invention are useful as flame retarders, solvents, intermediates for resins and biocidal agents.

3,642,912
ALKYLATION OF PHENOLS
John Alan Sharp and Raymond Ernest Dean, Bradford, England, assignors to The Coal Tar Research Association, Yorkshire, England
No Drawing. Filed Dec. 11, 1967, Ser. No. 689,275
Int. Cl. C07c *37/16*
U.S. Cl. 260—621 R **4 Claims**
Titanium dioxide is used to catalyse the reaction between at least one alcohol and at least one phenol in the vapor phase, so as to give alkylphenols. The temperature range preferred for the reaction is about 250° C. to about 500° C. The reaction can be carried out in a fluidized bed reactor.

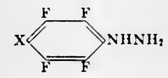
3,642,913
NITRATION OF PHENOL USING RECYCLE ACID
John David Callister, Runcorn, England, and Clayton George Carlile, Stockton, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application July 3, 1967, Ser. No. 650,624, now Patent No. 3,517,075, dated June 23, 1970. Divided and this application Feb. 13, 1970, Ser. No. 14,899
Int. Cl. C07c *79/26*
U.S. Cl. 260—622 R **9 Claims**
The problem of tar build-up in the process of nitrating phenol to produce predominantly p-nitrophenol comprising adding the phenol to a mixed acid solution having defined concentrations of H_2SO_4, HNO_3 and HNO_2 acids, separating the precipitated nitrophenol product, reconstituting the spent acid solution and recycling it to the nitration step of the process, is effectively counteracted by the addition of a defined minor proportion of a carboxylic acid of a defined type, such as acetic acid, to the reconstituted mixed acid solution prior to recycle thereof to the nitration step of the process.

3,642,914
PREPARATION OF BETA BRANCHED PRIMARY ALCOHOLS
Lawrence C. Mitchell, Southfield, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Mar. 18, 1968, Ser. No. 714,073
Int. Cl. C07c *31/02*
U.S. Cl. 260—642 **4 Claims**
Straight-chain, paraffinic, primary alcohols such as n-dodecanol) dimerize to form β-branched, primary alcohols, when contacted with a catalytic quantity of the thermal decomposition product of sodium bisulfite.

3,642,915
PURIFICATION OF ALCOHOLS
Clarence R. Bresson, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 27, 1968, Ser. No. 732,025
Int. Cl. C07c *29/24, 35/02*
U.S. Cl. 260—643 B **3 Claims**
Purification of alcohols of color forming bodies comprising treating the alcohol with ozone and a reducing

agent to obtain a non-odoriferous alcohol product substantially free of color forming bodies.

3,642,916
PREPARATION OF 1,2,4,5-TETRAFLUOROBENZENE
Julian Frodo Tilney-Bassett, Avonmouth, England, assignor to Imperial Smelting Corporation (N.S.C.) Limited (formerly The National Smelting Company Limited), London, England
No Drawing. Continuation of application Ser. No. 392,939, Aug. 28, 1964. This application Mar. 6, 1968, Ser. No. 711,133
Claims priority, application Great Britain, Sept. 13, 1963, 36,229/63
Int. Cl. C09k *3/02*
U.S. Cl. 260—650 **3 Claims**
A method for producing 1,2,4,5-tetrafluorobenzene involving the step of reacting a fluorinated phenyl hydrazine of the general formula:



(where X is fluorine or chlorine or bromine) with a source of alkoxide ions.

3,642,917
VINYL FLUORIDE FROM 1-FLUORO-2-CHLOROETHANE BY PYROLYSIS IN THE PRESENCE OF ETHYLENE
Joseph Warren Hamersma, Tustin, Calif., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 844,199, July 23, 1969. This application July 27, 1970, Ser. No. 58,670
Int. Cl. C07c *17/34, 21/18*
U.S. Cl. 260—653.5 **7 Claims**
1-fluoro-2-chloroethane is pyrolized in the presence of ethylene dichloride to vinyl fluoride. The pyrolysis occurs at 400° C. to 800° C. in ethylene dichloride to 1-fluoro-2-chloroethane ratios of 1:10 to 5:1.

3,642,918
PRODUCTION OF PERCHLOROETHYLENE AND TRICHLOROETHYLENE UTILIZING OXYCHLORINATION REACTION
Lester E. Bohl and Raymond M. Vancamp, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation of application Ser. No. 568,763, July 29, 1966, which is a continuation of application Ser. No. 258,131, Feb. 13, 1963. This application May 31, 1968, Ser. No. 733,317
Int. Cl. C07c *21/10, 21/12*
U.S. Cl. 260—654 A **4 Claims**
Trichloroethylene and perchloroethylene are produced by oxychlorinating an aliphatic 2 carbon hydrocarbon or partially chlorinated hydroacrbon in a two-stage process. In the first stage, oxychlorination is conducted in a fluidized bed at 550° F. to 750° F. to give a chlorinated product of the composition $C_2H_xCl_y$, x ranging from 1 to 3.3 and y from 2.5 to 4. This oxychlorination product, along with further oxygen, is fed to a second fluidized bed operated at a higher temperature than the first bed between 700° F. to 830° F., wherein it is converted by oxidation reaction to a predominantly trichloroethylene and perchloroethylene product. Some chlorinating agent may be fed to the second fluidized bed as the chlorine content of the first stage product dictates.

3,642,919
PREPARATION OF 1,4-DICHLOROBUTENE-2
Giovanni A. Bonnetti, Wynnewood, Thomas N. Baker III, Philadelphia, and Eugene C. Capaldi, Broomall, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Nov. 13, 1969, Ser. No. 876,603
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 **6 Claims**
Reacting 3,4-epoxybutene-1 with hydrochloric acid and cuprous chloride to produce 1,4-dichlorobutene-2. In another embodiment the 3,4-epoxybutene-1 is first hydrolyzed to a mixture of the 2 - butene - 1,4 - diol and erythrol (1-butene-3,4-diol). These compounds can be reacted with the hydrochloric acid and cuprous chloride to produce the 1,4-dichlorobutene-2. The 1,4-dichlorobutene-2 is a useful intermediate in the production of various monomers.

3,642,920
PREPARATION OF ALKYL IODIDE FROM ALKYL CHLORIDE BY NUCLEOPHILIC SUBSTITUTION
Morris A. Johnson and Kang Yang, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Dec. 12, 1968, Ser. No. 783,426
Int. Cl. C07c *17/20*
U.S. Cl. 260—658 R **5 Claims**
Propylene carbonate is disclosed as a reaction medium for the preparation of alkyl iodides from the corresponding alkyl chlorides by nucleophilic substitution.

3,642,921
MANUFACTURE OF 1,2-DICHLOROETHANE
John H. McCarthy and Andrew O. Wikman, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 127,793, July 31, 1961. This application May 29, 1967, Ser. No. 642,234
Int. Cl. C07c *17/02*
U.S. Cl. 260—659 A **4 Claims**
A split-feed oxychlorination process conducted by admitting oxygen and hydrogen chloride to the bottom of a fluidized reaction zone and ethylene to the zone at a location substantially above the bottom, under conditions such that the reactants form 1,2-dichloroethane.

3,642,922
PREPARATION OF ORGANOCALCIUM COMPOUNDS
Carl A. Uraneck, William J. Trepka, and James D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,177
Int. Cl. C07f *3/04;* **C08d** *3/06*
U.S. Cl. 260—665 R **7 Claims**
Polymerization initiators are produced from substantially pure calcium metal together with polynuclear aromatic compounds or polyaryl substituted ethylene.

3,642,923
PRODUCTION OF POLYCYCLIC HYDROCARBONS
Richard Gregory Foster, Runcorn, and David Richard Joy, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 6, 1970, Ser. No. 35,276
Claims priority, application Great Britain, May 9, 1969, 23,778/69; July 22, 1969, 36,829/69
Int. Cl. C07c *3/00, 13/54, 13/62*
U.S. Cl. 260—666 PY **16 Claims**
Polycyclic bridged ring compounds are produced by a two-stage process in which a substituted cyclic hydrocarbon such as norbornenyl chloride is condensed with an acyclic conjugated diolefine, e.g. butadiene, isoprene etc. and the substituents from the cyclic hydrocarbon subse-

quently removed to produce a double bond. A preferred substituent is a halogen eliminated as a hydrogen halide. The substituted cyclic hydrocarbon may itself be produced from cyclopentadiene or a norbornene by reaction with an acyclic substituted olefine such as vinyl chloride. The products of the process have utility as termonomers in EPT rubbers, 1,4-endomethylene-6-methyl-1,4,5,8,9,10-hexahydronaphthalene being particularly useful in this respect.

3,642,924

PROCESS FOR PRODUCING CYCLIC TRIMERS OF DIENES

Hiroyuki Morikawa, Inashiki-gun, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,912
Claims priority, application Japan, Aug. 23, 1968, 43/59,817
Int. Cl. C07c *3/02, 3/10, 3/18*
U.S. Cl. 260—666 B **9 Claims**

Cyclotrimerization of a diene is catalyzed by a catalyst which comprises a combination of

(1) a titanyl compound representable by the general formula $TiOX_2$ wherein X is a halogen or an OR group wherein R is a hydrocarbon radical, and
(2) a dialkylaluminium halide.

3,642,925

HYDROCARBON ISOMERIZATION PROCESS

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application June 16, 1969, Ser. No. 833,786, now Patent No. 3,558,523, dated Jan. 26, 1971, which is a continuation-in-part of application Ser. No. 819,114, Apr. 24, 1969. Divided and this application Apr. 20, 1970, Ser. No. 30,356
Int. Cl. C07c *15/02, 5/24*
U.S. Cl. 260—668 A **18 Claims**

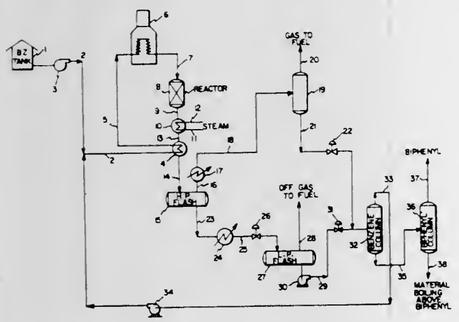
Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component, a tin component, and a rhenium component with a porous carrier material.

3,642,926

PROCESS FOR ARYLATING AROMATIC COMPOUNDS WITH MOLECULAR SIEVE CATALYST

Duane K. Chapman, Ashland, Ky., William S. Green, Cincinnati, Ohio, and John W. Newman, Ashland, Ky., assignors to Ashland Oil Inc., Houston, Tex.

Continuation-in-part of application Ser. No. 795,384, Dec. 18, 1968. This application June 3, 1970, Ser. No. 43,003
Int. Cl. C07c *15/12*
U.S. Cl. 260—670 **22 Claims**



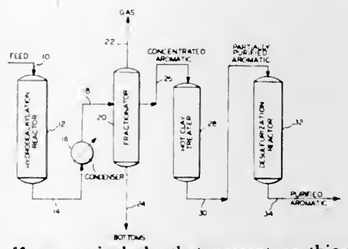
Process for arylating aromatic compounds using a molecular sieve catalyst, e.g. production of polyphenyls, which includes both substituted and unsubstituted biphenyl, terphenyl, and higher polyphenyl compounds.

3,642,927

PROCESS FOR DESULFURIZATION OF AROMATICS

Stephen M. Kovach, Ashland, and Ralph E. Patrick, Flatwoods, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Feb. 7, 1968, Ser. No. 703,585
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 **18 Claims**



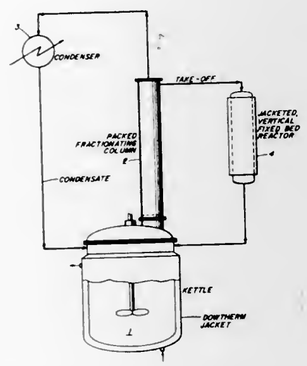
The sulfur—particularly that present as thiophenes—contained in aromatic hydrocarbons is substantially removed by treating the hydrocarbons with metals, and oxides thereof having hydrogenating activity. In one embodiment, the aromatic hydrocarbon is contacted with nickel, cobalt, nickel and tungsten, cobalt and tungsten, or their oxides at a temperature of about 200 to 600° F. and a pressure of about 50–500 p.s.i.g. In another embodiment, the aromatic hydrocarbon is contacted with nickel, cobalt, nickel and molybdenum, cobalt and molybdenum, nickel and tungsten, cobalt and tungsten, or their oxides at a temperature of about 600–900° F. and a pressure of about 0–50 p.s.i.g.

3,642,928

CATALYZED ISOMERIZATION OF α-PINENE

Curry Beach Davis, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,430
Int. Cl. C07c *5/30, 13/00;* **C09f** *3/02*
U.S. Cl. 260—675.5 **7 Claims**



A continuous process is described for the isomerization of α-pinene, β-pinene, or turpentine, by means of 13X zeolite catalyst, to give an isomerizate containing predominantly dipentene and minor amounts of terpinolene and camphene.

3,642,929

RECOVERY OF ACETYLENE FROM GAS MIXTURES

Kurt Sennewald, Hurth-Hermulheim, Alexander Ohorodnik, Liblar, and Udo Dettmeier, Hurth-Hermulheim, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,213
Claims priority, application Germany, Oct. 24, 1969, P 19 53 520.7
Int. Cl. C07c *11/24, 11/12*
U.S. Cl. 260—679 A **5 Claims**

Isolation and recovery of acetylene from an acetylene-containing gas mixture by intimately contacting the said gas mixture with a solvent, that is capable of selectively extracting and absorbing the acetylene, and expelling the absorbed acetylene from the solvent. The acetylene is more particularly isolated and recovered with the use of a solvent substantially consisting of dimethylphosphine oxide, methylethylphosphine oxide or diethylphosphine oxide.

3,642,930

PROCESS FOR THE MANUFACTURE OF ISOPRENE FROM ISOAMYLENES AND METHYL BUTANOLS AND CATALYST THEREFOR

Robert K. Grasselli, Garfield Heights, and Harley F. Hardman, Lyndhurst, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 794,469, Dec. 30, 1968. This application Oct. 20, 1969, Ser. No. 867,934
Int. Cl. C07c *5/18, 1/24*
U.S. Cl. 260—680 E **12 Claims**

A vapor phase catalytic oxydehydrogenation process for the conversion of a stream of mixed isomeric isoamylenes, methyl butanols or mixtures thereof to isoprene with relatively short contact times at a reactor temperature in the range of 500° F. to 1100° F. at from 0.5 to about 10 atmospheres pressure. The catalysts comprise an alkali metal as an essential catalytic ingredient.

3,642,931

DISPROPORTIONATION OF OLEFINS

Leonard Turner, Woking, and Keith Vaughan Williams, Shepperton, England, assignors to Brockway Glass Company, Inc., Brockway, Pa.

No Drawing. Filed Aug. 22, 1966, Ser. No. 573,881
Claims priority, application Great Britain, Dec. 16, 1965, 53,351/65, Patent 1,093,784
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **17 Claims**

This invention is directed to the disproportionation of olefinic hydrocarbons with an activated rhenium heptoxide-containing catalyst.

3,642,932

OLEFIN POLYMERIZATION TO YIELD PREDOMINANTLY DIMERS AND TRIMERS

Burnett H. Johnson, Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 814,524, Apr. 7, 1969, which is a division of application Ser. No. 594,682. This application Feb. 2, 1970, Ser. No. 8,050
Int. Cl. C07c *3/18*
U.S. Cl. 260—683.15 D **13 Claims**

Dimers and trimers of mono-alhpa-olefins are produced with a Friedel-Craft type catalyst system consisting of a first component selected from a compound having the formula:

$$RMeX_2$$

where:

R is a lower alkyl group, e.g., C_1 to C_6
X is Cl, Br, or I, and Me is Al, Ga or In;

and the second component is a Group I*b*, II*b*, or IV*b* metal halide (the groups as found in the Periodic Table of the Elements) or binary compound of the metal halide with $AlCl_3$, $GaCl_3$, or $InCl_3$.

3,642,933

DOUBLE BOND ISOMERIZATION OF OLEFINS OVER ALUMINA-SUPPORTED ZIRCONIA CATALYST

Louis F. Heckelsberg, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,277
Int. Cl. C07c *5/22, 5/24*
U.S. Cl. 260—683.2 **8 Claims**

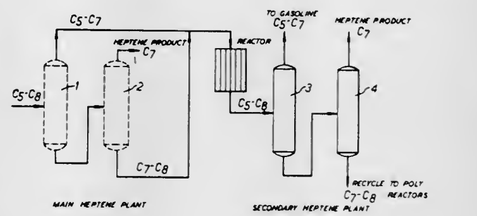
Olefins are isomerized with respect to the position of the double bond by contact with a catalyst comprising a halogen- and sulfate-free zirconium compound supported on alumina.

3,642,934

HEPTENE RECOVERY PROCESS

Michael J. Fulham, Quebec, Quebec, Canada, Richard Jones and Michael Webb, Southampton, England, and Jacques Hamard, Rixensart, Belgium, assignors to Esso Research and Engineering Company

Filed July 5, 1968, Ser. No. 744,616
Claims priority, application Great Britain, July 7, 1967, 31,377/67
Int. Cl. C07c *3/16, 5/24*
U.S. Cl. 260—683.15 C **10 Claims**



C_5 to C_8 olefins are passed over an acidic, e.g., phosphoric acid, catalyst at temperatures ranging from 300 to 500° F. to effect isomerization and then subjecting the isomerized product to fractional distillation to separate heptenes from the product.

3,642,935

DIMERISATION OF OLEFINS

Robert William Dunning, Keith Andrew Taylor, and John Walker, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 22, 1968, Ser. No. 754,740
Claims priority, application Great Britain, Sept. 4, 1967, 40,242/67, Patent 1,164,855
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **16 Claims**

Process for the oligomerisation of monoalkenes in which the monoalkene is contacted with a catalyst comprising a nickel compound, a substituted organic halophosphine and a Lewis acid. Preferably the catalyst comprises a preformed nickel complex containing an appropriate halophosphine ligand or ligands and a Lewis acid. In either case, the nickel compound or complex is preferably contacted with an olefin before addition of the Lewis acid.

3,642,936

COATING COMPOSITION OF AN ISOCYANATE TERMINATED POLYURETHANE, A VINYL CHLORIDE POLYMER AND POLYSILOXANE

George R. Hodge, Old Hickory, Tenn., and Angelos V. Patsis, New Paltz, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 22, 1968, Ser. No. 769,708, now Patent No. 3,551,830, dated Dec. 29, 1970. Divided and this application June 3, 1970, Ser. No. 43,217

Int. Cl. C08g *41/04*

U.S. Cl. 260—827 11 Claims

A coating composition that consists essentially of an isocyanate terminated polyurethane, a vinyl chloride polymer and a reactive polysiloxane is the subject of this invention. This coating composition is particularly useful for forming glossy vapor permeable finishes on natural leather and synthetic microporous coriaceous sheet materials that are free from surface tack.

3,642,937

SEALANT HAVING EPOXIDE ENCAPSULATED BY AMINOPLAST SHELL AND POLYMERIC BINDER

Fred W. Deckert, Waunakee, Wis., and Gale W. Matson, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 638,428, May 15, 1967. This application Dec. 22, 1969, Ser. No. 887,398

Int. Cl. C08g *45/10*

U.S. Cl. 260—834 12 Claims

Mechanical fasteners and stable pressure-activatable adhesive system therefore based on encapsulated resin, preferably epoxy and non-volatile curative therefor, preferably an amine such as 1,3-bis-4-piperidylpropane or imidazole, the capsules and curative being contained in polar solvent-free binder which can hold system on abutment surfaces of fastener.

3,642,938

STORAGE-STABLE, HEAT-CURABLE SOLUBLE AND FUSIBLE PRECONDENSATES BASED ON POLYEPOXIDE COMPOUNDS, ACID POLYESTERS AND ANHYDRIDE CURING AGENTS

Rolf Schmid, Reinach, Basel-Land, Friedrich Lohse, Allschwil, Willy Fisch, Binningen, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,453

Claims priority, application Switzerland, Aug. 7, 1968, 11,848/68

Int. Cl. C08g *45/14*

U.S. Cl. 260—835 16 Claims

Curable B-stage from (1) a polyepoxide with at least one carbocyclic or heterocyclic ring (for example Araldit CY 175, triglycidyl isocyanurate or casting resin F), (2) a polyester containing at least one carbocyclic or heterocyclic ring, with terminal carboxyl groups, with the ratio of the total chain members Z_g to ring members Z_r having to be 2 to 13, and with the chain possessing 2–10 recurring structural elements (for example polyesters from phthalic anhydride and ethylene glycol 11:10, or from succinic acid and 1,1-bis(hydroxymethyl)-cyclohexane 5:4) in amounts of 0.2–0.8 equivalent per 1 epoxide equivalent, and (3) a polycarboxylic acid anhydride containing a carbocyclic ring (phthalic anhydride, hexahydrophthalic anhydride) in an amount of 0.8–0.2 equivalent per 1 epoxide equivalent.

3,642,939

RADIATION-CURABLE VINYL PAINT CONTAINING PENDANT UNSATURATION WITH INTERVENING ETHER FUNCTIONALITY

John F. Fellers and James E. Hinsch, Livonia, and Ernest O. McLaughlin, Garden City, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,346

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 15 Claims

A film-forming, radiation-polymerizable, paint binder solution of vinyl momomers and an olefinically unsaturated vinyl monomer-comprising polymeric binder is applied as a liquid coating to an external surface of an article of manufacture and cured thereon with ionizing radiation. The binder polymer is characterized by having olefinic unsaturation between the terminal carbons of the side chains, i.e. alpha-beta unsaturation, with said unsaturation being separated from the principal carbon-to-carbon chain by two ether linkages. The binder polymer is formed by reacting an allylic alcohol with a polymer formed by reacting an unsaturated glycidyl ether with at least two different vinyl monomers at least one of which is an ester of acrylic or methacrylic acid.

3,642,940

POLYOXYMETHYLENES CONTAINING A BUTADIENE POLYMER AND A VINYL AROMATIC HYDROCARBON OR A METHYL METHACRYLATE POLYMER

Karlheinz Burg, Langenhain, Taunus, and Harald Cherdron, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 15, 1970, Ser. No. 46,489

Claims priority, application Germany, June 20, 1969, P 19 31 392.9

Int. Cl. C08g *45/04*; C08f *15/00, 19/00*

U.S. Cl. 260—837 10 Claims

Thermoplastic moulding compositions with high impact strength are prepared by mixing a polyacetal with a two-phase mixture which is composed of an elastomeric and a hard polymer, the elastomeric phase being dispersed in the hard phase. The moulding compositons obtained can be worked thermoplastically and are suitable for the manufacture of semi-finished and finished products, for example shaped articles, household articles, and machine parts.

3,642,941

THERMOPLASTIC MOLDABLE MASSES OF POLYAMIDE BLENDS

Johannes Schneider, 11 Ravensbergerweg, and Wolfgang Pungs, 1 Paul-Muller-strasse, both of 521 Troisdorf, Germany

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,442

Claims priority, application Germany, Mar. 23, 1968, P 17 69 040.3

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 6 Claims

Improved polyamide molding materials comprising 1 to 99 parts by weight of partially crystallized or crystallizable polyamides which are the polymeric self condensation product of ω-amino acids or ω-lactams, or the condensation products of straight chain aliphatic diamines and aliphatic dicarboxylic acids, and 1 to 99 parts by weight of an amorphous polyamide which is the condensation product of an aromatic dicarboxylic acid, anhydride or lower alkyl ester thereof with 2,2,4 or 2,4,4-trimethyl-1,6-diamino-n-hexane or with straight chain aliphatic diamines having 6 to 12 carbon atoms between next adjacent amine groups.

3,642,942

MODIFIED OXYMETHYLENE POLYMERS STABILIZED WITH PHOSPHITES

Claire Castner, Nutley, and Raymond A. Berard, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing, Filed Nov. 5, 1969, Ser. No. 874,386

Int. Cl. C08g *1/22, 51/58*

U.S. Cl. 260—858 6 Claims

Polyoxymethylene compositions and the process for producing the same are described and claimed that include an oxymethylene polymer coupled by means of a diisocyanate to a dissimilar organic polymer and a stabilizer for the modified oxymethylene polymer. The polyoxymethylene compositions are useful as molded articles, film and the like.

3,642,943

ACRYLIC URETHANE COMPOSITION OF ACRYLIC POLYMER WITH PENDANT ISOCYANATE GROUPS AND ISOCYANATE CONTAINING URETHANE PREPOLYMER

Charles M. Noel, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

No Drawing. Filed July 8, 1970, Ser. No. 53,336

Int. Cl. C08g *41/04*

U.S. Cl. 260—859 R 49 Claims

There is provided a mixture of (A) a polyurethane prepolymer and (B) a copolymer of an acrylic monomer and an adduct of an organo diisocyanate and a hydroxyalkyl acrylic monomer. The composition has enhanced adhesive properties as compared to the polyurethane prepolymer alone, particularly to vinyl substrates, and hence is especially adapted for use as a coating on vinyl substrates exhibiting marked adhesion thereto and blocking migration of plasticizer from the vinyl substrate into the coating.

3,642,944

FIRE RETARDANT POLYESTERS AND ARTICLES MADE THEREFROM

Austin C. Abbott, Jr., Millbrae, Calif., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed July 1, 1970, Ser. No. 51,684

Int. Cl. C08f *21/00, 21/02*

U.S. Cl. 260—864 8 Claims

Fire retardant polyester compositions are made by the reaction of a brominated polyol and a chlorinated aromatic dibasic acid in which the weight ratio of chlorine to bromine is in the range from about 2:1 to about 6:1, and a vinyl monomer.

3,642,945

POLYOLEFIN-POLYETHERESTER ALLOY

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 12, 1970, Ser. No. 36,687

Int. Cl. C08f *29/10*

U.S. Cl. 260—873 10 Claims

A blend comprising an intimate mixture of polyolefinic material and from about 1 to about 35 weight percent, based on the weight of polyolefin, of a polyetherester derived from bis(hydroxyethoxy)benzene and its homologs are readily spun to fibers having an improved dye receptivity in comparison to unmodified polyolefinic material.

3,642,946

GRAFT COPOLYMER-POLYCARBONATE-POLYSULFONE BLENDS

Thomas S. Grabowski, Vienna, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed Oct. 23, 1969, Ser. No. 868,888

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 5 Claims

This invention relates to ternary blends of ABS graft polymer, polycarbonate and polysulfones which are useful for a variety of applications wherein high impact strengths and high heat distortion temperatures are required.

3,642,947

PRODUCTION OF IMPACT-RESISTANT MOLDING COMPOSITIONS

Dieter Stein, Limburgerhof, and Ludwig Bootz, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,950

Claims priority, application Germany, Apr. 25, 1969, P 19 21 112.2

Int. Cl. C08f *41/12, 19/18*

U.S. Cl. 260—876 R 7 Claims

Thermoplastic molding composition consisting of a rigid component A and an elastomeric component B. Component A is a solution or suspension graft polymer of styrene and acrylonitrile on a butadiene rubber. Component B is an emulsion graft polymer of styrene and acrylonitrile on an acrylic ester rubber. The molding compositions are characterized by high impact resistance at room temperature, good rigidity and satisfactory impact resistance at low temperatures. They may be used, for example, in the manufacture of plastics parts for automobiles.

3,642,948

HIGH IMPACT STRENGTH MOLDING MIXTURES BASED ON CHLORINATED POLYVINYLCHLORIDE

Johann Bauer, Georg Hollenbach, Walter Popp, and Alex Sabel, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Jan. 10, 1969, Ser. No. 790,433

Claims priority, application Germany, Jan. 12, 1968, P 17 19 330.5

Int. Cl. C08f *29/24, 29/12, 37/18*

U.S. Cl. 260—876 R 3 Claims

High impact strength molding mixtures consisting essentially of chlorinated polyvinylchloride having mixed intimately therewith (1) from 5% to 25% by weight of said mixture of a modified butadiene-styrene copolymer selected from the group consisting of acrylonitrile modified butadiene-styrene copolymers and lower alkyl methacrylate modified butadiene-styrene copolymers and (2) from 0.1% to 5.0% by weight of said mixture of low pressure polyethylene having an average molecular weight of between 20,000 and 200,000; as well as high impact strength molded materials produced from said mixture.

3,642,949

IMPACT RESISTANT, HIGH HEAT DISTORTION COMPOSITION

Owen L. Stafford and Jack J. Adams, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,670

Int. Cl. C08f *41/12, 19/02*

U.S. Cl. 260—876 R 7 Claims

Compositions comprising a blend of a polydiene rubber nitrile graft copolymer such as a styrene-acrylonitrile graft of polybutadiene and a thermoplastic resin such as styrene-maleic anhydride provide impact strength and high heat distortion as well as a good balance of other physical properties when certain compositions and proportions are used.

3,642,950
GRAFT COPOLYMERIZATION ON ALPHA-MONOOLEFIN COPOLYMER RUBBERS TO MAKE GUM PLASTICS

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,984
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 19 Claims

A two-stage method of grafting on EPM or EPDM rubber to make a tough, impact-resistant gum plastic:

(I) A portion only of resin forming monomer (e.g., styrene, acrylonitrile) is first "pregrafted" in solution on the EPM or EPDM rubber spine;

(II) The remaining amount of resin-forming monomer is combined with the lightly grafted rubber, and subjected to further graft polymerization to produce the final gum plastic.

New graft copolymers of resin-forming monomers on ethylene/propylene/5-ethylidene - 2 - norbornene terpolymer rubber are also disclosed.

3,642,951
ETHYLENE PROPYLENE BLOCK COPOLYMER AND A 2-STEP METHOD FOR PRODUCING SAME

Iso Shirai, Kouichi Kunimune, and Masaaki Muraki, Higashi, Ichiharashi, Japan, assignors to Chisso Corporation, Osaka-shi, Japan

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,336
Claims priority, application Japan, Sept. 23, 1967, 42/61,112
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 1 Claim

A process for preparing an ethylene propylene block copolymer of improved anti-stress cracking characteristics in the presence of one of several composite catalyst systems which comprises the steps of (1) polymerizing (a) propylene or (b) propylene containing ethylene in an amount less than that of the propylene so that the amount of ethylene in the first segment of the copolymer is not greater than 5%, in an organic solvent and in the presence of the catalyst, (2) lowering the concentration of the unreacted propylene monomers in the said solvent and (3) continuing the polymerization reaction by supplying ethylene to form the second segment of the copolymer. The resulting block copolymer contains the first segment in an amount of 3–40% by weight and the second segment in an amount of 97–60% by weight.

3,642,952
REACTION PRODUCT OF A VINYL ESTER AND POLYPROPYLENE

Victor Jasinski, Dover, and Raymond A. Stone, Fairfield Farms, Del., assignors to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Filed June 2, 1969, Ser. No. 829,765
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R 7 Claims

A process for producing polymeric thermoplastic compositions which comprises effecting reaction of a mixture containing a low molecular weight polyolefin homopolymer, e.g., atactic polypropylene, and a copolymerizable vinyl ester, e.g., vinyl acetate, in a solvent which is a mutual solvent for the homopolymer and for the copolymerizable vinyl ester, e.g., toluene, in the presence of a free radical polymerization catalyst until a major proportion of the vinyl ester has reacted, thereafter removing the solvent, and then continuing the polymerization reaction at an elevated temperature below the thermal degradation temperature of the homopolymer to produce a homogeneous reaction product.

3,642,953
SELECTIVELY SULFONATED BLOCK COPOLYMERS AND PROCESS FOR THEIR PREPARATION

William P. O'Neill, Emeryville, Calif., and Walter V. Turner, Jr., Urbana, Ill., assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

No Drawing. Filed May 20, 1970, Ser. No. 39,165
Int. Cl. C08f *15/04, 27/06*
U.S. Cl. 260—880 5 Claims

Elastic block copolymer containing a polyelectrolyte segment, prepared by selective sulfonation of unsaturated block copolymers wherein the sulfonation is exclusively confined to the unsaturated elastomeric segments, and the plastic segments are unaltered, exhibit water absorption characteristics, and properties when swollen with water which indicate their utility for use as construction materials of devices for surgical implantation or for blood circulation and oxygenation. Additionally, these block copolymers have class utility as reinforcing material for natural and synthetic rubbers, for modification of rubber-based adhesives, and for high impact plastics. Encyclopedia of Polymers Technology (EPT), volume 2, 1965, pages 485, 507, and 517 (Interscience—Wiley). The process for preparation employs complexes of chlorosulfonic acid with ethers to obtain selective sulfonation of the elastomeric segment only.

3,642,954
BLEND OF BUTADIENE/ACRYLONITRILE COPOLYMER, STYRENE POLYMER AND CHLORINE-CONTAINING POLYMER AS A VIBRATION DAMPING COMPOSITION

Alan Edgar Turner, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,672
Claims priority, application Great Britain, Feb. 26, 1968, 9,206/68
Int. Cl. C08d *9/08*
U.S. Cl. 260—889 9 Claims

Wide temperature band vibration damping compositions, particularly suitable for use as interlayers between resonating sheets in laminates, comprise in combination a butadiene/acrylonitrile copolymer, a polymer of styrene with 0 to 50% of butadiene, a chlorine-containing polymer selected from chlorinated ethylene polymers and copolymer of vinylidene chloride with alkyl esters or nitriles of acrylic or methacrylic acids, and optionally a filler to improve modulus. The laminates are particularly suitable for conversion to housings such as valve gear covers, timing gear covers and sumps for internal combustion engines.

3,642,955
DYEABLE POLYPROPYLENE FIBERS

David E. O'Connor, Cincinnati, Ohio, assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,914
Int. Cl. C08f *29/12, 33/08, 7/12*
U.S. Cl. 260—895 4 Claims

Dyeability of polypropylene is substantially improved by blending with the polyolefin a copolymer of 2-methyl-5-vinyl pyridine and vinyl acetate or vinyl alcohol. The amount of the pyridine copolymers employed may range from 1 to 15 percent by weight.

3,642,956
PROCESS FOR THE MANUFACTURE OF NEUTRAL POLYPHOSPHORIC ACID ESTERS FROM P_2O_5 AND ORTHOCARBONIC ACID ESTERS

Klaus-Dieter Kampe and Edgar Fischer, both % Farbwerke Hoechst AG, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 504,187, Oct. 23, 1965. This application Apr. 15, 1969, Ser. No. 817,280
Claims priority, application Germany, Oct. 28, 1964, F 44,326
Int. Cl. C07f *9/08, 7/02*
U.S. Cl. 260—920 1 Claim

A process has been provided for producing neutral polyphosphoric acid ester derivatives which comprises reacting an acid ester with phosphorus pentoxide at a temperature within the range of −78° C. to +140° C., in the absence of moisture and in a mole ratio of ester to phosphorus pentoxide from 0.02 to 3 moles ester to 1 mole phosphorus pentoxide, said acid ester being defined by the formula

$$(R')_m—C(OR)_n$$

wherein $m+n=4$ in which Formula R represents a saturated, unsaturated, oxalkylated, or halogenated aliphatic radical of 1 to 12 carbon atoms, or an aromatic radical of 1 to 12 carbon atoms, and R' represents a hydrogen, a saturated, unsaturated, oxyalkylated, or halogenated aliphatic or cycloaliphatic radical of 1 to 12 carbon atoms or an aromatic radical of 1 to 12 carbon atoms. The compounds are useful as catalysts for the production of polyacetals.

3,642,957
PHOSPHATE AND PHOSPHONATE ESTERS OF 2-CYANOGLYOXYLAMIDE-2-OXIME

James Billet, Piscataway, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed June 9, 1969, Ser. No. 831,738
Int. Cl. C07f *9/08, 9/40;* A01n *9/36*
U.S. Cl. 260—940 2 Claims

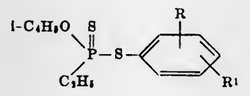
Phosphate and phosphonate esters of 2-cyanoglyoxylamide-2-oxime and the N-substituted derivatives thereof are new compounds having a broad spectrum insecticidal activity.

3,642,958
ISOBUTOXY-S-(4-CHLOROPHENYL) ETHYLPHOSPHONODITHIOATE

Mervin E. Brokke, Richmond, Julius J. Menn, Saratoga, and Stephen C. Dorman, Los Gatos, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed May 14, 1968, Ser. No. 728,902
Int. Cl. C07f *9/40;* A01n *9/36*
U.S. Cl. 260—961 1 Claim

Isobutoxy ethylphosphonodithioates of the formula



wherein R is hydrogen or methyl and R^1 is hydrogen or chlorine. The compounds are useful as insecticides. Representative compounds are isobutoxy-S-phenyl ethylphosphonodithioate, isobutoxy-S-(4-chlorophenyl) ethylphosphonodithioate, isobutoxy-S-(2-methyl - 5 - chlorophenyl) ethyl phosphonodithioate, and isobutoxy-S-(p-tolyl)ethylphosphonodithioate.

3,642,959
PROCESS FOR PREPARING ALKYL ARYL PHOSPHATES

George M. Nichols, Chicago, Ill., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,957
Int. Cl. C07f *9/18*
U.S. Cl. 260—973 11 Claims

Process for the preparation of alkyl aryl phosphates useful as gasoline additives, polymers plasticizers, hydraulic fluids, and the like which comprises forming a a solution of an aryl phosphorohalidate in a cosolvent mixture of an inert aliphatic hydrocarbon solvent having from 5 to 10 carbon atoms and an inert aromatic hydrocarbon solvent selected from the group consisting of benzene, toluene, xylene and mixtures thereof; heating the reaction mixture to reflux temperatures; incrementally adding an alcohol to the refluxing solution to effect alkoxylation of the aryl phosphorohalidate with the attendant formation of a haloacid by-product; and refluxing the solution for a period of time sufficient to remove substantially all by-product haloacid from the solution.

3,642,960
METHOD OF PRODUCING THIONO- OR DITHIO-PHOSPHONIC ACID ESTERS

Harold M. Pitt, Lafayette, and Raymond A. Simone, Walnut Creek, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,387
Int. Cl. C07f *9/40, 9/42*
U.S. Cl. 260—985 5 Claims

A mono- or dithio-phosphonic acid ester such as, e.g., O-ethyl-S-phenyl ethylphosphonodithioate, is prepared by isomerization of a trialkyl phosphite in presence of an iodine containing catalyst at 185° C. and pressures between about 12 and about 30 p.s.i.g. The corresponding dialkyl alkyl phosphonate is reacted with phosgene at a temperature between about 45° and about 55° C. and a pressure between about 0 and about 80 p.s.i.g. The dialkyl phosphono chloridate formed is then reacted with a metal phenolate at about 15° C. with a pH controlled at about 12.5. Finally the phosphonic acid ester is reacted with phosphorous pentasulfide in the presence of a promoter between about 90° and 130° C. The reaction of the dialkyl alkyl phosphonate with phosgene is carried out with a promoter if elevated pressures are not used. Washing of the dialkyl phosphono chloridate to remove any nucleophilic materials prevents unwanted side reactions from occurring.

3,642,961
INJECTION MOLDING PROCESS FOR INHIBITING PROPELLANT

John A. Sutphin, Lakewood, Colo., and Marlen G. Whippen, Succasunna, N.J., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed June 12, 1968, Ser. No. 736,253
Int. Cl. B29f *1/10;* C08b *21/00;* C09j *3/04*
U.S. Cl. 264—3 13 Claims

Propellant grains are inhibited by injection molding of an inhibitor material prepared from a low flow temperature thermoplastic polymer about the surface of the propellant grain wherein the said grain has been primed with a lacquer comprising a film-forming polymer selected from the group consisting of ethyl cellulose having an ethoxy content of from 43% to about 50%, cellulose acetate and cellulose acetate butyrate and the inhibitor material is chosen from the same polymer type as the said primary lacquer polymer.

3,642,962

METHOD OF INHIBITING PUFFING IN THE MANUFACTURE OF GRAPHITE ARTICLES FROM SULFUR-CONTAINING PETROLEUM COKE

Rudolph W. Wallouch, Lewistown, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Continuation of application Ser. No. 665,579, Sept. 5, 1967. This application May 19, 1970, Ser. No. 37,479
Int. Cl. C01b *31/04*
U.S. Cl. 264—29 3 Claims

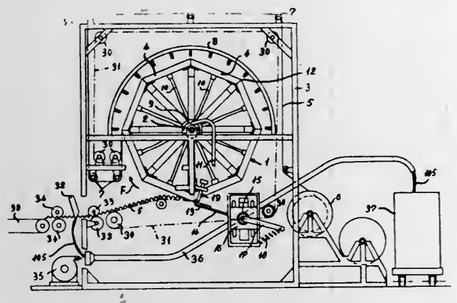
Cyanamids and carbides of the Group II metals of the Periodic Table, particularly calcium cyanamid and calcium carbide, are used in the manufacture of graphite articles from sulfur-containing carbonaceous materials, particularly petroleum coke, to inhibit puffing during graphitization of the articles. A high purity article is obtained by adding the Group II metal compound to petroleum coke, calcining the coke, and leaching the calcined coke with dilute acid prior to formation and graphitization of the article.

3,642,963

METHOD OF SEVERING ARTICLES FROM A CONTINUOUS THERMOPLASTIC WEB MOLDED ON ROTARY VACUUM-FORMING MACHINES

Guido Martelli, Piazza XX Settembre 5; Nerio Martelli, Via Cavaioni 6; and Francesco Martelli, Piazza XX Settembre 5, all of Bologna, Italy

Original application May 9, 1968, Ser. No. 727,990. Divided and this application Dec. 9, 1969, Ser. No. 880,514
Int. Cl. B29c *17/00, 17/14*
U.S. Cl. 264—37 3 Claims



Apparatus for severing articles molded in a web of thermoplastic material in vacuum-forming machines comprising a rotary drum on the periphery of which mold are mounted under the action of heating and suction means, the said web being first cut into quadrangular sections by co-action of cutting edges provided transversally on the drum with swinging cutter means mounted in proximity of the same drum. Whenever a further cutting of the single articles from said quadrangular section of web is desired, said sections are piled up in a convenient number and from said piles of web sections piles of single articles are cut off by means of reciprocating cutters, which may have shaped cutting edges.

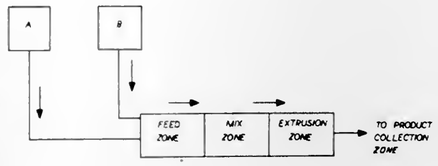
3,642,964

CONTINUOUS PROCESS FOR THE ONE-SHOT PREPARATION OF A THERMOPLASTIC NONCELLULAR POLYURETHANE

Karl W. Rausch, Jr., Hamden, Conn., and Thomas R. McClellan, Rosmalen, Netherlands, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 3, 1969, Ser. No. 881,758
Int. Cl. B29f *3/08;* C08g *22/04*
U.S. Cl. 264—40 8 Claims

A continuous preparation of thermoplastic noncellular polyurethanes is disclosed. The reaction components are mixed in the liquid state and passed through a high shear mixing zone and then through an extrusion zone. The temperature of the reaction mixture is controlled during



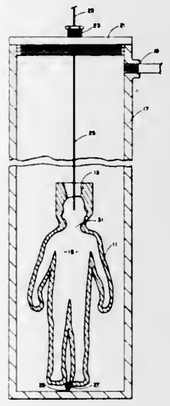
passage through the mixer and extruder in such a manner that the viscosity of the reaction mixture remains substantially constant throughout the mixing and extrusion zones; this requires a temperature gradient in the various zones rising from a low of about 200° F. at mixing to about 400–450° F. at the point of extrusion. In a preferred embodiment the reaction is carried out in a combination of high shear mixer and twin-screw extruder. The thermoplastic polyurethane is preferably extruded as a strand which is cooled below its melting point and pelletized.

3,642,965

METHOD OF REMOVING ESSENTIALLY SEAMLESS FOAMED PARTS FROM A MOLD BY FLUID PRESSURE

Fleet E. Nuttall and John W. Ryan, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 23, 1968, Ser. No. 786,231
Int. Cl. B29c *7/00;* B29d *27/04*
U.S. Cl. 264—45 12 Claims



A method for removing foamed plastic bodies from the molds in which they are formed comprising opening a portion of the mold to allow the product therein to be affected by external pressure, either placing the mold in a closed chamber or attaching it externally to such chamber, pressurizing said chamber to the point where the foamed product in said mold is sufficiently compressed to remove it from the mold, and subsequently withdrawing the body from the mold within the pressure chamber where, upon the release of the pressure within the chamber, the body fully expands to its formed shape.

3,642,966

DIPPING PROCESS FOR FORMING NONLEATHER, POROMERIC FOOTWEAR

Richard T. Morrissey, Cuyahoga Falls, and Nelson C. Hess, Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,580
Int. Cl. B29c *13/04;* B29d *27/04*
U.S. Cl. 264—45 3 Claims

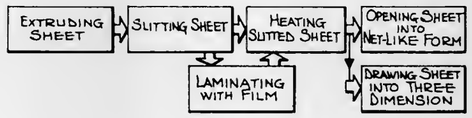
One piece poromeric footwear is produced by a dipping process on footwear forms. The forms are covered with a textile jacket that has been wet with water and they may be equipped for fluid to flow therethrough from interior to exterior. The dip cement is specially formulated for viscosity and nonsolvent liquid content.

3,642,967

METHOD OF PRODUCING NET-LIKE FOAMED THERMOPLASTIC MATERIAL

Martin Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.

Filed June 27, 1969, Ser. No. 837,162
Int. Cl. B26f *1/18;* B29d *7/24*
U.S. Cl. 264—51 10 Claims



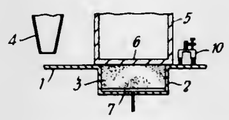
Method of produhcing net-like thermoplastic materials and products formed in accordance with the methods by which properties of thermoplastic materials are applied to provide improved packaging materials, such as wrapping materials, and receptacles through slitting and opening of sheet material and heat setting the material in the opened condition and in any desired configuration.

3,642,968

MANUFACTURE OF BRICKS

Thomas George Clayton, Plymouth, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Filed Apr. 30, 1969, Ser. No. 820,510
Int. Cl. B28b *11/00;* C04b *15/12*
U.S. Cl. 264—82 10 Claims



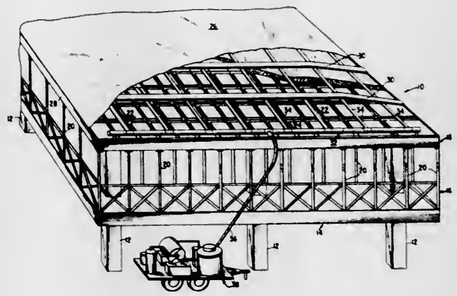
A method of manufacturing a building element having a textured surface on at least one face thereof. The building element is formed from a composition comprising a granular aggregate, a bonding material and water in specified proportions, the composition being compacted in a mould at a pressure of at least 1 long ton per square inch to form a coherent body which is thereafter hardened by treatment with steam. The textured surface is formed on the building element by passing the compacted composition whilst it is contained in the mould and before it is hardened beneath a wire brush which is positioned so as to contact one face of the compacted composition and from thereon a textured surface.

3,642,969

PROCESS FOR CURING CONCRETE IN SITU BY MEANS OF VAPOR

Manuel Estrada, Mexico City, Mexico (Insurgentes Sur 408–8 Col. Roma, Mexico)

Continuation-in-part of application Ser. No. 622,024, Mar. 8, 1967. This application Jan. 15, 1970, Ser. No. 3,049
Int. Cl. C04b *15/12*
U.S. Cl. 264—82 4 Claims



A method for accelerating the curing of concrete in situ comprising pouring concrete into forms; spreading a flexible sheet over the uncured concrete in the forms; and introducing steam from a portable steam generator into the space between the uncured concrete and the flexible sheet. Steam is introduced, under pressure, until the concrete mass has achieved an average temperature of about 77° C. at which time the introduction of steam is suspended and the exothermic heat of reaction cures the concrete at an accelerated rate.

3,642,970

METHOD OF MAKING POROUS BODIES

Akira Hagitani and Yoshishige Morita, Tokyo, Japan, assignors to Daicel Ltd., Osaka, and Nippon Plawder Co., Tokyo, Japan

No Drawing. Filed July 9, 1969, Ser. No. 840,522
Int. Cl. B29f *5/02*
U.S. Cl. 264—122 3 Claims

Porous thermoplastic bodies having a relatively high mechanical strength and a high and uniform porosity in the range of about 27% to 45% are made by filling a mold with spherical particles of a thermoplastic polymer containing from 0.3 to 5% of unreacted monomer and then heating the spherical particles to a temperature above the softening point, but below the melting point, of the polymer in the absence of externally applied pressure.

3,642,971

HEAT STABILIZATION OF POLYAMIDE FIBERS, BRISTLES AND FOILS

Wolfgang Griehl, Chur, Grisons, and Dieter Herion, Domat-Ems, Grisons, Switzerland, assignors to Inventa A.G. fur Forschung und Patentvertung, Zurich, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 666,931, Sept. 11, 1967. This application Aug. 27, 1969, Ser. No. 853,524
Claims priority, application Switzerland, Sept. 16, 1966, 13,426/66
Int. Cl. B29g *5/00;* D01f *1/02*
U.S. Cl. 264—136 6 Claims

A process for the heat stabilization of polyamide fibers, bristles and foils with copper compounds, aromatic amines, and alkali halides. The copper compounds and amines are incorporated in the starting materials prior

to the polymerization. The alkali halides and any other components of the stabilizer are added only upon the formation of fibers, bristles or foils, prior to stretching.

3,642,972

PROCESS OF PRODUCING NONWOVEN FABRICS USING AZIRIDINE-MODIFIED POLYURETHANE BONDING AGENT

Howard L. Needles, Davis, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 19, 1969, Ser. No. 882,407
Int. Cl. D04h *1/00*
U.S. Cl. 264—123 **5 Claims**

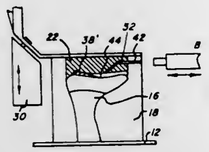
Non-woven fabrics which combine good tensile strength with porosity, air-permeability, flexibility, softness, and the appearance and handle of a woven fabric. Products of the invention, although made from wool, do not shrink when washed in aqueous soap or detergent formulations. Example: An aziridine-modified polyurethane is deposited on wool fibers which are then arranged in the form of a thin web and cured at a temperature of about 100–170° C. under a pressure of about 1000–5000 p.s.i.

3,642,973

METHOD FOR THE PRODUCTION OF FOOTWEAR OR PARTS THEREOF

Frank Vincent Maltby, Don Mills, Ontario, Canada, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Mar. 19, 1969, Ser. No. 808,628
Int. Cl. B29h *7/08*
U.S. Cl. 264—244 **13 Claims**



A method for the production of an article of footwear or parts thereof from one or more molding materials, wherein the molding material is injected through a sprue hole into a two-part mold substantially surrounding a lasting member and having an enlarged opening spaced from the sprue hole. A plurality of closure members, each having a different molding surface on its interior, are sequentially aligned in sealing relationship to the opening to thereby permit molding of successive layers or portions of the article of footwear. A plurality of such molds and closure members may advantageously be mounted on a rotatable turret and successively presented to one or more stationary injectors.

3,642,974

PROCESS FOR THE MANUFACTURE OF MOLDINGS OF POLYLACTAMS BY ACTIVATED ANIONIC POLYMERIZATION OF LACTAMS

Hans-Rudolf Jacobi, Mannheim, Abel Hauser, Bruehl-Rohrhof, and Manfred Hoffmann, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 2, 1970, Ser. No. 51,972
Claims priority, application Germany, July 7, 1969, P 19 34 305.6
Int. Cl. B29g *1/00*
U.S. Cl. 264—294 **3 Claims**

A process for the manufacture of polyamide moldings by activated anionic polymerization of lactams in a compression mold heated to the temperature of polymerization and provided with a plunger, the process comprising charging the mold with a melt of lactam, activator and catalyst in an amount such as is required for the production of the molding, immersing the plunger in the melt so that the latter completely fills the mold, compensating for



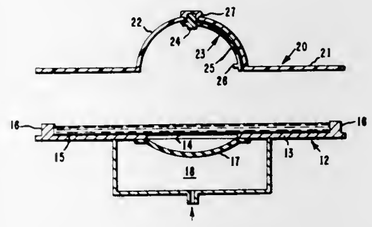
contraction of the melt during polymerization by advancing the plunger without applying pressure to the melt, and, when no further contraction takes place, closing the mold under pressure and thus giving the polymer its final shape.

3,642,975

PROCESS FOR FORMING A STRESS-FREE ARTICLE CONTAINING A DEPRESSION FROM A POLYMER

Ray B. Duggins, Chadds Ford, Pa., and Robert J. Gross, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 9, 1969, Ser. No. 840,317
Int. Cl. B29c *1/04, 1/08, 1/12, 9/00*
U.S. Cl. 264—314 **38 Claims**



A process for forming a stress-free article, containing a depression, from a polymer that shrinks upon polymerization, which comprises: forming a mixture from the polymer and an inert filler; depositing the mixture onto a first casting surface having a deformable portion; positioning a second casting surface, containing a concavity, above the first casting surface; applying a force to deform the deformable portion of said first casting surface towards the concavity while the mixture is still in a liquid state; hardening the mixture; and, during hardening, causing the deformable portion of the first casting surface to collapse by just enough to allow the mixture to harden and shrink freely without straining to overcome the applied force. A structure with a consistent surface pattern can be formed using the above process, as can a completely formed lavatory unit if the concavity supports a properly positioned degradable drain core that can be dissolved after the mixture has hardened.

3,642,976

SOLID PHASE, HYDROSTATIC EXTRUSION OF A FILLED THERMOPLASTIC BILLET TO PRODUCE ORIENTATION

Alan Buckley and Christopher Cassin, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 26, 1969, Ser. No. 802,626
Claims priority, application Great Britain, Feb. 27, 1968, 9,466/68
Int. Cl. B29f *3/014*
U.S. Cl. 264—323 **13 Claims**



Process forming article from a thermoplastic matrix containing fillers of defined shape, particularly fibres and plate-like structures, in which both the matrix and filler are oriented in the same direction or directions. The tensile properties of the articles are improved over similar articles in which the components are unoriented. The preferred process for producing such articles is hydrostatic extrusion below the melting point of the components.

3,642,977

HAIR SHAMPOO COMPOSITIONS CONTAINING CERTAIN IMIDAZOLINES AND CERTAIN AMIDE-SUBSTITUTED CARBOXYLIC ACIDS

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 541,137, Apr. 8, 1966. This application May 22, 1969, Ser. No. 827,042
Int. Cl. A61k *7/06*
U.S. Cl. 424—70 **9 Claims**

A shampoo composition is described which comprises 5–25% of a 2-acyclic-1(ethyl-beta-oxipropanoic)-imidazoline, 3 to 20% of an amide-substituted carboxylic acid which is a higher fatty acyl sarcosine or a higher fatty acid amide of polypeptide amino acids, the maximum amount of carboxylic acid being one mole per mole of imidazoline, 0–35% of a lower aliphatic alcohol and water.

3,642,978

PROCESS FOR PRODUCING STABLE CYTOCHROME C PREPARATION

Nobuhisa Ogawa, Sakaecho Sokashi, Japan, assignor to Mochida Seiyaku Kabushiki Kaisha, Kita-ku, Japan

Filed Feb. 12, 1970, Ser. No. 10,746
Claims priority, application Japan, Mar. 5, 1969, 44/16,266
Int. Cl. A61k *25/00, 27/12*
U.S. Cl. 424—37 **7 Claims**

Process for producing stable cytochrome c preparation, by gelating an aqueous solution containing cytochrome c and gelatin and drying the resulting substance by removing the water while retaining the cytochrome c in a colloidal gel state.

3,642,979

DENTIFRICE COMPOSITIONS CONTAINING INSOLUBLE SALTS OF AMINO ALKYLENE PHOSPHORIC ACIDS

Riyad R. Irani, Mentor, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,225
Claims priority, application Trinidad and Tobago, Mar. 9, 1968, 22/68
Int. Cl. A61r *7/16*
U.S. Cl. 424—54 **3 Claims**

Dentifrice compositions containing as the primary polishing agent a substantially water-insoluble salt of an amino-alkylene phosphonic acid such as the calcium salt of an amino tri(alkylidene phosphonic acid) having the formula, e.g.

$$N—[CH_2—PO_3H_2]_3$$

3,642,980

MOLDABLE LIPSTICK COMPOSITIONS CONTAINING AN EMULSIFIER

Felix Lachampt, Franconville, Andre Viout, Paris, and Guy Vanlerberghe, Mitry-Mory, France, assignors to Société Anonyme dite: L'Oreal

No Drawing. Filed Dec. 26, 1967, Ser. No. 693,190
Claims priority, application Luxembourg, Dec. 28, 1966, 52,708
Int. Cl. A61k *7/02*
U.S. Cl. 424—64 **6 Claims**

A new material for use in making lipsticks comprising a moldable mixture of oils and waxes in combination with an emulsifier of the water-in-oil type having a high affinity for water, said emulsifier being selected from the group consisting of the magnesium salts of certain polyoxyalkylene fatty alcohols, certain oxypropylene-oxyethylene alcohols, and certain oxypropylene polyglycerol alcohols.

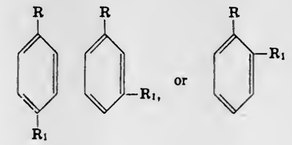
3,642,981

TOXIC CHEMICAL VACCINES

John J. Cuculis, Baltimore, Howard G. Meyer, Abingdon, Van M. Sim, Bel Air, and Ludwig A. Sternberger, Lutherville, Md., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 4, 1970, Ser. No. 34,547
Int. Cl. A01k *27/00*
U.S. Cl. 424—88 **10 Claims**

A composition of matter and method useful as a vaccine prophylactic means to protect mammals against poisoning by anticholinesterase compositions; the vaccine being the product resulting from the reaction of a carrier with a compound selected from the group



wherein R is any organophosphate or organophosphonate and R_1 is a member selected from the group of diazonium, carboxyl, amino acid, amide, isocyanate, or isothiocyanate.

The carrier can be any protein such as hemocyanin, ferritin, gamma G immunoglobulin, and egg albumin having a molecular weight in excess of 500,000 or any non-protein substance foreign to the host and having a

molecular weight in excess of 500,000. The vaccination is carried out by conventional means such as intramuscular, subcutaneous, aerosol, or intravenous injections.

3,642,982

UTILIZATION OF LIVING BACTERIA AS INSECTICIDES

Rokuya Morimoto, Neyagawa, and Reijiro Kodama, Toyonaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 341,436, Jan. 30, 1964. This application Aug. 2, 1965, Ser. No. 476,682

Claims priority, application Japan, Feb. 2, 1963 38/5,234; Aug. 6, 1964, 39/44,997

Int. Cl. A01n *15/00*

U.S. Cl. 424—93 **9 Claims**

Alkalophilic and acid-producing bacteria—*Serratia piscatorum, Streptococcus faecalis, Aerobacter aerogenes*—are cultured to produce living cells which are useful insecticidally, more especially against lepidopterous larvae, such as common cabbage worm, etc.

3,642,983

METHOD OF PREPARING INJECTABLE LIVER EXTRACTS

Marino Roberto Viola, Viguzzolo, Alessandria, Italy, assignor to Laboratorio Chimico Farmaceutico E. Granelli S.p.A., Milan, Italy

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,573

Claims priority, application Italy, Apr. 1, 1968, 51,135/68

Int. Cl. A61k *17/00*

U.S. Cl. 424—106 **7 Claims**

A method for preparing an injectable liver extract comprising the following steps:

(a) wherein ground liver is first digested and dispersed in water acidified by sulfuric acid having a pH in the range of from 5.3 to 5.8;

(b) whereupon the liquid phase is concentrated and deprived of its proteic fraction for oral administration by precipitation with an organic solvent, the dissolved matter being recovered for preparing therefrom, an injectable aqueous solution;

(c) said method being characterized in that the digestion step is carried out in a temperature range of from 45° C. to 50° C. for a period of from 5 to 8 hours, followed by filtering said dispersion, whereafter the liquid phase is concentrated in the vacuo at a temperature not exceeding 35° C., to a dry matter content of from 13% to 18% by weight, and subjected to deproteinization by treatment with acetone at a temperature of 15° C. to 25° C., thereafter separating said proteic fraction for oral administration through filtration, the resulting aqueous-acetonic solution being deprived of acetone by concentration through evaporation at a temperature not exceeding 32° C.

3,642,984

ANTIBIOTIC GARLANDOSUS AND PROCESS FOR PREPARING THE SAME

Malcolm E. Bergy and Clarence De Boer, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 28, 1964, Ser. No. 363,121

Int. Cl. A61k *21/00*

U.S. Cl. 424—117 **6 Claims**

Garlandosus is a biosynthetic product obtained by culturing a garlandosus producing actinomycete in an aqueous nutrient medium under aerobic condition and is active against gram-negative bacteria.

3,642,985

THREOMYCIN AND PRODUCTION THEREOF

Ken Katagiri, Ikedashi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 512,549, Dec. 8, 1965. This application Feb. 27, 1967, Ser. No. 623,502

Claims priority, application Japan, Dec. 8, 1964, 39/69,291

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **3 Claims**

An antibiotic, Threomycin, having antibacterial properties, and a process for producing the same being characterized by cultivating *Streptomyces threomyceticus* n. sp. in an aqueous nutrient-containing solution under a submerged aerobic condition.

3,642,986

ASPIRIN-CHARCOAL COMPOSITIONS

William Arthur Welch, 401 Eden Road, Apt. I–5, Lancaster, Pa. 17601, and Fritz Peter Kohler, 314 Avon Road, Bryn Mawr, Pa. 19019

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,833

Int. Cl. A01n *9/00, 9/24;* **A61k** *27/00*

U.S. Cl. 424—125 **5 Claims**

Aspirin, which is unstable and decomposes in the presence of activated charcoal, is stabilized by converting the aspirin to its aluminum salt. Therapeutically useful and stable compositions comprising aspirin and activated charcoal are provided.

3,642,987

LINCOMYCIN AND TETRACYCLINE COMPOSITIONS

Malcolm E. Bergy, 2617 Lomond Drive, and Ross R. Herr, 1303 Roseland Ave., both of Kalamazoo, Mich. 49001, and Donald Joseph Mason, 4802 Romence Road, Portage, Mich. 49002

No Drawing. Continuation of application Ser. No. 723,322, Apr. 22, 1968, which is a continuation-in-part of application Ser. No. 134,843, Aug. 30, 1961, now Patent No. 3,155,580. This application Dec. 23, 1969, Ser. No. 884,769

Int. Cl. A61k *21/00*

U.S. Cl. 424—181 **3 Claims**

Lincomycin and tetracycline composition with ranges of lincomycin 5–95 parts (50–1000 mg.) to tetracycline 95–5 parts (50–1000 mg.). The combination of antibiotics is prepared with pharmaceutical carriers for oral and parenteral administration and prevents developments of resistance pathogens and has synergistic activity.

3,642,988

NEMATICIDAL PHOSPHORYLATED BENZOFURAZANS

Johannes Th. W. Montagne and Christopher L. Dunn, Kent, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 15, 1969, Ser. No. 791,490

Claims priority, application Great Britain, Jan. 25, 1968, 3,433/68

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **3 Claims**

Protection of crops against attack by nematodes is afforded by treating the nematodes with a phosphorylated benzofurazan.

3,642,989

NEMATOCIDAL PREPARATIONS CONTAINING PHOSPHONIUM COMPOUNDS AS THE INGREDIENT

Henry Martin, Basel, Ernst Beriger, Allschwil, and Kurt Moser, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

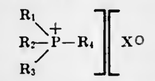
No Drawing. Filed June 16, 1967, Ser. No. 646,450

Claims priority, application Switzerland, June 22, 1966, 9,056/66

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **6 Claims**

The present invention relates to a pesticidal preparation, especially a nematocidal preparation, which comprises as active substance, a compound of the formula



and, if desired, a di-, tri- or poly-halogen adduct thereof, in which formula R_1, R_2 and R_3 are identical or different and each represents an aliphatic, araliphatic, aromatic or heterocyclic group, R_4 represents an unsubstituted or substituted aliphatic, araliphatic, aromatic or heterocyclic group and X^- stands for an anion, if desired, together with a suitable carrier.

3,642,990

PROCESS OF INHIBITING TRANSPLANTED MAMMARY ADENOCARCINOMA IN MICE USING POLYHALO(AZO OR AZOXY) BENZENE COMPOUNDS

Ralph Grassing Child, Pearl River, N.Y., and Steve George Syokos, Westwood, and Andrew Stephen Tomcufcik, Old Tappan, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 15, 1968, Ser. No. 744,651

Int. Cl. A61k *27/00*

U.S. Cl. 424—226 **4 Claims**

The process of inhibiting transplanted mammary adenocarcinoma in mice which comprises administering to the animal a compound selected from the group consisting of: 3,3′,4,4′-tetrachloroazobenzene, 3,3′ - dichloro - 4,4′ - difluoroazobenzene, 3,3′,4,4′-tetrabromoazobenzene, 2,2′,3,3′,4,4′-hexachloroazobenzene, 3,3′,4,4′,5,5′ - hexachloroazobenzene, 6-hydroxy-3,3′,4,4′-tetrachloroazobenzene, 3,3′,4,4′,5,5′-hexachloroazoxybenzene, 2,2′,3,3′,4,4′ - hexachloroazoxybenzene, 2,2′-dimethyl-4,4′,5,5′ - tetrachloroazoxybenzene, and 3,3′,4,4′ - tetrachloroazoxybenzene. Therapeutic compositions in dosage unit form can be prepared by combining any of the above compounds in an amount of between 1 and 250 milligrams per dosage unit with a pharmaceutical carrier.

3,642,991

ALUMINUM CALCIUM GLUCONATE COMPLEX OF TETRACYCLINE ANTIBIOTIC FOR PARENTERAL USE

George Madison Sieger, Montvale, James Elwood Krueger, New City, and William Charles Barringer, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 742,702, July 5, 1968, which is a continuation-in-part of application Ser. No. 559,073, June 21, 1966. This application Sept. 24, 1969, Ser. No. 860,825

Int. Cl. A61k *21/00*

U.S. Cl. 424—227 **3 Claims**

A dosage unit form is described containing a therapeutic dose of an aluminum calcium gluconate complex of a tetracycline antibiotic, with a product which releases free glyceraldehyde in solution, such as glyceraldehyde, its dimer and addition salts. The solutions, when used intramuscularly and intravenously, result in blood levels of the tetracycline antibiotic which rise much more rapidly than the same doses without glyceraldehyde,

3,642,992

ORGANIC COMPOUNDS

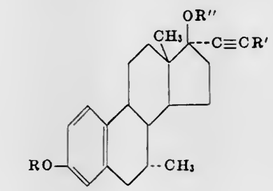
John C. Babcock and J Allan Campbell, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 114,621, June 5, 1961, which is a continuation-in-part of application Ser. No. 69,557, Nov. 6, 1960. This application Sept. 8, 1967, Ser. No. 666,465

Int. Cl. C07c *169/08*

U.S. Cl. 424—238 **5 Claims**

This invention relates to novel 7α-methyl-17α-alkynylestradiols and processes for their preparation; more particularly to those compounds embraced by the Formula II



II

wherein R is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, an alkyl radical containing from one through eight carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, 5-substituted tetrahydropyranyl and a silyl radical of the formula



wherein R_1, R_2 and R_3 are selected from the group consisting of alkyl of one through six carbon atoms and phenyl, R′ is selected from the group consisting of hydrogen and an alkyl radical containing from one through four carbon atoms and R″ is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, and a silyl radical of the formula



wherein R_1, R_2 and R_3 have the same meaning as above.

3,642,993

PHARMACEUTICAL COMPOSITION CONTAINING 2-METHYL - 5 - PHENYL - 1,2-DIHYDRO-3H-2-BENZAZEPINE FOR TREATMENT OF A CONDITION ASSOCIATED WITH ANXIETY OR TENSION

David N. Harcourt, Bath, and David Jack, London, England, assignors to Allen & Hanburys Limited, London, England

No Drawing. Filed Mar. 5, 1970, Ser. No. 16,961

Claims priority, application Great Britain, July 17, 1969, 36,028/69

Int. Cl. A61v *27/00*

U.S. Cl. 424—244 **4 Claims**

A pharmaceutical composition comprising 2-methyl-5-phenyl-1,2-dihydro-3H-benzazepine, or a pharmaceutically acceptable salt thereof, in association with a pharmaceutical carrier.

The utility of the composition is to relieve conditions associated with anxiety, tension or the emotional disturbances.

3,642,994
THERAPEUTIC PROCESS USING MELATONIN
Fernando Anton-Tay, Instituto de Investigaciones Biomedicas, Apartado Postal 70228, Ciudad Universitaria, Mexico City 20, Mexico
No Drawing. Filed May 25, 1970, Ser. No. 40,393
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **5 Claims**

The symptoms of epilepsy and Parkinsonism are relieved by the oral or parenteral administration of melatonin, and a psychotropic effect is exerted.

3,642,995
METHOD OF CONTROLLING FUNGUS GROWTH USING SALT OF ALKYLBENZENESULFONIC ACIDS
Walter Schenk, Bad Durkheim, and Ernst-Heinrich Pommer, Limburgerhof, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Original application May 23, 1967, Ser. No. 640,508. Divided and this application Oct. 6, 1969, Ser. No. 871,003
Claims priority, application Germany, June 4, 1966, P 15 42 827.0
Int. Cl. A01n *9/22*
U.S. Cl. 424—248 **1 Claim**

Salts of alkylbenzenesulfonic acids, in particular salts of morpholine, which may be substituted by methyl radicals, and alkylbenzenesulfonic acids, and methods of controlling fungi with said compounds.

3,642,996
ANTILIPEMIC AGENTS
Gerald F. Holland, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Original application Dec. 15, 1964, Ser. No. 418,526, now Patent No. 3,448,107, dated June 3, 1969. Divided and this application Dec. 31, 1968, Ser. No. 798,565
Int. Cl. A61k *25/00, 27/00*
U.S. Cl. 424—250 **6 Claims**

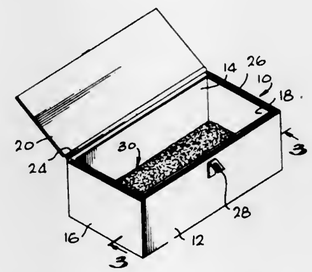
Novel 5-pyrazinyl, pyrimidinyl and pyridazinyl tetrazoles and N-oxides thereof useful as lipid regulating agents.

3,642,997
TRICYCLIC CARBOXYLIC ACIDS IN THE TREATMENT OF INFLAMMATION
Tsung-Ying Shen, Westfield, Richard Greenwald, Fanwood, and Bruce E. Witzel and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed June 25, 1969, Ser. No. 836,583
Int. Cl. A61u *27/00*
U.S. Cl. 424—250 **6 Claims**

This invention relates to the use of new tricyclic carboxylic acids in the treatment of inflammation.

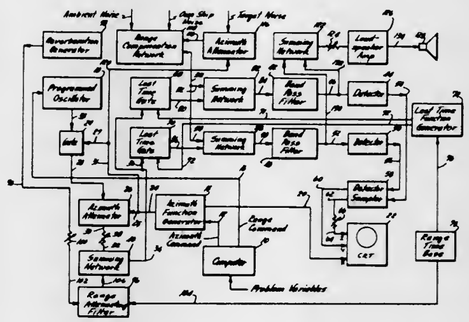
ELECTRICAL

3,642,998
CORROSION-INHIBITING TOOLBOX
Frederick A. Jennings, 22254 Del Valle, Woodland, Calif.
Filed Apr. 22, 1970, Ser. No. 30,921
Int. Cl. C23f *11/02*
U.S. Cl. 21—2.5 **6 Claims**



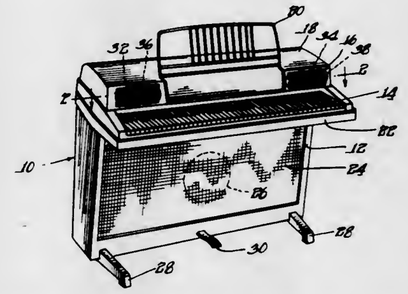
The toolbox is preferably designed with a close-fitting cover and contains therein a carrier for a volatile corrosion inhibitor. The toolbox is preferably of injection molded synthetic polymer composition material, including a continuous hinge of the same material. The carrier in the toolbox is preferably an open-cell foamed resilient synthetic material, while the corrosion inhibitor is preferably in the form of amine nitrite crystals deposited in the foam material.

3,642,999
SIMULATOR FOR CONTINUOUS FREQUENCY MODULATED SONAR
Francis J. Murphree, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 11, 1970, Ser. No. 36,237
Int. Cl. G06g *7/78*
U.S. Cl. 35—10.4 **5 Claims**



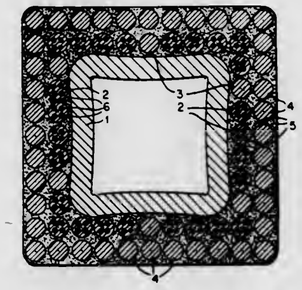
A multi-band-pass filter circuit with sequential detector-sampling means utilizing an azimuth function generator, programmable oscillator, lost time function generator means, range time base and range attenuator filter means together with a cathode-ray tube display (CRT) means and audio equipment for simulating realistically on the CRT and in the audio spectrum sonar echo signals representative of variations of target range, azimuth, conditions of relative movement, and including the effects of reverberation, lost time, and ambient, own ship and target noise conditions.

3,643,000
STEREOPHONIC ELECTRONIC PIANO
Clifford W. Andersen, De Kalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed Mar. 12, 1969, Ser. No. 806,610
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **5 Claims**



An electronic piano is provided with keyboard operated or controlled tone generators providing electric oscillations corresponding to piano tones. These oscillations are amplified by an amplifier, and are applied to two loudspeakers located at opposite ends of the keyboard. The loudspeaker at the left end of the keyboard is adapted to reproduce the piano bass tones at relatively high efficiency while the loudspeaker at the right end of the keyboard is adapted to reproduce the treble tones at relatively high efficiency, whereby the tones throughout the gamut of the piano are located primarily at the same locations relative to the keyboard as they would be on a mechanical or conventional string piano. A third speaker is provided on the panel below the keyboard to simulate sound emanating from a piano soundboard.

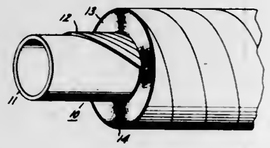
3,643,001
COMPOSITE SUPERCONDUCTOR
Norbert Schaetti, Glattbrugg, Switzerland, assignor to Maschinenfabrik Oerlikon, Zurich, Switzerland
Filed June 8, 1970, Ser. No. 43,992
Claims priority, application Switzerland, July 8, 1969, 10516/69
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **6 Claims**



A hollow, elongated support, adapted to have a cooling medium circulating therethrough, has a plurality of stabilized

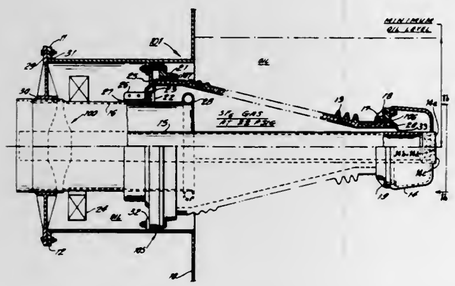
superconductor assemblies spirally wrapped therearound, with a pitch of 1 to 30 cm. per winding; additionally, preferably, a second layer of windings of nonsuperconductive wire with a pitch of about half of the pitch of the superconductor assemblies is wrapped around the outside of the spiralled superconductor assemblies. A good heat-conductive, nonmagnetizable bonding medium bonds the stabilized superconductor assembly and, if used, the layer of wires of nonsuperconductive material to the support tube. In the method of manufacture, lengths of hollow longitudinal support tubes are joined to form a continuous fluidtight tube to which the superconductor assembly wires are first applied, then, if desired, the nonsuperconductive wires are wrapped therearound with a direction of twist opposite to that of the superconductor wires, the wires being placed closely adjacent each other so that, upon immersion into a melt of good heat-conductive, nonmagnetizable material, the fluid material will flow by capillary action in the interstices between the wires to form a composite, encapsulated whole.

3,643,002
SUPERCONDUCTIVE CABLE SYSTEM
Stephen H. Minnich, Schenectady, N.Y., assignor to General Electric Company
Filed Mar. 19, 1969, Ser. No. 809,481
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 **5 Claims**



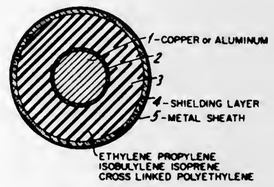
A cryogenic cable system for power transmission applications has a hollow conductor of a material which is superconductive at the freezing temperature of hydrogen and which is maintained at that temperature by providing the interior of the hollow conductor with a mixture of solid and liquid hydrogen.

3,643,003
TRANSFORMER TERMINATION FOR METAL-ENCLOSED, COMPRESSED-GAS-INSULATED ELECTRICAL CONDUCTORS
Howard W. Graybill, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Apr. 24, 1970, Ser. No. 31,590
Int. Cl. H01b *17/26*
U.S. Cl. 174—18 **7 Claims**



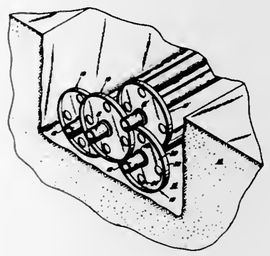
The grounded enclosure tube of the compressed-gas-insulated electrical conductor is attached to the metal wall of a power transformer tank and the energized conductor tube extends into the interior of the transformer tank wherein it is supported and insulated from the tank wall to provide a simple and inexpensive connection between metal enclosed switchgear, for example, and power transformers in a high-voltage electrical substation.

3,643,004
CORONA-RESISTANT SOLID DIELECTRIC CABLE
Alexander L. McKean, Ardsley, N.Y., assignor to Phelps Dodge Copper Products Corporation, New York, N.Y.
Filed Apr. 3, 1970, Ser. No. 33,212
Int. Cl. H01b *9/02, 11/06*
U.S. Cl. 174—36 **8 Claims**



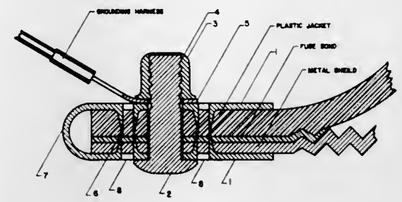
A conductor is surrounded by an inner shielding layer, an insulating layer of solid dielectric material such as polyethylene, and an outer shielding layer of polymeric material which adheres but is unbonded to the insulating layer and which has a resistivity of at least 1.0 million ohms-cm., whereby the outer shielding layer substantially suppresses the effects of corona discharge and can be readily stripped from the insulating layer for splicing or terminating the cable.

3,643,005
CONDUIT WITH SPACER
Lyle H. Mathews, 2712 W. Porter St., #2, Fullerton, Calif.
Filed Aug. 5, 1970, Ser. No. 61,066
Int. Cl. H02g *9/06*
U.S. Cl. 174—37 **11 Claims**



A unitary spacer for maintaining separation between electrical conduits in a ditch. The spacer comprises a short tubular section adapted to slide over the conduit, an annular disc portion extending radially outwardly from the tubular section, and a flanged rim at the periphery of the disc portion. A plurality of circular openings through the spacer disc portion cooperate with a locking pin to permit connection of adjacent spacers if desired; the openings also permit concrete to flow through the spacer while embedding the conduit.

3,643,006
MECHANICAL, SOLDERLESS GROUND WIRE CONNECTORS FOR TELEPHONIC CABLE SHIELDING JACKETS
Louis Ance, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.
Filed Mar. 3, 1971, Ser. No. 120,489
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 R **3 Claims**



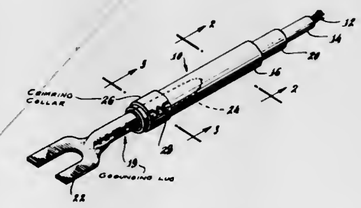
Disclosed is a bonding clip adapted to be connected to a bonding harness and for forming a joint that maintains electrical and mechanical continuity between the shielding of one cable terminus to another. The clip is made from a piece of metal, U-shaped in cross section, which has two juxtapositioned terminal portions. Each terminal portion has an aperture therein that is aligned not only with that aperture in the opposing terminal portion but also with an aperture through a coated cable shield. The terminal portions have spaced-apart perforations defining inwardly extending plastic and metal piercing protuberances whereby pressure applied to said terminal portions by a connector means, disposed through the apertures, exert a force to thrust said protuberances through the plastic covering and the metal shield. Located in the aligned apertures is a connector means that has a median shank and two terminal portions, one of which has unconnected grooves therein and is nested inside of an annulus sleevelike fitting that has annuluslike protuberances on the innermost surface thereof, the protuberances being positioned so that they mechanically interfit and essentially fill the unconnected grooves.

3,643,007
COAXIAL CABLE
Walter Roberts, Hickory; Jimmie D. Sherrill, Conover; Brandon B. Pusey, Hickory, and Frederic N. Wilkenloh, Conover, all of N.C., assignors to Superior Continental Corporation, Hickory, N.C.
Filed Apr. 2, 1969, Ser. No. 815,252
Int. Cl. H01b *7/18*
U.S. Cl. 174—106 **13 Claims**



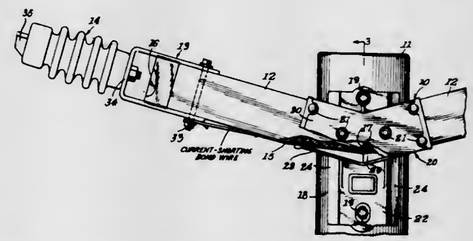
Disclosed herein is a coaxial cable structure having not only a center conductor nested axially in a tube of dielectric material and a second electrical conductor formed on the outer peripheral surface of the dielectric body, but an additional or third electrical conductor disposed around this second electrical conductor made of braided copper-clad steel. Surrounding the third conductor is a cylindrical sheath of dielectric material adhesively bonded to the third conductor by a resin copolymer. Both second and third conductors can be made of aluminum-coated polyethylene terepthalate. Where metal-coated plastic is used, the second electrical conductor tape generally is longitudinally wrapped around the dielectric body center conductor composite and the third conductor, made up of the same metallically coated polyethylene terepthalate, is helically wrapped around the second conductor.

3,643,008
SHIELDED CABLE CONSTRUCTION PROVIDING FOR AN INTERNAL CONNECTION TO GROUND
John A. Brazee, Wallingford, Conn., assignor to The Whitney Blake Company, New Haven, Conn.
Filed Oct. 6, 1970, Ser. No. 78,529
Int. Cl. H02g *15/02*; **H01b** *11/06*
U.S. Cl. 174—107 **10 Claims**



A shielded cable construction provides for an annular clearance space between the inner and outer insulation jackets so that a grounding member can be inserted therein and internally connected with the cable shield without need for stripping insulation or taping.

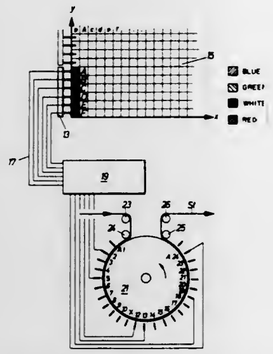
3,643,009
POST-MOUNTED WINGED INSULATOR ARM ASSEMBLY
Robert A. Collister, Temple City, Calif., assignor to Scott Engineering, Inc., Los Angeles, Calif.
Filed Sept. 15, 1970, Ser. No. 72,453
Int. Cl. H01b *17/14*; **H02g** *7/00*
U.S. Cl. 174—149 R **3 Claims**



An insulator-mounting assembly having oppositely directed, upwardly angled arms of dielectric material, a two-part metallic mount for fixedly engaging and holding adjacent ends of said arms, one part of said mount being provided with portions adapted to fixedly engage the surface of a pole and to be bolted thereto for mounting said arms on said pole, a metallic insulator-mounting bracket on the other end of each arm, said brackets being electrically spaced from the metallic mount, and a shorting bond wire connecting said

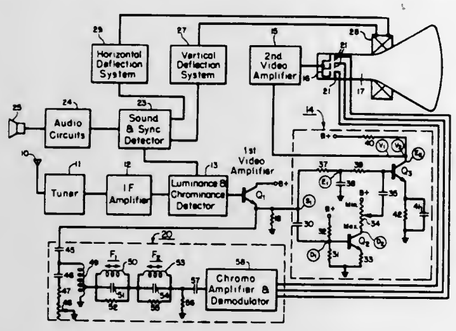
brackets and, thereby, electrically connecting the insulators on said brackets for relaying the circuit and deenergizing the line wires connected to the insulators.

3,643,010
METHOD FOR MAKING A STEERING STRIP FOR THE AUTOMATIC CONTROL OF MACHINES
Dr. Ingenieur Johannes Schunack, Berlin, Germany, assignor to Firma Franz Morat GmbH, Hessbruhlstrasse, Stuttgart-Vaihingen, Germany
Filed Apr. 3, 1970, Ser. No. 25,500
Claims priority, application Germany, Apr. 4, 1969, P 19 17 737.8
Int. Cl. H04n *1/00*; **G05b** *19/12*
U.S. Cl. 178—5.2 R **15 Claims**



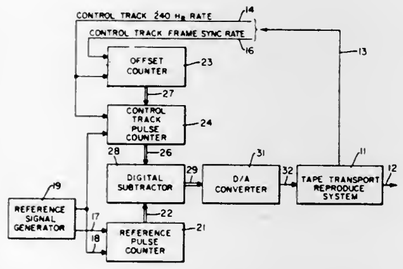
A method for making steering or control strips for the automatic control of machines in which a design having one or more areas with periodically recurring distribution is transformed in raster-form on a pattern draft and in which the pattern draft is then scanned point-by-point in order to store the information in the form of scannable markings on the steering or control strips and to apparatus for use therewith.

3,643,011
LUMINANCE SIGNAL CHANNEL
Christopher M. Engel, Franklin Park, and Charles F. Hepner, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 16, 1970, Ser. No. 29,220
Int. Cl. H04n *9/12*, *5/14*
U.S. Cl. 178—5.4 R **12 Claims**



A video signal translating channel for a television receiver having a detector for developing a video signal has a first signal translating path coupled to the output of the detector. A differentiating network is included in the first signal path for developing a modified version of the detected video signal in which the high-frequency components are accentuated. A second signal translating path is also coupled to the output of the detector and it includes an integrating network for developing a differently modified version of the detected video signal in which the high-frequency components are attenuated. Phase inversion means are provided for inverting one of the modified signals relative to the other. Finally, matrix means, including an adjustable control circuit coupled to both of the signal paths, is provided for combining selectable portions of the phase inverted signal and the other of the modified signals to produce a resultant video signal having an altered high-frequency response and delayed in time relative to the detected signal.

3,643,012
RAPID FRAME SYNCHRONIZATION OF VIDEO TAPE REPRODUCE SIGNALS
Harold V. Clark, Palo Alto, and Gary B. Garagnon, Redwood City, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Feb. 16, 1970, Ser. No. 11,473
Int. Cl. G11b *15/48*, *27/00*; **H04n** *5/78*
U.S. Cl. 178—6.6 A **14 Claims**

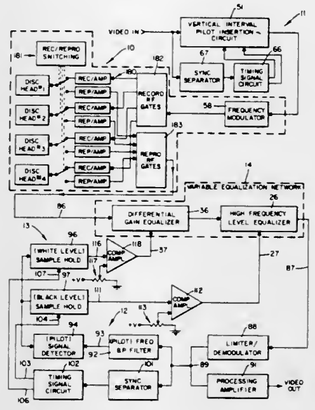


In order to rapidly synchronize each video frame of a video tape playback signal with a controlled frequency reference signal, signal information having a higher periodic rate than that of the frame or vertical synchronization is used as a time measure of the phase separation between playback signal framing pulses and reference framing pulses. The higher rate information is provided by a control track reproduce signal corresponding to the rotational rate of a rotary magnetic head wheel during playback of the video signal. The high-rate control track signal and a reference signal of corresponding frequency are used to develop separate digital count measurements of the time lapse following the respective reproduce and reference frame pulses, and a digital difference count is taken therefrom. The digital difference count, being a measure of the phase separation, is converted to analog form and thereafter employed to make suitable corrections to the playback rate of the tape transport to cause the video playback signal to assume a condition of frame synchronization with the reference standard.

3,643,013
DUAL LOOP EQUALIZATION FOR A FREQUENCY MODULATED SIGNAL SYSTEM
Maurice G. Lemoine, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Oct. 8, 1970, Ser. No. 79,070
Int. Cl. H04n *5/14*, *5/78*
U.S. Cl. 178—6.6 A **9 Claims**

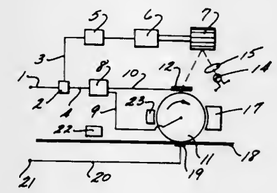
In order to compensate for nonuniform frequency response of a video signal passed through a frequency modulation magnetic record/reproduce system, a compound equalization

circuit having two concurrent modes of control is periodically and automatically adjusted by control signal information. The control signals are derived from a dual loop pilot



signal insertion and extraction means which monitors the frequency response characteristics of the system, not only at the frequency of the pilot signal but also at both the black and white luminance levels of the video signal.

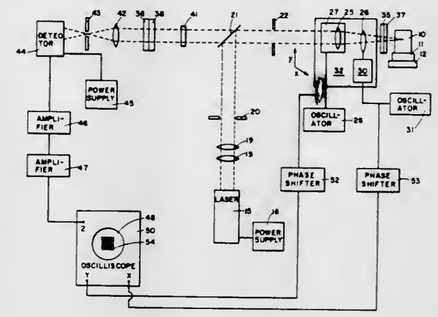
3,643,014
PIP RECORDING APPARATUS
Barnett Rosenberg, Lansing; Felix H. Brown, Okemos, both of Mich.; David Theodore Nelson Williamson, London, and Walter H. Bossons, Saunderton, both of England, assignors to Molins Limited, London, England, by said Williamson and said Bossons and Owens-Illinois, Toledo, Ohio, by said Rosenberg and said Brown, part interest to each
Filed Mar. 7, 1967, Ser. No. 621,205
Int. Cl. H04n *5/80*; **G03g** *15/00*
U.S. Cl. 178—6.6 A **5 Claims**



This disclosure comprises the recording and/or storing of information received in the form of electrical signals by scanning and illuminating at least a portion of the surface of a PIP material with a constant intensity radiation beam and applying a varying potential to the illuminated surface in accordance with the electrical signals so as to selectively polarize the PIP material.

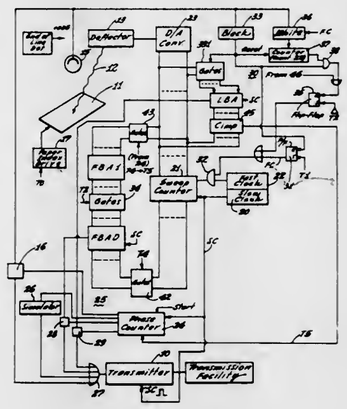
PIP material is used herein is defined as any material capable of exhibiting "persistent internal polarization" under the influence of radiation and an applied electric potential.

3,643,015
SCANNING OPTICAL MICROSCOPE
Paul Davidovits, 95 Lakeview Terrace, and Maurice David Egger, 70 Edgewood Way, both of New Haven, Conn.
Filed June 19, 1970, Ser. No. 47,717
Int. Cl. H04n *7/18*; **G02b** *21/06*
U.S. Cl. 178—6.8 **19 Claims**



An optical microscope suitable for scanning below the surface of specimens of low optical contrast and particularly for scanning buried tissues and cells. Optical means focus a beam of parallel light within the object and means are provided to scan by moving an objective lens system along to axes orthogonal to the optical axis. An image is generated in a cathode-ray tube.

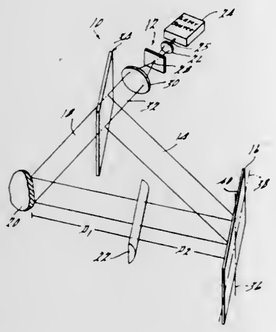
3,643,016
FACSIMILE SYSTEM WITH DATA COMPRESSION BY "WHITE SPACE SKIPPING"
Giuseppe A. Dattilo, Manhattan Beach, Calif., assignor to The Magnavox Company, Torrance, Calif.
Filed May 11, 1970, Ser. No. 36,246
Int. Cl. H04n *3/00*
U.S. Cl. 178—6 **15 Claims**



A facsimile system with data compression is disclosed according to which the information along a scanning line is divided in data blocks, separated by significant runs of contras-

tless portions (white). Beginning and end of a data block are identified by address codes developed during a fast search scan for such boundaries, and they are transmitted as control information. Slow facsimile scan is restricted to line portions between data block boundaries, and the receiver moves in synchronism at slow scan rate and reproduces between such boundaries as defined by the previously transmitted addresses. Two methods are disclosed, one thereof alternates between data block boundary detection and transmission thereof followed directly by slow scan transmission of the facsimile data of that block, thereafter fast scan data block detection on the same line is resumed etc. In the other method all of the data block boundaries in an entire line are detected first, next all the addresses thereof are transmitted followed by transmission of all the data in the several blocks.

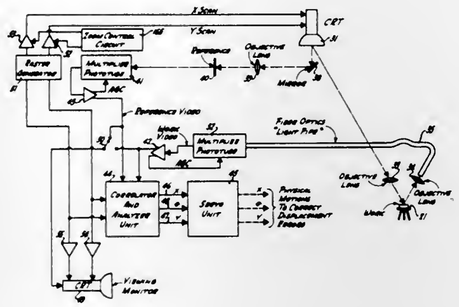
3,643,017
APPARATUS FOR CONSTRUCTING A REDUCED INFORMATION CONTENT HOLOGRAM
Dietlind Pekau, Munich, Germany, assignor to The Bendix Corporation
Filed Feb. 26, 1970, Ser. No. 14,354
Int. Cl. H04n *3/16*
U.S. Cl. 178—6.5 **5 Claims**



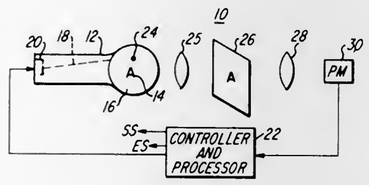
Apparatus for forming a reduced information content hologram, for transmitting that hologram, and for the reconstruction of a scene or object from that hologram. The reduced information content hologram is formed employing a cylindrical lens or other means for focusing in one dimension. The hologram produced by the apparatus of this invention provides an image having parallax information along a preselected dimension but no parallax information along all lines running perpendicular to that preselected dimension.

3,643,018
ALIGNMENT SYSTEM USING AN ELECTRONIC SCANNER
Alan J. Adler, Palo Alto, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 564,917, July 13, 1966, now abandoned. This application July 6, 1970, Ser. No. 56,126
Int. Cl. H04n *3/28, 7/18*
U.S. Cl. 178—6.8 **29 Claims**

There is disclosed a method and apparatus for aligning a semiconductor device at a work station for the purpose of bonding lead wires thereto. The semiconductor device is scanned by the optical beam from a flying spot tube while simultaneously scanning a reference standard. As the semiconductor device or the work implement is moved to effect the desired alignment, the flying spot is zoomed to increase its magnification and thereby effect more accurate alignment.

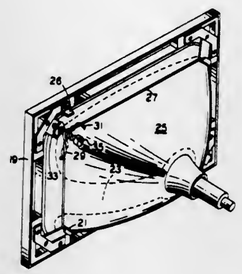


3,643,019
VARIABLE LENGTH CODING METHOD AND APPARATUS
John Prickett Beltz, Willingboro, N.J., assignor to RCA Corporation
Filed Apr. 22, 1970, Ser. No. 30,812
Int. Cl. H04n *7/12*
U.S. Cl. 178—6.8 **14 Claims**



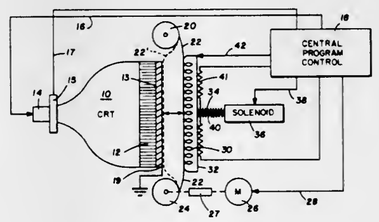
There is disclosed a method and apparatus for providing a coded representation of a black and white graphical pattern, such as an alphanumeric character or other symbol, a line drawing, etc., which reduces the storage space needed to store a representation of the pattern. Each pattern is divided into a plurality of adjacent linear zones that include one or more zonal segments of alternating black and white colors. A zonal segment is represented by a combination of groups of binary numbers, with each group containing a predetermined number of individual binary bits. The number of groups in the combination varies depending on the length of the segment. Successive combinations are distinguished from each other by reserving a first position in each group as a delimiter bit position to denote the beginning of each combination. A second predetermined position in the first combination of a zone is designated as a color bit position and specifies the visual reflectance of the first zonal segment of the zone. Succeeding zonal segments in a zone alternate in color. The color bit position in the combination defining the last segment of a zone is redesignated as an end-of-zone bit position to denote the end of a zone. Thus the combinations defining a zone vary depending on the length of the zone, and the number of groups in a combination varies depending on the length of the corresponding zonal segment.

3,643,020
PICTURE TUBE MOUNTING MEANS
Alfonso St. George, Depew, and Floyd John Winkler, Buffalo, both of N.Y., assignors to Sylvania Electric Products Inc.
Filed Mar. 9, 1970, Ser. No. 17,800
Int. Cl. H01J *29/02, 29/86*
U.S. Cl. 178—7.81 **1 Claim**



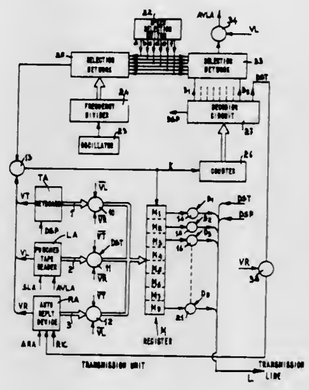
Apparatus for mounting a cathode-ray tube in an apertured cabinet includes a plurality of support members circumferentially spaced about the cathode-ray tube and affixed to the cabinet in the vicinity of the aperture therein, a wire strand with end portions engaged to form a wire loop, and engagement means for effecting pressure engagement of the wire loop and the cathode-ray tube and support members.

3,643,021
VOLTAGE CONTROLLED COLOR FILM RECORDING SYSTEM
Donald E. DeBlance, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 2, 1970, Ser. No. 135
Int. Cl. H04l *15/20*
U.S. Cl. 178—15 **20 Claims**



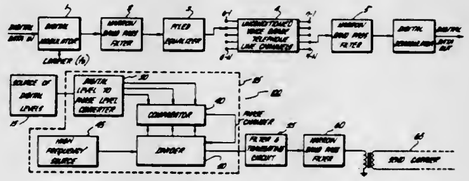
A photographic film is provided which includes a plurality of film layers each responsive to a different range of light wavelengths. A wavelength filter layer is disposed over the film which is responsive to an electric field for passing different light wavelengths. In the preferred embodiment, the filter layer is composed of a nematic liquid crystal and a dichroic dye. A device such as a cathode-ray tube displays a light image upon the film. Circuitry is provided for selectively applying an electric field across the film for varying the color of the light images exposed upon the film.

3,643,022
TELEPRINTER APPARATUS WITH ELECTRONIC SPEED CONTROL
Luigino Ferroglio, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy
Filed Apr. 18, 1969, Ser. No. 817,327
Claims priority, application Italy, Apr. 18, 1968, 51325 A/68
Int. Cl. H04l *13/14*
U.S. Cl. 178—17 R **3 Claims**



A teleprinter system provided with a variable speed control for different transmission rates. Rather than attempting to vary the speed of a motor or mechanical transmission, the speeds of those devices are maintained constant and the rate is controlled by varying the speed of keying of the bits being transmitted and received.

3,643,023
DIFFERENTIAL PHASE MODULATOR AND DEMODULATOR UTILIZING RELATIVE PHASE DIFFERENCES AT THE CENTER OF THE MODULATION PERIODS
Robert G. Ragsdale, Hollywood, and Paul E. Payne, Fort Lauderdale, both of Fla., assignors to Milgo Electronic Corporation, Miami, Dade County, Fla.
Filed Mar. 1, 1968, Ser. No. 709,761
Int. Cl. H04l *27/24*
U.S. Cl. 178—67 **25 Claims**

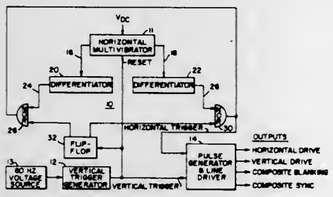


Digital data transmission at a very high bit rate through randomly selected voice-grade telephone lines by the use of a transmitter which includes digital differential angle modulation; and a receiver which includes digital differential angle demodulation is disclosed. Binary data wherein the individual bits are represented by a discrete level format during bit cell times is stored in multibit groups of randomly varying data patterns. Each multibit group is converted from its digital level format to a predetermined phase level format which includes a plurality of different phase, or angle, increments. At the transmitter a divider circuit receives a high-frequency signal which is many times higher than the bit rate of the data

to be transmitted, and divides it into an intermediate frequency square wave signal which is still many times higher than the bit rate. The predetermined phase levels representative of each multibit group are compared with divider output taps by a comparison circuit which selectively alters the dividing operation so that an information-representing phase-shifted intermediate frequency signal is emitted. This information-representing phase-shifted signal is filtered and translated down to a low-frequency analog signal which is passed through a narrow band pass communication link exhibiting a linear phase over the band pass width.

At the receiver end of the data communication system, the narrow band pass limited signal is translated up to the intermediate frequency and a clock signal is derived from the information-representing envelope. This clock signal is employed to synchronously gate a high-frequency counter output into a detector circuit which samples a precise portion of a phase-shifted signal containing the information to be ascertained. Two separate storage registers in the detector circuit receive successive counter output valves depending upon the phase sampled from the precise portion of the information-containing signal. A parallel adder determines the difference between successive counts, each count of which is characteristic of the information-representing phase change originally received during the interval in question. An encoder converts the phase-change signal as emitted by the parallel adder, back to its original digital data level format.

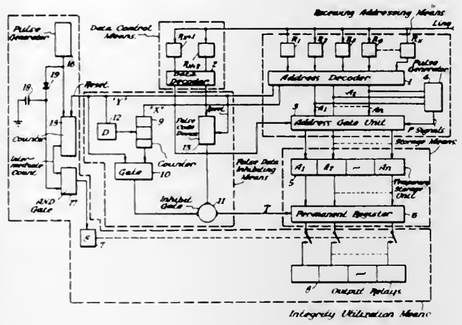
3,643,024
METHOD AND APPARATUS FOR VERTICAL LOCK 2:1 INTERLACE SYNC
James H. Meacham, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 30, 1970, Ser. No. 7,153
Int. Cl. H04n *5/06*
U.S. Cl. 178—69.5 G **5 Claims**



A technique for establishing the interlace of horizontal scanning lines in a video information transmission system based on a vertical lock 2:1 interlace technique which offsets alternate horizontal sync pulse trains by half the horizontal period.

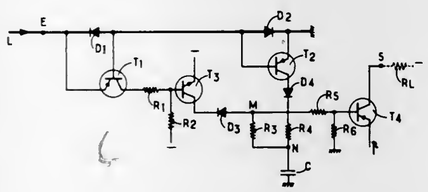
3,643,025
INFORMATION TRANSMISSION SYSTEMS
Vivian David, and David J. Norton, both of King's Cross, London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England
Filed Aug. 1, 1969, Ser. No. 846,743
Claims priority, application Great Britain, Aug. 2, 1968, 36,944/68
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **10 Claims**

This invention relates to an information-communicating system for receiving and synchronizing information data transmitted from one location to a remote location. The information-communicating system includes a receiving-addressing means, a data control means, a false data inhibiting means, a temporary storage means and a permanent register means. The receiving-addressing means sequentially receives a predetermined number of frequency inputs as well as a data input which has a first and a second binary condition. The receiving-addressing means sequentially produces the same predetermined number of binary outputs in accordance with the binary condition on the data input. These binary outputs of the receiving-addressing means are initially stored in the temporary storage means, and only permanently and



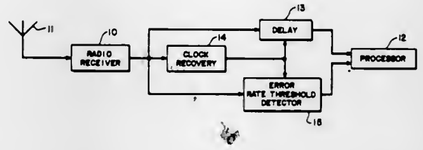
synchronously registered as outputs by the permanent register means after all binary outputs from the receiving-addressing means have been temporarily stored in the temporary storage means and if there simultaneously is produced a predetermined condition from the false data inhibiting means to the permanent register means.

3,643,026
RETRANSMITTING APPARATUS FOR CONVERTING INTERRUPTED TELEGRAPHIC MODULATED SIGNALS INTO TELEGRAPHIC SIGNALS WITHOUT INTERRUPTIONS
Roger Teurnier, Rueil-Malmaison, France, assignor to C.I.T. Compagnie Industrielle des Telecommunications, Paris, France
Filed Dec. 23, 1969, Ser. No. 887,502
Claims priority, application France, Dec. 23, 1968, 180133
Int. Cl. H03k *5/04*; **H04l** *25/52*
U.S. Cl. 178—70 R **10 Claims**



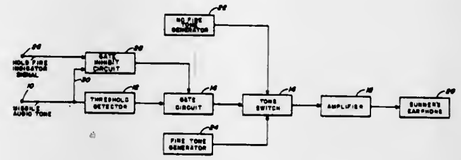
A telegraphy retransmitter receives bipolar modulated signals interrupted by telegraphic modulation equipment and retransmits the bipolar modulated signals without the interruptions. The retransmitter employs polarity sensitive transistor switching circuits and a holding circuit for maintaining the desired level of the bipolar signal during the period of the interruptions, so that the period of interruption is effectively eliminated.

3,643,027
DIGITAL INFORMATION RECEIVER
Lawrence H. Goldberg, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 2, 1969, Ser. No. 863,171
Int. Cl. H04l *15/24*
U.S. Cl. 178—88 **3 Claims**



A digital information receiver having an error rate detector for controlling a digital information processor. The error rate detector, connected to the discriminator output, has a wave shaper and logic gates for producing pulses for each of the transitions in the received signal. A clock signal is then gated with the transition pulses and sampled to produce a series of pulses one for each transition which occurs in synch with the clock. The rate at which these pulses occur is measured and is an indication of the error rate due to noise.

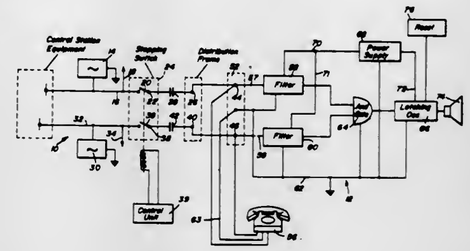
3,643,028
SYNTHETIC TONE GENERATOR SYSTEM
William C. Cleveland, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 9, 1970, Ser. No. 53,360
Int. Cl. H04b *13/00*
U.S. Cl. 179—1 R **10 Claims**



The audio signal generated by a missile electronic subsection is passed through a threshold detector and into a gate circuit. Output from the memory circuit causes a tone switch to connect a fire tone generator to the gunner's earphone. The fire tone generator produces an audio signal of different frequency and amplitude from that of the "no fire" tone generator.

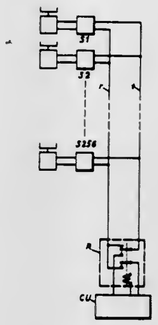
3,643,029
COMMUNITY WARNING SYSTEM USING TELEPHONE LINES
Paul H. Breazeale, 1646 St. Louis St., Springfield, Mo.
Filed Feb. 10, 1970, Ser. No. 9,469
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **12 Claims**

A transmitter unit at a central telephone office includes audio generators connected to a stepping switch which sequentially completes communication between the central office unit and connected subscriber stations. In order to properly receive an alarm signal produced by the audio generator, a subscriber receiver unit is connected in parallel with the usual telephone lines at the subscriber station. The receiver unit includes a frequency detector for sensing transmission of an alarm signal from the central office unit. A



speaker is connected to the frequency detector for manifesting an alarm condition.

3,643,030
METHOD FOR TRANSFERRING INFORMATION IN THE FORM OF TIME SEPARATED SIGNAL ELEMENTS BETWEEN SUBSCRIBERS IN A TELECOMMUNICATION SYSTEM AND A TELECOMMUNICATION SYSTEM, ETC.
Gunnar Erik William Sparrendahl, Vendelso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Feb. 6, 1970, Ser. No. 9,734
Claims priority, application Sweden, Mar. 18, 1969, 3706/69
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **16 Claims**

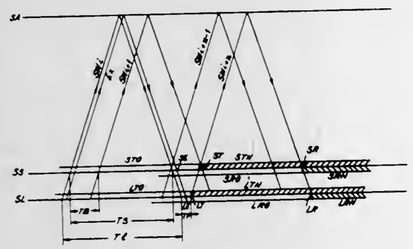


A telecommunication system, in which information is transferred between subscribers in the form of time separated signal elements. Each signal element is accompanied by a specific call number, allotted to the respective connection at the setting up of the connection. The call number allotted to a connection is registered in the subscriber equipment of the subscribers taking part in the connection and transferred in parallel with every signal element to all subscribers in the system. The signal elements can however be received only by the subscribers having the accompanying call number registered.

3,643,031
TIME DIVISION MULTIPLEXING COMMUNICATION SYSTEM

Hiroshi Sasaki, Chiba; Tatsuo Maruyama, Tokyo; Hisao Kanzaki, Tokyo; Yasuhiko Sakamoto, Kawasaki-shi, and Nobuyuki Yasoshima, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo and Fujitsu Limited, Kawasaki, Japan, part interest to each

Filed Sept. 15, 1969, Ser. No. 857,727
Claims priority, application Japan, Sept. 16, 1968, 43/66832
Int. Cl. H04J 3/16
U.S. Cl. 179—15 BS 9 Claims



A time division multiplexing communication system has a plurality of stations and a switching station. Two of the stations communicate with each other via the switching station by utilizing signals comprising a block having a plurality of words each comprising a plurality of frames which are bursts of a constant time length. Each of the stations comprises channel rearrangement control means for rearranging ground channels to satellite channels and for rearranging satellite channels to ground channels in accordance with informations from an order data channel. Burst synchronism control means connected to the channel rearrangement control means provides the timing of transmission and reception of bursts. Order word controls means connected to the channel rearrangement control means receives command data, provides an order data channel, changes the command data to the format of the order data channel, transmits the format to the other stations and assembles a word from the order data channel information received from the other stations. Command control means is connected to the order word control means, the channel rearrangement control means and the burst synchronism control means and is controlled by a program to discriminate the condition of operation of the channel rearrangement control means, the burst synchronism control means and the order word control means, and supplies thereto command data commanding the means to operate. The order word control means transfers the work assembled from the order data channel received from the other stations to the command control unit when the word is directed to the station. Block synchronism controlling means controls the timing of transmission and reception of the blocks and provides block synchronism for blocks of period TB determined in accordance with the equations

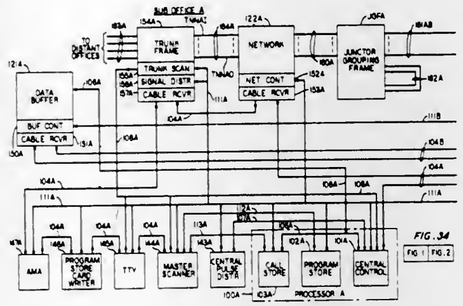
$$nTB \geq Tl + TP \text{ and } (n-1)\mathrm{TB} \leq TS$$

wherein TB is the period of the block period, *TS* is the period of time required for an electrical wave to travel from the station closest Tl the switching station and back to the station, *T*+is the period of time required for an electrical wave to travel from the station farthest from the switching station and back to the station, *TP* is the period of time required for each of the stations to provide the necessary operations based on received information and *n* is a positive integer.

3,643,032
COOPERATIVE PROCESSOR CONTROL OF COMMUNICATION SWITCHING OFFICE

Werner Ulrich, Glen Ellyn, and Frank S. Vigilante, Naperville, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 19, 1969, Ser. No. 859,470
Int. Cl. H04q 3/54
U.S. Cl. 179—18 ES 22 Claims

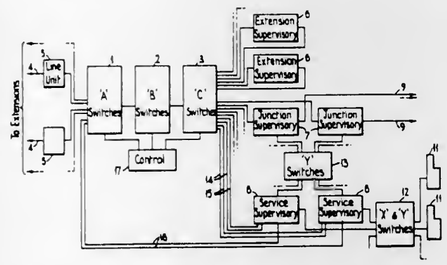


A communications switching office in which each of a plurality of separate processors independently hunts idle paths between terminals of an associated network and in which two separate processors cooperatively hunt idle paths between terminals of the two associated networks by means of data messages exchanged between the two processors. A data transmission arrangement is provided between the processors and internetwork junctors provide connections between the networks.

3,643,033
AUTOMATIC PRIVATE BRANCH EXCHANGE WITH PROVISION FOR OPERATOR ASSISTANCE

Ronald Smithers, Coventry, England, assignor to The General Electric Company Limited, London, England

Filed Jan. 11, 1968, Ser. No. 697,066
Claims priority, application Great Britain, Jan. 12, 1967, 1,757/67
Int. Cl. H04m 3/60
U.S. Cl. 179—27 CA 7 Claims

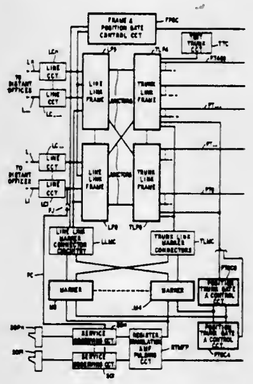


A P.A.B.X. using reed relay switches having a limited number of "service" units that are arranged to be brought into use as required. Each of these units has a speech transmission bridge arranged for connection between two different outlets of the main switching matrix of the exchange so as to enable a call connection to be set up through the unit involving two transits of the switching matrix. A free one of these units is taken into use under the manual control of an operator when an indicator lamp on the operator's switchboard lights to show that there is a call awaiting attention. The operator accepts such a call by operating switches on the switchboard which extends supervisory, speech and control circuits to the allotted unit for the purpose of enabling the call to be supervised. The switchboard is arranged to enable a single operator to supervise up to five call at a time. Alternatively a "service" unit is automatically taken into use when a party to an existing call wishes to make an "inquiry" call to another extension without releasing the original call.

3,643,034
PREFERRED-NONPREFERRED TRUNK GATING EQUIPMENT FOR AUTOMATIC CALL DISTRIBUTION

Thomas V. Burns; John M. Catterall; Gary L. Elliott, all of Columbus, and Ronald E. Fenstermaker, Reynoldsburg, all of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 19, 1969, Ser. No. 859,396
Int. Cl. H04m 3/64
U.S. Cl. 179—27 D 24 Claims



A system is disclosed for automatically distributing calls on groups of incoming lines through line and trunk link frames to teams of operator positions under control of markers. Frame and position gate circuitry is provided for serving the calls in the approximate order of their arrival. Position trunk gate and marker circuits balance the workload among operators by equalizing call distribution through a plurality of trunk link frames to both heavily and lightly occupied teams of operator positions selectively serving a plurality of different classes-of-calls. Position trunk and class control circuits convey data from the markers to advise operators of the classes of the received calls.

3,643,035
MULTICHANNEL MAGNETIC HEAD HAVING A COMMON GROUND TERMINAL COUPLED TO A PIECE OF MAGNETIC MATERIAL ON THE FACE OF THE HEAD

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 17, 1969, Ser. No. 858,674
Claims priority, application Japan, Sept. 17, 1968, 43/66561
Int. Cl. G11b 5/38
U.S. Cl. 179—100.2CH 8 Claims

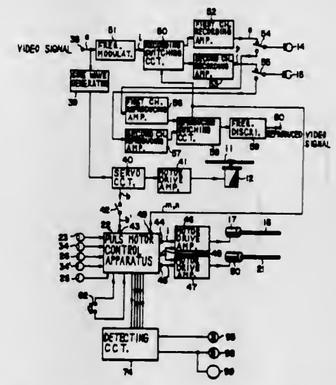


A magnetic head having a sheet of magnetic material deposited or adhered with an insulating film directly to a sheet of conductive material and indirectly through a conductive film to a sheet of nonconductive material; a plurality of electromagnetic converting films provided on said insulating film; current, voltage and ground terminals formed on said electromagnetic converting films by ohmic connection of conductive material, said ground terminal being connected by said magnetic material or said conductive film at the side of sliding contact with a magnetic tape; and a magnetic substance having an insulating portion, at least at the surface thereof, connected independently of each other to each of said electromagnetic converting films. This magnetic head is manufactured by a method having the steps of depositing or adhering a plurality of electromagnetic converting films on a sheet of magnetic material, connecting a magnetic substance independently of each other on said respective electromagnetic converting films for supporting said electromagnetic converting films therebetween.

3,643,036
SYSTEM FOR DETECTING A POSITION ERROR IN THE STEP-BY-STEP MOVEMENTS OF MAGNETIC HEADS

Seiichi Takashima, Kamakura, and Takatoshi Kato, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Kanagawa-ku, Yokohama, Japan

Filed Jan. 26, 1970, Ser. No. 5,574
Claims priority, application Japan, Jan. 27, 1969, 44/5319
Int. Cl. G11b 21/06
U.S. Cl. 179—100.2 T 11 Claims

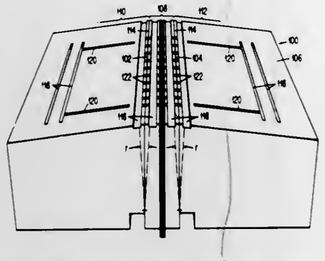


A system for detecting an error in the step-by-step movements of magnetic heads for a recording and reproducing apparatus using a rotary magnetic medium. A plurality of magnetic heads are alternately moved intermittently in a predetermined cycle over the rotary magnetic medium, from its marginal portion to its central portion and return, for example. The recording or reproducing is a continuous video signal recorded on a number of concentric circular tracks. The magnetic heads are moved in step-by-step motion. The recording magnetic head remains stationary over the rotating medium, each field or each frame of the video signal being recorded in one of the circular tracks. The inventive system enables a ready detection, and it indicates and corrects an error in the step-by-step movements of the magnetic heads.

3,643,037
SEPARATION CONTROL FOR RECORD MEDIA TRANSDUCER WITH TRANSVERSE SLOTS TO SUPPLY AMBIENT PRESSURE

Richard E. Norwood, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,562
Int. Cl. G11b 5/22, 5/60
U.S. Cl. 179—100.2 P 4 Claims

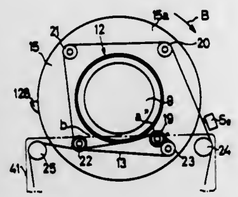


Means for improving separation between a transducer operating surface and a moving record media. Nonuniform pressure distribution between the media and the operating surface produces a cocking tendency in the media increasing upstream separation and decreasing downstream separation over the processing zone in the transducer. This invention recognizes that the cocking tendency is caused by a region of lower than ambient pressure near the point where the media draws away from the operating surface, and provides means for supplying ambient pressure at that point. In a preferred embodiment, the means comprises a transverse slot extending beyond the side edges of the media.

3,643,038
MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

Seiji Sato, Yokohama-shi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1969, Ser. No. 874,567
Claims priority, application Japan, Nov. 9, 1968, 43/81673
Int. Cl. G11b 5/52, 21/04
U.S. Cl. 179—100.2 T 25 Claims

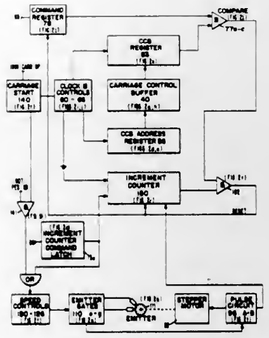


In a magnetic recording and/or reproducing system, for example, a video tape recorder of the type in which, during recording or reproducing, the magnetic tape is wrapped about a guide drum to a predetermined angular extent and is longitudinally advanced while a rotated magnetic head traverses the tape in skew or oblique tracks thereacross, a device is provided for automatically wrapping the tape about the guide drum at the initiation of the recording or reproducing operation. Such device for wrapping the tape about the guide drum is controlled to avoid its repeated operation in the event of successive recording or reproducing operations. Further, in the event of rewinding of the tape, or opening of a cover or lid provided for the tape recorder, the device automatically unwraps the tape from about the guide drum.

3,643,039
MULTIPLE PITCH CARRIAGE LINE SPACING

James G. Barcomb, Endwell, and Eugene T. Kozol, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 19, 1968, Ser. No. 760,905
Int. Cl. B41j 15/00
U.S. Cl. 197—133 3 Claims

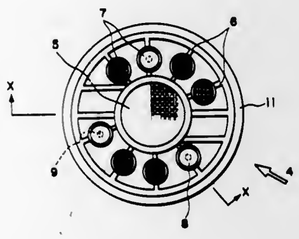


A printer carriage is operated to space a document by using a counter which may be set by program command to any count from a single increment which is a submultiple of a line space to a maximum count of the total number of increments for a full page. The counter is operated to subtract in response to each step advance by the carriage motor until a predetermined count is reached at which a stopping sequence is initiated to stop the carriage at the desired number of increments.

3,643,040
DISINFECTANT FOR A TELEPHONE MOUTHPIECE AND A MANUFACTURING METHOD THEREOF

Masao Kaneyasu, Taito, Japan, assignor to Dentsu Central Kabushiki Kaisha

Filed Mar. 5, 1970, Ser. No. 16,859
Claims priority, application Japan, Mar. 31, 1969, 44/23871; Mar. 15, 1969, 44/22633
Int. Cl. H04r 1/12
U.S. Cl. 179—185 2 Claims

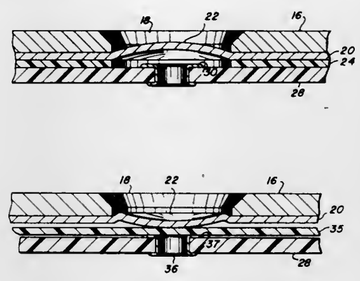


The present invention relates to a disinfectant wafer of the disc shape and a container therefor, which is usable by fitting in a telephone mouthpiece and is simple to handle, and yet the disinfectant sublimates or volatilizes at normal temperature and has a strong bactericidal and disinfectant effect.

3,643,041
PUSHBUTTON DIAPHRAGM SWITCH WITH IMPROVED DIMPLE ACTUATOR AND/OR CAPACITANCE-TYPE SWITCH CONTACT STRUCTURE

Charles A. Jackson, Litchfield Park, Ariz., assignor to Unidynamics/Phoenix, Inc.

Filed Dec. 30, 1970, Ser. No. 102,803
Int. Cl. H01h 9/26, 35/00
U.S. Cl. 200—5 A 10 Claims



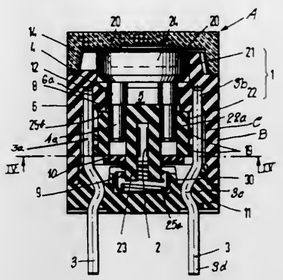
A faceplate is provided with a plurality of openings therein, each representing a digit to be used in a keyboard; a metal switch plate is positioned immediately beneath the faceplate and includes a plurality of dome-shaped resilient deformable dimples forming keys therein, each registering with and extending into a different one of said openings. An insulating plate, with holes therein registering with the dimples, separates the switch plate from a contact board that includes a plurality of contact buttons, each registering with one of the holes in the insulating plate. The dimples may be depressed by the fingertip of an operator to "snap" into contact with a corresponding contact button and will "snap" back to their original position when fingertip pressure is released.

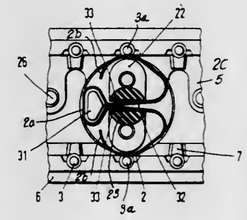
3,643,042
SLIDE SWITCH WITH IMPROVED RESILIENT, SELF-BIASING CONTACT

Josef Gratz, Munich, Germany, assignor to Siemens Aktiengesellschaft

Filed June 16, 1970, Ser. No. 46,651
Claims priority, application Germany, June 6, 1969, P 19 30 558.9
Int. Cl. H01h 15/08
U.S. Cl. 200—16 D 17 Claims

An inexpensive, compact and reliable miniature switch means comprises a generally channel-shaped housing having contact means regularly spaced along each of the opposite interior housing walls and a racklike structure extending from one of the walls with a pinionlike switching body being movable in the channel along the rack to selectively establish electrical connection between contact means on the opposite sides of the switch housing. A slot in the upper end of the switching body facilitates rolling movement of the body. A transparent cover plate may be pivotally connected to the housing means for snap-fit locking therewith and may have suitable indicia thereon to indicate switching body positions. A separation member which engages the racklike construction and snap-fits in place across the channel separates the switching means into a plurality of switching ranges within each of which a separate switching body may be moved. The switching body is constructed of a first contact bridge carrier portion and a second actuating disc portion held together by projections which form the lugs that engage the racklike ledge means for positive movement of the switching body. The contact bridge carrier portion is positioned below the ledge and between guide surfaces. The contact means are fixed along opposite inner walls and arranged generally opposite each other with the contact means on the wall having the racklike ledge being positioned generally in the area between the rack teeth.

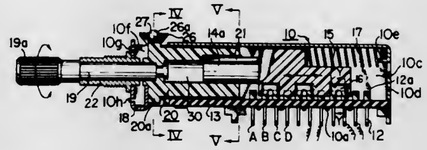




3,643,043
SLIDE SWITCH WITH ROTARY SPRING DETENT MECHANISM

Kunio Endow, Tokyo, Japan, assignor to Mitsumi Electric Company Limited, Tokyo, Japan

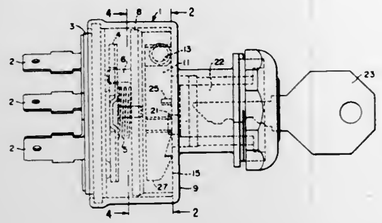
Filed Nov. 19, 1970, Ser. No. 91,088
Claims priority, application Japan, Nov. 20, 1969, 44/92653; Nov. 29, 1969, 44/113169; May 27, 1970, 45/45034
Int. Cl. H01h 15/10
U.S. Cl. 200—16 F 1 Claim



This invention relates to a combined rotary and side detent switch.

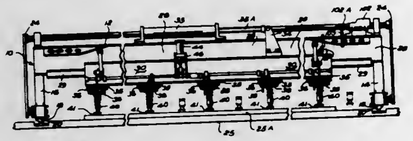
The improvement resides in the combination of a slide having a plurality of spaced female contacts, with a rotary detent mechanism, a motion-transmitting means being provided between the slide and the rotary detent for conversion of the latter to a corresponding sliding movement of said slide and said motion transmission means being formed into a recess or groove-shaped female member slidingly cooperating with a follower pin or rib-shaped male member formed on an extension of said slide.

3,643,044
RATCHET APPARATUS AND SWITCH CONSTRUCTION
Kent J. Batchiler, Westwood, Mass., assignor to Joseph Pollok Corporation, Boston, Mass.
Filed Feb. 23, 1971, Ser. No. 118,058
Int. Cl. H01h *27/06*
U.S. Cl. 200—44 **8 Claims**



In an ignition switch for automotive engines, a leaf spring ratchet prevents rotating the switch to engage the starter motor while the engine is running. The leaf spring has one end attached to a rotor and the other end free. It has a recess in the radially outermost surface and a tooth between the free end and the recess. A stop means adjacent the spring prevents rotation of the rotor to the "start" position when it engages the tooth and permits rotation of the rotor to the "start" position when it engages the recess.

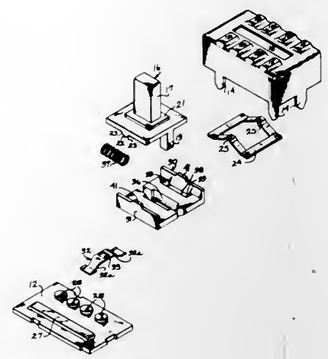
3,643,045
RECIPROCATING GRINDERS
Herbert P. Beck, Honey Brook, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
Original application June 3, 1968, Ser. No. 734,008. Divided and this application Apr. 1, 1970, Ser. No. 31,457
Int. Cl. H01h *21/28*
U.S. Cl. 200—47 **1 Claim**



Described herein is an improvement in a grinding machine to reduce overgrinding of the surface of a workpiece in the area at the end of each stroke of a reciprocating grinder which comprises counterreciprocating means and means to limit the forward movement of the reciprocating grinder.

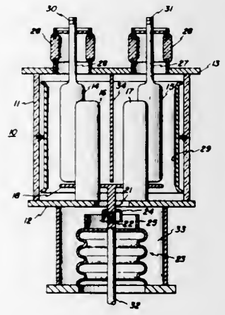
3,643,046
MULTIPLE CONTACT SNAP ACTION SLIDE SWITCH
John Zdanys, Jr., Edwardsburg; William L. Kelver, Jr., Cassopolis, both of Mich., and Norman C. Weingart, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Dec. 17, 1969, Ser. No. 885,873
Int. Cl. H01h *15/18*
U.S. Cl. 200—76 **20 Claims**

A snap action slide switch is provided having a contactor assembly engaging a common contact and selectively engaging one of a plurality of discrete contacts. A slider extends outwardly through a slot in a housing containing the contacts and has legs extending over the ends of a spring seated in the contactor assembly thereby biasing the contactor assembly to move with the slider. Projections on the contactor assembly engage notches on the housing to position the contactor assembly in engagement with a selected discrete contact and the common contact and to restrain the contactor assembly from movement with the slider. Movement of the slider relative to the contactor assembly compresses the spring and moves a cam depending from the slider into engagement with a cam surface on the contactor assembly. Relative movement



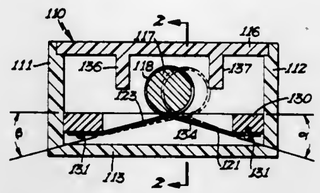
between the cam and cam surface produces pivoting of the contactor assembly and removal of the projections from the notches permitting the force of the compressed spring to snap the contactor assembly into engagement with another of the discrete contacts.

3,643,047
SERIES DOUBLE BREAK ROD ARRAY VACUUM SWITCH
Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company
Filed Dec. 10, 1970, Ser. No. 96,769
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **10 Claims**



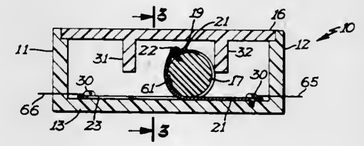
A series double break vacuum switch includes a pair of main electrodes and at least one, but preferably at least two, secondary electrodes juxtaposed in a radial array of parallel spaced rods within a switching chamber. Main electrodes enter the arcing chamber through one longitudinal end and secondary electrodes are interconnected by a common conductive mounting member at the opposite end of the switching chamber. The arrangement and connection of the main and secondary electrodes facilitates "blow out" of initial arc to extended area gaps between main and secondary electrodes and causes current flow in such direction within switch to prevent formation of destructive anode spots.

3,643,048
ROLLER-BAND DEVICE
Herman L. Crow, River Falls, Wis.; Andrew Lu Conic, New Port; Patrick Martin Maloney, St. Paul, and Gary Raymond Bluem, Golden Valley, all of Minn., assignors to Kroy Industries, Inc., Minneapolis, Minn.
Filed Feb. 6, 1970, Ser. No. 9,349
Int. Cl. H01h *3/00*; **F16c** *17/00, 27/00*
U.S. Cl. 200—153 R **24 Claims**



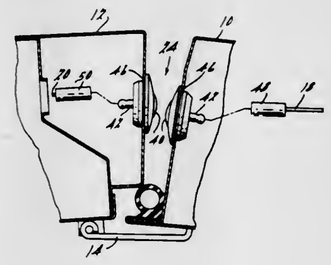
A roller-band device which utilizes a single roller with a flexible band encircling it and having its ends extending generally in opposite directions therefrom. The band has complimentary cutout and solid portions, preferably a pair of spaced leg portions at one end of the band and a tongue portion disposed between and having a width somewhat less than the space between the two leg portions at the other end whereby the band is wrapped around the roller and the tongue passes between the spaced legs without touching them. The roller and band are movable together along a predetermined path and may be used for performing various electrical switching functions. Opposite ends of the band decline from the plane on which the roller moves and form an acute angle therewith so that a high-contact force is obtained between contact surfaces on the roller and on the frame. A unique frame and housing means renders the device easily assembled and calibrated and then encloses the device. Also disclosed is a roller-band device with multiple rollers spaced along a common band.

3,643,049
ROLLER-BAND DEVICE
Andrew Lu Conic, New Port; Patrick Martin Maloney, St. Paul, and Gary Raymond Bluem, Golden Valley, all of Minn., assignors to Kroy Industries, Inc., Minneapolis, Minn.
Filed Feb. 6, 1970, Ser. No. 9,162
Int. Cl. H01h *13/12, 3/00, 1/16*
U.S. Cl. 200—153 R **29 Claims**



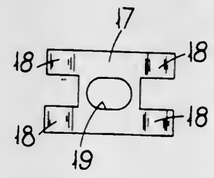
A roller-band device which utilizes a roller with a flexible band encircling it. The band has two sections which are electrically insulated from each other and the roller is nonconductive but has one or more conductors extending axially along its surface and disposed so that, in certain positions of the roller and band, the two sections of the band are bridged and an electrical circuit is completed therebetween and, in other positions of the roller, the electrical circuit is broken between the two sections of the band. One section of the band may include a plurality of legs, each electrically insulated from each other, and with each of the legs being bridged by the conductor means in different positions of the roller and band. In another embodiment the conductor means is arranged so that a circuit is completed to all of the legs simultaneously upon the roller and band moving to a predetermined position. A keyboard arrangement is disclosed wherein a plurality of switches of this type are utilized together, each with a different combination of legs connected into the output circuit to provide a coded signal to a device such as used in computer periphery equipment. Also disclosed is a roller-band device of the type described above having a unique actuating means, especially useful in connection with a keyboard switch, which includes a force-amplifying connection between the manual actuator and the roller and band and which provides a breakaway action as the manual actuator is operated.

3,643,050
RESILIENT ELECTRICAL CONTACTS
Richard E. Pfeifer, Lake Orion, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 27, 1970, Ser. No. 23,121
Int. Cl. H01h *1/24*
U.S. Cl. 200—166 BH **10 Claims**



An electrical contact including a flexible rubbery support member adapted for mounting in a hole. The support member exteriorly supports an electrical contact button which is interiorly connected to an electrical wire. The contact is particularly adapted for use in mating contact pairs on door and doorframes or the like to provide a means of supplying power to electrical devices on the door when it is closed and the contacts are mated.

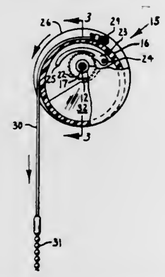
3,643,051
ELECTRICAL SWITCHES HAVING IMPROVED CONTACT STRUCTURE
David Foley, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed May 20, 1970, Ser. No. 39,130
Claims priority, application Great Britain, June 12, 1969, 29,753/69
Int. Cl. H01n *3/00*
U.S. Cl. 200—166 BH **2 Claims**



An electrical switch including an operating member pivotally mounted on a body and carrying a spigot which ex-

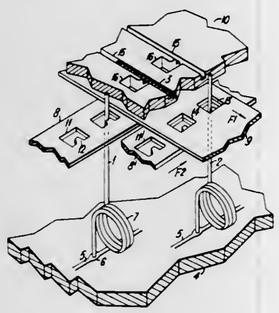
tends towards the base of the body, on which the fixed contacts are positioned. A movable contact member slidable on the base includes a pair of resiliently electrically interconnected parts engageable with the fixed contacts, the contact member being engaged with the spigot. A compression spring surrounds the spigot and urges the contact member into engagement with the base, the compression spring acting as part of an overcenter mechanism.

3,643,052
PULL CHAIN OPERATOR FOR ROTARY SWITCH SHAFT
Robert Marshall, Jr., 3425 N.E. Ainsworth, Portland, Oreg.
Filed Jan. 21, 1971, Ser. No. 108,526
Int. Cl. H01h *3/10*
U.S. Cl. 200—172 R **9 Claims**



An internally threaded tube forming a supporting hub for the device is mounted on the rotary switch shaft in a socket for a three-way light bulb in place of the conventional knob on the switch shaft. An eccentric drum is rotatably mounted on the tube and a ratchet gear in the drum is fixedly mounted on the tube. A pawl in the drum engages the ratchet gear. A pull chain on the drum rotates the switch shaft through fractional revolutions to switch the light circuit to low, medium, high and off in successive manipulations. A counterweight in the drum returns the drum and pull chain to starting position after each actuation of the switch.

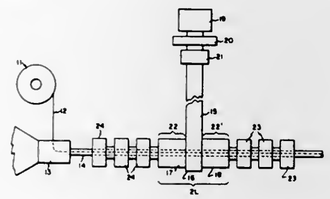
3,643,053
CROSSBAR SWITCH WITH PRESTRESSED MOBILE CONTACT SPRING AND PERPENDICULAR FIRST AND SECOND SHIFTING MEANS
Heinz Georg Grundig, Am Erlanger, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,873
Int. Cl. H01h *67/14*
U.S. Cl. 200—176 **6 Claims**



Shown is a cross-point mechanism for a crossbar switch in which each cross-point includes one or more mobile rigid wire springs conductors extending normal to a stationary conductor, there being one stationary conductor for each mobile wire spring. Two adjacent notches are inset in a stationary support insulator for each mobile spring, one for holding the mobile spring in the released or unoperated condition and the other for holding the mobile spring in the operated condition in contact with a stationary conductor. Each wire is permanently flexed toward the notches so that on movement toward the switch-operated condition the spring is moved orthogonally past a shoulder separating the notches and released there for movement due to the spring flexure.

For release of the cross-point connection, the mobile spring is translated in the direction normal to the alignment of the adjacent notches to free the spring of the shoulder and allow it to restore to the unoperated condition or release condition due to the spring flexure. The mobile spring is moved in operating condition by first and second perpendicular shifting means. Actuation of said first and second shifting means moves said mobile spring into a ready position, and then release of said first shifting means allows said spring flexure to move the mobile spring into the operated position.

3,643,054
MICROWAVE HEATING APPARATUS
Eric O. Forster, Scotch Plains, N.J., assignor to Esso Research And Engineering Company
Continuation-in-part of application Ser. No. 684,139, Nov. 20, 1967, now Patent No. 3,551,199. This application May 27, 1970, Ser. No. 40,911
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **7 Claims**

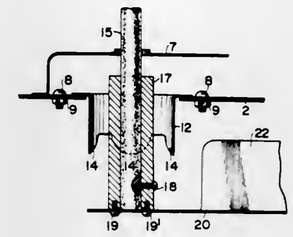


A microwave heating unit for curing wire coatings comprising a microwave generator, a waveguide coupled to said generator and means for coupling the coated wire to said waveguide whereby said wire becomes the center conductor of a coaxial line.

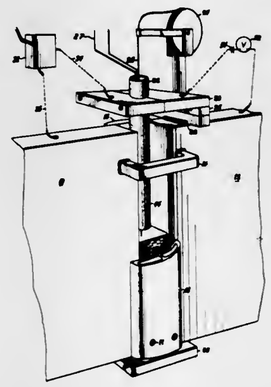
The outer conductor of the coaxial line is preferably circular in cross section. Propagation of microwave energy between the inner and outer conductors of the coaxial line necessarily passes through the wire coating, thereby curing said coating.

3,643,055
HIGH-FREQUENCY HEATING APPARATUS
Ryuji Suzuki, Nara, and Seiki Yokozeki, Yamatokoriyamashi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 27, 1970, Ser. No. 92,984
Claims priority, application Japan, Dec. 1, 1969, 44/96984
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **6 Claims**

A high-frequency heating apparatus, in which the high-frequency energy is uniformly distributed in a heating chamber for effectively heating the matter in the heating chamber. An energy distribution modifying means is provided in conformity to the shape of the heating chamber and on at least one of coaxial inner and outer conductors defining a cylindrical passage, which communicates with a waveguide coupled to a high-frequency oscillator. The high-frequency energy from the high-frequency oscillator is guided through the waveguide and the cylindrical passage to enter the heating chamber and is uniformly distributed in the heating chamber through the energy distribution modifying means.

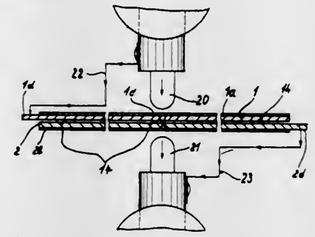


3,643,056
FLUX DEPTH INDICATOR
Jerry J. Wright, and William H. Curtis, Jr., both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Oct. 23, 1970, Ser. No. 83,553
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **4 Claims**



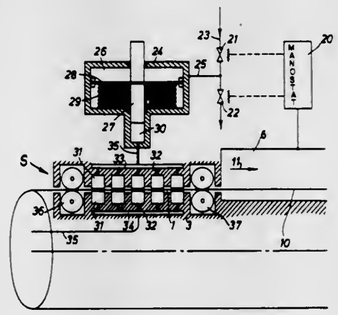
An arrangement for measuring the sufficiency of flux present in an electroslag welding process. In electroslag welding a space is formed between parts to be welded and a wire electrode is fed into said space through a tubular flux coated guide, both wire and guide including the flux thereon being melted to form the weld between parts when heat produced by resistance to electricity flowing therethrough is sufficient. The quality of the weld produced, is to a large extent, dependent upon the adequacy of the flux present at the site of the molten metal forming the weld. Frequently however, the weld is obscured from direct observation and only by indirect sensing as permitted by an arrangement such as provided by this invention is it possible to determine the quality of the weld being made.

3,643,057
RESISTANCE WELDING OF SHEET METAL COATED WITH LAYERS
Otto Alfred Becker, 59 Robert-Koch-Strasse 66, Saarbrucken 6, Germany
Filed Feb. 12, 1968, Ser. No. 704,684
Claims priority, application Germany, Feb. 11, 1967, B 91162; May 26, 1967, B 92707; Apr. 24, 1967, B 92210; Feb. 27, 1967, B 91404
Int. Cl. B23k *11/10*
U.S. Cl. 219—91 **11 Claims**



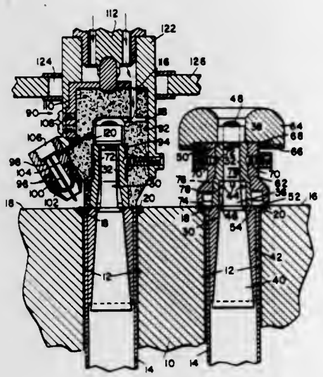
The invention relates to a method for the resistance welding of sheet metal coated with layers, wherein firstly electrical contact is established between the sheets to be interwelded and between the welding electrodes and said sheets, and subsequently welding is effected across the coating layers. The invention relates also to machines for carrying out this method.

3,643,058
DEVICE FOR CONTINUOUS TREATMENT OF ARTICLES
Jacques Long, Annecy, France, assignor to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique Alcatel, Paris, France
Filed Dec. 29, 1969, Ser. No. 888,566
Claims priority, application France, Dec. 26, 1968, 180656
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EB **9 Claims**



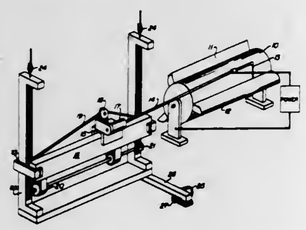
Device for continuous treatment of a workpiece, having an essentially constant and possibly complex cross section, providing means for passing the workpiece within an advancing passage defined by two opposite walls having an appropriate cross section and widening at particular points so as to form successively at least one input chamber, one treating chamber, and at least one output chamber, in that order, and means for supplying and maintaining predetermined pressures in said chambers, including regulating means for constantly regulating the pressure and the composition of the atmosphere prevailing in the treating chamber by regulating the opening of the advancing passage at the inlet and outlet sides, respectively, of said input and output chambers.

3,643,059
A METHOD OF WELDING TUBES TO TUBE PLATES
William G. Hill, London, and Kenneth Stevens, Richmond, both of England, assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Apr. 21, 1970, Ser. No. 30,415
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 6 Claims



This disclosure describes a method of an apparatus for s welding. In order to allow for automatic welding a groove is provided around the bore in a tube plate, header or the like, and an annular filler ring is provided in this groove around the end of the tube to be seal welded to the tube plate, header or the like. According to this invention, automatic seal welding is effected in a time which is comparable with manual seal welding by temporarily fixing a spindle in the end of each tube. The spindle is expandable in diameter and by expanding it, it can be temporarily fixed in place. After fixing it in place, a welding head is fixed over the spindle and a seal weld made. While this welding is taking place, the operator can be fixing one or more spindles in place. After the weld is completed, the head is removed and placed on a new spindle to made a new seal weld. The spindle can then be removed and placed in the end of a fresh tube.

3,643,060
WELDING APPARATUS FOR RESURFACING BREAKER BARS
Kenneth G. Carter, 175 Virginia, Salt Lake City, Utah
Filed June 29, 1970, Ser. No. 50,816
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 13 Claims

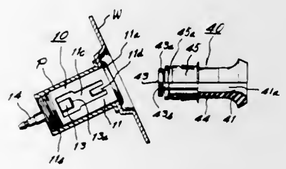


This invention relates to a welding apparatus for resurfacing in situ elongated breaker bars of a rotary impact crusher. The apparatus is generally located externally of the crusher and laterally to an end of a breaker roll, said apparatus comprising a welding tip extending into the crusher and above the protruding breaker bar to be resurfaced. The apparatus further includes means for reciprocating said welding tip along the length of an elongated breaker bar and means for transversely displacing said welding tip. The apparatus further includes means for elevating said welding tip, means for propelling said welding tip along a straight path substantially parallel to an elongated breaker bar and support means located externally to the rotary impact crusher for supporting said reciprocating means, said elevating means and said displacing means.

3,643,061
TUBULAR COMPOSITE SELF-SHIELDED ARC WELDING ELECTRODES
Robert B. Duttera, Springfield Township, York County, and Gordon H. Macshane, Upper St. Clair Township, Allegheny County, both of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed June 8, 1970, Ser. No. 44,561
Int. Cl. B23k 35/22
U.S. Cl. 219—146 16 Claims

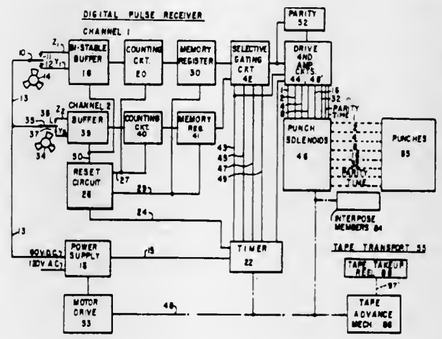
A tubular composite self-shielded arc welding electrode comprising a metallic outer sheath and a core within and enclosed by the sheath, the core comprising about 15 percent to about 60 percent of the electrode weight and consisting essentially of the following listed components in the specified weight percentages of the electrode: from about 1 percent to about 7 percent of at least one slag former, from about 0.5 percent to about 6 percent of at least one fluxing agent, up to about 3.2 percent of at least one arc stabilizer selected from the group consisting of calcium titanate, potassium titanate, potassium-bearing frit, sodium titanate and sodium-bearing frit, from 1.25 percent to about 4 percent of deoxidizer metal including at least 1 percent manganese and at least 0.25 percent silicon, and from about 12 percent to about 55 percent of other metal-bearing materials selected from the group consisting of metals, metal alloys and ferroalloys, the electrode being formulated to produce a high-alloy deposit of a type selected from austenitic chromium-nickel stainless steels and nickel-base alloys. In a preferred form the electrode may contain up to about 3 percent by weight of at least one fissure-reducing agent selected from the group consisting of alloyed and unalloyed metallic forms of calcium, magnesium and titanium.

3,643,062
INSTRUMENT BOARD LIGHTER
Sadahiro Ohinata, Higashiyurimura, Japan, assignor to Showa Tsusho Co., Ltd., Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,455
Int. Cl. F23q 7/22
U.S. Cl. 219—265 1 Claim



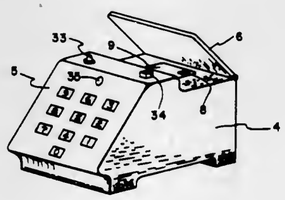
An instrument board lighter for use by automobile passengers, having a sliding cylinder adapted for insertion into a cylinder socket fixed on the instrument board of an automobile. The said sliding cylinder has a through hole for insertion of a cigarette formed in the axial direction thereof and, at the same time, a heater for direct contact with the forward end of the cigarette provided at the inserting end of the sliding cylinder. The said cylinder socket is provided with bimetallic leaf springs for holding said sliding cylinder and supplying electric current to the heater, while the said sliding cylinder is fitted with resilient springs constantly exerting a force in the direction of keeping the said sliding cylinder away from the said leaf springs.

3,643,063
ELECTRICAL DATA LOGGING SYSTEM FOR UTILITY INDUSTRY
Norman F. Marsh, and Karl W. Struck, both of Springfield, Ill., assignors to Sangamo Electric Company, Springfield, Ill.
Filed Dec. 4, 1969, Ser. No. 882,095
Int. Cl. G01v 1/32; G06k 1/12, 1/02; B06b 1/04
U.S. Cl. 235—61.1 18 Claims



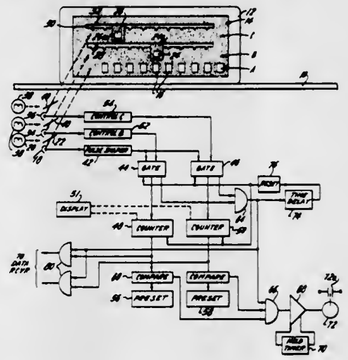
An event recorder device for providing a record of digital pulses representative of parameters, such as angular travel of a rotating shaft on an electrical meter, in which a count of the pulses is cyclically accumulated for successive measured time intervals, the count for each period being temporarily stored in a memory and being read out to lock in corresponding ones of a set of punch devices so that a slow-moving crankshaft will record the locked information on a standard multilevel paper tape during the next succeeding time interval. The same mechanical system controls an electrical timer and gating circuit in the gating of count information from the memory to the punch mechanism in several discrete sets of data (or characters) in which the actual reading is a sum of the weighted bit positions in the first character times a fixed multiplier plus the sum of the weighted bit positions of the second character. A tape cassette is used to store the paper tape which is advanced several times by the same mechanical system in each predetermined time interval to permit multicharacter readout in each interval.

3,643,064
CODE AUTHENTICATOR
Edward C. Hudson, Jr., Derry, N.H., assignor to Hudson Corporation, Manchester, N.H.
Filed Mar. 28, 1969, Ser. No. 811,343
Int. Cl. G06f 3/02; G06k 17/00; G08c 9/00
U.S. Cl. 235—61.7 B 1 Claim



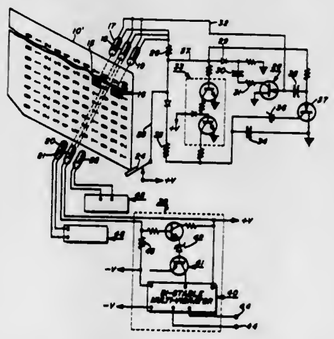
An authenticator device has an array of semiconductive magnetic transducers corresponding to an array of magnetically encoded areas on a card. The magnetic transducers statically sense the encoded areas on the card and provide electrical signals which are compared with information entered by a keyboard. Actuation of the keys causes a sequence of coded electrical signals to be generated corresponding to the order in which the keys are actuated. Each key code is compared in its turn with an appropriate part of the coded information read by the transducers from the card. Where a difference occurs between compared signals, the authenticator device provides an indication of noncorrespondence at the conclusion of a series of comparisons.

3,643,065
CODE RECOGNITION APPARATUS AND METHOD
Francis P. Dunigan, Holden, Mass., assignor to Federal Pacific Electric Company, Newark, N.J.
Filed Nov. 21, 1969, Ser. No. 878,810
Int. Cl. G05b 1/00; G06k 5/00; G06g 7/04
U.S. Cl. 235—61.7 R 3 Claims



Code-reading apparatus for identifying articles carried past a code reader by a conveyor, the apparatus using single and multiple digit codes.

3,643,066
ARRANGEMENT FOR THE AUTOMATIC IDENTIFICATION OF INFORMATION ON A NONPERFORATED DATA PROCESSING CARD
James T. Collz, New Providence, and Robert R. Meola, Parsippany, both of N.J., assignors to Calculagraph Company, East Hanover, N.J.
Filed Feb. 12, 1970, Ser. No. 10,758
Int. Cl. G06k 7/10; G01n 21/30; H03k 23/36
U.S. Cl. 235—61.11 E 9 Claims



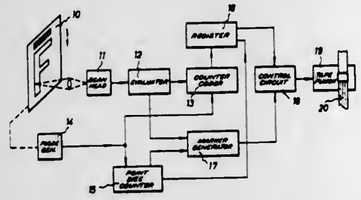
A plurality of light beams are projected onto a light-permeable information storage element such as a data processing card which is coded by applying a substantially opaque coat-

ing to selected areas of the card surface. Photoconductive cells are positioned to receive light beams emerging from the card, each photocell forming part of a switching circuit which is actuated when the intensity of the light beam striking the photocell exceeds a predetermined level.

3,643,067
METHOD OF OBTAINING AND PROCESSING CONTROL DATA FOR ELECTRONIC PHOTOTYPESETTING APPARATUS

Armin O. Colditz, Wellsee, and Werner Schmidt, Kiel, both of Germany, assignors to Dr.-Ing. Rudolf Hell

Filed Feb. 16, 1970, Ser. No. 11,640
Claims priority, application Germany, Feb. 19, 1969, P 19 08 113.1
Int. Cl. G06k 9/18
U.S. Cl. 235—61.11 E 4 Claims



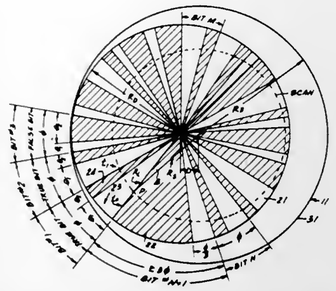
A phototypesetting process in which a character original is provided with coded bars which extend from the initial image line of successively identical image lines to the next to the last of such identical image lines as a means of generating a mark which signifies identical information content of such lines. The information mark is utilized to provide a recall order corresponding to the number of repetitions of a single such information content which would reproduce the scanned portion of the character associated with each single mark. The utilization of such recall orders in combination with repetition counters significantly reduces the storage capacity required for storing data to reproduce the character original in that the recall marks are utilized to inhibit storage of successively identical information and to recycle such information as frequently as required in accordance with the character original.

3,643,068
RANDOM ORIENTED DECODER FOR LABEL DECODING

William L. Mohan, and Samuel P. Willits, both of Barrington, Ill., assignors to Spartanics, Ltd., Palatine, Ill.

Filed Mar. 12, 1969, Ser. No. 806,371
Int. Cl. G06k 7/14, 19/06; G01n 21/30
U.S. Cl. 235—61.11 E 7 Claims

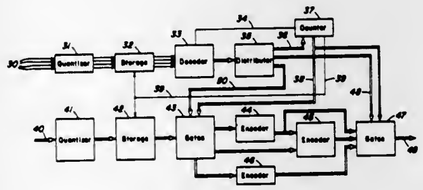
A decoder for reading labels and decoding them which does not require that the decoder be oriented relative to the label for operation to obtain data for the automatic tabulation of the item as to price, weight and item designation. The position of the label under the decoder is not critical and the decoder obtains an image from the label and decodes it and automatically centers the image in certain embodiments. The decoder scans the indicia on the circular label in a rotary fashion when the indicia is arrayed in radial wedges. The indicia is comprised of "bits," each data "bit" comprising a pair of contrasting areas, the ratio of said areas in each "bit" defining the binary status of each "bit." The scanned information from the label is entered in a cash register or computer for inventory purposes or at a checkout counter.



3,643,069
RECOGNITION APPARATUS WITH READOUT MODE SELECTION CAPABILITY

Yoshiyasu Kikuchi, Tokyo-to, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 29, 1969, Ser. No. 861,818
Claims priority, application Japan, Sept. 30, 1968, 43/71621
Int. Cl. G06k 7/00
U.S. Cl. 235—61.11 E 5 Claims



Recognition apparatus for reading mark-sensed documents having widely variable formats and various types of information thereon is provided by the present invention. The recognition apparatus according to the present invention comprises a plurality of transducer means adapted to sense marks present on a document, means for causing the document to move relative to the plurality of transducer means and means responsive to outputs of a predetermined number of the plurality of transducer means for selectively encoding outputs of the others of the plurality of transducers so that the marks on the document may be separately and selectively encoded in accordance with their nature whereby the document is read as a function of certain of the marks thereon and not the document format.

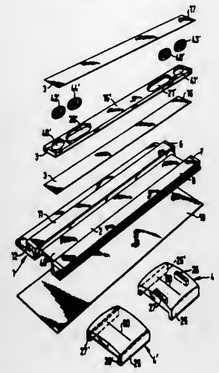
3,643,070
SLIDE RULES INCORPORATING MAGNETIC ELEMENTS

Johann Dogigli, Munich, Germany, assignor to ITAB Dogigli KG, Munich, Germany

Filed Apr. 7, 1970, Ser. No. 26,338
Int. Cl. G06g 1/02
U.S. Cl. 235—70 R 8 Claims

Slide rules constructed predominantly of nonmagnetic materials such as synthetic resins or light alloys, preferably having sliding surfaces of or faced with a synthetic resin or

other material of low frictional coefficient, and provided with inserts of magnetizable material in both the slide and body

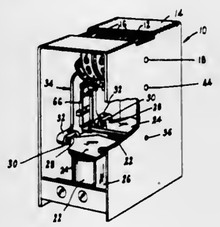


near their contacting faces, at least one of the inserts being magnetized.

3,643,071
ADD AND SUBTRACT PAWL ACTION COUNTER

Edwin J. McConnell, Windsor, Conn., assignor to Redington Counters, Inc., Windsor, Conn.

Filed July 8, 1970, Ser. No. 53,091
Int. Cl. G06m 1/14, 3/14
U.S. Cl. 235—92 C 11 Claims



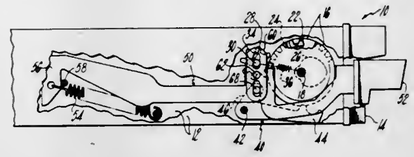
A counter has a novel driving assembly including a pinion cooperating with both a number wheel and an oscillatable ratchet having a pair of pivotally mounted pawls thereon to permit selective adding and subtracting. The pinion member has two adjacent axial portions with each portion having teeth spaced about the circumference thereof. The number wheel is in meshing engagement with a first portion of the pinion and the ratchet is mounted for oscillation adjacent to the number wheel with the pawls engaging the pinion during movement thereof to urge the pinion into driving engagement with another portion of the ratchet. Biasing means is provided to prevent counterrotation of the pinion during return travel of the ratchet.

3,643,072
RESETTABLE COUNTER

Ludwick Szeluga, South Windsor, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed July 22, 1970, Ser. No. 57,177
Int. Cl. G06c 15/42
U.S. Cl. 235—144 HC 8 Claims

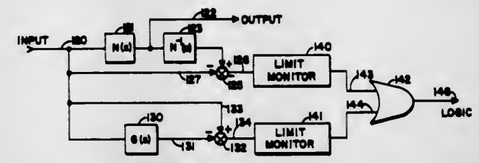
A counter reset mechanism includes a whippletree linkage movable with the counter's reset actuator and operatively connecting the actuator to both the transfer pinions and reset fingers. The linkage shifts the transfer pinions out of engagement with the number wheels as the reset actuator is moved toward the resetting position and permits reengagement between the transfer pinions and the number wheels upon initial movement of the actuator away from its resetting position. The linkage additionally controls the opposing biasing forces acting on the reset fingers to provide engagement of the reset fingers with the reset cams during the entire disengagement and reengagement operating sequence of the transfer pinions and withdrawal of the reset fingers from the reset cams upon reengagement of the transfer pinions and counter wheels.



3,643,073
TRANSFER FUNCTION MONITORING APPARATUS

Robert T. Sawamura, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 18, 1967, Ser. No. 668,505
Int. Cl. G06g 7/70; H03h 7/02
U.S. Cl. 235—150.2 10 Claims

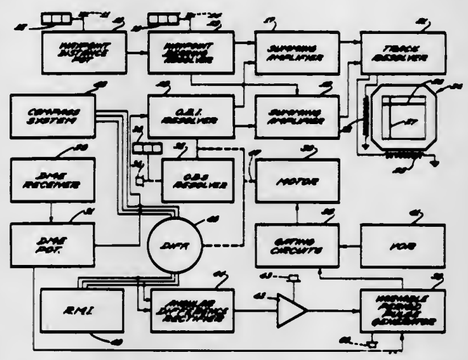


A sensitive control system monitor for control systems using band rejection or notch filters. An inverse notch filter reconstructs the input signal to the notch filter and a comparator measures the difference between a lagged input signal and the reconstructed input signal to provide a logic output when the time rate of change of the input signal exceeds a predetermined threshold.

3,643,074
ADAPTIVE FILTER USING HEADING CORRECTION

James Hobbs, Overland Park, Kans., assignor to Butler National Corporation, Oak Brook, Ill.

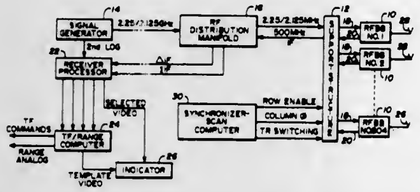
Filed Sept. 15, 1969, Ser. No. 857,724
Int. Cl. G06g 7/12; G01c 21/20
U.S. Cl. 235—150.27 12 Claims



An aircraft navigation system which has a variable response that is adjustable with the changes in heading rela-

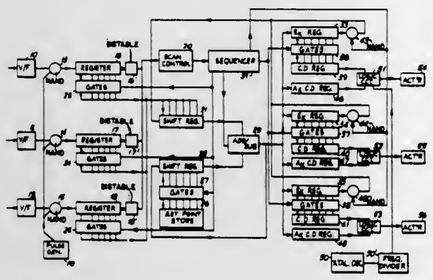
tive to the known radio bearing so as to filter out and remove signal frequency components which are greater than may be obtained with an aircraft having a particular airspeed and heading relative to the radio course.

3,643,075
DIGITAL SIMULATION
William F. Hayes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 2, 1970, Ser. No. 221
Int. Cl. G06f *15/20*; G01s *3/72*
U.S. Cl. 235—151 **16 Claims**



Digital data in the form of a bit pulse train from a phase shift generator is divided into a primary bit part and a remainder code. The remainder code is examined in correction code logic circuitry to determine the addition of a selected phase increment to the primary bit part of the phase shift digital data. If the remainder code falls within predetermined limits, a random addition of the selected phase increment will be made. The mean value of a large number of random additions is based on the value of the remainder code. Timing pulses to the correction code logic circuitry advances the digital representation of the phase increment through a half adder along with the primary bit part to simulate a bit code of higher order. This bit code is applied to an enabled gate connected to the phase shift network of an element of a phased array antenna.

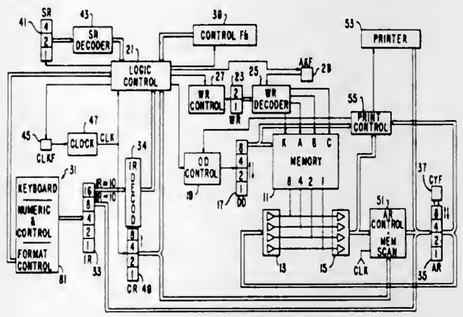
3,643,076
PROCESS CONTROLLER
Charles Anthony Bell, Biggleswade, England, and Anthony David Young, Victoria, Australia, assignors to National Research Development Corporation, London, England
Filed Sept. 3, 1969, Ser. No. 854,889
Claims priority, application Great Britain, Sept. 4, 1968, 42,065/68
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.1 **13 Claims**



A control system is described which has a number of control loops with individual sensing and actuating stages but a common arithmetical unit for calculating digital error and error rate signals. A common set point store is also provided for providing reference information for the arithmetical unit. Such a control system is useful where there are too few control loops to warrant the use of a computer.

Actuator drive apparatus is also described for providing a drive signal for the actuators in the loops. The apparatus receives the error signal and the error rate signal from the arithmetical unit, and multiplies these signals by constants by counting down registers containing the signals at preselected rates. If the signals have the same sign the registers are counted down one after the other and the actuator is energized for the duration of countdown, but if the signals are of different sign the registers are counted down concurrently until one reaches zero, and then the actuator is energized while the other register completes countdown.

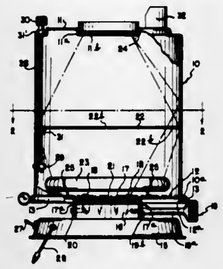
3,643,077
ELECTRONIC PRINTING DIGITAL CALCULATOR
John O. Griggs, Jr.; Arthur J. Radcliffe, Jr., both of Plymouth, and Michael F. Matouka, Sterling Heights, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Mar. 13, 1970, Ser. No. 19,236
Int. Cl. G06f *7/385*
U.S. Cl. 235—160 **42 Claims**



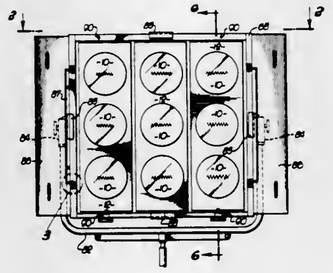
A printing electronic digital calculator having a system for translating instructions and decimal data into binary data, a register for receiving and temporarily storing the binary data, a memory with a plurality of registers, a single arithmetic register for transferring data from said receiving register to a memory register, for transferring data from one register of the memory to another register of the memory, for storing and algebraically increasing a factor according to a value stored in a register of the memory, all under the control of logic stored in the calculator, and for counting synchronizing pulses from a printing system to enable alignment of the proper character in the printer to be printed. A pair of registers in the memory may be treated as a single entry register with individually addressable word locations. A word-change system for this pair of registers transposes the logical designation of the two words, obviating the necessity for a physical transfer of a factor from one word location to the other in operations of the calculator.

3,643,078
ILLUMINATOR FOR BIOLOGICAL TEST PLATES
Andrew J. Lewis, 14718 Onaway Road, Shaker Heights, Ohio
Filed June 29, 1970, Ser. No. 50,550
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 R **10 Claims**

A laboratory lamp is provided for supplying a constant source of daylight-bright, soft, evenly diffused light for the examination of test plates which are translucent or transparent. A generally cylindrical housing has a recess in the center of its top wall for holding a plate to be examined. Near the bottom of the housing is a white light source providing light emitted evenly around a circumference substantially concentric with the cylindrical housing. A light baffle is supported in the housing between the light source and the plate opening preventing direct light beam transmission from the light source to the plate opening but leaving an annular opening substantially continuously around the baffle between its periphery and the interior of the cylindrical housing. The interior surface of the housing, and preferably the underside of said baffle, provide softly diffusing light deflectors. The light intensity may be varied by adjusting the baffle up or down within the housing.



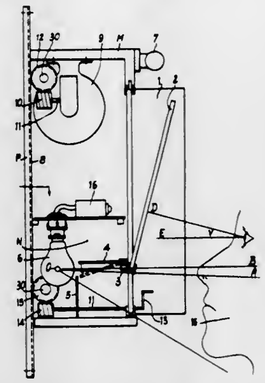
3,643,079
HIGH-EFFICIENCY ADJUSTABLE LUMINAIRE
Richard B. Glickman, Sherman Oaks, Calif., assignor to Berkey/Colortran Mfg. Inc., Burbank, Calif.
Filed Jan. 29, 1970, Ser. No. 6,732
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 **14 Claims**



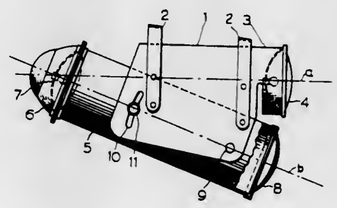
A luminaire mounts an array of standard sealed beam lamps each of which has a filament orientation and reflector configuration that produces a generally oval field of illumination. A plurality of elongate housings are provided, each housing mounting a set of lamps. The housings are mounted in side-by-side relationship and so that the housings can be rotated to achieve a desired degree of overlap or a desired degree of spacial relationship of the illumination fields produced by the sets of lamps. The luminaire can be turned 90° so that the spreading or overlap can take place either in a horizontal direction or a vertical direction as desired. Filament orientation can be determined independently.

3,643,080
ADJUSTABLE TOILET CUPBOARD WITH LIGHTING EQUIPMENT
Andre F. Gavallet, 8, rue Dante, Paris, 5e, France
Filed Aug. 14, 1969, Ser. No. 850,145
Claims priority, application France, Aug. 20, 1968, PV 163,450
Int. Cl. A47b *67/02*; A45d *42/10*
U.S. Cl. 240—4.1 **9 Claims**

An arrangement for toilet cupboard providing intense illumination of the lower part of the face for shaving or examining the skin, without the rays emitted by the source light being able to reach the user's eyes and dazzle him; the cupboard has a light chamber opening below an articulated frontal mirror and mechanical means to vertically displace said cupboard.



3,643,081
ANTIGLARE HEADLIGHTS
Marcel Szeles, 3605 Sandwich Street, West, Windsor, Ontario, Canada
Filed Nov. 21, 1969, Ser. No. 878,668
Claims priority, application Canada, Sept. 15, 1969, 61,954
Int. Cl. B60q *1/04*
U.S. Cl. 240—7.1 R **1 Claim**



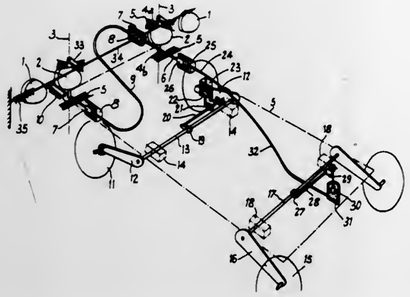
This invention consists of a car headlights in which a far-beam headlight is in combination with a standard parallel beam headlight to the underside of which the far-beam headlight is pivotally attached so that it can be adjusted and held at an angle to the parallel beam headlight. A dome-shaped rear on the far-beam headlight is provided with a light source which passes through a lens in the front of the said headlight. This lens has a principal focus a short distance in front of it so that the light which passes through it diverges. The above-mentioned angle of the far-beam headlight is such that the upper limit line of the diverging beam of light emerging from the far-beam headlight is parallel to the highway upon which the said car travels, and below the sight of the driver of an oncoming car

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3,643,082
VEHICLE LIGHTING SYSTEMS
Jacques Fleury, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Feb. 11, 1969, Ser. No. 798,332
Int. Cl. B60q *1/10*, *1/12*
U.S. Cl. 240—8.25 **10 Claims**

Pivotal headlamps are connected to a vehicle suspension system to cause the lamp beams to move to illuminate a

curve in a road and a mechanical or hydraulic system is operated by the vehicle suspension to ensure that the beams

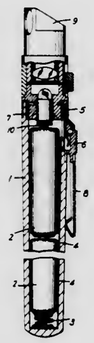


remain in the same plane despite pitching movements of the vehicle.

3,643,083
BATTERY-OPERATED DEVICES

Helmut A. Heine, Herrsching, Upper Bavaria, Germany, assignor to Propper Manufacturing Company, Inc. and Optotechnik G.m.b.H.

Filed Oct. 8, 1969, Ser. No. 864,776
Claims priority, application Germany, Nov. 30, 1968, P 18 11 923.8
Int. Cl. F21l 7/00
U.S. Cl. 240—10.66 7 Claims

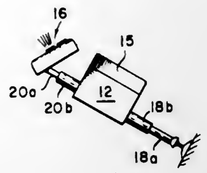


A battery-operated device such as a medical diagnostic unit requiring batteries for illumination purposes. The device has an elongated hollow grip which also acts to accommodate batteries in its interior, and a springy clip is carried by the grip at its exterior surface to enable the grip to be situated on the wall of a garment pocket or other enclosure with the grip situated within the enclosure and with an upper part of the wall thereof extending between the clip and the exterior surface of the grip. A movable switch member is guided for movement by the clip and situated in a position to be engaged by the upper edge of the wall of the enclosure and displaced thereby to a circuit-opening position whenever the grip is situated within the enclosure, so that in this way the circuit will be automatically opened when the device is not used and carried about in a garment pocket or placed in another enclosure which will operate in a similar manner to place the switch automatically in its open position.

3,643,084
EXTENSIBLE UNIVERSALLY POSITIONABLE DEVICE

William C. Moore, Qtrs. 57-B Rice St., Bolling AFB, Washington, D.C.

Filed Nov. 10, 1969, Ser. No. 875,381
Int. Cl. F21l 13/04; F21v 21/08, 21/28
U.S. Cl. 240—10.67 12 Claims

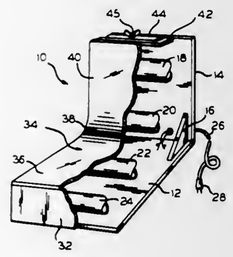


A versatile universally positionable portable device which preferably is provided with an illumination unit for illuminating desired areas such as an aircraft instrument panel or any selected cockpit area, wherein the device includes a housing having coaxial oppositely directed telescoping sectional units provided at their respective opposite ends with swivel assemblies to permit universal positioning of the device as found necessary or desirable by the user thereof.

3,643,085
PHOTOGRAPHIC LIGHT BOX

Jacqueline Durand, 600 S. Lathrop Ave., Forest Park, Ill.

Filed Oct. 13, 1969, Ser. No. 865,636
Int. Cl. F21v 9/00; F21e 5/12
U.S. Cl. 240—20 7 Claims



A photographic light box of generally L-shaped configuration having a surface of similar shape, with a curvature between the horizontal and vertical surface portions and with the light distributed in the box to provide a shadowless background for objects to be photographed so that the photograph that is produced has no horizon line.

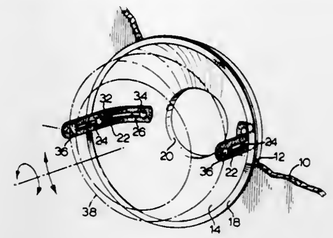
3,643,086
LIGHTING UNIT

Frank D. Shaw, 143 Bermondsey Road, Toronto, Ontario, Canada

Filed July 28, 1970, Ser. No. 58,860
Int. Cl. F21v 7/00
U.S. Cl. 240—41.6 2 Claims

A headlamp unit designed to be powered by cells is pivoted on the ends of a pair of flexible nonmetallic strips

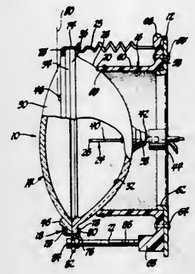
which extend inwardly along the inner surface of a bowl which carries the headlamp, each strip is frictionally supported on the bowl by head pins and each strip has a pair of rearwardly extending aligned slots, with each slot to a pin.



3,643,087
HEADLAMP ASSEMBLY

Sheldon G. Little, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1970, Ser. No. 23,574
Int. Cl. F21v 19/02
U.S. Cl. 240—41.6 1 Claim

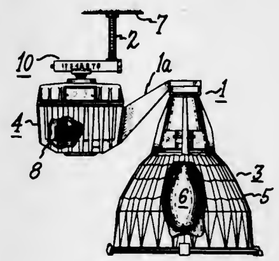


A headlamp assembly for a motor vehicle wherein the reflector of a headlamp is directly universally supported on a flexible conical lip of a plastic support cylinder. The headlamp is resiliently biased into seating arrangement with the lip and selectively positioned thereabout by means of circumferentially spaced aiming screws and extension springs.

3,643,088
LUMINAIRE SUPPORT

Mitchell M. Osteen, Zirconia, and James L. Grindle, Hendersonville, both of N.C., assignors to General Electric Company

Filed Dec. 24, 1969, Ser. No. 887,944
Int. Cl. F21s 1/06
U.S. Cl. 240—52 8 Claims

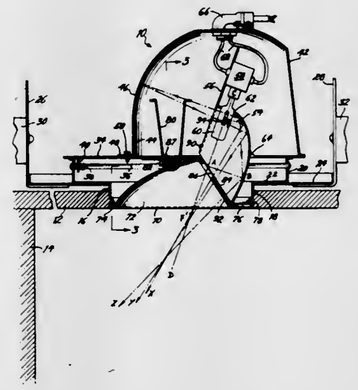


Industrial luminaire having an optical assembly mounted in offset relation to an associated ballast housing is suspended from a supporting conduit by a horizontally adjustable bracket by means of which the luminaire may be positioned with its center of gravity directly below the supporting conduit.

3,643,089
LIGHTING FIXTURE FOR ILLUMINATING PLANAR SURFACES

Paul M. Marantz, New York, N.Y., assignor to Century Lighting, Inc., Clifton, N.J.

Filed July 15, 1969, Ser. No. 841,715
Int. Cl. F21v 7/08
U.S. Cl. 240—78 H 8 Claims

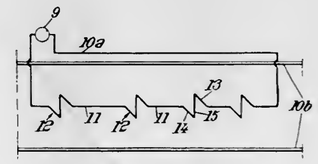


A lighting fixture for illuminating planar surfaces such as walls or the like, is disclosed. The fixture comprises an ellipsoidal primary reflector open at one end and on one side on a plane generally parallel to its major axis, an elongated light source at a focus of the primary reflector and extending along a portion of the major axis thereof adjacent the focus, and a second reflector juxtaposed to the open side of the primary reflector and the light source.

3,643,090
APPARATUS FOR DRIVING A VEHICLE

Jean-Pierre Malon, Maisons Alfort, France, assignor to Ste Inter-Elec, Aubervilliers, France

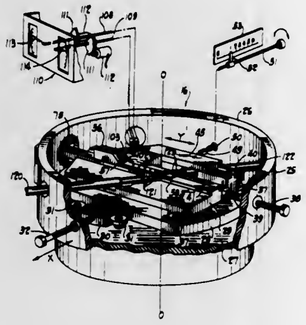
Filed Aug. 13, 1968, Ser. No. 752,275
Claims priority, application France, Aug. 18, 1967, 118334
Int. Cl. B61l 3/18
U.S. Cl. 246—182 R 16 Claims



The path of the vehicle is divided into successive intervals of space. An adjustable, periodic, pulsed reference signal is provided for each interval, and its frequency is adjusted so that the product of this frequency by the length of the corresponding interval is proportional to the speed desired for the vehicle on this interval. The number of reference pulses received by the vehicle during its travel along each interval is counted and compared with a determined fixed base number

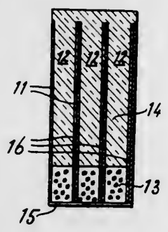
to compare the real speed of the vehicle with the desired speed.

3,643,091
SPECIMEN STAGE AND HOLDER ASSEMBLY FOR ELECTRON MICROSCOPE
Jeffrey H. Lucas, Rickling, NR. Saffron, Walden, Essex, England, assignor to Associated Electrical Industries Limited, Stanhope Gate, London, England
Filed Aug. 19, 1969, Ser. No. 851,172
Claims priority, application Great Britain, Aug. 30, 1968, 41,572/68
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 B **17 Claims**



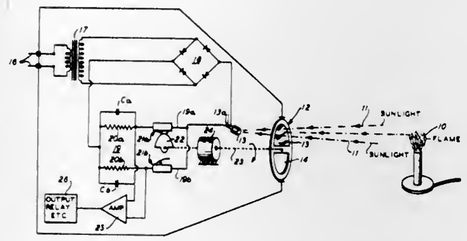
In an electron beam apparatus, two stage plates are nested one within the other and are slidable on a common reference surface to provide X–Y motion for scanning a specimen positioned on the optical axis of the apparatus. The specimen holder is mounted on a carriage which is carried by one of the stage plates and is movable relative to the stage plate along one axis. The specimen stage and holder assembly may be constructed to tilt the specimen in any direction about the optical axis.

3,643,092
COMBINED LUMINESCENT SCREEN AND ANTIDIFFUSION GRID, AND METHOD OF MAKING SAME
Willem H. van der Feyst, Delft, Netherlands, assignor to N.V. Optische Industrie De Oude Delft, Delft, Netherlands
Filed Mar. 2, 1970, Ser. No. 15,820
Claims priority, application Netherlands, Mar. 5, 1969, 6903366
Int. Cl. H01j *1/62*
U.S. Cl. 250—80 **7 Claims**



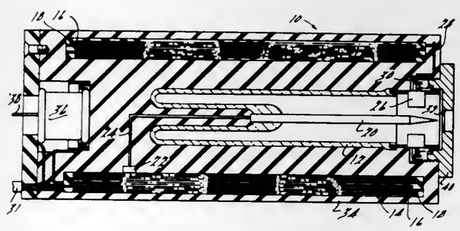
A combined X-ray luminescent screen and antidiffusion grid, in which compartmenting of the phosphor layer is partly or wholly achieved by means of the same X-ray absorbing and light-reflecting strips which also form the antidiffusion grid portion of the assembly. The interspaces between such strips are partly filled with the phosphor and partly are left empty or filled with a material transparent for X-rays.

3,643,093
ULTRAVIOLET DETECTOR SYSTEM
John J. Dietz, Cedar Grove, N.J., assignor to McGraw-Edison Company, Elgin, Ill.
Filed May 25, 1970, Ser. No. 40,248
Int. Cl. G01j *3/00*
U.S. Cl. 250—83.3 UV **4 Claims**



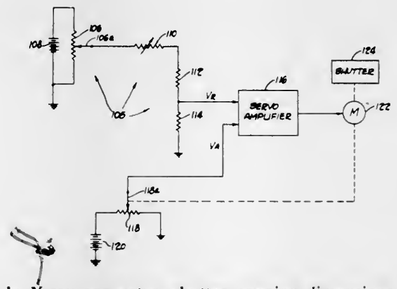
A system for detecting only ultraviolet radiation below a cutoff value of 2,900 Angstrom uses a detector means responsive to wavelengths both below and above the cutoff value. Associated partially with the detector means is an optical filter which passes only radiation above the cutoff value. A bridge circuit and the detector means are connected to a source of potential to provide a differential potential across two load resistors proportional only to the radiation below the desired cutoff value. An indicator connected to the bridge circuit responds according to the average differential potential across the load resistors whereby to give an indication only of the U–V radiation whose wavelengths are below the desired cutoff value.

3,643,094
PORTABLE X-RAY GENERATING MACHINE
Donald A. Courtois, Ypsilanti, Mich., assignor to The Bendix Corporation
Filed May 18, 1970, Ser. No. 38,261
Int. Cl. G03b *41/16*; **H01j** *35/00*
U.S. Cl. 250—87 **4 Claims**



A portable X-ray generating machine including an X-ray tube and a spiral generator power source in which the dimensions and positioning of the spiral generator are selected so that the generator encircles or surrounds the X-ray tube to form a compact unit. The spiral generator is formed from conductive sheets or foils which have a high coefficient of adsorption of X-radiation so that an operator will be effectively protected from X-radiation by the generator during operation of the tube. The portable combination of this invention is thus extremely light because a minimum of separate shielding material is needed. In the preferred embodiment illustrated herein of this invention, the electrodes of the X-ray tube are connected to the foils of the spiral by extremely short, well insulated paths. The short path lengths provide minimum inductance and thereby allow maximum voltage to be developed across the X-ray tube during the transient discharge, when the time rate of change in current is extremely high.

3,643,095
AUTOMATIC COLLIMATOR CONTROL FOR X-RAY APPARATUS
Ronald F. Shuster, Euclid, Ohio, assignor to Picker Corporation, White Plains, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,620
Int. Cl. G21f *5/04*
U.S. Cl. 250—105 **35 Claims**



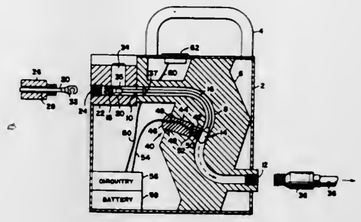
In X-ray apparatus, shutter opening dimensions are controlled automatically in accordance with the distance of an X-ray tube from a film and the size of film being used. Shutter opening is controlled automatically in accordance with film size only when the X-ray tube is oriented in particular directions, and is spaced from the film within a predetermined range of distances.

Actual shutter opening is compared with computed, desired shutter opening and the actual shutter opening adjusted to correspond to the desired opening. The circuitry is digital in nature, as opposed to analog, and energizes shutter drive motors to operate at fixed speed to adjust the shutters properly, at which time the motors are completely deenergized.

Means are provided for manually adjusting the shutter opening when it is desired not to operate automatically, or when the X-ray tube is oriented in other than predetermined directions, or when the X-ray tube is spaced from the film by a distance outside the predetermined range.

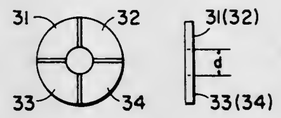
3,643,096
RADIOACTIVE SOURCE SHIELD WITH SAFE POSITION INDICATOR
Luther R. Jeffries, Jr., Medford Lakes, and Charles F. Thompson, Millville, both of N.J., assignors to General Nuclear, Inc., Houston, Tex.
Filed Feb. 27, 1969, Ser. No. 802,832
Int. Cl. G01t *1/26*; **G21f** *5/00*
U.S. Cl. 250—108 R **6 Claims**

Apparatus for indicating when a radioactive source capsule is in a safe position within its shield comprises a gamma-sensitive photoconductor located in the shield in close proximity to the safe location of the radioactive source. The photoconductor operates a visual indicator through electrical circuitry



designed so that a positive indication is given when the radioactive source is in its safe position.

3,643,097
OPTICAL FILTER FOR SUPPRESSING NOISE WHICH UTILIZES A GRADED OPTICAL FIBER AND MEANS FOR CONTROLLING TRANSVERSE POSITION OF IRIS
Atsufumi Ueki, and Ryuji Tatsumi, both of Tokyo, Japan, assignors to Nippon Selfoc, Limited c/o Nippon Electric Company Limited, Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,853
Claims priority, application Japan, Nov. 16, 1968, 43/83681
Int. Cl. G01j *1/20*; **G02b** *5/14*
U.S. Cl. 250—201 **5 Claims**

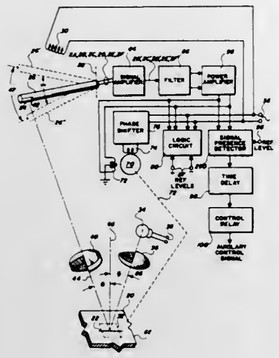


A noise suppression optical filter having practical utility in increasing the signal-to-noise ratio of a laser communication system. The filter comprises a converging light guide element having an index of refraction which varies inversely with the square of the distance from the central axis. Irises having apertures of specified diameters are located at the input and output ends of that light guide, and means are provided to position these apertures in alignment with the light travelling through the guide.

3,643,098
MARK-SENSING PHOTOSENSOR
Samuel P. Willits, Barrington, Ill., assignor to Spartanics Ltd., Barrington Village, Ill.
Original application July 3, 1967, Ser. No. 650,835. Divided and this application Jan. 29, 1970, Ser. No. 6,897
Int. Cl. G05k *1/01*; **G01j** *1/36*
U.S. Cl. 250—202 **5 Claims**

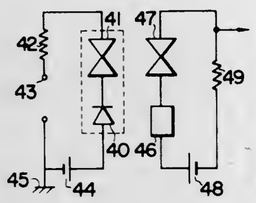
A periodically oscillating electro-optical scanning apparatus for indicating the position of registration lines or

edges relative to itself by providing an electrical signal output indicative thereof. The optical scanner is positioned relative



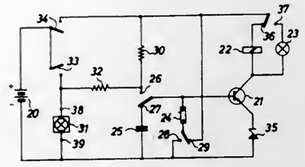
to the material containing the indicia to eliminate output signal deficiencies.

3,643,099
ELECTRO-OPTICAL NETWORK FOR SELECTIVELY PRODUCING A SINGLE PULSE OR PULSE TRAIN IN RESPONSE THERETO OF A SINGLE TRIGGER PULSE
Sadahiko Yamashita, Kadoma, Japan, assignor to Matsushita Electric Industrial Company Limited, Osaka, Japan
Filed Sept. 17, 1970, Ser. No. 73,052
Claims priority, application Japan, Sept. 20, 1969, 44/75572
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **6 Claims**



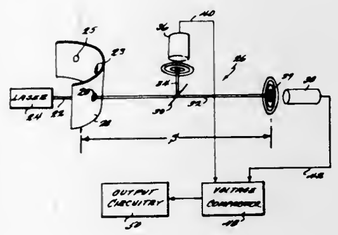
An electro-optical network having electrically isolated units, one of said units containing an injection-electroluminescent pulse-generating diode and another of said units containing a pulse-generating diode in series with a photoconductive element positioned in radiation-coupled relationship with said first-mentioned diode. Both of the pulse-generating diodes are of the type in which they start oscillation at a certain predetermined bias voltage V_1 and cease to oscillate at another predetermined voltage V_2 lower than V_1. Under the bias conditions of $V_2<Vb<V_1$, when a single trigger pulse is applied to the injection-electroluminescent pulse-generating diode, it starts to oscillate, emitting light from the PN junction. The light thus emitted irradiates the photoconductive element, causing a reduction in the resistance thereof. Consequently, a voltage as applied across said pulse-generating diode increases, rendering it for oscillation. With a bias of $Vb<V_2$, the application of the single pulse produces only a single output pulse.

3,643,100
PHOTOCELL CIRCUIT FOR PROVIDING INDICATIONS OF BOTH AVAILABLE LIGHT AND FLASHBULB READINESS
Dieter Engelsmann, Unterhaching; Hubert Hackenberg; Johann Putscher, and Rolf Strittmatter, all of Munich, Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 19, 1970, Ser. No. 12,204
Claims priority, application Germany, Feb. 21, 1969, P 19 08 653.4
Int. Cl. G03b *9/70;* **H01j** *39/12;* **H05b** *37/00*
U.S. Cl. 250—214 P **11 Claims**



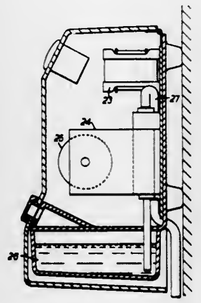
Operational readiness of a flashbulb is indicated by an indicator lamp prior to release of the camera shutter by connecting the flashbulb with a series resistor in the base-emitter circuit of a transistor, whose collector circuit contains the indicator lamp. By a suitable switching arrangement, the circuit may be combined with the camera automatic exposure control circuit. The condition of the battery and the light conditions affecting the exposure may also be tested.

3,643,101
LASER MICROAPERTURE MEASUREMENT INSTRUMENT
John I. Shipp; Nathan E. Welch, and Thomas D. Broadbent, all of Tullahoma, Tenn., assignors to Laser Systems & Electronics, Inc., Tullahoma, Tenn.
Filed Jan. 7, 1969, Ser. No. 789,458
Int. Cl. G02b *5/18*
U.S. Cl. 250—216 **14 Claims**



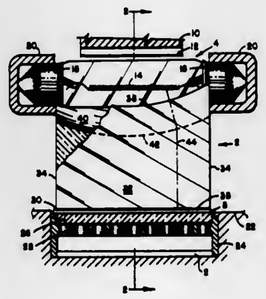
A method and apparatus for determining the diameter of roughly circular apertures by employing a laser to pass a beam of coherent light through the aperture whose diameter is to be measured so that a Fraunhofer diffraction pattern is produced. The Fraunhofer pattern is split by appropriate means and the two identical patterns thus produced each focused upon appropriate photodetectors. For a first reference photodetector the entire Fraunhofer pattern is allowed to be incident upon the reference photocell while for the second detector only part of the inner portion of the bright central area of the pattern known as the Airy Disc is detected. The ratio of the voltages produced by the two photocells is then a function of the diameter of the aperture through which the beam has passed and by appropriate circuitry an output signal related to that diameter can be produced.

3,643,102
RADIATION-SENSITIVE CONTROL FOR THE CONCENTRATION OF A CHEMICAL
Norman Craik Harper; John Henry Marshman, and Henry Thomas Marshman, all of Landfield House, Clarence Road, St. Helier, Jersey, Channel Islands, Great Britain
Filed Feb. 10, 1969, Ser. No. 797,801
Claims priority, application Great Britain, Feb. 15, 1968, 7,537/68
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **9 Claims**



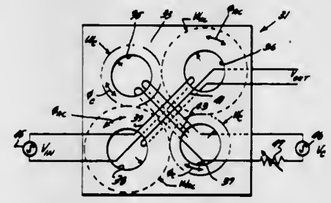
This invention is a control for the supply of chlorine in a swimming pool. The water in the pool is continuously recirculated and filtered and a sample is taken from the recirculating water in regular sampling cycles and the metered sample has injected into it a metered amount of chlorine indicator. An optical method is used to measure the effect of the indicator and to control accordingly an injector for chlorine into the pool.

3,643,103
LIGHT-CONDUCTING MEMBER FOR PHOTOELECTRIC CODE SENSOR
Edwin O. Du Buis, Sarasota, Fla., and Carl Bayer, Jr., Hackensack, N.J., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.
Filed Mar. 16, 1970, Ser. No. 19,590
Int. Cl. G02b *5/14*
U.S. Cl. 250—227 **10 Claims**



A light-conducting member for an apparatus which photoelectrically senses successive columns of coded data-indicating perforations in a punched tape. The light-conducting member is of a transparent material, located above the tape, and conducts light from a single elongated light bulb onto the tape. A phototransistor array is located beneath the tape and senses light passing through the perforations. The top surface of the light-conducting member receives the light from the bulb and contains a trough portion extending substantially parallel to the columns of perforations and elongated bulb. The bottom of the trough is concave and symmetrical about a plane perpendicular to the columns. The bottom surface of the light-conducting member emits the light received on its top surface, is planar and located perpendicular to the plane about which the trough is symmetrical. The bottom surface is also elongated in a direction parallel to the columns to emit light to all the apertures in each column. Preferably, the light-conducting member has two planar side surfaces located in converging planes which intersect beneath the bottom surface. The insides of these side surfaces are adapted to reflect at least some of the light directed onto the top surface and direct such light onto the bottom surface.

3,643,104
MAGNETIC CONTROL DEVICE
Orestes M. Baycura, 2238 Central Park Drive, Campbell, Calif.
Filed Jan. 6, 1970, Ser. No. 991
Int. Cl. G11c *11/08;* **H03k** *19/166*
U.S. Cl. 307—88 LC **3 Claims**

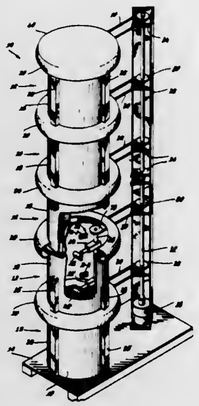


A magnetic control device comprising a magnetic structure having four openings forming an approximately square configuration. An input winding and an output winding are both coupled with the pair of openings along one diagonal of the square and a control winding is coupled with the pair of openings along the other diagonal of the square. An AC control signal, that is synchronized with an AC input signal, saturates the area around each of its associated openings which restricts the flux path available to the flux induced by the input signal. Varying the amplitude of the control signal varies the volume that flux induced by the input signal may occupy and therefore varies the current induced into the output winding. Other embodiments include NOR and NAND logic circuits that are derived from this basic magnetic control device.

3,643,105
MODULAR CASCADED REVERSIBLE POLARITY ULTRAHIGH DC VOLTAGE SUPPLY SYSTEM
George H. Bantz, Brewster; John S. Falle, Carmel, and Stanley G. Peschel, Brewster, all of N.Y., assignors to Hipotronics, Inc., Brewster, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,654
Int. Cl. H02m *7/04*
U.S. Cl. 307—110 **18 Claims**

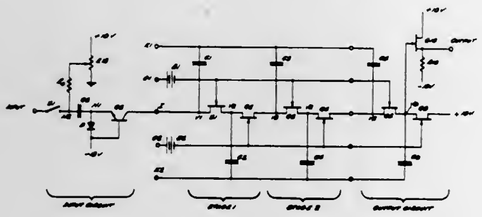
A modular cascaded reversible polarity ultrahigh DC voltage supply system is described wherein modular DC voltage power supply units are vertically stacked one upon another and connected in cascaded series relationship to form an ultrahigh DC voltage supply. Each of the modular units, as shown, includes a three-position switch electrically connected in each of the modular power supply units to "-ground" and then to reverse the polarity of the system output voltage, such that the whole electrical load is grounded between polarity reversals. A control is provided external of the vertically stacked modular units and couples to each of the switches at vertical intervals to simultaneously control

the polarity positions of the respective switches for reversing the polarity of the system voltage. A grounded intermediate terminal is effectively located in each of the switches to ground the system and also to ground the load connected to it before the polarity of the voltage applied to the load is



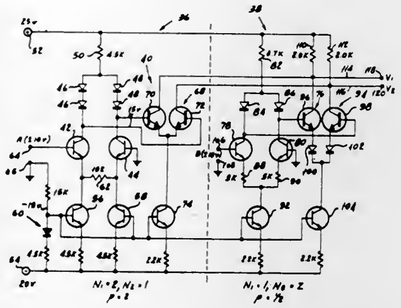
reversed. The ability to ground the load and then to apply a reversed ultrahigh DC voltage is advantageous for use in test systems, and the modular construction enables various predetermined ultrahigh DC levels to be obtained conveniently by assembling the desired number of stacked modular units.

3,643,106
ANALOG SHIFT REGISTER
Ted W. Berwin, and John A. Rado, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Sept. 14, 1970, Ser. No. 71,705
Int. Cl. H03k *17/60*
U.S. Cl. 307—221 C **7 Claims**



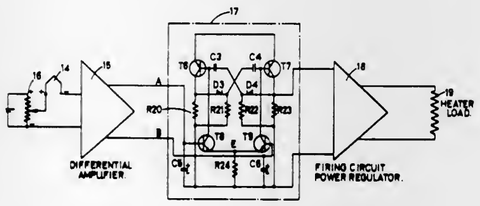
An analog shift register capable of storing and shifting sampled analog data as well as digital data. An embodiment of the analog shift register has four components, two capacitors, and two transistors per stage. Information is stored as the absence of a quantity of electric charge. The electric charge is proportional to the sampled value of the input signal according to the equation $q=Cv$. The shifting is accomplished by the transfer of electric charge from one capacitor to the next.

3,643,107
FUNCTION GENERATOR
Dennis R. Gilbreath, New Haven, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 1, 1970, Ser. No. 24,546
Int. Cl. G06g *7/24*
U.S. Cl. 307—229 **17 Claims**



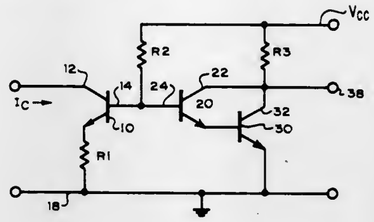
A nonlinear generator in which each of a plurality of sections includes two differentially connected devices each of which comprises a first string of elements having the same voltage-current characteristics and through which an input current is passed to provide a voltage which is applied to a second string of a different number of similar elements to produce a current from which there is obtained an output which is proportional to the input raised to a power which is the ratio of the numbers of elements in the respective strings. In making up any function each section produces an output representing a term of the overall approximating equation of the function.

3,643,108
AUTOMATIC PROCESS CONTROL SYSTEMS
Stephen John Pilkington, Lancaster, England, assignor to SK Instruments Limited, Skelmersdale, England
Filed Oct. 13, 1969, Ser. No. 865,927
Claims priority, application Great Britain, Jan. 8, 1969, 1,089/69
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **8 Claims**



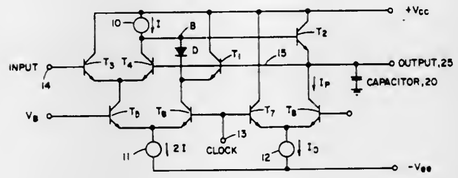
An automatic process control system transfer function device has a substantially linear small signal response which falls away at large signal inputs. The device comprises a square wave oscillator of which the mark-space ratio is varied by one or more nonlinear elements. These elements can be transistors used as resistors and which can be driven into saturation.

3,643,109
LOGIC GATE
Zdenek E. Skokan, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 9, 1970, Ser. No. 79,392
Int. Cl. H03k *5/00, 19/34, 19/36*
U.S. Cl. 307—235 **4 Claims**



The base of a common emitter connected transistor is connected to a threshold detector and the collector of the transistor is used as an input. When an applied voltage on the collector exceeds the threshold value, the threshold detector output is in a first state; and when the collector voltage is less than the threshold, the output is in a second state.

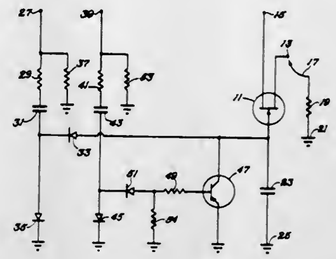
3,643,110
SAMPLE AND HOLD CIRCUIT
James E. Thompson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 30, 1970, Ser. No. 93,591
Int. Cl. H03k *17/60*
U.S. Cl. 307—238 **14 Claims**



There is disclosed a sample and hold circuit employing an amplification stage which is turned ON and OFF by steering a current source between the amplification stage and current sink circuitry. This decreases the aperture time of the sample and hold circuit to such an extent that one microsecond analog to digital conversion is possible for an 8-bit system including sync pulses. The sample and hold circuit eliminates the problem of discharge of the holding capacitor through the sample and hold circuit while at the same time decreasing sample and hold aperture time.

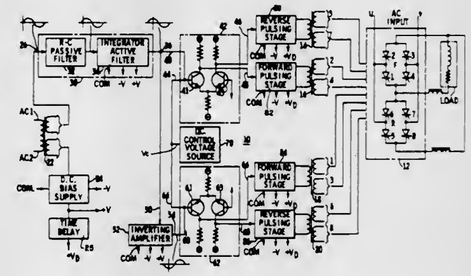
3,643,111
MEMORY CIRCUIT
Charles R. Deyo, 7800 Gaston Avenue, Fort Worth, Tex.
Filed Dec. 30, 1969, Ser. No. 889,035
Int. Cl. G11c *11/24, 11/34*
U.S. Cl. 307—238 **11 Claims**

This specification discloses a memory circuit characterized by a field effect transistor having its gate connected with a capacitor means, a memory setting means for charging the capacitor means, and a memory resetting means for discharging the capacitor means. The memory setting means and the memory resetting means incorporate inverting circuits to enable using an economical junction field effect



transistor in the memory circuit and yet have the memory circuit remain compatible with conventional logic circuits.

3,643,112
THYRISTOR GATE PULSE GENERATOR
Eugene M. Perrin, Cheektowaga, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,599
Int. Cl. H03k *5/153, 17/08, 17/72*
U.S. Cl. 307—252 W **6 Claims**



The invention comprises a thyristor gate pulse generator circuit including phase shifting and pulse-shaping networks to develop controlled firing pulses for single converter operation, or dual converters operating in the circulating current mode.

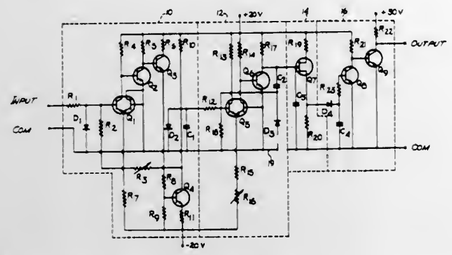
A controlled DC voltage is compared with an AC input with the intercepts determining the firing angle of the thyristors. The use of a single AC voltage and both positive and negative intercepts insures inherently the sum of forward and reverse thyristor gating angles is maintained 180°.

The AC input to the comparator is the cosine of the line voltage applied to the converters to achieve symmetry of operation around 90°.

3,643,113
VOLTAGE-TO-ANALOG PULSE RATE CONVERTER
Gordon L. Brock, and Charles H. Armstrong, both of Huntington Beach, Calif., assignors to Hersey-Sparling Meter Company, El Monte, Calif.
Filed Mar. 7, 1969, Ser. No. 805,321
Int. Cl. H03k *4/56*
U.S. Cl. 307—271 **1 Claim**

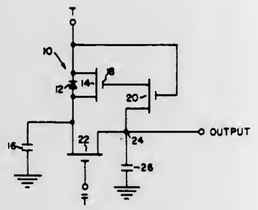
A circuit is provided for converting a relatively slowly varying DC voltage value to a proportional repetitive pulse train. The circuit is especially adapted to monitoring some quantity or physical value that can be represented by a direct

current input voltage when it is desired to transmit for some distance, the monitored value, without loss of accuracy in the



initial measurement. The pulse train can be transmitted without change in frequency to a remote readout device.

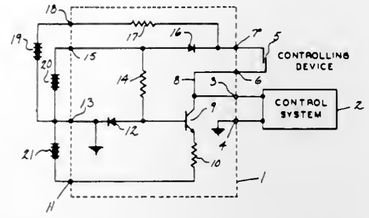
3,643,114
CLOCKLESS FARMOST TOGGLE FLIP-FLOP CIRCUIT
Alton O. Christensen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 24, 1970, Ser. No. 22,194
Int. Cl. H03k *3/286*
U.S. Cl. 307—279 **2 Claims**



A clockless, ratioless IGFET toggle flip-flop is composed of a FARMOST inverter whose input and output are bridged by the series-connected source-drain circuits of a pair of switching transistors. The gates of the switching transistors are connected, respectively, to the true rail and the complement rail of a double-rail trigger signal source. The true rail is also connected to the clock input of the FARMOST inverter, and the flip-flop output is taken between the two switching transistors. The operation of the circuit involves the transfer of incremental charges between the inverter output capacitance, the flip-flop circuit output capacitance, and the gate capacitance of the inverter input transistor.

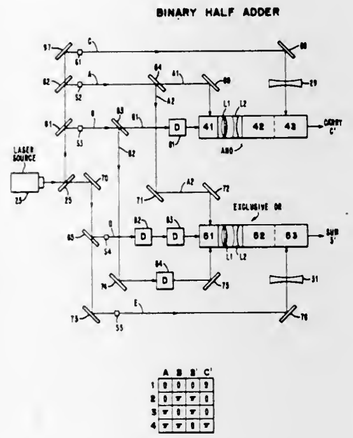
3,643,115
INTERFACE CIRCUIT FOR INDUSTRIAL CONTROL SYSTEMS
William W. Kiffmeyer, Bayside, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed Feb. 19, 1970, Ser. No. 12,769
Int. Cl. H03k *17/00*
U.S. Cl. 307—296 **12 Claims**

One contact of a controlling device connects to the input terminal of an industrial control system and the other contact connects to a positive voltage source through a blocking diode and to a high-voltage source through a resistor. A transistor collector is connected to the input terminal of the control system, and a feedback resistor connects its emitter to a negative voltage source. A bias current supplied to the base of the transistor saturates it. When the controlling device contacts close, the high-voltage source applied across them insures that conduction is established. Current then flows through the transistor resulting in a feedback action which brings the transistor out of saturation. The voltage on



the transistor's collector and the input terminal to the industrial control system then rises to the potential of the positive voltage source.

3,643,116
FAST LOGIC USING ULTRASHORT LASER PULSES
William H. Culver, Washington, D.C., and Farrokh Mehran, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,607
Int. Cl. H03k *19/14*
U.S. Cl. 307—312 **17 Claims**

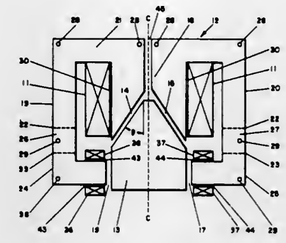


Logical elements are formed using resonant multilevel media and short laser pulses. Ultrashort laser pulses propagate through the media and interact with the media. The change in the state of the medium is described by the angle through which the pseudodipole moment rotates about the direction of the electric field. This same angle is used for describing the pulse. Using various combinations of resonant media and zero and π laser pulses as the binary elements, logical connectives, such as AND, OR, etc., are fabricated.

3,643,117
LINEAR RECIPROCATING ELECTRIC MOTORS
Philip Langdon Alger, Schenectady, and Charles Wilson, Troy, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.
Filed Sept. 3, 1970, Ser. No. 69,267
Int. Cl. H02k *33/00*
U.S. Cl. 310—17 **11 Claims**

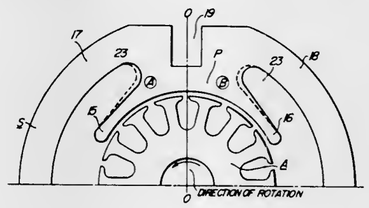
A linear reciprocating electric motor of the type wherein a moving member is arranged to reciprocate within an opening

in a stationary member which constitutes the electromagnetic circuit thereof, is provided with a pair of identical balancing coils arranged on the stationary member on opposite sides of the moving member and connected in series-bucking relationship so that the balancing coils are operative to maintain



equality of fluxes on both sides of the moving member to prevent side pull thereon. Further equalizing effect is achieved by including an airgap region through the stationary member extending in a direction colinear with the axis of motion of the moving member.

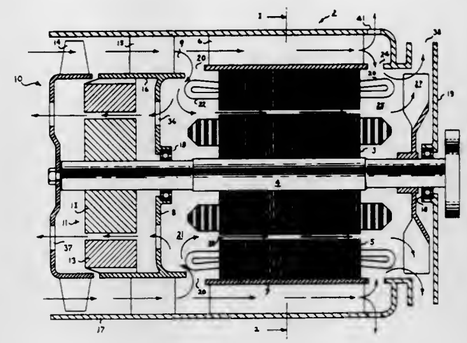
3,643,118
ROTARY MACHINE
Toshinobu Ichiki; Hironori Okuda, both of Hitachi, and Keiji Arai, Kita-Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 30, 1970, Ser. No. 33,289
Claims priority, application Japan, May 2, 1969, 44/33610
Int. Cl. H02k *1/12*
U.S. Cl. 310—40 **10 Claims**



A rotary machine comprising a stator having magnetic poles each provided with a stator winding, and an armature mounted for rotation within said stator and provided with an armature winding. Each of said magnetic poles is integrally formed at the end thereof with two oppositely directed polepieces which are aligned along the surface of said armature with a gap therebetween, said two polepieces being bisymmetrical so as to provide a larger sectional area of the magnetic path through a trailing one of said two polepieces in the rotating direction of the armature than that through a leading one of said two polepieces, whereby the output capacity of the rotary machine is increased.

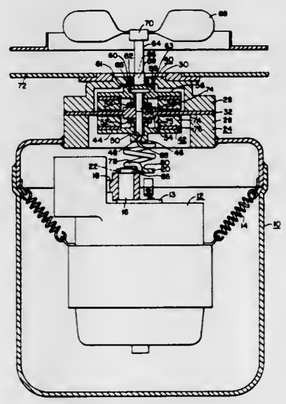
3,643,119
VENTILATED DYNAMOELECTRIC MACHINE
Alan Franck Lukens, Schenectady, N.Y., assignor to General Electric Company
Filed Nov. 5, 1970, Ser. No. 87,117
Int. Cl. H02k *9/06*
U.S. Cl. 310—60 **8 Claims**

A synchronous machine is described wherein a fan impels a coolant, typically air, into a first end of the generator and the air is divided into diverse streams which are passed in radially inward directions over the stator end turns disposed at opposite ends of the generator. Desirably, a plurality of arcuately displaced stationary vanes are positioned downstream of the intake fan to increase the air pressure within a zone circumferentially encompassing the end turn cavity proximate the fan and that portion of the pressurized air flowing radially into the end turn cavity is divided in axially opposite



directions, i.e., one part of the air in the cavity passing axially through the rotor while the second part of the air is exhausted from the intake end of the generator after flowing across the exciter. A fan also is provided at the opposite end of the generator to increase air flow through the rotor and to assist in drawing air over the end turns at the opposite end of the generator.

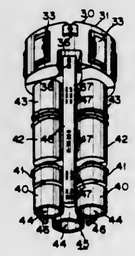
3,643,120
COMBINED FLEXIBLE AND MAGNETIC DRIVE COUPLING
Robert R. Young, Murrysville, and William A. English, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,636
Int. Cl. H02k *49/10*
U.S. Cl. 310—96 **5 Claims**



This invention provides a flexible drive coupling mounted between a resiliently supported prime mover and a rigidly supported power takeoff shaft. The prime mover in the instant application is situated in a hermetic enclosure so that a magnetic coupling means is provided between the flexible drive coupling powered power takeoff shaft and an output so as to drive the output shaft mounted outwardly of the her-

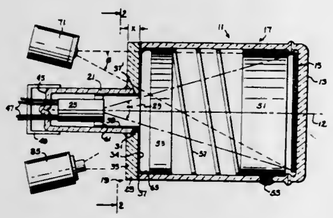
metic enclosure. This output shaft may conveniently mount a fan, belting or the like so as to receive its power from the prime mover.

3,643,121
TRIPLE ELECTRON GUN APPARATUS PROVIDED WITH CONVERGENCE ELECTRODE
Shinichi Sawagata, Tokyo; Masakatsu Nakahara, and Asahide Tsuneta, both of Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 9, 1969, Ser. No. 831,314
Claims priority, application Japan, June 10, 1968, 43/39430
Int. Cl. H01j *29/02, 19/46, 9/18*
U.S. Cl. 313—70 **5 Claims**



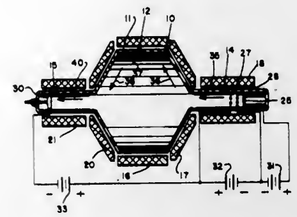
A triple electron gun apparatus comprises three electron gun units, a convergence electrode for converging electron beams emitted from said units, and three insulating support bars. These bars juxtapose the units to form a triple electron gun assembly as well as securely join the convergence electrode with the triple electron gun assembly.

3,643,122
MEANS FOR CONTROLLING ELECTROSTATIC CHARGE ON THE REAR WINDOW OF A CATHODE-RAY TUBE
Chris F. Bossers, 16 Johnston Street, Seneca Falls, N.Y.
Original application Dec. 20, 1968, Ser. No. 785,648. Divided and this application July 23, 1970, Ser. No. 57,473
Int. Cl. H01j *29/00, 29/89, 29/46*
U.S. Cl. 313—92 R **1 Claim**



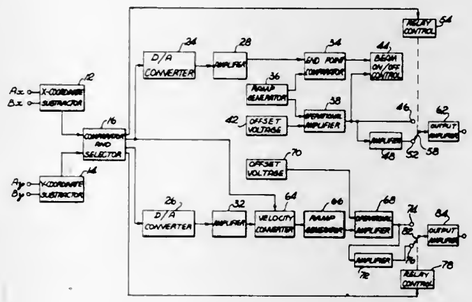
Means for controlling the electrostatic charge on the rear-window of a cathode-ray tube wherein a substantially annular-shaped optical access rear-window is oriented in the tube envelope in substantially symmetrical relationship to the longitudinal axis thereof. The window which provides a substantially annular viewing area from observing the electron impinged side of the screen has electrical conductive means symmetrically and discretely associated therewith to control the electrostatic charge thereon.

3,643,123
PLASMA CONTAINMENT DEVICE
Andrew V. Haeff, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Oct. 28, 1968, Ser. No. 771,103
Int. Cl. H01j *1/50*
U.S. Cl. 313—162 **7 Claims**



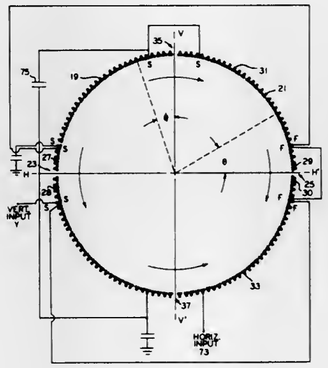
A plasma confinement device having separate means for repelling positive ions and for repelling electrons from the walls of the plasma chamber. The electrons are repelled from the central portion of the chamber by a sufficiently strong magnetic field. However, the positive ions which are little affected by the magnetic field are repelled from the walls of the chamber by making the walls of an insulating material which charges positively by impact of a few of the positive ions. The chamber has two end portions, one of which includes an ion generator and accelerator which tends to repel electrons, the other end portion is provided with an electron repeller. On the other hand, the positive ions are kept out of the end portions of the chamber by the positive charge on the walls thereof.

3,643,124
CONSTANT SPEED VECTOR GENERATOR UTILIZING A VARIABLE SLOPE SAWTOOTH GENERATOR
Richard L. Alani, Saugus, and Bill T. Jones, Jr., Granada Hills, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,868
Int. Cl. H01j *29/52*
U.S. Cl. 315—22 **5 Claims**



A vector generator which produces a constant intensity trace on a viewing screen. A pair of output signals control the angle of a vector as it sweeps across the screen of a displaying tube. A first constant sawtooth output voltage is utilized to represent the first output signal and a second sawtooth output voltage, the slope of which is varied in proportion to the ratio of the input signal components is used to represent the second output signal.

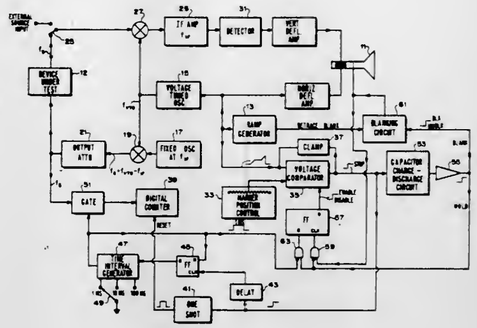
3,643,125
DEFLECTION SYSTEM FOR TRIAD-BEAM CATHODE RAY TUBE UTILIZING A TOROID-TYPE DEFLECTION YOKE
Charles Edward Torsch, Rochester, and Joseph Edward Thomas, Batavia, both of N.Y., assignors to Sylvania Electric Products Inc.
Filed July 15, 1969, Ser. No. 841,935
Int. Cl. H01j *29/76*
U.S. Cl. 315—24 **7 Claims**



A cathode-ray tube deflection system includes a triad-type cathode-ray tube and a toroid-type deflection yoke having horizontal and vertical axes with first and second horizontal windings symmetrical to the horizontal axis in mirror image of one another about the vertical axis and first and second vertical winding symmetrical to the vertical axis in mirror image of one another about the horizontal axis and said first and second horizontal and vertical windings each including a flux altering means for enhancing vertical convergence of horizontal trace lines. The deflection yoke is formed by a process wherein a core of magnetic material is wrapped with wire turns applied in toroidal fashion to form first and second horizontal windings and first and second vertical windings advanced in opposite circumferential direction to form a mirror image relationship. Also, "ringing" is inhibited by circuitry wherein a specific terminal of each of the horizontal and the vertical windings associated with the start of electron beam scanning of the cathode-ray tube is connected to a potential reference level while the other extremities of the horizontal and vertical windings are connected to a source of deflection signals whereby undesired distortions appearing on the trace lines of the viewing screen are minimized.

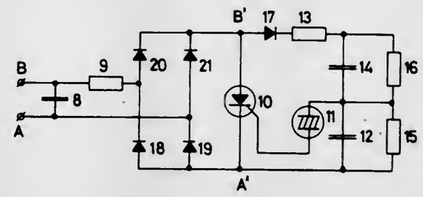
3,643,126
FREQUENCY-MEASURING SYSTEM UTILIZING MEANS FOR MOMENTARILY STOPPING THE VARIABLE FREQUENCY GENERATOR
Robert R. Hay, Santa Clara, Calif., assignor to Hewlett Packard Company, Palo Alto, Calif.
Filed Mar. 4,1 970, Ser. No. 16,315
Int. Cl. H01j *29/70*
U.S. Cl. 315—26 **9 Claims**

A variable frequency receiver scans a spectrum of frequencies from a signal source, and a cathode-ray tube (CRT) system detects and displays the amplitude of the signal source as a function of the frequencies scanned. At any selected point of the amplitude response curve, the frequency scanning is momentarily stopped to produce a marker spot on the CRT screen. During the stop time, a digital counter counts the frequency of the variable frequency generator. Timing and logic circuitry controls the intensity of the



marker spot and the length of the stop time in response to the counting time and the frequency scanning rate.

3,643,127
ELECTRONIC GAS DISCHARGE TUBE STARTER HAVING A SEMICONDUCTOR SWITCH ELEMENT CONTROLLED BY A CAPACITIVE VOLTAGE DIVIDER
Robert Ronald Laupman, Wijchen, Netherlands, assignor to N. V. Auco, Wijchen, Netherlands
Filed Nov. 17, 1969, Ser. No. 877,147
Claims priority, application Netherlands, Nov. 20, 1968, 68/16538
Int. Cl. H05b *41/23*
U.S. Cl. 315—101 **15 Claims**

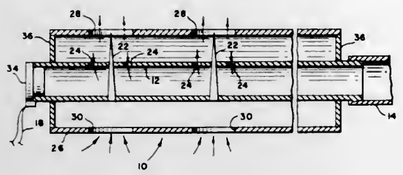


An electronic gas discharge tube starter comprises a semiconductor switch element with a separate control signal terminal connected through a semiconductor switch diode to the node between two capacitors included in a circuit connected in parallel with the switch element. According to the invention, the capacitors can exclusively be charged through a diode. It is thus ensured that after a predetermined time the voltage generated in the node has decreased to the extent that the switch diode is no longer capable of igniting the tube.

3,643,128
IONIZED AIR PROJECTOR
Anthony Q. Testone, Lansdale, Pa., assignor to Testone Electrostatics Corporation, West Point, Pa.
Filed Sept. 15, 1969, Ser. No. 857,732
Int. Cl. H05f *3/06*
U.S. Cl. 317—4 **9 Claims**

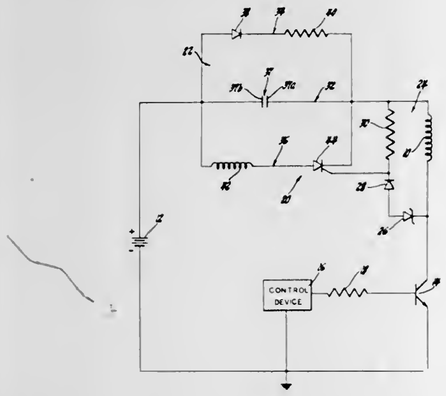
Apparatus for projecting ionized air comprising a conductive tube connected to an air source and to an AC source,

and having a row of extending points, beside which are air discharge passages; a grounded conductive shield around the



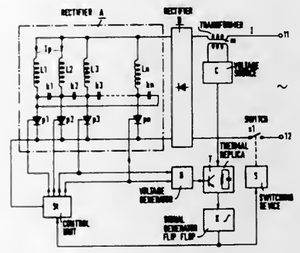
tube has opposed rows of air inlet and outlet apertures, the former receiving the ends of the points.

3,643,129
SOLENOID CONTROL APPARATUS
Lawrence C. Marsh, Dearborn Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 30, 1970, Ser. No. 93,547
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 R **3 Claims**



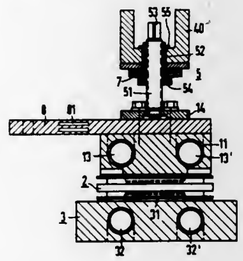
A solenoid control apparatus includes a control switch connected in series with a solenoid and a power supply. The control switch energizes the solenoid with an energizing current when the switch is rendered conductive and deenergizes the solenoid which develops a flyback voltage when the switch is rendered nonconductive. Further, the solenoid control apparatus includes an auxiliary drive circuit comprising a boosting network connected in series with the solenoid and a flyback network connected in parallel with the solenoid. The flyback network includes a Zener diode for limiting the flyback voltage to a maximum level. The maximum level is sufficiently high to rapidly decrease the energizing current through the solenoid as the control switch is rendered nonconductive thereby to minimize the pull-in time of the solenoid. However, the maximum level is sufficiently low to protect the control switch from damage due to the flyback voltage. The boosting network includes the parallel combination of a storage leg, a bypass leg and a reset leg. The storage leg includes a storage capacitor connected to discharge through the solenoid to temporarily increase the energizing current through the solenoid as the control switch is rendered conductive thereby to minimize the pull-in time of the solenoid. The bypass leg includes a bypass diode connected to shunt energizing current around the storage capacitor to maintain the solenoid energized after the capacitor has discharged through the solenoid. The reset leg includes a reset inductor connected to combine with the storage capacitor to form a parallel resonant circuit which oscillates for a half-cycle to charge the capacitor.

3,643,130
SUPERVISORY DEVICE FOR RECTIFIER HAVING SEMICONDUCTOR VALVE-TYPE COMPONENTS
Manfred Liska, and Klaus Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 20, 1970, Ser. No. 39,079
Claims priority, application Germany, May 31, 1969, P 19 27 826.3
Int. Cl. H02h *7/10*
U.S. Cl. 317—40 R **10 Claims**



A thermal replica has an RC component having a variable resistance and a capacitor connected to the resistance. The variable resistance is dependent upon the operating frequency of a rectifier having semiconductor valve-type components to an extent that the median value of the resistance increases with decreasing operating frequency when the variable resistance is connected in parallel with the capacitor and decreases with decreasing operating frequency when the variable resistance is connected in series with the capacitor. A current proportional to the current supplied to the rectifier is supplied to the thermal replica. A signal generator coupled to the capacitor responds when the voltage of the capacitor reaches a specific critical level.

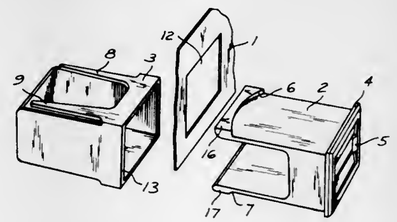
3,643,131
ELECTRICAL DEVICE HAVING LIQUID-COOLED CLAMPED DISC CELLS
Friedrich Scherbaum, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 1, 1970, Ser. No. 33,721
Claims priority, application Germany, May 10, 1969, P 1 9 24 011.0
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 **9 Claims**



An electrically conductive liquid-cooled conductor bar has a plurality of seats thereon, each of said seats for accommodating a corresponding one of a plurality of disc cells. Each of a plurality of subordinated pressure components

clamps a corresponding one of the disc cells to the corresponding one of the seats. Each of the pressure components has a cooling duct therein for conducting a coolant and such cooling ducts are coupled to each other by a plurality of elastic coupling ducts thereby permitting a coolant to flow through the pressure components. A slide rail is positioned in spaced parallel relation to the conductor bar. One of a pair of spaced bolts is provided on each side of each of the disc cells and its corresponding pressure component. The bolts couple the slide rail to the conductor bar in a manner whereby each of the disc cells and its corresponding pressure component is enclosed by a frame comprising part of the conductor bar, part of the slide rail and the bolts. Each of a plurality of clamping devices is positioned between a corresponding one of the pressure components and a corresponding part of the slide rail, each of the clamping devices abutting the corresponding one of the disc cells on its surface opposite that adjacent the conductor bar.

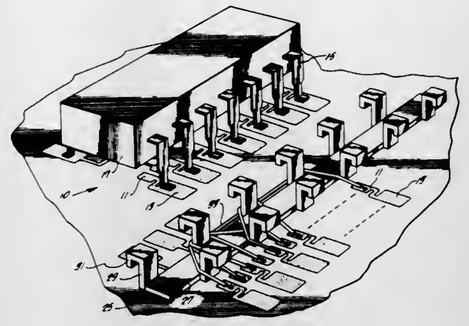
3,643,132
PROTECTIVE ASSEMBLY FOR A PANEL-MOUNTED CALL METER WITH ELASTIC HOUSING-LOCKING MEANS
Per Ranold Odmark, Alvsjo, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Feb. 19, 1970, Ser. No. 12,807
Claims priority, application Sweden, Mar. 19, 1969, 3807/69
Int. Cl. H02b *1/02, 9/00*
U.S. Cl. 317—107 **3 Claims**



An arrangement for mounting a call meter on a panel and at the same time protecting the meter. The arrangement consists of two hollow parts. One of the parts is inserted through an opening in the panel and the meter is placed in this part. The other part is telescoped on the one part and rests against the panel. The parts are locked in this position with snap action between the two parts.

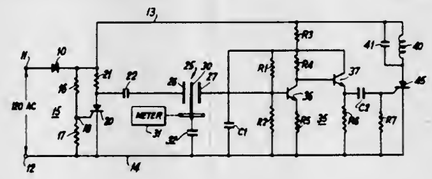
3,643,133
WIRE-ROUTING SYSTEM
LeRoy Dean Towell, Dallas, Tex., assignor to Computer Industries, Inc., Sherman Oaks, Calif.
Filed Dec. 15, 1969, Ser. No. 885,025
Int. Cl. H02b *9/00;* **H05k** *1/18*
U.S. Cl. 317—122 **8 Claims**

A wire-routing system for use with reflow wiring machines is disclosed in which the system includes a single-sided printed circuit board having a plurality of wire land pads and integrated circuit pads located thereon. Wire-routing fixtures are also adapted to be positioned on the circuit board with each fixture including an elongated baseplate having a plurality of upwardly extending posts longitudinally spaced thereon. Each of the posts includes a hook portion for receiving portions of insulated wire used for interconnecting the wire land pads. The wire routing is done with a conventional reflow wiring machine having a capillary which is adapted to lead the insulated wire from soldered joints on the land pads around adjacent hook portions in a simple and repeatable route. The integrated circuit pads, each of which is electrically connected to a corresponding wire land pad, are adapted to receive and be reflow soldered to the legs of dual in-line packages which extend over the wire-routing fixtures without any interference therebetween. As a result, a known



and repeatable wire route is provided to facilitate the programming and inspection of the finished circuit on the circuit board.

3,643,134
METER VANE POSITION SENSING CONTROLLER
Thomas E. Beling, Framingham, Mass., assignor to Sigma Instruments, Inc., South Braintree, Mass.
Filed Oct. 22, 1970, Ser. No. 83,033
Int. Cl. H01h *47/32;* **G08b** *21/00*
U.S. Cl. 317—148.5 R **10 Claims**

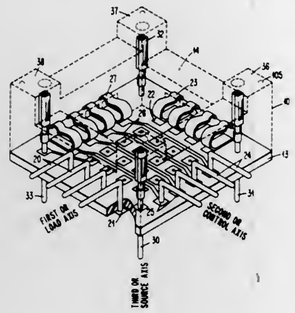


A meter movement controller has a movable meter vane, in the form of a disk of electrically conductive metal, movable between transmitting and sensor plates of a condenser to vary the transfer of energy between the plates. An SCR is arranged to be connected, in series with a diode, across a low-voltage source of AC potential at commercial frequency, and its anode is connected to the transmitting plate through a further condenser. A voltage divider is connected across the source in series with the diode, and the junction of the voltage divider is connected to the gate of the SCR. When the positive half wave of AC potential reaches a preselected potential, such as 100 volts, a triggering pulse is applied to the gate of the SCR to trigger the SCR conductive. This applies a 100-volt pulse to the transmitting plate of the condenser. A transistor amplifier, including a second SCR, connects the sensor plate to a control means, such as a relay winding. The relay winding is thus energized as a function of the transfer of energy between the condenser plates as modulated as a function of the position of the meter vane.

3,643,135
TRIAXIALLY EXPANDABLE CIRCUIT ARRAYS
Ernest W. Devore, and Kenneth L. Hotaling, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1970, Ser. No. 50,649
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 D **11 Claims**

An electronic circuit module and resulting array, each module having an insulating support body with first, second

and third electrical conductive means extending through the body along three mutually perpendicular axes. The plugs and receptacles of the respective conductive means are arranged to provide orientation of the module such that when a plurality of modules are connected together, appropriate circuit connections are made. A recess in each of the modules pro-



vides vertical cooling chimneys in the array. The array may be arranged such that one module in each of the cooling chimneys is activated at a given time to minimize the heat accumulation. The triaxially extending electrical conductive means also carries heat toward the array surface to further limit temperature rise within the array.

3,643,136

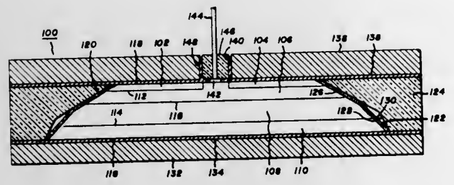
GLASS PASSIVATED DOUBLE BEVELED SEMICONDUCTOR DEVICE WITH PARTIALLY SPACED PREFORM

Bernard R. Tuft, Scipio Center, N.Y., assignor to General Electric Company

Filed May 22, 1970, Ser. No. 39,937

Int. Cl. H01l *1/08*

U.S. Cl. 317—234 R **25 Claims**



A silicon semiconductive element is provided with first and second spaced contact surfaces. A beveled peripheral edge extends from the first contact surface and intersects a first junction, and a second peripheral edge extends from the second contact surface to the beveled edge and intersects a second junction. A ceramic preform surrounds the semiconductive element with a surface conforming to one of the peripheral edges of the element. The preform has a thermal coefficient of expansion substantially matching that of the silicon thyristor element. A glass passivant bonds the one peripheral edge of the element to the conforming surface of the preform. The glass passivant also overlies a remaining of the peripheral edges and is spaced from the preform adjacent this edge. The glass passivant has a thermal coefficient of expansion in excess of that of silicon and below 45×10^{-7}/°C., a firing temperature below that of the preform, and a maximum thickness less than 1 mil. Contacts are associated with the first and second contact surfaces and are sealingly associated with the preform.

3,643,137

SEMICONDUCTOR DEVICES

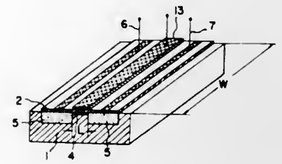
Minoru Ono; Toshimitsu Momoi, and Youji Kawachi, all of Tokyo-to, Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to, Japan

Filed Feb. 10, 1969, Ser. No. 431,677

Claims priority, application Japan, Feb. 13, 1964, 39/7388

Int. Cl. H01l *11/00*

U.S. Cl. 317—235 **4 Claims**



A semiconductor device which has a semiconductive single crystalline substrate having a plane surface, and an insulating film such as silicon oxide covering said plane surface, in which said plane surface lies parallel to a crystal plane other than a 111 plane, whereby the surface donor density is decreased. The surface donor density is minimized by subjecting said substrate to a heat treatment under application across said film of such a voltage as that which renders the electrode provided on said film negative polarity.

3,643,138

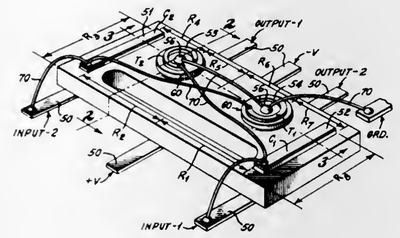
SEMICONDUCTOR DEVICE

Jack St. Clair Kilby, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of application Ser. No. 791,602, Feb. 6, 1959, now Patent No. 3,138,743, dated June 23, 1964, and a continuation-in-part of 811,476, May 6, 1959, now abandoned , and a continuation-in-part of 811,486, May 6, 1959, now Patent No. 3,138,744, dated June 23, 1964. This application Jan. 29, 1962, Ser. No. 169,557

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 **4 Claims**



1. A semiconductor device comprising:

a. a wafer of semiconductor material having two major faces;

b. said wafer being so shaped as to define a plurality of regions within said wafer and adjacent to one of said major faces;

c. at least some of said regions being electrically isolated within said wafer from others of said regions;

d. said regions having at least one portion thereof extending to said one major face;

e. at least some of said portions having selected locations on said one major face for electrical contact to said region;

f. an insulating material on said one major face of the wafer excluding at least said selected locations;

g. at least one electrically conductive area in contact with said insulating material and spaced from said wafer thereby;

h. said electrically conductive area being disposed in cooperative relationship with respect to a selected one of said isolated regions so as to provide the electrical function of a discrete electrical circuit component; and

i. a plurality of metallic interconnections providing electrically conductive paths between said selected locations on different ones of said regions and between another selected one of said locations and said electrically conductive area.

3,643,139

INTEGRATED CIRCUIT HAVING FOUR MOSFET DEVICES ARRANGED IN A CIRCLE SURROUNDING A GUARD DIFFUSION

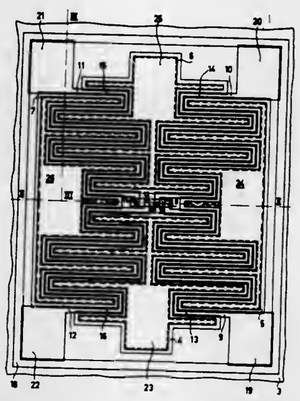
Rijkent Jan Nienhuis, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,192

Claims priority, application Netherlands, Nov. 2, 1968, 6815661

Int. Cl. H01l *19/00, 11/14*

U.S. Cl. 317—235 R **4 Claims**



A semiconductor device having four insulated gate field effect transistors uses each transistor electrode zone as a common electrode zone for adjacent transistors. The transistors are arranged around a channel stopper and are surrounded by a second channel stopper. The compact structure of the semiconductor device optimizes the use of a substrate area without leakage between electrode zones.

3,643,140

DC ENERGIZED TIMING MOTOR UTILIZING A RESONANT MEMBER TO MAINTAIN CONSTANT SPEED

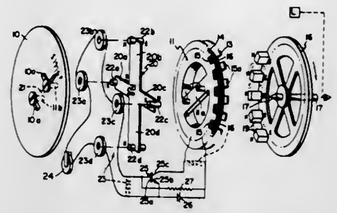
William W. Allison, Melville, N.Y., assignor to Armec Corporation, Huntington Station, N.Y.

Continuation-in-part of application Ser. No. 763,803, Sept. 30, 1968, now abandoned. This application Aug. 7, 1970, Ser. No. 62,125

Int. Cl. H02k *29/02, 33/00*

U.S. Cl. 318—138 **21 Claims**

A DC energized timing device including an electromagnetically driven rotor, a stator and a frequency reference in the form of a resonant member, with a pickup system providing signals which are a function of resonator action or resonator action and rotor motion, the signals being selectively utilized as part of a control circuit for the energization of the motor winding. The rotor and resonator include complementary coupling means which react under rotor motion



to excite the resonator into its resonant mode at synchronous speed.

3,643,141

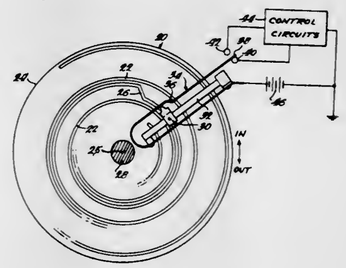
POSITION CONTROL AND INDICATING MECHANISM

Lewis B. Jackson, Jr., 31 Lake Shore Ct. Apt. 3, Brighton, Mass.

Continuation-in-part of application Ser. No. 791,392, Jan. 15, 1969, now abandoned. This application Jan. 13, 1970, Ser. No. 2,573

Int. Cl. G05g *5/00*

U.S. Cl. 318—162 **12 Claims**



A position control and indicating mechanism and method in which a control member, such as a disk, having a continuous generally spiral track, typically in the form of a groove, is used to return or advance a controlled device to a selected equilibrium position. A follower which rides in the groove, or otherwise follows the spiral track, is constrained to travel along a fixed, usually a generally axial path relative to the disk. The follower controls the operation of an output circuit, depending upon the position of the follower along its path, for example, its position relative to a null point on the control member. The output circuit can be used to cause rotation of the output member in a direction which moves the follower towards the null point, which corresponds to the equilibrium position of the device being controlled.

3,643,142

AC MOTOR CONTROL SYSTEM UTILIZING A SELECTIVELY ENERGIZABLE SEMICONDUCTOR SWITCH MEANS

Lyle E. McBride, Jr., Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

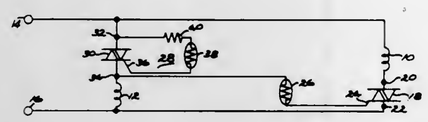
Filed June 2, 1970, Ser. No. 42,656

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 R **23 Claims**

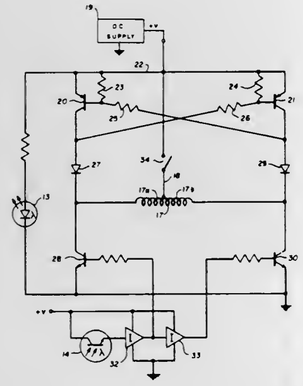
A control system is disclosed for an electrical motor having a run winding and a start winding. The system includes a gate-controlled current switch device connected between the start winding and a source of power as well as trigger means

including a thermistor adapted for operation in a self-heating mode coupled to the gate of the current switch device. The trigger means is adapted to apply triggering current to the gate only for a predetermined time interval to cause sufficient self-heating of the thermistor for effecting operation thereof in a high-resistance mode so as to cause a reduction in the flow of current therethrough and effect deenergization of the switch device at the expiration of the predetermined



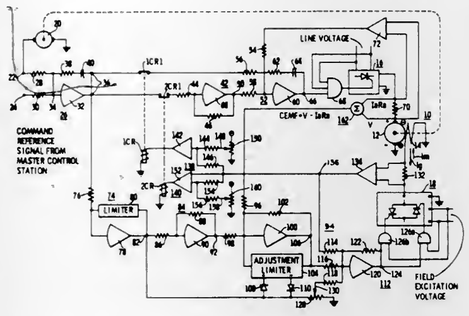
time interval. Means are also provided for energizing the start winding and the trigger means to permit current to flow to the start winding during the predetermined time interval in order to effect starting of the motor. In addition, the system may include a thermal protection means coupled to the motor in order to disrupt the flow of current to the run winding in response to a sensed motor temperature in excess of a preselected temperature level.

3,643,143
DUAL SPEED BRUSHLESS DC MOTOR
Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation
Filed July 6, 1970, Ser. No. 52,330
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **2 Claims**



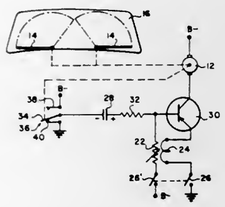
A brushless DC motor contains a single, center-tapped stator winding energized through a double-pole, double-throw type of solid state switching means and a single photosensor for detecting rotor position. High-speed operation is achieved by energizing the stator winding through the center tap. Low-speed operation is achieved by energizing the entire stator winding.

3,643,144
REGULATOR SYSTEM FOR A DC MOTOR DRIVE
Antonio Vicente Silva, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,711
Int. Cl. H02p *9/14*
U.S. Cl. 318—258 **5 Claims**



A regulation system for a DC drive motor having unidirectional current transfer circuitry in the armature, and bilateral current transfer circuitry in the field winding. The system permits regeneration by field inversion, while at the same time protecting the motor under all conditions when the field is inverted.

3,643,145
INTERMITTENT CONTROL DEVICE
David Tann, 333 Covington Drive, Detroit, Mich., and Robert A. Noetzold, 29496 Tawas St., Madison Heights, Mich.
Filed Apr. 18, 1969, Ser. No. 817,451
Int. Cl. B60s *1/08;* **H02p** *3/08*
U.S. Cl. 318—443 **6 Claims**

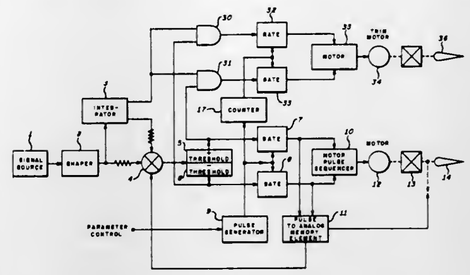


A control device for operating windshield wiper blades intermittently with a dwell period between wiping cycles. The length of time of the dwell periods is determined by a thermistor. The resistance of the thermistor is varied by the wiper motor current so that the length of time of the dwell periods is varied inversely with the moisture on the windshield.

3,643,146
AUTOMATIC CONTROL SYSTEM WITH PSEUDOPOSITION FEEDBACK AND MONITOR
Donald C. Ferguson, Scottsdale; Frederick W. Lynch, and Gerald F. Simons, both of Phoenix, all of Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,986
Int. Cl. G05b *23/02*
U.S. Cl. 318—565 **6 Claims**

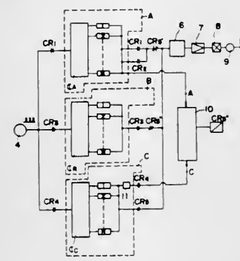
An automatic control system using digital techniques to drive a stepper motor for providing precisely controlled incremental output. A preselected output position triggers a

synchronizing signal to ensure periodic alignment between the input signal and the corresponding output control posi-



tion. Monitoring capability is provided by a memory comparison system and thereby provides a fail-operational feature. A multiplexing capability may be incorporated.

3,643,147
SHIFT-CONTROLLING DEVICE FOR SHIFTED MATERIALS
Haruki Mori, Kitakyushu; Toshinao Takahashi, Tokyo, and Eisuke Koyama, Kanagawa-ken, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Feb. 16, 1970, Ser. No. 11,384
Claims priority, application Japan, Feb. 21, 1969, 44/13849
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **1 Claim**

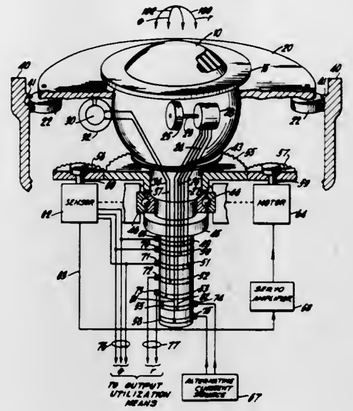


A device for controlling the shift of materials in an apparatus for shifting heavy materials such as, for instance, a walking-beam-type slab-heating furnace, wherein the acceleration and deceleration of the parts for shifting the shifted materials are so controlled that they may be stopped in a fixed position at any time in the end part of the said apparatus.

3,643,148
BALL TRACKER ASSEMBLY
Arthur Brown, Bayside, and Thomas W. Wong, New Hyde Park, both of N.Y., assignors to Edo Corporation, College Point, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,144
Int. Cl. G05b *11/01*
U.S. Cl. 318—628 **8 Claims**

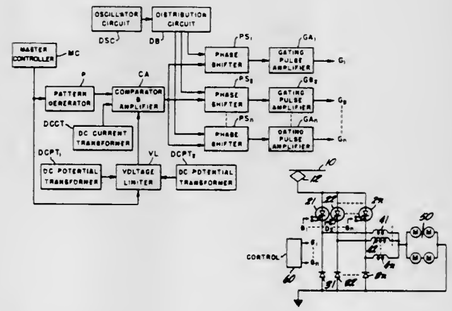
A ball tracker adapted for use in polar coordinate axis systems employs a rotating subframe including a rotatably mounted ball member and two ball rotation responsive sensors disposed 90° apart along the median ball circumference. The electronic output of the two sensors comprises polar coordinate range (r) and angle (θ) parameters, and feedback apparatus maintains the range sensor spatially aligned in an angular direction determined by the output of the angle sensor.

A controlled environment ordered in polar coordinates, e.g., a cursor position in a polar cathode-ray tube display,



may be regulated by actuating the ball tracker in a manner which is conceptually compatible with the natural predictions of a tracker operator.

3,643,149
SYSTEM FOR CONTROLLING DC POWER
Akira Shirashoji, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1969, Ser. No. 853,836
Claims priority, application Japan, Feb. 7, 1969, 44/9079
Int. Cl. H02m *1/08, 3/32*
U.S. Cl. 321—2 **2 Claims**

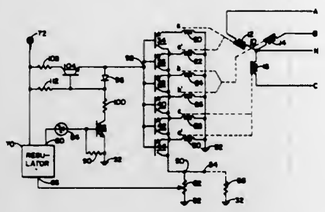


The disclosed DC power control system comprises n choppers connected in parallel to control vehicle motors and a comparison circuit for comparing a pattern current for the motors with the actual motor current to produce an error signal between them. The output from the circuit is clamped at such a predetermined magnitude that the choppers are each controlled to have a conduction time equal to any multiple of the chopping period divided by n at a given period at which the motor is operated in a predetermined control mode. The given period corresponds to the period during which a control handle is disposed at a given control notch of a conventional controller.

3,643,150
POWER CONVERTER APPARATUS

Keith J. Bulleyment, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 2, 1970, Ser. No. 85,955
Int. Cl. H02m 7/24
U.S. Cl. 321—5 12 Claims



A power converter and regulator combining regulating and rectifying portions into one output stage. A polyphase signal is separated into individual phases each of which is then applied to one of a number of series-regulating power transistors. The output of the transistors is summed to create a regulated DC output.

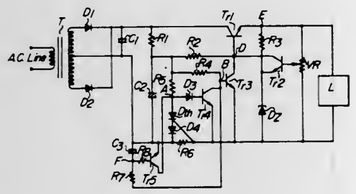
ERRATUM

For Class 322—33 see Patent No. 3,643,153

3,643,151
OVERCURRENT PROOF CONSTANT-VOLTAGE

Hiroshi Matsushima, Osaka; Ichiro Arimura, Kyoto; Hiroshi Goto, Osaka, and Yoshikadzu Nakao, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 1, 1970, Ser. No. 68,719
Claims priority, application Japan, Sept. 17, 1969, 44/75013; Sept. 18, 1969, 44/75586
Int. Cl. H02h 9/02; G05f 1/20
U.S. Cl. 323—9 5 Claims

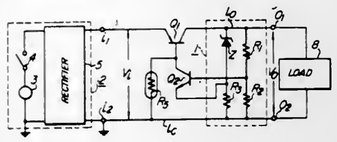


A power source circuit having an overcurrent preventing means comprising a transistor connected in series with a load for controlling the output voltage supplied to the load to a constant value, and a base circuit for the transistor including a thyristor triggered by a voltage produced across a current detection resistor connected in series with the load and a delay means to cut off the thyristor a predetermined time after the triggering of the thyristor. The delay means consists of either a combination of a resistor and a capacitor or a combination of a lamp and a photoconductive cell. The thyristor is short circuited either indirectly by driving another switching means or directly through the main component element of the delay means to cut off the thyristor.

3,643,152
COLLECTOR FOLLOWER-TYPE TRANSISTORIZED VOLTAGE REGULATOR WITH THERMISTOR STARTING CIRCUIT

Koji Matsumura, Kodaira, and Kunio Seki, Higashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1970, Ser. No. 17,184
Claims priority, application Japan, Mar. 12, 1969, 44/18325
Int. Cl. G05f 1/56, 1/64
U.S. Cl. 323—22 T 6 Claims

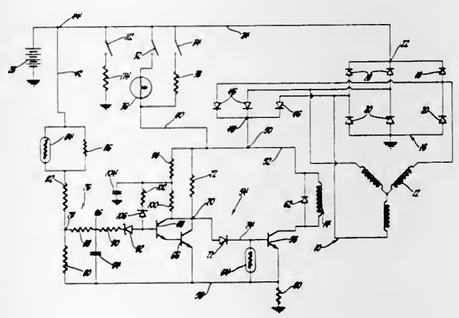


In a transistorized voltage regulator, in which a voltage source is connected to an emitter input circuit of a regulating transistor and a load to its collector output circuit, the starting circuit consists of a thermistor having a positive resistance-temperature coefficient connected between the emitter input circuit and the base of the regulating transistor. The thermistor supplies a starting current to the regulating transistor at the starting moment when an operating voltage is applied to the emitter input circuit of the transistor. On the other hand, since it is heated by an electric current flowing therethrough and has a high resistance at a high temperature the thermistor is substantially electrically isolated from the voltage regulator in the normal operation of the transistor. Thus, a regulator effectively operating even in a low-level load current is obtained.

3,643,153
TEMPERATURE STABILIZATION OF TRANSISTOR VOLTAGE REGULATORS

Charles G. Hanson, and Glen E. Harland, Jr., both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1968, Ser. No. 761,932
Int. Cl. H02p 9/30
U.S. Cl. 322—33 4 Claims



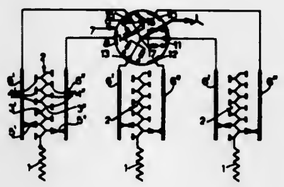
A transistor voltage regulator for regulating the output voltage of a generator. The generator is preferably a diode-rectified alternating current generator which is utilized to supply the electrical loads of a motor vehicle. The voltage regulator is of the switching-type and includes driver and output transistors connected such that when the driver transistor is nonconductive the output transistor is conductive and vice versa. The output transistor is connected with the field of the

generator to control the output voltage of the diode-rectified alternating current generator. A thermistor, having a negative temperature coefficient of resistance is positioned to sense the temperature of the voltage regulator and is connected across the base and emitter electrodes of the output transistor. This thermistor provides stable operation of the voltage regulator at high temperatures by reducing the base drive to the base-emitter circuit of the output transistor when the driver transistor is biased fully conductive to ensure a nonconductive condition for the output transistor. In the preferred embodiment the driver transistor comprises two NPN-transistors connected in a Darlington configuration with the collectors of the transistors connected to the base of the output transistor through a forward biased PN-junction semiconductor diode.

3,643,154
COMPOSITE POLYPHASE ON-LOAD TAP-CHANGERS FOR REGULATING POLYPHASE TRANSFORMERS AND POLYPHASE TRANSFORMERS PROVIDED WITH SUCH TAP-CHANGERS

Gerardus Adriaan Van Riemsdijk, Nijmegen, Netherlands, assignor to Smit Nijmegen Electrotechnische Fabrieken N.V., Nijmegen, Netherlands

Filed Sept. 23, 1970, Ser. No. 74,631
Claims priority, application Netherlands, Oct. 16, 1969, 6915660
Int. Cl. H02p 13/06; H01f 29/04
U.S. Cl. 323—43.5 R 1 Claim



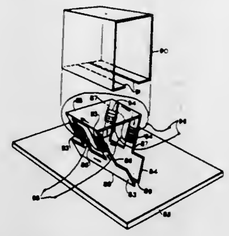
Composite polyphase on-load tap-changer comprising the series connection of at least a rotary polyphase diverter switch adapted to rotate stepwise on and on in both directions and a plurality of monophase tap selectors, said diverter switch having at least one circular series of fixed contacts of which the number is an integer multiple of the number of phases and sets of rotating contacts and rotating transition resistances which are connected to a star point and said tap selectors having each two series of fixed contacts and two alternately moving bridging contacts for connecting each the fixed contacts of a relative series with the same individual fixed contact of the diverter switch.

3,643,155
FLUX GATE MAGNETOMETER INCLUDING BACKING PLATE

John B. Riddle; Arndt Bergh, both of Palo Alto, and Charles O. Forge, Cupertino, all of Calif., assignors to Micro Magnetic Industries, Inc., Palo Alto, Calif.

Original application July 25, 1966, Ser. No. 596,024, now Patent No. 3,391,388, dated July 2, 1968, which is a division of application Ser. No. 149,799, Aug. 23, 1961, now Patent No. 3,280,974. Divided and this application Apr. 26, 1968, Ser. No. 758,167
Int. Cl. G01r 33/04
U.S. Cl. 324—43 6 Claims

A magnetometer having a flux sensing head including a core and a magnetically permeable backing plate opposite the core with second harmonic driven detection coils on the core for sensing a static magnetic field extending between the core and the backing plate. The magnetometer is designed

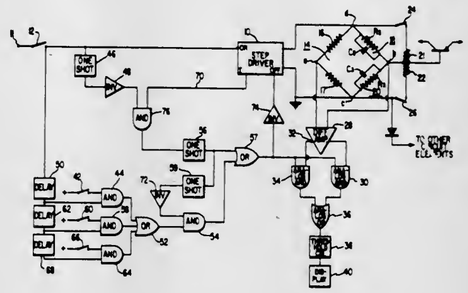


for detecting the presence of magnetic inks between the detection head and the backing plate.

3,643,156
PULSE-TYPE CIRCUIT ELEMENT-TESTING METHOD

Neil Rutherford Stewart, Cherry Hill, and Donald Ray Preslar, Cinnaminson, both of N.J., assignors to RCA Corporation

Filed June 5, 1969, Ser. No. 830,739
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 13 Claims



A method is provided for testing one or more elements while in circuit by comparing the reaction of the element or elements to a step signal applied thereto to at least one discrete moment or time interval after the step signal has been applied.

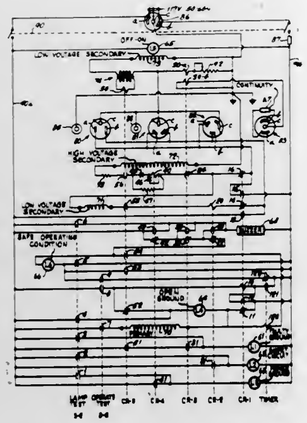
3,643,157
DEVICE FOR TESTING THE ADEQUACY OF ELECTRIC TOOLS, EXTENSION CORDS AND THE LIKE INCLUDING ENERGIZATION REMOVAL MEANS TO REDUCE HEATING

David J. Ettelman, Cranford, N.J., assignor to Multi-Amp Corporation, Cranford, N.J.

Filed Sept. 15, 1969, Ser. No. 857,796
Int. Cl. G01r 15/12, 31/02
U.S. Cl. 324—73 8 Claims

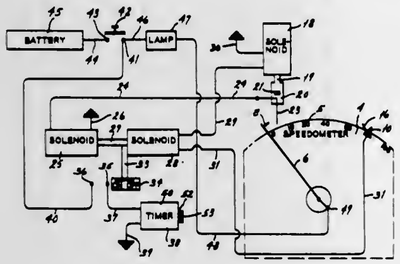
Device for testing the adequacy of the ground and power circuits of electric tools, extension cords and the like by performing an automated series of individual tests in sequence. The major tests are to determine: open ground circuit, faulty ground circuit, short circuit and poor insulation. If no faults are found by these tests, the circuit under test is next connected to line potential to determine if it operates properly. During this phase of testing, the potentials and currents associated with the previous tests are discontinued to avoid power drain and heating. A saturating current transformer

protects an essential relay from damage from excessive current. A long extension cord having a proper ground resistance (in the order of the resistance exhibited by a tool



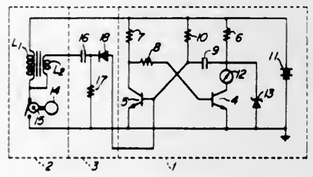
having a faulty ground cord) may be tested by modifying the test currents so that an erroneous faulty ground indication is not given.

3,643,158
TIMING DEVICE
James W. Kroner, Spanish Lake, and Joseph J. Anthony, II, St. Louis, both of Mo., assignors to William Kroner, Jr., St. Louis, Mo., a part interest
Filed May 18, 1970, Ser. No. 37,963
Int. Cl. G01p *15/00*
U.S. Cl. 324—162 **8 Claims**



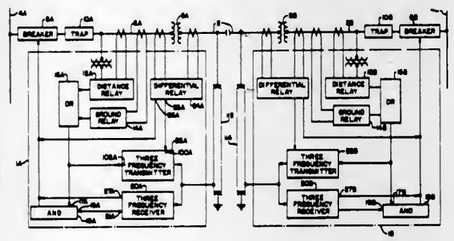
A device for measuring the time elapsed between zero velocity and a predetermined velocity of a vehicle incorporating: an electrical timer connected in circuit with the vehicle battery and energized and deenergized by the operation of a timer switch; a speedometer having a velocity scale and an electrically conductive velocity indicating needle in circuit with said battery; a switch control apparatus having a switch closing contact mounted adjacent "zero" on the velocity scale in the path of needle movement and a switch-opening contact slidably mounted for presentation adjacent with the predetermined "velocity" and within the path of needle movement; so that upon commencement of acceleration said needle engages said switch-closing contact for closing a circuit to close said timer switch and energize said timer; and upon attainment of said predetermined velocity, said needle engages said switch-opening contact for closing a circuit to open said timer switch and deenergize said timer, thereby determining the elapsed time between the velocity differential.

3,643,159
COUNTING DEVICE FOR MEASURING REPETITION RATE OF PULSE SIGNAL
Kunio Seki, Higashimurayama-shi, and Koji Matsumura, Kodaira-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 12, 1969, Ser. No. 857,421
Claims priority, application Japan, Sept. 14, 1968, 43/66472; Nov. 8, 1968, 43/81254
Int. Cl. G01p *3/48*
U.S. Cl. 324—169 **8 Claims**



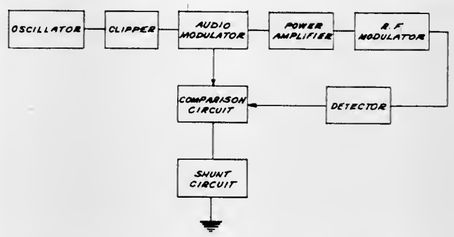
A counting device for measuring the repetition rate of a pulse signal which uses a monostable multivibrator including a constant-voltage diode connected in parallel with one of two switching elements which are connected in a monostable multivibrator configuration, thereby producing a measuring output signal which is independent of any voltage change in the operating power source for the monostable multivibrator.

3,643,160
THREE-FREQUENCY RELAYING SYSTEM
Roger E. Ray, Parsippany, N.J., and Nicholas Perez-Stable, W. Palm Beach, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 19, 1970, Ser. No. 21,010
Int. Cl. H04b *1/60*
U.S. Cl. 325—3 **11 Claims**



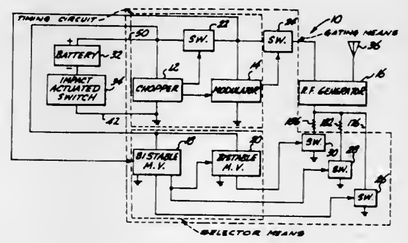
A frequency shift relaying system utilizing at least one transmitter which is normally transmitting its signal at a first or normal frequency and operable to shift the frequency of its output signal to a second or a third frequency one of which is above and the other of which is below the normal or first frequency in response to a first or a second fault condition and utilizing at least one receiver means tuned to receive the transmitted signal at the first and second and third frequencies; the receiver means including a pair of output circuits operable in accordance with frequency of the transmitted signal, and effective to maintain a first of the output circuits in a first or a second operating condition in response to the transmission of the signal at the first or the second frequency and to maintain a second of the output circuits in a third or a fourth operating condition in response to the transmission of the signal at the first or third frequency.

3,643,161
PULSE DURATION MODULATION TRANSMITTER
Hilmer I. Swanson, Quincy, Ill., assignor to Gates Radio Company, Quincy, Ill.
Filed Dec. 13, 1967, Ser. No. 690,167
Int. Cl. H04b *1/02*
U.S. Cl. 325—150 **15 Claims**



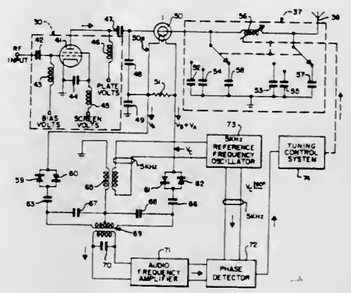
A radiofrequency transmitter having a pulse duration low-level modulator, a threshold amplifier, a power amplifier and a radiofrequency modulator. The power amplifier and the radiofrequency modulator are connected in series and means are provided to control the power level of the power amplifier and RF modulator by controlling the input signal to the threshold amplifier. Specifically, the plate of the power amplifier is protected by sensing the output RF power, by sensing the input power to the transmitter, by comparing the two and by triggering an electronic switch to short circuit the input to the threshold amplifier when the difference between the output and input powers exceeds a desired level. Similarly, a VSWR sensor is utilized to sense the voltage standing wave ratio of the transmitter, and a threshold trigger circuit is employed to be responsive to the VSWR sensor for substantially short circuiting the input to the threshold amplifier, thereby reducing the power to the output stages. In a similar manner, an arc sensor is employed in combination with an SCR circuit to short the input to the threshold amplifier in the presence of an unwanted detected arc. Also, the high-frequency carrier signal is controlled by a negative feedback circuit which responds to an excessive carrier level by reducing the input power to the threshold amplifier.

3,643,162
TRANSMITTER PRODUCING IN RECURRENT CYCLES TIME-SPACED VARIED-POWER PROPAGATABLE PULSELIKE SIGNALS
Roger R. Ady, 13945 Alibhai St., Beaverton, Oreg.
Filed July 7, 1969, Ser. No. 839,411
Int. Cl. H04b *1/04*
U.S. Cl. 325—164 **18 Claims**



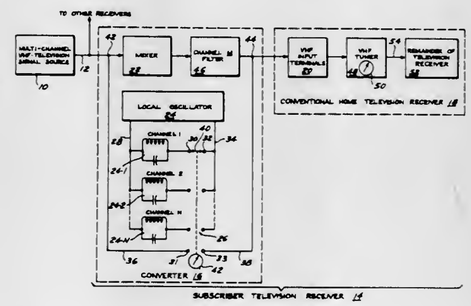
A transmitter which, when energized, transmits in recurrent cycles multiple time-spaced pulselike signals, with different signals in a cycle having different maximum power levels.

3,643,163
HIGH-ORDER MIXER AND COMPARATOR
George Bruck, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio
Filed Feb. 11, 1970, Ser. No. 10,505
Int. Cl. H04b *1/04*; **H03d** *7/02*
U.S. Cl. 325—177 **19 Claims**



A high-order mixer uses a full-wave, odd-function, exponential (antisymmetric) nonlinearity to transfer modulation information onto a carrier or reference signal. In one form, a pair of high-order mixers are used in a balanced arrangement to effect comparison of the amplitudes of two high-frequency input signals without regard to the phase of these signals and to provide an output at the reference frequency (or a multiple) which (i) increases monotonically as the difference between the signal amplitudes increases, (ii) reverses phase as the signal amplitude difference reverses, and (iii) becomes zero when the two signal amplitudes are equal. In another example, such a comparator is used for automatic tuning.

3,643,164
SIGNAL SELECTION APPARATUS
Thomas L. Sly, Clay, N.Y.; Joseph A. Weis, and Joseph T. Leto, both of Ringwood, N.J., assignors to Anaren Microwave, Incorporated, Syracuse, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,344
Int. Cl. H04b *1/06*
U.S. Cl. 325—308 **4 Claims**



A television transmission system includes a source of television signals. The television signals are within a given spectrum of frequencies. The spectrum can be divided into a first group of channels wherein each channel has a different range of frequencies or into a second group of channels such as the conventional VHF (very high frequency) channels wherein each channel has a range of frequencies different from the ranges of the first group. The source alternately

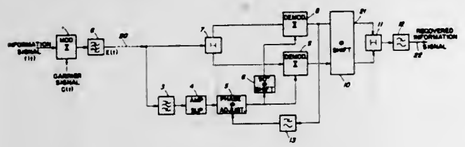
transmits television signals in the first and second groups of channels.

At least one commercial home television receiver is connected via a cable of the source. A frequency converter connects the VHF tuner of the receiver to the cable. The converter includes switching means for transmitting the signals on the cable directly to the tuner when the conventional VHF channels are transmitted so that the tuner can select the channel of the second group in the usual manner, and means for transmitting the signals via a multiposition frequency translator or converter which converts incoming signals to signals having the frequency range of a particular one of the conventional VHF channels so that the converter can select a particular one of the channels of the first group for reception by the television receiver.

3,643,165
MODULATED CARRIER WAVE COMMUNICATION APPARATUS

Michio Kuribayashi, and Riichi Mimori, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 22, 1970, Ser. No. 4,805
Claims priority, application Japan, Jan. 24, 1969, 44/4707
Int. Cl. H04b *1/68*
U.S. Cl. 325—330 **14 Claims**



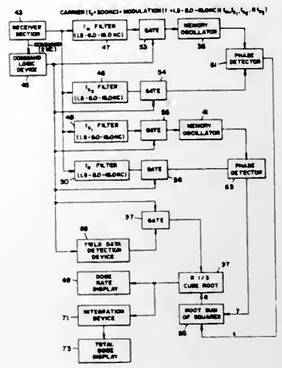
Apparatus for recovering information signals from modulated carrier waves is provided in accordance with the teachings of the present invention. According to one embodiment of this invention, modulated carrier waves including a first sideband component, a carrier wave component and a portion of a second sideband component are provided. Carrier signal generating means is responsive to the modulated carrier waves for generating a carrier signal of predetermined phase. Two-phase demodulation means, responsive to the carrier signal and a quadrature component thereof recovers the information signals from the modulated carrier waves. Control means responsive to low-frequency signals produced by said two-phase demodulation means generates control signals for adjusting the phase of said carrier signal.

3,643,166
FM RECEIVER FOR RADIATION PATTERN DETERMINING APPARATUS

Thomas W. McCurnin, and Lloyd J. Perper, both of Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Navy

Original application Nov. 5, 1968, Ser. No. 773,451. Divided and this application Mar. 12, 1970, Ser. No. 26,465
Int. Cl. H04b *1/16*
U.S. Cl. 325—344 **3 Claims**

A simulation system including a control device, a master transmitter, a plurality of slave transmitters and a plurality of receivers. The master and slave transmitters are physically spaced apart and their transmission signals form a hyperbolic grid network. The receivers are positioned within the hyperbolic grid network and process the signals from the master and slave transmitters to simulate dose and dose rate of a simulated detonation that takes place in the hyperbolic grid network. The master and slave transmitters operate at different modulation frequencies to identify receiver quadrants and to provide desired resolution. The receivers are controlled by control signals from the master transmitter to compare and remember the phase difference between oppositely

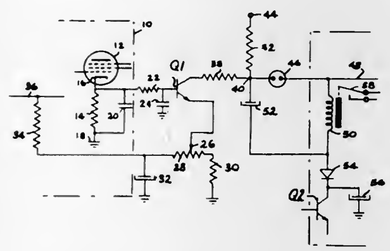


positioned transmitters for determining position and dose at each receiver within the hyperbolic grid.

3,643,167
AUTOMATIC TURNOFF SYSTEM FOR RECEIVER WITH FM DEMODULATOR

Louis F. Mayle, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Feb. 24, 1969, Ser. No. 801,348
Int. Cl. H04b *1/06*
U.S. Cl. 325—389 **10 Claims**



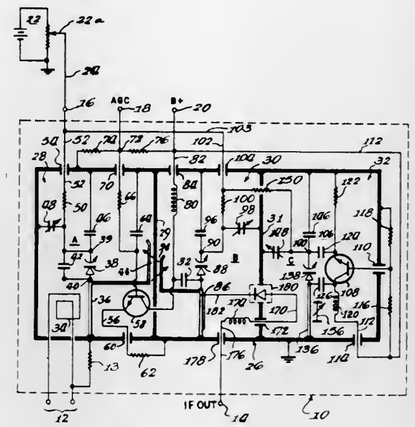
The present invention concerns an automatic system for turning off a television receiver when there is no signal on the channel to which the television set is tuned. According to the present invention, the automatic circuitry is sensitive to a DC voltage change which occurs in the FM sound demodulator of the receiver so that the receiver can be used on channels having picture and sound, as well as on a channel having only sound.

3,643,168
SOLID-STATE TUNED UHF TELEVISION TUNER

Gert L. Manicki, Port Credit, Ontario, Canada, assignor to Standard Kollsman Industries Inc., Melrose Park, Ill.

Filed July 7, 1969, Ser. No. 839,169
Int. Cl. H04b *1/06*
U.S. Cl. 325—459 **7 Claims**

A solid-state voltage-controlled capacitor (varactor or varicap) UHF television tuner is described which includes a varicap preselector tuned circuit, a varicap tuned RF amplifier stage inductively coupled to the preselector circuit, and a varicap tuned oscillator stage, both the oscillator stage and the amplifier stage being inductively coupled to the diode mixer stage from which an IF signal is derived. The tuner employs a single tuning voltage source to tune across the entire UHF range and also includes provision for AGC. Trimmer capacitors and inductance adjusting devices of unique and

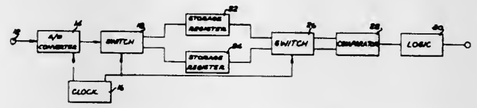


advantageous configuration are employed to align the tuner. Further disclosed are unique methods of assembly and alignment for the tuner.

3,643,169
WAVEFORM SENSING AND TRACKING SYSTEM

Albert M. Klein, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,382
Int. Cl. H03k *17/00*
U.S. Cl. 328—150 **1 Claim**

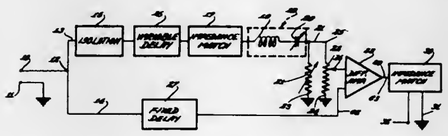


A waveform sensing tracking system for indicating and tracking the peaks occurring in a waveform. An analog-to-digital converter changes the incoming analog signal to a digital signal. Alternate digital signals are switched to different storage resistors. The alternately stored signals are then compared and an output signal produced when a peak in the signal occurs.

3,643,170
ENVELOPE DELAY COMPENSATION CIRCUIT

Leon J. Stanger, Quincy, Ill., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 24, 1969, Ser. No. 887,970
Int. Cl. H03b *1/04*
U.S. Cl. 328—163 **9 Claims**

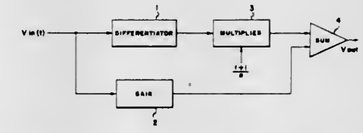


A network to compensate for group delay having a pair of circuit paths with a variable delay network in one path and a fixed delay network in the other path. The input information is coupled to both circuit paths and the output of the two paths is combined in a differential amplifier to produce a vector addition of the signals from the separate paths. An isolation network is provided in the variable delay circuit path and a resonant circuit is provided to have an adjustable Q and adjustable frequency of resonance and is also located in the same path. Means are provided to adjust the relative amplitudes of the two signals so that the resulting output of the differential amplifier will have a substantially constant amplitude regardless of the output frequency or phase.

3,643,171
CORE MEMORY DELTA NOISE CANCELLATION

Hua-Shan Chang, South Pasadena, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 6, 1970, Ser. No. 87,541
Int. Cl. H04b *1/12*
U.S. Cl. 328—165 **1 Claim**

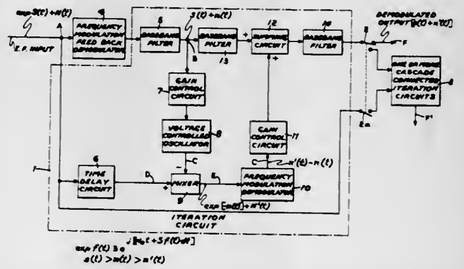


Method and means for delta noise cancellation for memory systems in which the delta noise decay function is combined electronically with a separately generated function derived from the delta noise decay function to cancel or reduce the delta noise amplitude in the decaying period to improve memory access time.

3,643,172
FREQUENCY MODULATION DEMODULATION SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 18, 1969, Ser. No. 808,116
Int. Cl. H03d *3/00*
U.S. Cl. 329—112 **10 Claims**

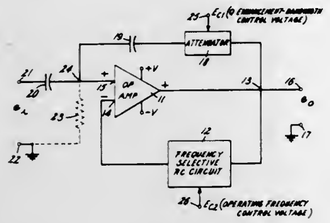


An iterative-type FM demodulator comprises a first FMFB demodulator coupled to the original input signal. The output of the first demodulator is coupled to modulate a voltage-controlled oscillator. The oscillator output is mixed with the original input signal. The resultant output of the mixer is demodulated by a second FM demodulator which may be of the feedback type. The output of the second demodulator is added as a correction signal to the output of the first demodulator to provide the desired system output signal. This system has greater threshold extension than obtainable with presently employed FMFB demodulator. The circuit arrangement coupled to the output of the first demodulator may be repeated a number of times and coupled in cascade with each other to provide a further threshold extension.

3,643,173
TUNEABLE MICROELECTRONIC ACTIVE BAND-PASS FILTER

James Robert Whitten, Scotia, N.Y., assignor to General Electric Company

Filed May 18, 1970, Ser. No. 38,019
Int. Cl. H03f 1/38
U.S. Cl. 330—26 8 Claims

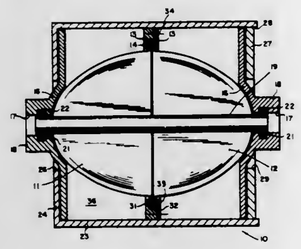


A microelectronic or integrated circuit active band-pass filter uses only resistors, capacitors, and active devices, is stable and has filter characteristics equivalent to an LC band-pass filter. A known band-pass amplifier comprises an operational amplifier and a negative feedback tuneable RC band reject network, such as a twin-T or bridged-T notch filter, or parallel high- and low-pass filters. To this is added a positive feedback circuit including an adjustable attenuator (for Q control) and a series feedback capacitor, and also a series input capacitor, that are effectively tuned to resonance at the band reject network center frequency. The positive feedback circuit thus has inductive characteristics at the passband frequencies, with resulting Q enhancement. The pass bandwidth and center frequency or high- and low-pass frequencies are tuneable independently and electronically by preferably fabricating the attenuator and band reject network in distributed RC form using insulated gate field effect transistors.

3,643,174
LASER CONSTRUCTION

Gunther Zeidler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 30, 1968, Ser. No. 763,509
Claims priority, application Germany, Sept. 28, 1967, P 16 14 615.9
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 7 Claims

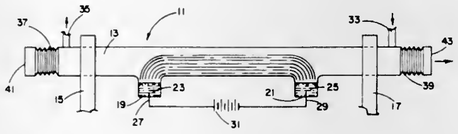


An optical molecular amplifier (laser) including a mirror system forming a closed cavity having the configuration of a prolate ellipsoid of revolution, a luminous pump source disposed on a transverse axis of the ellipsoid at one focal point thereof, and an excitable material disposed on the transverse axis of the ellipsoid at the other focal point thereof. The closed cavity forming the pump reflector mirror system includes a pair of superposed semiellipsoidal bowls joined along a conjugate axis of the ellipsoid of revolution to form a hermetic seal therebetween. A pair of oppositely disposed flanges are adhered to both longitudinally disposed apex end portions of the closed cavity, and each flange is formed with an aperture passing therethrough disposed coaxially of the transverse axis of the ellipsoid of revolution. The luminous pump source and the excitable material are disposed concentrically within a cylindrical, Dewarlike cooling tube arranged along the transverse axis of the ellipsoid of revolution and supported within the apertures formed in the pair of flanges. The pump reflector including the pair of flanges and the cooling tube which supports the luminous pump source and the excitable material are supported within and encircled by a cylindrical housing disposed coaxially of the transverse axis of the ellipsoid of revolution and provided with closed end portions to form a cavity for receiving a coolant.

3,643,175
THE USE OF MERCURY IN A CARBON MONOXIDE LASER

Mani L. Bhaumik, Pasadena, and Michael M. Mann, Redondo Beach, both of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.

Filed Sept. 10, 1970, Ser. No. 71,023
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 8 Claims

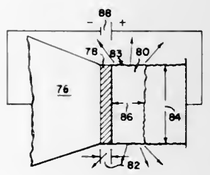


The room temperature efficiency of a carbon monoxide laser is increased by introducing mercury vapor into the gaseous discharge mixture. a further increase in efficiency in the laser is achieved when xenon is introduced into the mixture together with the mercury.

3,643,176
SUPERCONDUCTOR ELECTRO-MAGNETIC RADIATION DEVICE

William D. Gregory, Vienna, Va., and Lutz Leopold, Chevy Chase, Md., assignors to Georgetown University, Washington, D.C.

Filed Sept. 30, 1968, Ser. No. 763,679
Int. Cl. H01s 1/02, 3/08, 3/16
U.S. Cl. 331—94.5 12 Claims

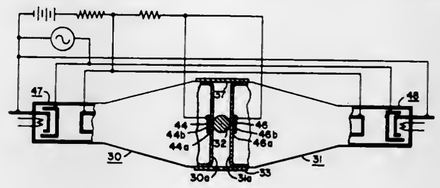


An injection-type junction superconducting radiation device, operated below the transition temperature of the superconductor. The junction is formed from a normal metal, an oxide insulative film and a superconductive material. The size of the superconductor element is determined by the radiation wavelength, and the index of refraction of the superconductor.

3,643,177
OPTICAL MASER

Jon W. Ogland, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 808,703, Mar. 19, 1969, now abandoned, which is a continuation of application Ser. No. 641,710, May 26, 1967, now abandoned, which is a continuation of application Ser. No. 265,461, Mar. 15, 1963, now abandoned.
This application Nov. 17, 1969, Ser. No. 871,669
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 8 Claims

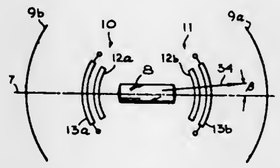


Means are illustrated for electronically exciting phosphor material to provide a source of photon energy for pumping active negative temperature media. Preferably the phosphor has a fast decay time and is so chosen that its emission spectrum substantially matches or coincides with the absorption spectrum of the active negative temperature medium. The source of electrons may be a conventional cathode, or alternatively, one of special construction.

3,643,178
ELECTROMAGNETIC RADIATION BEAM DIRECTING SYSTEMS

Fred R. Marshall, Sierra Madre, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of application Ser. No. 343,623, Feb. 10, 1964, now abandoned. This application Nov. 24, 1969, Ser. No. 872,458
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 6 Claims



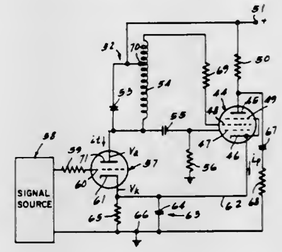
A dirigible beam of coherent radiation is generated by using a fixed birefringent element (Calcite plate) and a variable birefringent (Kerr cell) as a directional filter in combination with an optical resonator. The resonator is omnidirectional over a predetermined range and the directional filter is modulated to position the coherent light in any direction within said predetermined range.

3,643,179
REACTANCE TUBE CONTROLLED PENTODE OSCILLATOR

George J. Jarosz, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed July 30, 1969, Ser. No. 845,947
Int. Cl. H03b 3/04; H03c 3/14
U.S. Cl. 331—180 5 Claims

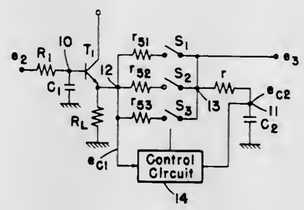
A reactance oscillator having a pentode as the active oscillator element and having a triode as a variable reactance element. A number of energy storage elements are associated with the pentode oscillator in the usual manner, and one of these elements comprises the variable capacitance of the triode. Feedback from the pentode oscillator is accomplished through an integrating circuit which couples energy of the correct phase to the cathode of the triode. The pentode operates as a peak detector or a class C oscillator, conducting for less than 90° of the operating cycle. Essentially, the signal developed at the cathode of the pentode is a pulse waveform, resulting in a sawtooth waveform after being integrated. The sawtooth waveform, however, has a fundamental frequency which lags the voltage at the anode of the triode by approximately 90°. This fundamental, being coupled to the cathode of the triode, produces a current in the triode which is 180° out of phase. The result is that the current through the triode leads the voltage by approximately 90° producing the desired reactance. The magnitude of this reactance may be varied by varying the applied voltage to the control grid of the triode.



3,643,180
DELTA MODULATOR APPARATUS

Tadao Shimamura, and Yukio Takimoto, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 9, 1970, Ser. No. 17,506
Claims priority, application Japan, Mar. 11, 1969, 44/18022
Int. Cl. H03k 13/22
U.S. Cl. 332—11 D 15 Claims

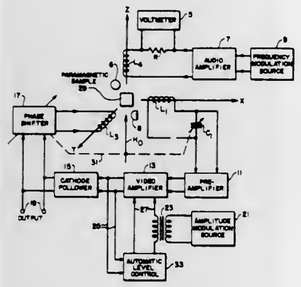


Improved delta modulator apparatus comprising a differential input circuit, a decision circuit timed by a sampling pulse generator and a decoder circuit is provided according to the present invention. In accordance with the teachings of this invention, the decoder circuit includes first and second integrator circuits interconnected by a nonlinear impedance device or network. The nonlinear impedance device or network utilized exhibits one value of impedance when the magnitude of the voltage applied thereto resides below a predetermined value and at least another value of impedance when the magnitude of the voltage applied thereto exceeds such predetermined value so that the resulting delta modulator apparatus formed manifests a high signal-to-noise ratio for slowly varying, relatively flat portions of an input signal to be encoded while rapidly responding to sharply sloping portions of such input signal.

3,643,181
AMPLITUDE AND/OR FREQUENCY-MODULATED PARAMAGNETIC RESONANCE OSCILLATOR

William A. Stirrat, Freehold Township, Monmouth County, N.J.; William L. Rollwitz, and Gilbert A. Persyn, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Army

Filed June 11, 1970, Ser. No. 45,517
Int. Cl. H03b 17/00
U.S. Cl. 332—17 3 Claims

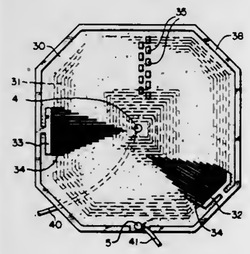


This oscillator includes a pair of radiofrequency (RF) coils orthogonally disposed to each other and coupled to a magnetized paramagnetic sample. At paramagnetic resonance, the two coils are effectively coupled and a feedback path is completed through one or more amplifiers which connect the two RF-coils. The oscillator can be both frequency- and amplitude-modulated.

3,643,182
COMPACT DISTRIBUTED-PARAMETER NETWORK

Carl R. Swanson, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,858
Int. Cl. H03h 7/34; H04b 3/40
U.S. Cl. 333—29 9 Claims

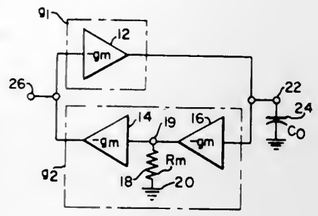


A compact distributed-parameter network for transmission of applied electrical signals with a predetermined characteristic impedance, comprising a substrate of dielectric material having at least two parallel major surfaces with a coil of coplanar turns of electrically conductive material in a spirallike configuration of concentric squares in the center area of the coil and of concentric octagons in the outer area of the coil affixed to and supported by one of the parallel major surfaces, and a ground plane comprising a plurality of electrically joined segments of electrically conductive material affixed to and supported by the parallel major surface opposite the spirallike coil in asymmetrical juxtaposition therewith.

3,643,183
THREE-AMPLIFIER GYRATOR

Philip R. Geffe, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1970, Ser. No. 38,709
Int. Cl. H03h 7/44, 11/00
U.S. Cl. 333—80 R 4 Claims

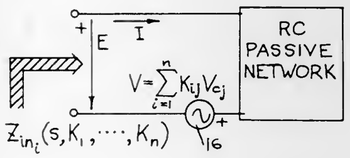


Three identical inverting amplifiers are connected in a circuit combination of two amplifiers in cascade across the remaining amplifier. The circuit configuration, accomplishes wide banding in a gyrator.

3,643,184
MULTIPORT FEEDBACK AND POLE-ZERO CONTROL

John R. D'Alessandro, 2970 North Sheridan Road, Apt. 1426, Chicago, Ill.

Filed Nov. 17, 1969, Ser. No. 877,402
Int. Cl. H03h 7/04
U.S. Cl. 333—80 R 10 Claims



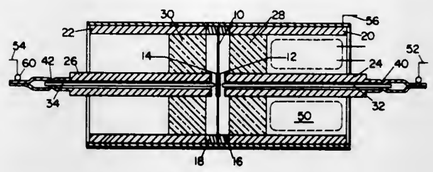
Apparatus and methods are disclosed which allow the critical frequencies (poles and zeros) to be independently controlled by applying state-variable feedback techniques to both the external and internal ports of an arbitrary linear, passive, and time-invariant network (system). There are no limitations on the locations of either the poles or zeros and the invention allows the generation of RC, RL, LC, and RLC and nonpositive real driving-point impedances and transfer functions from active RC networks. Therefore, if one fabricated any transfer function with these active driving-point impedances, pole-zero control will be achieved for the transfer function.

3,643,185
MERCURY-WETTED RELAY AND METHOD OF MANUFACTURE

John S. Zimmer, Waynesboro, Va., assignor to General Electric Company

Filed Oct. 5, 1970, Ser. No. 78,042
Int. Cl. H01h 1/08
U.S. Cl. 335—58 15 Claims

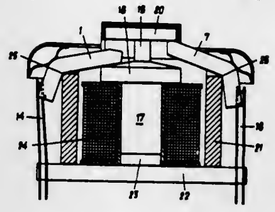
A mercury-wetted contact capsule used in relays or switch assemblies whose contacts are hermetically sealed in a chosen environment and includes a flat, spiral spring armature. The construction permits use of an optimum mercury film supply affording long operating life, elimination of contact bounce, chatter and noise, and operation in any position. The concentric symmetry design facilitates manufacture by a special preassembly and assembly sequence that ensures precise control of mercury film maintenance and exact parts positioning, and can be readily automated even for subminiature sizes.



3,643,186
ELECTROMAGNETIC PULSE COUNTER

Othmar Fischer, Modling, Austria, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,676
Claims priority, application Austria, Apr. 18, 1969, A 3751/69
Int. Cl. H01h 51/08
U.S. Cl. 335—119 20 Claims

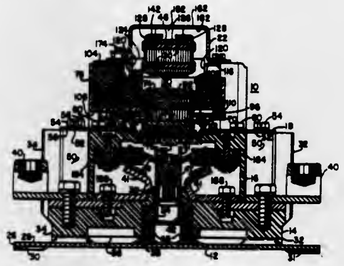


An electromagnetic pulse counter having successively operable, contact-operating armatures. The armatures are movable to a rest position, an intermediate position and an active position between the main pole and the secondary pole of a magnetic circuit.

3,643,187
ELECTROMAGNETICALLY OPERATED SWITCH CONSTRUCTION

James E. Stallman, Whitefish Bay; James J. Schlitt; Jordan F. Puetz, and Don J. Arneberg, all of Milwaukee, all of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 18, 1970, Ser. No. 99,573
Int. Cl. H01h 50/04
U.S. Cl. 335—132 10 Claims

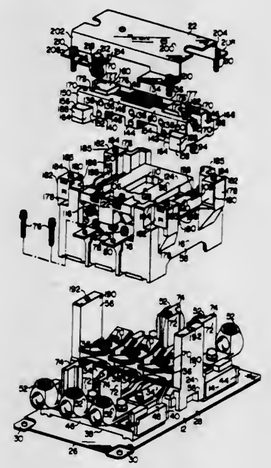


A contactor construction which will permit easy access to the movable and stationary contacts and replacement of the magnet coil of the contactor while the contactor is wired on a panel. The construction includes a readily detachable cover which resiliently positions the coil so the coil may be lifted from its position on a stationary magnet when the cover is removed and absorbs shock generated when resilient pads carried on the armature engage the cover when the contactor is deenergized.

3,643,188
ARMATURE MOUNTING STRUCTURE IN AN ELECTROMAGNETICALLY OPERATED SWITCH

Jordan F. Puetz, Milwaukee, and James E. Stallman, Whitefish Bay, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 18, 1970, Ser. No. 99,574
Int. Cl. H01h 50/04
U.S. Cl. 335—132 10 Claims



A structure for mounting and guiding the movements of an armature in an electromagnetically operated switch. The structure for mounting the armature includes a pair of members which are secured on opposite ends of the armature to connect the armature to the free ends on the arms of a U-shaped movable contact carrier. The movable contact carrier has a bight portion movable in a slot in a rear wall of a molded base that carries the stationary contacts of the switch on its front face. The bight portion is guided during its movement in the slot by a bearing portion which is centrally located on the bight portion and received in a central portion of the slot. The free ends on the arms of the carrier and the armature are guided during their movements by portions of a frame which positions a stationary magnet part and a magnet coil and four posts which extend from a molded member that acts as an arc suppressing barrier for the switch.

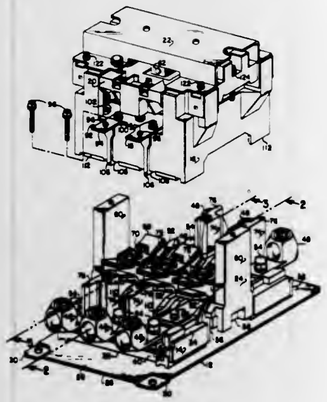
3,643,189
SHOCK TRANSMITTING STRUCTURE IN AN ELECTROMAGNETICALLY OPERATED SWITCH

James E. Stallman, Whitefish Bay, and Don J. Arneberg, Milwaukee, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 18, 1970, Ser. No. 99,613
Int. Cl. H01h 50/00
U.S. Cl. 335—132 9 Claims

A structure for supporting the electromagnet in an electromagnetically operated switch. The structure includes a metal shock plate which provides a mounting for the electromagnet and in turn is mounted on four posts that extend

from a surface of the base of the switch whereon the stationary contacts of the switch are mounted. The shock plate provides a mounting for a molded part which encloses the switch contacts so that part is spaced from the base. Thus



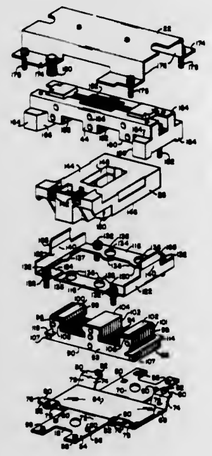
easy access to the contacts is obtained when the shock plate is removed from its position on the four posts and the shock generated by the energization of the electromagnet is transmitted through the four posts to the base when the shock plate is mounted on the four posts.

3,643,190

STRUCTURE FOR MOUNTING AN ELECTROMAGNET IN AN ELECTROMAGNETICALLY OPERATED SWITCH

Jordan F. Puetz, Milwaukee, and James E. Stallman, Whitefish Bay, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 18, 1970, Ser. No. 99,614
Int. Cl. H01h *50/00*
U.S. Cl. 335—132 **10 Claims**



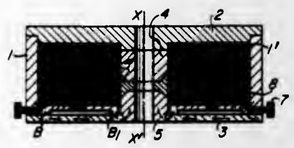
A structure for mounting an electromagnet in an electromagnetically operated switch. The structure includes a metal shock plate which is mounted on four posts that extend from a front surface of an insulated base whereon the stationary contacts of the switch are mounted. The front face of the shock plate has a mounting surface whereon an elastomeric pad is positioned and four spaced raised fingers which provide support surfaces along opposite sides of the mounting surface. The raised fingers provide a mounting for a pair of L-shaped members that are secured to each other and to the fingers to provide a frame that surrounds a stationary magnet when a rear wall of the magnet is positioned on the elastomeric pad. The magnet has projections on each of its opposite ends which provide a surface whereon elastomeric pads are positioned. The L-shaped members each have one leg resting on the elastomeric pads located on the projections so that the magnet is resiliently mounted on the shock plate. The L-shaped members also have openings therein which receive projections on a magnet coil to position the coil on the magnet and portions which guide the movement of an armature when the electromagnet is energized.

3,643,191

ELECTRON LENS FOR ELECTRON MICROSCOPE AND THE LIKE

Shozo Kasai, Hachioji; Daisaburo Shimizu, Katsuta, and Shinjiro Katagiri, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 10, 1970, Ser. No. 44,935
Claims priority, application Japan, June 13, 1969, 44/55077
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **4 Claims**



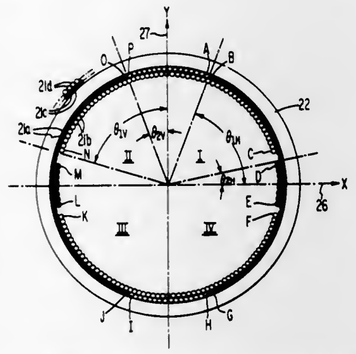
Movable magnetic compensating pieces are disposed on a lower magnetic path unit of an electron lens. The compensating pieces are in partial contact with the lower magnetic path unit and moved toward and away from each other on the lower magnetic path unit by manipulation form the exterior of the lens.

3,643,192

TOROIDAL ELECTROMAGNETIC DEFLECTION YOKE

Wayne Richard Chiodi, Indianapolis, Ind., assignor to RCA Corporation

Continuation-in-part of application Ser. No. 805,276, Mar. 7, 1969. This application June 3, 1970, Ser. No. 42,927
Int. Cl. H01f *5/00*
U.S. Cl. 335—213 **10 Claims**



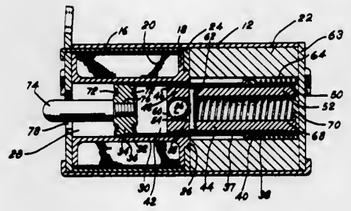
A toroidal deflection yoke is provided for a delta gun shadow mask color television picture tube. The wire distribution of the horizontal and vertical deflection coils is determined by selecting a minimum number of design parameters in the form of angular distributions of windings which can be varied for producing a deflection yoke which yields optimum performance in electron beam convergence and registration.

3,643,193

TIME-DELAY SOLENOID

Robert E. Prouty, Logansport, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Oct. 19, 1970, Ser. No. 81,751
Int. Cl. H01l *7/18*
U.S. Cl. 335—240 **8 Claims**



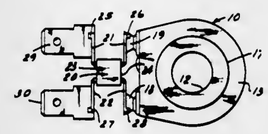
A time-delay solenoid includes a cylindrical permanent magnet and a coil wound cylindrical bobbin mounted within a single housing and adapted to exert opposite forces on a plunger. The plunger having a ball check valve connected to one end thereof is slidably secured for movement inside a tube within the solenoid. The valve acts to impede movement of the plunger in one direction through a viscous fluid in the tube.

3,643,194

RECTIFIER ENCAPSULATED WITHIN COIL

Arden Daniel Atherton, Oak Park, Ill., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Dec. 10, 1969, Ser. No. 883,863
Int. Cl. H01f *3/00*
U.S. Cl. 335—260 **1 Claim**



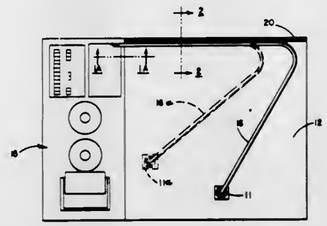
An integrated rectifier assembly having a coil of wire wound to form a solenoid about a thermoplastic bobbin. The coil of wire has a pair of leads for coupling to an external electrical circuit. A rectifier device is connected to the pair of leads of the solenoid coil to rectify power delivered to the coil. The rectifier device is a silicon rectifier and has two pairs of bifurcated legs which are soldered or otherwise electrically coupled to the electrical socket prongs normally associated with the solenoid winding. One leg of each bifurcated leg pair is coupled to the winding directly and the other leg of each pair is coupled to an electrical socket prong which may then be coupled directly to an external circuit. The entire assembly including the rectifier and its bifurcated legs are encapsulated in an electrically insulating material to protect the unit from shock, corrosion or interference electrically with other conductive members associated with the solenoid assembly.

3,643,195

MAGNETIC TAKEUP DEVICE FOR UMBILICAL CABLE OR THE LIKE

Bruce A. Sawyer, Allentown Drive, Woodland Hills, Calif.

Filed Nov. 17, 1969, Ser. No. 877,246
Int. Cl. H01f *7/20*
U.S. Cl. 335—285 **24 Claims**



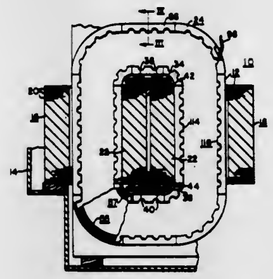
An umbilical feed cable runs from equipment which may include electrical controls, pneumatic sources or the like to a device such as a plotting head which is to be variously positioned. The cable has a flexible band of magnetic material attached thereto running along substantially its entire extensible length. Positioned in a desired takeup location is a magnetized strip. An end of the band of magnetic material is attached to an end portion of this strip. As the device is moved about, the band is magnetically drawn against the magnetic strip to take up any slack which may appear therein.

3,643,196

ELECTRICAL INDUCTIVE APPARATUS

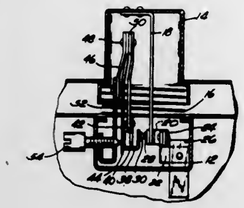
Harral T. Robin, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 10, 1970, Ser. No. 53,967
Int. Cl. H01f *15/04*
U.S. Cl. 336—84 **3 Claims**



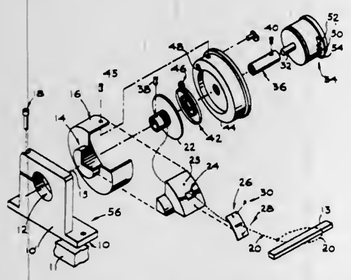
Electrical inductive apparatus having a static plate which includes a flat, electrically conductive sheet member disposed between first and second sheets of electrical insulating material, and electrically conductive edge strips disposed about the inner and outer edges thereof. The electrically conductive edge strips are formed of metallic wire cloth disposed to provide a single turn about a flexible insulating core. The metallic wire cloth is sized to provide at least one flap which extends outwardly from the insulating core, with the flap being of sufficient length to overlap the adjacent edge of the electrically conductive sheet member.

3,643,197
THERMORESPONSIVE CONTROL FOR ELECTRICAL HEATING UNITS
Joseph E. Brosseau, St. Charles, Ill., assignor to Joseph E. Brosseau Co., Franklin Park, Ill.
Filed Nov. 2, 1970, Ser. No. 86,234
Int. Cl. H01h *37/52*
U.S. Cl. 337—370 **3 Claims**



The inverted cuplike shield is biased into contact with the bottom of a cooking utensil so the sensing bimetal responds to the utensil temperature. As the heat rises, the bimetal moves right to move the right contact arm away from the left contact arm which is positioned by the ambient temperature sensing bimetal carried by a bracket which is adjustable to select the temperature to be maintained by the control. Preferably the right contact arm is a high-resistance bimetal through which current flows when the contacts are closed and which warps to the right when heated to act as an anticipator in that it can open the contacts before the sensing bimetal would. The anticipator then functions to anticipate the need for additional heat. This allows the control to gradually approach the set temperature without overshoot. When the control regulates a high-wattage heater such as a heating unit on a range, the heating of the anticipator bimetal is satisfactory but in low-wattage uses the heating may be too low for the anticipator to function. In such cases a resistance heater can be mounted on or adjacent the anticipator bimetal.

3,643,198
LINEAR DISPLACEMENT TRANSDUCER SYSTEM
Merle A. Economu, 37605 Fifth St. E., Palmdale, Calif.
Filed Feb. 8, 1971, Ser. No. 113,377
Int. Cl. H01c *9/02*
U.S. Cl. 338—162 **8 Claims**



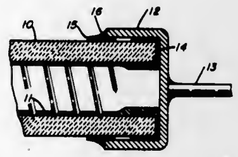
A linear displacement transducer system in which a tension cable is attached to the object of which the relative displacement is to be measured and to the shaft of a shaft angle position transducer (SAPT) such that displacement of the object relative to the shaft results in rotation of the shaft. This displacement provides a measurable variation of the electrical characteristics of the transducer. A cylindrical housing containing the transducer is also provided together with a bracket having a circular opening for accommodating the cylindrical housing to permit positioning of the transducer housing in any orientation with respect to the object.

3,643,199
PULL-PUSH SWITCH WITH A VARIABLE RESISTOR
Heiroku Tanaka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 14, 1970, Ser. No. 63,761
Claims priority, application Japan, Aug. 20, 1969, 44/80356; 44/80357; June 5, 1970, 45/55873; 45/55874; 45/55875; 45/55876; 45/55877; 45/55878; 45/55879; 45/55880; 45/55881; 45/55882
Int. Cl. H01c *9/08*
U.S. Cl. 338—172 **10 Claims**



A pull-push switch with a variable resistor in which on one side of a cap-shaped resistor cover is installed a resistor baseplate or an insulating baseplate mounted with a resistor thereon and on the other side thereof is installed an L-shaped metal plate, a bearing mounted on said resistor baseplate supporting a rotary shaft which is movable through said bearing, one end of said rotary shaft being projected through one side of said resistor cover and through a flat portion of said metal plate adjacent to said resistor cover, a switch being installed on the underside of the other portion of said metal plate which is in turn situated under said rotary shaft, an almost channel-shaped synthetic resin switch driver unit being placed on said other portion of said metal plate, a protrusion for operating said switch being fitted into a hole cut in the trunk of said switch driver unit, a couple of U-shaped music wire springs being bridged between said end of said rotary shaft and pockets cut in the inside surfaces of the legs of said switch driver unit opposite to each other.

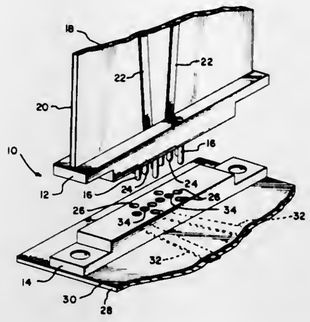
3,643,200
HERMETICALLY SEALED RESISTOR
Henry W. Brandl, 31 Ivy St., Newark, N.J.
Filed June 1, 1970, Ser. No. 41,810
Int. Cl. H01c *1/14*
U.S. Cl. 338—329 **2 Claims**



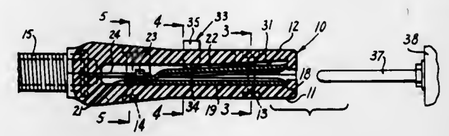
A resistance film is formed on the inner surface of tube of dielectric material. End terminals interfused with the tube provide electrical continuity between the resistance film and metallic end caps closing the ends of tube, which end caps are soldered in place to provide heretic seals.

3,643,201
IMPEDANCE MATCHING MICROSTRIP CONNECTOR
Robert George Harwood, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 9, 1970, Ser. No. 9,710
Int. Cl. H01r *17/18*; **H05k** *1/02*
U.S. Cl. 339—17 R **4 Claims**

Disclosed is a connector for making matched impedance connections, for example, as between two microstrip circuit boards. One-half of the connector has pins located therein with one end of each pin electrically connected to respective signal and ground planes in one microstrip, the second half of the connector has receptacles located therein, the ends of each receptacle mating, or making electrical contact respectively with, signal and ground planes on the second microstrip circuit board. The pins and receptacles are arranged in a pattern such that matched impedance, as between the two connectors, and therefore the two microstrip circuit boards, is effected.

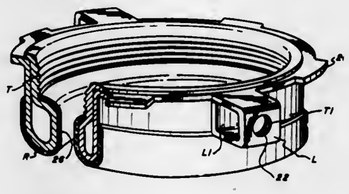


3,643,202
QUICK RELEASE FEMALE PLUG
James A. Coon, 929 Drever St., W. Sacramento, Calif.
Filed Mar. 6, 1970, Ser. No. 17,139
Int. Cl. H01r *13/20*
U.S. Cl. 339—75 P **4 Claims**



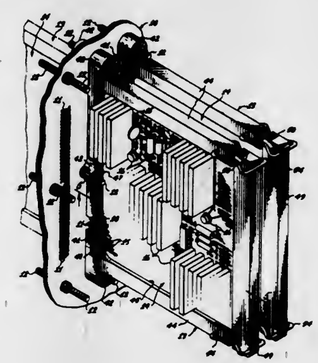
A quick release female plug in which the socket portions of the female plug are resilient and are forced into engagement with the male prongs by means of a hand-actuated sliding cam bar engaged therewith.

3,643,203
WROUGHT STEEL CONDUIT BUSHINGS
Bernard J. McLaughlin, St. Louis; George W. Petri, Chesterfield, and Raymond J. De Moor, St. Ann, all of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,590
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **5 Claims**



A wrought steel conduit bushing is provided. The bushing is formed from a blank by use of bending, stretching, setting, piercing, extruding, flattening, flaring and drawing techniques. Initially, a flat piece of iron is drawn into a cup and a flange is set. The closed end of the cup is reverse drawn to form a double shell or wall. The closed end of the cup is pierced and the resulting opening is extruded. The inner shell is then expanded to form a smooth annular ring with the outer shell to permit the passage of insulated wire without scarring the insulation. The inner shell is flared and flattened to complete the annular ring and to complete an inner cylindrical wall which may be threaded for mounting on rigid conduit. One or more ground lugs are then formed by bending a tang to provide an integral ground connection.

3,643,204
CONNECTOR FOR PRINTED WIRING BOARDS
Richard C. Drenten, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.
Original application Dec. 26, 1967, Ser. No. 693,599, now Patent No. 3,550,062. Divided and this application June 5, 1970, Ser. No. 43,753
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 L **5 Claims**

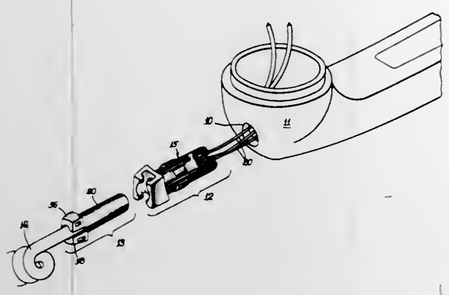


The connector and mounting device of this invention is used to mechanically and electrically interconnect a printed wiring board and a backpanel without the use of mounting devices (such as screws) in the contact area of the connector. The elimination of mounting devices permits greater packaging densities (closer spacing) of components on the printed wiring board. The connector comprises an elongated block of insulative material having plural transverse channels, a spring contact in each channel is affixed on one end thereof to the printed wiring board and the other end of the spring contact is yieldingly retained within the channel. Each contact is formed to provide an intermediate contact portion protruding exteriorly of the connector block. The printed wiring board with the connector attached as hereinbefore described is inserted into a U-shaped mounting device which holds and guides the assembly on the backpanel. A biasing retainer cap containing a waveform spring is attached to the mounting device so as to spring-load the printed wiring board connector assembly into conductive contact with the backpanel.

3,643,205
TELEPHONE HANDSET CONNECTOR
Luejene Elkins, Chicago, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Oct. 13, 1969, Ser. No. 865,585
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **5 Claims**

A miniature electrical connector consisting of a receptacle which latches itself into a single opening through the housing

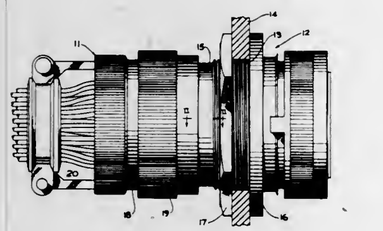
of an electrical instrument (a telephone handset, for example) together with a plug designed to be self latching upon insertion into the receptacle yet capable of quick, easy removal therefrom by proper manipulation.



3,643,206
DIAPHRAGM SEAL FOR AN ELECTRICAL CONNECTOR

Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Aug. 21, 1969, Ser. No. 851,910
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 R **9 Claims**



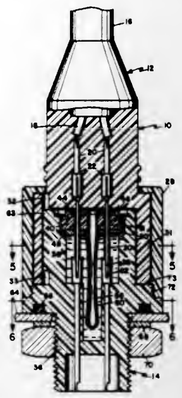
Diaphragm seal for an electrical connector using a material capable of taking a set under compression, the material being used in a manner such that it is effectively subjected only to tensioning, bending and shear to avoid taking a set. In particular, a resilient annular lip is engaged by a rigid annular edge at a point intermediate a root portion and a free edge to urge the free edge into pressure sealing engagement with an annular surface of a member from which the root portion is supported.

3,643,207
SEALED ELECTRICAL CONNECTOR

James L. Cairns, 5069 Park Rim Drive, San Diego, Calif.

Filed Aug. 28, 1970, Ser. No. 67,867
Int. Cl. H01r *9/08*
U.S. Cl. 339—96 **14 Claims**

A reusable electrical connector for making an electrical connection in adverse environments in which the electrical connection is made by passing a contact through a self-sealing, precut opening into a sealed chamber filled with dielectric fluid to electrically contact a contact position in the fluid and which chamber has means for instantaneously adjusting in volume to changes in the ambient pressure or with the insertion or removal of the electrical contact to maintain interior portions in equilibrium with the pressure of the environment and to prevent the loss of fluid from the sealed chamber.



3,643,208
UNDERWATER SEPARABLE CONNECTOR

Frank Massa, Jr., Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

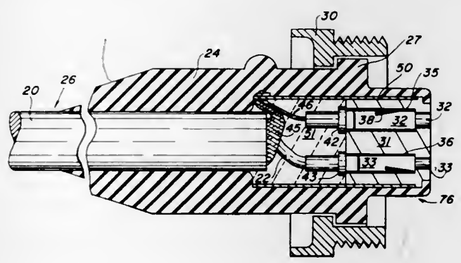
Filed May 21, 1969, Ser. No. 826,323
Int. Cl. H01r *13/52*
U.S. Cl. 339—102 R **11 Claims**

A shielded underwater cable terminates at a connector located inside a cylindrical metal sleeve. The sleeve serves the dual function of retaining a potting compound which mechanically protects the connector and of electrically shielding the connector region. In addition, the cable shield and sleeve are interconnected by plug and socket connectors also located inside the sleeve so that there is a positive electrical connection between the shields in two cables when two mating connector halves are put together.

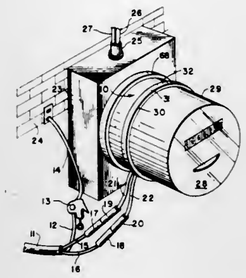
3,643,209
METER AND SERVICE CONNECTOR FOR ELECTRIC SERVICE RECONVERSION SYSTEMS

Ostis D. Coston, 1716 Exeter Ave., Bessemer, Ala.

Filed Aug. 22, 1969, Ser. No. 852,240
Int. Cl. A01r *33/76*
U.S. Cl. 339—155 R **11 Claims**



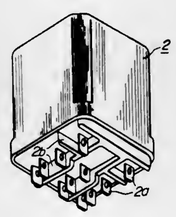
A connector is provided having two pairs of rearwardly extending stab terminals and two pairs of forwardly facing socket terminals mounted to opposite sides of a pair of insulative bushings. One pair of the stab terminals is electrically isolated from the corresponding socket terminals, while the other pair of the stab terminals is conductively connected to the corresponding pair of forwardly facing socket terminals. The isolated pair of the socket terminals has connected thereto the ends of a pair of power or current input lines. The stab terminals are adapted to be received in a conventional meter socket mounted to a building that normally supports a plug-in type of watt-hour meter. The unconnected ends of the power input lines have affixed thereto male plug-in jacks for quick connection to the female connectors connected to the ends of a service line of a portable electric power bypass system. A watt-hour meter is plugged into the forwardly facing socket terminals of the connector to record electric consumption.



3,643,210
RELAY SOCKET

Teizo Fujita, 3-34, Naka, Tezukayama, Sumiyoshi-ku, Osaka, Japan

Filed Dec. 30, 1969, Ser. No. 889,168
Claims priority, application Japan, May 22, 1969, 44/40449
Int. Cl. H01r *33/76*
U.S. Cl. 339—192 R **3 Claims**

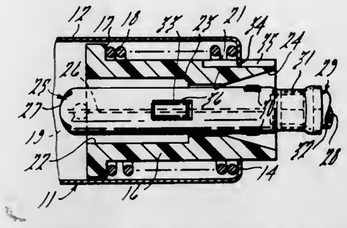


A relay socket for electrically connecting the terminals of a relay plug to external lead wires comprises a plurality of socket units assembled in a row, each of said socket units including a center base having upper recesses for receiving the terminals of the relay plug and two leadout portions provided at the opposite sides of said center base and each having leadout terminal beds defining a terminal space adapted to receive the external lead wire. Said upper recesses are each connected to a front recess formed on the front surface of said center base and to the terminal space defined by said leadout terminal bed, and metallic connecting means extend from the upper recess of said center base to the terminal space.

3,643,211
CONTACT ELEMENT

Don L. De Lano, Mount Clemens, Mich., assignor to Microdot Inc.

Filed June 22, 1970, Ser. No. 48,021
Int. Cl. H01r *9/08, 33/46*
U.S. Cl. 339—217 S **4 Claims**

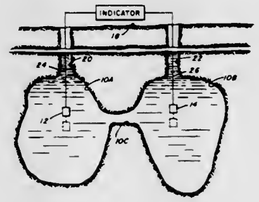


A contact element of formed sheet material secured on the end of an electrical conductor has a lanced out finger by which the contact element is retained in an aperture in a spring-pressed lamp base of a socket. After the contact element is inserted in the aperture the finger engages a shoulder therewithin to prevent the removal of the contact element and conductor therefrom.

3,643,212
METHOD AND APPARATUS FOR DUAL LOCATION SONAR MEASUREMENT OF CAVERNS

Gerald D. Patterson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1970, Ser. No. 734
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **6 Claims**



This invention relates to methods and apparatus for surveying caverns. More particularly the invention relates to methods and apparatus for surveying an underground cavern penetrated by spaced-apart boreholes including positioning a sound-transmitting device into one borehole and a sound-receiving device in the second borehole, transmitting sequential sound pulses by the transmitting device, reflecting the sound pulses from the cavern wall, receiving the sound pulses at the receiving device, and measuring the elapsed time between the transmission and receipt of sound pulses.

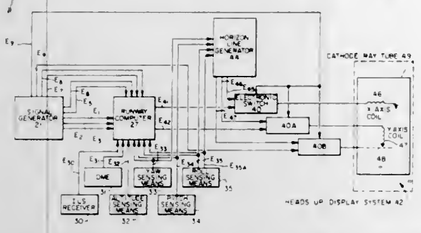
3,643,213
METHOD AND MEANS FOR PROVIDING A SYNTHETIC REAL WORLD RUNWAY DISPLAY

John F. Yurasek, Oakland, and Abner Owens, Jr., Paramus, both of N.J., assignors to The Bendix Corporation

Filed Nov. 24, 1969, Ser. No. 879,069
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **6 Claims**

A system for providing a perspective of a synthetic real world runway on a cathode-ray tube in a heads-up display system for guiding a pilot while landing an aircraft on the real world runway when visibility is poor. The perspective of the

synthetic runway changes in accordance with changes in the position of the aircraft to the real world runway. A waveform generator provides waveforms corresponding to the synthetic runway to a computer which modifies the waveforms in accordance with received signals from the airport, such as in-

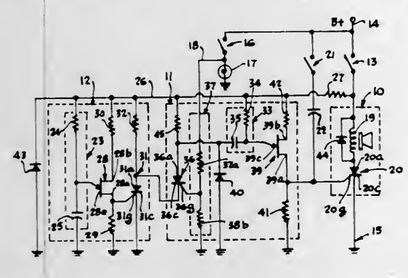


strument landing system (ILS) and range signals, and signals corresponding to sensed conditions, such as altitude, pitch, roll and yaw, to provide deflection voltages to the cathode-ray tube which displays the perspective synthetic real world runway in accordance with the deflection voltages from the computer.

3,643,214
SOLID-STATE BURGLAR ALARM SYSTEM FOR AUTOMOBILE

Ronald E. Chan, Chicago, Ill., assignor to Lino Engineering, Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 788,455, Jan. 2, 1969, now abandoned. This application Nov. 23, 1970, Ser. No. 91,916
Int. Cl. B60r *25/04*
U.S. Cl. 340—64 **14 Claims**



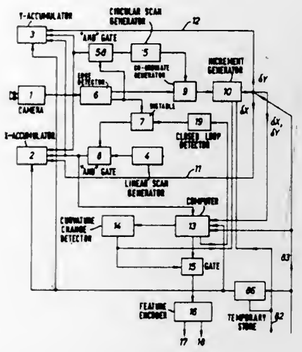
Solid-state burglar alarm system for operation with the courtesy light circuit of an automobile, wherein the alarm system includes a main switch hidden within the automobile for energizing and deenergizing the alarm system, means for disabling the ignition system, delay means for permitting the authorized operator to leave the automobile before the alarm is set, and delay means to permit the authorized operator to reenter the automobile and deenergize the alarm system before it would normally cause the alarm to sound.

3,643,215
PATTERN RECOGNITION DEVICE IN WHICH ALLOWANCE IS MADE FOR PATTERN ERRORS

William Ellis Ingham, Ealing; Michael Symons, Harrow, and Peter Murden, Beaconsfield, all of England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England

Filed Nov. 13, 1968, Ser. No. 775,410
Claims priority, application Great Britain, Nov. 15, 1967, 52,012/67
Int. Cl. G06k *9/16*
U.S. Cl. 340—146.3 S **4 Claims**

A pattern recognition device comprises search means which are controlled initially to make a systematic search of a pattern presented for classification and produce signals descriptive of the features. It also comprises storage means in which are stored (a) a list of likelihoods of classes for given features, (b) a list of likelihoods of features for given classes, and (c) a list of mean distances between features for given classes. These lists may be built up during a self-organizing mode of operation of the device. The device further includes prediction means which, when a given number of features have been described by the search means, utilizes these fea-

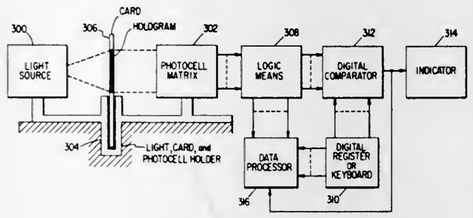


tures and the lists in the storage means and predicts the most likely class of the presented pattern, another feature likely to be associated with the features already described, and the locality of said feature. The control of the search means is then passed to the prediction means which cause a search to be carried out in the predicted locality. A signal produced as the result of the search in the predicted locality may be used either in a further prediction or to cause the systematic search to be resumed.

3,643,216
HOLOGRAPHIC IDENTIFICATION SYSTEM

David Leslie Greenaway, Untereichen, Birchwil, and John Patrick Russell, Thalwil, both of Switzerland, assignors to RCA Corporation

Filed July 30, 1969, Ser. No. 846,116
Claims priority, application Switzerland, Aug. 6, 1968, 37512/68
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 P **5 Claims**

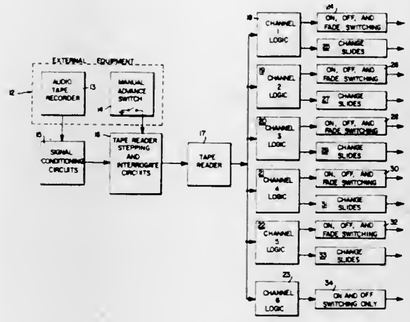


An identification card or credit card contains a unique holographically encoded number which may be decoded by a simple decoder requiring only a single flashlight bulb as a light source for reconstructing an image of the holographic code. This reconstructed image comprises a fixed predetermined pattern of a total number of spaced points, some of which, in accordance with the coded number, are manifested by light spots while the rest of the points are manifested by dark spots.

3,643,217
AUTOMATIC VISUAL AID CONTROL UNIT

James R. Morphew, 2513 Lakeside, Garland, Tex.; Roland D. Ingram, 329 Brookview Drive, Hurst, Tex., and John R. Stokes, 3004 Dyer St., Dallas, Tex.

Filed Oct. 10, 1968, Ser. No. 766,526
Int. Cl. H04q *9/02*
U.S. Cl. 340—147 P **8 Claims**

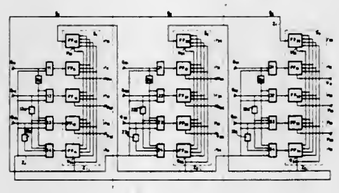


An all-electronic control system for simultaneously operating a plurality of visual aid components and/or a lighting system is operated from a programmed input tape to provide diverse control functions such as on, off, fade-in, fadeout, etc. The exclusive utilization of fast-switching, solid-state components in diverse control, slide change and movie projector control circuits enables several diverse commands to be executed nearly simultaneously.

3,643,218
CYCLIC GROUP PROCESSING WITH INTERNAL PRIORITY

Hans Cramwinckel, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,833
Claims priority, application Netherlands, Feb. 1, 1969, 6901657
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **3 Claims**

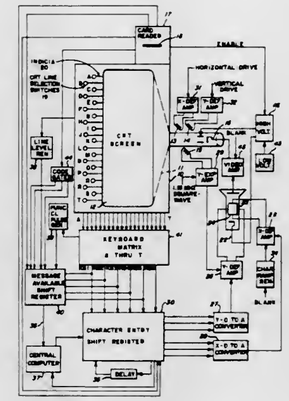


A priority circuit for passing in accordance with a given priority one of a plurality of interrogation signals coming from a number of lines to an output, said number of lines being divided in a number of different groups of lines, said circuit comprising means for dealing with interrogations within one group in accordance with a predetermined priority, there being provided means for processing cyclically the groups. The circuit comprises for this purpose a 1-out-of-(n+2) position device in which n is the number of lines of each group and the (n+1)th position is provided for activating the group by the preceding group, whilst the (n+2)th position is provided for setting the group into the rest position from a next following group (FIG. 3).

3,643,219
VISUAL DISPLAY SYSTEM

Richard F. Heimann, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 13, 1970, Ser. No. 19,175
Int. Cl. G06k *15/20*; **G06f** *3/14*
U.S. Cl. 340—172.5 **25 Claims**

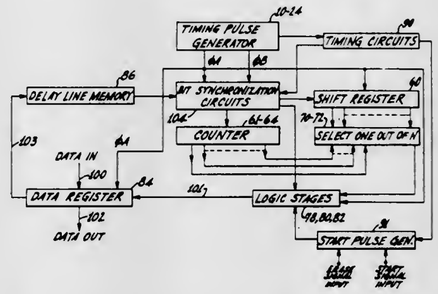


A limited access real-time data communication and display system wherein access to selected portions of stored data may be gained by the insertion of a coded identification card into the system resulting in the display on a cathode-ray tube of the selected data in a line raster adjacent to which and aligned with are a plurality of line selection switches which allow an operator to gain access to additional data in accordance with the displayed information and in accordance with the coded identification card.

3,643,220
SYNCHRONIZATION OF SERIAL MEMORY

Kazuo Katagi, Los Angeles, Calif., assignor to RCA Corporation

Filed Mar. 26, 1970, Ser. No. 22,815
Int. Cl. G06f *13/02*
U.S. Cl. 340—172.5 **7 Claims**

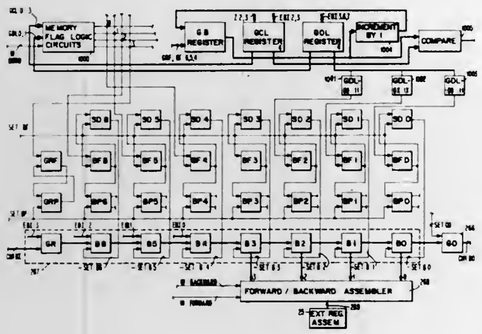


A delay line refresh memory stores the bits to be displayed on a visual display means such as a television receiver. A shift register in the feedback loop applies the stored bits back to the input circuit of the memory. Synchronization pulses which occur once each recirculation period are employed to determine which stage of the register to connect back to the memory, that is, to determine the amount of delay which must be inserted in the memory feedback loop to make the stored data synchronous with the synchronization pulses.

3,643,221
CHANNEL BUFFER FOR DATA PROCESSING SYSTEM

James B. Chambers, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,224
Int. Cl. G11c *19/00*
U.S. Cl. 340—172.5 9 Claims

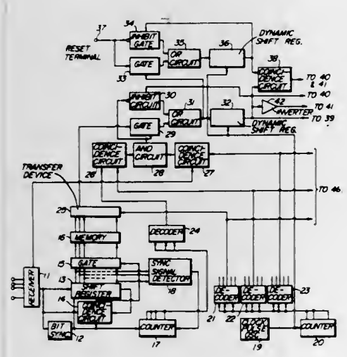


An improved shift register, characterized by the ability of data in each stage to be alternatively not transferred, transferred one stage, or transferred two stages in response to each advance pulse depending upon the full or empty conditions of the two succeeding stages, provides efficient transfer of data between the CPU and high-speed peripheral devices of data processing system.

3,643,222
REMOTE SUPERVISORY SYSTEM

Naokazu Kimura, Shimodate-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1969, Ser. No. 791,895
Claims priority, application Japan, Jan. 22, 1968, 43/3259
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 7 Claims

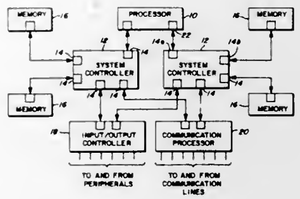


A remote supervisory system having two dynamic shift registers for storing a series of signals representing the new and the old state, respectively, of remotely supervised equipment, wherein the outputs from the dynamic shift registers are cyclically distributed to display circuits for a continuous or flickering display of the existing state of each equipment.

3,643,223
BIDIRECTIONAL TRANSMISSION DATA LINE CONNECTING INFORMATION PROCESSING EQUIPMENT

Richard L. Ruth, Paradise Valley, and William A. Shelly, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc.

Filed Apr. 30, 1970, Ser. No. 33,436
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 15 Claims

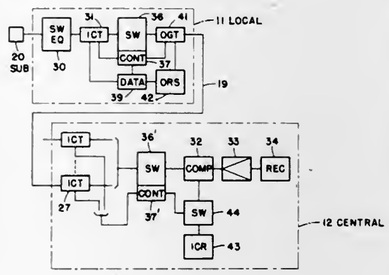


A communicating port in an information processing device is equipped with an interconnected logic gating wherein the bidirectional transmission line is connected to an output of one logic gate and to an input of another logic gate. Series and parallel interconnections permit one bidirectional transmission line for each bit of information per device and per port of each device, respectively. A transmitter-receiver circuit pair is disclosed for the logic gating using current mode logic driving a grounded base amplifier.

3,643,224
CENTRALIZED MESSAGE ASSEMBLER

Takashi Miyakawa; Tomio Kurita, and Akira Ichimura, all of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company Limited, Tokyo, Japan

Filed July 29, 1969, Ser. No. 845,816
Claims priority, application Japan, July 31, 1968, 43/54543
Int. Cl. H04m *3/50*
U.S. Cl. 340—172.5 8 Claims

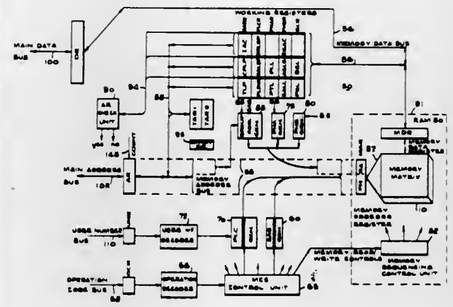


A message-reporting system is disclosed in accordance with the teachings of the present invention wherein compiler means located at a central office assembles a plurality of complete messages from message fragments stored on a recording medium in accordance with a plurality of message request signals generated by a plurality of subscribers. The message request signals correspond to predetermined conditions which may be established at a plurality of subscriber stations associated with a plurality of local offices. Each local office is comprised of means for storing the message request signals, means for reading out the appropriate stored message request signals in response to the occurrence of the predetermined conditions and means for transmitting the message request signals to the central office where the message request signals are used to control the compiler means.

3,643,225
MEMORY CONTROL SYSTEM

Rex Rice, Menlo Park, and William R. Smith, Mountain View, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,773
Int. Cl. G06f *9/20, 7/10*
U.S. Cl. 340—172.5 5 Claims

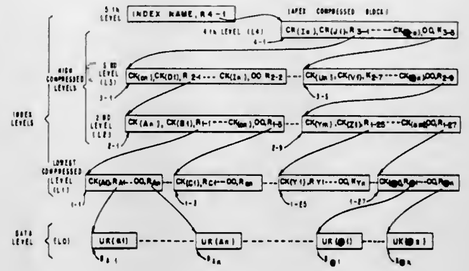


A memory control system for controlling the communication between a plurality of users and a memory is disclosed. The memory which is random-access memory, is organized in a unique way in that it is divided into pages, each page containing a plurality of groups, each group including a plurality of addressable locations. Each page also includes page control words and a separate group link word for each group. Fields of the page control words are used for page linking to form page lists and to indicate the availability of groups for assignment, while the fields of the group link words are used for the linking of groups to form strings of groups. The memory also includes a specific addressable location in which a system control word is stored. Various fields of the system control word are used in controlling the initial assignment of pages, the reclamation of pages no longer needed by users, and the dynamic reassignment of pages to users. The memory also includes a separate user control word for each user. Various fields of a user control word are used to point to a user's page list, to point to a page in which group space is available for assignment, and to point to reclaimed groups. The memory control system includes a plurality of generators for generating, at clock cycle time, the addresses of any one of the control words. The memory control system also includes logic circuitry for automatically executing any one of a plurality of coded operations, commanded by any of the users.

3,643,226
MULTILEVEL COMPRESSED INDEX SEARCH METHOD AND MEANS

Edward Loizides; Donald J. Lucas, both of Poughkeepsie, and George F. Steigerwalt, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1969, Ser. No. 836,825
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 42 Claims

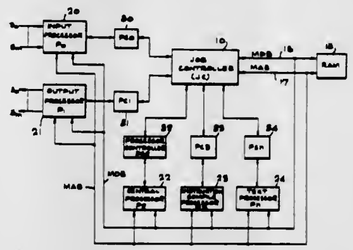


A method and means for searching a compressed index generated by the method and means disclosed in U.S. Pat. application Ser. No. 836,930 filed the same day as this application. Two types of searches are disclosed, (1) a multilevel search, and (2) a one-level search. The multilevel search begins at the highest, or apex level of a multilevel compressed index and searches one block at each level. The multilevel search ends after finding a pointer at the lowest level in the index. The pointer found at the lowest level addresses a data block containing the information searched for. The one-level search can enter the multilevel index at any level and serial search plural blocks for the correct pointer to a block at the next lower level.

3,643,227
JOB FLOW AND MULTIPROCESSOR OPERATION CONTROL SYSTEM

William R. Smith, Mountain View, and Rex Rice, Menlo Park, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sept. 15, 1969, Ser. No. 858,000
Int. Cl. G06f *9/19, 15/16*
U.S. Cl. 340—172.5 16 Claims



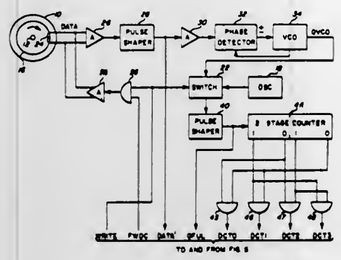
A hardware-oriented control system for use in a time-shared multiprocessor system is disclosed. The system controls the processing or flow of each requested processing operation or job, which typically requires the performance of processing tasks of several different processors. The control system also controls the operation of each processor by monitoring it and assigning a job thereto when the processor is found to be idle. The control system includes logic hardware necessary to form and modify a queue for each processor type, the queue including, by means of the contents of fields of special-purpose control words, all the jobs requiring the processing task of its associated processor type. The control system includes special-purpose clockable hardware which automatically responds to a signal from any processor which finished its task for a job previously assigned thereto, and modifies the processor's queue as well as adds, under defined conditions, the previously assigned job to the queue or queues of one or more other processors, whose processing tasks are required in the job's performance. The control system further includes special-purpose clockable hardware to assign a job to each idle or nonbusy processor from its respective queue.

3,643,228

HIGH-DENSITY STORAGE AND RETRIEVAL SYSTEM

James P. Lipp, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed Oct. 27, 1969, Ser. No. 869,698
Int. Cl. G11b *5/00*
U.S. Cl. 340—172.5 13 Claims



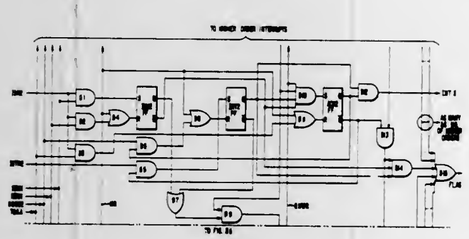
A high-density recording and reproducing system in which information is divided into groups of binary digits (bits) with different flux transition patterns recorded in associated storage cells to represent each group of bits and wherein each pattern is recorded and read independently of bits in adjacent cells resulting in reduced pulse crowding effects.

3,643,229

INTERRUPT ARRANGEMENT FOR DATA PROCESSING SYSTEMS

Thomas D. Stuebe, Arvada, Colo.; Pedro A. Lenk, Rochester, and John C. Gifford, Phelps, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,158
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 17 Claims



Interrupt process and circuit for data processing systems wherein interrupts are provided on a priority basis with suitable means for temporary inhibit of an interrupt being provided.

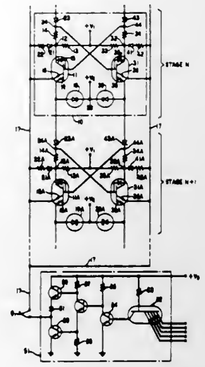
3,643,230

SERIAL STORAGE AND TRANSFER APPARATUS EMPLOYING CHARGE-STORAGE DIODES IN INTERSTAGE COUPLING CIRCUITRY

Dennis Joseph Lynes, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1970, Ser. No. 69,228
Int. Cl. G11c *11/34*; H03k *3/286*
U.S. Cl. 340—173 FF 13 Claims

In a serial digital storage arrangement bistable storage cells, each of which includes a pair of dual-emitter transistors, are diode coupled to a single-phase clock line and are concatenated via charge-storage diodes and Schottky barrier diodes. Signal currents are supplied primarily via the clock line through the coupling diodes and are substantially independent of standby current amplitudes. Application of a pulse to the clock line causes current to be diverted from the dual-emitter flip-flop transistors through the charge-storage diodes; and removal of the pulse from the clock line causes the charge stored in the charge-storage diodes to be conducted into one of the dual-emitter transistors of the next succeeding stage for setting the state thereof.

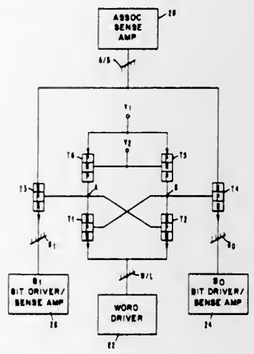


3,643,231

MONOLITHIC ASSOCIATIVE MEMORY CELL

Fred H. Lohrey, and Siegfried K. Wiedmann, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,975
Int. Cl. G11c *11/40*; H03k *3/286*
U.S. Cl. 340—173 FF 6 Claims



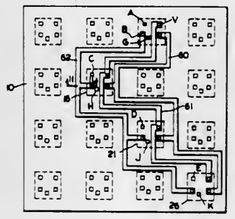
This specification discloses an associative memory storage cell having two cross-connected transistors with the word line for the cell connected to the common emitters of the two transistors and having each of the bases of the two transistors connected to the base of an input/output transistor. This emitter of each of these input/output transistors is connected to a separate bit line and the collectors of the input/output transistors are connected together and to the associative sense amplifier. To associatively search the memory, one of the bit lines is lowered. This causes the input/output transistor connected to the lowered bit line to conduct and thereby give a no-match signal to the associative sense amplifier if its base is connected to the base of the conducting one of the two cross-connected transistors and it causes that transistor to remain nonconductive and thereby give a match signal to the associative sense amplifier if it is connected to the base of the nonconducting one of the two cross-connected transistors.

3,643,232

LARGE-SCALE INTEGRATION OF ELECTRONIC SYSTEMS IN MICROMINIATURE FORM

Jack S. Kilby, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 420,031, Dec. 21, 1964, now abandoned. This application June 5, 1967, Ser. No. 645,539
Int. Cl. G11c *11/34*
U.S. Cl. 340—173 R 24 Claims



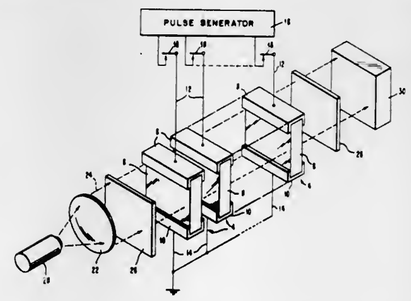
Large-scale integration of complex electronic circuitry and systems in semiconductor microminiature form comprising functional elements or cells at least partially in one surface of a semiconductor substrate and arranged in rows and columns with spaces between the rows, each cell including a plurality of first conductivity-type semiconductor regions in the substrate of opposite conductivity type in spaced-apart relation to form plural conduction paths and at least one semiconductor region of said first conductivity type extending under one of the spaces and being common to a conduction path in each of a pair of adjacent cells in a column. Also, disclosed is a multilayer connector pattern supported by the substrate and interconnecting the cells into an electronic system wherein the upper connector layer includes a supply line arranged to wind along the spaces in a serpentine fashion.

3,643,233

THREE-DIMENSIONAL OPTICAL READ-ONLY MEMORY

George J. Fan, San Jose, Calif., and James H. Greiner, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,319
Int. Cl. G11c *11/22*, *11/42*
U.S. Cl. 340—173.2 6 Claims



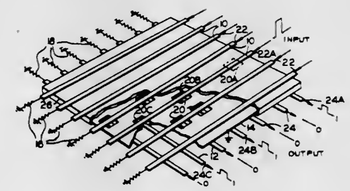
A three-dimensional optical read-only memory is composed of a stack of transparent plates composed of either ferroelectric or ferromagnetic materials wherein binary information is stored as domains in each plate. The stack of plates containing the domains allows a polarized source of light to traverse the stack and appear, to a detecting device, as a homogeneous source. When an electromagnetic field is applied across a single plate in the stack, the polarization of the domains in that plate is rotated, creating a birefringence in the material. The polarized source of light is now modulated by such particularly selected plate according to this particular bit pattern of domains. This pattern can be imaged onto an array of detectors. When the electromagnetic field is removed, the disturbed domains return to their original storage states so that the polarized interrogating light reappears as a homogeneous source to all detectors.

3,643,234

READ-ONLY MEMORY EMPLOYING STRIPLINES

Hiro Moriyasu, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 2, 1970, Ser. No. 15,568
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP 12 Claims



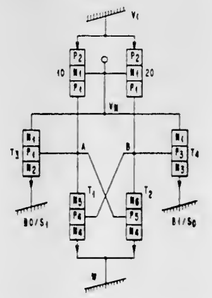
A read-only memory apparatus is described employing a plurality of stripline-type transmission lines. The input and output transmission lines are formed by signal conductors provided on the opposite sides of a common ground plane conductor. A plurality of openings are provided through the common ground plane at some of the intersections of the input and output signal conductors and such openings are positioned to produce a digitally coded output signal on the output signal conductors when an input signal applied to the input signal conductors crosses such openings.

3,643,235

MONOLITHIC SEMICONDUCTOR MEMORY

Horst H. Berger, Sindelfingen, and Sigfried K. Wiedmann, Esslingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

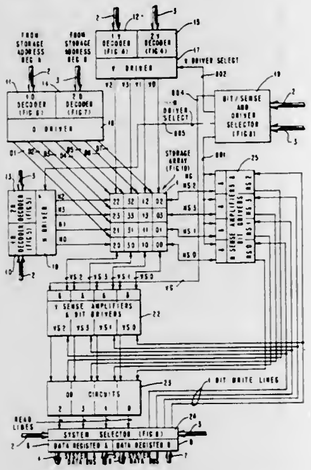
Filed Dec. 5, 1969, Ser. No. 882,575
Int. Cl. G11c *11/40*; H03k *3/281*
U.S. Cl. 340—173 FF 20 Claims



This specification discloses a storage cell which employs inversely operated and transverse transistors to reduce

storage cell size accessing times and power consumption when the cell is fabricated in monolithic form. Two cross-connected transistors are inversely operated so that they share a common emitter region with a separate base region and collector region for each of the cross-connected transistors. In this way, the transistors can be fabricated in a single diffusion region. The collector of each of the cross-connected transistors is connected to the collector of a load transistor of the opposite type transistor and to the base of an addressing transistor having its emitter connected to the sense line and its collector connected to the base of the load transistors. The two addressing and load transistors are formed in a single isolation zone with collector and base regions of the addressing transistors serving also as the base and collector regions respectively of the load transistors which are fabricated as transverse transistors with a common emitter region.

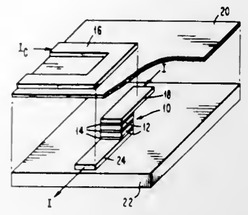
3,643,236
STORAGE HAVING A PLURALITY OF SIMULTANEOUSLY ACCESSIBLE LOCATIONS
Eugene Kolankowsky, Pleasant Valley; Robert F. McMahon, Poughkeepsie, and David J. Perlman, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,511
Int. Cl. G11c *15/00*
U.S. Cl. 340—173 R **6 Claims**



In a storage array wherein several locations are simultaneously accessed, each location includes a circuit settable to one of two conditions by signals on lines defining its position. Defining the storage position by three lines, "horizontal," "vertical" and "diagonal," each circuit may be selected by activating its diagonal line and either the horizontal or vertical line for that circuit. The storage cell is a solid-stage flip-flop with two cross-coupled active devices and additional active device for each of the three driving lines. Connections to each circuit through selected ones of the vertical and horizontal lines communicate information on the inactivated line.

3,643,237
MULTIPLE-JUNCTION TUNNEL DEVICES
Wilhelm Anacker, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,101
Int. Cl. G11c *11/44, 5/02*
U.S. Cl. 340—173.1 **9 Claims**

Switching and memory circuits which employ tunneling devices having nonlinearities are made more reliable by making each device a series arrangement of tunnel junctions. This built-in redundancy of each switching element eliminates problems due to frequent device short circuits, especially where there are thin tunnel barriers and the

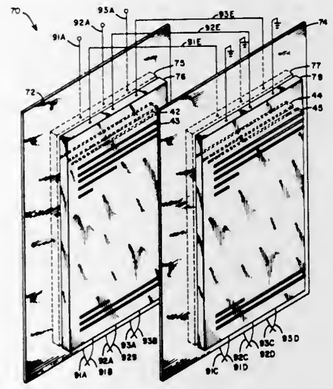


devices are operated under extreme temperature ranges. In a particular case, Josephson devices are used, each of which is a thin film structure having stacked junctions, i.e., a plurality of alternate layers of metal and tunnel barrier.

3,643,238
MAGNETIC DEVICES
Andrew H. Bobeck, Chatham, and Le Grand G. Van Uitert, Morris Township, Morris Co., both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Nov. 17, 1969, Ser. No. 877,154
Int. Cl. G11b *5/00*
U.S. Cl. 340—174 **7 Claims**

Local cobalt concentration inhomogeneities in bubble domain devices make possible a series of device designs in which various functions are expedited. These functions include bubble generation, bubble replication, bubble positioning and various logic functions. The exemplary materials are uniaxial rare earth and related orthoferrites in which small amounts of cobalt reduce anisotropy.

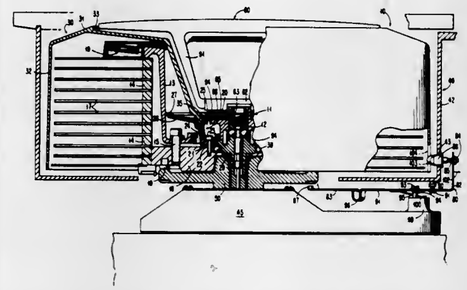
3,643,239
METHOD OF REDUCING BIT LINE TO BIT LINE COUPLED NOISE IN A PLATED WIRE MEMORY STACK
Thomas W. Mack; David P. Peretto, and Alden W. Allen, all of St. Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,578
Int. Cl. G11c *5/06, 11/04, 11/14*
U.S. Cl. 340—174 DC **7 Claims**



A method of transposing and interposing the bit lines of a plated wire bit line memory stack involving coupling the like-ordered bit lines of different plated wire arrays in alternate

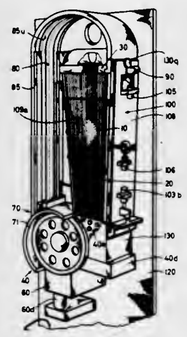
transposed and nontransposed configurations and then forming separate groups of the transposed and the nontransposed bit lines, each group, defining an ordered bit of a plurality of multibit words.

3,643,240
LOCKING MEANS FOR DISK PACK ASSEMBLY
Wilhelm G. Raiser, Baden Wurttemberg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 27, 1970, Ser. No. 41,034
Int. Cl. B65d *85/00;* **G11b** *23/02*
U.S. Cl. 340—174.1 C **19 Claims**



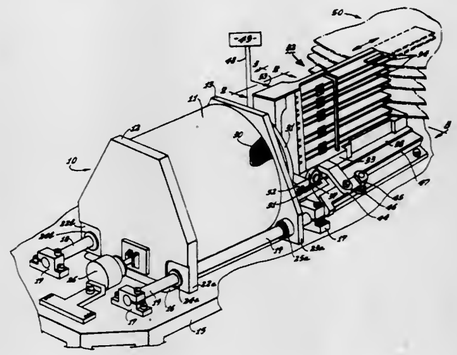
This invention teaches the combination in a magnetic disk storage file which comprises a disk pack assembly having a memory unit carrying rotatable locking means, a central support member, a plurality of magnetic disks and a first stationary engageable locking means; a dust cover enclosing the top and outer surfaces of the memory and including engaging means for engaging the first engageable locking means of the memory unit; a rotatable drive spindle for holding the disk pack assembly thereon, including second engageable means for locking the spindle to prevent rotary motion thereof; a rotatable handle coupled through the cover to the rotatable locking means; an actuatable spindle locking means for selectively engaging the second engageable means of the rotary drive spindle; and actuating means responsive to the dust cover when the disk pack assembly is positioned on the rotary spindle for actuating the spindle locking means to engage the second engageable means.

3,643,241
RANDOM-ACCESS INFORMATION STORE SYSTEM
Eugene H. Irasek, Los Angeles, Calif., assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 1, 1960, Ser. No. 12,032
Int. Cl. G11b *5/78, 23/12*
U.S. Cl. 340—174.1 C **47 Claims**



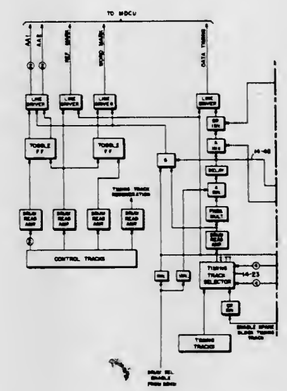
A random access memory using flexible strips removably hung in bins which strips are removed for transducing. Also details of the removing and tape transport system.

3,643,242
TRANSDUCER DISPLACEMENT CONTROL IN MOVABLE HEAD-TYPE STORAGE DISK SYSTEMS
Philip Stuart Bryer, Woodland Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed July 9, 1970, Ser. No. 53,500
Int. Cl. G11b *21/08;* **H02k** *41/02*
U.S. Cl. 340—174.1 C **4 Claims**



A plurality of transducers are positioned radially relative to a stack of disks, by means of a linear motor whose stator and voice coil are mounted on separate, movable carriages for relative, colinear displacement along low-friction paths, to inhibit transfer of momentum to stationary structure.

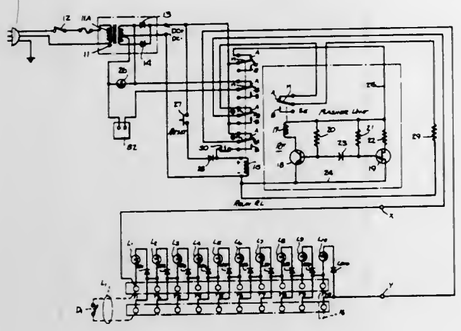
3,643,243
MEMORY SYSTEM HAVING ASSOCIATED PLURAL TIMING TRACKS AND DATA TRACKS
Wesley R. Johnson, and Jon J. Hamel, both of Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Continuation of application Ser. No. 597,371, Nov. 28, 1966, now abandoned. This application Nov. 26, 1969, Ser. No. 880,429
Int. Cl. G11b *15/12, 27/36*
U.S. Cl. 340—174.1 B **12 Claims**



A magnetic drum system that incorporates rigid read/write head mountings described as data blocks and spare blocks. Each block includes a timing track head, and an associated group of data track heads which are positioned at associated opposite ends of the block for minimizing skew and crosstalk error. Included is a bad-track memory for electrically switching to a timing track head and an associated group of

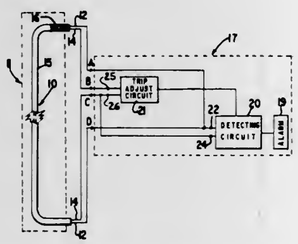
data track heads in the spare block when a bad-track on the magnetic drum arises under one of the data track heads in the data block.

3,643,244
FIRE AND SMOKE MONITORING AND ALARM SYSTEM
Marvin J. Levy, 2133 Kenwood Place, Bellmore, N.Y.
Filed May 26, 1969, Ser. No. 827,744
Int. Cl. G08b *17/00*
U.S. Cl. 340—227 **6 Claims**



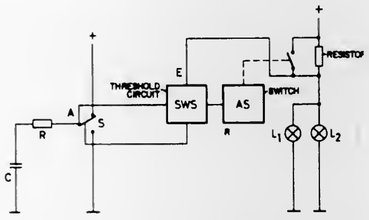
A monitoring and alarm system including a plurality of sensors located at various remote stations, each sensor being provided with a detector switch which is normally closed and which opens when any abnormal condition, such as fire or smoke is sensed. Each detector is connected by a two-wire line to a respective pair of terminals at a central console, across which is shunted an indicator lamp in series with a diode. The terminal pairs are connected in a series chain to a direct-current source, such that when all of the associated detector switches are closed, the chain is unbroken and the lamps are short circuited out of the chain, but when any detector is caused to open, the lamp associated therewith is then interposed in the chain and is energized through a flasher circuit to produce a pulsatory indication identifying the station responsible therefor.

3,643,245
DISCRETE HEAT-DETECTING SYSTEM USING A THERMISTOR DETECTING ELEMENT
Roger B. Jones, North Caldwell, and Raymond B. Smith, Wayne, both of N.J., assignors to Walter Kidde & Company, Belleville, N.J.
Filed Mar. 11, 1970, Ser. No. 18,460
Int. Cl. G08b *17/06*
U.S. Cl. 340—228 R **9 Claims**



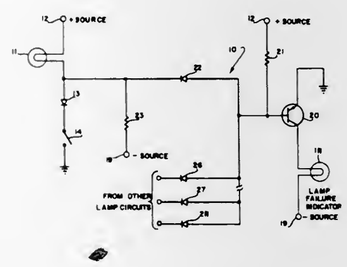
A heat detecting system of the type using an elongated heat-detecting element having material therein whose resistance changes in accordance with the temperature sensed by the element and an indicator which is actuated when a portion of the element is heated to a predetermined temperature causing said element to have a predetermined resistance value. The indicator is actuated by an instrument which measures the value of resistance of the material and an arrangement is provided to control the resistance value of the element at which the instrument actuates the indicator to compensate for changes in the resistance value of the element caused by the ambient environment.

3,643,246
MONITORING METHOD FOR BLINKING LAMPS AND THEIR FAILURE
Albrecht Gerlach, Emmendingen, and Rolf-Dieter Burth, Windenreute, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,490
Claims priority, application Germany, Apr. 25, 1969, P 19 21 034.5
Int. Cl. B60q *1/00*; **G08b** *21/00*
U.S. Cl. 340—251 **3 Claims**



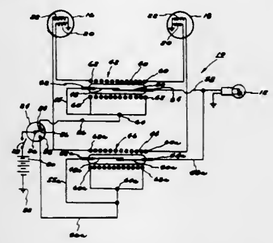
The monitoring of blinking lamps in motor vehicles is achieved by scanning, after passage of half of the dark period, a control voltage derived from the decreasing voltage of the dark period. If a lamp is defective the frequency of the oscillator will be raised.

3,643,247
APPARATUS FOR DETECTING OPEN-CIRCUIT CONDITION
David J. Ratcliffe, Morristown, N.J., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Dec. 22, 1969, Ser. No. 887,070
Int. Cl. G08b *21/00*
U.S. Cl. 340—251 **6 Claims**



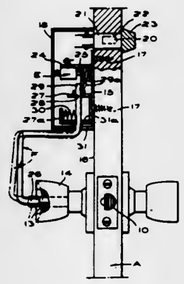
Apparatus for detecting an open-circuit condition in a circuit element such as an indicator lamp irrespective of whether the circuit is switched on or off. A trickle current flowing through the circuit element is interrupted if the element becomes open, and this trickle current controls a suitable indicator.

3,643,248
WARNING SYSTEM FOR INDICATING FAILURE OF ELECTRICAL CIRCUITS
Lawrence A. Schott, 15940 Warwick, Detroit, Mich.
Continuation-in-part of Ser. No. 814,359, Apr. 8, 1969
Filed Oct. 31, 1969, Ser. No. 873,010
Int. Cl. G08b *21/00*; **B60q** *1/24*, *1/04*
U.S. Cl. 340—253 B **3 Claims**



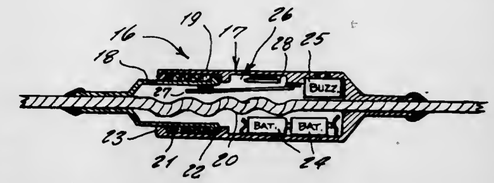
A warning system for vehicles such as automobiles and the like, to indicate when one of at least two lamps of the vehicle is inoperative. In a preferred embodiment of the present invention a dual winding coil is disposed in separate circuits connecting a pair of electrical lamps to a source of electrical energy. One of the dual windings of the coil connected in one circuit creates an electromagnetic field and the other winding in the other circuit creates an electromagnetic field cancelling the first field. A warning device such as an indicator electrical bulb, for example, positioned proximate the operator of the vehicle, is connected to the source of electrical energy by a switching device disposed within the coil. The switching device comprises a pair of movable contact members normally maintained in open position and adapted to engage one another to connect the indicator bulb to the source of electrical energy in response to an electromagnetic field. Thus, when both lamps are operative the two electromagnetic fields cancel one another and the switching device remains open. When current flows through one winding of the coil changes due to a lamp failure, the electromagnetic field created by the remaining current flow closes the switching devices and thereby activates the warning device.

3,643,249
WARNING DEVICE FOR INDICATING LOCKED POSITION OF DOOR
Ralph E. Haywood, 306 Aviador Avenue, Millbrae, Calif.
Filed Mar. 16, 1970, Ser. No. 19,659
Int. Cl. G08b *13/06*
U.S. Cl. 340—274 **4 Claims**



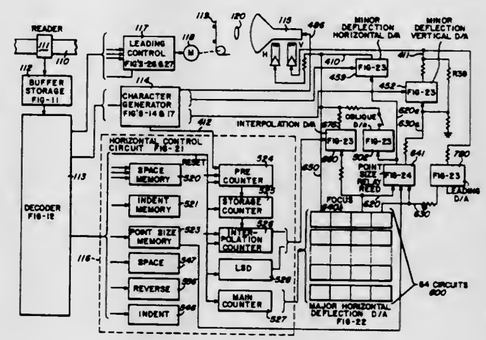
A warning device for indicating locked position of door wherein a light bulb is mounted in a position so that its light may be seen from the exterior of the door. An electrical circuit is provided for the bulb and it includes a switch operated by a swingable arm, the arm engaging with a movable member of a door-locking mechanism and movable by the latter to close the switch and thus illuminate the bulb when the door is locked. However, the arm is movable into a position to open the switch and extinguish the light when the member is moved into door-unlocked position.

3,643,250
THEFT DETERRENT FOR OFFICE MACHINES AND SMALL FACTORY TOOLS
Paul F. Sander, 1300 Lakeside Drive, Wantagh, N.Y.
Filed Dec. 8, 1970, Ser. No. 96,016
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **1 Claim**



A cable device for securing office machines and portable factory tools so to eliminate theft thereof, the device comprising a strong metal cable that cannot be readily cut, and the opposite ends of the cable having securement means that cannot be easily broken off either from the cable or the device to which they are attached. An alarm device responsive to tensioning of the cable is installed around an intermediate portion of said cable.

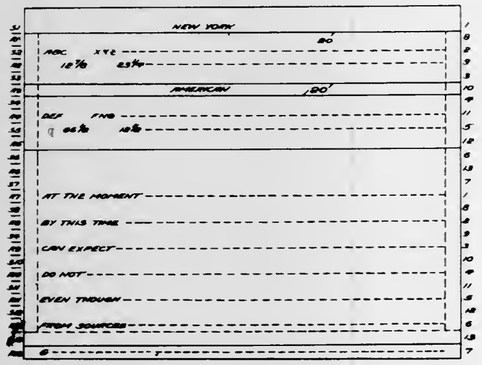
3,643,251
CONTROL OF CONFIGURATION SIZE AND INTENSITY
Edwin R. Kolb; John F. Blaha, both of Cleveland, and Webster C. Roberts, South Euclid, all of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Original application Nov. 3, 1966, Ser. No. 591,734, now Patent No. 3,588,870. Divided and this application June 17, 1970, Ser. No. 47,097
Int. Cl. G08b *5/22*
U.S. Cl. 340—324 A **9 Claims**



Apparatus is provided for displaying configurations on a surface, such as the face of a cathode-ray tube, with a energy beam, such as a cathode-ray tube electron beam. The beam is deflected with reference to first and second perpendicularly related axes in response to positioning signals for positioning the beam on the surface at selected positions in accordance with position command signals. A control circuit provides configuration signals for sequentially positioning the beam relative to the two axes to provide a plurality of incre-

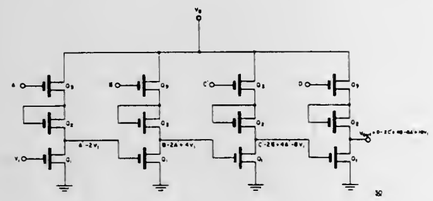
mentally spaced images which, in turn, define a configuration. The magnitude of the configuration signals is dependent on the selected position, and a configuration size control circuit serves, in response to size command signals, to change the magnitude of the configuration signals and thereby change the size of the configuration.

3,643,252
VIDEO DISPLAY APPARATUS
Richardson S. Roberts, Jr., Cherry Hill, N.J., assignor to Ultronic Systems Corp., Mount Laurel, N.J.
Filed Aug. 1, 1967, Ser. No. 657,664
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **30 Claims**



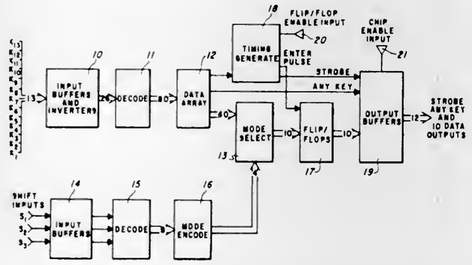
Coded characters from a plurality of input sources are stored in different intervals of a recirculating memory, each interval containing the characters for a row of the display. Characters for a display row are loaded into buffer register means which is then recirculated and the contents encoded during successive recirculations to produce signals representing the portions of the characters to be displayed on respective lines of the display row. Information from one source is displayed in the plurality of rows which are upshifted to rows thereabove and new information displayed in the bottom row, by delaying the vertical sweep relative to said encoding during upshift. Information from another source is displayed in rows which do not upshift, by delaying the decoding so that it remains unchanged with respect to the vertical sweep.

3,643,253
ALL-FET DIGITAL-TO-ANALOG CONVERTER
Hans G. Blank, New Rochelle, and Richard M. Greene, Smithtown, both of N.Y., assignors to GTE Laboratories Incorporated
Filed Feb. 16, 1970, Ser. No. 11,458
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **11 Claims**



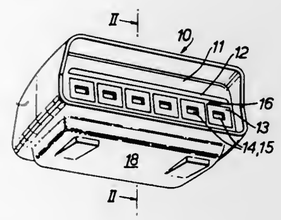
A digital-to-analog converter apparatus which receives a plurality of input voltages representative of the digits of a number and generates an analog voltage of the number. The apparatus includes a plurality of coupled voltage difference amplifiers, with one amplifier being provided for each digit of the number. The amplifiers, which perform successive multiplication and subtraction operations upon the input voltages, are ordered in the same sequence as the digits of the number. Each amplifier consists of a plurality of substantially identical field-effect devices connected in a series arrangement.

3,643,254
KEYBOARD ENCODER SYSTEM
Robert J. Proebsting, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 18, 1970, Ser. No. 20,686
Int. Cl. H04l *17/00;* **H03k** *13/24*
U.S. Cl. 340—347 DD **31 Claims**



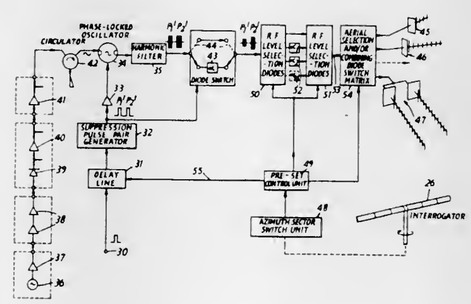
An encoder system provides inexpensive means for reducing the number of output connections from a keyboard, wherein each character key provides only two output signals. Each of the output signals from a character key is connected to only one of the inputs of the encoder system for the transmission of information thereto, and two or more additional outputs from shift keys are transmitted to separate shift inputs of the encoder representing, for example, alphabetical and numeric characters, respectively. One depression of any two character keys causes a digital default signal and the encoder treats the condition as if no keys were depressed. The output from the encoder is a binary signal which is transmitted to other peripheral equipment such as the central processor or memory buffer of a computer system.

3,643,255
PLURAL COLOR LAMP INDICATOR
Dominic Paul Edmund Barnard, Witney, England, assignor to Smith Industries Limited, London, England
Filed Sept. 30, 1970, Ser. No. 76,824
Claims priority, application Great Britain, Oct. 3, 1969, 48,729/69
Int. Cl. G09f *9/00*
U.S. Cl. 340—381 **9 Claims**



Indicator apparatus comprising a plurality of light bulbs, conveniently capless light bulbs, each of which can emit a primary light beam to a common region and a second light beam to an individual region associated with that particular light bulb. The primary light beam of some of the light bulbs has a first color, e.g. red, while the primary light beam of others of the light bulbs has a second color, e.g. yellow. The secondary light beam of all the light bulbs has a third color, e.g. blue or green, imparted to it by a filter which is substantially opaque to stray or unwanted light from the first or second colored primary light beam so as to avoid a false or confusing visual indication being obtained from the apparatus.

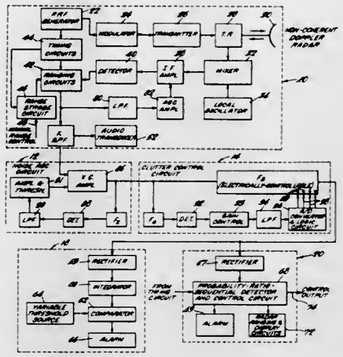
3,643,256
SECONDARY RADAR SYSTEM
Philip Collinson Owen, Harlow, England, assignor to A. C. Cossor Limited, Harlow, Essex, England
Filed Mar. 3, 1970, Ser. No. 16,146
Claims priority, application Great Britain, Mar. 4, 1969, 11,569/69
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **8 Claims**



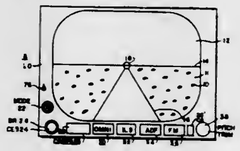
The ground station of a secondary radar system is provided with improved means for preventing transponder replies being triggered via reflecting surfaces. A special pair of reflection suppression pulses are transmitted directively in fixed azimuthal directions only, the second pulse being the larger, thereby generating a suppression gate in a transponder receiving these pulses. The transmission of these pulses is preferably made dependent on the azimuthal angle of the scanning aerial (FIG. 5).

3,643,257
DOPPLER RADAR AUTOMATIC SIGNAL DETECTION APPARATUS
Don N. Thomson, King of Prussia; James J. Connolly, Center Square, and Kenneth K. Zeiger, Morrisville, all of Pa., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed Sept. 10, 1969, Ser. No. 856,620
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **4 Claims**

The electrical output of a noncoherent doppler radar is applied to a noise AGC system which varies the channel gain so as to maintain substantially constant the level of random noise, thereby counteracting the noise-level distorting effects of AGC in the radar I.F. amplifier. Variations in the radar output due to changes in strength or spread of clutter signals are reduced by a clutter control circuit including a self-adapting filter which automatically changes its lower-frequency cutoff skirt so as to increase the attenuation of clutter signals when the energy of the interfering clutter-signal components tends to increase. After passing through the noise AGC circuit and clutter control circuit in series, the energy of the resultant signal varies substantially only due to the presence or absence of desired moving-target-produced received signals, and is applied to an energy-responsive threshold circuit to produce automatically an output signal indicative of moving target presence or absence. Either the noise AGC circuit or the clutter control circuit can be used by itself without the other.



3,643,258
ELECTRONIC GENERATOR FOR CONTACT AND ANALOG AND COMMAND INFORMATION
George H. Balding, Los Altos, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.
Continuation of application Ser. No. 378,892, June 29, 1964, now abandoned. This application June 30, 1969, Ser. No. 841,684
Int. Cl. G01s *1/18*
U.S. Cl. 343—108 R **18 Claims**

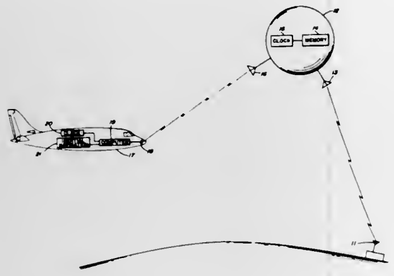


A display system for an aircraft including an electronic generator circuit for generating waveform signals which provide a pointer-marker on a cathode-ray tube, one end of which is normally positioned relative to a fixedly positioned reference mark. Various modes of operation are provided. In the compass mode, selected means provide signals to laterally displace the one end of the marker with deviation of the aircraft heading from a selected heading. In the omni mode, means responsive to the omni signals displace one end of the marker relative to the fixed reference with deviation of the aircraft heading from a selected heading, and effect lateral displacement of a second end of the marker with deviation of the aircraft from a selected track. A "to-from" symbol generator circuit is operative with the marker generator circuit to provide "to-from" information on the display. Crab means provide signals which adjust the pointer-marker on the cathode-ray tube display to the heading to be followed for crabbing purposes.

3,643,259
NAVIGATION SATELLITE SYSTEM EMPLOYING TIME SYNCHRONIZATION
Ronald S. Entner, 8148 Lake Park Drive, Alexandria, Va.
Filed Feb. 20, 1970, Ser. No. 15,824
Int. Cl. G01s *11/00*
U.S. Cl. 343—112 R **7 Claims**

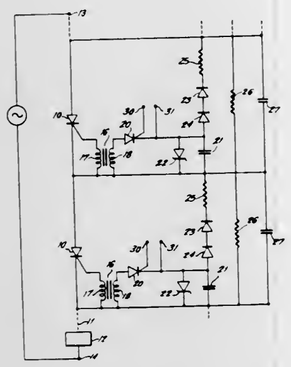
A system to navigate aircraft employing an earth satellite emitting stored signals from its memory device at predeter-

mined times, controlled by a precision clock. The aircraft desiring navigation aid, having an atomic clock synchronized with the satellite's, can thus calculate the propagation delay and the distance travelled by the signal. A computer aboard the aircraft generates a mathematical representation of a sphere, the radius being equal to the distance travelled by the satellite signal. Employing an inertial navigation set linked to



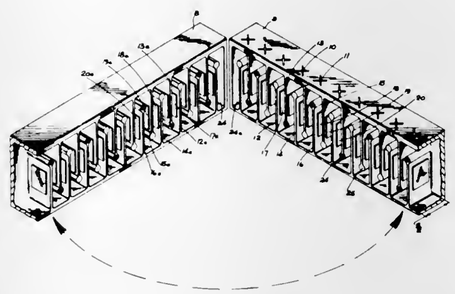
the computer, the computer generates two additional spheres, each displaced from the previous sphere by the distance the aircraft travelled prior to receiving the succeeding satellite transmission. The intersection point of the three spheres is the location of the satellite. Knowing the satellite trajectory in advance, the aircraft can thus determine its position with respect to the earth.

3,643,260
REMOTELY CONTROLLED FIRING CIRCUIT FOR SIMULTANEOUS FIRING OF SERIES DEVICES
Stephen Clarke, Westerham, England, assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Feb. 24, 1970, Ser. No. 13,312
Int. Cl. H03k *17/00;* **H04b** *1/22*
U.S. Cl. 343—225 **6 Claims**



The control electrodes of a plurality of series thyristors are connected to a radio receiver and simultaneously receive a firing impulse when a remote transmitter generates a firing signal. One or more of the devices may be arranged at high potential above ground and are provided with local power supplies for their respective control electrode circuits.

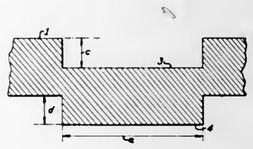
3,643,261
APPARATUS AND METHOD OF COMPENSATING A LONG HIGHLY DISPERSIVE TRAVELING WAVE TRANSMISSION LINE
Earl L. Kenworthy, Los Angeles, and Russell R. Hibbs, West Covina, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,044
Int. Cl. H01q *13/10*
U.S. Cl. 343—771 **6 Claims**



A method and structure for correcting and linearizing the phase distribution along the waveguide transmission line feed of a long, highly dispersive, slow-wave, N-element antenna array. The method involves the phase probing of the individual radiating elements of a linear array formed by slotting a serpentine waveguide feed. This probing is carried out in predetermined equal increments of Y-elements each.

The measured phase over each of the increments of Y-elements is subtracted from a theoretical or reference phase desired at the predetermined element and the phase error (Δ_F) thus determined is divided by Y. Individual dielectric panels are affixed to the serpentine broad internal walls ("*a*" dimension walls). Enough panels are inserted between the radiators of each adjacent pair to provide a $-\Delta\phi/Y$ phase shift. The process is repeated N/Y times for each linear array. A two-dimensional array can be assembled from M of these linear arrays, with each linear array having equal phase distribution characteristics overall and among its N-elements.

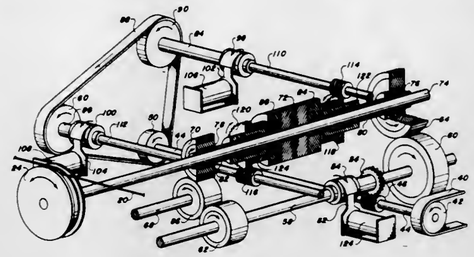
3,643,262
MICROSTRIP AERIALS
Roger Dumanchin, Paris, France, assignor to Compagnie Generale de Telegraphie Sans Fil, France
Filed Nov. 24, 1959, Ser. No. 855,234
Claims priority, application France, Dec. 5, 1958, 780929
Int. Cl. H01q *1/48*
U.S. Cl. 343—846 **4 Claims**



A microstrip aerial having a plurality of equally spaced

radiating discontinuities obtained by laterally shifting the edges of the strip.

3,643,263
RECIPROCATING SYSTEM FOR RECORDING ASSEMBLY
Reginald Henry Fowler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 20, 1970, Ser. No. 39,944
Int. Cl. G01d *15/24*
U.S. Cl. 346—139 R **9 Claims**



Electrographic-recording apparatus including a recording assembly positively driven in a reciprocating manner both in a high-speed mode and an incremental mode.

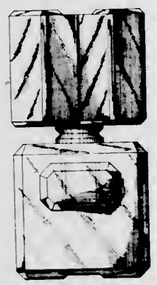
DESIGNS

FEBRUARY 15, 1972

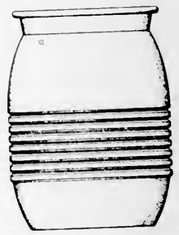
222,959
UTILITY KNIFE HANDLE
Terence Gerald Riley, Sheffield, England, assignor to Stanley Works (Great Britain) Limited, Sheffield, England
Filed May 11, 1970, Ser. No. 22,907
Claims priority, application Great Britain Nov. 12, 1969
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—107



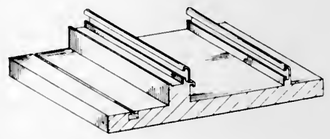
222,960
COMBINED BOTTLE AND CAP THEREFOR
Burt S. Avedon, Boston, and Richard A. Hussey, Watertown, Mass., assignors to The Gillette Company, Boston, Mass.
Filed Dec. 10, 1970, Ser. No. 26,386
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



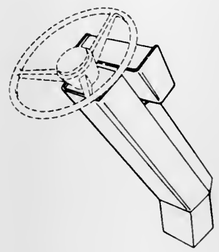
222,961
PACKAGING CUP OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 12, 1970, Ser. No. 21,880
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



222,962
DOUBLE HUNG SILL MEMBER
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,974
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



222,963
COMBINATION STEERING POST AND INSTRUMENT PANEL
Darrell C. Fuller, Niles, Mich., assignor to Clark Equipment Company
Filed Dec. 3, 1970, Ser. No. 26,264
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



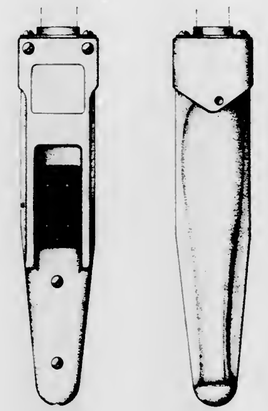
222,964
FISHING ROD HOLDER
Luther A. Woodbury, 1340 Garden Ave., Waterloo, Iowa 50701
Filed Aug. 20, 1970, Ser. No. 24,602
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



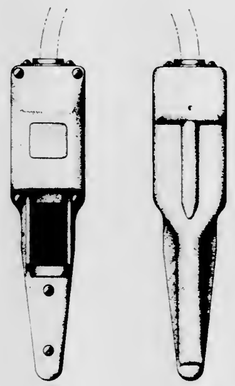
222,965
TOILET SEAT
Alexander Kira and George R. Scheuring, Ithaca, N.Y., assignors to American Standard Inc., New York, N.Y.
Filed Sept. 15, 1970, Ser. No. 25,017
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



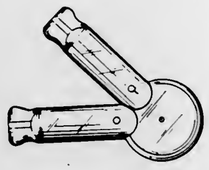
222,966
PENDANT HOIST CONTROL
Harold V. Hawkins and Ralph A. Dick, Williamsville, N.Y., and Edgar A. Bongort, Southfield, Mich., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Aug. 21, 1970, Ser. No. 24,629
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



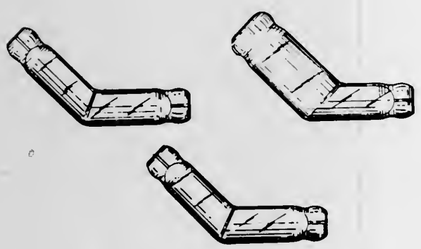
222,967
PENDANT HOIST CONTROL
Harold V. Hawkins and Ralph A. Dick, Williamsville, N.Y., and Edgar A. Bongort, Southfield, Mich., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Aug. 21, 1970, Ser. No. 24,630
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



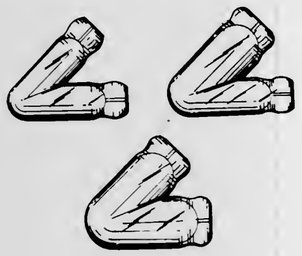
222,968
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Dec. 29, 1970, Ser. No. 26,686
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



222,969
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Feb. 1, 1971, Ser. No. 111,779
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



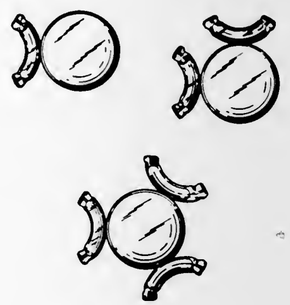
222,970
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Feb. 1, 1971, Ser. No. 111,780
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



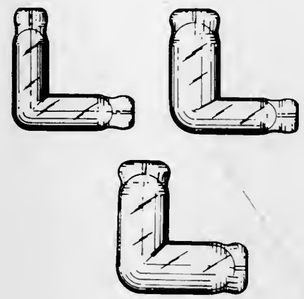
222,971
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,784
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



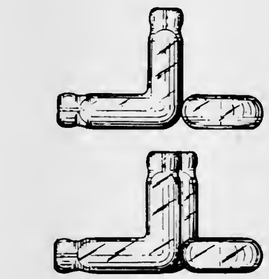
222,972
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,785
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



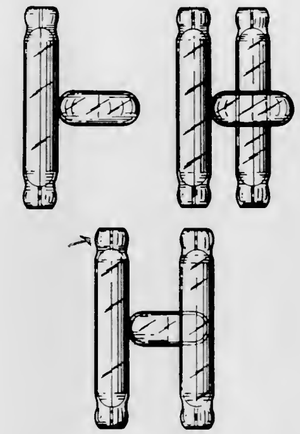
222,973
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,786
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



222,974
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,787
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



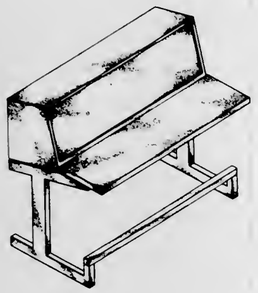
222,975
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,788
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



222,976
REED SWITCH ENVELOPE
Bernard Edward Shlesinger, Jr., 9411 MacKlin Court, Alexandria, Va. 22309
Filed Jan. 28, 1971, Ser. No. 110,789
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



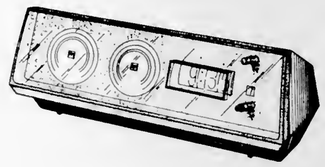
222,977
WORK DESK OR SIMILAR ARTICLE FOR USE IN A HOSPITAL OR THE LIKE
Ralph E. Schubert and Alexander Bally, Pittsburgh, Pa., assignors to CGR Medical Corporation, Cheverly, Md.
Filed Sept. 24, 1970, Ser. No. 25,178
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—7



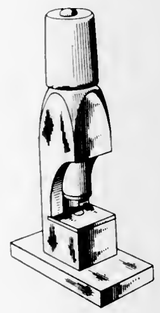
222,978
GAME TARGET
Marcello Gustavo Vinas, Salta 2331, Mar del Plata, Buenos Aires, Argentina
Filed Feb. 25, 1970, Ser. No. 21,621
Claims priority, application Argentina Aug. 26, 1969
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



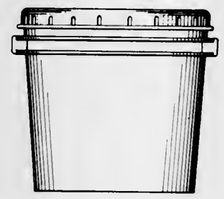
222,979
CLOCK RADIO
Kazuhiro Hirayama, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 29, 1970, Ser. No. 26,691
Claims priority, application Japan June 29, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



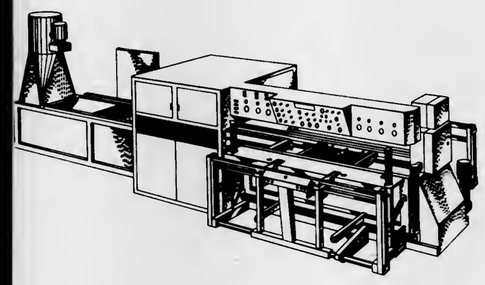
222,980
NUT CRACKER
Maurice M. Pike, 1827 E. Home Ave., Fresno, Calif. 93703
Filed July 15, 1970, Ser. No. 23,958
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—1



222,981
COMBINED BUCKET AND CLOSURE THEREFOR
George Yates, Jr., Glendale, Calif., assignor to Growth International Industries Corporation, Cleveland, Ohio
Continuation-in-part of design application Ser. No. 19,063, Sept. 8, 1969. This application Jan. 2, 1970, Ser. No. 20,736
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D49—29



222,982
SPRAY PAINTING MACHINE
Harry Szczepanski, 900 Clancy NE., Grand Rapids, Mich. 49503
Filed Oct. 8, 1970, Ser. No. 25,389
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



222,983
TENT STAKE
Alden H. Simpson, 54 Pine Grove St., Springfield, Mass. 01119
Filed Jan. 27, 1971, Ser. No. 110,359
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3



222,984
MOTORCYCLE LUGGAGE CARRIER
John H. Heltsen, 1091 Terrace Drive, Long Beach, Calif. 90807, and Frank G. Stone, 6655 Orange, Apt. D, North Long Beach, Calif. 90805
Filed Jan. 20, 1971, Ser. No. 108,255
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF FEBRUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Kabi: *See—*
Eriksson, Sven Axel, 3,642,450.

Abbott, Austin C., Jr., to Sherwin-Williams Company. Fire retardant polyesters and articles made therefrom. 3,642,944, Cl. 260-864.

Abbott Machine Co., Inc.: *See—*
Abbott, Samuel L., 3,642,216.

Abbott, Samuel L., to Abbott Machine Co., Inc. Device for applying tension to a running yarn. 3,642,216, Cl. 242-35.5

Abegg, Jean-Louis: *See—*
Kalopissi, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe,3,642,429.

Abitibi St. Anne Paper Ltd.: *See—*
Hamilton, Douglas D.; and Boivin, Joseph J. R., 3,642,041.

Accralube Company: *See—*
Caplan, Stanley J., 3,642,625.

Adamant Laboratories(Proprietary) Limited: *See—*
Pope, Noel C.; Kempis, Edward B.; and O'Donovan, Kevin H. J., 3,642,412.

Adams, Anthony L.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Rilly P., to Texas Instruments, Incorporated. Method of ball bonding with an automatic semiconductor bonding machine. 3,641,660, Cl. 29-471.1

Adams, Jack J.: *See—*
Stafford, Owen L.; and Adams, Jack J.,3,642,949.

Adams, James E.: *See—*
Wysooki, Joseph J.; Adams, James E.; and Madrid, Robert W.,3,642,348.

Adams, John S., Jr.; and Gerwitz, David L., to Monsanto Company. 2,5-Disubstituted α-iodoacetanilides. 3,642,895, Cl. 260-562.

Adams, Ronald Alfred Charles, to Howson Algraphy Limited. Apparatus for applying a surface coating of a liquid to a sheet. 3,641,905, Cl. 95-89.

Addante, Michael S. Rubber shims for squeaky beds. 3,641,599, Cl. 5-309.

Adkins, Joel E., to Otis Engineering Corporation. Jar stroke accelerator for pump down well tool. 3,642,069, Cl. 166-301.

Adler, Alan J., to Texas Instruments, Incorporated, mesne. Alignment system using an electronic scanner. 3,643,018, Cl. 178-6.8

Adler, Imre; Felts, Louis; and Klucheff, Nicholas S., to Hewitt-Robins Incorporated. Rotary plow feeder. 3,642,153, Cl. 214-17.

Admiral Corporation: *See—*
Jarosz, George J., 3,643,179.

Ady, Roger R. Transmitter producing in recurrent cycles time-spaced varied-power propagatable pulse-like signals. 3,643,162, Cl. 325-164.

Aelterman, Marcel Frans; and Stievenart, Emile Frans, to Gevaert-Agfa N.V. Photographic processing apparatus. 3,641,911, Cl. 95-94.

Agfa-Gevaert Aktiengesellschaft: *See—*
Bestenreiner, Friedrich; and Deml, Reinhold, 3,641,895.
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF FEBRUARY, 1972

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Sawyer, Bruce A. Magnetic positioning device. Re. 27,289, 2–15–72, Cl. 318—38.

Universal Water Corp.: *See*—
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Wilkus, Edward V., and A. Berger, to General Electric Co. Aryl ketone containing organosilicon materials. Re. 27,281, 2–15–72, Cl. 260—46.50 y.

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Columbus McKinnon Corp.: *See*—
Hawkins, Harold V., Dick, and Bongort. 222,966.
Hawkins, Harold V., Dick, and Bongort. 222,967.

Dallaire, Raymond M. Double hung sill member. 222,962, 2–15–72, Cl. D13—6.

Dick, Ralph A.: *See*—
Hawkins, Harold V., Dick, and Bongort. 222,966.
Hawkins, Harold V., Dick, and Bongort. 222,967.

Edwards, Bryant, to Illinois Tool Works Inc. Packaging cap or the like. 222,961, 2–15–72, Cl. D9—216.

Fuller, Darrell C., to Clark Equipment Co. Combination steering post and instrument panel. 222,963, 2–15–72, Cl. D14—6.

Gillette Co., The: *See*—
Avedon, Burt S., and Hussey. 222,960.

Growth International Industries Corp.: *See*—
Yates, George, Jr. 222,981.

Hawkins, Harold V., R. A. Dick, and E. A. Bongort, to Columbus McKinnon Corp. Pendant hoist control. 222,966, 2–15–72, Cl. D26—13.

Hawkins, Harold V., R. A. Dick, and E. A. Bongort, to Columbus McKinnon Corp. Pendant hoist control. 222,967, 2–15–72, Cl. D26—13.

Heltzen, John H., and F. G. Stone. Motorcycle luggage carrier. 222,984, 2–15–72, Cl. D90—3.

Hirayama, Kazuhiro, to Hitachi, Ltd. Clock radio. 222,979, 2–15–72, Cl. D42—7.

Hitachi, Ltd.: *See*—
Hirayama, Kazuhiro. 222,979.

Hussey, Richard A.: *See*—
Avedon, Burt S., and Hussey. 222,960.

Illinois Tool Works Inc.: *See*—
Edwards, Bryant. 222,961.

Kira, Alexander, and G. R. Scheuring, to American Standard Inc. Toilet seat. 222,965, 2–15–72, Cl. D23—71.

Pike, Maurice M. Nut cracker. 222,980, 2–15–72, Cl. D44—1.

Riley, Tarence G., to Stanley Works (Great Britain) Ltd. Utility knife handle. 222,959, 2–15–72, Cl. D8—107.

Scheuring, George R.: *See*—
Kira, Alexander, and Scheuring. 222,965.

Schubert, Ralph E., and A. Bally, to CGR Medical Corp. Work desk or similar article for use in a hospital or the like. 222,977, 2–15–72, Cl. D33—907.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,968, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,969, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,970, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,971, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,972, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Deed switch envelope. 222,973, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,974, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,975, 2–15–72, Cl. D26—13.

Shlesinger, Bernard E., Jr. Reed switch envelope. 222,976, 2–15–72, Cl. D26—13.

Simpson, Alden H. Tent stake. 222,983, 2–15–72, Cl. D88—93.

Stanley Works (Great Britain) Ltd.: *See*—
Riley, Terence G. 222,959.

Stone, Frank G.: *See*—
Heltzen, John H., and Stone. 222,984.

Szczepanski, Harry. Spray painting machine. 222,982, 2–15–72, Cl. D55—1.

Vinas, Marcalo G. Game target. 222,978, 2–15–72, Cl. D34—5.

Woodbury, Luther A. Fishing rod holder. 222,964, 2–15–72, Cl. D22—22.

Yates, George, Jr., to Growth International Industries Corp. Combined bucket and closure therefor. 222,981, 2–15–72, Cl. D49—29.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 15, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2		283	3,642,452	**CLASS 43**		**CLASS 68**		512	3,641,836	42	3,641,901
224R	3,641,589	294	3,642,453	17	3,641,693	22	3,641,762	513	3,641,837	53.3	3,641,902
CLASS 3		297	3,642,454	19	3,641,695	39.51H	3,641,763	530	3,641,838	64A	3,641,903
1	3,641,590	304	3,642,455	24	3,641,696	52R	3,641,764	574	3,641,839	66	3,641,904
'	3,641,591		3,642,456	26	3,641,697	53A	3,641,765	609	3,641,840	89D	3,641,906
36	3,641,592	**CLASS 24**		42.48	3,641,698	262	3,641,766	615	3,641,841	89R	3,641,905
CLASS 4		23W	3,641,629	43.1	3,641,699	274	3,641,767	665K	3,641,842		3,641,907
172.17	3,641,594	68	3,641,630	43.12	3,641,700	303	3,641,768	751	3,641,843		3,641,908
172.19	3,641,593	84C	3,641,631	**CLASS 44**		310	3,641,769	752	3,641,844		3,641,909
	3,641,595	153BP	3,641,632	15	3,642,458	**CLASS 61**		867	3,641,845	90.5	3,641,910
173	3,641,596	191	3,641,633	62	3,642,459	1F	3,641,771	**CLASS 75**		94R	3,641,911
255	3,641,597	205.15H	3,641,634	**CLASS 46**		1	3,641,770	.5	3,642,463	95	3,641,912
CLASS 5		**CLASS 26**		14	3,641,701	2	3,641,772	2	3,642,464	**CLASS 96**	
100	3,641,598	2E	3,641,635	120	3,641,702	35	3,641,772	4	3,642,465	1.5	3,642,470
309	3,641,599	**CLASS 28**		232	3,641,703	41A	3,641,773	51	3,642,466	1.8	3,642,471
317R	3,641,600	1.6	3,641,637	243LV	3,641,704	46.5	3,641,774	101	3,642,467	27H	3,642,472
345	3,641,601	4N	3,641,636	**CLASS 48**		63	3,641,775	123J	3,642,468	29	3,642,473
CLASS 8		72.2R	3,641,638	214	3,642,460	69	3,641,776	171	3,642,469	30	3,642,474
10.1	3,642,423	**CLASS 29**		**CLASS 49**			3,641,777	175.5	Re.27,286	35	3,642,475
21	3,642,424	1.2	3,641,639	256	3,641,705	72.1	3,641,778	**CLASS 81**		38	3,642,476
25	3,642,425	25.42	3,641,640	324	3,641,706	72.3	3,641,779	90F	3,641,846	45.2	3,642,477
39	3,642,426	33M	3,641,641	462	3,641,707	72.4	3,641,780	111	3,641,847	48R	3,642,479
41B	3,642,427	95.1	3,641,642	**CLASS 51**		**CLASS 62**		121B	3,641,848	48	3,642,478
116.3	3,642,428	110.5	3,641,643	33R	3,641,708	80	3,641,781	**CLASS 82**			3,642,480
127.51	3,642,429	156.8CF	3,641,644	34D	3,641,709	177	3,641,782	1	3,641,849	50PT	3,642,481
CLASS 9		196.5	3,642,457	90	3,641,710	343	3,641,783	36	3,641,850	53	3,642,482
8P	3,641,602	200A	3,641,645	100R	3,641,711	396	3,641,785	73	3,641,851	75	3,642,483
CLASS 12		203B	3,641,647	122	3,641,712	476	3,641,784	**CLASS 83**		90	3,642,484
146C	3,641,603		3,641,648	165.87	3,641,714	**CLASS 65**		1	3,642,461	100	3,642,485
CLASS 14			3,641,651	165.88	3,641,713	112	3,642,462	7	3,641,853	111	3,642,486
71	3,641,604	203D	3,641,649	204	3,641,715	242	3,642,462	18	3,641,854	115P	3,642,487
CLASS 15			3,641,650	241R	3,641,716	**CLASS 66**		171	3,641,855	**CLASS 98**	
1.5	3,641,605		3,641,652	284	3,641,717	50B	3,641,786	295	3,641,856	40VM	3,641,913
21E	3,641,606	203R	3,641,646	356	3,641,718	50R	3,641,787	322	3,641,857	66	3,641,914
50C	3,641,607	208R	3,641,653	402	3,641,719	60	3,641,788	337	3,641,858	121	3,641,915
88	3,641,608	212D	3,641,654	**CLASS 52**		96	3,641,789	566	3,641,859	**CLASS 99**	
112	3,641,609	243	3,641,655	122	3,641,720	140S	3,641,790	686	3,641,860	2R	3,642,489
114	3,641,610	243.57	3,641,656	174	3,641,727	**CLASS 68**		**CLASS 84**		2	3,642,488
180	3,641,611	278	3,641,657	212	3,641,721	4	3,641,791	1.01	3,643,000	17	3,642,490
231	3,641,612	423	3,641,658	213	3,641,722	210	3,641,792	192	3,641,861	28	3,642,491
250.02	3,641,613	428	3,641,662	281	3,641,723	**CLASS 70**		291	3,641,862	64	3,642,492
250.32	3,641,614	451	3,641,659	498	3,641,728	276	3,641,793	390	3,641,863		3,642,493
257.05	3,641,615	471.1	3,641,660	528	3,641,729	**CLASS 72**		470	3,641,864	98	3,642,494
257.06	3,641,616	574	3,641,661	584	3,641,730	4	3,641,794	**CLASS 85**		100	3,642,495
267	3,641,617	589	3,641,663	615	3,641,724	42	3,641,795	7	3,641,865	107	3,642,496
312R	3,641,618	592	3,641,664	747	3,641,731	56	3,641,796	72	3,641,866	108	3,642,500
CLASS 16		599	3,641,665	**CLASS 53**		122	3,641,798	**CLASS 89**		140R	3,642,497
19	3,641,620	629R	3,641,666	14	3,641,725	160	3,641,797	1.74	3,641,867	166	3,642,498
45	3,641,621	**CLASS 30**			3,641,732	198	3,641,799	1.813	3,641,868	171CP	3,642,499
95	3,641,622	2	3,641,667	24	3,641,726	299	3,641,800	14R	3,641,869	238.3	3,641,916
149	3,641,623	260	3,641,668	29	3,641,733	339	3,641,801	15	3,641,870	251	3,641,917
CLASS 17			3,641,669	124B	3,641,734	377	3,641,802	**CLASS 90**		279	3,641,918
23	3,641,624	**CLASS 32**		159	3,641,735	381	3,641,803	11A	3,641,871	330	3,641,919
25	3,641,625	6	3,641,670	180	3,641,736	409	3,641,804	13C	3,641,872	340	3,641,920
CLASS 18		10A	3,641,671	182	3,641,737	460	3,641,805	14	3,641,873		3,641,922
12	3,642,406	14A	3,641,672	391	3,641,738	**CLASS 73**		38	3,641,874	390	3,641,921
CLASS 19		60	3,641,673	**CLASS 54**		3	3,641,806	**CLASS 91**		404	3,641,923
65	3,641,626	**CLASS 33**		46	3,641,739	7	3,641,807	1	3,641,875	406	3,641,924
156.3	3,641,627	17A	3,641,674	**CLASS 55**		37.5	3,641,808	6	3,641,876	416	3,641,925
156.4	3,641,628	46R	3,641,675	105	3,641,740		3,641,809	44	3,641,877	448	3,641,926
CLASS 21		52	3,641,676	175	3,641,741		3,641,810	222	3,641,878	**CLASS 100**	
2.5	3,642,998	67	3,641,677	222	3,641,742	69	3,641,811	412	3,641,879	98	3,641,927
CLASS 23		174L	3,641,678	236	3,641,743	88.5SD	3,641,812	420	3,641,880	160	3,641,928
2SQ	3,642,445	204	3,641,679	319	3,641,744	121	3,641,813	483	3,641,881	218	Re.27,288
2R	3,642,430	**CLASS 34**		345	3,641,745	186	3,641,814	**CLASS 92**		233	3,641,929
	3,642,431	1	3,641,680	385	3,641,746	188	3,641,815	171	3,641,882	**CLASS 101**	
19V	3,642,432	41	3,641,681	**CLASS 56**		189	3,641,816	**CLASS 93**		35	3,641,930
52	3,642,433	99	3,641,682	15.6	3,641,747	194A	3,641,817	62	3,641,883	93C	3,641,931
113	3,642,434	132	3,641,683	15.7	3,641,748	226	3,641,818	84TW	3,641,884	157	3,641,932
117	3,642,435	**CLASS 35**		17.5	3,641,749	229	3,641,819	**CLASS 95**		181	3,641,933
134	3,642,436	8A	3,641,684	226	3,641,750	418	3,641,820	1	3,641,885	333	3,641,934
143	3,642,437	9C	3,641,685	291	3,641,751	421.5R	3,641,821	1.1	3,641,886	**CLASS 102**	
153	3,642,438	10.4	3,642,999	327A	3,641,753	422GC	3,641,822	4.5	3,641,887	39	3,641,935
165	3,642,439	22R	3,641,686	341	3,641,754	425.4	3,641,823	10CE	3,641,888	56	3,641,936
183	3,642,440	**CLASS 36**		**CLASS 57**		430	3,641,824		3,641,889		3,641,937
	3,642,441	2.5T	3,641,687	9	3,641,755	444	3,641,825		3,641,891	70.2	3,641,938
202V	3,642,442	43	3,641,688	34HS	3,641,756	514	3,641,826	10C	3,641,890	**CLASS 104**	
204R	3,642,443	**CLASS 37**		34R	3,641,758	**CLASS 74**			3,641,892	148LM	3,641,939
209.4	3,642,446	186	3,641,689	34	3,641,757	18.1	3,641,827	11W	3,641,893	**CLASS 105**	
218	3,642,447	**CLASS 40**		129	3,641,759	49	3,641,828	11	3,641,894	369A	3,641,940
225R	3,642,448	67	3,641,690	157R	3,641,760	60	3,641,829	12.21	3,641,895	376	3,641,941
230B	3,642,444	**CLASS 42**		**CLASS 58**		242.6	3,641,830	13	3,641,896		3,641,942
232R	3,642,449	1F	3,641,691	28B	3,641,761	250C	3,641,831	31AC	3,641,897	418	3,641,943
253TP	3,642,450	25	3,641,692			427	3,641,832	31EL	3,641,898	**CLASS 106**	
267	3,642,451	72	3,641,694			479	3,641,833	31FL	3,641,899	15AF	3,642,501
						492	3,641,834	36R	3,641,900	23	3,642,502
						501.5	3,641,835			38.35	3,642,503

39DV 3,642,504
65 3,642,505
90 3,642,506
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287SS 3,642,509
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300 3,642,510
306 3,642,511
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CLASS 108
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38 3,641,947
51 3,641,948
53 3,641,949
60 3,641,950

CLASS 110
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8C 3,641,952
97R 3,641,953

CLASS 112
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79R 3,641,955
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241 3,641,958

CLASS 113
1N 3,641,960
121A 3,641,959

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41 3,641,965

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105.2 3,642,521
106C 3,642,522
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136 3,642,525
200 3,642,526
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3,642,528
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237 3,642,533

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5 3,641,970
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9 3,641,972
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49 3,641,973
107 3,641,975
412 3,641,978
624 3,641,976
637 3,641,977
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3,641,980
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4 3,641,982
17 3,641,983
106 3,641,984

CLASS 123
8.09 3,641,985
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71R 3,641,987
90.16 3,641,988
119A 3,641,989
196R 3,641,990

CLASS 125
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CLASS 126
378 3,641,992

CLASS 127
15 3,642,534
29 3,642,535

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134 3,641,997
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238 3,642,000
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175 3,642,544
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197 3,642,051

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47 3,642,060
111 3,642,061
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CLASS 166
.5 3,642,063
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275 3,642,067
301 3,642,069
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314 3,642,070

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CLASS 172
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261 3,642,074

CLASS 173
23 3,642,075
91 3,642,076
116 3,642,077

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15 3,643,002
18 3,643,003
36 3,643,004
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6.5 3,643,017
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3,643,013
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6.8 3,643,015
3,643,018
3,643,019
7.81 3,643,020
15 3,643,021
17R 3,643,022
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27CA 3,643,033
27D 3,643,034
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100.2T 3,643,036
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66R 3,642,086
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46 3,642,096

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CLASS 195
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28 3,642,578
29 3,642,579
33R 3,642,580
49 3,642,581
66R 3,642,582

CLASS 197
17 3,642,109
107 3,642,110
133 3,643,039

CLASS 198
21 3,642,111
24 3,642,112
25 3,642,113
3,642,114
28 3,642,115
33AD 3,642,116
38 3,642,117
41 3,642,118
Re.27,283
3,642,119
203 3,642,120
219 3,642,121

CLASS 200
5A 3,643,041
16D 3,643,042
16F 3,643,043
44 3,643,044
47 3,643,045
76 3,643,046
144B 3,643,047
153R 3,643,048
3,643,049
166BH 3,643,050
3,643,051
172R 3,643,052
176 3,643,053

CLASS 203
11 3,642,583

CLASS 204
30 3,642,584
3,642,585
34 3,642,586
35N 3,642,587
44 3,642,588
3,642,589
54R 3,642,590
55R 3,642,591
73 3,642,592
143GE 3,642,593
149 3,642,594
158 3,642,596
181 3,642,597
3,642,598
195 3,642,599
3,642,600
206 3,642,601
211 3,642,602
247 3,642,603
286 3,642,604
300 3,642,605
3,642,606

CLASS 206
19.5R 3,642,122
43 3,642,123
45.33 3,642,124
47R 3,642,125
63.3 3,642,126
65K 3,642,127

CLASS 208
8 3,642,607
3,642,608
33 3,642,609
87 3,642,611
89 3,642,612
213 3,642,613
321 3,642,614

CLASS 209
121 3,642,128
3,642,130
133 3,642,131
159 3,642,129
211 3,642,132
314 3,642,133

CLASS 210
7 3,642,615
32 3,642,616
44 3,642,617
3,642,618
52 3,642,619
63 3,642,620
73 3,642,134
97 3,642,135
109 3,642,136
152 3,642,137
170 3,642,138
213 3,642,139
242 3,642,140
323 3,642,141
401 3,642,142

CLASS 211
13 3,642,143
45 3,642,144
78 3,642,145
176 3,642,146
181 3,642,147

CLASS 212
48 3,642,148

CLASS 213
15 3,642,149

CLASS 214
1SW 3,642,150
6H 3,642,151
13 3,642,152
17DA 3,642,153
83.24 3,642,154
83.26 3,642,155
85 3,642,156
314 3,642,158
450 3,642,157
764 3,642,159
767 3,642,160

CLASS 215
9 3,642,161

CLASS 219
10.55 3,643,054
3,643,055
73 3,643,056
91 3,643,057
121EB 3,643,058
125R 3,643,059
3,643,060
146 3,643,061
265 3,643,062

CLASS 220
1R 3,642,162
5A 3,642,163
9F 3,642,164
23.83 3,642,165
55AN 3,642,166
60R 3,642,167
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97R 3,642,169

CLASS 221
226 3,642,170

CLASS 222
59 3,642,171
90 3,642,172
94 3,642,173
129.1 3,642,174
135 3,642,175
146HE 3,642,176
168.5 3,642,177
195 3,642,178
402.12 3,642,179
402.23 3,642,180
517 3,642,181

CLASS 223
51 3,642,182

CLASS 224
2B 3,642,183
2C 3,642,184

CLASS 225
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CLASS 226
164 3,642,186

CLASS 227
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CLASS 228
36 3,642,188

CLASS 229
7R 3,642,189
28 3,642,190
39 3,642,192
45 3,642,193
51TC 3,642,194
72 3,642,195
77 3,642,191

CLASS 233
19A 3,642,196

CLASS 234
35 3,642,197

CLASS 235
61.1 3,643,063
61.11E 3,643,066
3,643,067
3,643,068
3,643,069
61.7B 3,643,064
61.7R 3,643,065
70R 3,643,070
92C 3,643,071
144HC 3,643,072
150.2 3,643,073
150.27 3,643,074
151 3,643,075
151.1 3,643,076
160 3,643,077
201 3,642,198

CLASS 236
12A 3,642,199
15A 3,642,200
44A 3,642,201

CLASS 239
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15 3,642,203
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214 3,642,206
251 3,642,207
255 3,642,208
265.19 3,642,209
407 3,642,210
426 3,642,211
533 3,642,212
590 3,642,213

CLASS 240
2R 3,643,078
3 3,643,079
4.1 3,643,080
7.1R 3,643,081
8.25 3,643,082
10.66 3,643,083
10.67 3,643,084
20 3,643,085
41.6 3,643,086
3,643,087
52 3,643,088
78H 3,643,089

CLASS 241
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CLASS 242
7.19 3,642,215
35.5R 3,642,216
3,642,217
36 3,642,218
47.12 3,642,219
55.19A 3,642,220
56 3,642,221
66 3,642,222
71.8 3,642,223
86.61 3,642,224
189 3,642,225
191 3,642,226
193 3,642,227
199 3,642,228
3,642,229
201 3,642,230
219 3,642,231

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CLASS 244
3.16 3,642,233
45 3,642,234
137R 3,642,235
138 3,642,236
152 3,642,237

CLASS 246
182R 3,643,090

CLASS 248
205R 3,642,238
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3,642,240
327 3,642,241
354R 3,642,242
354S 3,642,243
406 3,642,244
478 3,642,245

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CLASS 250
49.5B 3,643,091
80 3,643,092
83.3UV 3,643,093
87 3,643,094

105 3,643,095
108R 3,643,096
201 3,643,097
202 3,643,098
206 3,643,099
214P 3,643,100
216 3,643,101
218 3,643,102
227 3,643,103

CLASS 251
145 3,642,252
148 3,642,247
172 3,642,248
344 3,642,249

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8.5C 3,642,622
8.5M 3,642,623
8.55 3,642,624
25 3,642,625
33.6 3,642,626
39 3,642,627
47.5 3,642,629
3,642,630
48.4 3,642,631
51.5A 3,642,632
57 3,642,633
59 3,642,634
3,642,635
3,642,636
62.9 3,642,637
63 3,642,638
67 3,642,639
146 3,642,640
148 3,642,641
153 3,642,644
162 3,642,645
182 3,642,646
3,642,647
3,642,648
3,642,649
301.2 3,642,650
301.4R 3,642,651
389 3,642,652
3,642,653
408 3,642,654
3,642,655
412 3,642,643
419 3,642,656
425 3,642,657
431P 3,642,658
435 3,642,659
442 3,642,660
453 3,642,661
455Z 3,642,662
500 3,642,663
519 3,642,664
543 3,642,642

CLASS 254
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150 3,642,253

CLASS 259
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183 3,642,255

CLASS 260
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3,642,667
2.5AH 3,642,670
2.5BB 3,642,669
2.5B 3,642,666
2.5M 3,642,668
9 3,642,671
16 3,642,672
22CB 3,642,673
22EP 3,642,674
22A 3,642,675
23EM 3,642,676
23X 3,642,677
23.3 3,642,679
28.5 3,642,678
29.2 3,642,681
29.6RB 3,642,680
30.4N 3,642,682
31.6 3,642,683
31.8F 3,642,684
375B 3,642,685
37 3,642,686
41.5R 3,642,687
45.7P 3,642,689
45.75K 3,642,628
45.75N 3,642,690
45.8NZ 3,642,688
45.85 3,642,691
46.5G 3,642,692
46.5R 3,642,693
46.5Y Re.27,281
46.5 3,642,694
47CP 3,642,696
47EA 3,642,695
47ET 3,642,699
47C 3,642,697
47 3,642,698
50 3,642,700
58 3,642,610
67S 3,642,701
75R 3,642,702
77.5AC 3,642,044
77.5AM 3,642,703
77.5AP 3,642,705
77.5BB 3,642,704
78TF 3,642,707
78UA 3,642,712
78R 3,642,708
3,642,709
3,642,710
3,642,713
3,642,714
3,642,715
78S 3,642,706
78 3,642,711
78.3U 3,642,718
78.3 3,642,716
3,642,717
78.4EP 3,642,724
78.4D 3,642,722
78.4N 3,642,725
78.4R 3,642,720
3,642,721
3,642,723
78.5R 3,642,719
78.5T 3,642,726
79.3R 3,642,728
79.5A 3,642,727
80.7 3,642,729
80.72 3,642,730
80.78 3,642,731
80.81 3,642,732
3,642,733
83.7R 3,642,734
85.5 3,642,735
3,642,736
3,642,737
3,642,738
86.3 3,642,739
87.5A 3,642,742
87.5C 3,642,745
87.5 3,642,740
3,642,741
3,642,744
87.7 3,642,743
88.2B 3,642,747
88.2R 3,642,749
88.2 3,642,746
3,642,748
89.5 3,642,750
3,642,751
3,642,752
91.5 3,642,753
92.1 3,642,754
3,642,755
92.8W 3,642,756
93.1 3,642,757
93.7 3,642,761
94.3 3,642,758
3,642,759
3,642,760
94.7 3,642,762
112.5 3,642,763
153 3,642,764
3,642,765
154 3,642,766
158 3,642,767
204 3,642,768
207 3,642,769
210.5 3,642,770
211.5R 3,642,771
3,642,772
229 3,642,773
233.5R 3,642,774
239BE 3,642,776
239D 3,642,775
3,642,777
239.3P 3,642,778
3,642,779
239.55 3,642,780
240CA 3,642,783
240A 3,642,784
240D 3,642,781
240G 3,642,782
240R 3,642,785
240.4 3,642,786
242 3,642,787
243C 3,642,788
244R 3,642,789
247.2A 3,642,790
3,642,791
247.5B 3,642,794
247.5R 3,642,792
3,642,793
249 3,642,795
250 3,642,796
251A 3,642,797
254 3,642,798
270R 3,642,799
281 3,642,836
286R 3,642,800
287R 3,642,801
289R 3,642,802
293.57 3,642,804
293.61 3,642,803
293.62 3,642,808
295AM 3,642,805
295CA 3,642,806
296B 3,642,807
306.7 3,642,809
3,642,810
306.8D 3,642,811
307H 3,642,812
308A 3,642,813
308D 3,642,814
314.5 3,642,815
315 3,642,816
3,642,817
326.15 3,642,823
326.3 3,642,818
326.5B 3,642,820
326.5J 3,642,819
326.85 3,642,824
326.9 3,642,821
3,642,822
340.6 3,642,825
340.9 3,642,826
343.3 3,642,827
3,642,828
346.8 3,642,829
348 3,642,830
348.5L 3,642,831
3,642,832
3,642,833
348.5V 3,642,834
376 3,642,835
381 3,642,837
385 3,642,838
397.1 3,642,840
397.4 3,642,839
3,642,841
397.5 3,642,842
405.5 3,642,843
410.9R 3,642,844
429.7 3,642,845
3,642,846
3,642,848
429.9 3,642,847
437R 3,642,849
448A 3,642,850
448 3,642,853
448.2E 3,642,852
3,642,854
448.2N 3,642,851
448.8R 3,642,855
455A 3,642,856
463 3,642,857
3,642,858
464 3,642,859
465E 3,642,861
465 3,642,860
468.5 3,642,862
471C 3,642,863
471R 3,642,864
3,642,865
473F 3,642,869
473G 3,642,866
473R 3,642,867
3,642,868
475B 3,642,871
475R 3,642,870
479R 3,642,872
3,642,873
486R 3,642,877
487 3,642,874
488J 3,642,875
491 3,642,876
497A 3,642,878
501.14 3,642,879
503 3,642,880
513 3,642,881
520 3,642,882
525 3,642,883
3,642,884
526N 3,642,885
533C 3,642,886
534C 3,642,888
534E 3,642,887
535R 3,642,889
545R 3,642,890
553A 3,642,891
556AR 3,642,892
558D 3,642,893
561N 3,642,894
562B 3,642,895
570AB 3,642,897
570.6 3,642,896
570.8R 3,642,898
570.9 3,642,899
583EE 3,642,900
583A 3,642,901
585R 3,642,902
586R 3,642,903
590 3,642,904
3,642,905
591 3,642,906
593R 3,642,907
607A 3,642,908
607R 3,642,909
613D 3,642,911
613R 3,642,910
621R 3,642,912
622R 3,642,913
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653.5 3,642,917
654A 3,642,918
654R 3,642,919
658R 3,642,920
659A 3,642,921
665R 3,642,922
666PY 3,642,923
666B 3,642,924
668A 3,642,925
670 3,642,926
674 3,642,927
675.5 3,642,928
679A 3,642,929
680E 3,642,930
683D 3,642,931
683.15C 3,642,934
683.15D 3,642,932
3,642,935
683.2 3,642,933
827 3,642,936
834 3,642,937
835 3,642,938
836 3,642,939
837 3,642,940
857R 3,642,941
858 3,642,942
859R 3,642,943
864 3,642,944
873 3,642,945
3,642,946
876R 3,642,947
3,642,948
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878R 3,642,952
878 3,642,950
880 3,642,953
889 3,642,954
895 3,642,955
920 3,642,956
940 3,642,957
961 3,642,958
973 3,642,959
985 3,642,960

CLASS 261
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93 3,642,257
113 3,642,258
122 3,642,259
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CLASS 263
6B 3,642,261
19R 3,642,262
21C 3,642,265
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52 3,642,264

CLASS 264
3 3,642,961
29 3,642,962
37 3,642,963
40 3,642,964
41 Re.27,280
45 3,642,965
3,642,966
51 3,642,967
82 3,642,968
3,642,969
3,642,970
3,642,972
3,642,971
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3,642,976

CLASS 266
23P 3,642,266
24 3,642,267

CLASS 267
57.1 3,642,268

CLASS 269
40 3,642,269

CLASS 270
62 3,642,270

CLASS 271
41 3,642,271
61 3,642,273
62R 3,642,272
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CLASS 272
33R 3,642,275
57R 3,642,276
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CLASS 273
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127R 3,642,284
134AD 3,642,285
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CLASS 277
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11.35T 3,642,298
16 3,642,299
34A 3,642,300
47.12 3,642,301
124 3,642,302
150AB 3,642,303
3,642,304
293 3,642,305

CLASS 285
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38 3,642,307
47 3,642,308
226 3,642,309

CLASS 287
54A 3,642,310
109 3,642,311
117 Re.27,284
189.36 3,642,312

CLASS 292
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134 3,642,314
144 3,642,315

CLASS 296
28C 3,642,316
137A 3,642,317

CLASS 297
184 3,642,318
284 3,642,319
345 3,642,320
410 3,642,321
445 3,642,322
456 3,642,323

CLASS 298
11 3,642,324

CLASS 299
18 3,642,325
31 3,642,326

CLASS 301
108R 3,642,327

CLASS 303
6R 3,642,328
21BE 3,642,329

CLASS 305
38 3,642,332

CLASS 306
1.5 3,642,333

CLASS 307
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110 3,643,105
221C 3,643,106
229 3,643,107
230 3,643,108
235 3,643,109
238 3,643,110
3,643,111
252W 3,643,112
271 3,643,113
279 3,643,114
296 3,643,115
312 3,643,116

CLASS 308
6C 3,642,330
10 3,642,334
35 3,642,331
187.1 3,642,335

CLASS 310
17 3,643,117
40 3,643,118
60 3,643,119
96 3,643,120

CLASS 312
37 3,642,336
111 3,642,337
184 3,642,338
283 3,642,339

CLASS 313
70 3,643,121
92R 3,643,122
162 3,643,123
217 Re.27,282

CLASS 315
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24 3,643,125
26 3,643,126
101 3,643,127

CLASS 316
20 3,642,340

CLASS 317
4 3,643,128
11R 3,643,129
40R 3,643,130
100 3,643,131
101D 3,643,135
107 3,643,132
122 3,643,133
148.5R 3,643,134
234R 3,643,136
235R 3,643,139
235 3,643,137
3,643,138

CLASS 318
38 Re.27,289
138 3,643,140
162 3,643,141
221R 3,643,142
254 3,643,143
258 3,643,144
443 3,643,145
565 3,643,146
603 3,643,147
628 3,643,148

CLASS 321
2 3,643,149
5 3,643,150

CLASS 322
33 3,643,153

CLASS 323
9 3,643,151
22T 3,643,152
43.5R 3,643,154

CLASS 324
43 3,643,155
57R 3,643,156
73 3,643,157
162 3,643,158
169 3,643,159

CLASS 325
3 3,643,160
150 3,643,161
164 3,643,162
177 3,643,163
308 3,643,164
330 3,643,165
344 3,643,166
389 3,643,167
459 3,643,168

CLASS 328
150 3,643,169
163 3,643,170
165 3,643,171

CLASS 329
112 3,643,172

CLASS 330
26 3,643,173

CLASS 331
94.5 3,643,174
3,643,175
3,643,176
3,643,177
3,643,178
180 3,643,179

CLASS 332
11D 3,643,180
17 3,643,181

CLASS 333
29 3,643,182
80R 3,643,183
3,643,184

CLASS 335
58 3,643,185
119 3,643,186
132 3,643,187
3,643,188
3,643,189
3,643,190
212 3,643,191
213 3,643,192
240 3,643,193
260 3,643,194
285 3,643,195

CLASS 336
84 3,643,196

CLASS 337
370 3,643,197

CLASS 338
162 3,643,198
172 3,643,199
329 3,643,200

CLASS 339
14R 3,643,203
17L 3,643,204
17R 3,643,201

CLASSIFICATION OF PATENTS

75P	3,643,202	173SP	3,643,234	846	3,643,262		3,642,363	205	3,642,384	274	3,642,994
91R	3,643,205	173R	3,643,232		CLASS 346		3,642,364	411	3,642,385		CLASS 425
94R	3,643,206		3,643,236	139R	3,643,263	8	3,642,365	423	3,642,386	4	3,642,392
96	3,643,207	173.1	3,643,237		CLASS 350		3,642,366		CLASS 418	6	3,642,393
102R	3,643,208	173.2	3,643,233	4	3,642,342	45	3,642,367	16	3,642,387	72	3,642,394
155R	3,643,209	174DC	3,643,239	6	3,642,343	47	3,642,368	30	3,642,388	83	3,642,554
192R	3,643,210	174	3,643,238		3,642,344	64	3,642,369	107	3,642,389	109	3,642,395
217S	3,643,211	174.1B	3,643,243	10	3,642,341	75	3,642,370	133	3,642,390		3,642,396
	CLASS 340	174.1C	3,643,240	65	3,642,345	88	3,642,377	145	3,642,391		3,642,397
3R	3,643,212		3,643,241	131	3,642,346	128	3,642,371		CLASS 424	117	3,642,398
27NA	3,643,213		3,643,242	150	3,642,347		3,642,376	37	3,642,978		3,642,399
64	3,643,214	227	3,643,244	160	3,642,348		CLASS 356	54	3,642,979	129	3,642,400
146.3P	3,643,216	228R	3,643,245	162SF	3,642,349	3	3,642,372	64	3,642,980	137	3,642,401
146.3S	3,643,215	251	3,643,246		3,642,350	106LR	3,642,373	70	3,642,977	144	3,642,402
147P	3,643,217		3,643,247	215	3,642,351	107	3,642,374	88	3,642,981	145	3,642,403
172.5	Re.27,285	253B	3,643,248	288	3,642,352	114	3,642,375	93	3,642,982		3,642,404
	3,643,218	274	3,643,249	310	3,642,353		CLASS 406	106	3,642,983	149	3,642,405
	3,643,219	280	3,643,250		CLASS 352	143	3,642,378	117	3,642,984	198	3,642,406
	3,643,220	324A	3,643,251	91	3,642,354		CLASS 415	120	3,642,985	242	3,642,407
	3,643,221		3,643,252	92	3,642,355	119	3,642,379	125	3,642,986		3,642,408
	3,643,222	347DA	3,643,253	180	3,642,356	136	3,642,380	181	3,642,987	305	3,642,409
	3,643,223	347DD	3,643,254	189	3,642,357	151	3,642,381	200	3,642,988	326	3,642,410
	3,643,224	381	3,643,255	227	3,642,358		CLASS 416	211	3,642,989	343	3,642,411
	3,643,225		CLASS 343		CLASS 353	169	3,642,382	226	3,642,990	356	3,642,412
	3,643,226	6.5R	3,643,256	23	3,642,359	183	3,642,383	227	3,642,991	365	3,642,413
	3,643,227	7.7	3,643,257	38	3,642,360		CLASS 417	238	3,642,992	388	3,642,414
	3,643,228	108R	3,643,258	57	3,642,361			244	3,642,993	389	3,642,415
	3,643,229	112R	3,643,259		CLASS 355			248	3,642,995	438	3,642,416
173FF	3,643,230	225	3,643,260	3	3,642,362			250	3,642,996	443	3,642,417
	3,643,231	771	3,643,261						3,642,997	447	3,642,418
	3,643,235									457	3,642,419
										465	3,642,420
											CLASS 431
										254	3,642,421
										344	3,642,422

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D 9— 168	222,960	D23— 71	222,965		222,970		222,974	D34— 5	222,978	D55— 1	222,982
216	222,961	D26— 13	222,966		222,971		222,975	D42— 7	222,979	D88— 3	222,983
D13— 6	222,962		222,967		222,972		222,976	D44— 1	222,980	D90—	222,984
D14—	222,963		222,968								

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1 :	3,641,626		3,641,869		3,642,536		3,643,202		3,642,166		3,641,884
	3,641,675		3,641,906		3,642,559		3,643,207		3,642,472		3,641,912
	3,641,807		3,641,910		3,642,570		3,643,220		3,642,667		3,641,923
	3,641,970		3,641,930		3,642,616		3,643,225		3,642,681		3,641,933
	3,642,007		3,641,931		3,642,617		3,643,227		3,642,707		3,641,941
	3,642,214		3,641,942		3,642,625		3,643,233		3,642,709		3,641,943
	3,642,406		3,641,951		3,642,634		3,643,241		3,642,742		3,641,971
	3,642,736		3,641,956		3,642,636		3,643,242		3,642,859		3,641,992
	3,643,209		3,641,968		3,642,695		3,643,249		3,642,877		3,641,995
4 :	3,641,593		3,641,972		3,642,741		3,643,258		3,642,904		3,642,023
	3,641,679		3,641,973		3,642,773		3,643,261		3,642,952		3,642,025
	3,641,848		3,641,997		3,642,780	8 :	3,641,629	11 :	3,641,776		3,642,036
	3,641,927		3,642,002		3,642,824		3,641,699		3,641,847		3,642,037
	3,641,996		3,642,009		3,642,830		3,641,805		3,642,297		3,642,039
	3,643,041		3,642,029		3,642,833		3,641,922		3,643,084		3,642,071
	3,643,110		3,642,031		3,642,856		3,642,067		3,643,116		3,642,081
	3,643,146		3,642,043		3,642,891		3,642,139	12 :	3,641,631		3,642,093
	3,643,166		3,642,059		3,642,899		3,642,235		3,641,657		3,642,094
	3,643,204		3,642,079		3,642,901		3,642,236		3,641,696		3,642,113
	3,643,223		3,642,083		3,642,905		3,642,395		3,641,783		3,642,117
5 :	3,641,998		3,642,111		3,642,907		3,642,433		3,641,794		3,642,149
	3,642,320		3,642,155		3,642,917		3,642,961		3,641,851		3,642,160
6 :	Re.27,280		3,642,183		3,642,944		3,643,037		3,641,916		3,642,188
	Re.27,282		3,642,191		3,642,953		3,643,135		3,641,964		3,642,193
	Re.27,289		3,642,204		3,642,958		3,643,229		3,641,982		3,642,207
	3,641,617		3,642,215		3,642,960	9 :	3,641,633		3,642,170		3,642,242
	3,641,623		3,642,228		3,642,965		3,641,642		3,642,173		3,642,270
	3,641,643		3,642,243		3,642,972		3,641,652		3,642,231		3,642,284
	3,641,666		3,642,253		3,642,998		3,641,674		3,642,438		3,642,286
	3,641,677		3,642,279		3,643,005		3,641,698		3,642,679		3,642,287
	3,641,683		3,642,294		3,643,009		3,641,752		3,642,928		3,642,288
	3,641,695		3,642,299		3,643,012		3,641,820		3,642,999		3,642,304
	3,641,704		3,642,311		3,643,013		3,641,873		3,643,023		3,642,313
	3,641,720		3,642,324		3,643,016		3,642,142	13 :	3,641,707		3,642,322
	3,641,727		3,642,328		3,643,018		3,642,168		3,641,940		3,642,323
	3,641,738		3,642,331		3,643,028		3,642,180		3,641,947		3,642,325
	3,641,744		3,642,334		3,643,079		3,642,248		3,642,195		3,642,392
	3,641,750		3,642,345		3,643,104		3,642,277		3,642,217		3,642,408
	3,641,768		3,642,355		3,643,106		3,642,387		3,642,318		3,642,417
	3,641,774		3,642,379		3,643,109		3,642,542		3,642,414		3,642,418
	3,641,797		3,642,380		3,643,113		3,642,543		3,642,516		3,642,440
	3,641,812		3,642,431		3,643,123		3,642,564	15 :	3,641,985		3,642,491
	3,641,815		3,642,435		3,643,124		3,642,890	16 :	3,642,151		3,642,506
	3,641,827		3,642,448		3,643,126		3,642,950	17 :	3,641,656		3,642,525
	3,641,830		3,642,454		3,643,155		3,642,996		3,641,659		3,642,546
	3,641,831		3,642,456		3,643,169		3,643,008		3,641,662		3,642,557
	3,641,835		3,642,487		3,643,171		3,643,015		3,641,667		3,642,613
	3,641,854		3,642,494		3,643,175		3,643,071		3,641,692		3,642,614
	3,641,859		3,642,519		3,643,178		3,643,072		3,641,785		3,642,630
	3,641,863		3,642,520		3,643,195		3,643,107		3,641,811		3,642,646
	3,641,865		3,642,531		3,643,198	10 :	3,642,024		3,641,861		3,642,653

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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U. S. DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
TRADEMARK REGISTRATION TREATY

The World Intellectual Property Organization (WIPO) released on January 31, 1972 in Geneva, Switzerland, a draft of a proposed Trademark Registration Treaty designed to facilitate the international protection of trademarks. This draft Treaty is reproduced below together with the draft Regulations and some of the explanatory materials released by WIPO.

The United States has been invited to send a delegation to participate in the discussions of a Committee of Experts scheduled in Geneva from May 2 to 8, 1972, to consider the draft Treaty.

These documents are published by the Patent Office at this time so that interested parties will have an opportunity to consider them and offer comments prior to the May meeting. Interested parties should submit their views or suggestions to the Commissioner of Patents, Washington, D.C., 20231 by April 14, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Jan. 31, 1972.

INTRODUCTORY MEMORANDUM [TRT/11/3]
TO THE JANUARY 31, 1972, DRAFT OF THE TRADEMARK REGISTRATION TREATY
(prepared by the International Bureau)

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INTRODUCTION

1. This document, like all the other documents in the TRT/II series, has been prepared by the International Bureau of WIPO for the second session of the "Committee of Experts on the International Registration of Marks," convened for May 2 to 8, 1972, in Geneva. The decision to convene the Committee was made by the Executive Committee of the International (Paris) Union for the Protection of Industrial Property when it met in September/October 1971.

2. The said documents are based on the conclusions of the first session of the said Committee of Experts (hereinafter referred to as "the 1971 Committee of Experts"). It met at Geneva in October 1971.

3. The member States of the Paris Union and 15 intergovernmental and 24 nongovernmental organizations, primarily representing trademark owners (particularly private industry), trademark lawyers and trademark agents, were invited. The following were represented:

(a) States: Algeria, Australia, Austria, Belgium, Brazil, Cameroon, Canada, Cuba, Czechoslovakia, Denmark, Egypt, Finland, France, Germany (Federal Republic), Hungary, Iran, Italy, Ivory Coast, Japan, Mexico, Monaco, Netherlands, Norway, People's Republic of the Congo, Poland, Portugal, Romania, South Africa, Soviet Union, Spain, Sweden, Switzerland, Syria, United Kingdom, United States of America, Yugoslavia (36).

(b) Intergovernmental Organizations: United Nations, United Nations Conference on Trade and Development, Benelux Trademark Office, Commission of the European Communities, African and Malagasy Industrial Property Office (5).

(c) Non-governmental Organizations: American Bar Association (ABA), American Patent Law Association (APLA), Association of Corporate Patent Counsel, Bundesverband der Deutschen Industrie (BDI), Chartered Institute of Patent Agents, Council of European Industrial Federations (CEIF), Deutsche Vereinigung für Gewerblichen Rechtsschutz und Urheberrecht, European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents, International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Agricultural Producers, International Federation of Patent Agents (FICPI), New York Patent Law Association (NYPLA), Trade Marks, Patents and Designs Federation (TMPDF), Union des Fabricants, Union of European Patent Agents (UNEPA), Union of Industries of the European Communities (UNICE), United States Trademark Association (USTA) (19).

4. Experts of intergovernmental and non-governmental organizations had the same opportunities to participate in the discussions as governmental experts.

5. The conclusions of the 1971 Committee of Experts are reflected in the report of that Committee (document TRT/I/11).

6. The second (May 1972) session of the Committee of Experts is being convened to examine the Second Draft of a treaty, tentatively called "the Trademark Registration Treaty," and the Second Draft of the Regulations to accompany the Draft Treaty (documents TRT/II/1 and 2), as well as other documents issued or to be issued in the TRT/II series of documents. The document containing the Second Draft Treaty also contains comments on each provision of that Draft. They are mainly intended to explain the reasons for certain solutions and to facilitate the reader's task of relating the Draft Treaty to the Draft Regulations.

7. The rest of this document is divided into three parts. Part I gives a brief summary of the Draft Treaty. Part II enumerates some of the main advantages expected from an international registration system of marks as proposed in the Draft Treaty. Part III analyzes the questions concerning the coexistence of the proposed new Treaty with the existing Madrid Agreement.

8. It is to be noted that, the purpose of this document being to give concise information, many details—frequently quite important—had to be omitted. Only documents TRT/II/1 and 2 are to be considered as fully reflecting the proposals.

PART I: BRIEF SUMMARY OF THE DRAFT TREATY

9. *National Registration Effect of International Registrations.* The most important feature of the Draft Treaty,

the provision which constitutes its *raison d'être*, is that marks—and by this term both trademarks and service marks are meant—could be registered internationally, that is, with the International Bureau of the World Intellectual Property Organization (WIPO), and that international registration would have in each of the Contracting States (that is, States party to the Treaty) in which the owner of the mark desires protection the same effect as if the mark had been registered in each and every one of such States.

10. A corollary of this "national registration effect," as important as the effect itself, is that international registrations could be renewed every ten years, and such renewals would maintain the national registration effect in each and every one of such States for the periods for which the international renewal was effected.

11. *International Application.* To achieve protection by international registration of a mark, the owner would file an international application. Only residents and nationals of Contracting States would have the right to file international applications. The international application would identify the applicant, the mark, the goods and/or services in connection with which protection of the mark is desired, and the States ("designated States") in which protection is desired.

12. The goods and/or services would be listed and grouped according to the classes of the International ("Nice") Classification. That Classification had 34 classes for goods, and 8 classes for services. It is used by the national Offices of some 60 countries at the present time.

13. Any Contracting State, including the applicant's own, could be designated. Any number of Contracting States could be designated.

14. A representative may be appointed in the international application for contacts with the International Bureau.

15. The international application could be filed in either English or French. Preparation of the international application could essentially consist in filling in a printed form, distributed free of charge by the International Bureau. Listing the goods and/or services is facilitated by an alphabetical list of practically all conceivable goods and services which accompanies the International Classification of Nice. The said alphabetical list contains the names of some 20,000 products (goods) and services and is available in English, French, German and Spanish—and will soon be available also in Dutch, Italian and Portuguese—in official editions published by the International Bureau. The alphabetical list indicates, by its number, the class to which each product or service belongs and is brought up to date from time to time to cover goods or services which are new.

16. The international application would be subject to the payment of a fee. Part of the fee would be kept by the International Bureau to cover its expenses connected with the publication of the international registration and other processing of the international application. The other part of the fee would belong to the national Offices of the designated Contracting States to cover their expenses connected with the processing of the international registration notified to them by the International Bureau. The amount of the fees payable would depend on the number of the designated States and the number of classes of goods and/or services listed.

17. The International Bureau would check each international application to see whether it complied with the most elementary requirements of any application: Is the applicant sufficiently identified? Is he, on the basis of his nationality or residence indicated by him, entitled to file international applications? Is the reproduction of the mark included? Are goods and/or services listed? Is there at least one State designated? Have the fees been paid? Is the application in one of the prescribed languages (English, French)? Is it signed?

18. It is difficult to image that the International Bureau would err in answering such elementary questions. However, if it did, the applicant could turn to the national Office of one or more of the designated States. Each such Office could request the International Bureau to proceed with the international registration as far as that State is concerned if it found that the International Bureau had erred. The International Bureau would proceed according to the request.

19. *Later Designations.* Any Contracting State not designated in the international application itself could be designated later. This faculty is important because the applicant or owner might have no interest in a given State when he filed but develop an interest in the same State later and also because a State might not have been a Contracting State when the international application was filed.

20. *Registration, Publication, and Notification.* Unless the international application is declined because of some formal defect, the mark would be registered in the International Register of Marks and all the relevant data—including the reproduction of the mark and the list of goods and/or services—would be promptly published and individually notified to the national Office responsible for the national registration of marks in each of the designated States.

21. The international registration would normally be effected within a few days after receipt of the international application. The international registration date would be the date on which the International Bureau had received the international application. This rule would be subject to an exception when the application contained some serious mistake: in such a case the international registration date would be the date on which the mistake is corrected. (Any mistake could be corrected within six months.)

22. The international publication would be made in a weekly gazette of the International Bureau.

23. The individual notifications could not be different from the contents of the publication because they would consist of reprints of the relevant parts of the gazette.

24. The above remarks also hold as far as later designations are concerned.

25. *Refusal of National Registration Effect.* Each designated State could, as far as it is concerned, refuse the national registration effect on the same grounds as those on which it could refuse an application filed with its national Office for registration in the national register of marks. However, grounds incompatible with the Treaty or with the Paris Convention would be excluded. For example, no designated State could require that the application be translated into its national language or that fees other than its share in the international fees be paid to it.

26. Any such refusal would, however, have to be pronounced, or its possible pronouncement announced ("notice of possible refusal")—for example, where the registration has been opposed by a third party and the refusal depends on whether the opposition will be successful—before the expiration of a certain time limit. As to the length of the time limit, the Draft Treaty contains alternatives, 12 or 15 months, counted from the date of the international publication of the international registration, or of the later designation, as the case may be.

27. Furthermore, the refusal or notice of possible refusal would have to contain the reasons for the refusal or possible refusal. Although the final decision could be rendered after the expiration of the 12 or 15 months period, it would be effective only if it contained and was based on at least one of the reasons indicated in the notice of the possible refusal. According to a possible variant, this condition would not apply where the decision was that of a court.

28. *Use of the Mark.* No designated State could refuse the registration effect, cancel it or otherwise impair the rights of the owner on the ground that he had not used his mark before the expiration of a certain period of time counted from the date of the international registration (or the later designation, as the case may be). As to the length of the period, there are two variants: three or five years. No such moratorium on use is, however, required if the mark's international registration was preceded by a national registration or another international registration three (or five) years older than the international registration, and the term of this moratorium may be correspondingly reduced where the mark's international registration was preceded by a national registration or another international registration which is less than three (or five) years older than the international registration.

29. It is to be noted that the national law of any Contracting State could provide that any action for infringement by the owner of the international registration and based upon such registration may not be brought until the said owner has started using the mark in the said State and may remedy therefrom may relate only to the period of such use.

30. *Declaration of Actual Use.* Routine declarations of actual use could be filed with the International Bureau in the form prescribed by the national law of the State which requires such declarations. According to a possible variant, the declaration could also be filed on an internationally agreed form.

31. *Declaration of Intent To Use.* Declarations of intent to use connected with any designation and filed with the International Bureau would have the same effects as declarations of intent to use connected with national applications and filed with national Offices.

32. *Preservation of Acquired Rights.* Whenever the owner of a national registration switches over to international registration, his rights acquired under the national registration would not be affected and would also be deemed to be included in the international registration. The same would apply to switching over from international registration under the Madrid Agreement to international registration under the new Treaty.

33. *Right of Priority.* International applications could invoke the priority of earlier national applications, and vice versa. In the former case, the single declaration of priority, made in the international application, would apply to all designated States.

34. *Assignments.* Although their substantive validity would be subject to the national law of each State, assignments and other changes in ownership with respect to some or all of the designated States, or concerning some or all of the goods and/or services listed, could be recorded in the International Register of Marks.

35. *"Union."* The Contracting States would constitute a Union with an Assembly and a Secretariat, the latter being provided by the International Bureau. The Assembly could amend the Regulations subject to a ⅔, and, in some cases, ¾ majority vote.

36. *Financial Obligations of Contracting States.* Except for the possibility of having to contribute towards a working capital fund, the Contracting States would not incur any financial obligations and would not have to pay any contributions.

37. *Becoming Party to the Treaty.* Only States members of the Paris Union could become party to the Treaty. Any State could make its acceptance of the Treaty conditional on the acceptance of the Treaty by one, one of two, or two other States specified by it.

38. *Regulations.* The Regulations would be attached to the Treaty. Both instruments would have to be adopted by a diplomatic conference. Such conference is scheduled for May 7 to June 2, 1973, in Vienna.

PART II: MAIN ADVANTAGES

39. *Complexity of the Present System.* Today, the owner of a mark who wishes to secure protection of a mark in several States must—unless he can avail himself of the benefits of the Madrid Agreement and the said States are party to that Agreement—separately register the mark in each of those States. The number of such States may be very high. More than 50 is not unusual. The burden placed on the owner is consequently a heavy one: preparation of a separate application for each State; translation into the various languages of those States; filing separately in each of them; being familiar with their widely varying requirements, in particular with their fee structures; keeping an eye on as many different due dates for renewal as there are States in which he wishes protection; transfer of money in as many different currencies as there are such States; uncertainty as to whether he is aware of the latest requirements and the latest fee schedules; uncertainty as to whether the money he transfers to persons or authorities in so many States will arrive in time and will really be applied to the mark he wishes it to be applied to.

40. *Administrative Simplicity Under the Treaty.* Under the Draft Treaty, these difficulties would almost entirely disappear. There would be only one application; no translation, or only one, would be needed; that translation would mainly relate to the list of goods and/or services and would be easy to make on the basis of the official English and French lists of the International Classification; the amount of the fees payable would be easy to compute on the basis of a single schedule of fees; filing would be in one place (with the International Bureau); renewals would be in one place (the same Bureau); only one date repeated once every ten years would have to be remembered for renewal purposes; all fees would be paid in one currency (the Swiss), by a simple transfer, to an agency experienced in currency transfers; it would suffice to know the Treaty and its Regulations—rather than a great number of different national laws—in order to be sure that the application is correct and the renewal is correct.

41. *Shortening of Period of Uncertainty.* The fact that the Treaty would oblige each designated Office to notify refusals or notices of possible refusals within a period of 12 (or 15) months would reduce the period of uncertainty prevailing without the Treaty as to the ultimate fate of applications in some of the States. Under the Treaty, the applicant would know, once the said period was over, whether he had acquired the national registration effect or, if there was still no final decision, the obstacles it would be necessary to overcome in order to secure that effect.

42. *Declarations of Intent To Use and Routine Declarations of Actual Use.* Such declarations are required in a number of States. Under the Treaty, they could be filed with the International Bureau.

43. *Requirement of Using the Mark.* Laws vary greatly from one another on the question whether the owner of the mark loses his rights because of non-use, particularly during the period around the initial registration. The Treaty would not create uniformity in this respect but it would guarantee to the owner that non-use before, at the time of, or during the first three (or five?) years after the international registration could not result in refusal or cancellation of his mark.

44. *Comparison With the System of the Madrid Agreement.* Most of the advantages mentioned in connection with applications and renewals exist also under the Madrid

Agreement. But that Agreement also contains disadvantages. The most important of them is that any international application must be preceded by registration of the marks in the national register of marks of the country of origin of the mark. This may be impossible for reasons peculiar to the national law of that country or because of anticipations existing only in that country. Furthermore, the procedure leading to registration in the country of origin may last for a long time, and may even take years, causing the loss of any priority right and, in countries whose laws follow the principle "the-earlier-registrant-has-the-stronger-right," even the loss of all rights. All these disadvantages would not exist under the Draft Treaty since, in the proposed system, international applications would be filed direct with the International Bureau and the existence of a registration in the country of origin would not be required.

45. None of the advantages mentioned in connection with the three-year (or five-year) moratorium on the requirement to use the mark, the declarations of intent to use, and the routine declarations of actual use, exists under the Madrid Agreement.

46. The Madrid Agreement provides that the cancellation of the national registration of the mark in its country of origin, if effected during the first five years of the international registration or based on an action commenced during that period, nullifies the international registration in all countries. The new Treaty would contain no such provision granting extraterritorial effect to a national decision. This might be regarded as a disadvantage for any person wanting to cancel the international registration of a mark since, instead of instituting one proceeding in the country of origin, he will have to institute a separate proceeding in every State where he wishes the mark to be cancelled. However, the non-inclusion of this system in the Treaty would save the owner of the international registration from what, in many cases, would be a manifest and grave injustice, namely, the loss of his rights in a number of countries on the basis of a decision taken according to the law of a country which may be quite different from the laws of those countries and on the basis of a factual situation which may be quite different from the factual situation prevailing in those countries.

PART III: COEXISTENCE WITH THE MADRID AGREEMENT

47. *New Treaty or Revision?* The Draft Treaty is presented in the form of an instrument independent of the existing Madrid Agreement. The Madrid Union has 22 members—or 21 if the German Democratic Republic is not counted as a member (since its membership is contested): Austria, Belgium, Czechoslovakia, Egypt, France, Federal Republic of Germany, German Democratic Republic, Hungary, Italy, Liechtenstein, Luxembourg, Monaco, Morocco, Netherlands, Portugal, Republic of Viet-Nam, Romania, San Marino, Spain, Switzerland, Tunisia, Yugoslavia.

48. The Draft Treaty could, with only small drafting changes, be transformed into a revision of the Madrid Agreement. The 1971 Committee of Experts did not ask for such a transformation, probably for the reasons which were put before it in detail (see document TRT/I/2, paragraphs 48 to 52) and which may be very briefly summarized as follows:

(a) The differences between the Draft Treaty and the Madrid Agreement are so substantial—direct filing as opposed to filing on the basis of a registration in the country of origin, different terms for the initial registration, different terms for renewal, different fee systems, two official languages as opposed to one, the absence of all extraterritorial effect as opposed to extraterritorial effect of cancellation of the national registration in the country of origin—that even if the new instrument were called a revision of the Madrid Agreement, it would, *for all practical purposes*, be an independent treaty. This is the more so as their administrations could not be merged: not only would the applicants, owners, national Offices and the International Bureau have to follow rules fundamentally different but also the budgets and finances could not be merged because the fee systems are different and, above all, because the States party to one instrument would not be the same as those party to the other.

(b) The main purpose in proposing a new system is to find solutions acceptable both to the members of the Madrid Union and to countries which, without the substantial changes proposed, cannot accept the Madrid Agreement. *These prospective new members*, however, could vote in the diplomatic conference and could sign the new instrument—that is, could become responsible co-authors of the new system—only if the new instrument were a treaty independent of the Madrid Agreement. If it were a revision, only the existing members could participate in the decisions and sign the revised Agreement.

49. Two questions might deserve examination in connection with the proposal to have two independent instruments (Madrid Agreement and the new Treaty): What are the advantages and disadvantages of such a solution? Is there any need to establish links between the two instruments?

50. *Advantages and Disadvantages.* The quetion of advantages and disadvantages will be considered from the viewpoint of the territorial extension of an international registration system, the owners of marks, and national Offices.

51. It follows from what has been said about negotiation and signature in paragraph 46(b), above, that, in order to increase substantially the number of countries adhering to an international registration system, the only safe solution is to have an independent treaty. In other words, this is a matter of political necessity.

52. As far as the owners of marks are concerned, one must recognize that knowing two systems (Madrid and the new one) is more difficult than one. However, knowing two systems is still infinitely easier than knowing as many systems as there are countries outside the Madrid Union: once it is recognized—and in view of the history and present status of the Madrid Union one must recognize—that the Madrid system is not viable in a great number of countries, it is clear that it will be an enormous advantage to have a uniform international (the new) system for at least the countries outside the Madrid Union plus certainly the majority of the countries party to the present Madrid system.

53. As far as the national Offices are concerned, some say that, where a country belongs to two systems, its national Office will have two kinds of duties to perform and this will cause complications. However, this is only a superficial impression because the fact is that, for all practical purposes, the proposed new system will simply liberate national Offices from some tasks which they have to perform under the Madrid Agreement. Those are the tasks of certifying and transmitting to the International Bureau the international applications and the fees accompanying them, tasks which involve great responsibility because errors or delays may deprive the owner of the mark of his rights in all the countries in which he has sought protection. Under the new Treaty, national Offices would have no such tasks (because of the filing of the international applications direct with the International Bureau) and the remaining tasks (mainly the notification of refusals or notices of possible refusal) would be substantially if not entirely the same under the two systems. In other words, the net result of the existence of the second system for national Offices would be to lessen considerably, rather than complicate, their responsibilities.

54. *Links.* As far as the question whether some links need be established between the existing (Madrid) system and the new system is concerned, it would seem that there is no need for such links. On the contrary, the absence of any links, that is, the fact of keeping the two systems entirely apart, would make matters easier to comprehend and to apply.

55. Having two systems may, in some cases, present some advantages to the owner of the mark because he may choose between two possibilities according to whichever he considers the more advantageous for him. For example, take the case where he is a resident of a country which is party to both the Madrid Agreement and the new Treaty. If he desires protection in any other country which is also a party to both instruments, he will have the possibility of deciding which route to follow: if he already has a secure home registration and is not afraid of a cancellation with extraterritorial effect, if the fees are less under the Madrid Agreement, if he needs no moratorium for starting the actual use of the mark, if he is confident that he does not need a period of grace for paying certain fees, if, in fact, any of these reasons applies, he would probably choose "the Madrid route"; on the other hand, if he is excluded from obtaining a registration in his own country or cannot afford the time necessary for acquiring one, if he dislikes the idea of exposing his mark to a cancellation with extraterritorial effect, if the fees are less under the new Treaty, if he does not use the mark and wishes to secure protection in States which require actual use on filing or before the end of the third (or fifth) year after filing, if it is indifferent to him whether he lists his goods and/or services in French or English or if he actually prefers to do so in English, if he thinks that he might make a mistake in calculating the fees and wants to be able to use any period of grace, if, in fact, any of these reasons applies, he would probably choose "the new route."

56. It is to be noted that, naturally, all the questions relating to the coexistence of two intstruments should be considered transitory. Any country acceding to the new Treaty might decide to leave the Madrid Union. If all such countries did so, the Madrid Union would automatically disappear for lack of members. Of course, it is hoped that the present members of the Madrid Union would not, upon accession to the new Treaty, leave the Madrid Union, although, even if they did, they would not harm their residents or nationals in countries which did likewise because the owner can switch over to the new system without loss of rights: they could harm them only in those countries which are party only to the Madrid Agreement.

57. The following would be a completely safe solution: any member State of the Madrid Union acceding to the new treaty should leave that union only when its nationals and residents cease to use the Madrid Agreement. This would probably be the case when all, or almost all, the present members of the Madrid Union had acceded to the new Treaty.

58. In the meantime, owners of marks seeking protection in countries party to all three instruments could choose not only between the existing two routes—the Paris Convention route and the Madrid route—but from among three routes: the Paris route, the Madrid route and the new route. Far from harming them, this wider choice could only be advantageous to the owners of marks.

DRAFT

TRADEMARK REGISTRATION TREATY [TRT/11/1]

(prepared by the International Bureau)

LIST OF ARTICLES

Introductory Provisions

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COMMENTS ON THE TITLE OF THE TREATY

The title proposed is "Trademark Registration Treaty."

It is admitted that this title could be objected to on at least two grounds: first, that it uses the word "trademark" instead of "mark" and, second, that it does not specify that the registration in question is an international registration.

To the first objection, one could reply that, in the English language, the first meaning of the word "mark" is *not* "trademark." Thus "mark" could lead to misunderstandings. That is why it is proposed to use in the title the term "trademark"—which is unequivocal. The *text* itself uses the word "mark" to convey, to the specialist, the assurance that service marks have not been forgotten.

To the second objection, one could reply that, a treaty being an international matter *par excellence*, the word "Treaty" in the title already conveys the idea that the registration must be of some international kind. Here, too, it is of course true that the text uses the expression "international registration," but for a good reason, namely, to distinguish it from national registration. In the title, that distinction follows, as has been stated, from the juxtaposition of the words "Registration" and "Treaty."

Thus, the title—even if not quite in conformity with the terminology of the text—is believed to convey the essence of its subject matter and to be understandable also to the non-specialist.

Furthermore, it has the obvious advantage of being brief.

Finally, it has the advantage that its initials—TRT—give an abbreviated title which is easy to pronounce and easy to memorize.

Trademark Registration Treaty

(Second Draft)

INTRODUCTORY PROVISIONS

ARTICLE 1

Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

COMMENTS ON ARTICLE 1

Sole paragraph: The Treaty would be a "special agreement" under Article 19 of the Paris Convention since it would be concluded among States party to that Convention (see Article 108(1) of the Draft Treaty). Article 19 of the Paris Convention reads as follows: "It is understood that the countries of the [Paris] Union reserve the right to make separately between themselves special agreements for the protection of industrial property, in so far as these agreements do not contravene the provisions of this [Paris] Convention."

Each of the seven agreements so far concluded under Article 19 of the Paris Convention, which provides also for the establishment of administrative organs (at least an Assembly of the Contracting States), provides for the constitution of a special "Union" under the "general" Paris Union (constituted by the Contracting States of the Paris Convention). Thus, the constitution of a Union is in conformity with tradition.

ARTICLE 2

Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

(i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;
(ii) "international application" means an application filed for international registration;
(iii) "applicant" means the natural person who or legal entity which files the international application;
(iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of some or all of the designated States or some or all of the goods and/or services listed in that registration;
(v) "joint owners of the international registration" means those natural persons or legal entities in whose names the international registration stands for the purposes of the same designated States and the same goods and/or services;
(vi) "mark" means both a trademark and a service mark;
(vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;
(viii) references to any *final* decision or *final* refusal shall be construed as references to a decision or refusal against which there is no remedy, or against which all remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;
(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau.
(x) references to the *date of the publication* of the international registration or of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;
(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;
(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designation;
(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of natural Offices;
(xiv) "national register of marks" means the register of marks kept by a national Office;
(xv) "designated Office" means the national Office of the designated State;
(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;
(xvii) "Paris Convention" means the Paris Convention for the Protection of Industrial Property;

(xviii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;
(xix) "Union" means the International Trademark Registration Union;
(xx) "Assembly" means the Assembly of the Union;
(xxi) "Organization" means the World Intellectual Property Organization;
(xxii) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureaux for the Protection of Intellectual Property (BIRPI);
(xxiii) "Director General" means the Director General of the Organization;
(xxiv) "Regulations" means the Regulations referred to in Article 104.

COMMENTS ON ARTICLE 2

These abbreviated expressions seem to be self-explanatory. However, the following might be noted.

ad (iii): The person who files an international application is called an *applicant* only as long as his application is not accepted. Once accepted, he is called the *owner of the international registration.*

ad (ix): As to the *Gazette*, see Rule 30 (The Gazette).

It goes without saying that, as is usual in legislative texts, the singular stands also for the plural and masculine pronouns stand also for feminine and neuter pronouns, wherever appropriate.

CHAPTER I: SUBSTANTIVE PROVISIONS

ARTICLE 3

International Registrations and International Applications

(1) The International Bureau shall register marks in the International Register of Marks according to the provisions of this Treaty and the Regulations.

(2) International registrations shall be effected on the basis of international applications.

COMMENTS ON ARTICLE 3

Paragraph (1): See Rule 3 (The International Register of Marks).

Paragraph (2): See Articles 4 (Right To File International Applications and To Own International Registrations) and 5 (The International Application).

ARTICLE 4

Right to File International Applications and To Own International Registrations

(1) Any resident or national of a Contracting State may file international applications and may own international registrations.

(2)(a) Any natural person shall be regarded as a resident of a Contracting State if:

(i) according to the national law of that State, he is a resident of that State, or
(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that state.

(3)(a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.

(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.

(4) If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.

COMMENTS ON ARTICLE 4

Paragraph (1): See Article 5 (The International Application) and the comments thereon, as well as Rule 4 (Applicants; Owners of International Registrations).

According to Rule 5.2 (Indications Concerning the Applicant), the international application must indicate the nationality and the residence of the applicant. The International Bureau will not examine whether these allegations are true. It is not, and could not reasonably be expected to be, equipped to do so. Whether a person is the national of a State or not or the resident of a State or not, is a question which the national laws answer differently, and sometimes not very clearly, particularly in the case of dual nationality. Which law should the International Bureau follow? Thus, the question whether the applicant's allegation is true can be raised only before the national Office or other authorities of each designated State. If the allegation is held to be false, the effect of the Treaty on the protection of the mark can be refused by such Office or authority on the ground that it was obtained by fraud or by virtue of some other reasoning compatible with the national law of the particular State.

Paragraphs (2) and (3): These provisions are based on the concepts used in the Paris Convention, which grants national treatment to "nationals of any country of the Union" (Paris Convention, Article 2(1)) and assimilates to such nationals those "who are domiciled or who have real and effective industrial or commercial establishments in the territory of one of the countries of the Union" (Paris Convention, Article 3).

Paragraph (3): Supranational companies are entitled to file international applications and to own international registrations if they have a real and effective industrial establishment in at least one of the Contracting States (subparagraph (a)).

Paragraph (4): This provision means that it is not necessary that the applicant or owner should have both the nationality of and residence in a Contracting State: compliance with one of these criteria is sufficient.

ARTICLE 5

The International Application

(1)(a) The international application shall contain, as specified in this Treaty and the Regulations:

(i) an indication that it is filed under this Treaty,
(ii) indications concerning the applicant's identiy, residence, nationality, and address,
(iii) a reproduction of the mark,
(iv) a list of goods and/or services,
(v) the identification of the designated State or States.

(b) The international application may contain a declaration, as provided in the Regulations, claming the priority of one or more earlier applications filed in any country party to the Paris Convention or of one or more earlier filings that are equivalent to regular national filings within the meaning of that Conventional. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(2) International applications shall be filed direct with the International Bureau.

[(3) Notwithstanding the provisions of the preceding paragraphs, the national law of any Contracting State may provide that if the applicant is a resident [*Alternative:* national] of that State:

(i) the mark which is the subject of the international application must have been first granted a registration in the national register of marks of that State [or must have been first filed in that State],
(ii) That State may not be designated [or may be designated only if specific conditions are fulfilled, such as that fees additional to those provided for under this Treaty must be paid],
(iii) the international application [must or] may be filed through the intermediary of the national Office of that State.]

COMMENTS ON ARTICLE 5

Paragraph (1)(a), introductory phrase: See Rule 5 (Mandatory Contents of the International Application).

Paragraph (1)(a)(i): See Rule 5.1 (Indication that the International Application Is Filed Under the Treaty).

Paragraph (1)(a)(ii): See Rule 5.2 (Indications Concerning the Applicant).

Paragraph (1)(a)(iii): See Rule 5.3 (Reproduction of the Mark; Colors, Transliteration and Translation).

Paragraph (1)(a)(iv): See Rule 5.4 (List of Goods and/or Services). That Rule requires, among other things, that the goods and/or services must be expressed in "precise terms" and "as far as possible in those terms appearing in the alphabetical list of the International [Nice] Classification." It is to be noted that what constitutes "precise terms" is a matter on which each designated State may pass its own judgment and, consequently, even terms appearing in the said alphabetical list may be considered not "precise."

Paragraph (1)(a)(v): See Rule 5.5 (Identification of the Designated State or States). The designation of one Contracting State is permitted. If paragraph (3) is retained, any Contracting State could disallow its designation by applicants who are residents [nationals] of that State, or could impose specific conditions in connection with such a designation.

Paragraph (1)(b): As to the claiming of priority, see Rule 6.2 (Claiming of Priority). As to the effect of such claiming, see Article 23. "Earlier filings" could be applications under the Treaty (see Article 24) or under regional treaties (OAMPI, Benelux).

The additional optional indications provided for in *other provisions of the Treaty* concern:

the choice of a certain national register (see Article 11(3) and Rule 6.5: Option Under Article 11(3)),
the declaration stating intent to use the mark in respect of any of the designated States (see Article 18(4), and Rule 6.3: Declaration of Intent To Use the Mark).

The additional optional indications provided for *in the Regulations* concern:

the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 19(2) and 20(2), and Rule 6.4: Declarations Under Articles 19(2) and 20(2)),
the appointment of a representative (see Rule 6.1: Naming of a Representative),
the indication that the mark is a *"marque collective"* (see Rule 6.7: *Marque collective*),
the indication of the trade or business of the applicant (see Rule 6.6: Trade or Business of the Applicant).

Paragraph (1)(c): As to *language*, see Rule 7.1 (Language of the International Application).

As to *form*, see Rule 8 (Form of the International Application).

As to *fees*, see Rule 9 (Fees Payable With the Filing of the International Application), as well as Article 17 (Fees) and Rule 26 (Payment of Fees).

As to *signature*, see Rule 8.2 (Copies; Signature). The international application may be signed by the applicant's duly appointed representative (see Article 22(2), second sentence).

Paragraph (2): Filing may be made by deposit with the International Bureau or with any agency of that Bureau (if and when such agency is established in a place other than Geneva, Switzerland), or through mailing to the said Bureau or such agency. See Rule 24 (Transmittal of Documents to the International Bureau). However, if paragraph (3)(iii) is retained, any Contracting State could provide that the international applications of its own residents must or may (at the applicant's option) be filed through the intermediary of its own national Office.

Paragraph (3): This paragraph appears in brackets to indicate that opinion was divided in the October 1971 Committee of Experts on the question whether it should be retained. "The main arguments for omitting paragraph (3) were that, without it, the procedure would be uniform and more simple, and discrimination by any country against its own residents would be precluded" (Report of the Committee, document TRT/I/11, paragraph 49). Whether, if retained, this paragraph should relate to nationals or to residents is a question to be studied. That is why the word "national" appears in brackets.

Paragraph (3)(i): "The main argument for retaining item (i) was that a country party to both the Madrid Agreement and the proposed Treaty would be able to stipulate the same requirement under the latter as under the former, namely, previous national registration, and thus the residents of such country would not be exposed to the danger of confusion that would exist if they had to follow two different procedures" *(loc. cit.)*. Since this argument does not apply to the words "or must have been first filed in that State," those words have been placed between a second pair of brackets. If the provision is retained, the question arises whether non-compliance with it should be sanctioned in the Treaty and, if so, how. If such sanction had to be provided for, one would have to add to the requirements for international applications (paragraph (1)(a)) the stipulation that international applications filed by residents of a Contracting State making use of the faculty in question must be accompanied by an attestation by the national Office of such State that a national registration has been granted [or that a national application has been filed] in that State; issuance of the attestation would have to be preceded by a comparison—by the national Office—between the mark and the lists of the goods and/or services appearing (in some cases, in different languages) in the national registration [application] and those appearing in the international application. Furthermore, the lack of such attestation would have to be included among the reasons (Article 7(1)) for which the international registration would have to be denied by the International Bureau. Such procedures would appear to be complicated. Therefore, it would seem to be preferable—if the item is retained—not to write any sanction into the Treaty but to leave the matter of sanctions to the national law and the national procedures of the State of which the applicant is a resident. Rule 14.5 implements this thought.

Paragraph (3)(ii): The main argument used by those in the October 1971 Committee of Experts who wished to retain this item was that "some States might wish to prohibit the so-called self-designation" *(loc. cit.)*. Since this argument applies only to the first six words of the item, the rest of the provision has been placed between a second pair of brackets. Even if the provision is maintained, possible non-compliance with it does not seem to require any sanction in the Treaty since the simplest and most effective sanction would consist in refusing the effect provided for in Article 11(2) by the national Office of the self-designated State. Rule 14.5 implements this thought.

Paragraph (3)(iii): The main argument used by those in the October 1971 Committee of Experts who wished to retain this item was that "filing international applications through the intermediary of the applicant's national Office might be convenient to the applicant, particularly in countries at a great distance from Geneva" *(loc. cit.)*. Since this argument applies only to the clause in the permissive form, the words "must or" have been placed between a second pair of brackets. If the item is retained, and is retained only in the permissive form, it will contain no obligation and therefore any sanction is excluded by definition. If the item is retained, and is retained in its mandatory ("must") form, one could proceed in either of the two ways indicated above in connection with item (1).

ARTICLE 6

Later Designation

(1) Any Contracting State not designated in the international application or whose designation has been cancelled may be designated by the applicant or, once the international registration has been effected, by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) Any later designation shall be the subject of a request filed direct with the International Bureau and containing, as specified in the Regulations:

(i) an indication that it is for later designation under this Treaty,
(ii) indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,
(iii) the identification of the international application or, once the international registration has been effected, of such registration,
(iv) the identification of the later designated State.

(b) The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more applications filed in any country party to the Paris Convention or of one or more filings that are equivalent to regular national filings within the meaning of that Convention. Furthermore, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(d) Where, at the time of filing the request, different persons are the owners of the international registration for the purposes of different designated States, the request may be made by any of such owners, provided it does not relate to a Contracting State already designated by one of the other such owners.

[(3) Notwithstanding the provisions of paragraph (1), the national law of any Contracting State may provide that, if the applicant or, once the international registration has been effected, the owner of the international registration is a resident [*Alternative:* national] of that State, that State may not be designated [or may be designated only if specific conditions are fulfilled such as that fees additional to those prescribed under this Treaty must be paid].]

COMMENTS ON ARTICLE 6

Paragraph (1): Any later designation may relate not only to a State which was never designated but also to one whose designation was cancelled (because of the withdrawal of the designation or on the basis of Articles 12 or 13). For the latter case, such designation would generally make sense only if the reason for cancellation no longer existed.

Paragraph (2)(a), introductory phrase: See Rule 10 (Mandatory Contents of the Request for Recording of Later Designation).

As to the word *direct*, see Rule 24 (Transmittal of Documents to the International Bureau); the transmittal of the request may consist in handing over or mailing to the International Bureau or any agency thereof.

In connection with the word *request*, the following terminological pattern of the Draft may be noted: a petition for international registration is called an *application*, a petition for the recording of a later designation is called a *request*, a petition for renewal is called a *demand*; furthermore, only applications lead to *registration*, all other petitions lead to *recording*.

Paragraph (2)(a)(i): See Rule 10.1 (Indication That the Request Is For Recording of Later Designation).

Paragraph (2)(a)(ii): See Rule 10.2 (Indications Concerning the Applicant or the Owner of the International Registration). The indication of the residence and nationality of the applicant or owner is necessary since between the time of the filing of the international application and the time of the filing of the request for recording the later designation his residence or nationality may undergo changes which no longer allow him to own international registrations. His address may also have changed.

Paragraph (2)(a)(iii): See Rule 10.3 (Identification of the International Application or International Registration).

Paragraph (2)(a)(iv): See Rule 10.4 (Identification of the Later Designated State.

Paragraph (2)(b): As to the claiming of priority, see Rule 11.1 (Claiming of Priority).

The additional optional indications provided for in *other provisions of the Treaty concern:*

the choice of a certain national register (see Article 11(3), and Rule 11.5: Option Under Article 11(3)),
the declaration of intent to use the mark in respect of the designated State (see Article 18(4), and Rule 11.2: Declaration of Intent To Use the Mark).

The additional optional indications provided for *in the Regulations* concern:

the possibility of presenting a more limited list of goods and/or services in respect of the later designated State than the list appearing in the international registration (see Rule 11.4: List of Goods and/or Services),
the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 19(2) and 20(2), and Rule 11.3: Declarations Under Articles 19(2) and 20(2)).

Paragraph (2)(c): As to *language*, see Rule 7.2 (Language of the Request for Recording of Later Designations).

As to *form*, see Rule 12 (Form of the Request for Recording of Later Designation).

As to *fees*, see Rule 13 (Fees Payable With the Request for Recording of Later Designation), as well as Article 17 (Fees) and Rule 26 (Payment of Fees).

As to *signature*, see Rule 12.2 (Copies; Signature). The request may be signed by the duly appointed representative (see Article 22(2), second sentence).

Paragraph (2)(d): Any designation contrary to this provision will be declined by the International Bureau (see Article 8(1)(x)). This, however, would not prevent the unsuccessful owner from filing a new international application for the same mark and the same goods and/or services and designating the State which, through the attempted later designation, he was not entitled to designate. By forcing him into the latter solution, the International Register is kept clearer since the designation of the same State *on the basis of the same international registration* by different owners could more easily lead to confusion.

Paragraph (3): See the comments on Article 5(3) and item (ii) of Article 5(3). The reference to Rule 14.5 should be understood as a reference to Rule 15.5.

ARTICLE 7

International Registration or Declining of the International Application

(1) The International Bureau shall promptly effect the international registration as applied for except:

(i) where the international application does not contain an indication that it is filed under this Treaty,
(ii) where the international application is in a language other than one of the prescribed languages,
(iii) where the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,
(iv) where the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,
(v) where the international application does not include the reproduction of the mark,
(vi) where the international application does not list any goods and/or services,
(vii) where the international application does not designate any Contracting State,
(viii) where the international application is not signed,
(ix) where the prescribed fees are not paid.

(2) Where the only defect is or the only defects are that the international application has not been signed and/or that the fees paid are less than the amount prescribed but at least attain the amount ("minimum amount") fixed in the Regulations, the International Bureau shall invite the applicant to sign the application or to pay the missing part of the fees, as the case may be; if the invitation is complied with within the prescribed time limit, the International Bureau shall effect the international registration.

(3)(a) The International Bureau shall, subject to paragraph (4)(b), decline the international application, notify the applicant accordingly, and reimburse to him such amounts as are specified in the Regulations, where the defect or defects consist of:

(i) any of those referred to in paragraph (1), items (i) to (vii), or
(ii) the fact that no fees have been paid or the amount paid was less than the minimum amount referred to in paragraph (2), or
(iii) the fact that the invitation referred to in paragraph (2) has not been complied with within the time limit referred to in that paragraph.

(b) The International Bureau shall not proceed under subparagraph (a) before the expiration of six months from the date on which it received the international application.

(4)(a) Subject to subparagraph (b), the date under which the international registration shall be effected ("international registration date") is the date on which the international application was received by the International Bureau.

(b) Where any defect referred to in paragraph (3)(a)(i) or (ii) is corrected within the six months period referred to in paragraph (3)(b), or where the missing signature is furnished or the difference between the minimum amount of fees and the required amount of fees is paid after the expiration of the time limit referred to in paragraph (2) but within the said six months period, the International Bureau shall effect the international registration and the international registration date shall be the date on which the International Bureau receives the required correction or payment, provided that by that date all defects have been corrected and all required fees have been paid.

COMMENTS ON ARTICLE 7

Paragraph (1): As to the registration, see Rule 3.1 (Keeping of the Register).

The possible defects listed under (i) to (vii) are all so basic that the paper purporting to be an international application cannot reasonably be considered or treated as one. The comments on Article 5(1) refer in more detail to the applicable Rules, which are the following: for item (i), Rule 5.1; for item (ii), Rule 7.1; for items (iii) and (iv), Rule 5.2; for item (v), Rule 5.3; for item (vi), Rule 5.4; for item (vii), Rule 5.5. It is to be noted that items (iii) and (iv) concerning the identification of the applicant do not necessarily require compliance with all the provisions of Rule 5.2.

Whereas, in the case of the said defects, the international application will be declined automatically, the possible defects mentioned in items (viii) and (ix)—lack of signature or no payment or insufficient payment of the fees—are treated differently: the first always, the second in some cases. In the

case of *lack of signature*, the applicant will be given a chance to furnish the signature (see paragraph (2)) and, if he does so within one month (see Rule 14.1), his application will be registered under the date on which it was received by the International Bureau (see paragraph (4)(a)). As far as *fees* are concerned, two separate cases are envisaged with different consequences. Where the applicant has paid less than the amount prescribed but at least as much as the minimum amount defined in the Regulations (see Rule 14.2), he will be given a chance to pay the difference and, if he does so within one month (see Rule 14.1), his application will be registered under the date on which it was received by the International Bureau (see paragraph (4)(a)). On the other hand, where the applicant has paid no fees whatsoever, or paid less than the minimum amount, or—despite having paid at least the minimum amount—has not paid the difference within the said one-month time limit, his application will be declined (see paragraph (3)). However, even in such cases, as well as those where the time limit for furnishing the missing signature has lapsed without its having been furnished, and even in the case of any of the other defects, the applicant may pay the (missing) fees and correct the defects any time before the expiration of six months from the date on which it received the defective international application; if he does so, that application will not be declined, but the international registration will not be effected under the date on which the international application was received but under the date on which payment of the fees was made (completed) and all the defects were corrected (see paragraphs (3)(b) and (4)(b)).

It is to be noted that, when the defect is other than lack of signature or fees above the minimum but less than required, the International Bureau may call the attention of the applicant to it (see Rule 14.3: Calling Attention to Defects Other Than Those Referred To in Article 7(2)); when it is either of the said two, the International Bureau must invite the applicant to correct it (Article 7(2)).

Possible defects not sanctioned by declining the international application are, for example, non-compliance with the requirement of transliteration and translation (Rule 5.3: Reproduction of the Mark; Colors, Transliteration and Translation), and non-compliance with the requirement that goods and/or services must be grouped according to the International (Nice) Classification (Rule 5.4: List of Goods and/or Services). In such cases, the International Bureau proceeds itself with the transliteration, translation or grouping (see the cited Rules) and may charge the applicant a fee (Rule 9.2: Fees Payable in the Case of Certain Defects in the International Application). It will probably charge no fee where the work is not substantial. Non-payment would have no legal consequence.

Paragraph (2): The time limit is one month from the date of the registered letter which the International Bureau must send to the applicant, inviting him to sign his application or, where the fees paid are more than the minimum amount but less than the required amount, to pay the missing part of the fees (see Rule 14.1: Time Limit Under Article 7(2)). The "minimum amount" is fixed in Rule 14.2 (Minimum Amount Under Article 7(2)).

Paragraph (3)(a): See Rule 14.4 (Notification, and Reimbursement of Certain Fees, Under Article 7(3)).

Where the International Bureau declines the international application or, more precisely, declines to give the status of an international application to a paper purporting to be an international application, the applicant has no instance to appeal to since any such instance could only be an international tribunal and the matter in question could hardly justify the institution of such heavy machinery. Of course, if the International Bureau erred in finding a defect when in fact there was none, it can be alerted to it and come back on its decision. But even if it perseveres in its error, all the consequences of that error can be avoided by making use of the possibility offered to him by Article 9 (Avoiding the Effects of Declining).

Paragraph (3)(b): This subparagraph means that any defect may be corrected within six months of the (attempted) filing of the defective international application without the need to refile that application. However, the international registration date will not be the date on which the defective application was filed but the date on which the defect was corrected (see paragraph (4)(b)), except where, in the cases envisaged in paragraph (2), the condition stated therein is fulfilled.

Paragraph (4)(a): Naturally, where the international application has been declined, there will be no "international registration date."

Paragraph (4)(b): See the comments on paragraph (3)(b).

ARTICLE 8

Recording or Declining of Later Designation

(1) Any later designation shall be recorded by the International Bureau according to the request for the recording thereof except:

(i) where the request does not contain an indication that it is for a later designation under this Treaty,
(ii) where the request is in a language other than one of the prescribed languages,
(iii) where the request contains no indications concerning the residence or nationality of the applicant or, where the international registration has already been effected, of the owner of such registration, or only such indications as do not permit the conclusion that he has the right to file international applications and to own international registrations,
(iv) where the request contains no indications concerning the identity and address of the applicant, or, where the international registration has already been effected, of the owner of such registration, or only such indications as do not permit him to be identified and reached by mail,
(v) where the request does not identify the international application or, once the international registration has been effected, such registration,
(vi) where the request does not designate any Contracting State,
(vii) where the request contains a list of goods and/or services which is different from the list contained in the international application or international registration and does not conform with the concept of limitation as defined in the Regulations,
(viii) where the request is not signed,
(ix) where the prescribed fees are not paid,
(x) where, at the time of filing the request, different persons are the owners of the international registration for the purposes of different designated States and the request designates a Contracting State which has already been designated by one of such owners other than the owner making the request.

(2) Where the only defect is or the only defects are that any request for recording a limitation of the list of goods and/or services does not conform with the concept of limitation as defined in the Regulations, that the request for recording the later designation has not been signed, or that the fees paid are less than the amount prescribed but at least attain the amount ("minimum amount") fixed in the Regulations, the International Bureau shall invite the applicant or, once the international registration has been effected, the owner of such registration to conform the list of goods and/or services to the said concept of limitation, to sign the request, or to pay the missing part of the fees, as the case may be; if the invitation is complied with within the prescribed time limit, the International Bureau shall proceed with the recording of the later designation.

(3)(a) The International Bureau shall, subject to paragraph (4)(b), decline the request, notify accordingly the applicant or, once the international registration has been effected, the owner of such registration, and reimburse to him such amounts as are specified in the Regulations, where the defect or defects consist of:

(i) any of those referred to in paragraph (1), items (i) to (vi), or
(ii) the fact that no fees have been paid or the amount paid was less than the minimum amount referred to in paragraph (2), or
(iii) the fact that the invitation referred to in paragraph (2) has not been complied with within the time limit referred to in that paragraph, or
(iv) that referred to in paragraph (1)(x).

(b) The International Bureau shall not proceed under subparagraph (a) before the expiration of six months from the date on which it received the request for recording the later designation.

(4)(a) Subject to subparagraph (b), the date under which the later designation shall be recorded ("recording date of the later designation") is the date on which the request for recording the later designation was received by the International Bureau.

(b) Where any defect referred to in paragraph (3)(a)(i) or (ii) is corrected within the six months period referred to in paragraph (3)(b), or where the conforming with the concept of limitation, the furnishing of the signature or the payment of the difference between the minimum amount of fees and the required amount of fees is effected after the expiration of the time limit referred to in paragraph (2) but within the said six months period, the International Bureau shall record the request and the recording date of the later designation shall be the date on which the International Bureau receives the required correction or payment, provided that by that date all defects have been corrected and all required fees have been paid.

COMMENTS ON ARTICLE 8

Paragraph (1): As to the recording, see Rule 3.1 (Keeping of the Register).

The possible defects listed under (i) to (vi) are all so basic that the paper purporting to be a request for the recording of a later designation cannot reasonably be considered or treated as one. The comments on Article 6(2) refer in more detail to the applicable Rules, which are the following: for item (i), Rule 10.1; for item (ii), Rule 7.2; for items (iii) and (iv), Rule 10.2; for item (v), Rule 10.3; for item (vi), Rule 10.4. It is to be noted that items (iii) and (iv) do not necessarily require compliance with all the provisions of Rule 10.2.

As to item (vii), it is to be noted that the request for the recording of later designation may relate to less than all the goods and/or services appearing in the international registration, since the owner of the international registration may have reasons for aiming at a more limited list in the newly designated State than in those States which were designated in the international application. However, he will have to comply with the requirement that the new list conform with the concept of limitation as defined in Rule 22.2 (Concept of Limitation).

As to the possible defects concerning the limitation of the list of goods and/or services as well as to those referred to in items (viii) and (ix), the solution parallels that provided for in connection with international applications suffering from defects analogous to the two last mentioned. The third and fourth paragraphs of the comments on Article 7(1) apply here too. See also Rule 15.3 (Calling Attention to Defects Other Than Those Referred to in Article 8(2)).

The defect referred to in item (x) cannot be corrected, not even under paragraph (4)(b).

Paragraph (2): The time limit is one month from the date of the registered letter which the International Bureau must send to the applicant or the owner of the international registration, inviting him to conform with the concept of limitation, to sign the request or to pay the missing part of the fees (see Rule 15.1: Time Limit Under Article 8(2)). The "minimum amount" is fixed in Rule 15.2 (Minimum Amount Under Article 8(2)).

Paragraph (3)(a): See Rule 15.4 (Notification, and Reimbursement of Certain Fees, Under Article 8(3)). In the case of any erroneous declining of the request for the recording of later designation, the same guarantees are provided for as in the case of erroneous declining of the international application (see Article 9 (Avoiding the Effects of Declining) and the comments on Article 7(3)(a)).

Paragraph (3)(b): This provision parallels Article 7(3)(b), and the comments made on that provision apply here too, *mutatis mutandis*.

Paragraph (4)(a): Naturally, where the request has been declined, there will be no recording date.

Paragraph (4)(b): This provision parallels Article 7(4)(b), and the comments made on that provision apply here too, *mutatis mutandis*.

ARTICLE 9

Avoiding the Effects of Declining

(1) Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within the prescribed time limit, file with the national Office of any State designated in the said declined application or request a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, with the international registration of the mark and the recording of the designation of the said State or, where the international registration has already been effected, with the recording of the designation of that State. He shall, within the same time limit, transmit a copy of the petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition.

(2) If the national Office or other competent authority of the said State finds that the declining, by the International Bureau, of the international application or of the request for the recording of later designation was unjustified under this Treaty and the Regulations, the national Office of the said State shall request the International Bureau to proceed as provided in paragraph (1). [It may request the International Bureau so to proceed even in the absence of any such finding.]

(3) The International Bureau shall proceed as requested.

COMMENTS ON ARTICLE 9

Paragraph (1): As to the purpose of this Article, see the comments on Articles 7(3) and 8(3).

The time limit in question is three months from the date of the registered letter of the International Bureau notifying the fact that the international application or the request for later designation has been declined (see Rule 16.1). See also Rules 16.2 (Recording and Publication Under Article 9(1)) and 16.3 (Notification of National Offices Under Article 9(1)).

A matter to be studied further is whether the Treaty should not allow the applicant to choose between two possibilities: one contained in this Article and another which was provided in the Article bearing the same number in document TRT/I/3 of April 13, 1971. That Article read as follows:

> "(1) Where the International Bureau has declined the international application or a request for recordal of later designation, the applicant or the owner of the international registration may, within the prescribed time limit, file with the national Office of any State which the said applicant or owner has attempted to designate an application ("national application") for the registration, in the national register of marks, of the same mark in respect of a list of goods and/or services not extending beyond the list of goods and/or services indicated in the international application or the request for recordal of later designation.
>
> "(2) The national application thus filed with the said national Office shall be treated as if it had been filed on the date on which the declined international application or the declined request for recordal of later designation was filed with the International Bureau, provided that the national Office finds that the declining, by the International Bureau, of the international application or of the request for recordal of later designation was unjustified under this Treaty and the Regulations and provided further that the national application complies with all the requirements of the national law of the interested State laid down for national applications."

The above text was accompanied by the following comments in the said document:

> "*Paragraph (1):* As to the purpose of this Article, see the comments on Articles 7(3) and 8(3).
>
> "The time limit in question is three months from the date of the registered letter of the International Bureau notifying the fact that the international application or the request for later designation has been declined (see Rule 16.1).
>
> "*Paragraph (2):* This provision means that, if the attempted—but declined—international application or request for the recordal of a later designation was filed within the six-month priority period provided for in the Paris Convention, the national application in question would also benefit from that priority.
>
> "In order to be able to furnish evidence to the national Office in question that he did file an international application and that it was declined in error, the applicant may ask the International Bureau to communicate to the national Office a copy of the entire file of his case (see Rule 16.2: Notification to National Offices Under Article 9(2)).
>
> "The question arises whether a similar possibility should be offered to the owner of the international registration where the International Bureau has erred in applying a later effective date under the second sentence of Article 7(4) or the second sentence of Article 8(4)."

Paragraph (2): This provision means, in effect, that any designated State may force the International Bureau into recording its designation and, if the international registration has not been effected, also into effecting such registration. But if such registration is effected, it will have effect only in respect of the designated State which has forced the registration. However, the International Bureau may, at its own discretion, reverse its decision to decline also in respect of other designated States.

Whether the last sentence should be maintained is a matter to be studied further. The main argument for omitting it would be that if the national Office finds that the declining was justified there is no good reason for requesting the International Bureau to proceed. The main argument for retaining it is that the mistake on which the declining was based—of necessity, since the International Bureau has no discretion—may be insignificant (for example, the fact that the fees were only a few francs short of the required amount) and it would only be equitable to disregard such a mistake.

Paragraph (3): "As requested means as requested by the national Office of the designated State.

A matter to be studied further is whether the scope of this Article should be extended so as to cover not only the cases

where the International Bureau declines the international application or the request for recording later designation but also the cases where the International Bureau refuses to honor a request for recording a change in ownership (see Article 14), a request for recording a change in the list of goods and/or services (now covered in Article 15(3)(b)), and a demand for renewal (see Article 16). Another solution could consist in making Article 9 applicable to any decision of the International Bureau in connection with which the applicant or the owner of the international registration alleges that the International Bureau has erred.

ARTICLE 10

Publication and Notification

(1) International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.

COMMENTS ON ARTICLE 10

Paragraph (1): The publication shall take place in the Gazette of the International Bureau, since Article 2(ix) provides that "references to any publication by the International Bureau shall be construed as references to publications effected in the official Gazette of that Bureau."

As to the contents of the publication, see Rule 17.1 (Contents of Publication of International Registrations): The publication will be effected in English and French (see Rule 30.3: Languages of the Gazette), normally within between ten and twenty days from the international registration date if it is assumed that preparations for the registration and publication will last approximately ten days and if it is considered that the Gazette will be weekly (see Rule 30.2: Frequency of Issue of the Gazette).

The Regulations contain no provision on the question whether the registration of a mark relating to goods and/or services belonging to several classes of the Nice Classification should be published as one item or as many items as there are classes. The matter will be regulated in the Administrative Instructions. The present intention is to proceed as follows. The Gazette will have a separate section for each class of the Nice Classification. Each registration which relates to one class only will be published in the section corresponding to that class. Where any registration relates to several classes it will be published in the section corresponding to that class which has the lowest number among the said classes, whereas in each other relevant section merely the international registration number or international later designation number and the page number of the Gazette on which the registration appears will be mentioned.

As to access to information through other means than the Gazette, see Rule 31 (Copies and Other Information Available to the Public).

Paragraph (2): See Rule 18 (Notification of International Registrations and Recordings of Later Designations), according to which the notification will essentially consist of a reprint of the relevant passages in the Gazette. However, where the international application or the request for the recording of the later designation contains a declaration of intent to use the mark, the notification to the interested designated Office will also include a copy in full of that application or request (see Rule 18.1(iii)).

ARTICLE 11

Effects of International Registration and of Recording of Later Designation

(1) [*National Application Effect*] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

ALTERNATIVE A:

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a), at the expiration of that time limit,

(ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a), if and when, and to the extent to which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

ALTERNATIVE B:

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State on the following date:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a), on the day following the expiration of that time limit, or

(ii) where a refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a) but the refusal is subsequently reversed, on the date on which the decision of reversal becomes final, or

(iii) where a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a) but a decision taken in subsequent proceedings results in acceptance of the effect provided for in this paragraph, on the date on which that decision becomes final.

BOTH ALTERNATIVES:

(3) [*Several National Registers*] Where, in any designated State, there is more than one national register of marks, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register which affords the highest degree of protection, unless another register is indicated in the international application or the request for the recording of the later designation, or in a communication filed direct with the designated Office. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register so indicated.

COMMENTS ON ARTICLE 11

Paragraphs (1) and (2): These two paragraphs state the two effects of the international registration: the first is the same as that of national filing, the second is the same as that of national registration. In these comments, the first will sometimes be referred to as the "*national application effect* (of the international application)," and the second as the "*national registration effect* (of the international registration)."

These indications appear also at the beginning of the paragraphs, in brackets, as a sort of title. Neither these nor any other such paragraph titles are intended to remain in the text of the Treaty beyond the draft stages.

Paragraph (1): The national application effect comes into existence as of the international registration date, which is generally the date on which the international application was received by the International Bureau (see Article 7(4)(a)) or, in the case of a later designation, as of the recording date of the later designation, which generally is the date on which the request for recording the later designation is received by the International Bureau (see Article 8(4)).

In essence, this paragraph provides that an international registration has the same effect as a national application. It should be noted that it contains no provision attempting to harmonize the effects attached to national application under the various national laws. Consequently, each State's national law will continue to be completely free in this respect. Whatever effect is provided for national applications will be applicable under this paragraph to international registrations.

Paragraph (2): This provision, together with the provision on renewals, is the most important one of the Treaty. The Treaty is being concluded for the very reason that a single (international) registration should be able to take the place of the separate (national) registrations in each of those States in which the owner of the mark is interested in obtaining protection. This is the provision which accomplishes the desired aim.

The provision means that the effect of the international registration in each designated State (whether designated in the international application or later) is the same as that of the registration of the same mark, for the same goods and/or services, in the national register of marks of that State "(national registration effect)."

It should be noted that neither this provision nor any other provision of the Treaty attempts to harmonize the effects attached to national registration under the various national laws. Consequently, each State's national law will be free to provide the effects it desires to provide for national registration and whatever effect is so provided will be applicable under this paragraph to international registrations. One of the examples of the freedom of national laws is that no given time limit has necessarily to be computed from the date of registration; thus, for example, any requirement of the national law concerning incontestability or the use of the mark may run from any point in time (subject, of course, as far as use is concerned, to respecting Article 18(3)), but any time limit or right which, according to the national law, runs from the national registration date (as distinguished from national filing), will run from the international registration date unless the Treaty provides for exceptions or a different system. (For the sake of simplicity, the comments on this paragraph speak only of the international registration date; however, the expression should always be understood as including also the recording date of the later designation when the designation has not been made in the international application but in a later request.)

Furthermore, it should be noted that protection cannot be acquired, through international registration, in a designated State for marks which are unregistrable in the national register of that State, for example, service marks in States in which service marks are not registrable. If such a State is designated, its authorities should use the right of refusal given to it by Article 12; but, even if they fail to refuse, the designation will have the same effect (i.e., in most cases, none) as that of a national registration made in error.

Finally, it should be noted that the fact that the effect, once acquired, is the same as that of a national registration implies that it can be taken away for the same reasons as those for which a national registration can be cancelled, for example, because it should never have been made (because accepting it for registration was contrary to the law), or because it has not been renewed, or because the mark is not being used when it should be. However, in some of these cases, the Treaty provides for guarantees or alternative possibilities: cancellation must strictly follow the national treatment principle of the Paris Convention (see Article 12), renewal is to be effected internationally (see Article 16), and use generally cannot be required during an initial period of usually three (or five) years after the international registration or the later designation (see Article 18(3)(a)).

All that precedes applies to both Alternatives A and B. What follows deals with the difference between these two Alternatives.

The difference between the two Alternatives concerns the question when the national registration effect starts. According to Alternative A, it would start *on the international registration date.* According to Alternative B, it would start, where there is no "complication," i.e., refusal or notice of possible refusal, *at the end of the 12 (or 15) months period* during which refusal or notice of possible refusal may be forthcoming (see Article 12(2)(a)) or, where there is a "complication," if and *when it is resolved in favor of the applicant.*

Alternative A has the advantage that it fixes a uniform starting date, which appears to have the merit of simplicity. Alternative B has the advantage that it avoids the principle of retroactivity, which might raise fears that rights of third parties may be prejudiced, and that it avoids the possible need to change certain national laws in certain respects (see below).

It is believed, however, that the differences are more apparent than real and the advantages more theoretical than practical.

This is so because according to the national laws of most countries most effects of national registration are retroactive to the date of national filing. Thus, even under Alternative B, there would practically be a *de facto* retroactivity and to the same uniform date (the date on which the international registration was filed) as under Alternative A. For example, in many countries a registered mark prevails against conflicting marks if it has been filed before those other marks are filed; in others, it prevails if it has been used before those other marks are used. In neither case is the date of registration of any relevance.

Admittedly, there are certain effects under some national laws which start from registration only. For example, in some countries infringement actions may be brought only after registration. It is to cover those situations without having to change those laws (either in the sense that the said effects would also start from filing or from some event other than registration) that Alternative B is proposed. Another solution would consist in adopting Alternative A but with a proviso or some other provision (perhaps a reservation) which would allow any Contracting State which "repeats" the international registration in its national register to apply the said effects from the date it "repeats" the international registration, provided that the national Office notifies the International Bureau of the date of such "repeating" within the 12 months period. (Where item (ii) of Alternative A applies, the 12 months period would, naturally, not apply.)

Paragraph (3): This paragraph is intended, in particular, to cover the situation existing in the United States of America, the United Kingdom, and a number of States following the UK system, namely, that there are two registers of marks ("Principal" and "Supplemental" in the United States of America or "Part A" and "Part B" in the United Kingdom). The provision leaves it to the discretion of the applicant or the owner of the international registration to decide whether the national registration effect will, in the said examples, relate to the Principal Register or to the Supplemental Register, or to the Part A Register or to the Part B Register. If the application, or the request for recording of a later designation or a communication addressed to the interested designated Office does not contain an indication that the Supplemental Register or the Part B Register is chosen, the effect will relate to the Principal Register or the Part A Register, since they afford a higher degree of protection than the Supplemental Register and the Part B Register. See Rule 6.5 (Option Under Article 11(3)) and Rule 11.5 (Option Under Article 11(3)).

ARTICLE 12

Refusal of the Effect Provided for in Article 11(2)

(1) Subject to the provisions of paragraph (2) and Articles 18, 19(3) and 20(3), the effect provided for in Article 11(2) may, in respect of any designated State, be refused by the competent authorities of that State for the same reasons and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such reasons are not incompatible with this Treaty and the Regulations or the Paris Convention, and provided that Article 6*quinquies* of the Paris Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6*quinquies*, of registration in the country of origin.

(2)(a) Any refusal under paragraph (1) shall be effective only:

(i) if the refusal or the notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 12 [*Alternative:* 15] months from the date of the publication of the international registration, or, in the case of a later designation, of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the reasons for the refusal are specified,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the reasons for which a refusal may eventually be pronounced, and provided that the reasons given in the final decision of refusal include at least one of the reasons specified in the said notice and the said decision is or is also based on that reason. [Where the said decision is that of a court, it shall be effective even if it is not based on any of the reasons specified in the notice of possible refusal.]

[(b) Where the notice of possible refusal received by the International Bureau within the time limit fixed in subparagraph (a)(i) includes reasons adduced by a third party in an opposition procedure and that party later adduces supplemental reasons, the said reasons shall be considered to have been included in the notice of possible refusal if they are notified, as provided in the Regulations, by the designated Office to the International Bureau so that the latter receives them within three [*Alternative:* six] months from the expiration of the said time limit.]

(3)(a) The International Bureau shall, as provided in the Regulations, notify the owner of the international registration of any notification received under paragraph (2) and publish a notice concerning such notification.

(b) The owner of the international registration shall, in any designated State, have the same remedies against any decision of refusal and shall have the same procedural and substantive rights in connection with any intended possible refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4)(a) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall notify the owner of the international registration, record the final decision, cancel the designation of that State, or, in a case where the final decision relates to some only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancellation.

(b) Where a non-final refusal or a notice of possible refusal has been notified under paragraph (2) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly.

(c) The details of the procedures referred to in subparagraphs (a) and (b) are provided in the Regulations.

COMMENTS ON ARTICLE 12

Paragraph (1): This paragraph enunciates the principle according to which the "national registration effect" may not, on the basis of an international registration, materialize for the same reasons as those for which the national registration of a mark applied for direct in the national Office cannot be granted.

The principle is qualified in three respects, *First,* the refusal must follow certain procedural requirements (see paragraph (2)). *Secondly,* the refusal cannot be in violation of Article 18, which provides for the non-applicability of certain national requirements generally or for a limited period of time. *Thirdly,* the national registration effect cannot be put, so to speak, in double jeopardy by exposing the mark to a new possibility of refusal when it has already been exposed to such possibility because the mark which is the subject of the international registration is no more and no less than a mark which is already in the national register or which is already in the other international register, namely, that maintained under the Madrid Agreement (see Article 19 (Preservation of Rights Acquired Through National Registration) and Article 20 (Preservation of Rights Acquired Through International Filing Under the Madrid Agreement)). The question that may arise is why a State in which the mark is already protected (by virtue of a national registration or by virtue of the Madrid Agreement) should be designated at all under the Treaty. The answer is that under the Treaty the surveillance of renewals is much simpler if not also much cheaper (see Article 16(2) and the comments accompanying Article 19(1)).

The grounds on which the refusal is based must not be incompatible with the provisions of the Treaty and the Regulations or of the Paris Convention. That they must not be incompatible with the Treaty and the Regulations is a matter of course. That they cannot be incompatible with the Paris Convention follows from the fact that only States members of the Paris Union may become party to the Treaty (see Article 108(1)). These matters are dealt with in the first proviso of the paragraph under consideration.

The second proviso provides that the refusal must also respect Article 6*quinquies* of the Paris Convention. In this case, the mere reference to the Paris Convention would not suffice since the said Article refers to the notion of country of origin, and marks which are the subject of international registration do not have a country of origin when the international registration is not preceded by a registration in the national register of a country. Sections B and C of Article 6*quinquies* provide the reasons for which marks may be "denied registration" or may be "invalidated" (Section B) or may be "refused" (Section C). In the Draft Treaty's terminology, these acts are called refusals or cancellations (Articles 12 and 13). It is to be noted that, since Article 6*quinquies* of the Paris Convention deals only with grounds of refusal concerning the mark as such (the mark itself), any national law providing for refusal or cancellation for lack of bona fide intent to use the mark, lack of actual use, or multiplicity of applicants, would be compatible with Article 6*quinquies* and hence, subject to the provisions of Article 18, also with the paragraph in question.

Paragraph (2), generally: This paragraph specifies the procedural requirements which any refusal, to be effective under the Treaty, must satsify. Roughly stated, it means that the refusal can generally be based only on such grounds as are notified—via the International Bureau—within a certain time limit, to the owner of the international registration. The notification is made *via* the International Bureau because it might be awkward, or even impossible from a legal viewpoint, for a national Office to send official communications to persons in foreign States. Naturally, this difficulty could be eliminated if the owner of the international registration were obliged to have a representative or at least an address for service in each of the designated States. However, this would always be costly for him and often completely unnecessary, especially where there is no dispute between him and the national Office. But, of course, if there is a refusal or notice of possible refusal, and the owner wants to defend his case, he will have to conform, from then on, to the national procedure, because he can only react direct, that is, not through the International Bureau. Consequently, he will have to use the remedies available under the national law in accordance with that law. This will necessitate a knowledge of the national law, the use of the official language of the national Office, and the practical if not the legal necessity of using the services of a local representative (attorney, agent, or other). See Article 18(6).

Where the address of the owner of the international registration is in the State which notifies the refusal or notice of possible refusal, the national Office could, if it so desired, send a copy of the notification to the owner. Such a copy may give the owner a few more days to react if he so desires.

Paragraph (2)(a)(i): See Rule 19.1 (Notifying the International Bureau; Reasons). For the definition of the date of publication, see Article 2(x).

As far as the time limit is concerned, the Draft hesitates between 12 and 15 months. The owner of the mark desires the shortest possible term to reduce the period of uncertainty. On the other hand, unless the national law provides for no or only an elementary examination, the designated Office has to go through an ex officio (ex parte) examination, and, in certain States, must announce the mark for possible third-party opposition and forward a copy of any opposition to the International Bureau. All this requires time and the question is whether it can be accomplished within 12 months, or whether a longer period (for example, 15 months) is needed.

For the case where the notification is made but the time limit is missed, see Rule 19.5 (Belated Notifications).

Paragraph (2)(a)(ii): See Rule 19.1 (Notifying the International Bureau; Reasons).

Paragraph (2)(a)(iii): See Rule 19.1 (Notifying the International Bureau; Reasons). For the definition of "final," see Article 2(viii).

The rule is that the reasons specified in the final decision of refusal must include at least one of the reasons specified in the notice of possible refusal, otherwise the notice could become a meaningless formality which would not give the applicant the required warning. However, the question arises whether it is practical to apply that rule to final decisions in court proceedings since courts may not wish to have their freedom of decision limited by any earlier administrative finding. The sentence in brackets would give them that freedom. Naturally, by pronouncing the negative decision in the form of a cancellation rather than in the form of a refusal the same result could be obtained without the additional sentence.

Paragraph (2)(b): This subparagraph is placed within brackets since the question whether it is really necessary is still being studied. It tries to take care of the time problem which might arise where an opposition is later amended. It would extend the 12 (or 15) months time limit to between 15 and 21 months in the case described in it.

Paragraph (3)(a): See Rule 19.2 (Notifying the Owner of the International Registration).

Paragraph (3)(b): This provision simply specifies, for a special purpose—namely, for refusals—the national treatment rule of the Paris Convention.

Paragraph (4)(a): See Rule 19.3 (Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation).

Paragraph (4)(b): See Rule 19.4 (Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)).

Paragraph (4)(c): See the two Rules referred to in the preceding two paragraphs.

ARTICLE 13

Cancellation of the Effect Acquired Under Article 11(2)

(1) Subject to Article 18, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of such State for the same reasons, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that

(i) such reasons and such procedures are not incompatible with this Treaty and the Regulations or the Paris Convention,

(ii) Article 6*quinquies* of the Paris Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of that Article, of registration in the country of origin,

(iii) the competent authorities of the said State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in the procedure and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the State in question.

(2) If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

COMMENTS ON ARTICLE 13

Paragraph (1): Since the international registration is a constructive national registration (see comments on Article 11(2)), it is logical that, once acquired, it should be capable of being taken away ("cancelled") for the same reasons as a "real" national registration. This is the principle enunciated in paragraph (1). It can also be regarded as a specification of the national treatment rule of the Paris Convention. It goes without saying that item (iii) does not apply in those cases in which, according to the national law, the omission of certain acts by such owner entails, *ipso facto,* cancellation of registrations.

Paragraph (2): This provision deals with the question how to inform all those concerned and the public at large of the fact that the designation of a State has failed because of a final decision of cancellation pronounced by the authorities of that State. See Rule 20.1 (Notification and Recording of Final Decisions of Cancellation: Cancellation of the Designation, and Publication of the Cancellation).

As to the definition of "final," see Article 2(viii).

ARTICLE 14

Change in the Ownership of the International Registration

(1)(a) Subject to subparagraph (c), any change in the ownership of the international registration shall, on request, be recorded by the International Bureau, as provided in the Regulations.

(b) Subject to paragraph[s] (4) [and (5)], such recording shall have the same effect as if it had been made in the national Office of each of the designated States.

(c) If the new owner of the mark is not entitled to file international applications, this Treaty shall, with the exception of subparagraph (d), cease to be applicable to the international registration concerned unless the change in ownership is by operation of law and, pursuant to a further change in ownership occurring within two years from the first change in ownership and before the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the more recent owner is entitled to file international applications.

(d) If, pursuant to a change in ownership by operation of law, the new owner is not entitled to file international applications but is entitled under the national law of the designated State to file applications for the registration of marks in the national register of marks of that State, he shall have the right to file an application for the registration of the same mark in the said national register, and if, within two years from the change in ownership and before the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, he files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

(2) Where the change in ownership relates to some only of the designated States or some only of the goods and/or services listed in the international registration, the provisions of paragraph (1) shall apply only in respect of those designated States or those goods and/or services to which the change in ownership relates.

(3) Any recording effected by the International Bureau under paragraphs (1) or (2) shall be subject to the payment of a fee to that Bureau, shall be published by the said Bureau, and shall be notified by it to the old and the new owners and to the interested designated Offices, as provided in the Regulations.

(4)(a) The national law of any Contracting State may provide that the effect referred to in paragraph (1)(b) shall apply only if, within three months from the date of notification to the national Office of that State provided for under paragraph (3), evidence is adduced before such national Office for the purpose of satisfying the conditions of the national law as regards changes in ownership.

(b) Where the competent authorities of any designated State refuse the effect referred to in paragraph (1)(b), the national Office of that State shall, as provided in the Regulations, promptly notify the International Bureau accordingly, and that Bureau shall, as provided in the Regulations, record the refusal in the International Register of Marks and publish it.

[(5) The national law of of any Contracting State may provide that the effect referred to in paragraph (1)(b) shall apply only where the new owner is not a resident [*Alternative:* national] of that State.]

COMMENTS ON ARTICLE 14

Paragraph (1)(a): "Change in ownership" means any change in ownership, irrespective of its cause. It may be caused by reason of a contract (typically, assignment) or by operation of law (for example, inheritance). The Treaty does not regulate, and the International Bureau will not examine, the question whether a change has really occurred, in particular whether the contract transferring the property is valid and the transferee capable of owning property. These questions are left to the national law of each Contracting State. The International Bureau will merely record the change if properly requested to do so—that is, in a typical case, if requested by the person in whose name the international registration stands—and provided the new owner is the resident or national of a Contracting State. If he is not, the Treaty—which is concluded for the benefit of the residents or nationals of Contracting States—will cease to be applicable (see subparagraph (c)). As in the case of international applications, the International Bureau will rely on the allegation contained in the request: it will not examine the question whether the new owner is really a national or a resident of the State of which he alleges that he is a national or a resident. See Rule 21.1 (Request for Recording of Change in Ownership) and Rule 21.2 (Procedure Where New Owner Is Entitled To File International Applications).

Paragraph (1)(b): This provision means essentially that even where it is possible it is not necessary to record the change in ownership anywhere else than in the International Register. Any State may, if it wishes to do so, repeat or duplicate the international registration of a mark designating it in its own national register of marks. It may, if it so wishes, also duplicate recordings of any change in ownership. But in neither case may such State require the owner of the international application to ask for such duplication of the registration or recording. Nor may it require that any fee be paid for such duplication. The recording of the change in ownership in the International Register will have the effect described in this paragraph without any further action or any payment by the new or the old owner before or to the national authorities of the designated State. However, any Contracting State may apply its national law in respect of any condition concerning change in ownership other than recording in the national register. In particular, such law may provide that, where a change in ownership relates to some only of the goods and/or services, the goods and/or services listed in connection with the new owner may not be similar to those which remain listed in connection with the earlier owner. A further example is that the national law may provide that marks may be transferred only together with the transferor's goodwill or business or that the transferee is incapable, for certain reasons, of acquiring property. This is the meaning of the second part of paragraph (4)(a). The first part of the same paragraph provides in effect that any Contracting State may require evidence that the said conditions of its national law have been met. It also provides for a time limit for presenting such evidence (three months from the notification of the recording to the designated Office). The time limit is so fixed that it should allow enough time for the assembling and forwarding of the documents constituting the evidence but still not leave third parties and the designated Office in doubt for too long a time as to whether the recording not only is formally correct but also reflects the true situation.

If any of the conditions of the national law—except, of course, any requirement that the change must be recorded

in the national register—is not met, the national authorities of the designated State may refuse the effect of the international recording of the change provided for in paragraph (1)(b) (see paragraph (4)(a)).

Paragraph (1)(c): As to the first part of this provision, see the comment on subparagraph (a). The second part makes provision for rendering the rule less severe. It is modelled on at least one national law. It would mean, for example, that if a person acquires the property in a mark by inheritance but happens to be a person who neither has a residence in nor is a national of a Contracting State, he would be given a certain time to transfer the property to someone who has such a residence or nationality, thereby saving both the property and the international registration.

Paragraph (1)(d): It appears to be only logical that persons neither residing in nor being the nationals of Contracting States should not be allowed to benefit from the Treaty. However, where the ownership of the new owner has come into existence by operation of law and, under the national law of the designated State, he may own registrations, it would seem to be equitable to allow him to switch over to the national register. See Rule 21.3 (Procedure Where New Owner Is Not Entitled To File International Applications).

Paragraph (2): This provision implies, of course, that a change in ownership may relate to some only of the designated States (and even to only one of them) or to some only of the goods and/or services listed in the international registration. However, such fractioning of the international registration can last only until the end of the ten-year term which is running when the change is recorded (see Article 16(4)).

This might be an appropriate place to note a definition appearing in Article 2(iv) according to which "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of some or all of the designated States or some or all of the goods and/or services listed in that registration.

Paragraph (3): As to the fee, see Rule 21.1(c); and as to the publication and the notification, see Rule 21.2(b).

Paragraph (4)(a): See the comments on paragraph (1)(b).

Paragraph (4)(b): See the comments on paragraph (1)(b) and Rule 21.4 (Notification of Refusal; Recording and Publication).

Paragraph (5): This paragraph is placed between brackets since it would be needed only if Article 5(3)—also placed between brackets—is retained. It is intended to avoid the circumventing of the prohibition (should there be one) of self-designation by having the mark registered in the name of a non-resident of the country prohibiting self-designation and then having the registration transferred to a resident of such a country.

Licenses. It is to be noted that the Draft Treaty does not provide for the recording, in the International Bureau, of licenses (whether exclusive or non-exclusive) and "registered user declarations" as known, for example, in the UK law. Where the national law requires such recordings—so that the effect exists also vis-à-vis third parties (for example, in France)—and where the national Office "duplicates" the international registration in its national register, it will be possible to comply with the national law by having the recording effected in the national register. But where the national Office does not "duplicate" the international registration—and not only is there no obligation to "duplicate" but "duplication" may even be regarded as uneconomical—there would be no basic registration to which the recording could relate. It may, therefore, be advisable to consider whether the Treaty should not provide for the recording of licenses.

ARTICLE 15

Limitation of the List of Goods and/or Services

(1) On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the concept of limitation as defined in the Regulations.

(2) The request for recording shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3)(a) The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said concept of limitation, and shall notify the owner of the international registration accordingly, as provided in the Regulations.

(b) In the case of a declining under subparagraph (a), the owner of the international registration may, within the prescribed time limit, file with the national Office of any designated State in respect of which the recording of the limitation was requested a petition for the purpose of requesting the International Bureau to record the said limitation in respect of that State. If the national Office or other competent authority of the said State finds that the declining by the International Bureau was unjustified under this Treaty and the Regulations, the national Office of the said State shall request the International Bureau to record the limitation in respect of that State. [It may request the International Bureau so to proceed even in the absence of any such finding.] The International Bureau shall proceed as requested.

(4) Where the national Office or other competent authority of any designated State finds that the limitation of the list of goods and/or services recorded in respect of that State is not admissible under the national law, the national Office of that State shall, as provided in the Regulations, notify the International Bureau accordingly, and that Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

COMMENTS ON ARTICLE 15

Paragraph (1): As to the request, see Rule 22.1 (Request for Recording of Limitation of List).

It is important that only such changes be recordable as are *true* limitations. If additions or such other changes were permitted as could be regarded as extending the list of goods and/or services, the designated Offices would have to be given a new opportunity to refuse the "national registration effect" since what was acceptable in respect of a certain list might well be unacceptable under a list of a broader scope. Re-opening the refusal procedure would be too complicated. If the owner wants to cover additional goods and/or services, he will have to apply for a new registration of the mark for those additional goods ond/or services.

Deciding whether a limitation is a true limitation is not always easy if the limitation takes the form of substituting one term for another. That is why Rule 22.2 (Concept of Limitation) does not allow substitutions (and, obviously—even less so—additions) but only deletions and such qualifications of existing terms as are easy to recognize and can lead to nothing but a true limitation. A "term" may, of course, consist of several words (e.g., alcoholic beverages).

It is to be noted that no designated State is bound by any finding by the International Bureau that a requested limitation does not conform with the concept of limitation as defined in the Regulations. The competent authorities of such State have the right to disagree with the International Bureau and, consequently, may admit limitations which that Bureau has considered inadmissible or may decide not to admit limitations which it has considered admissible (see paragraph (3)).

Furthermore, where the national Office or other competent authority of any designated State has accepted a change in the list of the goods and/or services which does not conform with the provisions of Rule 22.2(a) and (b), the International Bureau will record such change. Naturally, such recording will relate to the said State only. See Rule 22.1(a)(v) and 22.2(c).

Limitation of the list of goods and/or services is also possible in combination with the request for recording later designation (see Article 6(2)(b) and Rule 11.4)) In this case, there is no need for a separate request and no fees for the limitation will be due.

Paragraph (2): As to the fee, see Rule 22.1(c).

As to procedure, see Rule 22.3 (Recording, Publication, and Notification, of Limitation of the List).

Paragraph (3)(a): See Rule 22.4 (Declining the Recording of Limitation of the List).

Paragraph (3)(b): See Rule 22.5 (Time Limit Under Article 15(3)(b)).

The procedure parallels that provided for in Article 9. See the comments on that Article.

Paragraph (4): See Rule 22.6 (Non-Admission By Designated State).

See also the last paragraph of the comments on paragraph (1).

ARTICLE 16

Term and Renewal of the International Registration

(1) The initial term of any international registration shall be ten years from the international registration date.

(2)(a) Any international registration may be renewed in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effect provided for in Article 11(2) in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3) Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The International Bureau shall record and publish the renewal and shall notify each designated Office accordingly, as provided in the Regulations.

(4) If, at the time of renewal, the owner of the international registration is not the same in respect of all the designated States or all the goods and/or services listed in the international registration, each owner shall present a separate demand.

COMMENTS ON ARTICLE 16

Paragraph (1): The "international registration date" is defined in Article 7(4)(a).

It goes without saying that any later designation becomes part of the international registration and thus renewal in respect of later designated States will be due at the same time as in respect of States designated in the international application itself. Consequently, for example, where the later designation took place four years after the international registration date, it will be effective only for the six remaining years of the initial term.

Paragraph (2)(a): This provision implies that the demand for renewal may relate to some only of the designated States.

Paragraph (2)(b): This provision means that the "national registration effect" will continue. Compliance with the requirements of the national law of any designated State concerning renewals is neither required nor, indeed, possible.

Paragraph (2)(c): As to the computation of terms, see Rule 25.2 (Periods Expressed in Years, Months, or Days).

Paragraph (3): The International Bureau will remind the owner of the international registration that the time for renewal is approaching (see Rule 23.1: Reminder by the International Bureau).

As to the form and contents of the demand, see Rule 23.2 (Demand for Renewal).

As to the fees, see Rule 23.3 (Renewal Fees).

As to the time limit within which the demand and the fees have to reach the International Bureau, see Rule 23.4 (Time Limits; Surcharge).

As to the recording of the renewal and its notification to the interested designated Offices, see Rule 23.5 (Recording, Publication, and Notification).

Paragraph (4): At the time when the international application is filed, the applicant(s) must be the same with respect to all the designated States and the list of goods and/or services must be the same with respect to all the designated States. Once the international registration is effected, ownership of it may be transferred in respect of some States only or some goods and/or services only (see Article 14(2)). Where there are different owners for the purposes of different States or for the purposes of different goods and/or services in the same State, a separate demand by each owner is needed—and this paragraph so provides—since, otherwise, one owner could prevent another owner from renewing his (the latter's) registration. On the other hand, where the same owner's registration shows different lists of goods and/or services for the purposes of different States, a single demand will suffice.

ARTICLE 17

Fees

(1) Part of the fees payable to the International Bureau in connection with the filing of international applications, requests for later designation, and demands for renewal, shall belong to the designated Offices, and part of them to the International Bureau.

(2)(a) Subject to subparagraph (b), the Regulations shall provide the details concerning the amounts of the fees, their partial reimbursement in certain circumstances, the application of the provisions of paragraph (1), and other details concerning fees payable under this Treaty.

(b) In connection with each designation and each class of goods or services named, a fee shall be payable.

COMMENTS ON ARTICLE 17

Paragraph (1): This paragraph states the principle according to which some of the fees belong to the designated Offices and some of them to the International Bureau. Rules 28 and 29 specify which belong to the former and which to the latter. The fees called, in Alternative A, designation fees and class fees (see Rules 9.1[A](a)(ii)(iii), 13.1[A](a)(ii), 23.3[A]) and, in Alternative B, State fees (see Rules 9.1[B](a)(ii), 13.1[B](a)(ii), 23.3[B]), would belong to the designated Offices; all others would belong to the International Bureau.

These fees would be payable in connection with the filing of international applications, requests for later designation, and demands for renewal.

The amounts of the fees will appear in what the Draft Regulations call a "Table of Fees" annexed to the Regulations. They are not indicated in that Draft. They are still being studied.

The said amounts will eventually depend on the following considerations.

As far as the designated Offices are concerned, the question arises whether the fees should be so fixed (i) that they cover the expenses of the designated Office connected with the handling of the international registrations in which they are designated, or (ii) that they yield, for each mark, the same revenue as each national registration earns for the national Office, or (iii) that, in either case, the national Office should receive less in order to facilitate international trade, the State economy finding compensation for the loss in revenue in the fact that its citizens spend less abroad if, by using the Treaty, they too pay less to foreign States than they would without the Treaty.

The solution under (iii) is generally looked upon with disfavor by national Offices, which, quite naturally, look at the question from the viewpoint of their own budgets. Furthermore, "subsidizing" foreign mark owners by any State seems to be out of the question even if, in return, the citizens of the same State receive the same "subsidy" abroad.

Solutions (i) and (ii) would yield the same amount of fees where the national fees exactly cover the costs. However, many Offices have budgets which show a deficit, whereas others make a profit. In these cases, solutions (i) and (ii) lead to quite different results.

A further question is whether, if solution (ii) is adopted, the fees should not be so fixed that they reflect the fact that any designated Office will have to do less work in connection with a mark already registered internationally than with a mark coming direct from the applicant. In other words, the question is whether the fees belonging to the national Offices under the Treaty should not yield less than the national fees.

Alternatives A and B are alike in this respect that they allow either solution (i) or solution (ii) to be achieved. Solution (ii) also permits a reduction in fees, if the question asked in the preceding paragraph is answered in the affirmative. Everything will depend on the actual amounts which will be fixed. The main difference between the two Alternatives is that, whereas under Alternative A the decision on the actual amounts would be made collectively by the Contracting States, under Alternative B the decision would be made separately by each Office as far as it was concerned. The advantages of the former system are of two kinds: the fees payable in respect of each designated State being the same, their computation would be greatly facilitated for the applicant; any arbitrariness in fixing the fees would be less likely. On the other hand, the advantage of allowing each Office to fix the fees individually would be that no Office could ever find itself in the position of having to accept the decision of a majority with which it disagreed.

As far as the International Bureau is concerned, the amounts of all the important fees would be fixed by the Assembly of the Contracting States, since they would be fixed in the Regulations (in the "Table of Fees" annexed to the Regulations), the Regulations being amended by the Assembly (Article 104(3)(a)), and in this respect by a two-thirds vote (Article 104(3)(b)). Minor fees and charges (for example, for delivering copies) would be fixed in the Administrative Instructions, that is, by the Director General under the control of the Assembly (see Article 104(1)(b)).

As to the principle which should guide the Assembly in fixing the amount of the fees belonging to the International Bureau, Article 103(4)(a) provides that "the amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty."

Among these fees, by far the most important—because they are expected to represent more than 90% of all the revenues of the International Bureau in fees and charges—are what are called in Alternative A the basic fees (see Rules 9.1[A](a)(i), 13.1[A](a)(i), 23.3[A], and in Alternative B the international fees (see Rules 9.1[B](a)(i), 13.1[B](a)(i), 23.3[B](a)(i)). These fees, payable in connection with the filing of international applications, requests for later designation, and demands for renewal, are intended to cover the expenses of the International Bureau connected with checking the applications, requests and demands, preparing the material for publications, printing the Gazette, notifying the designated Offices, and other related tasks.

Paragraph (2)(a): The *amounts* of all major fees will be shown in the Table of Fees annexed to the Regulations; the amounts of minor fees will be given in the Administrative Instructions; and, if Alternative B is adopted, the amounts of the fees belonging to each national Office will be published in the Gazette.

Partial reimbursement is provided for in Rules 14.4 (Notification, and Reimbursement of Certain Fees, Under Article 7(3)), 15.4 (Notification, and Reimbursement of Certain Fees, Under Article 8(3)), and 23.7 (Reimbursement of Certain Fees): where the International Bureau declines the international application or the request for recording of a later designation, the fees belonging to the designated States would be reimbursed since, because of the fact that the international application or the request for recording of a later designation has been declined, they would *not* be designated States and would have no work to perform. The fees belonging to the International Bureau would not be reimbursed since that Bureau would have performed the task of checking and conducting correspondence with the applicant, a task that is frequently more costly than in a routine case because the cases involved would be those where the application or request had defects.

As to the application of paragraph (1), see the comments on that paragraph as well as Rules 28 (Fees Belonging to the Designated Offices) and 29 (Fees Belonging to the International Bureau).

As to *other details*, see Rule 26 (Payment of Fees).

Paragraph (2)(b): This paragraph enunciates the principle according to which fees will be payable for each designation of a State and for each class of the goods and/or services listed. The amount of the fees will be the same for each designation and each class if Alternative A is adopted; under Alternative B, these fees could and probably would vary from State to State (see the comments on paragraph (1), above). If Alternative B is adopted, the words "and each class of goods or services named" will have to be omitted since, under that Alternative, each designated State may or may not charge a fee per class.

ARTICLE 18

Certain National Requirements

(1) [*Fees*] No national Office of any designated State shall, unless acting as an independent review authority, require the payment of fees other than those provided for under this Treaty in connection with the obtaining or renewing of international registrations and recordings under this Treaty and the effects of such registrations and recordings in the said State.

(2) [*Number of Classes and of Goods and/or Services*] No designated State may refuse or cancel the national registration effect merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [*Actual Use*] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of [*Alternative A*: three] [*Alternative B*: five] years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [*Actual Use: Continued*] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered in the national register of marks of any designated State or has been the subject of an application for registration in that register, the proviso of subparagraph (a) shall not apply to the exent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than [*Alternative A*: three] [*Alternative B*: five] years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the [*Alternative A*: third] [*Alternative B*: fifth] year counted from the date on which the said application was filed. The present subparagraph shall also apply where the earlier registration is one effected in the International Register under the Madrid Agreement or the present Treaty.

(c) [*Declaration of Actual Use*] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ["routine declaration"], such declaration may in the form prescribed by the national law of that State [or in the form as prescribed in the Regulations] be filed with the International Bureau and shall have tne same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to produce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ["ad hoc requirement"].

(d) [*Declaration of Actual Use: Continued*] No requirement referred to in subparagraph (c) shall be applicable prior to the expiration of the time limit referred to in the proviso of subparagraph (a), subject, where applicable, to subparagraph (b).

(4) [*Intent to Use*] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [*Provisions common to paragraphs (3) and (4)*] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

(6) [*Representation*] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purposes of serving notices on such applicant or owner, an address in that State be indicated, except where the applicant or owner is involved in a proceeding before the national authorities of the said State and, where applicable, after the refusal or notice of possible refusal has been notified by the designated Office to the International Bureau as provided in Article 12(2)(a)(i).

COMMENTS ON ARTICLE 18

Paragraph (1): International registration and renewal being *in lieu of* national registration and renewal, the fees paid under the Treaty and belonging to the designated Offices should compensate them for not collecting national fees.

The fees paid under the Treaty exempt the applicant or owner of the international registration from paying any national fee which otherwise would be due to any national Office for "the obtaining or renewing . . . the effects of such [international] registrations and recordings [under the Treaty] in the said [i.e., the designated] State." The reference to "obtaining" is intended to cover *all* fees leading to registration, that is—depending on the national laws—filing fees, registration fees, grant fees, publication fees, class fees, fees payable in an opposition procedure by the applicant, and any other fees, but, of course, *not* fees payable by the opposer in any opposition proceeding and *not* fees payable by the petitioner in any cancellation proceeding (since these are not fees payable by the owner of the international registration). The reference to "renewing" is intended to cover *all* fees connected with the prolongation of the registration, that is—depending on the national laws—renewal fees, recording fees, publication fees, and any other fees. In both cases, only fees concerning national Offices are meant, and *not* fees payable by any party in any proceeding before a court or other independent review authority.

Paragraph (2): Some national laws provide that for each different class a separate registration is required, or that each registration may relate to only a given number of goods and/or services (for example, ten). Such provisions could not be held against an international registration. The amount of the fees payable under the Treaty depending, among other things, on the number of classes to which the goods and/or services belong, the fee aspects of the said national laws would be taken care of partly if not always wholly.

Paragraph (3)(a): The national laws of some States provide that a mark must be used before an application concerning it may be filed, or before the registration concerning it may be granted. Some national laws provide that the registration must be cancelled if the mark is not used within a specified period of time. Some national laws provide for the cancellation of marks which have been abandoned and establish a presumption of abandonment when the mark is not used for a specified period and its non-use is not excusable.

Under the Treaty these provisions would also apply—subject to paragraph 3(c)—to marks which are the subject of international reigstration to the same extent as they are applicable to the marks registered nationally in that State, but with an important qualification: *non-use* at any time prior to the expiration of *a certain number of years*—the Draft hesitates between three and five—could not be a ground for refusing the international registration effect, for cancelling it or for otherwise impairing it. The period would count from the international registration date or the recording date of the later designation, as the case may be, that is, from the date which, for the purposes of the interested State, is the "filing date."

As stated in the second sentence of subparagraph (a), even though the national registration effect in a State cannot be refused, cancelled or otherwise impaired on the ground of non-use during the three-year or five-year period, the national law of any Contracting State could provide that any action for infringement may not be started until the owner has commenced use of the mark in that State and any remedy resulting from such action could relate only to the period after the said owner has started use. For example: the owner starts to use the mark as from the second year after the international registration; during the third year after such event, he sues for damages a person who has started to use a similar mark just after the international registration date of his mark and is still using it; the national law may provide that the plaintiff will recover damages only as from the second year.

It goes without saying that provisions of any national law excusing non-use even beyond the three-year or five-year period—for example, because the owner of the mark for a pharmaceutical product cannot use it before the authorization of the health authorities is granted—would remain applicable by virtue of the national treatment provisions of the Paris Convention. Such justified non-use, where it is of relevance, would have to be proved according to the national law of each designated State direct before the competent national authorities of such State, without the intermediary of the International Bureau.

Of course, nothing in the Treaty could prevent the national law of any Contracting State from requiring at any time, from the owner of an international registration, evidence of use in any proceeding where such evidence is relevant or necessary under such national law to overcome a ground *other than non-use* for refusing under Article 12, or cancelling under Article 13, the effects of the international registration as defined in Article 11. For example, if registration is refused or cancelled on the ground that the mark is descriptive (or, in the British law, not distinctive) and that ground, in the given case, can be overcome only where the applicant or owner shows that the mark has acquired a secondary meaning (or, as in the British law, that it has been adapted to distinguish or is capable of distinguishing) by reason of use of the mark, evidence of use could be required, but only to overcome the said ground, which is a ground other than non-use.

Paragraph (3)(b): This provision relates to the situation where a mark has been the subject of a national application or registration and is later the subject of an international registration *cum* designation. The three-year or five-year moratorium would apply only if the national registration took place within the three or five years preceding the international registration or later designation and only for the period between such registration or designation and the end of a three-year or five year period counted from the national filing date.

Paragraph (3)(c): Some national laws require not only that a mark be used but also that the owner of the mark file with the national Office at a certain point in time or from time to time (as fixed in that law) a declaration ("routine declaration") that the mark is (still) used. The Treaty leaves any such requirement intact, subject to two exceptions. One is that such a requirement cannot, obviously, be applied during the three-year or five-year moratorium provided for in paragraph (a) (see subparagraph (d)). The other is that any routine declaration could be filed with the International Bureau rather than the national Office (see the subparagraph under consideration). The question when such routine declarations are due will depend on the national law but the national Office will provide and the International Bureau will publish the necessary information (see Rule 23*bis*.1: Information Concerning Requirements Under Article 18(3)(c)). On the question of the form of the declaration, the Draft hesitates between two solutions. One—*without* the words in brackets—would mean that the declaration must be in the language and in the form prescribed by the national law of the State which the declaration concerns ("national forms"). The other—*with* the words in brackets—would mean that the owner may use either the said national form or an "international form" in the language of the international application. (See Rules 23*bis*.2: National Forms and 23*bis*.3: International Forms.) Both kinds of forms would be put at the disposal of the owner of the international registration, free of charge. In any case, the declaration would be transmitted by the International Bureau to the designated Office. A further advantage provided for is that where evidence is required and does not accompany the declaration (it may accompany it but does not have to do so) or is insufficient, the national Office will give three months for filing or completing such evidence.

It is to be noted that the said facilities apply only to "routine declarations" and not to any declaration which is needed on an ad hoc basis. For example, when non-use is alleged in a cancellation proceeding dealing with a specific mark, in order to overcome such allegation it may well be necessary to make a statement of use. Another example is the declaration of use provided for in the US law as one of the conditions for obtaining incontestability of the owner's right to use the mark: no owner is required to seek such incontestability but, if he wishes to do so, he will, among other things, have to file a declaration alleging continued use for a period of five years subsequent to registration.

Paragraph (3)(d): This provision means that neither general nor ad hoc declarations could be required during the three-year or five-year moratorium.

Paragraph (4)(a): Some national laws provide that at the time a person files an application for the registration of a mark he must have a *bona fide* intent to use the mark in the country and that a declaration to that effect must be filed with the national Office. The requirement for a declaration to be filed with the national Office would be inapplicable or, rather, it would be replaced by a declaration to the same effect filed with the International Bureau. Rules 6.3 (Declaration of Intent To Use the Mark) and 11.2 (Declaration of Intent To Use the Mark) provide for the details where the declaration is made in connection with the international registration or a later designation, as the case may be, and contain a suggested wording for the declaration which would be recognized by all Contracting States. The wording does not include the expression *"bona fide"* since, at least in civil law countries, it goes without saying that a solemn declaration producing legal effects is not a declaration if it is not made in good faith. The substantive requirement of the national law that the intent to use must exist would be left unaffected by the Treaty. Consequently, where the applicant or owner does not, *in fact*, intend to use the mark, the registration effect may be taken away by any designated State requiring intent to use. It may do so notwithstanding the existence of the—false—declaration, and may do so at any time, even before the three-year or five-year period referred to in paragraph (3)(a) expires.

Paragraph (4)(b): See item (iii) of Rule 18.1 (Form of Notifications).

Paragraph (5): This provision means that, in any routine declaration of actual use (paragraph (3)(c)) and in any declaration of intent to use (paragraph (4)(a)), the alleged use may be either direct (that is, by the owner of the international registration or by the applicant, respectively) or indirect (that is, by a person whose use inures to the benefit of such owner or applicant).

Paragraph (6): Since the international application is filed with the International Bureau (see Article 5(2)) and since any notice of possible refusal or refusal under Article 12 is notified to the International Bureau (see Article 12(2)(a)(i)), there is no need for direct contact between the applicant or owner of the international registration and the designated Office. However, once the notice of possible refusal or the refusal has been notified to the said owner and the latter contests it, any further contact between the owner and the national authorities (administrative or judicial) will be direct—since the Treaty does not provide for such contacts through the International Bureau—and for such direct contact the designated Office may wish to require that the owner be represented by a local agent or have an address for service in the State concerned.

ARTICLE 18*bis*

Certain Changes Recorded by National Offices

(1) Where the national Office of any designated State has recorded in its own records any change in respect of any mark which is registered in the International Register of Marks, such Office shall, as provided in the Regulations, promptly notify the International Bureau of such recording unless the said recording has been made pursuant to a notification by the International Bureau to such national Office.

(2) The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

COMMENTS ON ARTICLE 18*bis*

Paragraph (1): This Article was provisionally given a *"bis"* number in order not to have to change the numbering of the Articles as they appeared in the last series of documents.

The Treaty does not require any Contracting State to enter in its national register marks which, by virtue of the Treaty, have a national registration effect in that State. (Such effect exists by virtue of the Treaty, in particular, under Article 11(2), whether such marks are entered in the national register or not.) But the Treaty does not prohibit the entering of such marks in its national register. If any country chooses to make such entries, that is, to "repeat" the international registration in its national register, it may be that certain changes affecting the mark only in that State will be entered in the national register without the owner's asking for their recording by the International Bureau. For example, ownership of the mark or the list of goods and/or services may change in that State. If such changes are entered in the national register without the owner's asking for them to be recorded in the International Register of Marks, the latter would not reflect them. Such a situation is undesirable since the International Register of Marks would then become incomplete and third parties could not entirely rely on it. It is to avoid this situation that the provision is proposed: any change "directly" entered would have to be promptly communicated to the International Bureau by the national Office, and the International Bureau would reflect it in the International Register of Marks and the International Marks Gazette.

Rule 29*bis* (Changes in the National Register) deals with the procedure.

It is recognized that there is no sanction for the case where the national Office does not comply with the obligation provided for in this paragraph. But since non-compliance would amount to violating an obligation assumed under the Treaty, it is reasonable to expect that the obligation will generally be respected.

Paragraph (2): See Rule 29*bis* (Changes in the National Register).

In certain cases, the change could only with great difficulty be recorded in all its details in the International Bureau, primarily because of language problems (for example, where the change is in the list of goods and/or services). In such cases, probably only the fact that a change has been entered in the national register and an indication of the nature of the change will be all that is practicable for the purposes of international annotation and publication. The details will be regulated in the Administrative Instructions (see Rule 29*bis*.2).

ARTICLE 19

Preservation of Rights Acquired Through National Registration

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include all rights, particularly any priority rights, existing under that national registration, and to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are the same as the goods and/or services referred to in the said national registration.

(2) The applicant or the owner of the international registration of a mark may, as provided in the Regulations, file a declaration alleging that he owns national registrations of the same mark in certain designated States and identifying such registrations and the goods and/or services to which each of them relates. Once the international registration or the recording of the later designation has been effected in respect of the said States, the International Bureau shall record and publish the declaration and shall notify any interested designated Office accordingly, as provided in the Regulations. That Office shall refer to the declaration in the national register of marks in connection with the said national mark.

(3)(a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effect provided for in Article 11(2), may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks and the national registration referred to in paragraph (1) exists in a national register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register.

COMMENTS ON ARTICLE 19

Paragraph (1): This paragraph deals mainly with the situation in which the owner of a mark switches over from protection by virtue of national registration to protection by virtue of international registration *cum* designation under the Treaty. It is essential that he suffer no prejudice because of such switchover, and that is what this provision and paragraph (3) accomplish. The reason for which the owner of a mark may desire such a switchover is that under the Treaty the surveillance of his mark becomes much simpler, and generally also much cheaper, if for no other reason than that renewals valid in a number of States can be made at regular (ten-year) intervals, in one place (the International Bureau), according to a centrally (in the Gazette) publicized fee schedule, by payment in one currency (Swiss) by a single transfer, subject to the simplest single formality (filling in one form), and without the need of any intermediary.

The paragraph provides that the effect of the switchover is that the rights under the national registration are deemed to be included and continue to be deemed to be included in the international registration even if the national registration subsequently expires, in particular because it has not been renewed.

Paragraph (2): As to the declaration, see Rule 6.4 (Declarations Under Articles 19(2) and 20(2)), dealing with declarations relating to international registration and Rule 11.3 (Declarations Under Articles 19(2) and 20(2)), dealing with declarations relating to later designations.

As to recording the declaration, see Rule 3.1 (Keeping of the Register).

As to publishing the declaration, see Rules 17.1(a)(x) (Contents of Publication of International Registrations) and 17.2(a)(vi) (Contents of Publication of Recordings of Later Designations).

As to notifying the declaration, see Rule 18.1 (Form of Notifications [of International Registrations and Recordings of Later Designations]), by virtue of which everything that is published is also separately notified to each interested designated State.

The last sentence of this paragraph provides that the declaration shall be referred to in the *national* register in connection with the national mark on the basis of which the switchover took place. This is important because it means that anybody consulting the national register will be alerted to the fact that mere failure to renew the national registration does not necessarily mean that the protection has ceased.

Paragraph (3)(a): The words "to the extent that they [the conditions referred to in paragraph (1)] are complied with" are intended to emphasize that the provision applies only to the extent to which the goods and/or services listed in the national registration are the same as those which are listed in the international registration.

See also the comments accompanying Article 12(1).

Paragraph (3)(b): This subparagraph deals with the situation contemplated in Article 11(3) (see the comments thereon) and means that, for example, if a person owns a mark registered in the Supplemental Register of the U.S. Patent Office and later switches over to an international registration *cum* designation of the United States of America, such designation shall not be subject to the possibility of refusal only if it is connected with the indication of the Supplemental Register (see Rule 6.5: Option Under Article 11(3)).

ARTICLE 20

Preservation of Rights Acquired Through International Registration Under the Madrid Agreement

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration effected under the Madrid Agreement ("Madrid registration"), his rights under this Treaty shall be deemed to include all rights, particularly any priority right, existing under that Madrid registration and to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are the same as the goods and/or services referred to in respect of the said State in the Madrid registration.

(2) The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, file a declaration alleging that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration and the goods and/or services to which such registration relates in each such State. Once the international registration or the recording of the later designation has been effected in respect of the said States, the International Bureau shall record and publish the declaration and shall notify any interested designated Office accordingly, as provided in the Regulations.

(3) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effect provided for in Article 11(2) may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

COMMENTS ON ARTICLE 20

Paragraphs (1) (2) and (3): This Article has the same content as Article 19, except that it deals with the preservation of rights acquired not through national registration but through international registration under the Madrid Agreement.

Consequently, the comments made in connection with Article 19 apply also to this Article, *mutatis mutandis*.

The switchover is facilitated in certain circumstances through exemption from certain fees (see Rule 9.3: Exemption from Certain Fees).

ARTICLE 20*bis*

Preservation of the Right To Use the Madrid Agreement

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

COMMENTS ON ARTICLE 20*bis*

Sole paragraph. This Article was provisionally given a "*bis*" number in order not to have to change the numbering of the Articles as they appeared in the last series of documents.

The proposed Treaty will not replace the Madrid Agreement, not even among States which will be party to both instruments. Where any applicant or owner of a mark is a national or a resident of a State party to both instruments, he will have the freedom to choose and may use, for the purposes of protection in other States that are also party to both instruments, either of the two instruments. The freedom to choose the Madrid Agreement is spelled out in this Article. The freedom to choose the present Treaty—which will be the more recent one—goes without saying.

ARTICLE 21

Regional Marks

(1) The provisions of this Treaty shall also apply, *mutatis mutandis*, where marks have effect, by virtue of a regional treaty, in one or more States under such regional treaty.

(2) The implementation of the principle laid down in paragraph (1) shall be provided for in the Regulations for the purposes of any present or future regional treaty concerning marks.

COMMENTS ON ARTICLE 21

Paragraph (1): The intent of this Article is to provide the possibility of using this Treaty to obtain the effect of a regional mark registration.

Paragraph (2): Rule 32 is reserved for the purpose specified in this paragraph.

However, no draft is proposed for Rule 32 at the present time. Proposals will be made only after consultation in particular with those two regional offices which, for the moment, are the only ones falling under the definition of this paragraph, namely, the African and Malagasy Industrial Property Office (in Yaoundé, Cameroon; commonly called "OAMPI") and the Benelux Trademark Office (in the Hague, Netherlands).

ARTICLE 22

Representation Before the International Bureau

(1) Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) Any invitation, notification or other communication addressed by the International Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the International Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3)(a) Where there are several applicants and they have not appointed a common representative as provided in the Regulations, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several joint owners of an international registration and they have not appointed a common representative as provided in the Regulations, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the joint owners of the international registration.

COMMENTS ON ARTICLE 22

Paragraph (1): See Rules 2.1 (Number of Duly Appointed Representatives), 2.2 (Form of Appointment), 2.3 (Revocation, Lapse, or Renunciation of Appointment).

This provision means that any person may represent an applicant or owner of an international registration before the International Bureau. The representative may be not only a trademark agent or attorney but also one of the employees of the applicant or owner, or any other person, including a legal entity, and no requirements as to professional qualifications may be prescribed. Of course, if and when any act has to be accomplished before a national Office, the national law applicable to that Office will govern and, consequently, it will frequently be necessary that the representative be a qualified trademark attorney or agent residing in the country in which that national Office is located.

Paragraph (2): According to the first sentence, where, for example, the Treaty provides that the International Bureau has to (i) invite the applicant to sign the international application or pay the missing part of the fee (Article 7(2)), (ii) notify the applicant if it declines the international application (Article 7(3)) or if it receives from a designated State a notice of refusal or possible refusal (Article 12(3)(a)), or (iii) notify the owner of the international registration if it rejects a request for changing the list of goods and/or services (Article 15(3)(a)), the said Bureau will send the invitation or notification to the duly appointed representative (rather than the applicant or the owner of the international registration) and thus will have complied with the requirements of the Treaty.

According to the second sentence, the duly appointed representative, instead of the applicant or the owner of the international registration, may, for example, sign the International application, any request for recording a later designation or a change in ownership or a change in the list of goods and/or services, any demand for renewal, any declaration of intent to use, or any declaration of actual use.

Paragraph (3)(a): See Rule 2.1(a), which provides that, if there are several applicants or joint owners of the international registration, they may appoint only one representative. "Joint owners of the international registration" are defined in Article 2(v) as "natural persons or legal entities in whose names the international registration stands for the purposes of the same designated States and the same goods and/or services."

Paragraph (3)(b): See the comments on paragraph (3)(a).

ARTICLE 23

Effect of Priority Claim Contained in International Application or in Request for Later Designation

The effect of any declaration of priority made in the international application or in the request for recording of later designation shall be as provided for in respect of marks in the Paris Convention.

COMMENTS ON ARTICLE 23

Sole Paragraph: The international application or any request for later designation may contain a declaration claiming the priority of one or more earlier applications filed in any country party to the Paris Convention or of one or more earlier filings that are equivalent to regular national filings within the meaning of that Convention (see Articles 5(1)(b) and 6(2)(b)). Rule 6.2 (Claiming of Priority) regulates the details for making the declaration of priority effective in respect of all of the States designated in the international application. Rule 11.1 (Claiming of Priority) provides for the same in respect of any later designated State.

The Paris Convention regulates the effect of the right of priority in Article 4B.

ARTICLE 24

International Application as Possible Basis of Priority Claim

(1) Any international application which is regular shall be equivalent to a regular national filing within the meaning of the Paris Convention and shall be recognized as the basis of a priority claim as provided for in that Convention.

(2) For the purposes of paragraph (1), an international application shall be regarded as regular unless it has been declined by virtue of Article 7(3) and shall be regarded as having been filed on the international registration date.

COMMENTS ON ARTICLE 24

Paragraph (1): This Article makes the international application the possible basis of a priority claim. Since, under the Treaty, international applications may be filed without or before the existence of any national filing (except in the case contemplated in Article 5(3)(i)), international applications will frequently be "first" applications, and it will be useful to invoke their priority in States which cannot be designated (because they are not party to the Treaty) or which, for one reason or another, are not designated although they could be designated.

The Paris Convention provides that "any filing that is equivalent to a regular national filing . . . under . . . multilateral treaties concluded between countries of the Union shall be recognized as giving rise to the right of priority" (Article 4A(2)).

The paragraph under consideration provides that a regular international filing comes within the scope of the quoted provision of the Paris Convention.

Paragraph (2): This paragraph specifies the conditions which an international application must satisfy to constitute a "regular" filing and defines the date of filing.

The provision means in effect that the international filing cannot be regarded as irregular if it has led to an international registration. Any national law may, of course, recognize, for priority purposes, even international applications which have been declined.

ARTICLE 25

Delay in Meeting Time Limits

(1) Any Contracting State shall, as far as that State is concerned, excuse, for reasons admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) Any Contracting State may, as far as that State is concerned, excuse, for reasons other than those admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(3) Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in Article 12(2).

COMMENTS ON ARTICLE 25

Paragraph (1): A typical reason for which national laws excuse delays in meeting time limits is *force majeure*. Thus, for example, if, according to the national law of a Contracting State, a postal strike is considered *force majeure* and, because of that strike, the missing signature on a request for the recording of the later designation of that State is furnished after the expiration of the time limit fixed in Article 8(2), the national Office of that State will, on the request of the owner of the international registration, have to request the International Bureau to proceed with the recording of the designation (see Article 9(2)).

Paragraph (2): If, for example, the delay is not due to *force majeure* but—to modify the example given above—is caused by the late arrival in the mail of the signature, for no apparent reason, the designated State may, if it so wishes, proceed as outlined in the above example.

Paragraph (3): The time limit provided for in Article 12(2) is the time limit for notifying refusals or notices of possible refusals to the International Bureau. Excusing delays in meeting that time limit would mean that the Contracting State would be excusing its own delay. This would seem to be going too far, particularly since it would create uncertainty both for the owner of the mark and for third parties over an indefinite period of time.

CHAPTER II: ADMINISTRATIVE PROVISIONS

ARTICLE 101

Assembly

(1)(a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2)(a) The Assembly shall:

(i) deal with all matters concerning the maintenance and development of the Union and the implementation of this Treaty:

(ii) exercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;

(iii) give directions to the Director General concerning the preparation for revision conferences;

(iv) review and approve the reports and activities of the Director General concerning the Union, and give to him all necessary instructions concerning matters within the competence of the Union;

(v) determine the program and adopt the budget of the Union, and approve its final accounts;

(vi) adopt the financial regulations of the Union;

(vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;

(viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;

(ix) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) A delegate may represent, and vote in the name of, one State only.

(4) Each Contracting State shall have one vote.

(5)(a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum; the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6)(a) Subject to the provisions of Article 103 (5)(f), Article 104(3)(b) and (c), and Article 107(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7)(a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The Assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) The Assembly shall adopt its own rules of procedure.

COMMENTS ON ARTICLE 101

Paragraph (1)(a): "The States party to this Treaty" (Article 1(1)) are the Contracting States.

Paragraph (1)(b): See Rule 101.1 (Expenses Born by Governments), according to which the expenses of each Delegation are borne by the Government which the Delegation represents.

Paragraph (2)(a): This paragraph enumerates some of the main tasks of the Assembly. The Assembly is the principal organ of the Union, in which all Contracting States are represented (paragraph (1)(a)) and have equal rights (paragraph (4)). The Draft provides for only one other organ and that is the secretariat, called the "International Bureau," headed by the Director General (see Article 102). The International Bureau is the secretariat of the World Intellectual Property Organization (WIPO), with headquarters in Geneva, Switzerland (see Article 2). WIPO administers several intellectual property Unions, including the Paris Union, the Madrid Union, and, once it comes into effect, the Union created by the Patent Cooperation Treaty (PCT).

As to the reasons for not proposing the creation of an Executive Committee, see the comments on paragraph (7)(a).

Paragraph (2)(b): The Coordination Committee of WIPO is composed of the members of the Executive Committee of the Paris Union and the members of the Executive Committee of the International (Berne) Union for the Protection of Literary and Artistic Works.

Paragraph (3): In other words, no person can represent two or more member States.

Paragraph (4): This provision ensures equality among the member States.

Paragraph (5)(a): This provision is qualified in subparagraph (b), which provides that decisions can be made also in the absence of a quorum: decisions of a procedural nature made in the absence of a quorum are unconditionally valid, whereas all other decisions made in the absence of a quorum and of the required majority obtained effect after what amounts to a continuation—by correspondence—of the voting.

Paragraph (5)(b): See the comments made in connection with the preceding subparagraph. See also Rule 102.1 (Voting by Correspondence).

Paragraph (6)(a): Article 103(5)(f) deals with the majority required for decisions concerning the working capital fund. Article 104(3)(b) and Article 104(3)(c) deal with the majorities required for amending the Regulations, a matter within the power of the Assembly. The majorities are two-thirds for some provisions and three-fourths for others.

Article 107(2)(b) deals with the majorities required for amending certain provisions (some administrative provisions and the length of the time limit for notifying refusals and warnings) of the Treaty, a matter within the power of the Assembly. The required majority is three-fourths for the said administrative provisions, and unanimity for changing the length of the said time limit.

Paragraph (6)(b): Abstentions, whether explicit or tacit, of delegations represented in the Assembly are, of course, counted in the quorum.

Paragraph (7)(a): Traditionally, the place and the period are Geneva and the end of September/beginning of October.

In some other treaties which are administered by WIPO and which constitute a Union, the Union has not only an Assembly but also an Executive Committee (generally consisting of one quarter of the States members of the Assembly) and that Committee meets once a year and the Assembly once every three years. For the purposes of the present Treaty, the constitution of a body (e.g., an Executive Committee) consisting of some only of the members of the Union is not proposed and it is proposed that the Assembly meet every year. The main reasons for not proposing the establishment of an Executive Committee and for proposing the institution of annual sessions of the Assembly are that the Regulations, including the fees under those Regulations would probably have to be under constant review, that relatively large sums of money would go to the member States through the Union each year, and that those are all matters of equal interest to all member States.

Paragraph (7)(b): The request will be addressed to the Director General, who must then convene the extraordinary session.

Paragraph (8): There are in existence what are called the General Rules of Procedure of WIPO, which the organs of the various Unions usually take as a basis for their own rules of procedure. The latter may, of course, differ from the former in any and every respect which the Assembly sees fit.

ARTICLE 102

International Bureau

(1) The International Bureau shall:

(i) perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;

(ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) The Director General shall be the chief executive of the Union and shall represent the Union.

(3) The Director General shall convene any committee and working group established by the Assembly and all other meetings dealing with matters of concern to the Union.

(4)(a) The Director General and any staff member designated by him shall participate, without the right to vote, in all meetings of the Assembly, the committees and working groups established by the assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General, or a staff member designated by him, shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5)(a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General, or a staff member designated by him, shall be ex officio secretary of any revision conference.

(6) The Regulations shall specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

COMMENTS ON ARTICLE 102

Paragraph (1)(i): Among the tasks specially assigned, the most important are the receiving of the international applications, the keeping of the International Register of Marks, the publication of the Gazette, and the notification of national Offices and owners of international registrations.

Paragraph (1)(ii): As to revision conferences, see Article 106(2).

Paragraph (2): A similar provision is included in the "Charters" of all the Unions administered by WIPO.

Paragraph (3): The rules of procedure will contain provisions as to agendas and the length of the period which must be left between the sending of the preparatory documents and the meeting. In one case (Article 107(1)(b)), this period is fixed by the Treaty itself.

Paragraph (4)(a): "Participate" should be understood as meaning that he has the right to be present and the right to speak.

Paragraph (4)(b): The usual tasks of the Secretary are to assist the Chairman and prepare a draft report on the meeting.

Paragraph (5)(a): As to revision conferences, see Article 106(2). "Preparations" mainly consist in making proposals, receiving and distributing any proposals made by member States, convening preparatory meetings and preparing proposals for such meetings.

Paragraph (5)(b): This is a customary provision for all Unions administered by WIPO.

Paragraph (5)(c): "Take apart" should be understood as meaning that they have the right to be present and the right to speak.

Paragraph (5)(d): See the comments made on paragraph (4)(b).

Paragraph (6): Such sources include, for example, furnishing their statistics. Naturally, the services in question would be of the same kind for each national Office.

ARTICLE 103

Finances

(1)(a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by

the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) The budget of the Union shall be financed from the following sources:

(i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
(ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
(iii) gifts, bequests, and subventions;
(iv) rents, interests, and other miscellaneous income.

(4)(a) The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5)(a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the fund is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the fund may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various countries since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of the provisions of subparagraphs (a), (b), and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(6)(a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provided that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) The auditing of the accounts shall be effected by one or more of the Contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

COMMENTS ON ARTICLE 103

Paragraph (1)(a): This provision and most of the others in this Article are identical or almost identical with the "Finances" provisions in the "Charters" of the other Unions administered by WIPO.

Paragraph (1)(b): The main sources of income will be fees and the sale of publications. The main expenses will be for staff salaries and printing. The "sum made available to the budget of the Conference of the Organization" would mainly serve purposes of technical assistance to member States. Similar provisions exist in the "Charters" of the Paris and Berne Unions. Of course, it is for the Assembly to decide whether to make any contribution for the said purpose and, if so, how much.

Paragraph (1)(c): Typical common expenses are those connected with the buildings used by the International Bureau and the staff salaries of such "common services" as the Director General's Office, External Relations, Finances, and Personnel.

Paragraph (2): Such coordination is mainly necessary in connection with the "common expenses."

Paragraph (3): Fees and the sale of publications will represent the greatest part of the income.

Paragraph (4)(a): In other words, the Union should be self-supporting. Consequently, there is no provision for any regular contribution by member States. In other words, any State which becomes party to the Treaty assumes no financial obligations, except, perhaps, that of contributing to a working capital fund. The constitution of such a fund may not, in certain circumstances, take place at all (see paragraph (5)(d)), but, if it does, its amount will be decided by the Assembly (see paragraph (5)(c)). Any contribution will be rather in the nature of a loan since it must be reimbursed if no longer needed (see paragraph (5)(a), last sentence).

The existing Madrid Agreement provides for the yearly distribution, among the member States, of any "profit" of the International Bureau, that is, of any difference between income and expenditure when the former is larger than the latter. The main source of income being fees, such profit means that the fees are set at a higher level than is necessary to make the international registration service self-supporting. The intention of this provision, and, more generally, of the proposed system, is not to make a profit but to fix the fees at the lowest possible safe level to make the service self-supporting. Consequently, there should be no or only an insignificant profit. That is why the present Draft does not provide for distribution of profits, but if there are any, they will be paid into a reserve fund.

Paragraph (4)(b): The financial regulations will be adopted by the Assembly.

Paragraph (5)(a)(b)(c)(d)(e) and (f): See the comments made in connection with paragraph (4)(a).

Paragraph (6): The State in question is Switzerland.

Paragraph (7): The financial regulations will be established by the Assembly.

ARTICLE 104

Regulations

(1)(a) The Regulations under this Treaty provide rules:

(i) concerning matters in respect of which this Treaty expressly refers to the Regulations or expressly provides that they are or shall be prescribed,
(ii) concerning any administrative requirements, matters or procedures,
(iii) concerning any details useful in the implementation of this Treaty.

(b) Furthermore, the Regulations provide for the establishment, under the control of the Assembly, of Administrative Instructions by the Director General.

(2) The Regulations as adopted at the same time as this Treaty are annexed to this Treaty.

(3)(a) The Assembly may amend the Regulations.

(b) Subject to the provisions of subparagraph (c), amendments shall require two-thirds of the votes cast.

(c) The amendment of any provision concerning any of the following matters shall require three-fourths of the votes cast:

(i) the amount of fees paid by applicants or owners of international registrations under this Treaty which are intended for the national Offices of the Contracting States,

(ii) the distribution among the national Offices, and the transfer to them, of the fees referred to in (i), above.

(4)(a) In the case of conflict between the provisions of this Treaty and those of the Regulations or the Administrative Instructions, the provisions of this Treaty shall prevail.

(b) In the case of conflict between the provisions of the Regulations and those of the Administrative Instructions, the provisions of the Regulations shall prevail.

COMMENTS ON ARTICLE 104

Paragraph (1)(a): This provision is intended to define the scope of the Regulations, that is, the matters which they are likely to provide for.

Paragraph (1)(b): See Rule 103 (Administrative Instructions). "Under the control of the Assembly" is implemented by Rule 103.2, which reads as follows: "The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly."

Paragraph (2): "Annexed to this Treaty" means that the Regulations will be adopted in and by the diplomatic conference which will adopt the Treaty and that the text of the Regulations will be part of the document opened for signature at the end of that conference.

Paragraph (3)(a): This is probably the most important right of the Assembly.

Paragraph (3)(b): Amendment of subparagraph (c) requires three-fourths of the votes cast.

Paragraph (3)(c): The two items in this provision are the only matters in the Treaty or the Regulations which have an effect on the size of the income that each Contracting State will derive from the Treaty.

Paragraph (4)(a) and (b): The hierarchy of the three instruments (Treaty, Regulations, Administrative Instructions) follows that of the three organs (Diplomatic Conference, Assembly, Director General) which adopt them.

ARTICLE 105

Search Service

(1) The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) Searches shall be made on request and shall be subject to the payment of fees fixed in the Administrative Instructions. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

COMMENTS ON ARTICLE 105

Paragraph (1): Such a search Service for marks registered under the Madrid Agreement exists today and has been in existence for decades. "Anticipations" means identical and similar marks. "Other marks" means marks registered under the Madrid Agreement and marks registered in the national register of marks of any given State. Inclusion in the Service of other marks, however, requires a decision by the Assembly.

Paragraph (2): Search reports are confidential between the requesting party and the International Bureau. They have, of course, no legal effect whatsoever.

Paragraph (3): The fees must make the Service self-supporting since no sources of revenue other than the fees are provided for.

CHAPTER III: REVISION AND AMENDMENT

ARTICLE 106

Revision of the Treaty

(1) This Treaty may be revised from time to time by a special conference of the Contracting States.

(2) The convocation of any revision conference shall be decided by the Assembly.

(3) The provisions referred to in Article 107(1)(a) may be amended either by a revision conference or according to the provisions of Article 107.

COMMENTS ON ARTICLE 106

Paragraph (1): "Special conference" means a diplomatic conference, that is, a conference among Governments represented by delegations having full powers to vote and sign.

Paragraph (2): "Revision conference" means the same as "special conference," the term used in paragraph (1).

Paragraph (3): The provisions referred to in Article 107(1)(a) are certain administrative provisions and the length of the time limit fixed in Article 12(2).

ARTICLE 107

Amendment of Certain Provisions of the Treaty

(1)(a) Proposals for the amendment of the length of the time limit fixed in Article 12(2), or for any amendment to Article 101(5) and (7), 102, 103 and 105, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2)(a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in Article 12(2) shall require that no Contracting State vote against the proposed amendment.

(3)(a) Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with the provisions of subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

COMMENTS ON ARTICLE 107

Paragraph (1)(a): The time limit fixed in Article 12(2) concerns refusals and notices of possible refusals. As to its length, the Draft contains several alternatives. Since it is believed that changing circumstances may make it desirable to lengthen or shorten those time limits, it is proposed to provide for them an easier procedure than a revision conference. That is why they appear in this provision. This provision follows very closely the Patent Cooperation Treaty (PCT), according to which any time limit fixed in that Treaty may be modified by a unanimous decision of the Assembly (see PCT Article 47(2) and PCT Rule 81). Here, too, unanimity is required (paragraph (2)(b)). But whereas the PCT allows such modification of any time limit fixed therein, the proposed Treaty allows the same modification in respect of one only of the time limits fixed in that Treaty. All other time limits (Articles 14(1)(c)(d), 16(1)(2), 18(3)(a)) can be changed only through a revision conference and any such change would bind only those States which ratify or accept the revised text. In the case of the proposed Treaty, this seems to be indispensable for the very important time limit fixed in Article 18(3)(a), and does not seem to matter as far as those time limits are concerned which it is unlikely to become necessary to change (Articles 14(1)(c)(d) and 16(1)(2)).

Article 101(5) and (7) are the provisions on the quorum in the Assembly and the provision on the times when ordinary and extraordinary sessions of the Assembly meet. Whereas the Stockholm Acts of the Paris Convention (Article 17) and of the Madrid Agreement (Article 13) provide that a qualified majority of the Assembly may amend any provision of that Convention or that Agreement concerning the Assembly, the PCT (Article 61(1)(a)) allows the same procedure only in the case of those provisions concerning the Assembly which deal with the quorum, voting on matters relating to Chapter II (inapplicable here) and the Executive Committee (inapplicable here). The proposed Draft follows the PCT by allowing the said procedure not in the case of all, but only in the case of some, of the provisions concerning the Assembly, namely, as already stated, in the case of the quorum (as in the PCT) and the frequency of the meetings of the Assembly (a matter not relevant in the PCT, which provides for an Executive Committee). The proposed Draft does not follow the Stockholm Act of the Paris Convention because, there,

the role of the Assembly is quite different (it has no regulation-making power); and it does not follow the Stockholm Act of the Madrid Agreement because the expected membership of the proposed Treaty will probably be more like that of the PCT than that of the present Madrid Agreement.

Article 102 deals with the International Bureau. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 103 deals with the finances of the Union. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 105 deals with the search Service. "Initiated" means "made."

Paragraph (1)(b): This provision is intended to give sufficient time for reflection to the Governments of the Contracting States.

Paragraph (2)(a): As to the required majority, see the following subparagraph.

Paragraph (2)(b): Since the time limit fixed in Article 12(2) is one which national Offices have to respect, it appears to be wise to place it under a unanimity rule.

Paragraph (3)(a): As to States which become Contracting States later, see subparagraph (c).

Paragraph (3)(b): In other words, no Contracting State will be bound by an amendment increasing its financial obligations unless it agrees to be so bound. The only financial obligation provided in the Draft is the obligation to contribute to a working capital fund (see Article 103(5)).

Paragraph (3)(c): As to becoming a Contracting State, see Article 108.

CHAPTER IV: FINAL PROVISIONS

ARTICLE 108

Becoming Party to the Treaty

(1) Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

(i) signature followed by the deposit of an instrument of ratification, or
(ii) deposit of an instrument of accession.

(2) Instruments of ratification or accession shall be deposited with the Director General.

(3)(a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when:

(i) another State, or
(ii) either one of two other States, or
(iii) both of two other States,

specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect of two States in accordance with subparagraph (a)(iii), may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification or accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

COMMENTS ON ARTICLE 108

Paragraph (1): The legal effect of ratification and accession is the same. The difference is merely a terminological one, "ratification" referring to acceptance by a signatory State, and "accession" referring to acceptance by a State which has not signed the Treaty.

Paragraph (2): Such instruments are usually signed by the Head of State.

Paragraph (3)(a): This provision enables any State to say, in effect, that it will become party only if State X, or State X or State Y, or States X and Y, also become party. The provision is not without precedent. Protocol No. 3 of the Universal Copyright Convention, concluded in 1952, is an example of such a precedent.

Paragraph (3)(b): This provision enables any State having said, in effect, that it will become party only if State X also becomes party, to change its mind, which it might well wish to do if, in the meantime, the membership of State X has ceased to be indispensable in the eyes of the State having made the declaration.

ARTICLE 109

Entry Into Force of the Treaty

(1) This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accession.

COMMENTS ON ARTICLES 109

Paragraph (1): It has been said in the past that any new Treaty on the international registration of marks should come into effect only if certain States not members of the Madrid Union accept it. It is believed that this desire is largely met by Article 108(3)(a). Declarations under that Article and the naming of the same State or States can hold up the entry into force of the Treaty until the said State or States accept it, even if the number of other States runs to dozens.

In other words, the paragraph under consideration, although it speaks of five States does not necessarily mean that when five States have deposited their instruments the Treaty will come into force. The number actually required depends on the influence of the declarations made under Article 108(3)(a): it may be anything between five and any other, possibly much higher number.

Paragraph (2): The time limit of three months is the usual one.

ARTICLE 110

Reservations to the Treaty

No reservations to this Treaty are permitted

COMMENTS ON ARTICLE 110

Sole paragraph: It is now accepted practice of the law of treaties that, when a Treaty does not provide for any possibility of making reservations, it must expressly state the fact in order to avoid any misunderstanding.

ARTICLE 111

Denunciation of the Treaty

(1) Any Contracting State may denounce this Treaty by notification addressed to the Director General.

(2) Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4)(a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) The same shall apply in Contracting States other than the denouncing State in respect of marks whose international registration is owned by a resident or national of the denouncing State.

(c) The owner of the international registration of a mark may, during the year referred to in paragraph (2), apply for the registration of the same mark in the national register of marks of any designated State. Such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing by reason of the effects of the said international registration in the said State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are the same as the goods and/or services referred to in the said international registration in respect of the said State.

COMMENTS ON ARTICLE 111

Paragraph (1): This provision is subject to one exception stated in paragraph (3).

Paragraph (2): This provision is subject to certain qualifications stated in paragraph (4).

Paragraph (3): This provision is intended to give a certain degree of stability to the membership of the Union.

Paragraph (4)(a): This provision is intended to allow a certain period of time for owners of international registrations to look for means of protection other than under the Treaty in the denouncing State.

Paragraph (4)(b): This provision is intended to allow a certain period of time for owners of international registrations who are residents or nationals of the denouncing State to look for means of protection other than under the Treaty in any Contracting State other than the denouncing State.

Paragraph (4)(c): This provision is intended to allow a "switchover" from the International Register of Marks to the national register. In certain respects it parallels the provisions of Article 19.

ARTICLE 112

Signature and Languages of the Treaty

(1) This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) This Treaty shall remain open for signature at Vienna until December 31, 1973.

COMMENTS ON ARTICLE 112

Paragraph (1): This provision follows the trend of treaties recently concluded under the aegis of the Paris Convention.

Paragraph (2): The comment made in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): This provision assumes that the Vienna Diplomatic Conference, now scheduled for May 7 to June 2, 1973, will take place as scheduled and will adopt the Treaty.

ARTICLE 113

Depositary Functions

(1) The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention and, on request, to the Government of any other State.

(3) The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

COMMENTS ON ARTICLE 113

Paragraph (1): This provision follows the contemporary trend of treaties recently concluded under the aegis of the Paris Convention.

Paragraph (2): The comment made in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): Article 102 of the Charter of the United Nations provides for the mandatory registration of treaties with the Secretariat of the United Nations.

Paragraph (4): The comment made in respect of paragraph (1) applies also to this paragraph.

ARTICLE 114

Notifications

The Director General shall notify the Governments of the States party to the Paris Convention of:

(i) signatures under Article 112;
(ii) deposits of instruments of ratification or accession under Article 108(2) and of any declaration accompanying them under Article 108(3)(a) and any withdrawal or limitation of such declarations made under Article 108(3)(b);
(iii) the date of entry into force of this Treaty under Article 109(1) and any amendment under Article 107(3)(a);
(iv) denunciations received under Article 111.

COMMENTS ON ARTICLE 114

Sole paragraph: These notifications are indispensable to keep the interested States officially informed of the status of the Treaty.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Treaty.

DONE at Vienna, on June . . ., 1973.

DRAFT REGULATIONS [TRT/11/2]

UNDER THE TRADEMARK REGISTRATION TREATY

(prepared by the International Bureau)

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Abbreviated Expressions

1.1 *"Treaty"*

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

1.2 *"Chapter" and "Article"*

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

1.3 *"International Classification"*

In these Regulations, "International Classification" means the classification provided for in the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks.

RULES CONCERNING CHAPTER I

RULE 2

Duly Appointed Representatives

2.1 *Number of Duly Appointed Representatives*

(a) Where there are several applicants or joint owners of the international registration, they may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or applicants, or by the owner or joint owners of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

2.2 *Form of Appointment*

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b), (d) and (e).

(b) The appointment of any representative shall require:

(i) that his name appear as that of a representative in the international application, in the request or in any other document addressed to the International Bureau, and that such document bear the signature of the applicant or the owner of the international registration, or

(ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant or the owner of the international registration, be filed with the International Bureau.

(c) The signature shall not require any legalization or authentication.

(d) Where there are several applicants or several joint owners of the international registration, the document containing or constituting the appointment shall be signed by all of them.

(e) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity (for example, a partnership of trademark lawyers or agents), "name" shall mean the complete official name of the legal entity. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b), (d) and (e), it shall be regarded as non-existent.

2.3 *Revocation, Lapse, or Renunciation of Appointment*

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. The signature shall not require any legalization or authentication.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

RULE 3

The International Register of Marks

3.1 *Keeping of the Register*

(a) The International Register of Marks shall contain, in respect of each mark registered therein:

(i) all the indications that the applicant or owner of the international registration must or may furnish and has, in fact, furnished and, where relevant, the date on which such indications were received by the International Bureau,
(ii) the amount of all fees received and the date on which they were received by the International Bureau,
(iii) the dates and numbers of all international registrations and recordings,
(iv) any other indication whose recording is provided for by the Treaty and these Regulations.

(b) The Administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing entries and recordings therein and for preserving it from loss or other damage.

RULE 4

Applicants; Owners of International Registrations

4.1 *Several Applicants; Joint Owners of the International Registration*

(a) If there are several applicants, the right to file an international application shall be recognized only if all of them are residents or nationals of Contracting States.

(b) If there are joint owners of an international registration, the right to own such a registration shall be recognized only if all of them are residents or nationals of Contracting States.

4.2 *Certain Associations of Natural Persons or Legal Entities*

Where, under the national law of a Contracting State, a certain type of association of natural persons or legal entities may acquire rights and be the subject of obligations without constituting a legal entity, such association shall be regarded as a legal entity for the purposes of the Treaty and these Regulations.

4.3 *The Same Applicants for All Designated States*

(a) The applicant or applicants shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant or applicants for the purposes of all the designated States, that application shall be treated as if only the State first mentioned therein, and any other State for the purposes of which the same applicant or applicants are indicated as for the said first-mentioned State, had been designated.

RULE 5

Mandatory Contents of the International Application

5.1 *Indication that the International Application Is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trademark Registration Treaty."

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered. Any subsequent change in address shall be recorded on request, free of charge, by the International Bureau.

5.3 *Reproduction of the Mark; Colors, Transliteration and Translation*

(a) Where the mark contains only letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm x 21 cm), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. [*Alternative A*: The mark may be in one or various colors.] [*Alternative B*: If colors are claimed, the reproduction shall be in black and white and the colors shall be described in words and, where the nature of the mark permits, also by means of the signs of the Heraldic Convention, as specified in the Administrative Instructions.] In any case, the reproduction shall be of a quality admitting of direct reproduction by photography and printing processes.

(c) [*Alternative A*: Any reproduction presented in color shall be reproduced in color in the publications of the International Bureau only if the application contains an express statement to the effect that color is claimed.] [*Alternative B*: If the provisions of paragraph (b) concerning colors are not complied with, no account shall be taken by the International Bureau of the claiming of colors.]

(d) Any reproduction of a three-dimensional object whose shape constitutes or is part of the mark shall be accompanied by an indication to the effect that the mark is a three-dimensional mark.

(e) Marks which cannot, or whose picture cannot, be reproduced by the usual printing processes shall not be the subject of international applications.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is missing and it is equipped to effect the said transliteration itself, it shall proceed accordingly.

(g) If the mark consists of or contains words which are part of the vocabulary of the language of or the language in general use in the country of residence or nationality of the applicant, and where such language is other than English or French, the international application shall contain a translation of such words in the language in which the international application is written. If the International Bureau finds that such translation is missing and it is equipped to effect the translation itself, it shall proceed accordingly.

5.4 *List of Goods and/or Services*

(a) The goods and/or services concerning which the international registration is applied for shall be expressed in precise terms, and as far as possible in those terms appearing in the alphabetical list of the International Classification. The said terms shall be grouped according to the classes of the International Classification. Each of the said groups shall be preceded by an indication of the number of the class and the various groups shall follow in the numerical order of the corresponding classes.

(b) If the International Bureau finds that the terms used by the applicant do not correspond to the conditions laid down in the first sentence of paragraph (a), it may call this fact to the attention of the applicant.

(c) If the International Bureau finds that the grouping of the goods and/or services does not correspond to the conditions laid down in the second and third sentences of paragraph (a), it shall itself proceed with such grouping.

5.5 *Identification of the Designated State or States*

(a) Identification of the Contracting State or States shall consist in writing its name, or their names, in the international application in a manner sufficiently clear for the purposes of identification.

(b) Any identification of States which are not Contracting States shall be treated as if such identification had not taken place.

RULE 6

Optional Contents of the International Application

6.1 *Naming of a Representative*

The international application may indicate a representative.

6.2 *Claiming of Priority*

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of the mark in the national register of marks of a country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, the State or States designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and the State or States for which it was filed;
(ii) the date on which the earlier application was filed;
(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country, State or States, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it had not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered by all States designated prior to the expiration of 6 months counted from the said date to have been furnished in time, and the number so furnished shall be published by the International Bureau.

(d) If the filing date of the earlier application as indicated in the declaration precedes the filing date of the international application by more than 6 months, the International Bureau shall treat the declaration as if it had not been made.

(e) If the statement referred to in Article 5(1)(b) claims the priority of more than one earlier application, the provisions of paragraphs (a) to (d) shall apply to each of them and the statement shall specify which of the earlier applications relate to which of the goods and/or services listed in the international application.

6.3 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons authorized by him (it) in commerce with and/or on the territory of . . . [either insert "each of the States designated in this application" or indicate those of the States designated in respect of which the declaration is made] on and/or in

connection with the goods and/or services listed in this application." Blanks shall be filled in by the applicant, as appropriate.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

6.4 *Declarations Under Articles 19(2) and 20(2)*

(a) Any declaration made under Article 19(2) or Article 20(2) and relating to one or more States designated in the international application may:

(i) be included in the international application, or
(ii) be filed as a separate document after the filing of the said application.

(b) Where the declaration referred to in paragraph (a) is filed under Article 19(2), it shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the allegation that the applicant owns national registrations of the same mark in the said State or States,
(iii) indicate, in respect of each such national registration, its number and the goods and/or services to which it relates,
(iv) if the said declaration is filed as a separate document, identify the international application by attaching a copy thereof or, where international registration has already been granted, by indicating the international registration number.

(c) Where the declaration referred to in paragraph (a) is filed under Article 20(2), it shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the allegation that the applicant seeking the international registration of the mark under the Treaty owns an international registration of the same mark under the Madrid Agreement ("Madrid registration") in respect of the said State or States,
(iii) indicate the number of the Madrid registration and, in respect of each of the said States, the goods and/or services to which such registration applies,
(iv) if the said declaration is filed as a separate document, identify the international application by attaching a copy thereof or, where international registration has already been granted, by indicating the international registration number.

6.5 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

6.6 *Trade or Business of the Applicant*

The applicant may indicate in the international application the trade or business in which he is engaged.

6.7 *"Marque collective"*

(a) Where the mark which is the subject of the international application is presented as a *"marque collective,"* the international application shall contain the appropriate indication.

(b) The term *"marque collective"* includes certification marks.

[NOTE: If this Rule is maintained, Article 18 will have to be completed to permit designated States to require the filing of supporting documents.]

RULE 7

Language of International Applications, Requests for Recording of Later Designations, Registrations, Recordings, Notifications, and Correspondence

7.1 *Language of the International Application*

The international application shall be in the English or in the French language.

7.2 *Language of the Request for Recording of Later Designations*

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

7.3 *Language of Registrations, Recordings, Notifications, Correspondence*

(a) Registrations, recordings and notifications by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Correspondence between the International Bureau and the applicant or the owner of the international registration, or his duly appointed representative, shall be in the same language as that in which the international application was filed.

(c) Notifications by the national Offices to the International Bureau, and letters or other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition procedure attached to any notice of possible refusal shall be in the original language of such papers.

(d) Where the International Bureau is under the obligation to forward to the applicant any of the communications referred to in paragraph (c), it shall forward them in the language in which it received them.

RULE 8

Form of the International Application

8.1 *Printed Forms*

(a) The international application shall be made on a printed form furnished free of charge, on request, by the International Bureau to prospective applicants, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

8.2 *Copies; Signature*

(a) The international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

(c) Where the applicant is a legal entity, the name of the legal entity shall be indicated in the place reserved for signatures and shall be accompanied by the signature or signatures of the natural person (persons) who is (are), according to the national law of the country under whose law the legal entity was established, entitled to sign for such legal entity.

8.3 *No Additional Matter*

(a) The international application shall not contain any matter and shall not be accompanied by any document other than those prescribed or permitted by the Treaty and these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if it is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat it as if it had not been transmitted to it.

RULE 9

Fees Payable With the Filing of the International Application

9.1[A] *Fees Payable in Any Case (Alternative A)*

(a) The fees payable with the international application shall be the following:

(i) a basic fee,
(ii) as many designation fees as there are designated States,
(iii) as many class fees as there are classes to which the goods and/or services listed in the international application belong according to the International Classification [*Sub-alternative*: multiplied by the number of designated States].

(b) The amount of each of the said fees is indicated in the Table of Fees.

9.1[B] *Fees Payable in Any Case (Alternative B)*

(a) The fees payable with the international application shall be the following:

(i) an international fee,
(ii) State fees for every designated State.

(b) The amount of the international fee is indicated in the Table of Fees.

(c) The amounts of the State fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the State fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall, subject to the following provisions, be free to determine the amount of the State fee applicable to it:

(i) Each Contracting State shall communicate the amount in Swiss francs of the State fee to the International Bureau each year before the end of the month of June. If the said communication is not made within the said time limit, the amount last communicated shall remain applicable.
(ii) The amount of the State fee may vary only according to the number of classes to which the goods and/or services listed in the international application belong according to the International Classification. For each class, the fee shall be the same.
(iii) The amount of the State fee shall not exceed the total amount of [*Sub-alternative*: 75% of] any filing, registration, publication or class fees which would be payable if the application were an application for registration in the national register of marks.

9.2 *Fees Payable in the Case of Certain Defects in the International Application (Both Alternatives)*

(a) If the International Bureau finds that the requirement of transliteration or translation contained in Rule 5.3(f) and (g) has not been complied with, or that the requirement of proper grouping of the goods and/or services contained in Rule 5.4(b) has not been complied with, it may charge the applicant a "transliteration fee," a "translation fee," or a "classification fee," as the case may be.

(b) If the indication of the applicant's trade or business exceeds twenty words, the International Bureau may charge the applicant a fee.

(c) The amounts of the fees referred to in paragraphs (a) and (b) are indicated in the Table of Fees.

9.3 *Exemption from Certain Fees*

Where the owner of the international registration of a mark registered under the Madrid Agreement for certain goods and/or services applies for the international registration of the same mark for the same goods and/or services under the Treaty at least five years before the expiration of the then current term of protection under the Madrid Agreement and files a declaration under Article 20(2), he shall be exempt from [*Alternative A:* the designation fee] [*Alternative B:* the State fee] in respect of any Contracting State in which his mark is then protected by virtue of the Madrid Agreement.

RULE 10

Mandatory Contents of the Request For Recording of Later Designation

10.1 *Indication that the Request Is for Recording of Later Designation*

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration requests the recording in the International Register of Marks of the following later designation made under the Trademark Registration Treaty."

10.2 *Indications Concerning the Applicant or the Owner of the International Registration*

The provisions of Rule 5.2 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(ii).

10.3 *Identification of the International Application or International Registration*

(a) The international application shall be identified by a copy of the same and the date on which it was filed with or mailed to the International Bureau.

(b) The international registration shall be identified by its international registration number and date.

10.4 *Identification of the Later Designated State*

The provisions of Rule 5.5 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(iv).

RULE 11

Optional Contents of the Request for Recording of Later Designation

11.1 *Claiming of Priority*

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b), provided that any reference in Rule 6.2(c) and (d) to the filing date of the international application shall be construed as a reference to the filing date of the request for recording a later designation.

11.2 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant/owner of the international registration intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or through persons authorized by him (it) in commerce with and/or on the territory of the State designated herein on and/or in connection with the goods and/or services listed in this request."

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

11.3 *Declaration Under Articles 19(2) and 20(2)*

(a) Any declaration made under Articles 19(2) and 20(2) and relating to one or more States which are the subject of a later designation shall be included in the request for recording such designation or be filed as a separate document after the filing of the said request.

(b) The declaration shall contain the indications provided for in Rule 6.4(b) or (c), as the case may be.

11.4 *List of Goods and/or Services*

Where the applicant or owner of the international registration wishes to indicate a list of goods and/or services more limited than the list which was included in the international application or which was published with the international registration, he shall set out, in his request, the more limited list, presented in a form which conforms with the concept of limitation as defined in Rule 22.2, or, if paragraph (c) of the said Rule is applicable, he shall set forth the more limited list in conformity with the decision of the national Office, or other competent authority of the later designated State, and shall attach to the request the indications concerning such decision specified in Rule 22.1(a)(v).

11.5 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

RULE 12

Form of the Request for Recording of Later Designation

12.1 *Printed Forms*

(a) The request referred to in Article 6(2)(c) shall be made on a printed form furnished free of charge, on request, by the International Bureau to applicants, owners of international registrations, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

12.2 *Copies; Signature*

(a) The request referred to in Article 6(2)(c) and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant.

12.3 *No Additional Matter*

Rule 8.3 shall also apply to requests for recording later designations.

RULE 13

Fees Payable With the Request for Recording of Later Designation

13.1 [A] *Later Designation Fees (Alternative A)*

(a) The fees referred to in Article 6(2)(c) shall, for each later designation, be the following:

(i) a basic later designation fee,

(ii) a designation fee [*Sub-alternative*: and as many class fees as there are classes to which the goods and/or services listed in respect of the designated State belong according to the International Classification].

(b) The amount of the fees referred to in paragraph (a)(i) is indicated in the Table of Fees. The amount of the fee referred to in paragraph (a)(ii) is the same as that of the fee referred to in Rule 9.1[A](a)(ii).

13.1[B] *Later Designation Fees (Alternative B)*

(a) The fees payable with the request for the later designation of any Contracting State shall be the following:

(i) an international later designation fee,

(ii) the State fee applicable to the designated State.

(b) The amount of the international later designation fee is indicated in the Table of Fees.

(c) The State fee shall be the same as that referred to in Rule 9.1[B](a)(ii).

13.2 *Exemption from Certain Fees (Both Alternatives)*

The provisions of Rule 9.3 shall, *mutatis mutandis*, also apply in connection with the fee [*Sub-alternative*: fees] referred to in Rule 13.1[A](a)(ii).

RULE 14

Defects in the International Application

14.1 *Time Limit Under Article 7(2)*

The time limit under Article 7(2) shall be 1 month from the date of the registered letter from the International Bureau containing the invitation to sign the application or to pay the fees or the missing part of the fees.

14.2 *Minimum Amount Under Article 7(2)*

The minimum amount referred to in Article 7(2) shall be an amount equivalent at least to the total amount of [*Alternative A*: the basic fee, one designation fee and one class fee, referred to in Rule 9.1[A](a)] [*Alternative B*: the international fee and that State fee which, among the State fees of all the designated States, is the lowest].

14.3 *Calling Attention to Defects Other Than Those Referred to in Article 7(2)*

Where any international application has any defect other than those referred to in Article 7(2), the International Bureau may call it to the attention of the applicant.

14.4 *Notification, and Reimbursement of Certain Fees, Under Article 7(3)*

Where, under Article 7(3), the International Bureau declines the international application, it shall notify the applicant by registered letter stating the reasons for declining and shall reimburse to him those [*Alternative A*: designation fees and class fees referred to in Rule 9.1[A](a)(ii) and (iii)] [*Alternative B*: State fees referred to in Rule 9.1[B](a)(ii)] which he has paid.

[14.5 *Non-Compliance With Certain Provisions of Nation Laws*

The International Bureau shall not take note of any lack of compliance with possible provisions of national laws referred to in Article 5(3).]

RULE 15

Defects in the Request for Recording of Later Designation

15.1 *Time Limit Under Article 8(2)*

The time limit under Article 8(2) shall be 1 month from the date of the registered letter from the International Bureau containing the invitation to conform with the concept of limitation, sign the request, or pay the fees or the missing part thereof.

15.2 *Minimum Amount Under Article 8(2)*

The minimum amount referred to in Article 8(2) shall be an amount equivalent at least to [*Alternative A*: the basic later designation fee] [*Alternative B*: the international later designation fee].

15.3 *Calling Attention to Defects Other Than Those Referred to in Article 8(2)*

Where any request for the recording of a later designation has any defect other than those referred to in Article 8(2), the International Bureau may call it to the attention of the applicant or owner of the international registration.

15.4 *Notification, and Reimbursement of Certain Fees, Under Article 8(3)*

Where, under Article 8(3), the International Bureau declines the request for the recording of the later designation, it shall notify the applicant or owner of the international registration by registered letter stating the reasons for declining and shall reimburse to him [*Alternative A*: the designation fee referred to in Rule 13.1[A](a)(ii)] [*Alternative B*: the State fee referred to in Rule 13.1[B](a)(ii)] to the extent to which he has paid it.

[15.5 *Non-Compliance With Certain Provisions of National Laws*

The International Bureau shall not take note of any lack of compliance with possible provisions of national laws referred to in Article 6(3).]

RULE 16

Procedure Where Avoiding the Effect of Declining Is Sought

16.1 *Time Limit Under Article 9(1)*

The time limit referred to in Article 9(1) shall be 3 months from the date of the notification referred to under Rule 14.4, or Rule 15.4, as the case may be.

16.2 *Recording and Publication Under Article 9(1)*

(a) The fact of having received a copy of a petition under Article 9(1) shall be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The information to be published under Article 9(1) shall indicate the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

16.3 *Notification of National Offices Under Article 9(1)*

On the request of the applicant, the International Bureau shall send to each interested national Office a copy of the file of the declined international application or declined request for recording of later designation, together with a memorandum setting out the reasons for and the various steps leading to the declining of the said application or request.

RULE 17

Publication of International Registrations and Recordings of Later Designations

17.1 *Contents of Publication of International Registrations*

(a) The publication of any international registration shall contain:

(i) the name and address of the applicant together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(ii) the reproduction of the mark, together with any transliteration, translation, [or description of color or colors,]

(iii) the list of goods and/or services,

(iv) the names of the designated States,

(v) the international registration date,

(vi) the international registration number,

(vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, and the name of the country or countries in which or for which they were filed,

(viii) where appropriate, an indication that the mark is a *marque collective*,

(ix) any indication under Article 11(3),

(x) any declaration under Articles 19(2) and 20(2).

(b) The international registration number shall be a single serial number, followed by an oblique stroke and a zero.

17.2 *Contents of Publication of Recordings of Later Designations*

(a) The publication of any recording of a later designation shall contain:

(i) the international later designation number,

(ii) the date of the recording of the later designation,

(iii) the name of the later designated State,

(iv) if, for the purposes of the later designated State, the list of goods and/or services is more limited than the list of goods and/or services which was published with the international registration, the more limited list,

(v) any indication under Article 11(3),

(vi) any declaration under Articles 19(2) and 20(2).

(b) The international later designation number shall consist of the international registration number of the international registration to which the later designation refers, followed by an oblique stroke and a number indicating the original number of the later designation in question among all the later designations referring to the same international registration.

(c) Where the recording of the later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the said publication shall, itself, contain the elements indicated in paragraph (a)(ii), (iii), (iv), (v) and (vi), and the number of the said publication shall consist of the number referred to in Rule 17.1(b) and the number or numbers referred to in paragraph (b).

RULE 18

Notification of International Registrations and Recordings of Later Designations

18.1 *Form of Notifications*

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

(i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,

(ii) separate reprints made of the publication by the International Bureau of each international registration referred to in the said list,

(iii) a copy of the international application or the request for the recording of later designation if it contains a declaration of intent to use made under Article 18(4).

18.2 *Frequency of Notifications*

The notification shall be effected on the same day as that on which the issue of the Gazette is published which contains the matter from which the reprints referred to in Rule 18.1 are made.

RULE 19

Refusals; Notices of Possible Refusal

19.1 *Notifying the International Bureau; Reasons*

(a) Any notification under Article 12(2) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each Contracting State. The notification shall, in any case, contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,
(ii) the name of the owner of the said international registration,
(iii) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,
(iv) if it relates to some only of the goods and/or services listed, identification of those to which it relates,
(v) the reasons referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein, and, when the notice of possible refusal specifies the reasons by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said reasons are specified,
(vi) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The form referred to in paragraph (a) shall be prepared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the reasons for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such reasons may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other reasons and for other possible indications.

19.2 *Notifying the Owner of the International Registration*

(a) The notification referred to in Article 12(3)(a) shall indicate the date on which any notification made under Article 12(2) was received by the International Bureau and shall include a copy thereof.

(b) The International Bureau shall effect any notification referred to in Article 12(3)(a) promptly after the receipt of the notification referred to in Article 12(2).

19.3 *Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification to be effected by the national Office under Article 12(4)(a) shall be effected promptly after the date on which the decision of refusal becomes final. The notification shall contain:

(i) the indications referred to in Rule 19.1(a)(i) and (ii);
(ii) the reasons given in the decision;
(iii) if the notification relates to some only of the goods and/or services listed, identification of those to which it relates;
(iv) the name of the authority which pronounced the decision, the number, if any, and the date of such decision, and
(v) the date on which the decision became final.

(b) The notification to be effected by the International Bureau under Article 12(4)(a) shall be effected as soon as possible and shall include a copy of the notification referred to in paragraph (a).

(c) The details of the recording referred to in Article 12(4)(a) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(a) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision of refusal.

19.4 *Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)*

The notification under Article 12(4)(b) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 19.1(a)(i) and (ii), the number, if any, and the date of the decision, and the date on which the decision became final.

19.5 *Belated Notifications*

If any notification referred to in Article 12(2) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification and shall treat such notification as if it had not been effected.

RULE 20

Final Decisions of Cancellation

20.1 *Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification referred to in Article 13(2) shall be effected promptly after the date on which the decision of cancellation becomes final. The notification shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,
(ii) the name of the owner of the said international registration,
(iii) if the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,
(iv) the name of the authority which pronounced the final decision,
(v) the number, if any, and the date of such decision,
(vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(2) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(2) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision of cancellation.

RULE 21

Recording of Changes in Ownership

21.1 *Request for Recording of Change in Ownership*

(a) The request for recording referred to in Article 14(1)(a) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,
(ii) the name, residence, nationality, and address, of the new owner, in the manner provided for indications to be furnished in respect of applicants,
(iii) the international registration number,
(iv) if the change in ownership relates to some only of the designated States, identification of those States to which it relates,
(v) if the change in ownership relates to some only of the goods and/or services listed in the international registration, a list of those of such goods and/or services to which it relates.

(b) The request shall be signed by the natural person or legal entity whose name appears in the International Register of Marks as the owner of the international registration or, if that person is dead or incapacitated, or—in the case of a legal entity—if it is dissolved or incapacitated, by his (its) successor in title or a person entitled to act for him or his estate. When the request is signed by the said successor in title or other person, it shall indicate his address and contain a statement of the reasons for which the owner of the international registration cannot sign it and for which the person signing is entitled to do so.

(c) The amount of the fee referred to in Article 14(3) is indicated in the Table of Fees.

21.2 *Procedure Where New Owner Is Entitled To File International Applications*

(a) Where the new owner is a natural person or legal entity entitled to file international applications and the request complies with the prescribed requirements, the International Bureau shall record the change in the ownership of the international registration as a whole or in respect of the designated States or goods and/or services specified in the request, as the case may be. If the request does not comply with the prescribed requirements, the International Bureau shall reject it and shall notify the owner of the international registration accordingly.

(b) The publication and the notifications referred to in Article 14(3) shall contain the indications referred to in Rule 21.1(a) and the date of the recording. All notifications shall bear the same date and shall be transmitted on the same day. Where the request referred to in Article 14(1)(a) was signed by a person other than the person whose name appears in the International Register of Marks as the owner of the international registration, this fact as well as the name of that other person, together with an indication of the capacity in which he signed, shall also be indicated in the said publication and notifications.

21.3 *Procedure Where New Owner Is Not Entitled To File International Applications*

(a) Where the new owner is a person (natural person or legal entity) not entitled to file international applications, the International Bureau shall not proceed to effect the requested recording but shall merely record the fact that, for the reason stated, the International Register of Marks is, subject to the last part of Article 14(1)(c), closed in respect of the international registration in question, or in respect of the designated States or goods and/or services specified in the request, as the case may be.

(b) The recording of the fact referred to in paragraph (a) shall be published by the International Bureau. Further details of the procedure are provided in the Administrative Instructions.

21.4 *Notification of Refusal; Recording and Publication*

The notification, recording and publication provided for in Article 14(4)(b) shall refer to the fact of the refusal, identify the State whose authorities pronounced the refusal, and contain:

(i) the name of the owner of the international registration,
(ii) the name of the purported new owner,
(iii) the international registration number,
(iv) a brief indication of the reasons for the refusal,
(v) the identification of the publication referred to in Article 14(3) which is the subject of the refusal.

RULE 22

Recording of Limitations of the List of Goods and/or Services

22.1 *Request for Recording of Limitation of the List*

(a) The request for recording referred to in Article 15(1) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,
(ii) the international registration number,
(iii) the desired limitation of the list of goods and/or services,
(iv) if the request relates to some only of the designated States, identification of those States to which it relates,
(v) if the request relates to one only of the designated States and conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a certified copy of such decision and, if the decision is in a language other than English or French, a certified translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2) is indicated in the Table of Fees.

22.2 *Concept of Limitation*

(a) Subject to paragraph (c), any request under Article 15 shall be regarded as conforming with the concept of limitation if it is presented in either of the following forms:

(i) it asks for the deletion of one or more terms in the list of goods and/or services,
(ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),
(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *shoes* (inserted word) *provided that they are* (linking words) *rubber articles* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk product" by "cheese").

(c) Paragraphs (a) and (b) shall not apply in the case contemplated under Rule 22.1(a)(v).

22.3 *Recording, Publication, and Notification, of Limitation of the List*

(a) If the request complies with the prescribed requirements, the International Bureau shall record the indications referred to in Rule 22.1(a) and the date on which the request was received. If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly.

(b) The publication and the notification referred to in Article 15(2) shall contain the indications referred to in Rule 22.1(a) and the date of the recording.

22.4 *Declining the Recording of Limitation of the List*

The notification referred to in Article 15(3)(a) shall include the reasons for declining the recording of the limitation of the list of goods and/or services.

22.5 *Time Limit Under Article 15(3)(b)*

The time limit referred to in Article 15(3)(b) shall be 3 months from the date of the notification referred to in Article 15(3)(a).

22.6 *Non-Admission by Designated State*

(a) The notification referred to in Article 15(4) shall consist in indicating the recording to which it refers and the fact and date of the finding.

(b) The annotation and publication referred to in Article 15(4) shall contain the indications mentioned in paragraph (a).

(c) The details of the procedure concerning paragraphs (a) and (b) shall be provided in the Administrative Instructions.

RULE 23

Renewal

23.1 *Reminder by the International Bureau*

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect, reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative Instructions. The reminder shall be sent from 6 to 3 months prior to the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, shall not affect the expiration date.

23.2 *Demand for Renewal*

(a) The demand for renewal referred to in Article 16(3) shall preferably be made on a printed form furnished free of charge by the International Bureau together with the reminder referred to in Rule 23.1. The demand shall, in any case, indicate its purpose and contain:

(i) the name of the owner of the international registration, his residence and nationality, and his address,
(ii) the international registration number,
(iii) if the demand relates to some only of the designated States for the purposes of which the person presenting the demand is the owner of the international registration, the identification of those States to which the demand relates.

(b) The demand shall be signed by the owner of the international registration.

(c) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or a request for recording a limitation in the list of goods and/or services. Rule 8.3 shall also apply to demands for renewal.

23.3[A] *Renewal Fees (Alternative A)*

The fees payable under Article 16(3) shall be the same as those referred to in Rule 9.1[A].

23.3[B] *Renewal Fees (Alternative B)*

(a) The fees payable under Article 16(3) shall be the following:

(i) an international renewal fee,
(ii) State renewal fees for every designated State.

(b) The amount of the international renewal fee is indicated in the Table of Fees.

(c) The amounts of the State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the State renewal fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall be free to determine the amount of the State renewal fee applicable to it, subject to the provisions of Rule 9.1[B](d)(i) and (ii) and provided that the amount of the said fee shall not exceed the amount of [*Sub-alternative:* 75% of] the renewal fee which would be payable if the demand were for the renewal in the national register of marks of the said State for a comparable period of time.

23.4 *Time Limits, Surcharge (Both Alternatives)*

(a) Subject to paragraph (b), both the demand and the fees referred to in Article 16(3) must reach the International Bureau by the last day of the term about to expire.

(b) Where, by the said day, the International Bureau has received the demand as prescribed and no renewal fees or an amount intended as renewal fees but which is less than the full amount payable for the demand, the International Bureau shall promptly invite the owner of the international registration to pay the fees or the missing part of the fees. If the said owner complies with the invitation within 6 months from the last day of the term about to expire, the fees or the missing part thereof shall be considered to have been paid within the time limit fixed in paragraph (a), provided that, where the payment reaches the International Bureau after the last day of the term, a surcharge whose amount is fixed in the Table of Fees shall also be payable within the said 6 months time limit.

(c) Failure to send or receive the invitation referred to in paragraph (b), or any delay in dispatching or receiving such invitation, shall not prolong the time limits fixed in that paragraph and in paragraph (a).

23.5 *Recording, Publication, and Notification*

Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal, shall publish the indications referred to in Rule 23.2(a) together with a reference to all previous publications concerning the registration effected since the most recent renewal and an indication of the date on which the renewal shall expire, and shall notify the designated States of the said indications and the said date.

23.6 *Declining the Demand*

Where no demand is presented or the demand does not conform with the requirements of Rule 23.2 or the fees (including, where applicable, the surcharge referred to in Rule 23.4(b)) are not paid as prescribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by registered letter stating the reasons for declining the demand.

23.7 *Reimbursement of Certain Fees*

Where, under Rule 23.6, the International Bureau declines the demand, it shall reimburse to the owner of the international registration [*Alternative A:* the designation fee and the class fees referred to in Rules 23.3[A] and 9.1[A](a)(ii) and (iii)] [*Alternative B:* The State renewal fees referred to in Rule 23.3[B](a)(ii)] to the extent to which he has paid them.

RULE 23bis

Declarations of Actual Use

23bis.1 *Information Concerning Requirements Under Article 18(3)(c), First Sentence*

The national Office of any Contracting State whose national law requires the filing of declarations within the meaning of the first sentence of Article 18(3)(c) shall inform the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law. The International Bureau shall promptly publish such information.

23bis.2 *National Forms*

The national Office of any Contracting State referred to in Rule 23*bis*.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 18(3)(c). The International Bureau shall furnish such forms free of charge to interested persons.

[23bis.3 *International Forms*

(a) Where the declaration referred to in Article 18(3)(c) is not made on a national form according to Rule 23*bis*.2, it shall consist of the following statement and shall be signed by the owner of the international registration:

"The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . ① on . . . ②; that the mark which is the subject of the international registration herein identified is now in use by and through . . . ③ in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . ④; that such use commenced on . . . ⑤; and that the mode or manner in which the mark is used is:

- ☐ on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s);
- ☐ on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s);
- ☐ in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s);
- ☐ other [recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use].

"[① Insert name of State; ② insert international registration date or, if applicable, recording date of the later designation of such State; ③ Insert "the undersigned owner" and/or, if applicable, the name and address of the person and/or persons using the mark under the authority of the owner in the State; ④ Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used; ⑤ Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates.]"

Blanks shall be filled in by the owner of the international registration, as appropriate.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The declaration shall be filed in the same language as the international application to which it relates.

(d) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or of the displays associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(e) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently from the statement set out in paragraph (a) shall produce the same effect.]

RULE 24

Transmittal of Documents to the International Bureau

24.1 *Place and Mode of Transmittal*

International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau, or deposited with or mailed to agencies of the said Bureau in places other than Geneva (Switzerland). The Administrative Instructions shall provide for the setting up and operation of any such agency.

24.2 *Date of Receipt of Documents Mailed*

Any document received by the International Bureau or any of its agencies through deposit or mail shall be considered to have been received on the day on which it is actually received by such Bureau or agency, provided that, when it is actually received after office hours, or on a day when the Bureau or the agency is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau or agency is open for business.

RULE 25

Calendar; Computation of Time Limits

25.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

25.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire on the day on which the last day of the count has been reached.

25.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document must be filed or the required fee must be paid.

25.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agencies falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances exists.

RULE 26

Payment of Fees

26.1 *Payment to the International Bureau*

All fees payable under the Treaty and these Regulations shall be payable to the International Bureau.

26.2 *Currency*

(a) Subject to paragraph (b), all fees payable under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has local agencies, referred to in Rule 24.1, the Administrative Instructions may, under specified conditions, allow exceptions to the provisions of paragraph (a).

26.3 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any of its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.

26.4 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

(i) the name and address, as provided in Rule 5.2(a), of the natural person or legal entity making the payment,

(ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a bank account or to the postal cheque account of the International Bureau, or by cheque. The Administrative Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates, unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative. The details shall be provided in the Administrative Instructions.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which it relates, in the manner to be provided for in the Administrative Instructions.

RULE 27

Withdrawals and Renunciations

27.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before registration is effected and preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches it before recording is effected and preparations for publication have been completed.

27.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

27.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 27.1 and 27.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be.

(b) The International Bureau shall acknowledge receipt of the communication referred to in paragraph (a). In the case of withdrawals, the International Bureau shall reimburse to the applicant [*Alternative A*: the fees referred to in Rule 9.1[A](a)(ii) and (iii), or Rule 13.1 [A](a)(ii), as the case may be] [*Alternative B*: the fees referred to in Rule 9.1 [B](a)(ii), or Rule 13.1[B](a)(ii), as the case may be].

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

RULE 28

Fees Belonging to the Designated Offices

28.1[A] *Fees Belonging to the Designated Offices (Alternative A)*

The fees referred to in Rule 9.1[A](a)(ii) and (iii), Rule 13.1[A](a)(ii), and Rule 23.3[A] as far as it refers to Rule 9.1[A](a)(ii) and (iii), shall belong to the designated Offices.

28.2[A] *Distribution and Transfer of Fees*

The total amount of the fees referred to in Rule 28.1[A] collected by the International Bureau in respect of international registrations, recordings of requests for later designations, and recordings of renewals effected in any given calendar year, shall be distributed among and transferred to the Contracting States in the course of the next subsequent calendar year in proportion to the number of cases in which they have been designated, provided that the number resulting for each State has first been multiplied:

(i) by 2, if the national law provides only for examination of "absolute grounds of nullity,"

(ii) by 3, if the national law provides for examination as to whether there is conflict with another mark ("relative grounds of nullity") and if such examination is carried out only where there is a third-party opposition,

(iii) by 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,

(iv) by 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

Further details shall be provided in the Administrative Instructions.

28.1[B] *Fees Belonging to the Designated Offices (Alternative B)*

Any fee collected by the International Bureau under Rule 9.1[B](a)(ii), Rule 13.1[B](a)(ii), and Rule 23.3[B](a)(ii), shall belong to the designated Office of the State in respect of which it was paid.

28.2[B] *Transfer of Fees*

The International Bureau shall in every calender year transfer to any interested designated Office the fees referred to in Rule 28.1[B] and collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year. Further details shall be provided in the Administrative Instructions.

RULE 29

Fees Belonging to the International Bureau

29.1 *Fees Belonging to the International Bureau*

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Rule 28, shall belong to the International Bureau.

RULE 29bis

Changes in the National Register

29bis.1 *Notification of Changes*

The notification provided for in Article 18*bis*(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

29bis.2 *Annotation and Publication*

The Administrative Instructions provide for the extent to which annotations of any changes notified under Article 18*bis*(1) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter (change in ownership, change in list of goods and/or services, etc.).

RULE 30

The Gazette

30.1 *Contents and Title of the Gazette*

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/*Gazette internationale des marques*" (hereinafter referred to as "the Gazette").

(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

30.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

30.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.

(b) The Administrative Instructions shall identify those portions which require translation (for example, the lists of goods and/or services) and those portions which do not require translation (for example, the names of the designated States).

(c) Matters which can be easily understood even if not translated (for example, the names of the designated States, or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/*Renouvellement*") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.

(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

30.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

30.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.

(b) The International Bureau shall make the requested number of copies available to the national Office:

(i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention by the Contracting State of which the said Office is the national Office,

(ii) at half of the ordinary subscription or sale price for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

RULE 31

Copies and Other Information Available to the Public

31.1 *Copies and Information Concerning International Applications and Registrations*

(a) Any person may obtain from the International Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of any document in the file of any international application or registration.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information on any fact appearing in any document in the file of any international application or registration.

31.2 *Authentication of Documents Issued by the International Bureau*

No authority of any Contracting State shall ask for the authentication by any person or authority of certificates issued and of copies or other documents certified by the International Bureau, provided such certificates, certified copies or other certified documents bear the seal of the International Bureau and the signature of the Director General or a person acting under his authority.

RULE 32

Regional Marks

[*Note by the International Bureau*: Proposals will be made after consultation with the African and Malagasy Industrial Property Office (OAMPI) and the Benelux Trademark Office.]

RULES CONCERNING CHAPTER II

RULE 101

Expenses of Delegations

101.1 *Expenses Borne by Governments*

The expenses of each Delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

RULE 102

Absence of Quorum in the Assembly

102.1 *Voting by Correspondence*

(a) In the case provided for in Article 101(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

RULE 103

Administrative Instructions

103.1 *Matters Governed by the Administrative Instructions*

The Administrative Instructions referred to in Article 104(1)(b) shall contain provisions:

(i) concerning matters in respect of which these Regulations expressly refer to such Instructions,

(ii) concerning any details in respect of the application of these Regulations.

103.2 *Control by the Assembly Under Article 104(1)(b)*

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

103.3 *Publication and Effective Date*

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to its publication in the Gazette.

PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Trademark Application and Drawing Requirements

A proposal was published at 36 F.R. 18002 to amend and revise §§ 2.21–2.23, 2.52, and 2.56. Pursuant to this notice, a number of comments have been received from interested persons. In light of the comments submitted, some changes have been made in the rules as proposed.

An additional subparagraph has been added to § 2.21 requiring that the application state the name of the applicant. In the same section, a paragraph (c) has been added. This paragraph incorporates the substances of proposed § 2.22. Section 2.52 has been revised to state that drawings must be 8 to 8½ inches wide and 11 inches long. In view of the change in § 2.52, § 2.31 has also been revised to make it clear that applications submitted on either letter or legal-size paper are acceptable.

Effective date. This revision shall become effective on *February 1, 1972*. However, as to § 2.52, drawings which comply only with the existing rule will be accepted until March 1, 1972.

1. Section 2.21 is revised to read as follows:

§ 2.21 *Requirements for receiving a filing date.*

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing or other identification of the mark sought to be registered;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the act;

(7) The required filing fee for at least one class of goods or services.

Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent Office.

(c) If the papers are so defective that they cannot be accepted, the applicant will be notified and the papers and fee held 6 months. If the requirements for receiving a filing date have not been satisfied within such time, the papers and fee will be returned to the applicant or otherwise disposed of; the drawing or fee of an unaccepted application may be transferred to a later application.

§ 2.22 [*Revoked*]

2. Section 2.22 is revoked.

3. Section 2.23 is revised to read as follows:

§ 2.23 *Serial number.*

Applications will be given a serial number as received, and the applicant will be informed of the serial number and the filing date of the application.

4. Section 2.31 is revised to read as follows:

§ 2.31 *Application must be in English.*

The application must be in the English language and plainly written on but one side of the paper. It is deemed preferable that the application be on legal or letter-size paper, typewritten double spaced, with at least a one and one-half inch margin on the left-hand side and top of the page.

5. Section 2.52 is amended by revising paragraph (c) to read as follows:

§ 2.52 *Requirements for drawings.*

* * * * * *

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches wide and 11 inches long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch on the sides and bottom of the paper and at least 1 inch between it and the heading.

* * * * * *

6. Section 2.56 is revised to read as follows:

§ 2.56 *Specimens.*

The application must include five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actual used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable flat material and of a size not to exceed 8½ inches wide and 13 inches long.

Dated: January 11, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary
for Science and Technology.

[FR Doc. 72-924; Filed 1-20-72; 8:48 am]

Published in 37 FR 931; Jan. 21, 1972

TRADEMARKS

Initial Processing of Applications

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or

not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective February 1, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

January 11, 1972.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-925; Filed 1-20-72; 8:48 am]

Published in 37 FR 942; Jan. 21, 1972

Certificates of Correction for the Week of Feb. 22, 1972

3,258,802	3,580,477	3,589,742	3,597,690
3,370,578	3,580,531	3,589,825	3,597,751
3,372,006	3,580,848	3,589,989	3,598,135
3,421,133	3,580,875	3,590,227	3,598,283
3,465,044	3,581,054	3,590,463	3,598,379
3,470,205	3,582,050	3,590,771	3,598,384
3,471,685	3,582,207	3,590,824	3,598,429
3,509,878	3,582,650	3,590,892	3,598,485
3,527,747	3,582,708	3,591,341	3,598,580
3,542,502	3,582,814	3,591,405	3,598,845
3,554,683	3,583,189	3,591,464	3,599,326
3,555,027	3,584,084	3,591,627	3,599,355
3,555,182	3,584,125	3,591,881	3,599,568
3,560,461	3,584,459	3,592,527	3,599,609
3,562,494	3,584,467	3,592,807	3,599,970
3,562,611	3,584,779	3,592,910	3,600,163
3,564,016	3,585,163	3,593,015	3,600,478
3,564,328	3,585,205	3,593,592	3,600,573
3,566,940	3,585,348	3,593,597	3,601,016
3,567,789	3,585,524	3,594,086	3,601,750
3,568,142	3,585,690	3,594,261	3,602,224
3,568,734	3,586,949	3,594,352	3,602,344
3,572,775	3,587,175	3,594,421	3,605,256
3,574,701	3,587,245	3,594,574	3,605,760
3,575,281	3,587,516	3,594,607	3,605,989
3,576,319	3,587,750	3,595,075	3,607,413
3,577,026	3,587,858	3,595,814	3,607,775
3,578,470	3,588,076	3,596,116	3,609,519
3,578,556	3,588,095	3,596,163	3,613,044
3,578,702	3,588,612	3,596,700	
3,578,742	3,588,679	3,596,767	
3,579,627	3,588,813	3,596,987	

Dedications

2,898,266.—*Robert L. Gates,* Medina, N.Y. CONTROL OF PLANT DISEASES OF ASCOMYCETES ORIGIN EMPLOYING N-PHENYL-DICHLOROMALEIMIDE. Patent dated Aug. 4, 1959. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,936,734.—*Frank K. Chestnut, Jr.,* Middleport, and *Laurence G. Mayne,* Corfu, N.Y. SELF-DISPENSING FEEDING STATION. Patent dated May 17, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,945,780.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated July 19, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,955,069.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Oct. 4, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,955,070.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Oct. 4, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,960,431.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 15, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,960,432.—*Howard A. Jones* and *John R. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 15, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,961,370.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Nov. 22, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,970,939.—*Eldon Gene Maitlen,* Middleport, N.Y. CONTROL OF NEMATODES EMPLOYING N-NITROSO-N,N-DIMETHYLAMINE. Patent dated Feb. 7, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,990,315.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,990,316.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,995,488.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Aug. 8, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

Patents Available for Licensing or Sale

D. 222,798. HAND-E-HOSE REEL. Stanley Erickson, 7358 23rd NW., Seattle, Wash., 98107.

3,145,723. WATER FEED CONTROL VALVE FOR WATERING TROUGHS. Vance C. Sterrett, 501 West Linden Ave., Logansport, Ind., 46947.

3,195,125. TELEVISION AID TO AIRCRAFT INSTRUMENT LANDING. Henry Reitler, P.O. Box 785, Nashville, Tenn., 37202.

3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Poinciana Drive, Martinez, Ga., 30907.

3,541,362. ELECTROMAGNETIC GENERATORS. Robert Proulx. Correspondence to: Southwest International, Inc., P.O. Box 374, Albuquerque, N. Mex., 87103.

3,563,237. DISTAL PHALANX BANDAGE. Edwin L. Maxwell, Washington, D.C. Correspondence to: Millen, Raptes & White, 503 Crystal Mall, Bldg. 1, 1911 Jefferson Davis Highway, Arlington, Va., 22202.

3,587,105. PICTURE FRAMED ANTENNA. W. Edwin Neilson, 255 East Wendy Way, King of Prussia, Pa., 19406.

3,591,011. APPARATUS FOR SEPARATING SOLID PARTICLES FROM A FLUID MEDIUM. Heinz Holter, et al., Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,591,925. LINE ANGLE DEGREE LEVEL INSTRUMENT. Frank Dupin, 3170 Grandview Ave., Waukegan, Ill., 60085.

3,603,823. MAGNETIC MOTOR WITH PLURALITY OF STATORS. Elmer B. Mason, 901 Vickie Drive., Del City, Okla., 73115.

3,611,633. METHOD AND APPARATUS FOR OUTDOOR FLOWER ARRANGEMENTS. Clarice W. Shackelford, 3628 13th St. NW., Washington, D.C., 20010.

3,612,049. PERSONAL HUMIDIFIER. Cecil C. Schmidt, 1630 Midwest Plaza Bldg., Minneapolis, Ind., 55402.

3,618,059. ELECTRONIC DETECTION AND TRACING MEANS. Milton F. Allen, 551 E. College Ave., P.O. Box 789, Decatur, Ga., 30031.

3,623,103. CONTINUOUSLY INDICATING RADIO DIRECTION FINDER. Charles A. Baldwin, 3406 Old Dominion Road, Alexandria, Va., 22305.

Eastman Kodak Company announces that, in accordance with its policy, nonexclusive licenses upon reasonable terms are available to responsible applicants under the following U.S. patent.

This offer is consistent with the present practice of Eastman Kodak Company generally to grant nonexclusive licenses under unexpired U.S. patents on photographic inventions issued to Kodak prior to 1967 and on inventions made in the course of research or development work for the U.S. Government.

Applications for license may be addressed to Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,226,816. METHOD AND MACHINE FOR PACKAGING ROLL FILM.

Monsanto Research Corporation is prepared to grant licenses, at reasonable royalties, to domestic manufacturers under the following twenty-one Fuel Cell Patents (some of which are already licensed).

Applications for licenses may be addressed to L. Bruce Stevens, Jr., Manager, Patents, Monsanto Research Corporation, P.O. Box 8, Station B, Dayton, Ohio, 45407.

3,252,837	3,444,001
3,260,620	3,454,429
3,293,080	3,454,430
3,368,922	3,457,113
3,382,103	3,479,227
3,385,736	3,508,694
3,395,047	3,542,597
3,436,268	3,553,028
3,438,816	3,570,260
3,442,715	3,617,388
3,444,000	

The RCA Corporation offers to grant nonexclusive licenses on reasonable terms and conditions under patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,625,147. APPARATUS FOR CONTACT PRINTING.

3,625,593. ELECTRICAL CONTROL OF LIGHT POLARIZATION UTILIZING THE OPTICAL PROPERTY OF FLUIDS.

3,625,760. MAGNETIC RECORDING MEDIUM WITH LUBRICANT.

3,626,238. THYRISTOR CONTROLLED POWER SUPPLY CIRCUITS AND DEFLECTION CIRCUITRY ASSOCIATED WITH A KINESCOPE.

3,626,242. POWER SUPPLY CIRCUITS.

3,626,511. DIGITAL LIGHT DEFLECTOR USING ELECTRO-OPTIC GRATING.

3,627,392. STEREOPHONIC SOUND REPRODUCING APPARATUS.

3,627,526. ELECTROPHOTOGRAPHIC RECORDING ELEMENTS WITH HALF-TONE SCREEN COATINGS THEREON.

3,627,528. ELECTROPHOTOGRAPHIC RECORDING ELEMENT HAVING PHOTOCONDUCTOR WITH QUENCHED LUMINESCENCE DURING CHARGING AND METHOD OF MAKING THE PHOTOCONDUCTOR.

3,627,599. METHOD OF APPLYING AN N,N'DIALLYLMELAMINE RESIST TO A SURFACE.

3,628,070. VOLTAGE REFERENCE AND VOLTAGE LEVEL SENSING CIRCUIT.

3,628,082. LINEARITY CORRECTION CIRCUIT UTILIZING A SATURABLE REACTOR.

3,628,152. TELEVISION TUNING CIRCUIT UTILIZING VOLTAGE VARIABLE CAPACITANCE.

3,628,166. WIDE-BAND AMPLIFIER.

3,628,170. LSA OR HYBRID MODE OSCILLATOR STARTED BY SERIES CONNECTED GUNN OR QUENCHED MODE OSCILLATOR.

3,628,177. OPTICAL MODULATION SYSTEM.

3,628,847. HOLOGRAM MEMORY.

3,628,869. AUTOCOLLIMATOR INCLUDING A RETROFLECTOR ELEMENT.

3,629,494. SIGNAL PROCESSOR FOR DROPOUT CORRECTION BEFORE DEMODULATION.

3,629,503. DIGITAL SYNCHRONIZATION SYSTEM.

3,629,519. MAGNETIC HEADS WITH POLES JOINED BY MOLECULAR TRANSPORT BONDING.

3,629,611. ELECTRONIC PROCESSING APPARATUS.

3,629,612. OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUIT HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE.

3,629,691. CURRENT SOURCE.

3,629,692. CURRENT SOURCE WITH POSITIVE FEEDBACK CURRENT REPEATER.

3,629,721. ORTHOGONAL FILTERS.

3,629,734. BROADBAND DOUBLE RIDGE WAVEGUIDE MAGIC TEE.

3,629,737. TRANSMISSION LINE FORMED BY A DIELECTRIC BODY HAVING A METALLIZED NONPLANAR SURFACE.

3,629,956. TEACHING AND GAME PLAYING MACHINE.

3,630,594. HOLOGRAPHIC SCAN CONVERTER.

3,631,131. METHOD OF RECONSTITUTING UNFIRED, CAST, ALUMINA SCRAP.

3,631,348. SIGNAL DISTRIBUTION SYSTEM.

3,631,411. ELECTRICALLY AND OPTICALLY ACCESSIBLE MEMORY.

3,631,417. CYLINDRICAL MAGNETIC MEMORY CONSTRUCTION.

General Electric Company is prepared to grant non-exclusive licenses under the following 41 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,571,773. CENTER CLAMPED BUSHING TRANSFORMER.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Department, General Electric Company, Lynchburg, Va., 24502.

3,603,917. MOUNTING DEVICE FOR A WOUND INDUCTOR.

Applications for licenses under the following 3 patents may be addressed to: General Electric Company, Patent Counsel, Housewares Business Div., 1285 Boston Ave., Bridgeport, Conn., 06602.

3,007,029. TEMPERATURE RESPONSIVE CONTROL FOR ELECTRICALLY HEATED DEVICES.

3,189,995. LID HOLDING MEANS FOR CAN OPENERS.

3,439,417. CAN OPENER.

Applications for license under the following 12 patents may be addressed to: General Electric Company, Aircraft Engine Group, 1000 Western Ave., Lynn, Mass., 01910. Attention: Patent Counsel.

3,106,094. DIFFERENTIAL PRESSURE APPARATUS.

3,158,912. CONTROLLED GRAIN SIZE CASTING.

3,208,847. CHROMIUM BASE ALLOY.

3,268,093. OBJECT HANDLING SYSTEM.

3,365,251. SEAL ASSEMBLY FOR ANTIFRICTION BEARINGS.

3,514,955. MIXING STRUCTURES AND TURBOFAN ENGINES EMPLOYING SAME.

3,514,957. HIGH SPEED PROPULSION ENGINE.

3,526,953. METHOD FOR MAKING LIGHTWEIGHT METALLIC STRUCTURE.

3,540,214. FUEL SYSTEMS FOR GAS TURBINE ENGINES.

3,540,811. FLUID COOLED TURBINE BLADE.

3,548,204. ELECTRICAL FUNCTION GENERATOR.

3,598,319. PROPULSION NOZZLES.

Applications for license under the following 17 patents may be addressed to: Patent Counsel LSTG-I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,135,322. LIQUID COOLED CONDENSER.

3,407,681. FACE GEAR AND METHOD OF ITS MANUFACTURE.

3,422,831. TURBINE CONTROL SYSTEM.

3,429,557. STEAM TURBINE ROTOR COOLING ARRANGEMENT.

3,443,550. TWO-SECTION HEAT RECOVERY STEAM GENERATOR.

3,443,633. TEMPERATURE COMPENSATED AIR-COOLED STEAM CONDENSER.

3,453,181. EVAPORATOR UNIT WITH INTEGRAL LIQUID HEATER.

3,505,811. CONTROL SYSTEM FOR A COMBINED GAS TURBINE AND STEAM TURBINE POWER PLANT.

3,547,085. STEAM DRUM BAFFLE ARRANGEMENT FOR A FORCED RECIRCULATION STEAM GENERATOR.

3,573,460. ION CHAMBER DETECTOR FOR SUB-MICRON PARTICLES.

3,588,562. INSULATED SHAFT ATTACHMENT FOR ROTATING CONDUCTING RING AND METHOD OF ATTACHING.

3,597,653. DIGITAL LOW SPEED SWITCH.

3,600,162. COBALT IRON MAGNETIC ALLOYS.

3,601,617. TURBINE CONTROL SYSTEM WITH EARLY VALVE ACTUATION UNDER UNBALANCED CONDITIONS.

3,601,642. MULTI-THREE PHASE WINDING WITH INTERCHANGED CIRCUIT SEQUENCE.

3,601,643. ANTI-EROSION FEED SLOT FOR LIQUID METAL COLLECTOR.

3,604,206. SHAFT SEALING SYSTEM FOR NUCLEAR TURBINES.

Erratum

In the OFFICIAL GAZETTE of Feb. 1, 1972, the following patent listed as being available for licensing or sale offered by: "Seymour H. Miller, Executive Vice President, Masterpiece, Inc., 29 Elm Ave., Mount Vernon, N.Y., 10550," should read as follows: *Masterpiece, Inc., % American Technical Industries, Inc., 200 5th Ave., New York, N.Y., 10010, Attn: Seymour H. Miller, Executive Vice President.*

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 8, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-06-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-23-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-25-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-10-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-08-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-20-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-08-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-11-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during February 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,700,764 to 2,702,900, inclusive
Plant Patents..... Numbers 1,345 to 1,354, inclusive

REISSUES

FEBRUARY 22, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

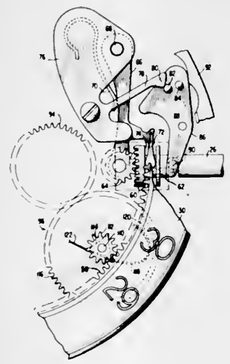
27,290

WATCH CALENDAR SETTING MECHANISM

Donald J. Rogers and John A. Van Horn, Lancaster, Pa., assignors to Hamilton Watch Company, Lancaster, Pa.

Original No. 3,427,798, dated Feb. 18, 1969, Ser. No. 593,374, Nov. 10, 1966. Application for reissue Apr. 1, 1970, Ser. No. 24,891

Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **19 Claims**



The watch calendar setting mechanism has a rotatable stem axially movable into three positions. A pivoted setting wheel is biased into engagement with a clutch slidably mounted on the stem. When the stem is in an innermost position, the setting wheel engages the watch winding mechanism. When the stem is in an intermediate position, the setting wheel engages the calendar ring which may then be rotated in response to rotation of the stem. When the stem is in the outermost position, the setting wheel engages a hand setting gear. The dial train continuously drives the calendar ring through a slip clutch.

27,291

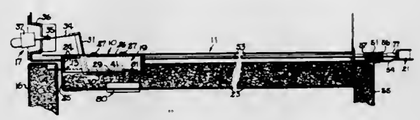
LATCHING DEVICE

Roland V. Fowler, Louisville, Ky., assignor to Amerock Corporation, Rockford, Ill.

Original No. 3,410,591, dated Nov. 12, 1968, Ser. No. 592,137, Nov. 4, 1966. Application for reissue Mar. 12, 1970, Ser. No. 18,870

Int. Cl. E05c *5/00, 19/10*
U.S. Cl. 292—113 **18 Claims**

A latch for a self-cleaning oven and comprising a handle operable to move a bolt along a first path into engagement with a strike on the oven door and then inwardly along a second path to a latched position to draw the door in tightly against the oven cabinet. A spring acting on the bolt normally holds the bolt for movement in its first path and prevents the bolt from moving inwardly to its latched position unless the door is closed and the bolt actually engages the strike to create a force overcoming the spring force.



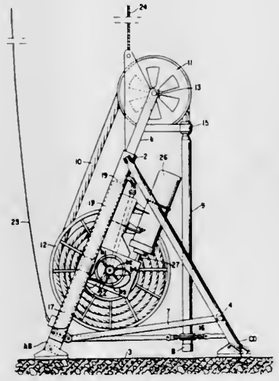
27,292

APPARATUS FOR SUBMARINE CORE DRILLING

Pierre Grolet, Pierre Moulin, and Jean Parola, Rueil Malmaison, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France

Original No. 3,370,656, dated Feb. 27, 1968, Ser. No. 510,285, Nov. 29, 1965. Application for reissue Feb. 27, 1970, Ser. No. 15,305

Int. Cl. E21b *7/12*
U.S. Cl. 175—6 **5 Claims**



A submarine core drilling apparatus comprising a basic structure which is suspended by a supporting cable from the surface installation. A flexible conduit is wound upon a storage reel which in turn is carried by the basic structure. The free end of the conduit is connected to a rigid tubular part comprising a bottom motor operatively connected to a core drill at its lower end. The apparatus further comprises means for guiding the rigid tubular part above the sea bottom, means supported by the basic structure for feeding water under pressure into the conduit, means associated with the conduit storage reel to control

the unwinding of the flexible conduit when the core drill is lowered and advanced into the underwater strata, and at least one cable which may or may not be distinct from the supporting cable. This cable contains electric power and has control and command conductors connected to a source of electric energy and a switchboard on the surface installation.

27,293

SEMICONDUCTOR DEVICE FOR PRODUCING AND AMPLIFYING ELECTRICAL SIGNALS OF VERY HIGH FREQUENCY

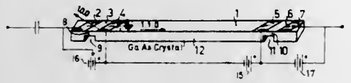
Robert Veilex, Paris, France, by U.S. Philips Corp., assignee, New York, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Original No. 3,458,831, dated July 29, 1969, Ser. No. 644,001, June 6, 1967. Application for reissue Feb. 12, 1970, Ser. No. 14,883

Claims priority, application France, June 10, 1966, 65,098

Int. Cl. H03b *5/32, 7/14;* **H03f** *3/04*

U.S. Cl. 331—107 A **12 Claims**



A semiconductor device for producing and amplifying electrical high frequency signals comprising an elongate body of monocyrstalline piezoelectric material which exhibits a negative resistance characteristic over a portion of the current-voltage characteristic thereof. The body which may consist of gallium arsenide and cut with its longest dimension in the (1.1.0) direction has one end thereof operated at a field intensity at which the material exhibits its negative resistance characteristic thereby to generate at this end electrical and concurrent acoustical oscillations. The acoustical oscillations are coupled to the intermediate portion of the rod which is subject to an electric field which brings about an amplified acoustic oscillation. The terminal end portion of the elongated body is operated at a potential at which the material thereof exhibits a negative resistance characteristic whereby the impinging acoustic oscillations from the intermediate portion bring about an output amplified signal.

27,294

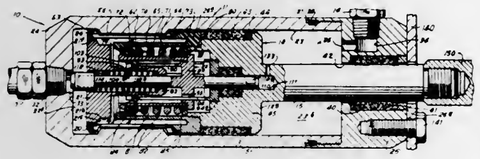
OPERATOR DEVICES

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original No. 3,444,783, dated May 20, 1969, Ser. No. 435,990, Mar. 1, 1965. Application for reissue Feb. 18, 1970, Ser. No. 12,420

Int. Cl. F15b *15/26, 11/00, 13/00*

U.S. Cl. 91—41 **20 Claims**



A pressure fluid actuated operator device movable to at least two positions for operating other devices and adapted to be releasably locked in each of said positions, having fluid pressure differential pulse code signal responsive operator means for actuating and releasing the locking means of said operator device in response to selected predetermined pulse code pressure differential signals transmitted to said operator device from a remote source of pressure fluid; and a system utilizing a plurality of said operator devices in which each is selectively operated in response to a predetermined selected pulse code pressure differential signal transmitted to all of said operator means by fluid pressure.

27,295

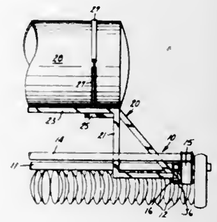
APPLICATOR APPARATUS ATTACHABLE TO A WHEELED AGRICULTURAL IMPLEMENT

Joseph H. Pechacek, 1050 Blaine, Woodburn, Oreg. 97071

Original No. 3,526,342, dated Sept. 1, 1970, Ser. No. 743,715, July 10, 1968. Application for reissue Oct. 16, 1970, Ser. No. 81,434

Int. Cl. A01c *23/00*

U.S. Cl. 222—176 **1 Claim**



A frame having stub axles affixed thereto for suspending the frame on the wheels of an agricultural implement so that the frame extends above the instrument and supports a material container thereabove, for various tasks such as spraying weeds, fertilizing, etc., while adding very little, if any, weight to the frame of the agricultural implement.

27,296

PROCESS FOR THE PREPARATION OF AROMATIC CARBOXYLIC ACIDS

Yataro Ichikawa, Iwakuni, Japan, assignor to Teijin Limited, Kita-ku, Osaka, Japan

No Drawing. Original No. 3,299,125, dated Jan. 17, 1967, Ser. No. 362,488, Apr. 24, 1964. Application for reissue June 9, 1969, Ser. No. 871,487

Claims priority, application Japan, May 1, 1963, 38/22,901

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **11 Claims**

A process for producing aromatic carboxylic acids comprising reacting under conditions of oxidation, an aromatic compound having at least one substituent selected from methyl, hydroxymethyl and aldehyde radicals in the presence of a catalyst system containing in combination (A) at least one substance selected from the group consisting of scandium, yttrium, lanthanum, neodymium, gadolinium, thorium, zirconium and hafnium and the organic acid salts, inorganic salts, oxides, hydroxides, basic salts, complex salts and alcoholates thereof, and (B) at least one substance selected from the group consisting of the metal cobalt, organic acid salts, oxides, hydroxides and complex salts of the metal cobalt. When two substituents are present on the aromatic compound, they should be separated by at least one unsubstituted nuclear carbon.

27,297

DISPENSER WITH CUP SUPPORTING BRISTLES

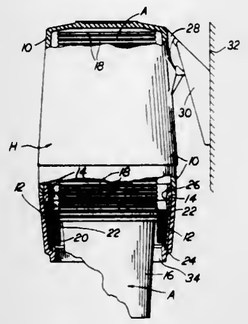
Howard W. Johnson and Glacinto C. D'Ercoli, Park Forest, and Elmer J. Knize, Chicago, Ill., assignors to Solo Cup Company, Chicago, Ill.

Original No. 3,342,375, dated Sept. 19, 1967, Ser. No. 531,842, Mar. 4, 1966. Application for reissue June 16, 1969, Ser. No. 835,905

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. A47f *1/04*

U.S. Cl. 221—308 **10 Claims**



The specification discloses a cylindrical dispenser for paper or plastic cups having a tapered open end through which the cups are put into or taken out of the dispenser. At the lower open end, bristles project toward the axis of the cylinder for supporting a stack of nested cups. The bristles are of progressively shorter length and therefore stiffer toward the open end whereby the lower stiffer bristles provide good support for the stack while the longer, less stiff bristles assist in separating the nested cups to facilitate removing only one at a time.

27,298

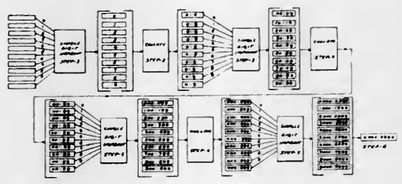
PROCESS OF PRINTING NUMBERS ON FORMS

Arthur S. Folino, 444 Stone Mill Road, Dayton, Ohio 45409

Original No. 3,421,752, dated Jan. 14, 1969, Ser. No. 488,331, Sept. 20, 1965. Application for reissue Jan. 20, 1970, Ser. No. 4,431

Int. Cl. B41f *13/54;* **B41l** *45/00;* **B65h** *45/16*

U.S. Cl. 270—1 **13 Claims**



A method of applying consecutive numbers of multiple denominational position to ticket and like forms without the use of numbering devices, including steps of imprinting in successive denominational positions and of collating the ticket forms intermediate imprinting operations to form numerically related groups and sets within groups.

27,299

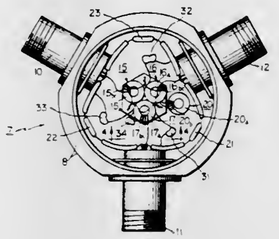
N-WAY ELECTRICAL POWER DIVIDER WHEREIN N IS AN ODD NUMBER

Joseph Oleksiak, Dudley, Mass., assignor to Adams-Russell Co., Inc., Waltham, Mass.

Original No. 3,428,920, dated Feb. 18, 1969, Ser. No. 597,650, Nov. 29, 1966. Application for reissue Mar. 10, 1970, Ser. No. 18,357

Int. Cl. H01p *5/12*

U.S. Cl. 333—8 **9 Claims**



An electrical network for summing or dividing high-frequency electrical power. Any odd number of high frequency electircal power inputs can be summed and the sum will appear at a single output port or, alternatively, a single high-frequency input can be divided into any odd number of output, each appearing at one of a plurality of ports. The network achieves a high degree of isolation between the plurality of ports as well as close coupling between the single port and each of the plurality of ports. These ends art attained by utilizing a plurality of transformers, each having two windings, the two windings consisting of a pair of insulated wires, each twisted about the other and the toroidally wound around of ferromagnetic core. The windings are connected to each other in such a way as to bring about net cancellations of electrical signals tending to transfer between the plurality of ports and net reinforcements of electrical signals tending to ransfer between each of the plurality of ports and a common terminal.

27,300

RAILROAD CAR PUSHING APPARATUS

Carl Ludwig, Cleveland, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Original No. 3,212,454, dated Oct. 19, 1965, Ser. No. 315,237, Oct. 10, 1963. Application for reissue May 6, 1970, Ser. No. 34,971

Int. Cl. B61j *3/06*

U.S. Cl. 104—176 **18 Claims**



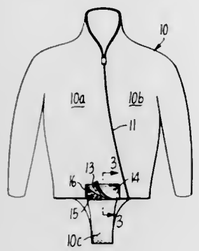
There is provided a railroad train moving system including a train of coupled railroad cars, a track portion therefor, and characterized by a carriage movable alongside the track portion and having an arm selectively positionable into and out of train pushing position between a pair of coupled cars for applying, centrally and on or near the coupler, a force sufficient to move the train as a unit when the arm is in its train pushing position.

PATENTS

GRANTED FEBRUARY 22, 1972

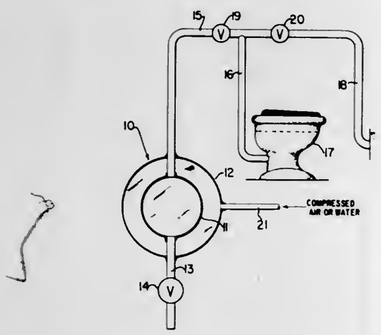
GENERAL AND MECHANICAL

3,643,264
UNDERWATER DIVING GARMENT CONSTRUCTION
Carl T. Rector, 2408 Meadow Lane, Eureka, Calif.
Filed Oct. 2, 1970, Ser. No. 77,609
Int. Cl. B63c *11/02*
U.S. Cl. 2—2.1 R **2 Claims**



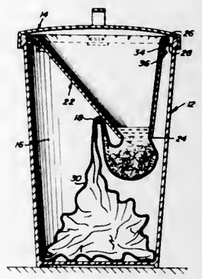
An improved fastening means for use in the construction of an underwater diving garment having a tail strap and vest portion that extends below the waistline, said improved fastening means comprising a pair of pads having hooked surfaces, one pad being secured to the lower portion of said vest and the other pad being hinged to the vest above said first pad, the hooked surfaces of said pads being in opposed facing relation, and a woolly fabric material mounted on both sides of said tail strap for simultaneously engaging both pads while the end of said tail strap is sandwiched therebetween.

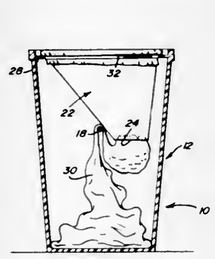
3,643,265
HOLDING TANK FOR MARINE TOILET
George C. Wiswell, Jr., 1014 Requot Road, Southport, Conn.
Filed Sept. 4, 1970, Ser. No. 69,570
Int. Cl. E03d *1/00, 3/00, 5/00*
U.S. Cl. 4—10 **5 Claims**

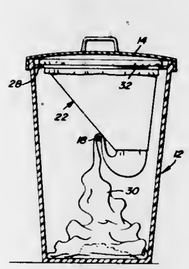


A holding tank for a marine toilet comprises a pair of flexible bags, one inside the other and separate from each other. The inner bag is connected to a high point of a siphon line between the exhaust of a marine toilet and the overflow discharge. A separate discharge line also extends from the inner bag. The outer bag is connected to a source of fluid pressure so that pressure can be applied against the inner bag to force the contents thereof through the discharge line.

3,643,266
PORTABLE WASTE RECEPTACLE
Robert D. Black, 515 South Liberty, Harrison, Ark.
Filed Nov. 24, 1970, Ser. No. 92,461
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 **10 Claims**





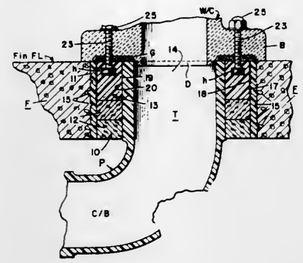


An enlarged upright cylindrical container having a removable funnel seated in the upper portion thereof. The funnel has an offset spout which lies to one side of and below a bar spanning the internal chamber of the container. A waste receiving bag is fitted within the funnel and projects through the spout and along a reversely curving path over the bar and subsequently into the bottom of the chamber, the folding of the bag over the bar defining a trap.

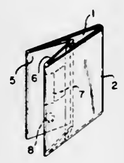
3,643,267
METHOD AND MEANS FOR MAINTAINING THE THROAT PLASTIC-TYPE CLOSET BEND SPACED FROM CEMENT FLOORING AND FOR SECURING A WATER CLOSET THERETO
Arthur L. Winter, 54 San Carlos St., Salinas, Calif.
Filed May 4, 1970, Ser. No. 34,125
Int. Cl. E03d *11/00*
U.S. Cl. 4—252 **9 Claims**

A guard form for circumscribing and maintaining the threat of a closet bend free and clear of cement flooring by

removable coring and the replacement of such coring by a closet fastening ring tightly fitting between the guard form and the throat for stabilizing and securing a water closet relative thereto.



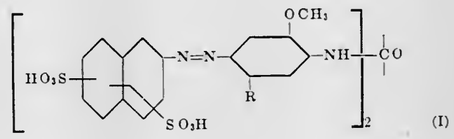
3,643,268
SELF-INFLATABLE HOLLOW BODIES FOR USE AS CUSHIONS AND FOR LIKE PURPOSES
Paul Stamberger, 552 West University Parkway, Baltimore, Md.
Continuation-in-part of application Ser. No. 738,657, June 20, 1968, now Patent No. 3,553,113, dated Oct. 13, 1970, which is a continuation-in-part of application Ser. No. 453,252, May 5, 1968, now abandoned. This application Sept. 30, 1970, Ser. No. 76,734
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 **12 Claims**



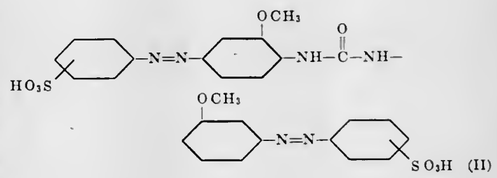
The present invention relates to self-inflatable hollow bodies made of relatively flexible, strong, air-impervious sheet material, which bodies comprise a top portion and a bottom portion of substantially the same relative size and configuration, the marginal edges of said top and bottom portions being connected in airtight relation by means of a flexible, foldable portion or portions of sufficient height to form a hollow, hermetically sealed, body provided with an air inlet and exhaust valve which permits air to be drawn into said hollow body when said valve is opened and when the top portion is being moved into spaced or extended position with respect to said bottom portion and which valve is closed when the self-inflative hollow body is formed to thus retain the air within said hollow body to provide the self-inflated cushion, pillow, mattress or the like article of manufacture. As a means for moving said top and bottom portions from their normal, juxtaposed and readily foldable positions to their spaced positions to form the hollow body, there is provided a pair of opposed members whose upper and lower edges are secured to aligned portions of the top and bottom portions, which opposed members are sufficiently stiff or are made so by strengthening or reinforcing means to be stiffer or more rigid than the remaining portion of the hollow body. When the hollow body is in its normal, collapsed and readily foldable condition with the top and bottom portions in juxtaposed relation, said opposed members are disposed in substantially parallel relation with respect to the plane of the said juxtaposed top portion, and when said members are moved manually or automatically to positions at right angles to said plane, they act as levers to cause said top and bottom portions to be separated to form the hollow body, the extent of such separation being limited by the height of the flexible, foldable portion or portions which connect the marginal edges of the said top and bottom portions. It is the provision of the pair of opposed, relatively stiff or stiffened members which act as levers upon manual or automatic operation thereof to effect separation of the top and bottom portions to form the air-filled hollow body, which constitutes an important feature of the present invention and distinguishes said invention, in a patentable sense, from the pneumatic cushions and the like of the prior art. The means by which the self-inflatable device of the present invention may be moved from a normal flat condition to an extended condition are so constructed and arranged that such movement may be entirely manual or may be entirely automatic, the automatic movement being effected by the provision of novel means associated with each of the pair of opposed stiff or stiffened members which will move said opposed members from their normal flat positions substantially parallel to the plane of said top portion to their extended positions at substantially right angles with respect to the plane of said bottom portion.

3,643,269
DYEING SYNTHETIC POLYAMIDE FIBERS WITH DISULFONATED DIARYL BIS AXO CARBONILIDES
August Schweizer, Muttenz, Switzerland, assignor to Sandor Ltd. (also known as Sandoz A.G.), Basel, Switzerland
Filed Sept. 30, 1968, Ser. No. 763,925
Claims priority, application Switzerland, Oct. 25, 1967, 15022/67
Int. Cl. D06p *1/20*
U.S. Cl. 8—41 **10 Claims**

"A process for dyeing or printing polyamide fibers with dyes of the formula



where R stands for methyl or ethyl, or with dyes of the formula



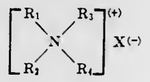
or their water-soluble salts."

3,643,270
PROCESS FOR DYEING ANIONIC GROUPS CONTAINING SYNTHETIC FIBER MATERIALS

Helmut Kirschnek, Leverkusen-Schlebusch; Dietrich Hildebrand, Leverkusen, and Gunter Breidbach, Cologne-Flittard, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 12, 1969, Ser. No. 798,768
Claims priority, application Germany, Dec. 20, 1968, P 18 15 943.8
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 **7 Claims**

An improvement in the process for dyeing synthetic fibers containing anionic groups, e.g., acrylonitrile copolymers, with basic dyestuffs in chlorohydrocarbon dyebaths containing 0.1–4 percent by weight of water is obtained by utilizing a dyeing auxiliary having the formula



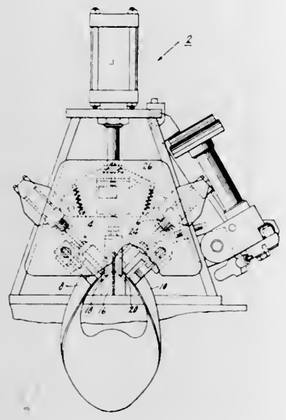
wherein

R_1 and R_2, independently of one another are C_{14}–C_{22}-alkyl or C_{14}–C_{22}-alkenyl in which the total of the carbon atoms contained in R_1 and R_2 is 32–44;
R_3 is lower alkyl, haloalkyl or hydroxyalkyl;
R_4 is optionally substituted cycloalkyl, aralkyl or C_1–C_4-alkyl, or together with R_3 forms a 5- or 6-membered heterocycle; and
$X^{(-)}$ is an anion.

3,643,271
METHOD AND APPARTUS FOR SEAM FORMING

Lionel W. G. Wilkinson, Narborough, England, assignor to USM Corporation, Flemington, N.J.

Filed Aug. 24, 1970, Ser. No. 66,446
Claims priority, application Great Britain, Sept. 11, 1969, 44,907/69
Int. Cl. A43d *11/00*
U.S. Cl. 12—146 C **6 Claims**

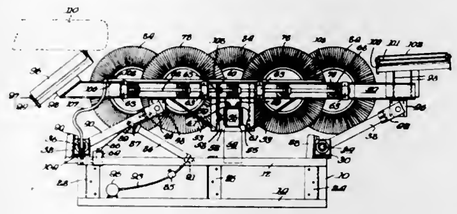


A method of forming a seam joining two workpieces, such as thermoplastic shoe parts, by supporting said parts with the edges to be seamed in adjacent relationship on a support surface having a grooved-out portion aligned with the edges to be seamed, forming a weld along said adjacent edges, flowing a portion of the weldment into the grooved-out portion during welding, thereby forming a reinforcing rib aligned with and superimposed over the seam joining said workpieces and apparatus for use in practising the method.

3,643,272
WHEEL WASHER CONSTRUCTION

Allen D. Rickel, Northbrook, Ill., assignor to Auto Laundry Equipment Sales Company, Glenview, Ill.

Filed June 2, 1969, Ser. No. 829,257
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **3 Claims**

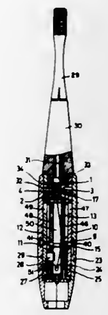


A wheel washer for use in automatic automobile laundries whereby an entire wheel, including the tire, of an automobile is washed and cleaned during one pass of the forwardly moving, rotating wheel. Staggered and stacked brush assemblies provide maximum surface cleaning of the automobile wheel in a minimum of linear travel distance. Direct chain-and-sprocket and geared driving means provide positive power delivery to the brush assemblies.

3,643,273
AUTOMATIC TOOTHBRUSH WITH A FLUID MOTOR

Cornelis Johannes Theresia Potters; Jacobus Pieter Reinhoudt, and Hendricus Franciscus Gerardus Smulders, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,739
Claims priority, application Netherlands, Jan. 24, 1969, 6901274
Int. Cl. A46b *13/02*
U.S. Cl. 15—22 R **9 Claims**

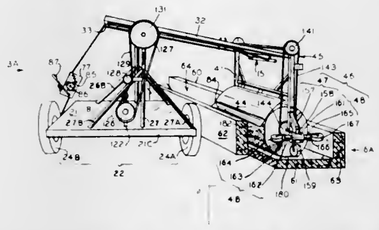


An automatic toothbrush having a fluid motor, in particular a water motor, which produces reciprocating movements of a part, such as a piston, coupled to the brush proper, one or more ports being located in the fluid supply passage and/or the fluid discharge passage, which ports can periodically be opened and closed by a member, such as a slide, which is driven by a switching mechanism the position of which is determined by the position of the pistons. Preferably a buckling spring mechanism is used.

3,643,274
CATTLE FEED TROUGH TREATING APPARATUS AND METHOD

Roy Kenneth Hodges, Stratford, Tex., assignor to Kenneth Poole, Cactus, Tex., a part interest

Filed Sept. 19, 1969, Ser. No. 859,393
Int. Cl. A46b *13/02*
U.S. Cl. 15—56 **7 Claims**

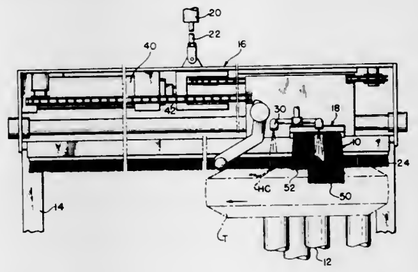


Apparatus for treating and cleansing a feed trough having a longitudinally extending upwardly open channel of round, curved or rectangular section by the concurrent steps of supporting a cylindrical brush means having a central longitudinally extending axis in the trough channel; rotating the brush about its axis and thereby contacting and brushing said trough channel and thereby applying a force between the trough channel and rotating brush while supporting the rotating brush in the channel against that force between the rotating brush and the trough channel; and moving the brush along the length of the trough with the axis of the brush at an angle to the length of the trough channel, the brush contacting the bottom and horizontally spaced-apart vertically extending wall portions of the trough channel, in alternating combination with the step of stirring the feed in said trough by concurrent steps of supporting in said trough, pivotally about a horizontal axis above said trough, plowlike stirring means extending transversely of the length of said channel of said trough and moving said stirring means along the length of the trough through the feed in said trough. The apparatus for supporting and locating and moving the brush along the length of the trough is the same as the apparatus for supporting, locating and moving the stirring means.

3,643,275
HUBCAP WASHER

Russel A. Van Brakel, Wood Dale, Ill., assignor to Haverberg Auto Laundry Equipment Co., Inc., Chicago, Ill.

Filed Apr. 3, 1970, Ser. No. 25,503
Int. Cl. B60s *3/04*
U.S. Cl. 15—21 R **7 Claims**

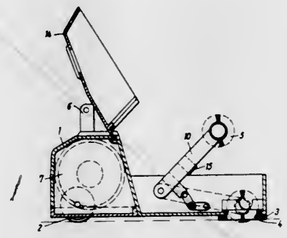


A hubcap washer is provided with a brush having a beveled or tapered face that allows the maximum number of individual bristles to be cleaning or brushing at one time. The brush is mounted at an angle so that the face of the brush is disposed generally at a 90° angle with respect to the axis of rotation of the wheel. The brush in the preferred form is also stepped.

3,643,276
FLOOR-CLEANING MACHINE

Eberhard Worwag, Stuttgart, Germany, assignor to Progress-Elektrogerate Mauz & Pfeiffer, Stuttgart, Germany

Filed Apr. 6, 1970, Ser. No. 25,699
Claims priority, application Germany, Apr. 5, 1969, G 69 13 820
Int. Cl. A471 *11/18*
U.S. Cl. 15—49 **8 Claims**

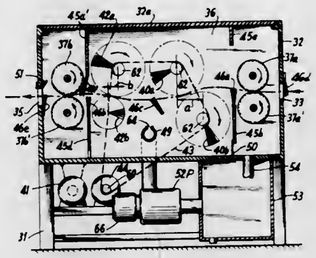


A floor-cleaning machine with a cleaning tool which is adapted to be driven by a motor and is rotatably journaled between two supporting arms, said supporting arms being provided with plug-in coupling means for rotatably engaging and supporting said cleaning tool, said supporting arms together with said cleaning tool being pivotable selectively from a position within the housing to a position outside the housing and vice versa.

3,643,277
DEVICE FOR CLEANING VENETIAN BLIND SLATS

Felix Durst, Oberweningen-Schofflisdorf, Switzerland

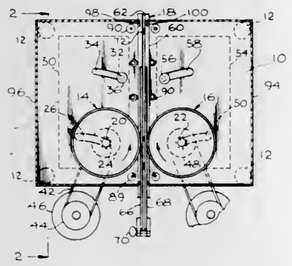
Filed July 10, 1969, Ser. No. 840,732
Claims priority, application Switzerland, July 12, 1968, 10649/68; May 14, 1969, 7530/69
Int. Cl. A46b *13/04*
U.S. Cl. 15—77 **10 Claims**



A device for cleaning venetian blind slats includes a housing having spaced opposite sidewalls defining an inlet opening for the slats respectively. A substantially horizontal slat passage plane is defined between the apertures within the housing and the clamping points of two pairs of superposed driving rolls having rubber-elastic surfaces and arranged adjacent the respective apertures and provide guiding means for the slats for delivering the slats between two horizontally spaced pairs of cleaning rolls. The apparatus also includes a horizontally arranged spray pipe connected to a pressure line

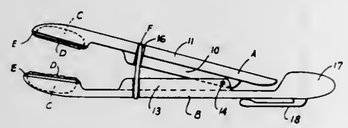
for applying a cleaning fluid in the vicinity of the space defined between the two cleaning roll pairs. The spray pipe advantageously defines a slat guide channel having a convergent entrance for guiding the slats therethrough.

3,643,278
PRINTED CIRCUIT PANEL SCRUBBING APPARATUS
Daniel M. Harris, Canoga Park; Jack E. Moore, Woodland Hills; Chester E. Taylor, Reseda, and Walter H. Walczyk, Oxnard, all of Calif., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Apr. 13, 1970, Ser. No. 29,366
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 **8 Claims**



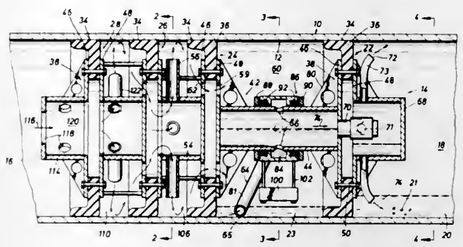
A scrubbing apparatus particularly useful for scrubbing clean the plating on the base contact fingers of printed circuit panels. The apparatus is comprised of a pair of cylindrical brushes each mounted for rotation in the same horizontal plane about spaced vertically oriented axes. The brush peripheries are closely spaced from one another to permit the passage of a circuit panel therebetween along a guide and support track. Means are provided to adjustably position the brushes to permit simultaneous scrubbing of either both sides of a single panel or one side each of a pair of panels. Adjustability also enables the brush wear to be compensated for. A source of waterflow is provided to continually wet the brush periphery.

3,643,279
EYEGLASS CLEANER
Alonzo M. De Bruhl, 11 Shrevewood Drive, Taylors, S.C.
Filed July 27, 1970, Ser. No. 58,476
Int. Cl. G02c *13/00*
U.S. Cl. 15—104.94 **2 Claims**



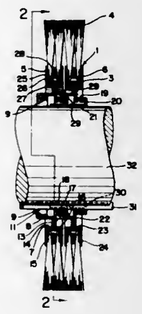
An apparatus for applying a cleaning agent simultaneously to both sides of the lens of a pair of eyeglasses. The apparatus includes a pair of arms that are pivotally connected together, and have cup-shaped recesses carried adjacent one end thereof. Positioned within each recess is an absorbent material saturated with a cleaning agent. A rim extends around the recesses for minimizing evaporation of the cleaning agent when the arms are in a closed position.

3,643,280
PIPELINE PIGS
Marvin D. Powers, 6060 Skyline Drive, Houston, Tex.
Filed Dec. 19, 1969, Ser. No. 886,629
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **12 Claims**



This invention relates to pipeline pigs for removing liquids and solid debris. The pig includes at least one fluid extraction chamber and is propelled through the pipeline under the pressure exerted by a suitable gas which picks up and atomizes the liquids within the chamber. The pig preferably also includes a drying chamber from which liquids are removed through a syphon tube operated by the gas pressure. The gases, together with the extracted liquids, become ejected in front of the moving pig in the direction of fluid flow.

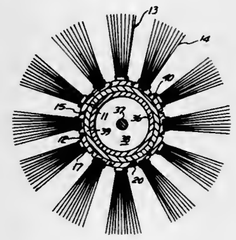
3,643,281
ROTARY BRUSH
Arthur T. Schofield, Brecksville, Ohio, assignor to The Manufacturers Brush Company, Cuyahoga County, Ohio
Filed Jan. 6, 1969, Ser. No. 789,302
Int. Cl. A46b *13/00*
U.S. Cl. 15—181 **25 Claims**



A rotary brushing tool adapted for mounting on a drive shaft in brushing machinery and suitable for sweeping or scrubbing large areas; such brushing tool comprising a plurality of similar interlocking annular brush elements joined end to end, one to the other, in coaxial alignment. The brush elements are each formed of unitary first and second members and brush bristle material held in such members by anchoring means. The unitary first member has an axial hub portion and a radial flange, as does the unitary second member, and they are mounted with their flanges adjacent one another to form a channel holding the brush bristle

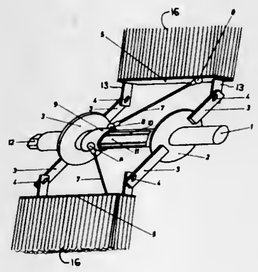
material therebetween. The end of the hub portion of the first member is shaped to interlock with the end of the hub portion of the second member of another brush element so that brush elements so formed are joined in this manner end to end in interlocking coaxial alignment. The brushing tool so formed is suited for construction from a variety of materials including sheet metal, but is particularly suited for plastic construction. The tool is also suited for a variety of bristle configurations including a configuration characterized by the brush bristles intersecting the brush axis at oblique angles to afford a side-to-side motion during brush rotation.

3,643,282
BRISTLE MAT ASSEMBLY FOR BRUSHES
Leo Lechene, Patton, and John Campbell, Coalport, both of Pa., assignors to Fab Fibre Company, Patton, Pa.
Filed Dec. 2, 1969, Ser. No. 881,530
Int. Cl. A46b *1/00*
U.S. Cl. 15—179 **1 Claim**



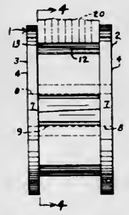
A bristle mat assembly for brushes which consists of a mat of rectangular shape, having a fastening device at its opposite ends so that the strip may be formed into a cylinder with its ends interconnected, and a series of spaced rows of longitudinally spaced plastic bristle bundles overlying one side of the strip, with the bristle ends projected through the mat, fused and bonded thereto and extending at right angles thereto; and the method of making same wherein the mat is pressure molded to shape with the bristle bundles assembled into the mold with the bristle ends projected through the mold cavity.

3,643,283
CENTRIFUGAL ROLLER FOR STREET CLEANING DEVICES
Fritz Jahnert, Stadtbergen near Augsburg, and Martin Schollhorn, Kissing near Augsburg, both of Germany, assignors to Keller & Knappich GmbH, Augsburg, Germany
Filed Aug. 20, 1970, Ser. No. 65,470
Claims priority, application Germany, Sept. 30, 1969, P 19 49 304.0
Int. Cl. A46b *13/02*; **E01h** *1/02*
U.S. Cl. 15—183 **5 Claims**



In a centrifugal roller mounted on street cleaning devices having pivotable broom carriers which pivot parallel with respect to the rotational axis of the roller so that the brooms engage the circumference of the roller at a defined point, there is provided a connecting rod joining each of the broom carriers to a collar which is slidably mounted on a roller so that when the collar is positioned on the roller, the broom carriers can be easily adjusted in order to equalize the wear on the broom bristles during the operation of the street cleaning device.

3,643,284
REUSABLE BUFFING WHEEL CARRIER
Henry J. Patterson, 468 W. Hudson, Madison Heights, Mich.
Filed Aug. 10, 1970, Ser. No. 62,534
Int. Cl. B24d *29/00*
U.S. Cl. 15—230.19 **3 Claims**

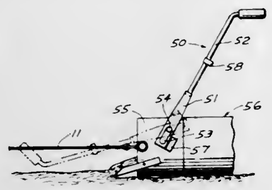


Two slidably interfitting duplicate and complementary members, each having an end plate, a hole approximately centrally formed in said end plate to mount the member on an arbor, three webs, each defining one face, equally, angularly spaced about the center of said hole, said faces occupy planes intersecting at substantially the center of the hole; the hole is elongated through the end plate and through said webs with the effect of dividing the webs into three V-shaped units equally spaced about the center of said hole, and each said unit is comprised of two sectional webs having their inner end portions conjoined and diverging outwardly to terminate uniformly in peripheral faces on which buffing wheels may be mounted; an outer marginal edge portion of the plate extends beyond said peripheral faces and buffing wheels may abut against such marginal portion which resists their escape axially of the member; the spacing of the three V-shaped units leaves three equally spaced V-shaped sockets, one between each pair of such units, so that when two complementary members are assembled, the V-shaped units on each member is received in a V-shaped socket on the other member; the aforesaid surfaces forming the outer surfaces of each V-shaped unit, and being so inclined as to define a V of larger dimensions at the juncture of the surfaces with the end plate and a smaller V at the end of such surfaces remote from said end plate, with the effect that the V-shaped sockets are larger at the ends of said units remote from said end plate and smaller at the juncture of the adjacent faces which form such socket, whereby the smaller ends of the V-shaped units are received into the larger ends of the V-shaped sockets, and with the result that upon slidably assembling the two complementary units, the inclined surfaces fully interengage with little or no space therebetween.

3,643,285
SLUDGE SCOOP FOR OIL TANKERS
Henry J. Modrey, Eagle Drive, Stamford, Conn.
Filed Sept. 11, 1969, Ser. No. 857,154
Int. Cl. B63b *57/00*
U.S. Cl. 15—246.5 **5 Claims**

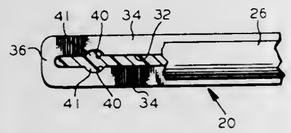
This invention is directed to apparatus for removing sludge from the bottom of the tanks of an oil tanker and includes a hoisting winch at the top of the tank with its cable extending

down into the tank and attached to a sludge scoop initially remotely located at the bottom of the tank. An adjustably



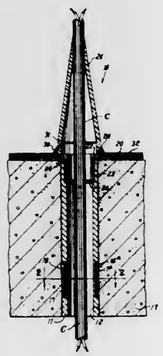
positioned snatch block is used to control the lead of the cable and to establish the desired path of travel of the sludge scoop.

3,643,286
WINDSHIELD WIPER
Leo J. Wubbe, Beverly Shore, Ind.
Filed Mar. 18, 1970, Ser. No. 20,585
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.38 **7 Claims**



This invention relates to blade elements adapted for use in windshield wiper assemblies for wiping curved windshields. The assembly includes a blade element and a pressure-distributing superstructure operatively connected together so as to transmit and distribute pressure received by the pressure-distributing superstructure from the wiper arm to spaced locations along the length of the blade element to conform the blade element to the shape of the surface of the windshield to be wiped. The blade element comprises a support member and a resilient wiping member whose lowermost portion is adapted to wipe windshields and which is maintained under longitudinal tension by means interlocking the support member and the resilient wiping member.

3,643,287
LEAD-THROUGH DEVICE
Oliver W. Majors, P.O. Box 1781, Corpus Christi, Tex.
Filed Feb. 17, 1969, Ser. No. 799,659
Int. Cl. F16l *5/00*
U.S. Cl. 16—2 **8 Claims**

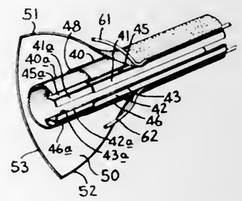


A lead-through device insertable in holes drilled in a concrete floor and the like for leading cables or wires from below to above the floor of a building structure which protects the cable or wires from contact with the concrete and has a resilient hood which extends above the floor a short distance to protect the wires or cable.

ERRATUM

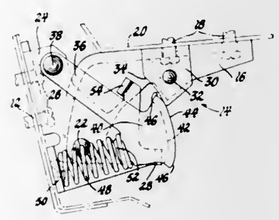
For Class 16—96 see:
Patent No. 3,643,529

3,643,288
TELESCOPING DRAPERY ROD CONSTRUCTION
Humbert Olivari, Randallstown, Md., assignor to Eastern Products Corporation, Columbia, Md.
Filed Oct. 13, 1969, Ser. No. 865,740
Int. Cl. A47h *1/04*
U.S. Cl. 16—96 **1 Claim**



A fabric covered drapery rod having inner and outer telescoping rod sections slotted at the back and including registering grooves forming continuous channels for anchoring the fabric along the edges of the slot with the rod extended to desired length. The lateral edges of the fabric are held in the channels by frictional tucking strips.

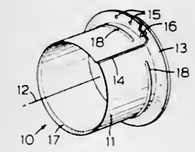
3,643,289
INFINITE POSITION HOLD OPEN HINGE
Thomas E. Lohr, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 2, 1969, Ser. No. 829,255
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **4 Claims**



A door is pivotally mounted to a vehicle by an infinite position hold open hinge including conventional male and female hinge members pivotally interconnected. The female hinge member pivotally mounts one end of a lever about an axis inboard from the hinge axis with the other end of the lever having a depending flange with a center arcuate surface generated about and facing away from the hinge axis. The male hinge member mounts a plastic brake having an arcuate surface generated about and facing the hinge axis for engagement with the arcuate surface of the lever. A spring extending between the female hinge member and the other end of

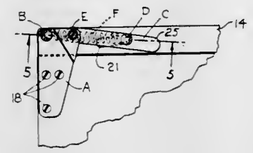
the lever biases the arcuate surface of the lever into frictional engagement with the arcuate surface of the brake. The depending flange also has lead in surfaces providing a smooth transition to the center arcuate surface the female hinge member includes and a stop preventing engagement of the lever the and brake when the door is in closed position to prevent the brake from taking a permanent set. Moving the door from closed position to open position moves the arcuate surface of the lever along the arcuate surface of the brake to produce a frictional drag which wedges the surfaces apart against the action of the spring to decrease the effort of opening the door. Moving the door from open position to closed position moves the arcuate surface of the lever oppositely along the arcuate surface of the brake to produce a frictional drag which wedges the surfaces together aiding the action of the spring to increase the effort of closing the door. When the door is in an intermediate position between the open and closed positions, the engagement between the arcuate surfaces of the lever and brake prevents movement of the door toward either the open or closed positions until a predetermined force is applied to the door.

3,643,290
BUSHING AND BUSHING ASSEMBLY
John D. Milne, c/o 62 Shaft Road, Rexdale, Ontario, Canada
Filed Dec. 1, 1969, Ser. No. 881,215
Int. Cl. F16l *3/00*
U.S. Cl. 16—2 **17 Claims**



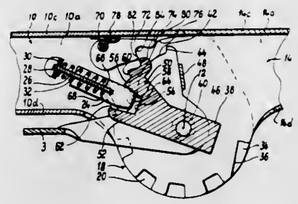
A bushing comprising a cylindrical portion, and a flange portion presented at one end of the cylindrical portion and projecting outwardly from and around the cylindrical portion. The bushing is axially split throughout its length, a plurality of circumferentially spaced openings being formed through the flange portion of the bushing on one side of the split, and one or more locking pins projecting from the flange portion on the other side of the split so that, depending on which of the openings the or each pin is disposed through, the diameter of the bushing which is formed of a resiliently deformable material can be varied. In an alternative embodiment the plurality of openings are formed transverse to the axis of the bushing rather than through the flange portion, and instead of the above-mentioned pin or pins a single circumferentially disposed locking pin is presented by the flange portion on the above-mentioned other side of the axial split, the pin having a tooth which is engageable with the farthest opening from the split through which the pin is disposed thereby again permitting the diameter of the bushing to be varied. Two or more of the bushings may be assembled together with the locking pin or pins presented by one of the bushings in engagement with selected openings provided in the other bushing and with the locking pin or pins presented by said other bushing in engagement with selected openings in the first-mentioned bushing. Thus, a bushing assembly is provided, the diameter of the assembly being variable within a range of sizes which is substantially greater than the range of sizes which can be achieved using only one of the bushings. Furthermore, a game comprising a plurality of the bushings together with a board formed with a plurality of holes may be provided. The holes in the board are of different sizes, and the adjustable sizes of the bushings are such that, in relation to each hole in the board, only one of the bushings has an adjustable size which corresponds to the size of said hole.

3,643,291
COMBINATION HINGE AND CLOSING DEVICE FOR DOORS
Robert E. Clark, West Columbia, S.C., assignor to Revco, Inc., West Columbia, S.C.
Filed Oct. 12, 1970, Ser. No. 79,816
Int. Cl. E05f *1/12*
U.S. Cl. 16—188 **6 Claims**



A pair of hinges carried closely adjacent the sides of a chest freezer and the like, for aiding in closing the door thereon. The hinge includes a mounting bracket, a hinge means extending between the mounting bracket and the door, an elongated slot carried in the side of the door, an elongated linkage arm, a bearing means carried adjacent one end of the elongated linkage arm, and a pivot means connecting the other end of the linkage arm to the mounting bracket. A spring is coupled between the hinge means and the bearing means so that according to the location of the center line of the spring the apparatus either aids in maintaining the door closed, or for heavier doors aids in raising the door.

3,643,292
AUTOMATICALLY INTERLOCKABLE HINGE FITTING
Otto Mayer, Muhlstrasse 76, D-7067 Pluderhausen, Germany
Filed Aug. 21, 1969, Ser. No. 851,974
Claims priority, application Germany, Aug. 23, 1968, P 17 75 524.7
Int. Cl. E05d *11/10*
U.S. Cl. 16—144 **2 Claims**



A lockable hinge fitting which usually forms part of folding ladders, reclining chairs, etc., in which a pair of hinge arms are connected one to the other turnable round a common axis. One hinge arm carries a spring-loaded locking member which in its operative position locks the hinge fitting in a desired angular position by engaging one of a number of recesses circumferentially spaced apart from each other on the periphery of the other hinge arm. An unlocking lever is provided to move the locking member into its inactive position where the locking member is locked by a pawl. The pawl can be moved into its operative position in which it locks the locking member in its inactive position by pawl-actuating means during the movement of the unlocking lever in its unlocking position. This pawl actuating means is preferably an integral part of the unlocking lever or the pawl. According to the different attachments of the hinge fitting, the pawl will either release the locking member in any subsequent angular

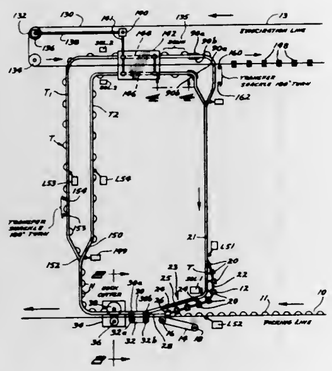
position defined by a recess or only when a suitable pivotable movement of the hinge fitting is performed. In both cases, the interlocking is performed automatically.

3,643,293

POULTRY TRANSFER APPARATUS AND METHOD

Jack J. Rejsa, Minneapolis, Minn., and Paul K. Kiker, Ellijay, Ga., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 13, 1970, Ser. No. 81,831
Int. Cl. A22b *3/08*
U.S. Cl. 17—11 **8 Claims**



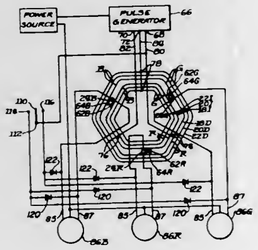
Poultry transported by a first conveyor is hung by the feet from shackles. As the birds are moved horizontally at a constant speed by the first conveyor, they are engaged by transfer shackles of a special construction which are supported from a second conveyor. The transfer shackles include a clamp for each thigh composed of a slot and a retaining lug. When the thighs of each bird are forced into the slots, the retainer lug snaps into place over the open end of the slot to prevent the thigh from being released. The birds are then carried by the transfer shackles to a third conveyor which is also provided with leg shackles. The legs of the bird are brought into registry with the shackles of the third conveyor and a cam assembly engaging the transfer shackle releases the retaining lugs and allows the thighs of the bird to fall from the transfer shackles.

3,643,294

APPARATUS FOR CONTROLLING A PLURALITY OF LIGHT SOURCES

James F. Wilson, Palatine, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 779,817, Nov. 29, 1968. This application Aug. 10, 1970, Ser. No. 62,593
Int. Cl. H01h *19/58, 21/78*; **H04n** *9/48*
U.S. Cl. 178—5.4 R **12 Claims**



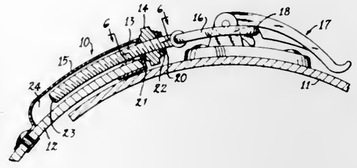
Three variable, addable factors are controlled simultaneously from a single manual setting of the apparatus to produce a resultant having a constant characteristic.

3,643,295

ADJUSTABLE CLOSURE DEVICE FOR SPORTS SHOES

Robert Schoch, Singen, Hohentwiel, Germany, assignor to Weinmann Aktiengesellschaft, Schaffhausen, Switzerland

Filed June 30, 1969, Ser. No. 837,680
Claims priority, application Germany, July 5, 1968, P 17 60 817.2
Int. Cl. A44b *21/00*; **A43c** *11/00*
U.S. Cl. 24—70 SK **3 Claims**



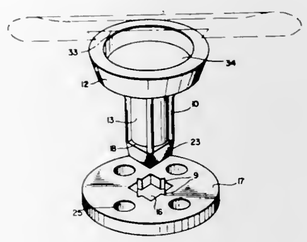
A stepless adjustable closure device, for sports shoes having two flaps to be releasably closed, has holding means connected to one of the flaps, a threaded arcuate spindle held by the holding means and carries a nut, and the holding means include journal means engaging the spindle on both sides of the nut, thereby restraining longitudinal movement of the spindle with the thread; the longitudinal position of the spindle can be adjusted by manual turning of the nut on the spindle thread.

3,643,296

TWO-PART SNAP FASTENER

Edward Joel Kahn, Baltimore, Md., assignor to Togs, Inc., Baltimore, Md.

Continuation-in-part of application Ser. No. 863,060, Oct. 2, 1969, which is a continuation-in-part of application Ser. No. 819,144, Apr. 25, 1969, which is a continuation-in-part of application Ser. No. 781,296, Oct. 16, 1968, now abandoned. This application Sept. 3, 1970, Ser. No. 69,324
Int. Cl. A44b *1/34, 1/32, 17/00*
U.S. Cl. 24—108 **9 Claims**



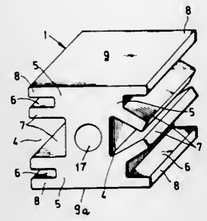
The invention is a two-part snap-fastening device which includes a button member having a stud projecting therefrom, and a foundation member securable to a garment. The projecting stud mates with the foundation member in a semipermanent fashion so that disengagement does not result during normal wearing. The button portion is made of relatively hard material having a stud integral therewith, the free end of which is bulbous and adapted to be inserted into the somewhat resilient foundation member and form a semipermanent connection.

3,643,297

SLIDE FASTENER

Walter Urban, Egererstrasse 7, Burgthann, Germany

Filed Dec. 11, 1969, Ser. No. 884,176
Claims priority, application Germany, Mar. 29, 1969, P 19 16 228.8
Int. Cl. A44b *19/06*
U.S. Cl. 24—205.13 **4 Claims**



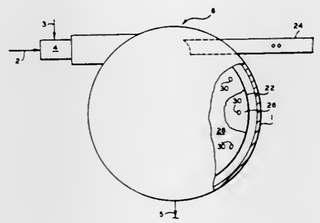
A link for a slide fastener, the links of which are secured to two binding strips by locking beads along the strip edges in grooves of the links. These grooves are formed on two opposite sides of each link and the two branches defined by each of the grooves are lengthwise slotted parallel to the grooves thereby forming two inner tabs and two outer tabs on each of said sides. The inner tabs are clamped against the beaded strip portion inserted into the grooves thereby locking the links to the respective strip. The outer tabs which are left unchanged conceal the deformation of the inner tabs so that the links present a smooth and ornamental appearance on the outside of the fastener.

3,643,298

STEAM CRIMPING OF YARN

Hayes J. Schmick, Morrisville, N.C., assignor to Phillips Fibers Corporation

Filed Sept. 29, 1970, Ser. No. 76,433
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **9 Claims**



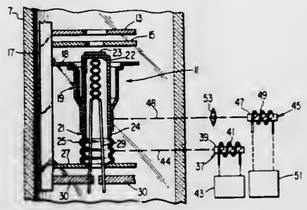
An apparatus and method for uniformly crimping yarn by passing a yarn through a confined crimping zone and providing means in the crimping zone for interrupting the flow of steam streams against opposed sides of the yarn. Each steam stream intermittently contacts the yarn at uniformly spaced portions along the length of the yarn with one steam stream contacting the yarn at a medial location between the contacting locations of the other steam stream. The yarn is thereafter cooled and recovered in a relaxed condition.

3,643,299

ELECTRON BEAM TUBE AND METHOD OF ADJUSTING THE ELECTRODE SPACING OF AN ELECTRON GUN THEREIN

Martin Kamp Brown, Lancaster, Pa., assignor to RCA Corporation

Filed June 16, 1969, Ser. No. 833,615
Int. Cl. H01j *9/18, 9/36*
U.S. Cl. 29—25.16 **9 Claims**



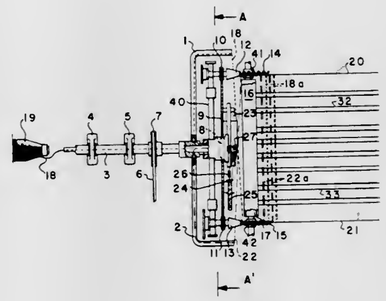
A novel electron beam tube and a method of adjusting the electrode spacing of an electron gun therein utilize an expansion member to support the cathode cylinder of the gun within the electron gun assembly of the tube. With this method, the proper control grid-cathode spacing for cutoff of the electron gun at desired operating voltages is fixed after the tube is constructed and while the gun is operating under normal conditions.

3,643,300

APPARATUS FOR PRODUCING NONWOVEN SCRIM FABRICS

Pierre Seguin, Chavanoz, France, assignor to Moulinage et Retorderie de Chavanoz, Chavanoz, (Isere), France

Filed Oct. 30, 1970, Ser. No. 85,368
Claims priority, application France, Nov. 7, 1969, 6938635
Int. Cl. D02g *3/00*; **D04h** *3/08*
U.S. Cl. 28—1 CL **10 Claims**

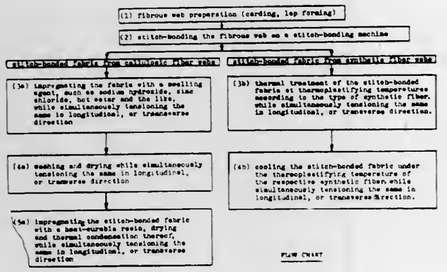


The invention relates to a device for making nonwoven scrim, which device comprises a rotary member distributing two weft threads drawn from two fixedly mounted bobbins. It permits the production of nonwoven scrim of various constructions.

3,643,301
METHOD OF MAKING AN ELASTIC STITCH-BONDED FABRIC

Bedrich Weigl; Milos Janku, both of Dvur Kralove nad Labem; Milos Prikryl, Zabori; Jaroslav Hubeny, Lipnic, and Milos Hofman, Dvur Kralove nad Labem, all of Czechoslovakia, assignors to Vyzkumny Ustav Zuslechtovaci, Dvur Kralove nad Labem, Czechoslovakia

Filed June 10, 1968, Ser. No. 735,748
Claims priority, application Czechoslovakia, June 13, 1967, 4323/67
Int. Cl. D06c *23/04*
U.S. Cl. 28—76 (E) 12 Claims



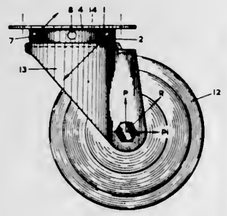
FLOW CHART

A fibrous web is stitch-bonded in an atlas construction which is elastic in two directions whereupon the web is tensioned in one direction thereof. The web contracts and is crimped by the stitches in the respective other direction, and is treated to make the crimp permanent so that the finished fabric is expansible in the crimped direction.

3,643,302
METHOD OF MAKING A ROLLING BEARING ASSEMBLY

Sture Asberg, Lilla Pukevagen 5, Savedalen, Sweden, and Henrikus Jacobus Maria Timmer, Irenelaan 39, Ede, Netherlands

Original application Mar. 17, 1969, Ser. No. 807,545.
Divided and this application Dec. 17, 1970, Ser. No. 99,107
Claims priority, application Netherlands, Nov. 14, 1968, 6816232; 6816233
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A 3 Claims

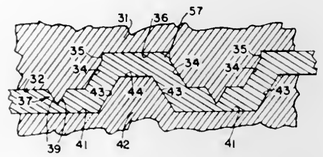


A method for manufacturing a rolling bearing assembly consisting of inner and outer bearing elements having confronting raceways, a plurality of rolling elements in the annular space between the inner and outer bearing elements, each of the bearing elements being associated with a support member and an access opening in one of said bearing elements communicating with the space between said bearing raceways to permit the rolling elements to be positioned into said space, said method consisting of steps of machining each of said bearing elements to form the raceways and thereafter securing each bearing element to its respective support member.

3,643,303
METHOD OF MANUFACTURING TYPE

Joseph S. Kanarek, 5435 West 63rd St., Chicago, Ill.

Filed Sept. 29, 1969, Ser. No. 861,718
Int. Cl. B23p *17/00*
U.S. Cl. 29—413 4 Claims

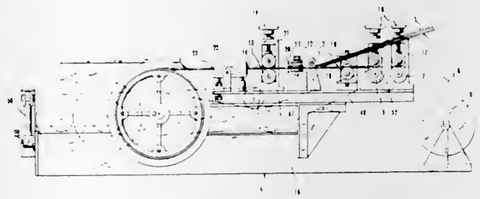


A two-part die set forms type by extruding characters while simultaneously scoring a fracture line around each character. Added height for each character may be provided to maintain its sharpness over an extended period of usage. A holder connected to a heating means carries the type such that it is slidably insertable and removable but effectively retained in operational position therein.

3,643,304
METHOD OF SIMULTANEOUSLY DRAWING A NUMBER OF WIRE MEMBERS

Kaoru Kokubu, and Osami Hirai, both of Osaka, Japan, assignors to Nippon Seisen Co., Ltd., Osaka, Japan

Filed May 15, 1969, Ser. No. 824,827
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 6 Claims



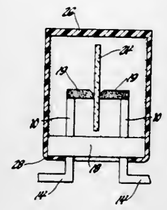
A number of wires are gathered together and bound with an armoring material in the shape of a band. The wires in this condition are drawn by means of a wire-drawing apparatus having dies and a capstan. A plurality of bundles of such wires are gathered together and bound in the same way as in the foregoing to form a composite bundle body, which is further drawn, and these processes are repeated until at last filaments of a specified diameter are obtained in quantities.

3,643,305
METHOD OF FABRICATING A PIEZOELECTRIC DEVICE

Thomas J. Furnival, Logansport, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 24, 1970, Ser. No. 49,288
Int. Cl. B01j *17/00*; H04r *17/00*
U.S. Cl. 29—25.35 5 Claims

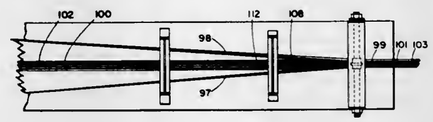
A method of fabricating a piezoelectric device which includes providing a resilient metallic unit, bonding an insulating base member between two leg members of the unit, severing a bar element of the unit to provide facing projections, and compressively supporting a piezoelectric element therewith prior to permanently bonding it in place.



3,643,306
MACHINE FOR PRODUCING PLASTIC FOAM—SHEET METAL PANELS

Daniel Massagli, Covina, and Marino Ralph Massagli, Claremont, both of Calif., assignors to Tru-Lok Metal Fabricating Company, Inc., Los Angeles, Calif.

Filed Jan. 6, 1970, Ser. No. 955
Int. Cl. B23p *23/04*, *25/00*; B21b *15/00*
U.S. Cl. 29—33 R 8 Claims



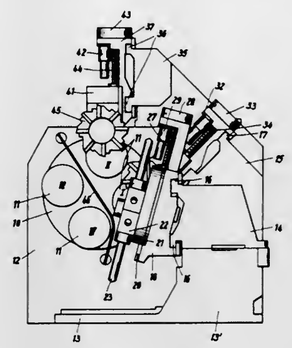
A machine and process to continuously produce sandwiched sheet metal rigid plastic foam panels provided with a metal forming unit, an injector for the plastic reactants, and an expansion confining apparatus, the foam-forming reactants being introduced into that portion of the metal panel that is ahead of the location where the metal panel enters the expansion confining apparatus to allow the foam formed to start expanding prior to entry of the panel into the expansion confining apparatus, the expansion confining apparatus being provided with a cavity conforming to the cross-sectional outline of the panel, that portion of the panel remaining in the cavity until full expansion has taken place before it is discharged from the confining apparatus.

3,643,307
MACHINE TOOL

Alfred Ledergerber, and Hans Jacoby, both of Bielefeld, Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft, Bielefeld, Germany

Filed Feb. 20, 1969, Ser. No. 801,026
Claims priority, application Germany, Feb. 23, 1968, P 16 52 728.9
Int. Cl. B23b *9/10*
U.S. Cl. 29—38 B 9 Claims

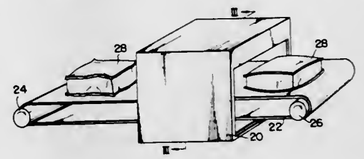
A machine tool with four equidistant work spindles rotatable in a carrier which is indexible about a horizontal axis. Two stations at which the spindles dwell between successive indexing movements of the carrier are accessible from the front side of the frame and each of the remaining two stations accommodates one or more movable tool holders for a variety of tools. All of the stations are located at different levels.



3,643,308
METHOD FOR MANUFACTURING MATTRESSES

Haruhiko Yamamoto, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed June 24, 1970, Ser. No. 49,010
Int. Cl. B68g *9/00*; B65b *43/00*
U.S. Cl. 29—91.1 4 Claims



A method for manufacturing mattresses including a cushion member wrapped in a cover which comprises receiving the cushion member in the cover initially having a larger inner capacity than the volume of the cushion member and formed of fabric woven from heat shrinkable fibers and subjecting the cover to heat shrinkage until the inner capacity of the cover becomes slightly smaller than the volume of the cushion member.

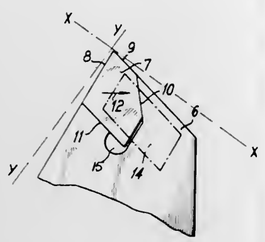
3,643,309
TOOL ARRANGEMENT FOR A MACHINE TOOL

Erhard Anschutz, Plochingen, Germany, assignor to Feldmuhle Aktiengesellschaft, Dusseldorf, Germany

Filed June 5, 1970, Ser. No. 43,811
Claims priority, application Germany, June 18, 1969, P 19 30 916.1
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 8 Claims

A ceramic, five-sided cutting plate is clamped in a recess of a toolholder in such a manner that two sides of the plate which constitute cutting edges and enclose an angle of 75° are exposed, the other three sides being located in the recess. The two sides contiguously adjacent the cutting edges are

backed by faces of the toolholder in the recess which jointly define an angle of 37°. The fifth side of the plate which connects the last-mentioned two sides defines an airgap with the



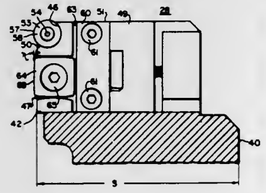
surface of the toolholder. Working stresses applied to the cutting plate in all normal turning operations tend to wedge the plate deeper into the recess of the toolholder, and thus do not cause displacement of the plate.

3,643,310

MILLING WHEEL STRUCTURE

Ralph Werner Kilbourne, Glenn Mills, and Frank L. Di Ferdinando, West Chester, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1969, Ser. No. 883,015
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—105 **6 Claims**



A milling wheel structure for a milling machine comprising a circumferential row of interchangeable cartridges which are nonsymmetrically spaced on the periphery of the wheel. The cartridges receive disposable multiedge cutters, which are rotatable to bring other edges into cutting relation. The cutters are of the finishing or semifinishing type, both of which may be used simultaneously or individually.

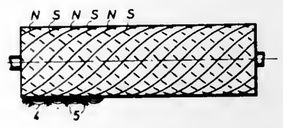
3,643,311

ROTATABLE POWDER DISPENSING CYLINDER FOR AN ELECTROSTATIC POWDER IMAGE FIXING APPARATUS

Wilhelm Knechtel, Rodheim; Kurt Brinkmann, Frankfurt am Main-Roedelheim; Hans Krebs, Hinter dem Hain, and Heinrich Mohr, Dortmund-Aplerbeck, all of Germany, assignors to Firma ECE-Elektrostatik und Chemische Entwicklungsgesellschaft mbH, Giessen and Firma Deutsche Edelstahlwerke AG, Krefeld, Germany, part interest to each

Filed July 27, 1970, Ser. No. 58,514
Claims priority, application Germany, Dec. 11, 1969, P 19 62 106.8
Int. Cl. B21b *31/08*
U.S. Cl. 29—125 **9 Claims**

A rotatable cylindrical member has magnetic poles on its peripheral surface comprising parallel bands of alternating North and South poles with these bands being at an angle of about 45° to the generatrix of the cylinder. The cylindrical



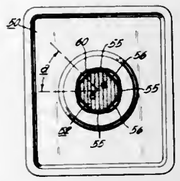
member may be solid or tubular and comprise a plurality of magnetic or nonmagnetic rings or disks adhered together and mounted upon a shaft which defines the rotary axis.

3,643,312

METHOD OF MAKING FINNED TUBING

Charles S. Shriver, Oreland, Pa., assignor to Orbit Manufacturing Company, Perkasie, Pa.

Original application Mar. 24, 1969, Ser. No. 809,744, now Patent No. 3,550,680. Divided and this application June 18, 1970, Ser. No. 47,308
Int. Cl. B21d *53/02*
U.S. Cl. 29—157.3 B **7 Claims**



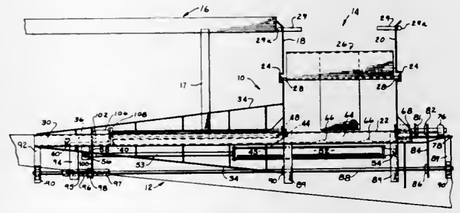
A method is disclosed for making a finned tube heat exchanger wherein each of a plurality of platelike fins is mounted on an elongated heat conductor by means of a series of interference fits provided between each fin and the conductor. The interference fits are effected by forming a noncircular aperture in the fins, forming a slightly smaller noncircular cross-sectional shape on the conductor, aligning the conductor with the apertures, displacing the conductor longitudinally through the apertures, and, after the fins are properly positioned on the conductor, locking them in place by effecting relative rotation through a portion of a turn to cause a series of interference fits to be established between each fin and the conductor.

3,643,313

DEVICE FOR REMOVING BANDING MATERIAL FROM A BALE OF CROP MATERIAL

Lawrence C. Dickinson, Reno, Nev., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 25, 1969, Ser. No. 855,796
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **16 Claims**



A device, adaptable for use in combination with a single bale unloading wagon, for cutting and twisting the retaining

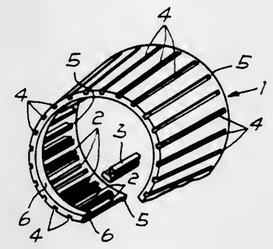
band, such as twine or wire, from a bale of crop material by first severing the band with a cam actuated cutting means and then winding the severed band around a pair of twisting bars to remove the band from the bale.

3,643,314

DEVICE FOR SPACING THE SEGMENTS OF A COMMUTATOR

Anton Worner, Stuttgart, and Helmut Wilbert, Boblingen, both of Germany, assignors to Kaut & Bux oHG, Stuttgart-Vaihingen, Germany

Filed July 22, 1970, Ser. No. 57,160
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 CM **9 Claims**



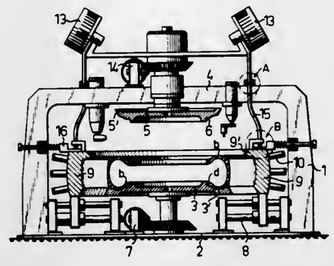
A cagelike device having an outer tubular wall and a plurality of spacing strips integral with this wall and projecting radially from the inner side thereof for holding the segments of a commutator at the proper distance from each other during the production of the commutator including the step of filling of the commutator with a molding material.

3,643,315

APPARATUS FOR DRIVING ANTISKID STUDS INTO THE TREAD SURFACE OF TIRES

Friedrich Bartsch, Hannover-Herrenhausen, and Heinrich Blum, Horst, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Jan. 26, 1970, Ser. No. 5,674
Claims priority, application Germany, Jan. 25, 1969, P 19 03 808.5
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 R **15 Claims**



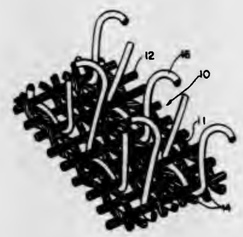
An apparatus for driving antiskid studs into the tread surface of tires, especially pneumatic tires, by means of driving tools, which includes holding means for grasping and holding the tire to be studded and which also includes annular supporting means operable to be placed onto and around the tread surface of the tire to be studded, and equipped with a plurality of driving tools distributed over the circumference of said annular supporting means and operable selectively simultaneously to drive a plurality of studs into the tread surface of the tire to be studded.

3,643,316

METHOD OF MAKING SEPARABLE FASTENING DEVICES

Laurent H. Girard, Bedford, N.H.; Clive E. Hockmeyer, Lowell, Mass., and Marcel C. Quellette, Manchester, N.H., assignors to American Velcro, Inc.

Original application Feb. 20, 1967, Ser. No. 617,265, now Patent No. 3,461,513. Divided and this application Feb. 24, 1969, Ser. No. 801,357
Int. Cl. B23p *17/00*
U.S. Cl. 29—400 **11 Claims**



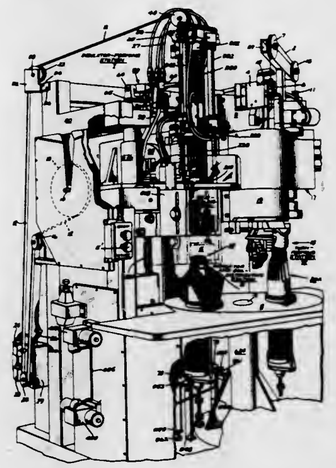
A method of making separable fastening devices which have a very large number of closely spaced hooking elements of the hook and loop type such that pressing opposed surfaces of two fastening members together in face-to-face relation will engage a large number of hooks and loops; the hooking elements are formed of metal and in preferred forms are operable at temperatures from cryogenic temperatures to above 1,000° F.

3,643,317

METHOD AND APPARATUS FOR FORMING SHAPED INSULATORS OF DIFFERENT LENGTHS

Richard B. Arnold, and Dallas F. Smith, both of Fort Wayne, Ind., assignors to General Electric Company

Original application Mar. 11, 1969, Ser. No. 806,057, now Patent No. 3,579,818, dated May 25, 1971. Divided and this application Oct. 27, 1970, Ser. No. 84,406
Int. Cl. H02k *15/10*
U.S. Cl. 29—205 E **13 Claims**



Method and apparatus for forming shaped insulators of different lengths from a strip of insulative material. The insulators are automatically formed into the predetermined desired

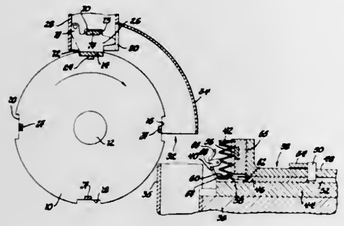
lengths from a continuous strip of insulative material by apparatus which includes a guide for the strip of insulative material, a driving feed member which advances the strip along the guide and a retaining member which retards movement of the strip. A linkage is coupled to the driving feed member and has a movable pivot to effect a change in the length of strip advanced. A timing means includes a rotatable member connected to the linkage for periodically reciprocating the driving feed member. Control means is connected to selectively effect movement of the pivot to vary the length of stroke of the driving feed member. Severing means is associated with the timing means to sever the advanced strip of insulative material. There is a magazine to receive the severed length of insulative material and shaping means associated with the timing means to insert the severed length of insulative material into the magazine.

3,643,318

ASSEMBLY MACHINE AND METHOD

Willard I. Roofe, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,279
Int. Cl. B23p *19/00, 13/00*
U.S. Cl. 29—434 **5 Claims**



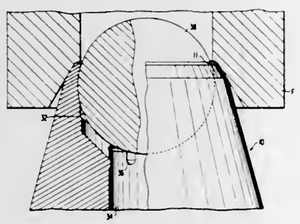
Machine and method for assembly of workpieces such as primary and secondary weights of a transmission governor. Leading edge of the top flange of the primary weight is used to compress the coil spring seated on the secondary weight. An insert slide wipes the secondary weight and spring off of a carrier to assemble the secondary weight inside of the primary weight and to load the spring internally between the weights.

3,643,319

METHOD OF PRODUCING A HEAT-TREATED BERYLLIUM COPPER TIP FOR A BALLPOINT WRITING INSTRUMENT

William B. Payne, San Marino, Calif., assignor to Scripto, Inc., Atlanta, Ga.

Original application Nov. 16, 1967, Ser. No. 683,533, now Patent No. 3,502,418, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,562
Int. Cl. B23p *11/00*
U.S. Cl. 29—441 **5 Claims**



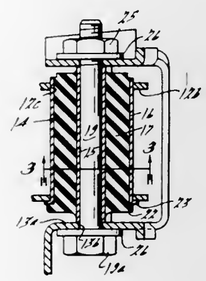
This invention relates to a new improved ball tip for ballpoint writing instruments and a method for producing same. The ball tip of the present invention is made of a heat-treated beryllium copper and incorporates a tungsten carbide ball of a mirror finish. In addition to the conventional steps utilized in producing a ball tip for a ball pen, the method of the present invention incorporates the unique steps of shaping the metal around the ball by a forming tool prior to a spinning operation utilized to free the ball and then subjecting the completed ball tips to an atmospherically controlled heat treatment operation. The ball tip of the present invention renders a greatly improved wear resistant construction having an initially established controlled clearance between the ball and housing thereby rendering an initially intense ink deposit which does not increase to any extent during use due to the wear resistant properties of the housing.

3,643,320

METHOD OF MOUNTING AN AUTOMOBILE ENGINE

Lawrence E. Werner, Grosse Pointe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Original application Sept. 24, 1969, Ser. No. 860,720, now Patent No. 3,556,445, dated Jan. 19, 1971. Divided and this application May 15, 1970, Ser. No. 37,556
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 **4 Claims**



At each of the forward sides of an automobile engine, a voided bushing assembly comprises an electric bushing radially spacing and bonded to an outer tubular housing member of oval cross section and a coaxial inner tubular support member. The outer member is tightly secured by a forced fit within a pair of closely conforming oval holes in a pair of axially spaced channel sides respectively of a one-piece channel-shaped engine bracket secured to the engine. A one-piece channel-shaped body bracket associated with each bushing assembly has a pair of bracket arms spaced axially to receive the bushing assembly therebetween. A pair of upwardly opening guide slots within the latter arms respectively receive the axially opposite ends of a bolt in supported relationship on their bases, the bolt being releasably confined coaxially by friction within the inner tubular member. Enlarged clamping members at opposite ends of the bolt axially outward of the slotted bracket arms and oversize with respect to the slots to prevent passage therethrough are adjustable axially with respect to each other by screw action to clamp the latter arms tightly against the bushing assembly therebetween. Flanges of the latter arms closely overlie the tightened clamping members to limit their movement from the slot bases, but without interfering with their adjustability.

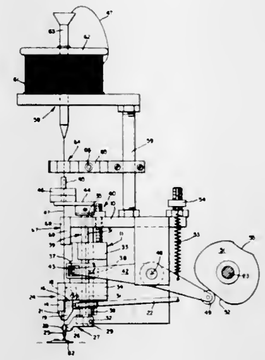
Prior to mounting the engine, the engine brackets with their bushing assemblies are secured to the engine. The bolts are inserted into the inner tubular members and the clamping members are arranged on the bolts so as to clear the flanges of the slotted bracket arms freely. The engine is then lowered into preassembled position by guiding the bushing assemblies between the slotted bracket arms and the bolts downwardly into the slots to their supported positions on the slot bases. The clamping members are then tightened to clamp the adjacent bracket arms against the bushing assemblies.

3,643,321

METHOD AND APPARATUS FOR TAILLESS WIRE BONDING

Edwin C. Field, Lansdale; Frederick W. Kulicke, Jr., Philadelphia, and Richard W. Masso, Conshohocken, all of Pa., assignors to Kulicke and Soffa Industries, Inc., Fort Washington, Pa.

Filed June 17, 1970, Ser. No. 46,902
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **18 Claims**



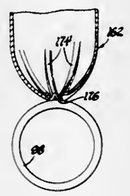
A tailless wire-bonding apparatus for bonding a fine wire to a semiconductor device and breaking the wire behind the bond without disturbing the bond. A wire threaded through a capillary bonding tool is maintained stiff as the wire is being bonded for a final bond. A wire clamp above the bonding tool is actuated to provide the taut piece of wire between the bond and the wire clamp enabling the bonding tool to be moved toward the wire clamp along the taut wire. Subsequently the wire clamp and bonding tool are moved to break the wire at the reduced cross-sectional area of the bonded wire and to expose a predetermined length of wire out of the end of the bonding tool which may be formed under the bonding tool.

3,643,322

METHOD FOR MANUFACTURING A SHOCK ABSORBER RESERVOIR TUBE

De Witt F. Gerstle, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 29, 1970, Ser. No. 50,529
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—482 **4 Claims**



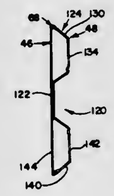
In preferred form, a method of manufacturing a shock absorber tube from sheet metal comprising the steps of forming a tube section having a longitudinal seam weld along the length thereof; forming a concave die having an inside surface with a central opening therein and a plurality of radial grooves extending from the central opening to the outer peripheral edge of the concave surface; pressing the tube into the die and causing the metal at one end of the tube to form into the inside surface of the concave die to cover ribs between the grooves and to flow into the grooves so as to form spaced, inwardly and outwardly directed reinforcing ribs and a small diameter tapered opening through the formed tube surrounded by a high-density concentration of material; thereafter locating a connector element against the high-density concentration of material and heating and pressing the metal to cause it to flow into the tapered opening for sealing the end of the tube while sinking the connector into the end of the tube for connection to the spaced reinforcing ribs.

3,643,323

METHOD OF MAKING A DRAWER FRONT

Everett K. Harris, Geneva; John P. Ericson, St. Charles, and Richard E. Miller, Aurora, all of Ill., assignors to All-Steel Equipment Inc.

Original application July 22, 1968, Ser. No. 746,609, now Patent No. 3,549,301, dated Dec. 22, 1970. Divided and this application Oct. 30, 1969, Ser. No. 871,350
Int. Cl. B21d *39/00*; **B23p** *11/00*
U.S. Cl. 29—511 **2 Claims**



The disclosure relates to a drawer construction for office furniture units, such as desks, in which the drawer is made from sheet metal components, including a body member of generally U-shaped transverse cross-sectional configuration defining a drawer bottom and sides, a rear panel, and a special fabricated front made of a stamped or drawn frontpiece and liner secured together by a press-forming operation to form a mitered border along the front of the drawer that avoids machining for smoothness. The sidewalls of the drawer each have secured to same a side panel member that makes the sides of a double-wall construction and hides brackets and the like which secure the drawer front to the drawer and houses a drawer stop device on either side of the drawer. The side panels are shaped to avoid all possible ledges, cracks, and the like that could accumulate dust, and to give the drawer as clean an appearance as possible. Associated with the drawer is a novel clip and divider arrangement that removably mounts the divider within the drawer.

3,643,324

MACHINE FOR MANUFACTURING A LOCK TUMBLER

Roy C. Spain, Box 190, Salem, Va.

Filed Feb. 10, 1970, Ser. No. 10,187
Int. Cl. B23p *15/00*
U.S. Cl. 29—566 **9 Claims**

Machine for manufacturing a lock tumbler comprises means for driving a blank down a passageway past successive

broaches against a punch in a socket at the end of the passageway. The socket is then moved laterally of the



passageway so that the blank therein contacts a third broach and is finally ejected from the socket.

3,643,325
METHOD OF HYDROSTATICALLY FORMING A TUNNEL STRUCTURE FOR A MAGNETIC PLATED WIRE MEMORY ARRAY

Clyde E. Reed, W. St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 19, 1970, Ser. No. 20,986
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **3 Claims**

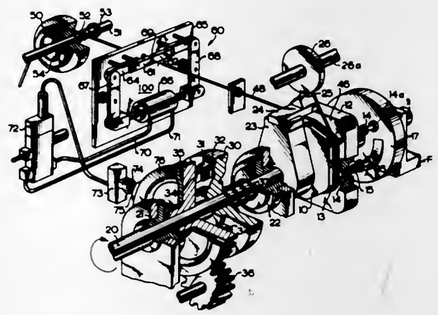


A method of using hydrostatic pressure to form copper word lines and/or a copper ground plane about parallel-aligned forming wires to form a plated wire tunnel structure. The copper word lines and the adhesively coated opposing faces of the plastic films to which they are bonded are firmly and compressively formed about the forming wires with the interstitial portions of such plastic films brought into contact to form one physical structure. After curing, the forming wires are removed from the sandwiched construction forming the tunnels into which respectively associated plated wire memory elements are inserted.

3,643,326
METHOD FOR MAKING COILS FOR ARMATURES OF ELECTRICAL MACHINES OR THE LIKE

Reinhard Boke; Alfred Schmid, and Heinz Wilke, all of Hildesheim, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 27, 1969, Ser. No. 828,145
Claims priority, application Germany, May 29, 1968, P 17 63 434.3
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **3 Claims**

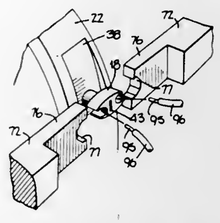


Armature coils for use in electrical machines are produced on a revolving pattern of polygonal outline. A continuous length of wire having a current-conducting core surrounded by an insulating sheath is fed under tension to the peripheral surface of the revolving pattern. A set of pushers cooperate with the pattern to move successively formed convolutions axially of the pattern. A cutting device which severs the wire between selected convolutions to form a succession of coils comprises a finger which orbits about the pattern and a reciprocating device which moves the finger axially at predetermined intervals so that the finger loops the wire between selected convolutions and moves the thus engaged part of the wire against a counterknife which is adjacent to the periphery of the pattern. A removing device strips the insulation off those portions of the wire which are to be severed by the cutting device so that the coils are formed with blank terminals.

3,643,327
METHOD OF MAKING A SERIES OF ELECTRICAL CONNECTIONS

David L. Jackson, Doylestown, Pa., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Original application June 26, 1967, Ser. No. 648,795, now Patent No. 3,509,615, dated May 5, 1970. Divided and this application Dec. 17, 1969, Ser. No. 888,095
Int. Cl. H01r *9/00*
U.S. Cl. 29—628 R **5 Claims**



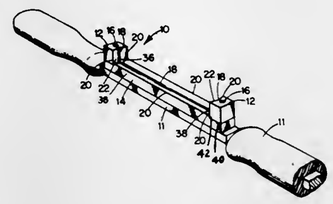
The connectors are deposited in the rotary wheel at the rear of the machine and fed to the staking station at the front

of the machine. The staking jaws come together to stake the connector on a pair of conductors by crimping the notched ends of the connector over the conductors. The index system indexes the rotary wheel in synchronism with the staking jaws to sequentially advance another connector into the staking station after a connection has been made with a previous connector.

3,643,328
SKI-RENOVATING TOOL

Albert V. Wainwright, Jr., 35 Lakeshore Drive, Nabnasset, Mass.

Filed Oct. 8, 1969, Ser. No. 864,667
Int. Cl. A63c *11/06*; **B27g** *17/04*
U.S. Cl. 30—172 **7 Claims**

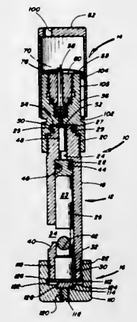


A ski-sharpening and surface-renovating unitary tool consisting of a strong, rigid, one-piece handle, having a grip at each end, and having three abrading surfaces, one longer abrading surface being placed just below and at right angles to two shorter abrading surfaces whereby the longer surface and at least one of the smaller surfaces can be simultaneously utilized to renovate the bottom surface of a ski and a metal edge of a ski, respectively. All of the scraping surfaces are of hard metal and the shorter surfaces are both detachably fixed to the longer surface for removal for sharpening.

3,643,329
EXPLOSIVELY ACTUATED CUTTER

Morris S. Lieberman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 17, 1970, Ser. No. 29,574
Int. Cl. B26b *17/04*
U.S. Cl. 30—180 **1 Claim**

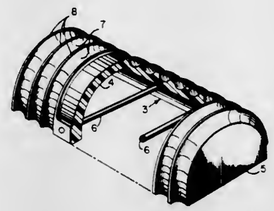


Apparatus for cutting a hard elongate workpiece having a slideable cutter piston positioned within a cylindrical housing, such piston being actuated by an explosive charge located within the housing, which upon actuation will thrust the piston with great force against an appropriately positioned workpiece thereby cutting the workpiece. A series of gas-sealing elements within the device prevent the discharge of explosive resulting gas and prevent fluid entry.

3,643,330
CUTTERS FOR DRY SHAVERS

Norman J. Brown, Maidenhead, England, assignor to The Gillette Company, Boston, Mass.

Filed July 13, 1970, Ser. No. 54,649
Claims priority, application Great Britain, July 11, 1969, 35,030/69
Int. Cl. B26b *19/04*
U.S. Cl. 30—346.51 **2 Claims**

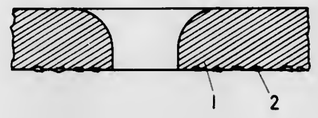


This invention relates to a cutter for a dry shaver having a stationary outer arch shape shear plate and an inner reciprocating cutter that is formed as an integral molding of plastics material having a transversely curved convex surface for engaging the inner surface of the shear plate and presenting a plurality of transversely extending convexly curved cutting edges, at least the convex surface of the plastics molding being coated with a thin layer of metal, the cutting edges being formed by the metal of said layer. This form of cutter is cheaper to produce, lighter and stiffer, and easier to clean than conventional cutters.

3,643,331
METAL PLATE HAVING STABILIZED FRICTION PROPERTIES

Bodo Futterer, Handelshof, 6060 Sarnen Obwalden, and Hugo Fritschy, Huas Jasmin 6072 Sachseln, both of Switzerland

Continuation of application Ser. No. 647,659, June 21, 1967, now abandoned. This application June 24, 1970, Ser. No. 56,046
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.54 **12 Claims**

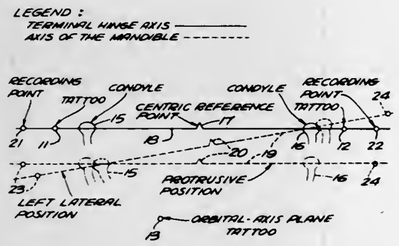


A shearing foil for a razor constituted by a metal plate having a surface which is in slidable contact with the surface of another foil, and microscopically small solid particles embedded in the plate at least at the contact surface.

3,643,332
METHOD AND APPARATUS FOR RECORDING JAW MOVEMENTS

Robert L. Lee, 22937 Grand Terrace Road, Colton, Calif., assignor to Robert L. Lee; Arlene M. Lee and Gene W. Arant, Los Angeles, Calif., part interest to each

Original application Aug. 1, 1966, Ser. No. 569,472, now Patent No. 3,452,439. Divided and this application June 24, 1969, Ser. No. 836,062
Int. Cl. A61c 9/00
U.S. Cl. 32—19 29 Claims

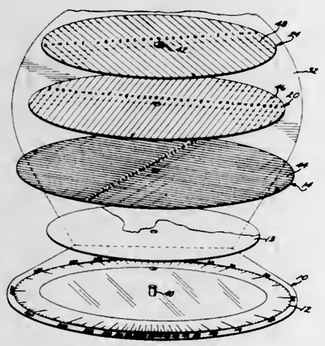


The disclosed method consists in measuring the movements of the lower jaw (mandible) relative to the upper jaw by selecting two points a fixed distance apart on the horizontal axis of rotation of the subject's mandible, one on each side of subject's head and at substantially equal distances from the subject's head; recording the positions of the points relative to the subject's head when the jaws of the subject are in centric relation; and when the subject's mandible moves from centric relation, continuously measuring in three dimensions the position of each of the points relative to the position that it occupied in centric relation.

3,643,333
NAVIGATIONAL COURSE COMPUTER AND PLOTTER

Peter W. Pepper, 8899 Beverly Blvd., Los Angeles, Calif.

Filed Mar. 30, 1970, Ser. No. 23,559
Int. Cl. G01c 21/20
U.S. Cl. 33—1 8 Claims

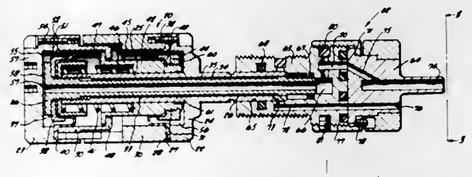


A navigational course computer and plotter for a boat utilizes a base member that receives a navigational chart and is imprinted with a compass rose. Three transparent discs are mounted for rotation relative to the base member on a common vertical axis. Each of the discs is imprinted with sets of spaced parallel lines. Two of the discs are manipulated to diagram a fix of the boat's location when used with a radio direction finder or the like. The third disc is employed to indicate the course to be followed from the fixed position to a desired destination.

3,643,334
PEN CARRIAGE ASSEMBLY

John Gelb, Tarzana; Eugene M. Merwin, Northridge, and William B. Richardson, Santa Susanna, all of Calif., assignors to Computer Industries, Inc., Sherman Oaks, Calif.

Filed Nov. 19, 1969, Ser. No. 878,167
Int. Cl. B43l 13/00
U.S. Cl. 33—18 R 11 Claims

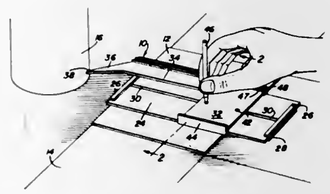


A pen carriage assembly for automatic drafting machines is described having a scribe holder reciprocably driven by a pneumatic drive assembly. The scribe holder is driven in two modes, a pressure mode and a gravity mode. In the pressure mode, the pneumatic drive assembly includes a first pressure chamber, the expansion of which forces the movable portion of the assembly downward to move the scribe into writing engagement with the drafting paper. In the gravity mode, the pneumatic drive assembly includes a second pressure chamber, the expansion of which enables the movable portion of the assembly to be released from its support means to drop downwardly due to gravity and also to move the scribe into writing engagement with the drafting paper.

3,643,335
TILE-MARKING DEVICE

Elmer L. Smith, 14079 Dumbarton Drive, Brock Hall Estates, Upper Marlboro, Md.

Filed Oct. 17, 1969, Ser. No. 867,196
Int. Cl. B43l 13/02
U.S. Cl. 33—42 5 Claims

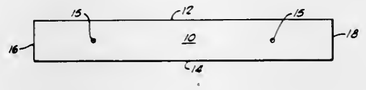


A tile-marking device including a baseplate having bosses on the top and bottom surface thereof spaced apart 9 and 12 inches respectively for reversible use with 9 and 12 inch tiles respectively. The baseplate includes a longitudinal slot thereon and a slide member is reciprocally mounted on the baseplate and provided with a projecting finger which engages an irregular surface to be followed with the sliding member including central holes spaced 9 and 12 inches respectively from the tip end of the finger so that the baseplate may be placed on a tile overlying a previously laid tile and the finger engaged with an irregular surface to duplicate the irregularity of the surface to be cut or edge to be formed into the tile.

3,643,336
METHOD AND APPARATUS FOR PLEATING FABRIC

Jennie Henry, 425 West Douglas Drive, Midwest City, Okla.

Filed Aug. 18, 1969, Ser. No. 850,754
Int. Cl. G01b 3/00
U.S. Cl. 33—174 G 5 Claims



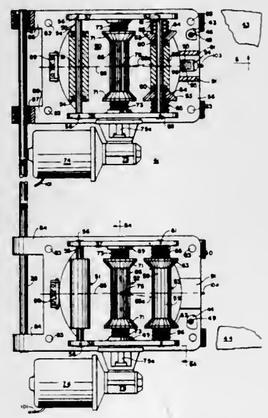
Apparatus for placing pleats in a fabric including an elongated measuring device having longitudinally spaced holes formed therethrough, and a plurality of pleat guides each having two substantially parallel edges and a transverse bend line extending between and normal to these edges to form a retainer flap for retaining the respective pleat guide adjacent an edge of the fabric at which pinch pleats are to be formed. A table of pleat guide selection indicia and fabric amount data is provided for indicating the amount of fabric required, and a particular pleat guide to be utilized where the pleated fabric is to traverse a predetermined distance.

In practicing the invention, the distance to be transversed by the pleated fabric is initially measured. The table of pleat guide selection indicia is consulted to determine which of the several pleat guides should be utilized for the particular measured distance of traverse. The table also indicates the amount of fabric required to span this distance after a series of pleats are sewn therein. The measuring device is used to indicate, the locations along a marginal edge of the fabric where bisector fold lines of the pleats are to be formed. Finally, the selected pleat guide is placed on the fabric with one of the parallel edges extending through one of the marks. The other parallel edge is used to determine the seam line of a pleat to be formed at the location of the mark. This use of the selected pleat guide is repeated for each of the marks to form all of the pleats.

3,643,337
AUTOMOBILE FRONT END ALIGNMENT EQUIPMENT

Roy E. Dick, 3758 Blue Rock Road, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 386,460, May 19, 1964. This application Aug. 5, 1968, Ser. No. 757,190
Int. Cl. G01b 7/30
U.S. Cl. 33—203.13 8 Claims

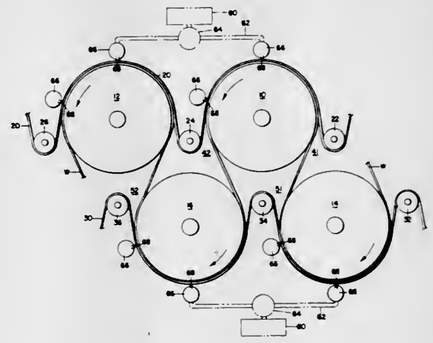


Automobile front end alignment equipment in which a platform comprised of a pair of trucks correlated for like orientation while free for universal movement on a horizontal surface, supports respective carriages for free swinging about respective vertical axes, which carriages engagingly support front wheels of a vehicle in predetermined relation to the wheels of a vehicle, and a bracket attachable to a wheel whereby correlated toe-in toe-out and camber of wheels may be simultaneously measured.

3,643,338
DRYING SYSTEM FOR A PAPERMAKING MACHINE

Albert Edward Harold Fair, 101 Monmouth St., Brookline, Mass.

Filed July 9, 1970, Ser. No. 53,593
Int. Cl. F26b 3/00
U.S. Cl. 34—6 6 Claims

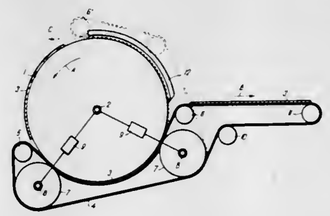


Drying of paper is accomplished by heated, dry air of relatively higher temperature than normally used in paper dryers which is directed under pressure through a restricted orifice across the paper machine width onto and through a porous woven felt and onto and against the wet paper web entrained between the felt and the periphery of a heated dryer drum, thereby creating high, locally induced vapor pressures for inducing a rapid release of the generated vapors. The web is held tightly between the felt and the face of the dryer drum thereby restricting the usual lateral contraction of the web, which contraction results in loss of web width and formation of cockles, streaks and general unevenness in the dried web.

3,643,339
LEATHER DRYING

Bohuslav Plechac, Otrokovice; Miroslav Ambroz, Gottwaldov-Malenovice, and Josef Mudrik, Lhota u Malenovic, all of Czechoslovakia, assignors to Statni vyzkumny ustav kozedelny, Gottwaldov, Czechoslovakia

Filed Apr. 22, 1970, Ser. No. 30,684
Claims priority, application Czechoslovakia, Apr. 28, 1969, 2990/69
Int. Cl. F26b 3/00, 5/14
U.S. Cl. 34—9 6 Claims



Wet or moisture-saturated leather is placed on a surface of a heated drying cylinder with its grain arranged in a stretched

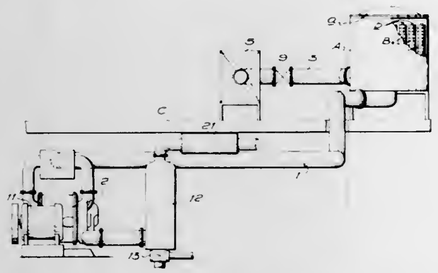
and smooth condition and its longitudinal axis as defined by the rear edge of the leather piece parallel with the axis of the drying cylinder and with its fresh side out. In this condition the leather piece is then passed between the roller surface and a flexible conveyor band stretched as sling about a portion of the outer periphery of the drying roller, completely across its longitudinal length, until it is dried.

3,643,340

METHODS OF DRYING YARNS AND APPARATUS THEREFOR

Stewart C. Jackson, Congleton, and Arthur Harrison, Leek, both of England, assignors to William Tatton & Co. Limited, Leek, England

Filed Aug. 11, 1969, Ser. No. 848,782
Claims priority, application Great Britain, Aug. 16, 1968, 39,195/68
Int. Cl. F26b *5/04*
U.S. Cl. 34—15 **3 Claims**



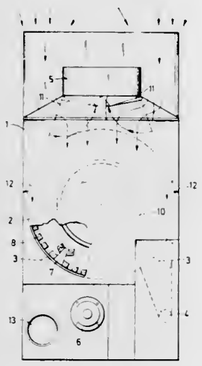
A process for the drying of yarn on packages in a kier in which air is drawn through the kier by a vacuum pump to lower the boiling point of the water in the packages in order to "flash off" the moisture to promote quicker and more efficient drying of the packages and apparatus for carrying out the process.

3,643,341

APPARATUS AND PROCESS FOR DRYING SKINS, PELTS, HIDES, FURS, SOFT LEATHERS, AND THE LIKE

Berthold Magin, Bietigheim, Wuerttemberg, Germany, assignor to Hans F. Arendt, Maschinenbau, Bleichinsel, Bietigheim, Germany

Filed Apr. 1, 1970, Ser. No. 24,480
Claims priority, application Germany, Apr. 2, 1969, P 19 16 916.5
Int. Cl. F26b *3/00*
U.S. Cl. 34—31 **9 Claims**



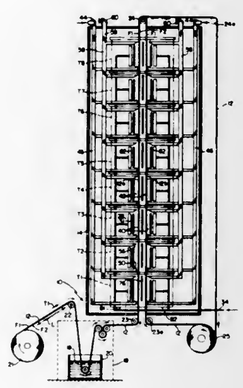
This disclosure teaches a dryer and related process for skins, pelts, hides, furs, soft leathers, and like materials, the dryer comprising a perforated drum mounted for reversible rotation in a housing through which heated air is circulated. The drum is lined with thermally nonconductive material (preferably hard wood) and has radial baffles to promote tumbling. The air is heated to a temperature exceeding 100° C. and preferably to a temperature from about 110° to about 160° C. for from about 10 minutes to about 240 minutes.

3,643,342

DRYER OR HEATER WITH SHIELDING MEANS

David Z. Tyson; Edward E. Hunter, both of Akron, Ohio, and Willie Herman Best, Columbia, S.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Original application May 2, 1969, Ser. No. 821,413, now Patent No. 3,590,495. Divided and this application Aug. 17, 1970, Ser. No. 64,488
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 **10 Claims**



Apparatus for drying or heating a continuous length element, and more particularly a drying apparatus in a machine for impregnating such fiber with a liquid fiber-to-rubber adhesive coating in the manufacture of tires, belting and similar products, wherein the element is rapidly dried at a controlled temperature by flame generated infrared-type heating means while (1) an adjustable shielding means controls heat flow from the heating means to the element, and/or (2) moving a gas stream rapidly over the surface of the element and shielding means to protect the heating means from the flowing gas stream against any adverse effect on the infrared radiation from the heating means and to remove heat products from the shielding means and element.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extend of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,643,343

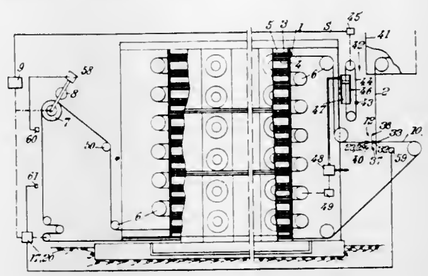
THREADING A PAPER WEB IN A WEB DRYER

Paul Henri Marchal, Neuilly, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 22, 1969, Ser. No. 886,835
Claims priority, application France, Dec. 24, 1968, 180506
Int. Cl. F26b *13/06*
U.S. Cl. 34—120 **11 Claims**

This disclosure pertains to a multipass web-treating apparatus particularly adapted for drying a paper web. The web is transferred between passes or zones by turning rolls. A threading device associated with the dryer utilizes turning sheaves which are associated with each turning roll over

which at least one threading rope or tape travels. A clutch is arranged to operatively associate each turning roll and turning sheave to transmit rotary motion from the sheave to the



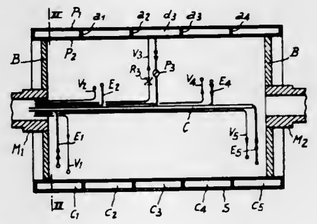
roll such that the peripheral speed of the roll is equal to or greater than the linear speed of the threading rope or tape. An attachment device is fixed to the tape to hook or unhook the end of a paper web to be threaded through the dryer.

3,643,344

DRYING CYLINDERS

Henri Robert Strube, Paris, France, assignor to Societe de Recherches et de Realisations Industrielles S.R.R.I. (Societe Anonyme), Paris, France

Filed July 17, 1968, Ser. No. 745,521
Int. Cl. F26b *11/02*
U.S. Cl. 34—124 **7 Claims**



This invention relates to improvements in drying cylinders for papermaking machines which comprise two concentric cylindrical casings, the confronting walls of which provide a chamber which is separated into individual compartments each of which is fed with controlled quantities of steam, the cylinder also including an evacuation system for the condensed liquid.

ERRATA

For Classes 34—202 and 34—133 see:
Patent Nos. 3,643,346 and 3,643,349

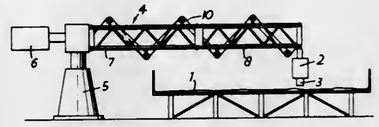
3,643,345

TERRAIN MODEL VIEWING DEVICE

Raymond Charles Wilton, Worthing, and Peter James Astley, Pulborough, both of England, assignors to Miles Electronics Limited, Shoreham-by-Sea, Middlesex, England

Filed Sept. 29, 1969, Ser. No. 861,669
Claims priority, application Great Britain, Oct. 1, 1968, 46,543/68
Int. Cl. B64g *7/00;* **G09b** *9/08*
U.S. Cl. 35—12 N **5 Claims**

A terrain model viewing device for an aircraft flight simulator comprises an articulated arm mounting a camera at its free end and having its other end pivotally mounted on a base to one side of the model in the case where the model is



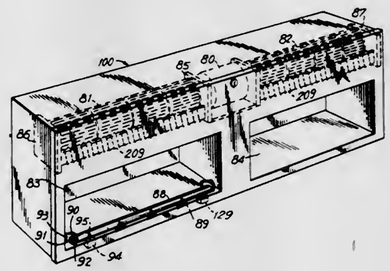
horizontal or above or below the model in the case where the model is vertical.

3,643,346

DRYING APPARATUS

Robert W. Lester, Manhasset, N.Y., assignor to Lestron International Corporation, Jamacia, N.Y.

Filed May 29, 1969, Ser. No. 829,005
Int. Cl. F26b *19/00*
U.S. Cl. 34—202 **6 Claims**



An improved electric hand dryer which provides a partially enclosed chamber within its housing so that the user's hands can be inserted into the chamber during the drying cycle. Warm dry air is directed in a circular flow path within the chamber so that a major portion of it is recirculated through the heater and dryer while it dries the user's hands on all sides so that the drying cycle and the power requirements of the apparatus are significantly reduced. The dryer can also be adapted for use as a face dryer, food warmer, hair dryer, and as a room heater, and as a clothes dryer.

3,643,347

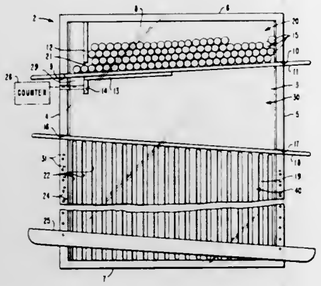
NUMERAL BASE CONVERSION INSTRUCTIONAL DEVICE

Sigi Ziering, 720 North Walden Drive, Beverly Hills, Calif.

Filed Jan. 21, 1970, Ser. No. 4,484
Int. Cl. G09b *19/02*
U.S. Cl. 35—30 **3 Claims**

The instant invention involves a conversion device which enables the ready conversion of numerals in a first numeral base, such as the base 10, or decimal system, to another and different, numeral base system, such as the base 2, or binary system. The conversion device generally comprises a container divided into an upper section, a midsection and a lower section. The upper section serves as a reservoir for discrete measuring units, such as balls. The midsection serves as an area of transfer for the balls between the reservoir and the lower section. The lower section consists of a plurality of parallel channels, each adapted to receive a preselected

number of balls. A selector bar, moveable along the lower section, has means for defining the number of balls which can be contained in each column. The device is operated by a gravity feed. If a predetermined number of balls is released from the reservoir into the midsection, and selectively directed to the lower section, the balls will fill up varying numbers of the columns, depending upon the location of the



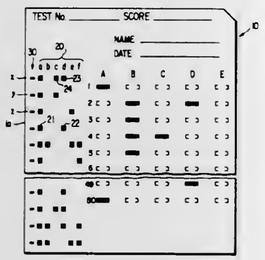
selector bar. By observing this number of columns filled up by the balls, one can readily determine the corresponding numeral in a particular base system. The corresponding numeral in a different base system for the same amount of balls can readily be determined by moving the balls from the columns back into the midsection, relocating the selector bar again allowing the columns to fill up with balls, and then noting the number of filled columns.

3,643,348

SYSTEM AND METHOD FOR INDIVIDUALLY PROGRAMMED AUTOMATIC TEST GRADING AND SCORING

Leo L. Azure, Jr., Richland, Wash., assignor to Automata Corporation, Richland, Wash.

Filed Aug. 18, 1969, Ser. No. 850,856
Int. Cl. G09b *7/00*
U.S. Cl. 35—48 B **24 Claims**



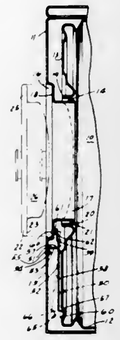
Test cards include a group of answer indication areas corresponding to the multiple choice answers for each of a plurality of problems for receiving indicia indicating answer responses to the problems. Correct answer information coded on the card identifies predetermined answer indication areas as corresponding to the correct answers for each problem. Sensing of the correct answer code from each test card automatically programs the apparatus with the correct answer for the problems for comparison with the sensed answer response indicia for grading and scoring the answer responses to the plurality of problems of each test card. A visible correct answer code of plural bit positions includes a number of code bit permutations for identification of each of the answer indication areas as a correct answer to prevent deciphering of the correct answer code. Automatic system control and recording of grading and scoring results is provided.

3,643,349

DRYER WITH DRUM GROUNDING MECHANISM

Fred J. Zenz, Berrien Springs, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 9, 1970, Ser. No. 79,402
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 **6 Claims**



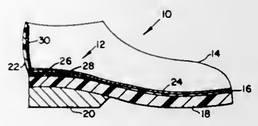
An electrical grounding device for use in connection with laundry appliances having an open-ended rotating drum. The grounding device consists of a metal member affixed to an electrical contact with the metal appliance body or cabinet adjacent the door opening and having an arm spring-biased toward the drum with a contact point on the end thereof adapted to contact a metal portion of the drum for grounding through the arm from the drum to the housing. An offset portion of the arm is provided with an abutment member which will be contacted by the door of the appliance, when closed, to lift the arm off of contact with the drum. When the door is open, the abutment member will be released and the spring bias of the arm will create mechanical and electrical contact with the drum.

3,643,350

LAMINATED SHOEHORN

Rocco E. Paoletta, Boston, and William Petrou, Haverhill, both of Mass., assignors to Perma Horn Sales Corporation, Haverhill, Mass.

Filed July 27, 1970, Ser. No. 58,402
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 Y **8 Claims**



A laminate having upper and lower strata is provided for incorporation into a shoe as an integral part thereof. The lower stratum includes a tab portion having flocking on one face for cushionable engagement with the heel of a person's foot and a glazelike surface on the opposite face for slidable

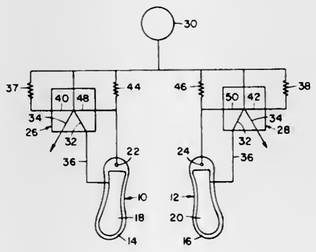
engagement with the counter of the shoe. The profiles of the rearward edge of the lower stratum with the exception of the tab portion and the rearward edge of the upper stratum substantially conform to the profile of the rearward edge of the shoe sock lining. The upper stratum and lower stratum are bonded together, the rearward edges being in registration. The laminate is bonded to the shoe in such a way that the tab portion and the upper and lower strata are adapted to be pulled up for engagement with the heel of the person's foot as it is about to be placed within the shoe and are adapted to slide downwardly with the foot as it is inserted into the shoe.

3,643,351

FLUID-OPERATED SYSTEM FOR AIDING THE USER IN STANDING AND WALKING AND OTHER APPLICATIONS

Herbert M. Eckerlin, Raleigh, and Morris V. Ward, Cary, both of N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,757
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 **7 Claims**



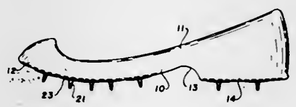
A pair of shoes, hand-held members, or the like having one or more cavities therein which communicate with one or more output passages of a conventional bistable fluidic element. Fluid is supplied to the element to activate the suction forming capabilities of the shoes, a negative pressure or partial vacuum being drawn on the passages whenever one or both of the passages are in a passive condition with respect to fluid flow therein. The shoes or hand-held members adhere to a floor or other surface of contact when the soles or cavity defining parts are placed in conforming contact with the floor or surface.

3,643,352

OVERSHOE FOR GOLF

Raymond K. S. Adair, 104-2040 York Street, Vancouver, British Columbia, Canada

Filed Oct. 2, 1970, Ser. No. 77,554
Int. Cl. A43b *1/10*
U.S. Cl. 36—7.3 **11 Claims**



The specification discloses an overshoe for use in playing golf and other sports. The overshoe is of the flexible resilient kind which is stretched over an ordinary shoe and it has a plurality of cleats to give good footing. The cleats are located within holes in the outer sole of the shoe and have threaded stems which are engaged within threaded openings in washers located on the inside of the overshoe. The washers are overlain by separate heel and sole pads which are in turn overlain by a complete insole.

3,643,353

FOOTWEAR

Donald Weight, Chalfont St. Giles, England, assignor to Monsanto Chemicals Limited, London, England

Filed Apr. 3, 1970, Ser. No. 25,555
Claims priority, application Great Britain, Apr. 25, 1969, 21,332/69
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **18 Claims**



An improved article of footwear comprising a heelboard and an upper wherein the outer edge of the upper is bent around the heelboard and adhesively bonded to the lower surface thereof, wherein the improvement comprises a sheet of resin which covers at least a portion of the lower surface of the heelboard, said resin being selected from the group consisting of:

A. copolymers of at least one olefin with at least one nonhydrocarbon aliphatic monomer, and

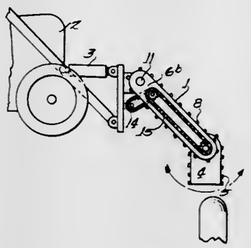
B. blends of A with at least one polyolefin, whereby the adhesive bond between the upper and the heelboard is strengthened.

3,643,354

APPARATUS FOR ROOTED PLANT EXCAVATING

Samuel E. Clegg, 729 Bartlett Avenue, Plainfield, Ill.

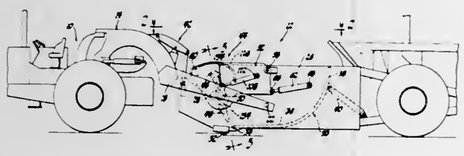
Filed Jan. 13, 1969, Ser. No. 790,540
Int. Cl. A01g *23/04*
U.S. Cl. 37—2 R **23 Claims**



An excavating apparatus for digging a plant and root ball. In one embodiment the apparatus is adapted for attachment to a power source, and has a curvilinear cutting arm rotatable with respect to a positionable support frame and a digging member attached to the frame to dig a hole to allow a portion of the frame to descend into the ground with the curvilinear cutting arm. The method of excavating a rooted

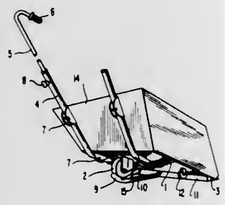
plant by digging a curvilinear channel vertically into the ground adjacent the plant to be excavated, arcuately under the rooted plant to a point directly below the plant, retracing the path of the channel to remove the digging apparatus from the ground, digging a curvilinear channel vertically into the ground adjacent the plant opposite the first channel, arcuately under the rooted plant to a point directly below the plant, and lifting the undercut plant and its protective soil ball from the ground.

3,643,355
SELF-LOADING SCRAPER WITH CLEANING SHIELD FOR THE BLADES
William H. Eiger, Eastlake, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 25, 1969, Ser. No. 879,657
Int. Cl. B60p *1/00, 1/36*
U.S. Cl. 37—4 **1 Claim**



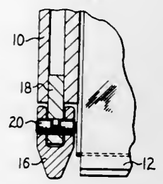
A self-loading earthmoving scraper having a scraper bowl provided with a loading device carried by the front end of the bowl above the scraper blade. The loading device has a plurality of paddles supported for orbital movement about a transverse horizontal axis and is adapted to be driven in a direction to load material cut by the scraper blade into the bowl. Each of the paddles is provided with outwardly projecting means formed on the rear surface of the paddle that cooperate with the ejector for discharging material out of a bowl.

3,643,356
HAND-OPERATED SNOW REMOVING TOOL
Helmut Gohl, Sulzbach Murr, Germany, assignor to Fahrzeuge und Gerate GmbH & Co. KG, Hannover-Ricklinger, Germany
Filed Sept. 22, 1969, Ser. No. 859,718
Claims priority, application Germany, Sept. 25, 1968, P 17 84 843.0
Int. Cl. E01h *5/02*
U.S. Cl. 37—53 **5 Claims**



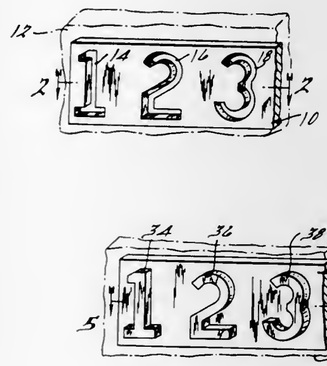
A tool in the nature of a snow shovel comprising a box-shaped container having an open top and front side, a pair of adjustable handle bars projecting upwardly from the rear end of the container and at an oblique angle to the bottom of the container, a slide rail removably secured to the front part of said bottom and projecting slightly beyond the front edge of the bottom, and a runner rotatably and pivotably mounted on the lower side of the bottom at a point underneath the center of gravity of the entire tool.

3,643,357
ROUTER BIT FOR SCRAPER BOWL
Gregory M. Benning, Joliet, and Dennis E. Shipp, Centralia, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 25, 1969, Ser. No. 844,966
Int. Cl. E02f *9/00*
U.S. Cl. 37—141 **3 Claims**



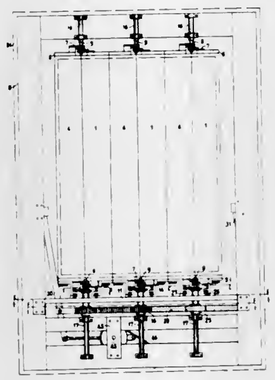
A hard metal protective bit for the forward, lower edges of the bowl of an earth-moving scraper, which bit is bifurcated to provide protection to both sides of the leading edge and bisymmetric to permit its use interchangeably on the two edges. It is held in place by retaining pins which do not have projecting parts subject to wear and deformation in use.

3,643,358
IDENTIFICATION STRUCTURE
Lawrence D. Morderosian, 918 Harcourt Road, Grosse Pointe Park, Mich.
Continuation of application Ser. No. 517,695, Dec. 30, 1965, now abandoned. This application July 25, 1968, Ser. No. 751,678
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 **4 Claims**



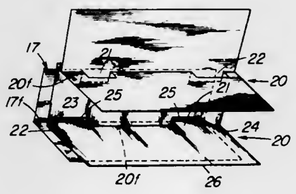
An identifying system for objects made from metal utilizing indicia selected from material having a substantially different radiation absorption coefficient and melting temperatures higher than the melting point of the object to permit identification by radiographic techniques.

3,643,359
ADVERTISING BOARD
Witold Nowicki, 3 rue La Condamine, 75, Paris, France
Filed Jan. 22, 1970, Ser. No. 7,484
Claims priority, application Germany, Jan. 30, 1969, P 79 04 533.1
Int. Cl. G09f *11/02*
U.S. Cl. 40—35 **5 Claims**



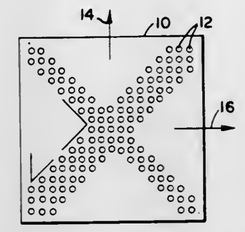
An advertising board includes a plurality of groups of plates placed close by. In each group the plates are set up in a semicircle movable round the common axles. The plates standing on the straight edges of the semicircles, form together a good sight-surface of the advertising board. The number of plates in each group equals the number of different plate positionings and different sight-surfaces. The mechanism that changes position of the plates consists of a revolving and steering system.

3,643,360
LOOSE-LEAF FILING INDEX AND METHOD OF MAKING IT
Kurt C. Vogl, Clay, N.Y., assignor to Boorum & Pease Company, Brooklyn, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,359
Int. Cl. G09f *7/00*
U.S. Cl. 40—104.19 **11 Claims**



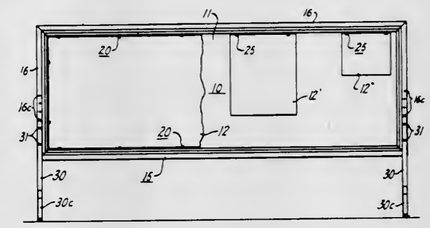
The index is a composite sheet or panel with pockets for filing cards on both its faces. The index and its pockets are made by nesting a plurality of folded sheets which have tabs offset along one side of the foldline. When nested, the tabs depend below the foldline and space the folded sheets apart and form individual pockets on each face of the index, for filing cards with a margin visible.

3,643,361
MOIRE MOTION ILLUSION APPARATUS
Robert B. Eaves, Wayne, Pa., assignor to Photo-Motion Corporation, King of Prussia, Pa.
Filed Nov. 17, 1969, Ser. No. 877,298
Int. Cl. G09f *13/34*
U.S. Cl. 40—106.53 **12 Claims**



Apparatus and methods are presented for the simulation of motion through the use of moire patterning. Motion simulation is accomplished with two overlay transparent sheets imprinted with dot patterns of different frequencies. One of the sheets, having a plurality of dot patterns of different frequencies, is held stationary and the other sheet, having a uniform dot pattern, is moved relative to the stationary sheet, and an illusion of motion is created on the stationary sheet by movement of moire patterns resulting from the interaction of the dot patterns on the two sheets. Depth illusion may also be accomplished through the use of dot patterns of different frequencies on the front and back surfaces of the stationary sheet.

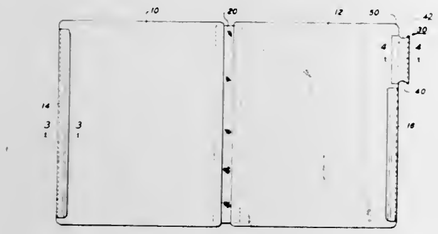
3,643,362
SIGN DISPLAY DEVICE
Robert H. Hackett, Oakmont; Charles D. Hartmann, Pittsburgh, and Brady M. Elias, Jeannette, all of Pa., assignors to I.D.L. Incorporated, Pittsburgh, Pa., by said Hackett and H.J. Heinz Company, Pittsburgh, Pa., by said Hartmann and said Elias
Filed Dec. 8, 1969, Ser. No. 883,160
Int. Cl. G09f *1/12*
U.S. Cl. 40—156 **15 Claims**



A signlike display device is disclosed having a substantially flat backup board member, a frame about and enclosing the outer peripheral edge portions of the board member, and support assemblies at each end of the frame in the form of a pair of members, each having an upright leg and a horizontally outwardly projecting foot and being removably and adjustably secured to vertical end members of the frame and adaptable for different heights of support and for different spacing of members. The frame, of integral construction, has an outer, reinforced part of hollow boxlike section and an

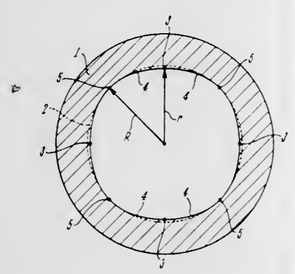
inner part of dual channellike section whose back portion is adapted to slidably closely receive edge portions of the board and whose forward open mouth portion is adapted to bypass the board and to removably receive mounting means in the form of clamping elements for positioning paperlike sheets of advertising material on wide side faces of the board member.

3,643,363
REUSABLE FILE FOLDER
F. Joseph Biro, 416 Montclair Avenue, Pompton Lakes, N.J.
Filed Mar. 18, 1970, Ser. No. 20,672
Int. Cl. B65d *27/06*
U.S. Cl. 40—359 **9 Claims**



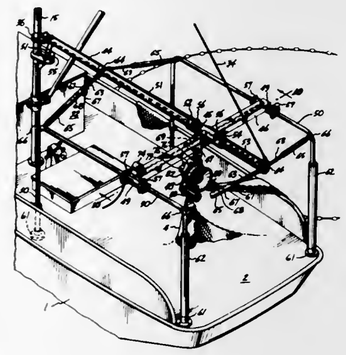
A file folder is made with both front and back covers of sheet plastic, joined by a flexible material such as cloth. These cover members have their longitudinal side margins integrally formed into clips disposed to releasably retain sheets of paper and the like. One of the covers preferably has an index tab retainer attached or formed from the cover so as to extend outwardly from the cover, said tab retainer adapted for inserting or attaching new indexing strips when desired.

3,643,364
RIFLED GUN BARREL WITH THE INTERIOR CROSS-SECTIONAL CONFIGURATION DEFINING A REGULAR CURVILINEAR POLYGON
Theodor Koch, 7238 Oberndorf, (Neckar), Lehenhofweg 29, Germany
Continuation of application Ser. No. 670,654, Sept. 26, 1967, now abandoned. This application Nov. 7, 1969, Ser. No. 871,624
Int. Cl. F41c *21/00*
U.S. Cl. 42—78 **9 Claims**



A rifled barrel intended for use with small arms, particularly in combination with steel-jacketed soft-core ammunition having no special rotating bands provided on the exterior thereof, which barrel has a cross-sectional configuration such that the interior surface of the barrel defines a regular polygon with rounded sides and corners, which corners form the rifling in the barrel wall and represent arc segments spaced uniformly about the interior surface and having a common radius of curvature, the rounded sides of the polygon extending between the rounded corners and representing arc segments having a common radius of curvature of lesser magnitude than the first-mentioned radius of curvature, the transitional regions between adjacent arc segments having different radii of curvature being continuous.

3,643,365
MOUNTING MECHANISM FOR A SEINE-HAULING POWER BLOCK
Lawrence E. Demmert, 3408 Redwood Avenue, Bellingham, Wash.
Continuation-in-part of application Ser. No. 759,693, Sept. 13, 1968, now Patent No. 3,535,811. This application Jan. 5, 1970, Ser. No. 701
Int. Cl. A01k *73/12*
U.S. Cl. 43—8 **9 Claims**



A trolley carrying the seine-hauling power block can be driven along an elongated track having its length extending athwartships of a boat. A carriage supporting such athwartships track can be driven along a fore-and-aft boom and the block trolley can be driven along the athwartships track so as to lay the seine back and forth in a pile below the block as it is hauled in. The athwartships track may include two quadrants having inboard ends parallel to each other and to the boom or such track may be straight. If the athwartships track includes two quadrants, the boom carriage carries a transfer track section which can be placed in registry with the inboard end of either arcuate track section by shifting such arcuate track sections transversely of the boom. Rollers mounted for engagement by a seine being hauled by the power block can guide and deter billowing of the seine.

3,643,366
LURE DISLODGING AND RETRIEVING DEVICE
Eugene R. Gates, 941 S. Gertrude Street, Stockton, Calif.
Filed Sept. 14, 1970, Ser. No. 71,651
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **8 Claims**

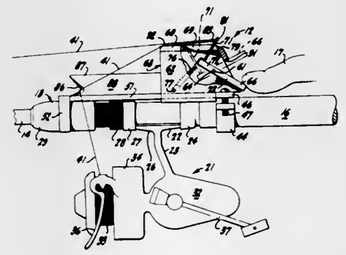
A fish lure loosening and dislodging retriever comprising a weight provided at its upper end with a first eye to which a lifting line is connected and a second eye fixed on one side

below but adjacent the upper end and which embodies a pigtail coil and is detachably and slidingly connectable with the fishing line. This weight attaching eye is rigid and constitutes a lure knocker and is manipulable in a manner to hammer



and, as is ordinarily the case, free the snagged lure. If this step fails, the clawlike grappling hooks can be brought into play in a manner to lift the log or brush and render the lure accessible for removal by hand.

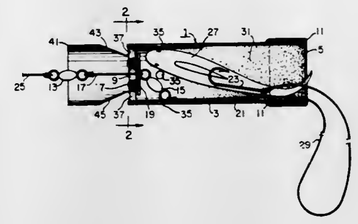
3,643,367
THUMB RELEASE ATTACHMENT FOR SPINNING REEL
Frank E. Denny, 203 2nd Street P.O. Box 326, Hawthorne, Nev., and Douglas M. Denny, 724 Crane Avenue, Foster City, Calif.
Filed Dec. 4, 1969, Ser. No. 882,202
Int. Cl. A01k *89/02*
U.S. Cl. 43—25 **4 Claims**



A housing located on top of the handle of a spinning rod possesses a thumb-actuated latch member capable of selectively retaining or releasing a fishing line extending from a spinning reel (located below the handle) upwardly to the latch member and thence forwardly through the line guides and tip eye to the terminal line tackle. The line is released by a slight movement of the thumb at the appropriate juncture in the casting operation.

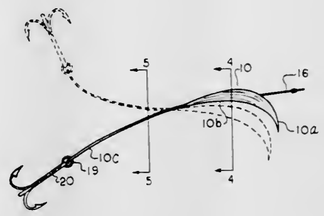
3,643,368
SLIDING SINKER BAIT CARTRIDGE
Samuel T. Pool, P.O. Box 1102, Sacramento, Calif.
Filed Feb. 27, 1969, Ser. No. 802,901
Int. Cl. A01k *97/04*
U.S. Cl. 43—41.2 **4 Claims**

A sliding sinker assembly for bottom fishing, comprising a cartridge in the form of a hollow tube open at one end and having a line passage through a wall at its other end, the tube being adapted to house live bait for casting, and having an



overall specific gravity greater than the water in which it is to be used.

3,643,369
FISH LURE
Earl D. Jacobson, 2037 West 4200 South, Roy, Utah
Filed June 8, 1970, Ser. No. 44,203
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.03 **2 Claims**

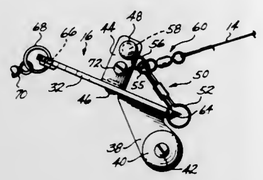


A fish lure having a body section formed of very thin, high-tensile strength, but flexible sheet metal. The body is shaped to provide a three-dimensioned perspective representation of a small bait fish. The body has upturned side flanges to serve as stiffeners for a portion of the body, the side flanges extending from a point just rearward of the leading edge of the nose to a point not exceeding one-half of the overall length of the body, the said flanges functioning to generally funnel water over the central portion thereof as it is traveled through water and the tail is dropped, whereby impinging water repeatedly flexes it up until it is repeatedly contacted and forced down by the funneled water.

3,643,370
DIVING SINKER MEMBER
John W. Cook, 1512 South 11, Mount Vernon, Wash., and Lester M. Davis, Gig Harbor, Wash., assignors to said Cook, by said Davis
Filed Aug. 12, 1970, Ser. No. 63,230
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.13 **8 Claims**

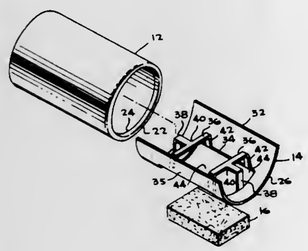
A diving sinker comprising a flat surface deck member and a keel extending downwardly therefrom, which may be integral and molded from a plastic. A support extends upwardly from a longitudinal midportion of the deck and terminates in one-half of a frictionally engageable and detacha-

ble coupling member. Link means has one end thereof swingingly connected to the forward end portion of the deck member and has the other end portion thereof terminating in the other half of the frictionally engageable and detachable coupling member. Adjusting means is provided for said



coupling member to adjust the frictional engagement between the two halves thereof. Fishing line receiving means is carried by an upper portion of said link means and the fishhook means and other fishing gear are connected to the trailing end portion of said deck member.

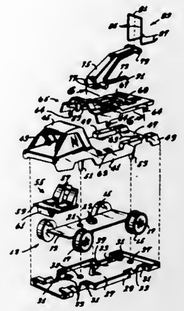
3,643,371
INSECTICIDE APPARATUS
Walter C. Gordon, Arcadia, Fla., assignor to DeSoto Chemical Co., Inc., Arcadia, Fla.
Filed Sept. 2, 1969, Ser. No. 854,622
Int. Cl. A01m *25/00*
U.S. Cl. 43—131 **10 Claims**



An insecticide apparatus comprising a substantially tubular housing having an open end and including a chemical exterminating means such as lead arsenate and a resilient flexible guard which must be squeezed to permit insertion into the open end of the tubular housing, and which is positioned over the chemical exterminating means to prevent the chemical exterminating means from being easily removed or improperly accessible either accidentally or intentionally by other than insects. A guard-holding lip is also positioned and projects across the portion of the open end to retain the guard in place after release. The guard may be made of any suitable plastic or other material which is flexible and resilient.

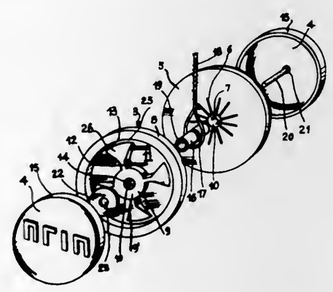
3,643,372
TOY TOW TRUCK
Alan W. B. Nash, and Brian S. Prodger, both of Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 29, 1970, Ser. No. 6,675
Int. Cl. A63h *33/30*
U.S. Cl. 46—40 **8 Claims**

A wheeled toy truck body is shown having a spring operated boom mounted therein, the boom holding a toy vehicle engaging member such as a hook. The boom is forced downwardly to lower the hook and engage and hold a portion of a toy vehicle to be towed and upon being released, the



boom returns to its unflexed position to thereby raise the hook and lift the toy vehicle. The hook may be a separate member or it may be an integral part of the boom.

3,643,373
TETHERED AERIAL TOP
Luther J. Russell, 524 Fernwood Road, Key Biscayne, Fla.
Filed Feb. 4, 1970, Ser. No. 8,588
Claims priority, application Spain, Feb. 5, 1969, 145,319
Int. Cl. A63h *1/30*
U.S. Cl. 46—61 **5 Claims**

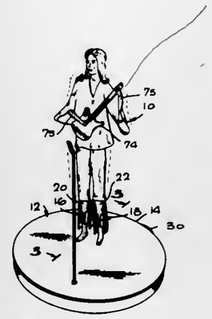


A tethered aerial top comprising a pair of circular disks each having a central hub formed with a stepped bore therethrough, a tubular shaft pressed into the larger-diameter portions of the bores and a rivet extending through the tubular shaft and having at one end a head abutting against the end face of the hub on one disk and means connected to the other end of said rivet and abutting against the end face of the hub of the other disk, to thereby securely hold the two disks in spaced and axial alignment with each other.

3,643,374
ACTION STAGE FOR DANCING DOLL
Gregory M. Gunther, Palos Verdes Estates; Ferenc Fekete, Inglewood; Ronald R. Lledtke, Redondo Beach, and Donald H. Stephens, Pomona, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 8, 1970, Ser. No. 96,032
Int. Cl. A63h *13/02*
U.S. Cl. 46—139 **7 Claims**

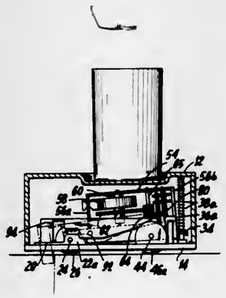
A stage for use with a doll that can flex at the waist, to make the doll perform an entertaining dance, including a pair

of foot holders for engaging the feet of the doll. One of the foot holders is stationary while the other is vertically oscillated by an electric motor to cause the doll to sway at the waist. A child can operate a manual speed control to increase



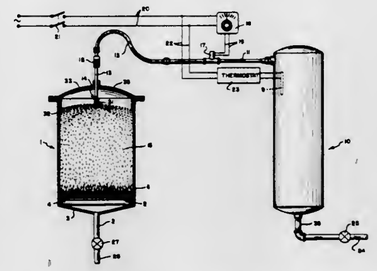
the oscillation speed past the natural frequency of oscillation of the doll at the waist, to make the doll's swinging change from a large moderately slow movement to a rapid small movement.

3,643,375
MOVABLE SUPPORT
Arthur Ginsberg, Great Neck, N.Y., and Atsumu Hirata, Tokyo, Japan, assignors to Royal London, Ltd., New York, N.Y.
Filed Oct. 13, 1969, Ser. No. 865,642
Int. Cl. A63h *17/00*
U.S. Cl. 46—208 **6 Claims**



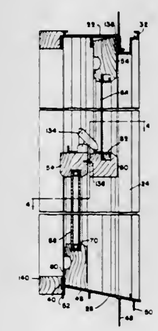
A moveable support which may be in the form of a coaster to support a glass and which operates in a manner to provide entertainment for the user. When a weight such as a glass filled with liquid is placed on the support, it automatically begins to move and stops as soon as the weight is removed. If after a weight has been placed on the support, and the support moves to the end of a surface, such as a table, the moveable support will automatically stop to prevent the moveable support from passing over the edge of the table.

3,643,376
PRODUCTION OF SEED SPROUTS
Everton G. Poindexter, and Hugh M. Scott, both of Monroe, Conn.
Continuation-in-part of application Ser. No. 736,468, June 12, 1968, now abandoned , Continuation-in-part of application Ser. No. 651,591, July 6, 1967, now abandoned. This application Oct. 8, 1969, Ser. No. 864,737
Int. Cl. A01g *31/02*
U.S. Cl. 47—1.2 **5 Claims**



Sprouting various seeds and growing these sprouts for the purpose of providing edible sprouts as a vegetable.

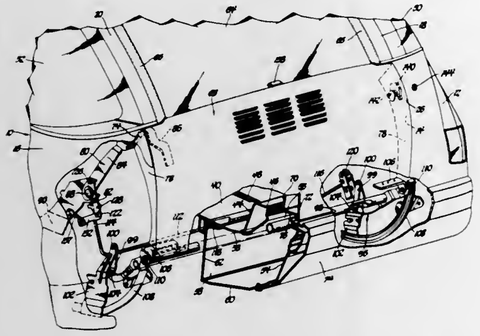
3,643,377
WINDOW STRUCTURE
Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.
Continuation-in-part of application Ser. No. 634,169, Apr., 1967, now Patent No. 3,464,160. This application Apr. 2, 1968, Ser. No. 718,052
Int. Cl. E05d *15/22*
U.S. Cl. 49—181 **4 Claims**



Tilting double hung window construction, including a single plastic guide member at each side of a window sash for providing compression between a window frame and the window sash mounted therein and weatherstripping therebetween, as well as guiding the window sash in sliding movement relative to the frame and two-part pivoted camming and locking structure for securing the window sash in a tilted vertical position, especially in conjunction with counterbalance structure which is readily engageable with and releasable from the counterbalance structure.

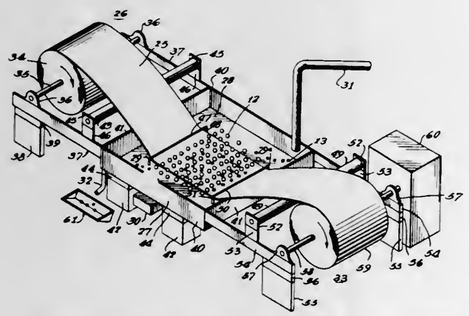
The window construction further includes unique single member glazing and mullion extrusions for facilitating glazing of the window structure and the sealing of window structures positioned side-by-side. Shipping clips for maintaining the frame of the window structure within predetermined limits during shipping and installing are also disclosed.

3,643,378
HINGE COUNTERBALANCE
Alfonsas Velavicius, Warren, and Nicholas Toruk, Allen Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 15, 1970, Ser. No. 72,323
Int. Cl. E05d 13/10; E06b 3/34
U.S. Cl. 49—445 5 Claims



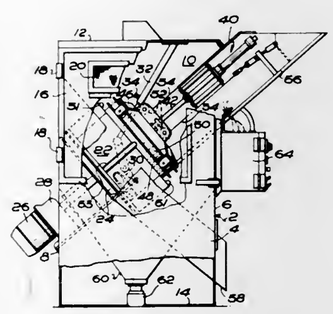
A closure is supported on a vehicle body for generally vertical bodily shiftable movement between open and closed positions relative to an opening in the vehicle body by a hinge arm supported on the vehicle body for pivotal movement about a first axis of the latter. The weight of the closure produces on the hinge arm about the first axis a gravitational turning moment which is counterbalanced by a hinge counterbalance according to this invention including a torsion rod with a crank thereon, an intermediate lever pivotally supported on the vehicle body, a connecting link between the torsion rod and the intermediate lever, cam means on the intermediate lever and follower means on the hinge arm. The torsion rod through the connecting link produces a primary turning moment on the intermediate lever while the cam means and follower means cooperate to produce a secondary turning moment on the hinge arm of magnitude varying in inverse proportion to the magnitude of the primary turning moment.

3,643,379
CONTINUOUS GRAINING AND APPARATUS THEREFOR
Reno J. Testolin, Wheaton, Ill., assignor to The Richardson Company, Melrose Park, Ill.
Filed Mar. 16, 1970, Ser. No. 19,794
Int. Cl. B24b 19/00
U.S. Cl. 51—6 11 Claims



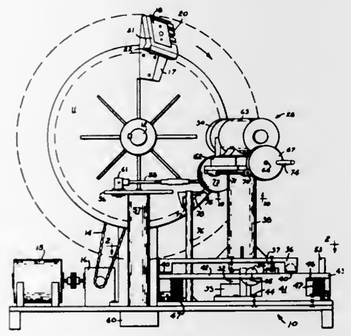
This invention relates to the graining of metal sheet especially of the type employed as the supporting base for lithographic printing plates. More particularly, this invention relates to the continuous ball graining of such metal sheet and to apparatus for effecting such continuous ball graining.

3,643,380
APPARATUS FOR BLAST TREATING ARTICLES
James F. Thomson, Low House Farm, Timble, near Otley, Yorkshire, England
Filed June 2, 1970, Ser. No. 42,698
Int. Cl. B24c 3/28
U.S. Cl. 51—13 8 Claims



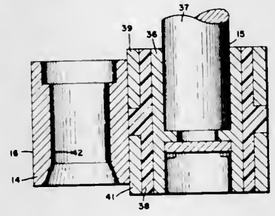
Shot blasting apparatus comprising a blasting chamber, an inclined rotatable drum in the chamber for holding articles to be shot blasted, and means to raise and lower the drum to enable articles which have been shot blasted to leave the apparatus.

3,643,381
KNIFE GRINDER
George M. Standal, 1916 San Fernando Place, Victoria, British Columbia, Canada
Filed Sept. 21, 1970, Ser. No. 74,093
Int. Cl. B24b 7/00
U.S. Cl. 51—31 4 Claims



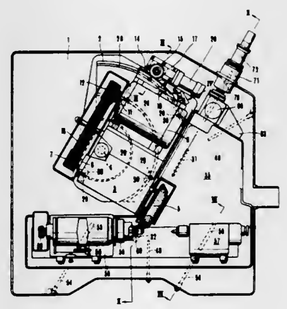
A knife grinder for chipping knives having plane beveled surfaces interconnected by a curved beveled corner surface. The knives are mounted on a rotatable head that carries them past a movable grinding unit. A powered grinding surface engages each knife while moving in an arcuate path about the corner axis of the knife along the line of engagement and while moving in arcuate paths about pivot axes perpendicular to the straight knife edges. The grinding unit is guided by a pivot frame and powered by a constantly turning crank. Automatic advancement of the grinding unit toward the knives is provided by a pawl and ratchet wheel engaged at the completion of each complete pass of the unit across the knife surfaces.

3,643,382
GRINDING MACHINE
Herbert R. Uhtenwoldt, Worcester; William H. Grotewold, Holden, and Norman S. Humes, Worcester, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed Jan. 8, 1970, Ser. No. 1,378
Int. Cl. B24b 5/18
U.S. Cl. 51—103 WH 6 Claims



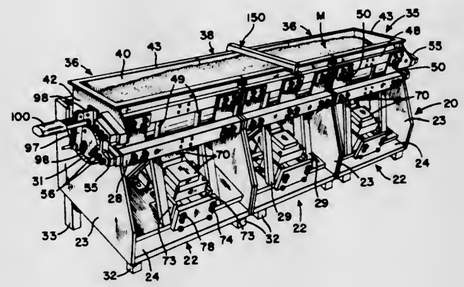
This invention relates to a grinding machine and, more particularly, to apparatus for grinding large workpieces including a regulating roll having visco-elastic material contained in it and having a loading arm particularly adapted for use with a curved ramp for conveying the workpiece to and from the work area.

3,643,383
GRINDING MACHINES
Hiroaki Asano; Tsuyoshi Koide; Ikuo Ohtsu; Shozo Hayashi, and Hiroshi Kobayashi, all of Kariya-shi, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Aug. 21, 1970, Ser. No. 65,942
Claims priority, application Japan, Aug. 30, 1969, 44/68866
Int. Cl. B24b 5/00, 17/00
U.S. Cl. 51—105 7 Claims



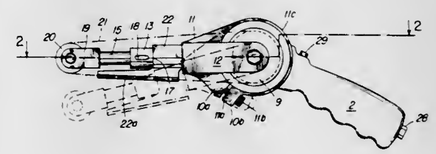
In a grinding machine comprising a motor-driven grinding wheel and a headstock for holding a workpiece to be ground by the grinding wheel, the base for supporting the grinding wheel is secured to a stationary bed, a table for supporting the headstock is slidably mounted on the bed and a feed shaft is provided for the table to feed it toward the grinding wheel. The feed shaft is located in a plane perpendicular to the axis of the grinding wheel and passing through substantially the center of the width of the grinding wheel.

3,643,384
VIBRATORY APPARATUS
Max Isaacson, and Benjamin Smilg, both of Dayton, Ohio, assignors to Vibrodyne, Inc., Dayton, Ohio
Filed Mar. 11, 1969, Ser. No. 806,079
Int. Cl. B24b 31/06
U.S. Cl. 51—163 15 Claims



A vibratory finishing machine includes an elongated container supported at longitudinally spaced intervals for oscillator movement at a predetermined natural frequency and on an effective axis offset laterally to a vertical plane extending through the center of the container. In one form, the container consists of longitudinally aligned and rigidly connected sections each supported by a plurality of aligned spring beams mounted on a corresponding frame section so that each container section has substantially the same natural frequency of oscillation. A pair of opposing magnets are mounted on each frame section to effect vibration of an armature rigidly connected to the corresponding container section, and each armature is generally aligned with the corresponding spring beams. Each pair of magnets is separately controllable to provide for varying the amplitude of oscillation of each container section. The container may also be enclosed to provide a ball mill or may be provided with end openings for progressive finishing an elongated part.

3,643,385
PORTABLE GRINDING TOOL
Toshio Mikiya, 17-10, 1 chome, Ikegami, Ota-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 729,692, May 16, 1968. This application Nov. 19, 1969, Ser. No. 877,987
Claims priority, application Japan, Sept. 30, 1967, 42/62742; Dec. 27, 1967, 42/83308
Int. Cl. B24b 23/00
U.S. Cl. 51—170 EB 24 Claims



A portable grinding tool consisting of a handle, a telescopic holder and arm having a rotatable pulley attached to one end. The telescopic holder is adjustably fastened to the han-

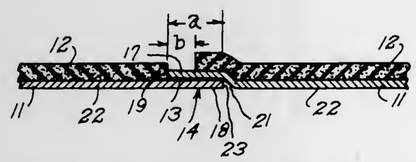
dle at variable angles, and a rotatable driving member positioned within the holder is adapted to be driven by suitable power means so as to rotate a grinding belt entrained about and interconnecting the driving member and the rotatable pulley. Pressure plates for the belt and pulleys of various configurations may be interchangeably mounted for the effective and accurate grinding of different surfaces of a wide range of objects.

3,643,386
ABRASIVE HAND APPAREL
John V. Grzyll, 1040 Agate Street, St. Paul, Minn.
Filed Feb. 19, 1970, Ser. No. 12,707
Int. Cl. B24d *11/00*
U.S. Cl. 51—391 **8 Claims**



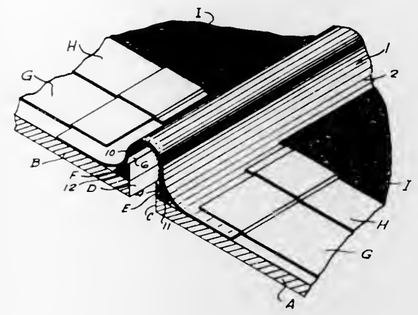
Hand apparels, gloves and mittens, having abrasive material secured to the hand apparel at effective working areas such as extending beyond and partially around an extending member, finger or thumb, to afford cleaning and abrading contact with an object while providing various advantages and protections to the user.

3,643,387
ENDLESS ABRASIVE BELT HAVING AN OVERLAPPING JOINT
Hans Hildebrand, Koeln-Nippes, Germany, assignor to Norton Company, Worcester, Mass.
Filed May 18, 1970, Ser. No. 38,117
Claims priority, application Germany, May 16, 1969, P 19 25 151.5
Int. Cl. B24d *11/06*
U.S. Cl. 51—399 **4 Claims**



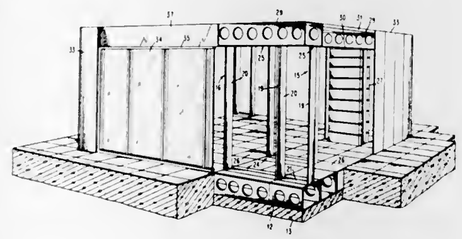
An endless abrasive belt of the type including one or more sections of backing material supporting an abrasive coating and having adjacent end portions overlapped to form joints extending obliquely of a direction of belt travel is characterized by the abrasive coating on an inner one of the overlapped end portions being removed over the longitudinal extent of the overlapping and the abrasive coating on an outer one of the overlapped end portions being removed only over a longitudinal extent in a range of about 30 to 80 percent of the overlapped distance.

3,643,388
FLEXIBLE EXPANSION JOINT FOR STRUCTURES
Russell Dale Parr, and Leo Joseph Dete, Jr., both of Carlisle, Pa., assignors to Carlisle Tire and Rubber Division of Carlisle Corporation
Filed Jan. 9, 1968, Ser. No. 697,285
Int. Cl. E04d *1/36*
U.S. Cl. 52—58 **2 Claims**



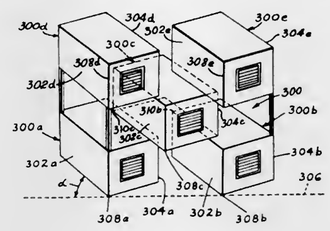
The present flexible expansion joint and joining member therefore is for structures which tend to move under varying conditions such as changes in temperature which cause expansion and contraction of the structure. To prevent possible damaging changes to the structure, extended portions thereof have one or more elongated openings therein which may be provided by spacing apart sections of the structure, positioning a sheet of flexible joining material in an arc across each opening and fastening a pair of flaps attached to said sheet, to the marginal portions of said structure on opposite sides of each opening.

3,643,389
MODULAR ELECTRICAL ENCLOSURE
William S. Sheppley, Jr., Rhinebeck, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,238
Int. Cl. E04b *9/00;* **E04b** *1/348, 5/48*
U.S. Cl. 52—79 **7 Claims**



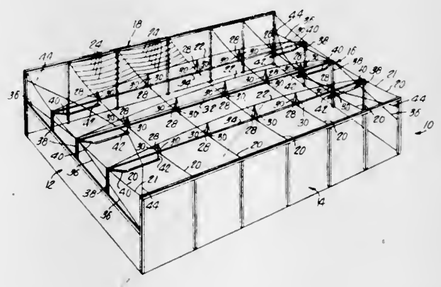
Modular frames are provided that support electrical components and other apparatus of a data-processing system. The frames are open at their front and back and are partially open along the two sides so that the components are easily accessible for maintenance and operation and are accessible for cooling and for wiring connections. The frames are combined with other components to form a room size, walk-in, enclosure.

3,643,390
MODULAR BUILDING STRUCTURE
Shelley W. Shelley, San Juan, P.R., assignor to Shelley Systems, Inc., Rio Piedras, P.R.
Continuation-in-part of application Ser. No. 762,668, Aug. 14, 1968, now Patent No. 3,503,170. This application Nov. 26, 1969, Ser. No. 880,316
Int. Cl. E04h *1/00;* **E04c** *3/10*
U.S. Cl. 52—79 **18 Claims**



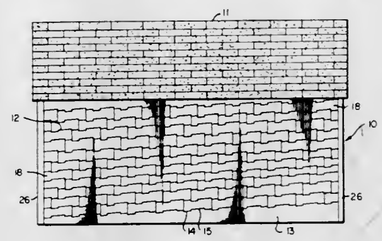
A modular building structure comprised of a plurality of prebuilt boxlike units, each having sidewalls, a ceiling and a floor slab, which are stacked to form successive stories of a building. The units are positioned such that there is an open space between any two units on the same floor level. The interior units at intermediate levels are each stacked between at least four other units. In one embodiment the boxlike units have load-bearing vertical columns which are located inwardly with respect to the sidewalls, and the units are stacked such that at least portions of the sidewalls overlap sufficiently that one or more of the load-bearing columns of the upper and lower units are aligned. In high-level embodiments these columns are post-tensioned to form a unitary assembly. In some embodiments the units are arranged with their sidewalls perpendicular to the front of the building, while in other cases each of the walls meets the length of the building at an angle other than 90°.

3,643,391
ROOF CONSTRUCTION
Sebastian Mollinger, 17 Irving Place, Montreal 970, Quebec, Canada
Filed Oct. 3, 1969, Ser. No. 863,584
Int. Cl. E04b *7/14*
U.S. Cl. 52—83 **8 Claims**



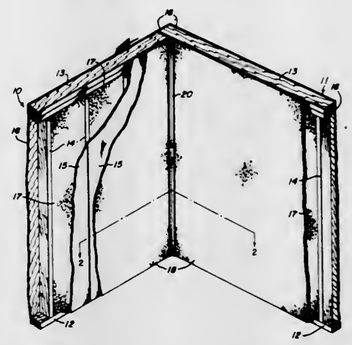
A flexible roof structure supported by tension members extending in a catenary between the walls of the structure and a second set of tension members interconnected to the first set of tension members through a hold, the tension members of the first set in position and preventing undue flexing of the roof.

3,643,392
BUILDING BLOCK AND STRUCTURE MADE THEREWITH
Charles Martinez, P.O. Box 362, Woldorf, Md.
Filed Jan. 28, 1970, Ser. No. 6,485
Int. Cl. E04c *1/10*
U.S. Cl. 52—262 **5 Claims**



A building block which is adapted to be employed in the formation of walls and the like of a building structure and which is so shaped as to interlock with one another to enable the same to be employed in this environment without the use of any adhesive or mortar but relying on the forces of gravity to retain the blocks in their assembled elation to one another.

3,643,393
BUILDING CONSTRUCTION
Edwin A. Pierce; Richard W. Knob; Samuel O. Roth, all of Piqua, and Emery L. McKinney, Troy, all of Ohio, assignors to Inland Systems, Inc., Piqua, Ohio
Filed Mar. 30, 1970, Ser. No. 23,816
Int. Cl. E04b *1/40;* **E04c** *1/40*
U.S. Cl. 52—287 **9 Claims**

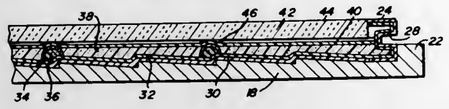


Modular building construction in which the walls of each module are manufactured as panels consisting of one or more gypsum board subpanels secured to a core of studs and plates and overlaid with a continuous sheet of embossed, polyvinyl chloride, and in which the corner joints of the module are covered by a strip of polyvinyl chloride of the same color and texture as the continuous sheets and secured to the adjacent edges of the panels by means of a pressure-sensitive adhesive.

3,643,394
INSULATED PREFABRICATED BUILDING MODULE
Bobby G. Johnson, P.O. Box 1621, Durham, N.C.
Filed Oct. 24, 1969, Ser. No. 869,054
Int. Cl. E04b *2/10, 2/38;* **E04d** *3/35*
U.S. Cl. 52—309 **5 Claims**

A building structure module in the form of a wall panel capable of load bearing constructed of glass fiber reinforced

plastic resin, semicylindrical structural members for load bearing and reinforcement and foam plastic for insulation purposes with the module having fire-retardant properties and a peripheral edge channel member to enable adjacent

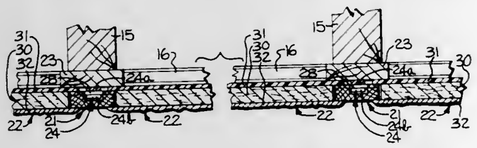


modules to be readily interconnected. The module is constructed by employing a procedural method so that the sequential steps are performed in a production line technique to facilitate construction of the modules.

3,643,395
REVERSIBLE WALL ASSEMBLY

Richard C. Schuyler; Jacquie G. Schuyler, both of 6120 Elmwood Circle, Charlotte, N.C.; Margaret E. Griffin, 1336-A Green Oak Lane, Charlotte, N.C.; William E. Tobias, 3108 Buckeye Drive, West Columbia, S.C., and Jack R. Finney, 901 Frink St., Cayce, S.C.

Filed Dec. 15, 1969, Ser. No. 884,872
Int. Cl. E04b *2/06*
U.S. Cl. 52—509 **6 Claims**

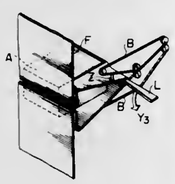


A wall assembly for mounting on a substantially planar supporting wall structure and characterized by being easily reversible to provide a desired decorative effect. The wall assembly includes at least two elongated splines which are removably secured in spaced-apart parallel relation to the planar supporting structure. An elongate planar wall panel including opposite faces having different surface characteristics for providing a desired decorative appearance on opposite faces thereof has the longitudinal edges thereof reversibly interconnected with proximal edges of the splines.

3,643,396
METHOD AND APPARATUS FOR WRAPPING AN ARTICLE

Shozo Togashi; Yoshijima Makijima, both of Kawasaki; Ikuo Tanaka, and Kaoru Narita, both of Tokyo, all of Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1970, Ser. No. 35,699
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 **7 Claims**

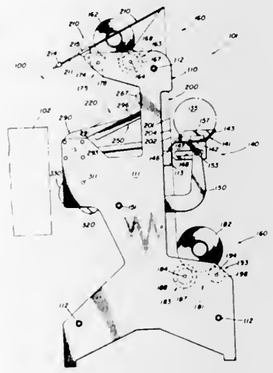


An article to be wrapped such as a bundle of newspapers is firstly compressed so as to decrease its height, then it is moved forwardly in compressed state toward a sheet of thermoplastic resin film which is stretched tightly across the course of movement of the article so that the article is wrapped by the film from its forward end toward its rear end as the article continues its advancement. When the article is wrapped by the film over its upper and lower surfaces, it is stopped and the film portions at the rear of the article are fuse welded. Upon completion of the fuse welding, the film edges projecting transversely beyond the article are folded together and joined upon further advancement of the article.

3,643,397
PACKAGING MACHINE AND METHOD AND ARTICLE PRODUCED THEREBY

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed May 28, 1969, Ser. No. 828,533
Int. Cl. B65b *9/02, 57/12*
U.S. Cl. 53—28 **26 Claims**



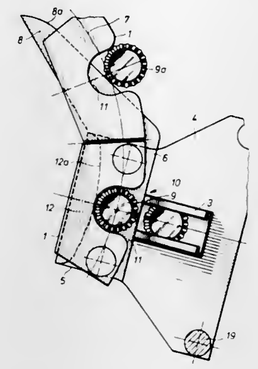
A machine for packaging a workpiece in a heat-sealable film, including a U-shaped sealing pad and heater, means for establishing a longitudinal reach of film adjacent to the sealing pad, the sealing pad and the heater being movable between a receiving position and a sealing-severing position, means for urging the workpiece against the reach of film when the heater and the sealing pad are in the receiving position to provide superimposed lengths of film positioned between the sealing pad the the heater and forming an envelope open along one side and the ends of the workpiece, the heater in the sealing-severing position overlying the sealing pad and being in contact with the superimposed lengths of film to seal and sever the same along the one side and the ends of the workpiece. A method for packaging the workpiece in the heat-sealable film is disclosed as is the article of manufacture produced thereby.

3,643,398
BOTTLE CAPPING MACHINE

Karl Quest, Dortmund; Werner Heckmann, Dortmund-Aplerbeck, and Uwe Knabe, Dortmund-Hombruch, all of Germany, assignors to Holstein & Kappert, Maschinenfabrik Phonix GmbH, Dortmund, Germany

Filed Sept. 14, 1970, Ser. No. 71,941
Claims priority, application Germany, Sept. 18, 1969, P 19 47 169.3
Int. Cl. B65b *57/00, 7/28*
U.S. Cl. 53—77 **10 Claims**

A bottle capping machine wherein the capping units orbit about a vertical axis and have sockets which travel past a transfer station where each socket receives a cap which is thereupon engaged by a permanent magnet and is lifted toward a sealing ram of the respective unit while the latter moves toward registry with a filled bottle. The transfer station accommodates a vertically adjustable platform which supports a chute for delivery of caps to successive sockets and a stop which centers the caps in the sockets to place them into an optimum position for engagement with the

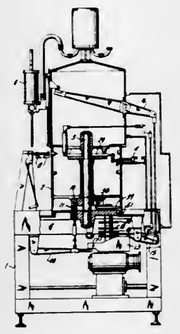


respective magnets. A deflector is mounted on the platform to expel, if necessary, from successive sockets caps and/or fragments of bottles before such sockets reach the transfer station.

3,643,399
MACHINE FOR DOSING AND FILLING THICK LIQUIDS INTO BAGS OF PLASTIC MATERIAL

Guido D. Bertoglio, Lugano-Viganello, Switzerland, assignor to Centra Anstalt, Vaduz, Liechtenstein

Filed Sept. 2, 1969, Ser. No. 854,635
Claims priority, application Switzerland, Oct. 31, 1968, 16305/68
Int. Cl. B65b *43/29, 3/32*
U.S. Cl. 53—187 **6 Claims**

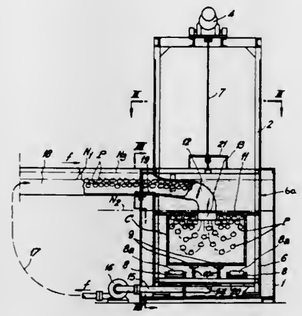


An arrangement for metering and filling plastic bags with thin and thick liquids. A rotary member is intermittently indexed and carries a plurality of jaws equipped with suction means for holding the bag to be filled at the open edges. Metering cylinders fill the bag with a predetermined quantity of liquid, after which the bag is sealed through thermopulse welding. Indexing is accomplished through a maltese-cross device which is indexed and stopped through a cam-operated indexing mechanism. The indexing mechanism also operates the metering cylinders. A closure device closes the bag after filling and before indexing the rotary member to the next station.

3,643,400
SYSTEM FOR THE CRATING OF FLOATABLE GOODS

Robert Louis Barbet, 35 bis Rue Pasteur, Chateau-du-Loir, Sarthe, France

Filed Feb. 26, 1970, Ser. No. 14,545
Claims priority, application France, Mar. 4, 1969, 6905887
Int. Cl. B65b *5/00, 39/14*
U.S. Cl. 53—/248 **10 Claims**

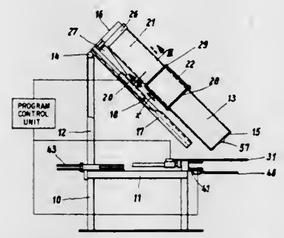


Apples or other floatable goods are loaded into a perforated container through a duct terminating in a screen at the top of a cage immersed in a water bath, the water being circulated by a pump to drive the goods into the duct from a channel aligned therewith. The cage is then lifted out of the bath to the level of a track while a pair of spring-loaded container-supporting bars are depressed to lower the loaded container onto a set of rollers whence it can be discharged onto the track preparatorily to the introduction of the next container.

3,643,401
APPARATUS FOR PACKING PIECE GOODS, PARTICULARLY FRUITS, INTO A HOSE-SHAPED PACKING MATERIAL

August Wickersheim, 4, Industriestrasse, Egenbuttel near Hamburg, Germany

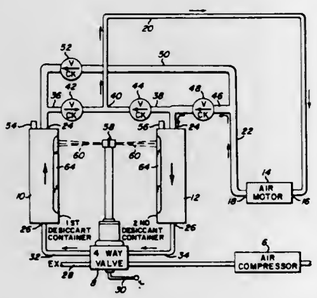
Filed May 5, 1970, Ser. No. 34,841
Claims priority, application Germany, May 8, 1969, P 19 23 508.6
Int. Cl. B65b *5/00, 39/12*
U.S. Cl. 53—266 **15 Claims**



A fully automatic apparatus for packing discrete articles such as fruits into a hose-shaped packing material and sealing a filled package at both ends. The apparatus comprises two coaxially arranged pipes whereby the outer pipe is slidably mounted on the inner pipe and holds a supply of the hose material and part of a brake device. The articles are passed through the inner pipe into the hose which is closed at its bottom end by a conventional closing and severing device in timed relationship to the movement of the outer pipe along the inner pipe. Below the pipes is arranged a clamping ring

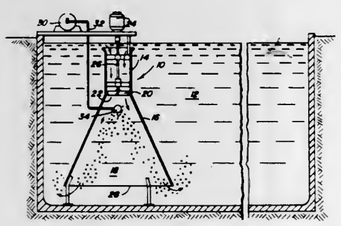
controlled in its movement by the closing and severing device and serving to constrict the hose into a suitably narrow neck portion at which the hose may then be closed and severed.

3,643,402
METHOD AND APPARATUS FOR SUPPLYING DEHYDRATED AIR TO AIR-OPERATED MECHANISMS
Wallace H. Wireman, 3514 Handman Avenue, Cincinnati, Ohio
Filed Feb. 6, 1970, Ser. No. 9,336
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **9 Claims**



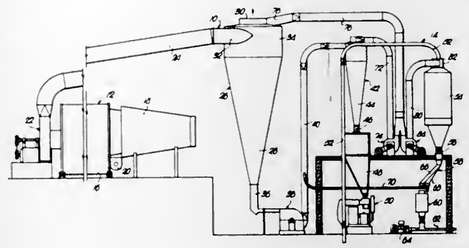
The apparatus supplies thoroughly dehydrated super-clean air to an air-operated mechanism in a closed dehydration, pressure differential reactivation system. In the operation of the apparatus, dehydrated air, under pressure supplied to an air-operated mechanism, is exhausted from said mechanism as spent dry air at a lowered pressure, but without substantial reduction in volume, and is then without loss of any volume utilized to reactivate one or the other of a pair of dehydrators incorporated in the system. The entire exhaust from the air-operated mechanism is utilized to reactivate one dehydrator, while the other dehydrator gathers moisture from the air supplied to the air-operated mechanism. The arrangement eliminates the need for heat in effecting reactivation of the dehydrators.

3,643,403
DOWNFLOW BUBBLE CONTACT AERATION APPARATUS AND METHOD
Richard E. Speece, 6205 Shoal Creek Blvd., Austin, Tex.
Filed Apr. 29, 1970, Ser. No. 32,846
Int. Cl. B01d *19/00*
U.S. Cl. 55—53 **11 Claims**



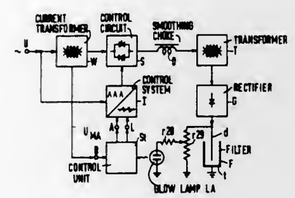
Oxygen deficient water is aerated by dispersing bubbles of air or oxygen gas in a forced downflow of water through a downwardly diverging funnel trapping the bubbles therein for prolonged contact with the water. The bubbles are displaced by crowding from the lower end of the funnel after some of the oxygen has been absorbed in the water and in some cases partially replaced by nitrogen gas stripped from the water.

3,643,404
METHOD AND APPARATUS FOR ENHANCING THE SEPARATION OF PARTICULATE MATERIAL FROM AN EFFLUENT STREAM
Richard L. Ronning, 9714 West 91st Terrace, Overland Park, Kans.
Filed Jan. 28, 1969, Ser. No. 794,652
Int. Cl. B01d *7/16*; **A01f** *17/84*
U.S. Cl. 55—92 **10 Claims**



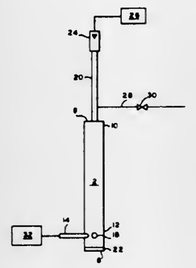
A method and apparatus for minimizing the particulate material content from an effluent stream of gases by enhancing the efficiency of centrifugal separation. A conduit feeds a stream of cooling gases into the separator to cool the effluent stream closer to its dew point. Condensing moisture collects on the particles, augmenting the mass of each particle so that separation by centrifugal force is enhanced.

3,643,405
CIRCUIT ARRANGEMENT FOR AUTOMATIC CONTROL OF THE VOLTAGE OF AN ELECTRICAL FILTER
Lovro Vukasovic, and Rudolf Hofmann, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 6, 1970, Ser. No. 17,176
Claims priority, application Germany, Mar. 8, 1969, P 19 11 924.5; P 19 11 925.6
Int. Cl. B03c *3/66*
U.S. Cl. 55—105 **11 Claims**



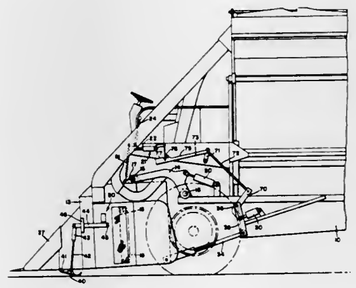
A control unit comprises a charging circuit which connects a guide capacitor to a source of DC voltage whereby a control voltage supplied to a control system is produced by the control unit in accordance with the voltage of a guide capacitor. A discharging circuit is connected in parallel with the guide capacitor and includes a controllable resistor having a resistance value dependent upon the voltage of the filter. A photoelement is in operative proximity with a glow lamp in a manner whereby light produced by the glow lamp impinges on the photoelement. The photoelement is coupled by a circuit to the discharging circuit for supplying a control signal dependent upon the irradiation of the photoelement whereby the control signal controls the controllable resistor of the discharging circuit to a low resistance value when the glow lamp does not glow and controls the controllable resistor to a high resistance value when the glow lamp glows. A cutoff circuit supplies a cutoff signal to the control system and the control system controls a control circuit to interrupt the filter current without delay when a sparkover occurs in the filter.

3,643,406
SAMPLE SCRUBBER
Otis E. Ririe, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 18, 1970, Ser. No. 12,388
Int. Cl. B01d *47/00*
U.S. Cl. 55—238 **5 Claims**



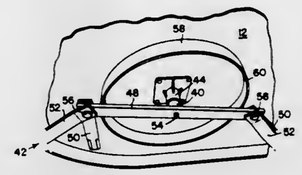
Apparatus for breaking up, cooling, and water scrubbing solids and oils from a sample vapor stream.

3,643,407
AUTOMATIC HEIGHT ADJUSTMENT OF CROP HARVESTER
Arthur Lowell Hubbard, and Leon Franklin Sanderson, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 26, 1970, Ser. No. 83,769
Int. Cl. A01d *45/18*
U.S. Cl. 56—10.2 **20 Claims**



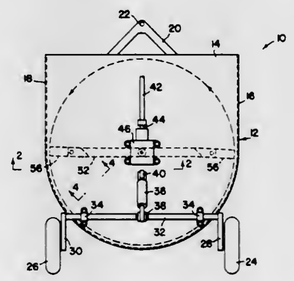
A crop harvester, particularly of a cotton-picker-type in which the row unit is suspended on a main supporting structure to rock about a transverse axis and in which there is provided a hydraulic motor for rocking the unit so as to raise and lower the forward end which is controlled by a ground-sensing device at the forward end of the row unit. The unit is further characterized by having a hydraulic cylinder which will raise and lower the structure suspending the unit and the hydraulic cylinder is controlled through a valve and mechanical linkage connection to the row unit that actuates the latter hydraulic cylinder upon the row unit being rocked beyond a predetermined range of movement.

3,643,408
PROTECTIVE DEVICE FOR ROTARY MOWERS
John Kulak, Port Colborne, and Kenneth Lawrence Kirkpatrick, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.
Filed July 20, 1970, Ser. No. 56,477
Int. Cl. A01d *35/26*
U.S. Cl. 56—17.4 **4 Claims**



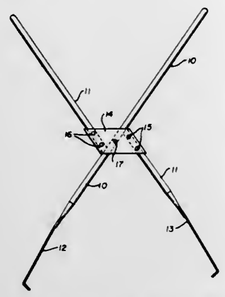
A protective device for use in conjunction with a rotary mower of the type having a housing, a vertical driven shaft extending through the housing, and a cutting blade assembly mounted on the lower end of the shaft, the assembly consisting of a center section rigidly fixed to the shaft for rotation therewith, and a pair of outer sections pivotally connected to the outer ends of the center section. The device, which serves the dual function of, first, limiting the deflection of the center blade section, and, secondly, shielding the vertical shaft and center blade section from stumps and similar obstructions, consists of a circular ring mounted on the housing concentrically with the shaft and having a lower edge terminating in close proximity to the center blade section, the outer circumference of the ring being located just inwardly of the pivotal connection between the center and outer blade sections.

3,643,409
MOWER BLADE
William Archibald Jones, Fonthill, Ontario, Canada, assignor to Deere & Company, Moline, Ill.
Filed Nov. 5, 1970, Ser. No. 87,188
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **6 Claims**



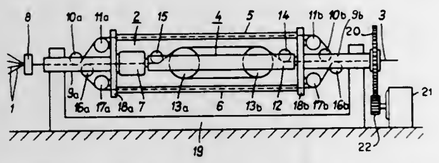
A mower blade assembly for use in a rotary mower having a vertical, power-driven shaft, the assembly consisting of an elongated blade carrier rigidly secured at its midpoint to the vertical shaft for rotation therewith, and a pair of vertically offset cutting blades swingably mounted on opposite ends of the carrier. The cutting blades are swingable about axes sloping downwardly, radially inwardly, and tangentially rearwardly relative to the direction of rotation of the carrier, whereby the outer ends of the blades move upwardly to provide increased ground clearance as they are swung from an operative, radially outwardly extending position, to an inoperative, tangentially rearwardly extending position.

3,643,410
RAKE AND TONGS COMBINATION
Walter A. Menning, 122 Harvard Street, Youngstown, Ohio
Filed Dec. 17, 1970, Ser. No. 99,126
Int. Cl. A01d *7/10*
U.S. Cl. 56—400.12 **5 Claims**



A lawn tool in the form of a pair of leaf rakes, the handles of which are crossed and pivoted to one another with one of them being offset to increase the area between the rake portions is disclosed which tool may be used as a grass or leaf rake and also as a grass or leaf pickup and carrying tongs by moving the rake portions relative to one another by their pivoted handles.

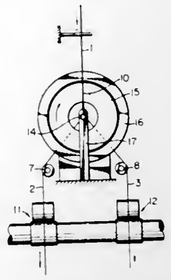
3,643,411
METHOD AND APPARATUS INCLUDING A ROTATING INTERMEDIATE STORER FOR SZ TWISTING OF ELEMENTS OF A CABLE
Dieter Vogelsberg, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 29, 1970, Ser. No. 6,663
Claims priority, application Germany, Feb. 7, 1969, P 19 06 997.7
Int. Cl. H01b *13/04*
U.S. Cl. 57—34 AT **11 Claims**



The elements are pretwisted prior to the supply of such elements to a rotating intermediate storer and independently of the rotary movement of the storer. An additional twist is superimposed on the section of elements withdrawn from the intermediate storer independently of the rotary movement of the storer.

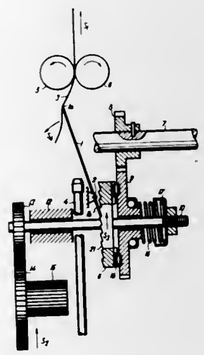
3,643,412
METHOD AND APPARATUS FOR THE PRODUCTION OF CRIMPED YARNS
Yutaka Maeda, Fujiyoshida-shi; Hiroshiro Kimura; Akio Koshimo, both of Uji-shi; Nagamasa Kanzaki, Kyoto-fu; Katsumi Yasuzuka, and Yoshinobu Furukawa, both of Uji-shi, all of Japan, assignors to Nippon Rayon Company Limited, Uji-shi, Japan
Filed Sept. 26, 1969, Ser. No. 861,309
Claims priority, application Japan, June 18, 1969, 44/56831
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **11 Claims**

The production of crimped yarns in which at least two yarns are fed under tension to a common twisting zone, wherein the yarns are pretwisted together and heated so as to be under a plastic state at least in a part of the zone. The yarns are thereafter separated into individual yarns by being pulled apart in different directions and at the same speed.



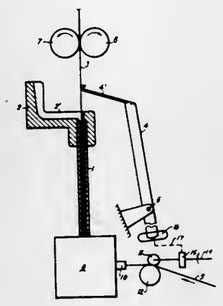
The twisted yarns are turned at the separating point in the same direction as that of the initial pretwisting while the separated yarns are also turned in the same direction as that of the initial pretwisting.

3,643,413
MECHANICAL CHECKING DEVICE FOR CONTROLLING THE OPERATION OF SPINNING UNIT
Brazda Ladislav, deceased, late of Cerveny Kostelec, Czechoslovakia (by Drahuska Brazdova and Dagmar Brazdova, heirs); Miloslav Prochazka, Nachod; Karel Kaulich, and Josef Ozdian, both of Cerveny Kostelec, all of Czechoslovakia, assignors to Elitex, Zavodytextilniko Strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia, by said Prochazka, Kaulick, and Ozdian
Filed Feb. 25, 1970, Ser. No. 13,958
Claims priority, application Czechoslovakia, Mar. 6, 1969, 1636/69
Int. Cl. D01h *13/16, 1/12*
U.S. Cl. 57—83 **10 Claims**



A mechanical checking device for controlling the operation of a spinning unit for manufacturing yarn. The checking device includes a feeler which is freely movable from a first position in which it engages the yarn being pulled under tension from the spinning unit to a second position when such yarn breaks. Fibrous material is fed into the spinning unit by a driven roller, there being a controllable clutch interposed between such roller and a driving means. The clutch remains engaged when the feeler is in its first position; when the yarn breaks, however, the feeler acts mechanically effectively to disengage the clutch and to stop the feeding of fibrous material into the spinning unit.

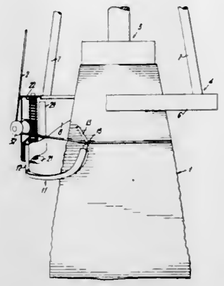
3,643,414
CHECKING MECHANISM FOR DETECTING YARN BREAKAGES IN OPEN END SPINNING MACHINES
Miloslav Prochazka, Nachod, and Karel Kaulich, Cerveny Kostelec, both of Czechoslovakia, assignors to Elitex, Zavody textilhino strojirenstri, Liberec, Czechoslovakia
Filed Mar. 9, 1970, Ser. No. 17,734
Claims priority, application Czechoslovakia, Mar. 10, 1969, 1715/69
Int. Cl. D01h *13/18, 13/16, 1/12*
U.S. Cl. 57—83 **7 Claims**



Yarn breakage-detecting mechanism for open end spinning machines, such as those in which a spinning chamber is used which operates under pressure. On the outer end of the withdrawing tube of the chamber there is a sidewardly extending extension piece having a groove on its upper surface communicating with the mouth of the tube. A yarn tension checking and fibrous material feeding controlling lever is mounted on a pivot at one side of the tube, the lever having a plate attached to its upper end. The parts are so arranged that when the yarn is unbroken and extends from the mouth of the tube to yarn-withdrawing rolls, the yarn engages the outer edge of the plate to maintain the lever in its fibrous material feeding position. When the yarn breaks, the lever tips to stop the feeding of fibrous material, the plate then covering the groove on the extension. To repair the breakage, a yarn is introduced into the groove and thence into the withdrawing tube. When the end of the yarn is inside the spinning chamber, the yarn is automatically placed under tension, thereby to hold the lever in its fibrous material feeding position.

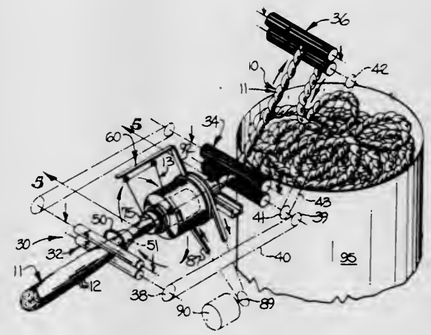
3,643,415
FLYERS
John K. P. Mackie, Belfast, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland
Filed Mar. 16, 1970, Ser. No. 19,789
Claims priority, application Great Britain, Mar. 18, 1969, 14,201/69
Int. Cl. D01h *7/24, 1/04*
U.S. Cl. 57—117 **7 Claims**

A device for winding packages of synthetic plastic tape includes a member for controlling the lay of the tape which is designed to overcome the problems of the ridging normally encountered. The device may comprise a part which is traversed in relation to a rotary support or may be a flyer driven round the axis of a stationary support in which case the member is in the form of a finger which has at its package-engaging end a tape guide on its outer surface for controlling the lateral movement of the tape and on its inner surface directly opposite the tape guide an inwardly projecting nose portion shaped for engaging the surface of the package over a width less than that of the tape guide. The end of the finger adjacent the nose portion is capable of elastic displacement, preferably resulting from the resilience of the finger itself, in a direction axial of the package in relation to its support by a distance equal to at least half the width of the tape guide. If ridging starts the nose portion will engage the intervening depressions to wind tape in the



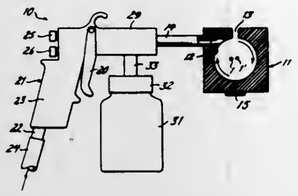
depressions and as a result of the elastic displacement will tend to dwell for a short period in each depression until it jumps to the next depression. In this way a smooth surfaced package is formed.

3,643,416
COMPACT TEXTILE TOW AND METHOD FOF FORMING SAME
John W. Andrews; William J. Schmiel; Gene E. Inman, all of Charlotte, and James Phillip Jones, Matthews, all of N.C., assignors to The Railway Supply & Mfg. Co., Charlotte, N.C.
Filed Dec. 10, 1969, Ser. No. 883,777
Int. Cl. D01g *1/00*
U.S. Cl. 57—142 **17 Claims**



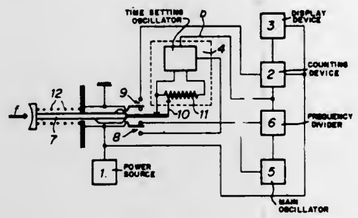
A compact textile tow adaptable for forming staple fibers therefrom comprising an elongate condensed bundle of a plurality of textile filaments having an inherent tendency to expand to a greater cross-sectional area, and a yarn spirally wound around the bundle of filaments and maintaining the same in the condensed condition. The method comprises feeding an elongate bundle of a plurality of textile filaments in a predetermined path of travel while condensing the same to a smaller cross-sectional area and while spirally winding a yarn around the same to maintain the bundle of filaments in condensed condition by opposing the inherent tendency of the bundle of filaments to expand.

3,643,417
SPLICING OF TEXTILE STRANDS
Malcolm F. Irwin, Philadelphia, Pa., assignor to Techniservice Corporation, North Kennett Square, Pa.
Filed Oct. 27, 1969, Ser. No. 869,581
Int. Cl. D02g 3/00; D01h 13/30
U.S. Cl. 57—142 10 Claims



Textile strands, including at least one monofilament strand, are spliced together by being overlapped and subjected to fluid rotating circumferentially thereof, which swirls the overlapped component filaments into interengagement so that the strands will not be separated by applied tensions. Gun-type apparatus is provided for applying air or the like as the swirling fluid and for applying an auxiliary adhesive material in like manner.

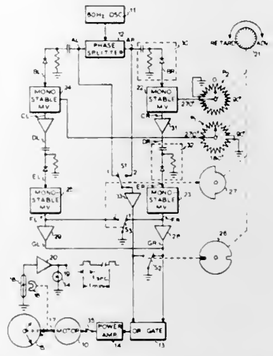
3,643,418
TIME-SETTING DEVICE FOR AN ELECTRONIC WATCH
Herbert S. Polin, and Gustavo Kuhn, both of Veyrier, Switzerland, assignors to Paul Vogel, Geneva, Switzerland
Filed May 6, 1970, Ser. No. 34,928
Claims priority, application Switzerland, Aug. 27, 1969, 8127/69
Int. Cl. G04c 3/00; G04b 27/00
U.S. Cl. 58—23 7 Claims



The invention concerns a time-setting device for an electronic watch. This time-setting device is original in that it comprises only one control member to set the watch at different setting speeds. Furthermore, this control member is formed by a pushbutton which is made alike the winding and setting crown of an ordinary mechanical watch to be immediately familiar to the user.

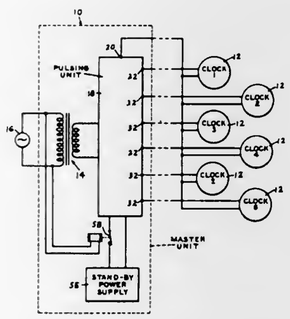
3,643,419
APPARATUS FOR FINE ADJUSTMENT OF SIGNAL FREQUENCY
Nathaniel Motta, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed July 14, 1969, Ser. No. 841,359
Int. Cl. G04c 3/00; H03k 5/00, 17/00
U.S. Cl. 58—23 16 Claims

A clock is so driven by a constant frequency signal through a phase splitter that, to advance or retard the time in increments of half the cycle period of the constant frequency signal, a control knob is turned clockwise or counterclockwise in half-turn increments. A pair of annular potentiometers, each having a single point connected to ground, are driven by the knob in such a fashion that while the resistance of one is cyclically increasing and decreasing, the other is cyclically decreasing and increasing. The separate potentiometers are connected to monostable multivibrators (MV's) triggered by the frequency standard to vary their duty cycles as a function of resistance. Each variable MV triggers a separate MV at the end of its duty cycle to produce output pulses having fixed durations equal to the period of half a cycle of the constant frequency signal. The device is



driven alternately by output pulses of the separate MV while time is being adjusted. A cam synchronizes the transfer from one output MV to the other at the midpoint of a half turn of the knob thereby allowing the phase of the frequency standard applied to the motor to be advanced or retarded 90° through one MV and another 90° through the other MV. A magnet is driven by the clock motor in a circular path over a reed switch to periodically produce a pulse to be used as a time signal from the clock and in comparing the time of the clock with a time standard to within a fraction of a second.

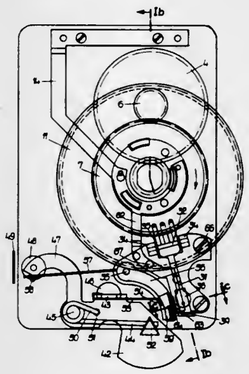
3,643,420
CLOCK SYSTEM
Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.
Filed Oct. 14, 1969, Ser. No. 866,322
Int. Cl. G04c 13/02, 13/04
U.S. Cl. 58—24 17 Claims



A master-slave clock system for use with a source of alternating current of uniform frequency with translates the frequency of the source into readable time by dividing or counting the frequency into submultiples, by distributing clock pulses to the slave clocks at this submultiple frequency

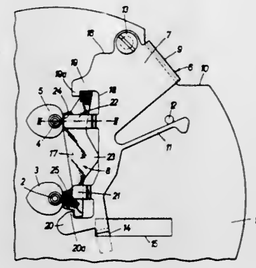
and by using stepper motors in each clock to intermittently advance the clock a predetermined discrete step in response to receipt of each clock pulse. In certain embodiments, in which no more than one slave clock operates at the same time, the pulses are distributed to the successive clocks in sequence. In other embodiments all of the slave clocks advance simultaneously. In certain embodiments each slave clock includes a trigger circuit which momentarily connects a direct current power source in the clock across the clock's stepper motor on receipt of a pulse, and low power rectified current is fed to this source between the pulses. The entire system requires only one to two watts of power for its operation. The system is uniquely suitable for use with a standby power source which continues to drive the slave clocks in the event of a power failure or other interruption of the incoming signal.

3,643,421
ELECTRIC ALARM CLOCK WITH ILLUMINABLE FACE
Friedrich Herr, Hubertusstrasse 1, 7911, Wullenstetten, and Jurgen King, Erich Rittinghausstrasse, 7913 Senden/Iller, both of Germany, assignors to Uhrenfabrik Sender GmbH, Sender/Iller, Germany, by said Herr
Filed Sept. 29, 1969, Ser. No. 861,902
Claims priority, application Germany, Sept. 28, 1968, P 17 98 352.7
Int. Cl. G04b 19/34
U.S. Cl. 58—50 26 Claims



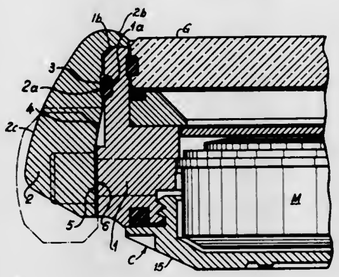
An electric alarm clock has an hour wheel which can move axially to engage with several teeth in an alarm-hour setting wheel and make an electrical contact therewith by means of a protruding metallic tongue on a conductive plate mounted on the nonconductive hour-wheel. This tongue makes a brief contact until further rotation of the hour wheel allows it to drop into the hole and open the circuit for the alarm. A second pair of contacts in series with the first-mentioned pair is closable on axial shifting of the hour-wheel into the alarm wheel. A contact-breaking arm of nonconductive material can be pushed between these second contacts and is clamped by them there until the hour-wheel is automatically cammed out of and away from the alarm wheel, whereupon the contact-breaking arm is released. Depression of a button on the clock lights a lamp for illuminating the clock dial face and can shift the contact-breaking arm toward the second contacts to open same. Means is provided to prevent pivoting of the contact-breaking arm between the contacts except when the teeth of the hour-wheel are engaged fully in the holes in the alarm wheel.

3,643,422
CHRONOGRAPH MOVEMENT
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland
Filed June 8, 1970, Ser. No. 44,512
Claims priority, application Switzerland, June 10, 1969, 8820/69
Int. Cl. G04f 7/04
U.S. Cl. 58—74 4 Claims



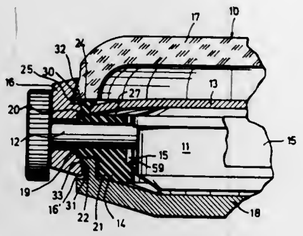
This invention is exemplified by a hammer made in two pieces, a body piece and a lever piece. The hammer is used to return heart cams such as are used in stopwatches and counting devices to the zero position when a button is pressed. The hammer disclosed consists of a pivoted part which coacts with the button and a lever part which is held between the pivoted part and a platen in such a way that it drives the heart cams to zero position when the pivoted lever engages it at one point.

3,643,423
PROTECTIVE SCREEN FOR A TIMEPIECE CASING
Ervin Piquerez, 2854 Bassecourt, Switzerland
Filed Sept. 30, 1969, Ser. No. 862,255
Int. Cl. G04b 37/00
U.S. Cl. 58—88 R 5 Claims



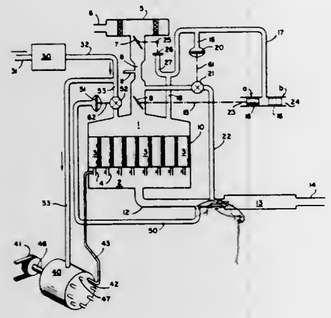
An annular protective jacket of hard scratch-resistant material such as tungsten carbide covers and protects the sidewall and front edge of the casing of a wristwatch. The protective jacket is removably secured in place on the casing by a ring of elastomeric material received in mating annular grooves provided respectively in the sidewall of the casing spaced from the front edge and in the inner periphery of the protective jacket. A second elastomeric ring may be provided between the front edge of the casing and an inwardly projecting rim portion of the protective jacket to absorb axial shocks applied to the jacket.

3,643,424
FLUIDTIGHT WATCH
Peter Simon, Schramberg, Germany, assignor to Ronald Bley, Schramberg, Germany
Filed Aug. 19, 1969, Ser. No. 851,276
Claims priority, application Germany, Aug. 19, 1968, P 17 98 081.3
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 26 Claims



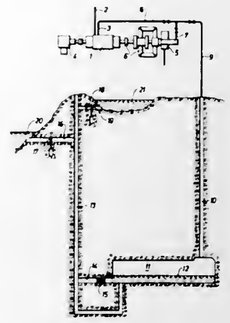
In a watchcase a radially preloaded spring ring urges a soft-elastic packing ring radially outwardly against the inner walls of the case middle and axially outwardly against closure elements to provide a fluidtight watchcase and a floating support for said closure elements as well as for the movement.

3,643,425
LOW-POLLUTING INTERNAL COMBUSTION ENGINE WHEREIN SECONDARY AIR IS INJECTED INTO THE EXHAUST PORTS
Bernhard J. Kraus, Roma-Ostia, Italy, and Dae Sik Kim, Maplewood, N.J., assignors to Esso Research and Engineering Company
Filed Feb. 12, 1970, Ser. No. 10,905
Int. Cl. F01n 3/10
U.S. Cl. 60—30 2 Claims



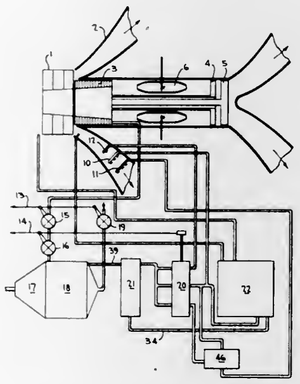
Low-polluting internal combustion engine wherein means are provided to inject secondary air in a pulsed manner to the exhaust ports of the cylinders when the port valves are open to permit the ejection of exhaust gases. Particular features comprise controlling these pulses with respect to the shape of pulse, duration of pulse, and timing of the pulse with the cycle of the engine.

3,643,426
POWERPLANT DRIVEN BY A GAS TURBINE, AND A METHOD OF OPERATING SUCH A POWERPLANT
Ingvar Janelid, Forsetevagen 18, Djursholm, Sweden
Filed June 29, 1970, Ser. No. 50,726
Claims priority, application Sweden, June 30, 1969, 9298/69
Int. Cl. F02c
U.S. Cl. 60—39.02 8 Claims



A powerplant is driven by a gas turbine. The compressed air for the gas turbine is accumulated in a rock chamber. The rock chamber communicates through a conduit with a lake, so that the rock chamber can receive water to any desired level. A pump is arranged in said conduit, to assist the flow of water from the lake to the rock chamber, or vice versa.

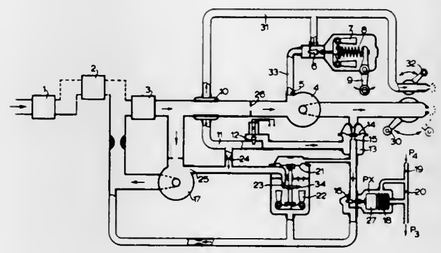
3,643,427
FUEL CONTROL SYSTEMS FOR SUPPLYING FUEL TO PRIMARY AND MAIN BURNERS IN A GAS TURBINE ENGINE
Owen Napier Lawrence, Boxford, near Newbury, and Eugene Harold Warne, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation-in-part of application Ser. No. 624,016, Mar. 17, 1967, now abandoned. This application Aug. 22, 1969, Ser. No. 852,386
Int. Cl. F02c 9/04
U.S. Cl. 60—39.28 4 Claims



Fuel control systems for supplying fuel to the primary and main burners in gas turbine engines of the fan-type in which means are provided for controlling the primary fuel supply in accordance with the engine compressor pressures. A variable

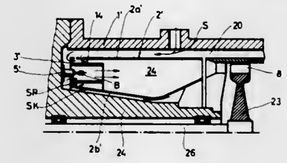
operator control valve is utilized for supplying fuel to the main burner and means are included to maintain the flow rate to the main burners as a function of that of the primary burners.

3,643,428
FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE
David Marshall, and Arthur Leslie Lloyd, both of Wolverhampton, England, assignors to H. M. Hobson Limited, London, England
Filed July 24, 1970, Ser. No. 57,944
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 5 Claims



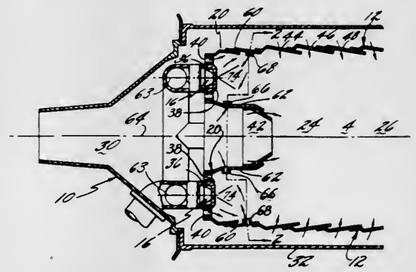
A fuel supply system for a gas turbine engine which comprises a fluidic vortex valve which meters the flow of fuel delivered by a pump to the main burner of the engine, a governor controllable by the pilot which adjusts the pressure of fuel at the control port of the vortex valve to maintain during steady state conditions the engine at a speed determined by the governor, and means operable during periods of acceleration and when the flow through the control port of the metering vortex valve is saturated to vary the pressure drop across the metering vortex valve, as a function of engine speed and compressor pressure, so that the flow of fuel to the engine cannot exceed a limit permissible during acceleration.

3,643,429
GAS GENERATOR CONSTRUCTION
Manfred Schutz, Ottobrunn, Germany, assignor to Messerschmitt-Bolk-Blohm GmbH, Munich, Germany
Filed Oct. 24, 1969, Ser. No. 868,997
Claims priority, application Germany, Nov. 16, 1968, P 18 09 348.6
Int. Cl. F02k 9/02
U.S. Cl. 60—39.46 5 Claims



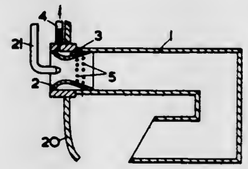
A gas generator construction particularly an auxiliary combustion chamber for a rocket engine of the main current type for the production of oxygen-rich propellant gases of relatively low temperatures includes either a single annular reaction chamber or a plurality of individual side-by-side reaction chambers arranged within an annular combustion chamber which is located to discharge its gases to a rotating turbine. The construction includes means for directing a propellant component in the form of a liquid fuel into the reaction chamber in the form of a spray and for directing the primary oxygen supply through openings surrounding the nozzle for the liquid fuel in order to provide a stoichiometric combustion of the fuel with a part of the oxygen and oxygen carrier in the reaction chamber. The reaction chamber or chambers are of shorter length than the casings for the gas generator and combustion of the fuel with a part of the oxygen supply takes place in the reaction chamber. Secondary oxygen is directed into contact with the walls of the reaction chamber either from the portion of the walls which are located within the auxiliary gas generator or through bores defined along the length of the walls defining the reaction chamber.

3,643,430
SMOKE REDUCTION COMBUSTION CHAMBER
John M. G. Emory, Jr., Vernon, and Joseph J. E. Faitani, Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 4, 1970, Ser. No. 16,527
Int. Cl. F02c 7/00
U.S. Cl. 60—39.65 6 Claims



A combustion chamber either an annular or can-annular type, which substantially eliminates the production of smoke while maintaining all other performance parameters of the combustion chamber. The combustion chamber is provided with a front end configuration which substantially eliminates local fuel rich regions and which provides a means for mixing the incoming fuel and air.

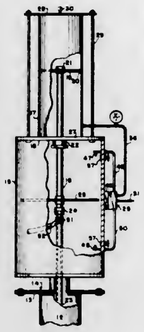
3,643,431
FLOW CONTROL DEVICES
James Barry Jamieson, Fleet, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Dec. 4, 1969, Ser. No. 882,152
Claims priority, application Great Britain, Dec. 6, 1968, 58,178/68
Int. Cl. F02c 3/00; F15d 1/06
U.S. Cl. 60—39.71 9 Claims



In a venturi having a wide angle divergent section, flow separation can occur near the throat resulting in throttling. Suction is applied through perforations in the venturi surface to cause reattachment with consequent increase in flow rate. Air flowing to primary zones in combustion chambers can be

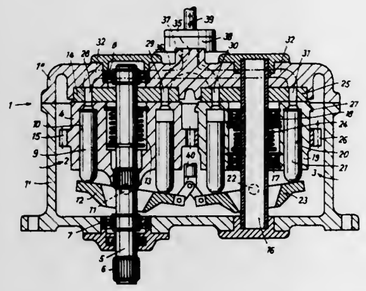
controlled by selective application of suction so as to vary local air/fuel ratios according to operating conditions. A similar arrangement may be applied to fuel injector vaporizing tubes.

3,643,432
PNEUMATIC PUMP ACTIVATOR FOR OIL WELLS
Joseph H. Klaeger, 147 Stardream, San Antonio, Tex.
Filed Apr. 23, 1970, Ser. No. 31,158
Int. Cl. F15b *15/18*; F011 *25/08, 25/02*
U.S. Cl. 60—52 PJ 11 Claims



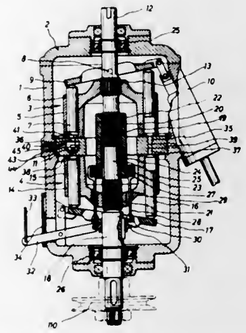
A wellhead mounted pneumatic actuating device for oil well pumps designed for operation by compressed air or gas. The preferred embodiment utilized a single action cylinder with the down stroke actuated by the weight of the sucker rods. The elongated pneumatic cylinder was powered by filtered lubricated compressed air. The pressure or solenoid control floating piston bleeder valve supplies high-pressure air or gas from an external source for lifting the piston and attached sucker rods and the release of pressure from the cylinder accomplishes the down stroke.

3,643,433
HYDRAULIC APPARATUS WITH INTERCONNECTED HYDRAULIC UNITS
Dieter Widmaier, Fellbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed May 7, 1970, Ser. No. 35,427
Claims priority, application Germany, June 10, 1969, P 19 24 010.9
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 A 19 Claims



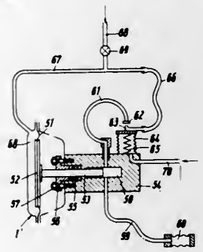
Two hydraulic units, each operable as a pump or motor, are mechanically connected by a coupling transmission which can be engaged and disengaged. Valves are hydraulically connected to the units, so that a single unit can be operated as a pump or motor, that both units can be simultaneously operated as pumps or motors, and so that the two units form a hydrostatic transmission.

3,643,434
HYDRAULIC APPARATUS WITH AXIALLY ALIGNED HYDRAULIC UNITS
Dieter Widmaier, Fellbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed June 8, 1970, Ser. No. 44,329
Claims priority, application Germany, July 23, 1969, P 19 37 347.8
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 A 14 Claims



Two hydraulic units, each operable as a pump or hydraulic motor, have coaxial shafts in end-to-end relationship which can be coupled and disengaged from each other by a coupling. Valve means hydraulically connect the two units, so that a single unit can be operated as a pump or motor, that both units can be simultaneously operated as pumps or motors, and so that the two units can form a hydrostatic transmission in which one unit operates as a pump driven by a prime mover, and the other unit operates as a hydraulic motor.

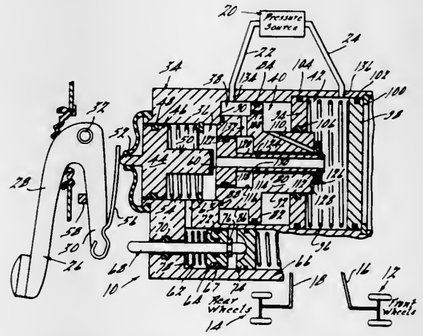
3,643,435
METHOD OF AND APPARATUS FOR ADJUSTING A DEVICE BY FLUID PRESSURE
Gerhard Klee, Frankfurt am Main, Germany, assignor to Samson Apparatebau A.G., Frankfurt am Main, Germany
Filed Apr. 3, 1969, Ser. No. 813,145
Claims priority, application Germany, Apr. 4, 1968, P 17 52 115.2
Int. Cl. F15b *7/00*; F01b *19/00*
U.S. Cl. 60—54.5 R 7 Claims



A method of controlling a fine adjustment of a part such as a machine tool, for example, by using a stop and using a fluid pressure for indicating desirable changes in the position of the stop, comprises amplifying the signals produced by the

changes in fluid pressure and transforming it into a hydraulic working pressure at a location separate from the means to be adjusted and feeding the working pressure through a connecting line to the adjusting means to effect the adjustment. An apparatus for carrying out the method comprises in its simplest form a diaphragm which is exposed on one side to the changes of fluid pressure in accordance with the adjustment necessary and which is exposed on the other side to a fluid pressure which may be a combination of a pneumatic and hydraulic pressure. The hydraulic pressure is maintained within a cylinder which is closed by a piston member which is connected to the diaphragm. Flexing of the diaphragm causes movement of the piston member to change the pressure in the hydraulic cylinder. The hydraulic cylinder is in turn connected through a line to a semirigid spring tube which forms a stop having a stop head at one end. The spring tube is made with corrugated sidewalls to permit its expansion in accordance with the pressure indications and variations of the hydraulic fluid to adjust the position of the stop head.

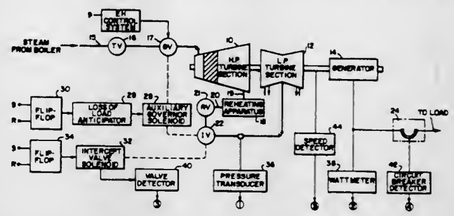
3,643,436
INTEGRATING HYDRAULIC BRAKE BOOSTER
Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Sept. 22, 1969, Ser. No. 859,777
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 P 10 Claims



A power booster for a brake system in which input force and input displacement hysteresis relative to output pressure is avoided or minimized.

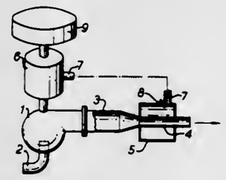
3,643,437
OVERSPEED PROTECTION SYSTEM FOR A STEAM TURBINE GENERATOR
Manfred E. Birnbaum, Pittsburgh, Pa.; Andrew S. Braytenbah, Pennsauken, N.J., and Arthur W. Richardson, West Chester, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 16, 1969, Ser. No. 866,965
Int. Cl. F01k *13/02, 17/02*
U.S. Cl. 60—73 29 Claims

The disclosure relates to a steam turbine-driven electrical generating plant wherein a protection system is provided for preventing the turbines from reaching speeds which would result in damage to the turbines; such speeds resulting from a sudden partial or entire loss of the electrical load. A partial loss of the load is sensed by a comparison of the inlet pressure at the lower pressure turbine stages with the output power provided to the load. If the output power decreases according to a predetermined relationship and if the input pressure corresponds to a value above a predetermined percentage of rated load, the interceptor valve is closed for a predetermined period of time to stop steam flow between the steam reheating apparatus and the lower turbine stages and thereby to reduce turbine speed buildup during and up to the time that additional load is connected to the generator output. In the event of a total load loss, which is determined in the same manner as in the case of a partial loss of the load but with the additional criteria that the circuit breakers associated with the generator be opened, both the intercept



valve and the main governor valve, which regulates the steam through the high-pressure turbine stages, are closed. Whenever the speed of the turbine generator exceeds a predetermined percentage of rated speed, an overspeed protection system maintains both the interceptor valve and the governor valve in a closed position and cooperates with the main governor valve control system to relieve steam pressure within the reheating apparatus.

3,643,438
JET ENGINES
Charles R. Barsby, Little Croft, Two Mile Ash, Horsham, Sussex, England
Filed Dec. 31, 1969, Ser. No. 889,403
Int. Cl. B63h *11/08*
U.S. Cl. 60—221 6 Claims



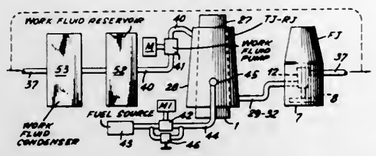
Liquid pumped at constant velocity through a pipe is injected with an excess quantity of gas under pressure which is thoroughly mixed with the liquid in the pipe to form a small bubble dispersion and the accelerated jet of liquid issuing from the outlet end of the pipe may be used to propel a boat or a land vehicle.

In a jet engine operating on the above principle, a pump driven by a prime mover draws in water from the vicinity of a boat or from a tank mounted on a road vehicle and delivers it under constant pressure through a jet pipe having a perforated section at or near its outlet surrounded by a chamber to which gas under pressure is fed from the exhaust of the prime mover or from a compressor driven by the prime mover and the accelerated jet of water discharged through the pipe outlet produces a propulsive thrust or is employed to drive the wheel of a turbine.

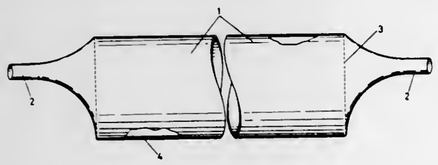
3,643,439
COMPOUND REACTION PROPULSION MEANS WITH MULTIPLE THRUST
Adolphe C. Petersen, 4623 Bruce Avenue, S.E., Minneapolis, Minn.
Filed Nov. 29, 1968, Ser. No. 779,999
Int. Cl. F02c *7/20*; F02k *11/00*; F01k *25/00*
U.S. Cl. 60—225 7 Claims

This power propulsion system involves compound reaction thrust for propulsion, and including supplementary air

propulsion by supplementary propelled airstream impulse, and including pressurized heated work fluid driving supplementary air propulsion and including work fluid container means for heat absorption.

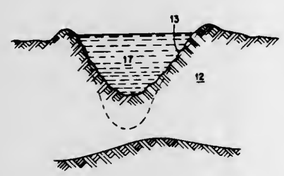


3,643,440
DEVICE FOR REINFORCING HYDRAULIC STRUCTURES
Gerhard Knisse, Wohltorf; Richard Berger, Dettingen/Teck, and Karl-Heinz Egert, Hamburg, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Apr. 15, 1969, Ser. No. 836,679
Claims priority, application Germany, Feb. 28, 1968, K 60 428
Int. Cl. E02b *3/04*
U.S. Cl. 61—4 **7 Claims**



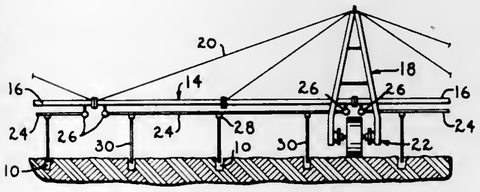
Device for reinforcing hydraulic structures, especially dams, groins, rinsing fields, and for transporting materials which can be transported by means of pumps or similar devices. The device consists of a hose of plastic material provided at both ends with sockets for the inlet and outlet of a sand-in-water mixture and having a length which corresponds to a multiple of its diameter.

3,643,441
OIL STORAGE METHOD
Richard S. Hague, Boulder City, Nev., assignor to The United States of America as represented by the Atomic Energy Commission
Filed May 5, 1970, Ser. No. 34,759
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **1 Claim**



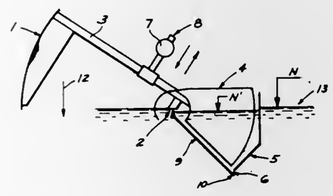
Vessels for the storage of liquid, such as crude oil, are formed by detonating a nuclear (or conventional) explosive under the surface of a permafrost area such as occurs in arctic and subarctic regions, to form an open crater. The walls of such a crater are naturally sealed or may be easily sealed liquidtight by the freezing of water in the pore spaces of the host media, whereby oil (or other product) may be stored in the permafrosted crater without seepage loss. Further, permafrost (or frozen moisture between the permafrost and the product to be stored) in the fallback material (rubble) in the crater will form an effective separation barrier between the oil (or other product) and residual radioactivity formed as a result of the nuclear detonation.

3,643,442
AGRICULTURE IRRIGATING METHOD
Richard K. Houston, Kansas City, Mo., assignor to Agrecology, Incorporated, Kansas City, Mo.
Continuation-in-part of application Ser. No. 697,980, Jan. 15, 1968, now abandoned. This application Feb. 25, 1970, Ser. No. 13,975
Int. Cl. E02b *13/00*; **B05b** *3/00*
U.S. Cl. 61—12 **5 Claims**



A method of irrigating a field for maximum efficiency wherein the water is flowed onto the field from above and from mobile irrigation apparatus at a flow rate far exceeding the permeability factor of the soil. Slots are formed in the soil surface to receive the inherent water runoff to conduct the water into the subsurface soil regions. The water may be discharged directly into the slots by aligning hoses and the slots and the latter are preferably mulched to minimize evaporation. Elongated irrigation manifolds are moved through successive arcs swung about pivot points at alternate ends of the manifold to maximize length of crop rows and the efficiency of movement of the apparatus in the irrigation operation.

3,643,443
AUTOMATIC CONSTANT DOWNSTREAM LEVEL GATE
Philippe Alexandre, La Trouche, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Grenoble, France
Filed Dec. 29, 1970, Ser. No. 102,286
Claims priority, application France, Jan. 5, 1970, 7000464
Int. Cl. E02b *7/52*
U.S. Cl. 61—22 **2 Claims**

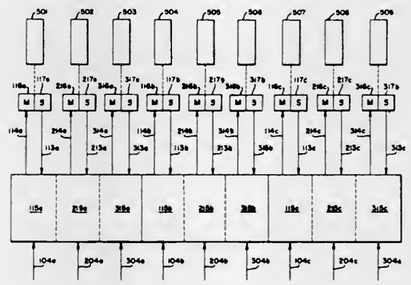


The control gate herein embodies a sector float immersed in a container which is in communication with the tailrace through an opening formed between the lower end of the downstream wall of the container and its base which projects downstream beyond such opening to shelter the latter from the tailrace current.

3,643,444
SURFACE STABILIZATION PROCESS
Stamford Hodgson, Penarth, Wales, assignor to BP Chemicals Limited, London, England
Filed Aug. 11, 1970, Ser. No. 63,016
Claims priority, application Great Britain, Aug. 20, 1969, 41,642/69
Int. Cl. E02d *3/14*
U.S. Cl. 61—36 R **8 Claims**

Ground surfaces such as oil storage bund areas are protected from seepage of hydrocarbon liquids by coating the surface with a plasticized polyvinyl acetate latex prepared in the presence of a partially hydrolyzed polyvinyl acetate homopolymer. In a prepared aspect, excessive layers of finely divided mineral materials bound together with latex are put down, and the whole sealed by a surface dressing of latex.

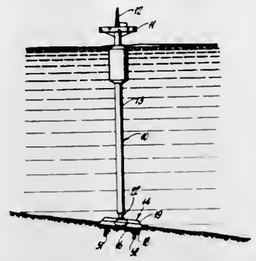
3,643,445
HYDRAULIC CASING SYSTEMS IN MINE WORKINGS
Helmut Schmidt, Essen-Haarzopf, Germany, assignor to Bergwerksverband GmbH, Essen, Germany
Filed June 12, 1968, Ser. No. 736,487
Claims priority, application Germany, June 14, 1967, P 15 33 723.2
Int. Cl. E21c *35/24*; **F15b** *11/16*, *13/06*
U.S. Cl. 61—45 D **6 Claims**



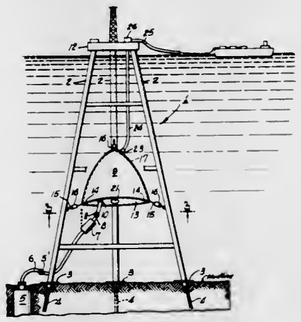
This invention provides a hydraulic casing system comprising automatically advancing casing structures which are connected together in groups in such fashion that in each group only one casing structure can move at once, although several casing structures in different groups can move at the same time, the casing structures being allocated individual control systems which are prepared for the advancing movement, or are locked, by elements which sense a freedom to advance, in particular by sensing elements which cooperate with the roof or sill of the seam or working, and is characterized by the fact that the individual control systems are incorporated in a logic system governing the selective advance of the different groups.

3,643,446
MARINE PLATFORM FOUNDATION MEMBER
George E. Mott, Metairie, La., assignor to Texaco Inc., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,943
Int. Cl. E02b *17/00*; **E02d** *27/04*
U.S. Cl. 61—46.5 **8 Claims**

The invention relates to an anchor or foundation member for positioning a buoyant platform at an offshore location characterized by a sloping or irregular floor surface. The anchor includes initially separable members which are floated to an operating or anchoring site. A coupling member depending from the anchor is adapted to engage the lower end of the elongated, buoyant structure for retaining the latter in place at the water's surface. The coupling member is adjusted into vertical alignment with a connector depending downwardly from the marine structure. While being held in the upwardly aligned position by an enclosing retainer, a hardenable fluid such as cement is introduced to solidify and form the coupling and retainer member into a singular body.



3,643,447
FLEXIBLE STORAGE CONTAINER FOR OFFSHORE FACILITY
Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,241
Int. Cl. E02d *29/00*; **B63b** *35/44*
U.S. Cl. 61—46 **7 Claims**

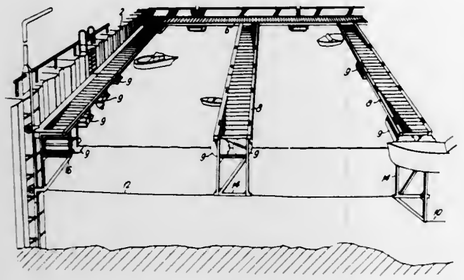


A submergible flexible storage container for storing crude product anchored to columns beneath an offshore drilling and production platform or similar support structure. The container includes inlet and outlet means for receiving crude product and for disposing of crude product to a floating vessel. A manhole opening is also provided for ingress and egress of personnel in removing extraneous matter collected in the base of the flexible storage container.

3,643,448
FLOATING LANDING STAGES
Walter Bower, Newark, England, assignor to Thos. Storey (Engineers) Limited, London, England
Filed Apr. 21, 1970, Ser. No. 30,419
Claims priority, application Great Britain, Apr. 24, 1969, 20,976/69
Int. Cl. E02b *3/20*; **E02c** *5/02*
U.S. Cl. 61—48 **4 Claims**

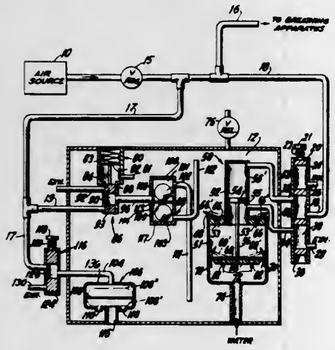
A floating landing stage including a plurality of floating jetties the free ends of adjacent jetties being interconnected by ties which prevent any substantial movement of the jetties relative to each other or to the remainder of the landing stage and which are located beneath the surface of the water

so as to allow passage of craft between the jetties. Guide means is provided to restrain the movement of the landing



stage relative to the shore so that the landing stage can rise and fall with the water in which it is floating without any substantial lateral movement.

3,643,449
VARIABLE BUOYANCY ARRANGEMENT
Robert H. Murphy, West Hartford, Conn., assignor to The Wiremold Company, West Hartford, Conn.
Continuation-in-part of application Ser. No. 767,373, Oct. 14, 1968, now Patent No. 3,572,048, dated Mar. 23, 1971, Continuation-in-part of application Ser. No. 766,932, Oct. 11, 1968, now Patent No. 3,541,985, dated Nov. 24, 1970. This application Sept. 2, 1969, Ser. No. 854,699
Int. Cl. B63c *11/22*
U.S. Cl. 61—69 **13 Claims**

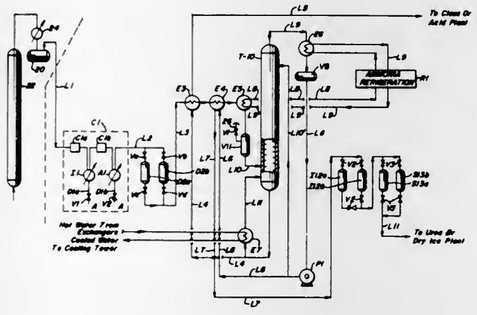


A variable buoyancy arrangement includes a tank of fixed volume and pressure-regulating apparatus for maintaining the interior of the tank within a fixed pressure range above the ambient underwater condition. An air pressure actuated pump is selectively operable under user control for decreasing buoyancy by inserting water into the tank; and buoyancy may be increased by opening a stop valve to expel water from the tank.

3,643,450
PROTECTING A BURIED MATERIAL SUCH AS A CABLE WITH WATER-SOLUBLE RODENT-REPELLENT COMPOSITIONS
Roy E. Stansbury, and James A. Shotton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Sept. 25, 1969, Ser. No. 861,175
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.1 **7 Claims**

A water-soluble rodent-repellent composition is coated onto a material, e.g., a cable, which is laid into the ground. Ground moisture dissolves the composition, forming in the earth surrounding the cable a rodent-repellent barrier thus preventing contact of the rodent with the cable or material. Any rodent repellent in a water-soluble or water-dispersible composition can be used. Specifically mentioned in the disclosure as now-preferred effective rodent repellents are N,N-dialkyl sulfenyl dithiocarbamates, e.g., the N,N-dimethylsulfenyl dithiocarbamates, N,N-dimethyl-S-methylsulfenyl dithiocarbamate and N,N-dimethyl-S-tert-butylsulfenyl dithiocarbamate.

3,643,451
METHOD FOR THE PRODUCTION OF HIGH-PURITY, HIGH-PRESSURE CARBON DIOXIDE FROM A MIXTURE OF LOW-PRESSURE MIXED ACIDIC GAS
Harry G. Foucar, Shaler Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Aug. 18, 1969, Ser. No. 850,852
Int. Cl. F25j *3/02*
U.S. Cl. 62—28 **13 Claims**

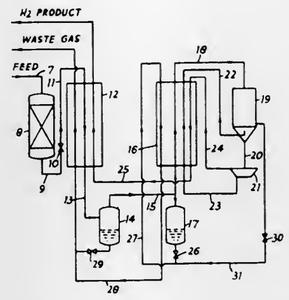


A process is disclosed for producing high-purity, high-pressure carbon dioxide from a concentrated low-pressure mixture of acid gases including one or more sulfur-containing gaseous compounds, and carbon dioxide as the major gas in the mixture with the highest vapor pressure, the mixture containing less than 1 percent of nonacid gases. The process including the steps of: compressing the mixture of acid gases, cooling the mixture of acid gases to liquefy the mixture of acid gases, fractionating the mixture of liquefied acid gases into a high-purity carbon dioxide liquid overhead of about 99.95 percent and a liquid bottom of condensed sulfur compounds, and vaporizing the carbon dioxide liquid overhead in heat exchange relationship with the mixture of acid gases during the cooling thereof.

3,643,452
RECOVERY OF GASES
Martin Siegfried William Ruhemann, Brooklands, and Stanley Mercer, Manchester, both of England, assignors to Petrocarbon Developments Limited, Manchester, England
Filed Aug. 20, 1969, Ser. No. 851,705
Claims priority, application Great Britain, Aug. 20, 1968, 39,734/68
Int. Cl. F25j *3/00*, *3/08*
U.S. Cl. 62—22 **9 Claims**

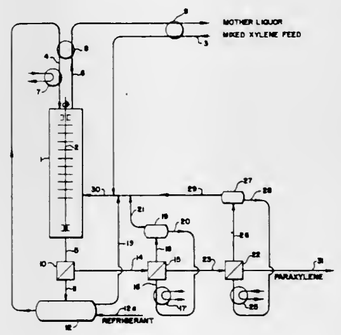
A light gas, namely hydrogen or helium, of increased purity is obtained from a gaseous mixture consisting predominantly of the light gas by passing the mixture through a rotating gas centrifuge under conditions such that gaseous impurities are condensed and a light gas stream of increased purity is recovered. The process may be applied to a light gas concentrate obtained from a gaseous mixture by separation of

the constituents other than the light gas by low-temperature condensation, in which case a gas expansion turbine used to



produce refrigeration for the process may be used to drive the gas centrifuge.

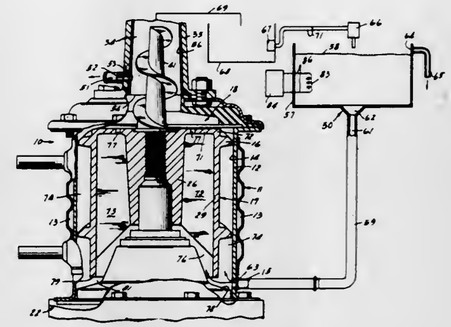
3,643,453
SELECTIVE CRYSTALLIZATION OF PARAXYLENE IN A WATER-ALKANOL MIXTURE
Hendrik Groothuis, and Jan G. van de Vusse, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 26, 1968, Ser. No. 787,063
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **6 Claims**



Selective crystallization of paraxylene from a liquid mixture by direct contact with a cooled, immiscible, liquid refrigerant consisting of alkanol, water and a surface active agent which refrigerant wets the paraxylene crystals preferentially and has a low-interfacial tension relative to the resulting mother liquor.

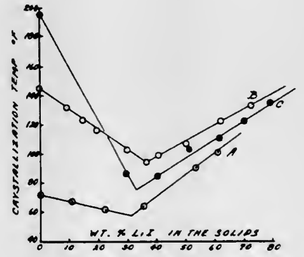
3,643,454
WATER SYSTEM FOR AN ICEMAKING APPARATUS
Phillip H. Turner, Inver Grove Heights, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed May 22, 1970, Ser. No. 39,774
Int. Cl. F25c *1/14*
U.S. Cl. 62—66 **9 Claims**

A method and means for producing ice by gravitationally feeding water from a source of supply in excess of the freezing capacity of a refrigerated cylinder, wherein the feed water is directed into a lower part of the cylinder and the excess feed water is vented through a drain located in a compression nozzle above the level of the cylinder. The water is circulated through openings formed in the top of a harvesting auger. The water flow aids in lifting harvested ice product



and also serves to thaw out the unit and prevent it from becoming ice bound.

3,643,455
COMPOSITIONS FOR ABSORPTION REFRIGERATION SYSTEM
William E. Hensel, Jr., Powell, Ohio, and William W. Harlowe, Jr., San Antonio, Tex., assignors to Arkla Industries, Inc., Evansville, Ind.
Original application Jan. 3, 1968, Ser. No. 695,523, now Patent No. 3,524,815. Divided and this application July 20, 1970, Ser. No. 56,580
Int. Cl. F25b *15/06*
U.S. Cl. 62—112 **2 Claims**

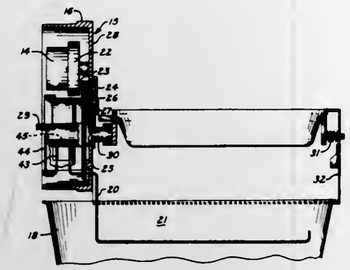


Aqueous solutions of LiI-LiBr containing up to about 50 weight percent LiI based on total salt are used as the refrigerant-absorbent in an air-cooled, two-pressure absorption refrigeration system. The crystallization temperatures of these solutions are sufficiently low that crystal formation will not occur when the temperature of the solution drops to ordinarily expected ambient temperatures of, for example, 100° F. Further depression of the crystallization temperature is obtained by adding ethylene glycol or glycerine to the mixed salt solution.

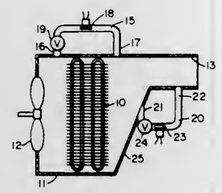
3,643,456
MECHANICAL BIN-LEVEL-SENSING CONTROL FOR DOMESTIC ICE MAKER
Duane C. Nichols, Evansville, Ind., assignor to Whirlpool Corporation
Filed June 17, 1970, Ser. No. 46,920
Int. Cl. F25c *5/18*
U.S. Cl. 62—137 **12 Claims**

An ice body maker having means permitting the drive motor to run continuously while interrupting the operation of

the mechanism when collected ice bodies reach a preselected level. A sensing means is provided which includes means for cyclically ascertaining the quantity of ice bodies in a collecting bin and permitting a successive ice body forming cycle only in the event that the level is below the preselected level. The cycle of operation of the mechanism comprises a timed cycle under the control of the drive motor.



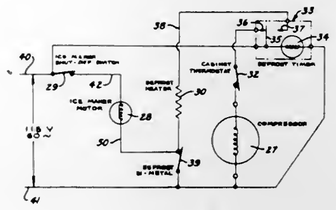
3,643,457
FROST DETECTOR FOR REFRIGERATION SYSTEM
Charles L. Winkler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 20, 1970, Ser. No. 91,299
Int. Cl. F25d *21/02*
U.S. Cl. 62—140 **4 Claims**



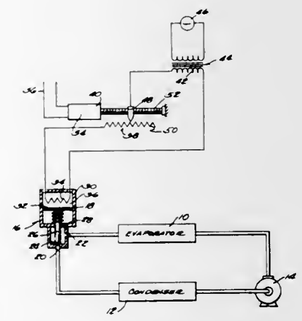
A frost detector for an air-cooling refrigeration system having an evaporator coil mounted in a main airflow duct is comprised of a first bypass duct connected to the main duct on each side of the coil and a second reference bypass duct connected to each side of a constriction in the outlet side of the main duct downstream from the coil. Signals from airflow velocity sensing devices in each bypass duct are compared to provide a defrost initiation signal to the refrigeration apparatus and the preferred airflow velocity sensing device is an air-cooled electrical resistor connected in a bridge circuit.

3,643,458
DEFROST BIMETAL FOR INTERRUPTING TIMED CYCLE ICEMAKER DURING DEFROST—TWO TIMERS
William J. Linstromgerg, and Duane C. Nichols, both of Evansville, Ind., assignors to Whirlpool Corporation
Filed June 18, 1970, Ser. No. 47,521
Int. Cl. F25d *21/00*
U.S. Cl. 62—155 **4 Claims**

A refrigerator-freezer apparatus normally operating through freezing and defrosting portions of an operating cycle including a freezer compartment, a refrigeration system including a compressor and an evaporator for chilling the compartment to a subfreezing temperature, an icemaker producing ice bodies and having a motor for timing the period between harvests and for harvesting the ice bodies, an energizable defrost means for periodically warming the evaporator to defrosting temperature, an electrical circuit including the defrost means, an icemaker circuit including the icemaker motor and a temperature responsive switch common to both of these circuits and in heat exchange relationship with the evaporator for opening both circuits at an above freezing temperature of the evaporator so that the temperature responsive switch serves to terminate defrosting when the evaporator attains a substantially frost-free condition and to inactivate the icemaker motor also at above freezing temperatures in order to interrupt the timing function and avoid dumping water from the icemaker into the freezer compartment.



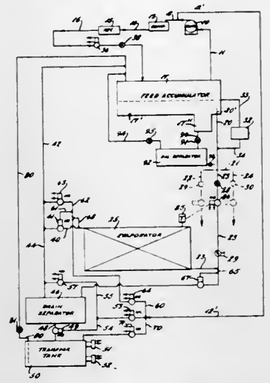
3,643,459
TIMER-CONTROLLED REFRIGERATION SYSTEM
Alan A. Matthies, Milwaukee, Wis., assignor to Controls Company of America, Melrose Park, Ill.
Filed Mar. 30, 1970, Ser. No. 23,913
Int. Cl. F25b *41/04*
U.S. Cl. 62—157 **8 Claims**



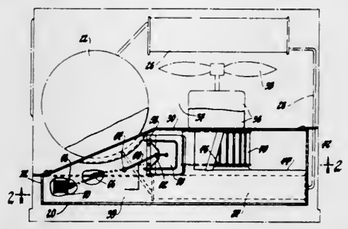
An expansion valve in a refrigeration system has an electrically energized operator assembly which controls the operative state of the valve on the basis of the electrical input to the operator assembly. The electrical input to the operator assembly is timer controlled and the system is taken through a preselected refrigeration cycle under control of the timer.

3,643,460
GRAVITY REFRIGERANT RECIRCULATION
Milton W. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.
Filed Sept. 11, 1970, Ser. No. 71,487
Int. Cl. F25b *41/00*
U.S. Cl. 62—174 **6 Claims**

A feed accumulator receives liquid refrigerant from the receiver and feeds it by gravity to the evaporator. Excess liquid refrigerant from the evaporator is temporarily stored in a lower level tank from which it is, from time to time, forced back to the accumulator by high-pressure refrigerant. Automatic controls and oil separator features are included.



3,643,461
AIR CONDITIONER WITH CYCLING FRESH AIR PERIODS
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 24, 1970, Ser. No. 31,512
Int. Cl. F25d *17/00*
U.S. Cl. 62—180 **2 Claims**



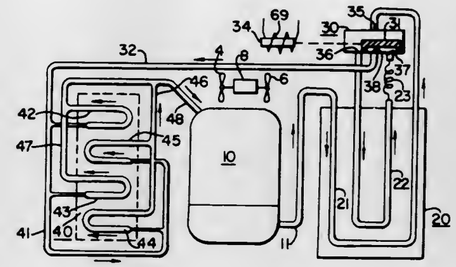
In the preferred form, this air conditioner is provided with an electromagnetically opened exhaust air door energized through a bimetal switch connecting in different circuit arrangements to either the portion of the compressor motor circuit controlled by the air conditioner thermostat or the uncontrolled portion to provide periodic opening of the door during either the idle period and the running period or the running period alone or the idle period alone or only at the start of the running period of the compressor.

ERRATUM

For Class 62—196 see:
Patent No. 3,643,754

3,643,462
VARIABLE CAPACITY REFRIGERATION SYSTEM AND CONTROLS
Arthur H. Eberhart, Hilliard, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 18, 1970, Ser. No. 73,544
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **8 Claims**

A refrigeration system for a room air conditioner having an outside heat exchanger with two separate refrigerant flow passages connected either directly or through an expansion device as controlled by a reversing valve. One of the passages is substantially more restrictive than the other. The reversing valve is responsive to the room temperature so that when full capacity cooling is required, the valve directs refrigerant flow from the first passage to the substantially more restrictive second passage and then through the expansion device so that the heat exchanger functions as a normal condenser; however, when reduced capacity cooling is desired, the valve directs refrigerant flow from the first passage, through the expansion device, then through the second restrictive passage which passage than functions similar to an evaporator and reduces the cooling capacity of the system. Further, with this arrangement, the reduced capacity operation permits a reduction of power for driving the compressor. Controls to stop and start the compressor and to control the valve are also provided along with an evaporator having multiple inlets to prevent freezeup when the system is operated continuously.



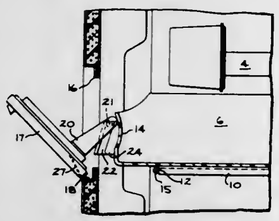
3,643,463
PASSIVE MICROCLIMATE CONTROL SYSTEM
Sidney Lee Friedlander, 4613 La Subida Place, Tarzana, Calif., and Walter Vincent Blockley, 27727 Pacific Coast Highway, Malibu, Calif.
Filed Apr. 14, 1970, Ser. No. 28,488
Int. Cl. F25d *23/12*
U.S. Cl. 62—259 **12 Claims**



A microclimate control system is disclosed for controlling the removal of metabolic heat from a person's body. The system comprises a self-contained refrigerant garment worn over a variable insulation garment whose thermal conductance is controlled at will by the wearer. The refrigerant garment comprises a plurality of tubes attached to a network of webbing adapted to fit at least over the upper torso of the wearer. Each tube is filled with water and sealed at 4-inch intervals to form a string of individual water compartments. The water-filled tubes are then frozen to provide a refrigerant having a large thermal capacity. The insulation

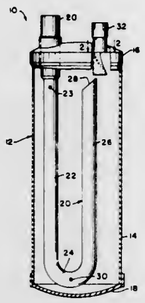
garment comprises an open cell foam material sandwiched between two outer layers of airtight material. The outer layers are sealed about the periphery of the garment to make an airtight garment. Vacuum means are provided to evacuate the interior of the garment and gradually reduce the thickness of the insulation layer in order to vary the heat conductance of the garment according to the varying metabolic demands of the user.

3,643,464
EXTERNAL ICE SERVICE
Donald E. Hilliker, and William M. Webb, both of Louisville, Ky., assignors to General Electric Company
Filed June 29, 1970, Ser. No. 50,475
Int. Cl. F25c *5/18*
U.S. Cl. 62—344 **8 Claims**



A refrigerator including a freezer compartment, a freezer door having an ice access opening therein normally closed by an ice access door and an ice receptacle slideably supported within the freezer compartment. The ice access door and the receptacle are provided with means for sliding the receptacle forwardly to an accessible position when the ice access door is opened.

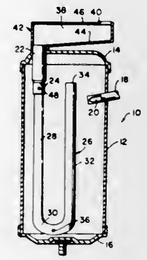
3,643,465
REFRIGERATION SUCTION ACCUMULATOR
Edward W. Bottum, 9357 Spencer, Brighton, Mich.
Original application Sept. 16, 1968, Ser. No. 759,876, now Patent No. 3,589,395, dated June 27, 1971. Divided and this application Nov. 2, 1970, Ser. No. 85,861
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **6 Claims**



A suction accumulator is provided for the compressor of a refrigeration system. The accumulator includes a casing having an inlet and an outlet. A U-shaped conduit is provided within the casing. One leg of the conduit extends from a point adjacent the bottom of the casing to the casing outlet. The other leg extends from the casing bottom and terminates in an open end within the casing. A metering opening is provided in the bend of the U-shaped conduit to meter liquid refrigerant into the conduit. The open-ended leg is adapted to receive gaseous refrigerant which passes through the U-shaped conduit and on to the compressor of the system.

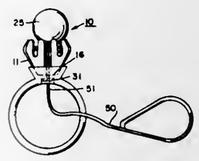
The inlet comprises a tubular member which extends from a point exteriorly of the casing into the casing. A fluid guide surface is provided on the inner end of the tubular inlet to direct incoming fluid exiting from the inlet at an angle to the longitudinal axis of the inlet and tangentially around the inner periphery of the accumulator casing to thereby reduce turbulence within the casing. The guide surface is defined by a wall portion of the tubular inlet. The inlet wall is deformed inwardly and the downstream edge is severed from the main portion of the tubular member. The wall is bent onto the opposite wall surface to provide an opening at the guide surface. This construction may also serve as an outlet in some pressure vessel applications.

3,643,466
REFRIGERATION SUCTION ACCUMULATOR
Edward W. Bottum, 9357 Spencer, Brighton, Mich.
Original application Sept. 16, 1968, Ser. No. 759,863, now Patent No. 3,563,053, dated Jan. 16, 1971. Divided and this application Nov. 16, 1970, Ser. No. 89,953
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **3 Claims**



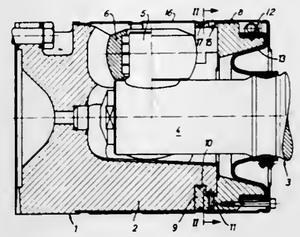
The suction accumulator of the invention is designed for use with the suction or compression side of a refrigeration system. The accumulator comprises a casing having an inlet and outlet. A conduit is provided within the casing. The conduit extends from a point adjacent the bottom of the casing to the casing outlet and acts as a suction tube to draw liquid from the casing and expel it into the casing outlet at a metered rate. A liquid trap chamber is connected to the outlet to receive excessive amounts of liquid expelled from the conduit. The liquid trap chamber is connected exteriorly of the casing.

3,643,467
MOUNTING HEAD FOR ARTICLE OF JEWELRY CONTAINING INTERCHANGEABLE ORNAMENTS
Edward Postel, 6330 Azalea Lane, Dallas, Tex.
Filed May 14, 1969, Ser. No. 824,504
Int. Cl. A44c *17/02*
U.S. Cl. 63—29 R **3 Claims**



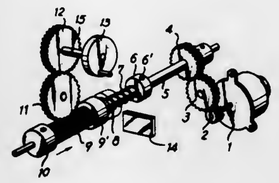
Disclosed is an interchangeable ornament mount for an article of jewelry having a head member defining a plurality of substantially separately operable pronged sections for gripping a removably inserted ornament inserted therein, a conically shaped spring disposed within said head member urging said ornament against the indented gripping surfaces of the prongs, an aperture being provided in a base portion of said head member for insertion of a tool to eject the ornament.

3,643,468
CONSTANT VELOCITY SLIDING JOINT COUPLING
Hans-Joachim Kleinschmidt, Essen, and Karl-Heinz Teinert, Essen-Steele, both of Germany, assignors to Gelenkwellenbau GmbH, Essen, Germany
Filed Dec. 22, 1969, Ser. No. 887,158
Claims priority, application Germany, Dec. 27, 1968, P 18 17 195.4
Int. Cl. F16d *3/02*
U.S. Cl. 64—8 **6 Claims**



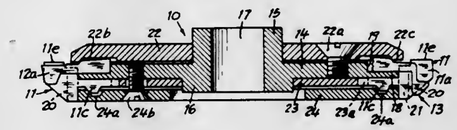
Constant velocity sliding joint coupling includes one joint half having a plurality of axially extending arms disposed at equally spaced intervals about the periphery thereof, the arms having free ends and axially extending lateral faces, respective lateral faces of adjacent arms being disposed opposite one another and defining therebetween an imaginary cylinder having an axis extending parallel to the axis of the one joint half. The other joint half is in the form of a star and includes a hub, a plurality of stubs or arbors extending radially from the hub, and a respective joint member comprising a central spherical segment having a radius substantially equal to the radius of the imaginary cylinder which is rotatably and longitudinally displaceably mounted on the stubs. The free ends of the axially extending arms are enclosed by a ring member.

3,643,469
MECHANISM FOR WINDING PHOTOGRAPHIC FILM
Nobuaki Enomoto, Okaya-shi, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo, Japan
Filed Nov. 4, 1969, Ser. No. 874,000
Claims priority, application Japan, Nov. 13, 1968, 43/82515
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **5 Claims**



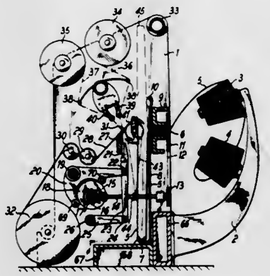
A mechanism for winding photographic film in a device such as a camera. The mechanism includes a rotary drive and a transmission for operating a film winder. The transmission includes a friction clutch which is capable of having the degree of friction thereof adjusted. The transmission coacts with the rotary drive for transmitting the drive therefrom to the film winder. In addition, the transmission responds automatically to an increasing load for automatically increasing the friction of the friction clutch, so that in this way the mechanism adapts itself to the size of the load and is capable of absorbing sudden load increases while maintaining a smooth film movement substantially free of any shocks.

3,643,470
DESIGN WHEEL FOR KNITTING MACHINES
Louis Pernick, Miami, Fla., assignor to David Pernick; David Haft, Brooklyn and Arthur Finkelstein, Rockway Park, N.Y., part interest to each
Filed Feb. 6, 1970, Ser. No. 9,194
Int. Cl. D04b *15/76*
U.S. Cl. 66—50 A **3 Claims**



Needle-driven inclined rotary design wheel having equally spaced replaceable inserted walls extending radially from the periphery thereof wherein the wall inserts extend radially between and within the slots of radially spaced inner and outer circular series of radially extending slots provided in a body portion of the design wheel and wherein the inserted walls provide lateral support for replaceable needle-raising jacks positioned between the inserted walls, the design wheel having a bottom cover plate releaseably secured to the bottom side of the design wheel body portion and serving to releaseably secure the wall inserts therebetween and having a top cover plate releaseably secured to the top side of the design wheel body portion and serving to releaseably secure the jacks therebetween.

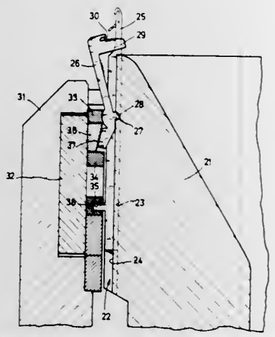
3,643,471
WARP KNITTING MACHINE
Stefan Furst, Monchengladbach, Germany, assignor to Walter Reiners, Gladbach, Germany
Filed July 9, 1969, Ser. No. 840,161
Claims priority, application Germany, July 11, 1968, P 17 60 860.5
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 **8 Claims**



A warp knitting machine having a zone wherein knitting needles are disposed and means for supplying warp threads to the needles includes device for filling a weft having holder members for making the weft ready outside the needle zone,

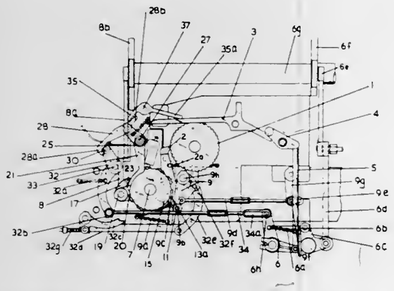
the holder members being disposed in the vicinity of weft reversal locations and being rotatable in closed travel paths, and means for guiding the weft to the warp threads, the holder members having a thread guide cooperating therewith for making the weft ready, the thread guide being displaceable in the closed travel path of one of the holder members.

3,643,472
APPARATUS FOR PRODUCING A LOOPED FABRIC
Harry Apprich, Uhlandweg 34, 7305 Altbach/Neckar, Germany
Filed Aug. 11, 1969, Ser. No. 849,010
Claims priority, application Germany, Aug. 13, 1968, P 17 85 125.1
Int. Cl. D04b *15/06, 15/14*
U.S. Cl. 66—106 11 Claims



The sinkers of a knitting machine are pivotally mounted immediately adjacent their associated needles in a common slot in the needle-guiding structure of the knitting machine. This arrangement can be used in any suitable circular or flat knitting machines. The slots can be formed by means of removable plates, which also act as supports for the sinkers. Camming systems actuate the sinkers and needles. The sinkers can be of various configurations for different functions in the knitting process.

3,643,473
RACKED PROGRAMMING CONTROL MEANS
Barry Colin Strong, Syston, England, assignor to William Cotton Limited
Filed Nov. 25, 1968, Ser. No. 778,584
Claims priority, application Great Britain, Dec. 6, 1967, 55,518/67
Int. Cl. D04b *15/66*
U.S. Cl. 66—155 8 Claims

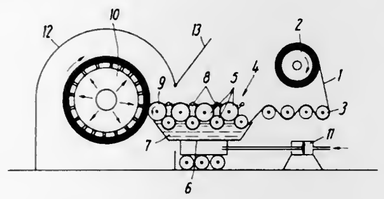


Programming control means, primarily for a straight bar knitting machine, having a punched chart racking mechanism racked once per course, auxiliary racking mechanism also racked once per course, indexing mechanism movable with the auxiliary ratchet mechanism, means under control of holes in the punched chart for introducing the auxiliary ratchet mechanism and indexing means, and means under control of the indexing means for rendering the punched chart racking mechanism inoperative for periods governed by the index pitch of the indexing mechanism.

ERRATUM

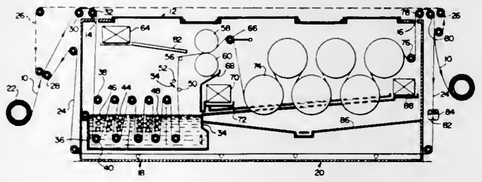
For Class 66—111 see:
Patent No. 3,643,476

3,643,474
APPARATUS FOR WET TREATING TEXTILE FABRICS
Gunter Schiffer, Krefeld, Germany, assignor to Joh. Kleinwefers Sohne, Krefeld, Germany
Filed Sept. 21, 1970, Ser. No. 73,763
Claims priority, application Germany, Sept. 22, 1969, P 19 47 858.1
Int. Cl. B05c *8/02*
U.S. Cl. 68—8 8 Claims



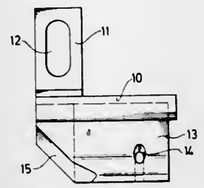
An apparatus for wet treating webs of textile material in which the web is passed over and below staggered rollers in a trough adapted to receive treating liquid into which at least some rollers are at least partially immersed while the web material leaving the last roller is wound onto a perforated drum which latter is, relatively to said last roller, pressed against the latter at a substantially uniform pressure during the winding-up operation, said drum being arranged in a housing adapted selectively to be closed completely for independent wet treatment of material on the perforated drum.

3,643,475
METHOD AND APPARATUS FOR PROCESSING KNIT GOODS AND THE LIKE
Brooks Stevens, Jr., Concord, Mass., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Filed Dec. 2, 1969, Ser. No. 881,501
Int. Cl. D06f *43/06, 43/08*; B05c *3/132*
U.S. Cl. 68—18 C 7 Claims



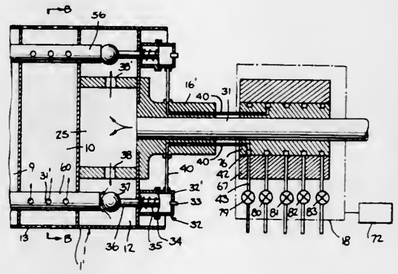
A running web of knit material or the like is processed on a continuous basis and in a tensionless open width condition by means of a moving belt, coextensive with the web, which carries the web first through a wet-out stage where it is scoured in a solution or otherwise treated and then to a drying stage. The fabric is carried in tight contact against a plurality of heated rotary drums which cause the entrained liquid to evaporate from the fabric. A condensate system is provided for condensing and recovering the solution.

3,643,476
YARN GUIDE FOR CIRCULAR KNITTING MACHINES
Dieter Overdyck, Ebingen, and Fritz Lehner, Tailfingen, both of Germany, assignors to Mayer & Cie, Tailfingen, Germany
Filed Aug. 4, 1969, Ser. No. 862,119
Claims priority, application Germany, Aug. 14, 1968, G 67 52 402
Int. Cl. D04b *15/08, 15/54*
U.S. Cl. 66—111 4 Claims



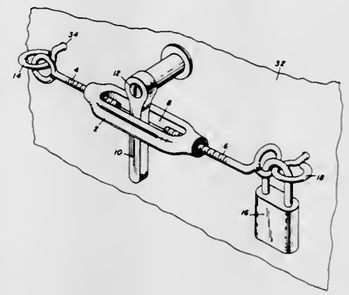
A yarn guide particularly for guiding the yarn of a knitting machine. The yarn guide includes a yarn-guiding member formed with at least one passage through which the yarn is guided. This member is composed at least in part of a ceramic material, and preferably it is in the form of a single body of pure ceramic material.

3,643,477
PROGRAMMED CENTRIFUGE DRUM FOR TREATING SHEETLIKE MATERIAL
Fritz Lorenz, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland
Filed Apr. 18, 1969, Ser. No. 817,344
Claims priority, application Switzerland, Apr. 30, 1968, 6441/68
Int. Cl. B05c *8/02, 11/122*; D06f *39/00*
U.S. Cl. 68—150 10 Claims



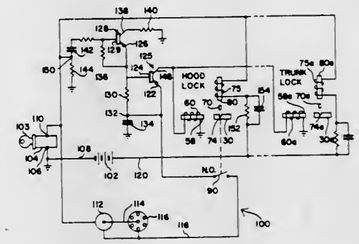
Programmed centrifuge drum to treat thread and sheetlike material wound on the drum according to which selected parts of the material are subjected to treatment fluid passing through areas of the drum jacket according to a desired program; and means for controlling such passage.

3,643,478
SAFETY DOOR LOCKING DEVICE
John E. McPeake, 3437 West Clearfield Street, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 797,383, Feb. 4, 1969, now abandoned. This application June 8, 1970, Ser. No. 44,011
Int. Cl. B60r *25/02*; E05c *19/18*
U.S. Cl. 70—212 15 Claims



Unauthorized operation of an exposed latch-operating lever for a door includes bars mounted on the interior of the door to support a pair of eye bolts having their eyes lying on the exterior side of the door. One eye swingably supports an obstruction member such as a turnbuckle and the other eye carries a lock which permits detachable retention of the opposite end of the obstruction member. The elements are positioned so that the obstruction member will prevent movement of the latch-operating lever to a door-releasing position.

3,643,479
ELECTRONIC HOOD AND TRUNK-LOCKING DEVICE
Joseph Solow, P.O. Box 116, Plainview, N.Y.
Filed May 22, 1970, Ser. No. 39,697
Int. Cl. E05b *65/19, 47/02*
U.S. Cl. 70—241 9 Claims

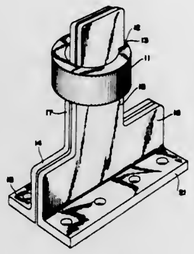


A locking device for an enclosure such as a hood or trunk of an automobile includes a casing having a slidable bolt actuated by a first solenoid and held by a lever in extended position. A second solenoid retracts the lever to permit retraction of the bolt by a spring. A switch in the casing is disposed for operation by the bolt when the bolt is retracted. The first and second solenoids are operable in response to actuation of a key controlled switch and associated electronic circuitry which includes two opposing transistors. The first solenoid is actuated by discharges of a capacitor through one of the transistors when the other transistor is rendered nonconductive.

3,643,480
FORMING COIL

Hansjorg Jansen, La Jolla; Paul Wildi, and James A. Kline, both of San Diego, all of Calif., assignors to Gulf Oil Corporation

Filed Dec. 9, 1968, Ser No. 782,383. The portion of the term of the patent subsequent to Feb. 18, 1986, has been disclaimed.
Int. Cl. B21d *26/14*
U.S. Cl. 72—56 7 Claims

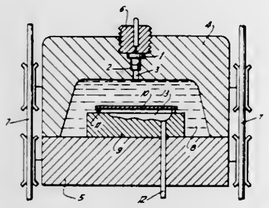


Magnetic forming apparatus is described in which a conductive forming coil is formed in a generally cylindrical single turn, and wherein a pair of generally parallel flat conductors are connected to the adjacent ends of the coil and extend axially of the coil.

3,643,481
EXPLOSIVE-FORMING DEVICE

Heinrich Hertel, Tannenbergallee 36, 1 Berlin 19, and Dietrich Ruppin, Berlin, both of Germany, assignors to said Hertel, by said Ruppin

Filed Sept. 24, 1969, Ser. No. 860,703
Claims priority, application Germany, Sept. 25, 1968, P 17 77 207.5
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 10 Claims

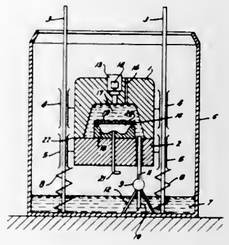


An explosive-forming device has walls surrounding a pressure chamber arranged to accommodate a workpiece and a die whose surface contour is to be imparted to the workpiece for shock-deformation of the latter into conformance with the surface contour. A recess is provided in the wall means and has an opening communicating with the pressure chamber. A gunpowder charge is accommodated in the recess and fills the same partly. Damping means is arranged in the remainder of the recess intermediate the charge and the opening of the recess and fills at least a part of this remainder of the recess.

3,643,482
APPARATUS FOR SHOCK DEFORMATION OF WORKPIECES

Heinrich Hertel, Tannenbergallee 36, Berlin 19, and Dietrich Ruppin, Berlin, both of Germany, assignors to said Hertel, by said Ruppin

Filed Sept. 24, 1969, Ser. No. 860,704
Claims priority, application Germany, Sept. 24, 1968, P 17 77 208.6
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 12 Claims



An apparatus for shock deformation of workpieces comprises a pressure chamber surrounded by at least two walls and arranged to accommodate a workpiece and a die as a surface contour which is to be imparted to the workpiece by shock deformation of the latter into conformance with the surface contour. The walls have respective juxtaposed surfaces and at least one of the walls is movable relative to the other between a chamber-closing position in which the surfaces abut in other-than fluidtight contact and a chamber-opening position. The walls has an inertia so selected as to at least substantially equal the shock pressure necessary for producing the energy level required to obtain the desired deformation of the workpiece so that upon exceeding of the necessary shock pressure relative movement of the walls to the chamber-opening position results with concomitant venting of the chamber. Shock pressure producing means produces a sudden increase in pressure in the chamber. A quantity of pressure-transmitting liquid fills the pressure chamber to a predetermined level and is operative for transmitting shock pressure to the workpiece. Portions of the liquid tends to escape from the chamber between the surfaces so that the level of liquid tends to drop. Replenishing means replenishes the quantity of liquid in the pressure chamber to thereby maintain the predetermined level at least substantially steady.

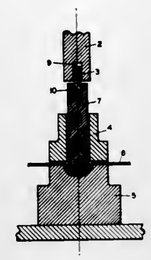
3,643,483
SONIC SYSTEM FOR DEFORMATION OF SHEET MATERIAL

Hildegard M. Minchenko, Reynoldsburg, and Lytton A. Kendall, Jr., Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Aug. 13, 1969, Ser. No. 849,823
Int. Cl. B21d *26/02, 22/00*
U.S. Cl. 72—56 7 Claims

A system and process for the bending and drawing of metals using vibratory-mechanical energy to facilitate the deformation process. A forming tool or punch is "impact coupled" with the free or unattached end of the transmission line of a piezoelectric electromechanical transducer-transmission line assembly. A mating die is positioned opposite the punch and the metalwork material is inserted

therebetween. Intermittent impacts made by the forming tool against the metal blank effectively transfer dynamic force

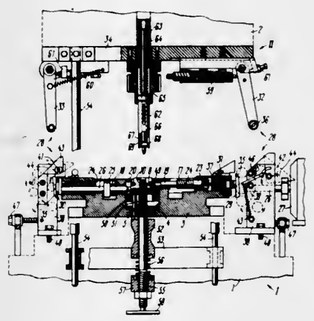


and static force sufficient to perform the desired deformation.

3,643,484
DEVICE FOR FORMING PROJECTIONS ON SIDES OF HOLLOW DETAILS

Nikolai Nikolaevich Orlov, ulitsa Lenina, 195, kv. 6; Mikhail Shevelevich Leveikin, ulitsa Bikernicku, 63, kv. 13, and Ilmar Alfredovich Pukitis, ulitsa L. Laitsena, 5, kv. 1, all of Riga, U.S.S.R.

Filed Dec. 18, 1969, Ser. No. 886,200
Int. Cl. B21b *1/00;* B21d
U.S. Cl. 72—67 7 Claims



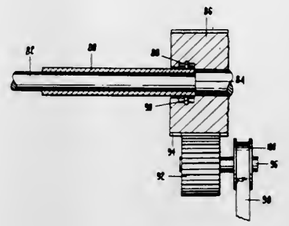
The invention consists in a device for forming projections on the sides of hollow workpieces with the aid of punches introduced inside a workpiece and forming rollers mounted on rotary and advancing heads arranged outside the workpiece.

3,643,485
HIGH-PRESSURE ROLLING OF WORKPIECES

Jacob Marcovitch, Johannesburg, Republic of South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein

Continuation of application Ser. No. 634,947, May 1, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 882,367
Claims priority, application Republic of South Africa, May 5, 1966, 66/2610; Aug. 17, 1966, 66/4911
Int. Cl. B21b *19/08, 3/06*
U.S. Cl. 72—96 27 Claims

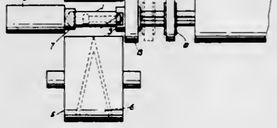
A die for drawing tubular workpieces has its orifice defined by a ring of small rollers which are rotatable to work the workpieces around their circumference. Means may be present to straighten the tube and the die may include means to make the wall thickness of the workpiece uniform.



3,643,486
WORK-HOLDING ASSEMBLY

Vaclav Hladky, Brno, Czechoslovakia, assignor to Vyzkumny ustav tvarecich stroju a technologie tvareni, Brno, Czechoslovakia

Filed Apr. 7, 1969, Ser. No. 813,872
Int. Cl. B21b *9/00*
U.S. Cl. 72—108 3 Claims



In a work-holding assembly wherein a workpiece is supported while fed to a working location, a main work-holding means includes a pair of main jaws which hold the workpiece, and an auxiliary work-holding means includes a pair of auxiliary jaws which also engage the work. A connecting means in the form of a pair of elongated bars interconnects the auxiliary jaws with the main jaws. With this arrangement, while the main jaws are in the region where working of the workpiece takes place, the auxiliary jaws are also located in this region so as to support even a relatively short workpiece in the direct vicinity of the region where it is worked upon by devices such as, for example, wedge-rolls.

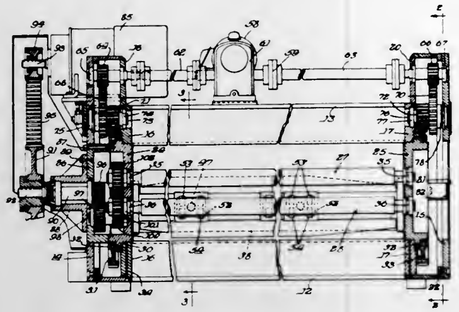
3,643,487
APPARATUS FOR CONTINUOUSLY BENDING AND FLEXING STRIP MATERIAL

Chester M. Wlig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Jan. 29, 1970, Ser. No. 6,841
Int. Cl. B21d *1/02*
U.S. Cl. 72—164 10 Claims

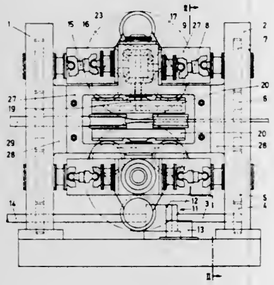
For cold-working metal strip material, suitably spaced bending and flexing rollers are provided and which are journaled for rotation in end members that form part of a drum type of support. The said support is in turn mounted for rotation since the end members are each rotatably supported in the frame structure of the machine. Thus the rotative posi-

tioning of the drum support will produce various degrees of bending of the strip material as it passes over the rollers



which rotate simultaneously and at the same speed for the said purpose.

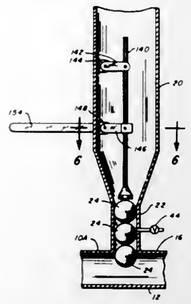
3,643,488
ROLLING MILL
Erich J. F. E. Bretschneider, Buderich, Germany, assignor to SIEMAG Siegener Maschinenbau GmbH, Dahlbruch, Germany
Filed Dec. 4, 1969, Ser. No. 882,135
Claims priority, application Germany, Dec. 7, 1968, P 18 13 331.8
Int. Cl. B21b *21/00*
U.S. Cl. 72—191 **10 Claims**



This invention has to do with a universal planetary rolling mill in which clusters of rolls are rotated to swing successive rolls into the path of the stock to be rolled.

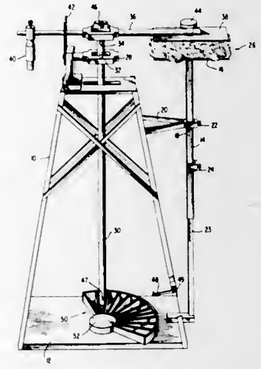
3,643,489
CALIBRATING BARREL
Billy E. Davis, Tulsa, and Paul V. Gilliam, Broken Arrow, both of Okla., assignors to Signet Controls, Inc., Tulsa, Okla.
Original application June 13, 1968, Ser. No. 736,752, now Patent No. 3,541,837, dated Nov. 24, 1970. Divided and this application Mar. 2, 1970, Ser. No. 15,817
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 **8 Claims**

Fluid flowmeters are calibrated by comparing the flowmeter through a calibration barrel. The barrel is of uniform internal diameter with two detector switches placed a predetermined distance apart. Balls with a diameter substantially equal to the internal diameter of the barrel move the predetermined distance to actuate the switches so that an exact and predetermined amount of fluid flow is detected. A ball return conduit is connected to the inlet and outlet ends



of the calibration barrel so that a ball is returned from the outlet to the inlet for another calibration test.

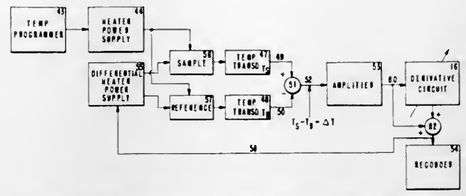
3,643,490
METHOD AND APPARATUS FOR INVESTIGATING INTERFIBER FRICTION
Kenneth L. Hertel, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.
Filed Aug. 11, 1967, Ser. No. 660,044
Int. Cl. G01n *3/56, 19/02*
U.S. Cl. 73—9 **16 Claims**



Interfiber friction information is obtained by measuring the energy dissipated when a fibrous assembly is loaded in shear. The specimen of fibers is mounted between parallel surfaces one of which is connected to a pendulum so as to be oscillated in a direction parallel to the surfaces. During relative oscillatory movement between the surfaces, fibers of the assembly move relative to each other and the work expended in overcoming friction is reflected in the decay in the amplitude of the pendulum oscillations.

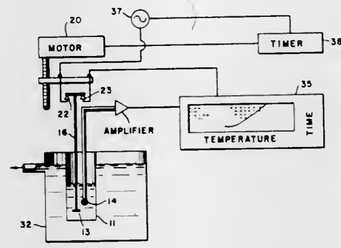
3,643,491
DERIVATIVE DIFFERENTIAL SCANNING MICROCALORIMETER
Curtis G. Dell; Dennis W. Janzen, both of Newark, Del., and John D. McGhee, Plymouth Meeting, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 11, 1968, Ser. No. 766,857
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 B **6 Claims**

A scanning differential microcalorimeter in which energy is differentially supplied to a reference and sample in an effort to equalize their temperatures. A signal proportional to the difference in energy flows is produced and its derivative



obtained and added to this signal to correct for the lag in the difference signal.

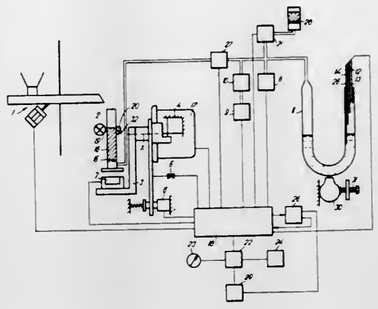
3,643,492
POUR AND CLOUD POINT ANALYZER
Samuel W. Simpson, Florissant, Mo., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 21, 1970, Ser. No. 30,393
Int. Cl. G01n *25/04*
U.S. Cl. 73—17 A **4 Claims**



Apparatus for determining the pour point of a normally liquid composition having constituents which crystallize upon being cooled by observing the temperature at which the solidifiable constituents in a sample of the composition, upon being cooled, will support a small object. This point is indicated by discontinuance in an automatically recorded time/temperature curve. This solid point correlates with the ASTM solid point and also the ASTM pour point temperature which is 5° F. above the solid point temperature. The inception point of a plateau in the time/temperature curve during the cooling portion of the cycle is the crystal point. This crystal point correlates with the ASTM cloud point. Modification of the apparatus for continuous service can be accomplished by automatically introducing the sample, heating, then cooling, removing the sample and recirculating a fresh sample.

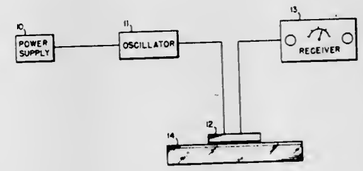
3,643,493
MEASURING SPECIFIC SURFACE OF POWDERS
Jan Vitovsky, Brno, Czechoslovakia, assignor to Vyzkumny ustav Stavebnich hmot, Brno, Czechoslovakia
Filed Mar. 27, 1970, Ser. No. 23,406
Claims priority, application Czechoslovakia, Mar. 31, 1969, 2278/69
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **9 Claims**

Method and apparatus for measuring the specific surface of pulverized materials successively feeding a predetermined weight of pulverized material to a transparent container. The material is then compacted into a predetermined volume and air passed therethrough, the air being increased from an initial pressure to a predetermined increased pressure. The



pressure is then allowed to decrease to its initial position and the time taken is measured against a fixed reference. The process is cyclically and repetitively operated.

3,643,494
A NONDESTRUCTIVE MEASURING SYSTEM
Erwin W. Kammer, McLean, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 15, 1969, Ser. No. 858,020
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.2 **2 Claims**

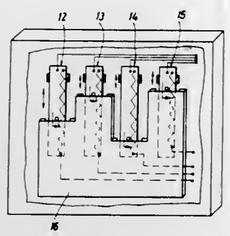


A system for nondestructively measuring the thickness of a surface stress layer of a glass material by measuring an increase of the fundamental frequency of a quartz resonator due to the stressed surface layer.

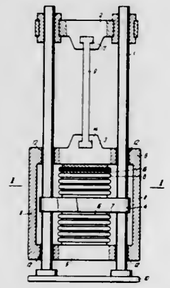
3,643,495
PROGRAMMED ULTRASONIC PULSE-ECHO APPARATUS FOR FLAW SIZE INDICATION IN MATERIALS TESTING
Ludwig Niklas, Lovenich near Cologne, Germany, assignor to Dr. J.U.H. Krautkramer Gesellschaft Fur Elektrophysik, Luxemburger, Germany
Filed Mar. 23, 1970, Ser. No. 21,921
Claims priority, application Germany, Mar. 28, 1969, P 19 15 833.9
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.9 **8 Claims**

In an ultrasonic pulse-echo apparatus for nondestructive materials testing, particularly for flaw size determination,

flaw size is determined by the reflected echo intensity as analyzed by means of programmable circuit modules the output of which is readout in terms of the flaw distance on the scale or similar means of an indicator instrument.



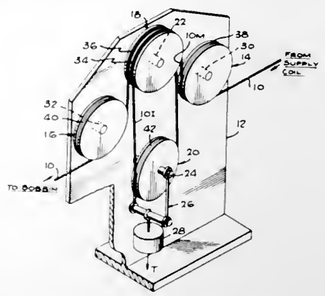
3,643,496
HYDRAULIC LOAD TEST DEVICE
Vladimir Zajic, Pizen, Czechoslovakia, assignor to Skoda narodni podnick, Pizen, Czechoslovakia
Filed Apr. 3, 1970, Ser. No. 25,416
Claims priority, application Czechoslovakia, Apr. 10, 1969, 2528/69
Int. Cl. G01n *3/10*
U.S. Cl. 73—93 **5 Claims**



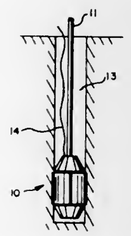
A hydraulic load test device for examination of load test pieces by pull, pressure or bending, provided with hydraulic elastic steel cushions, inserted between crossbeams of a mobile frame arranged slidable along posts and between a crossbeam, connecting both posts of the test device within an opening of the frame.

3,643,497
TENSILE LOADING APPARATUS FOR MOVING WIRE
George W. LeCompte, Rockville, Md., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 1, 1969, Ser. No. 812,971
Int. Cl. G01n *3/28*
U.S. Cl. 73—95.5 **11 Claims**

Apparatus for testing the tensile strength of moving wire without subjecting wire at the supply coil or other source to high tension, comprising a main pulley with two grooves and a free pulley biased away from the main pulley for leading wire in a loop from one main pulley groove to the other. Guides for guiding wire to and away from the main pulley assure a 180° wire wrap about each main pulley groove. This permits a high-testing tension to exist in the loop that extends about the free pulley, while only a low tension exists prior to entering on the main pulley and after leaving it.

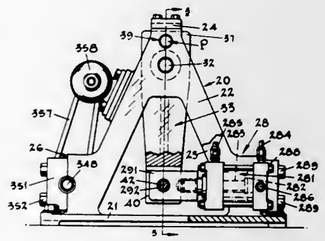


3,643,498
APPARATUS FOR TESTING SOILS IN SITU
Bobby O. Hardin, 767 Bravington Way, Lexington, Ky.
Filed July 27, 1970, Ser. No. 58,489
Int. Cl. G01n *3/24*
U.S. Cl. 73—101 **10 Claims**



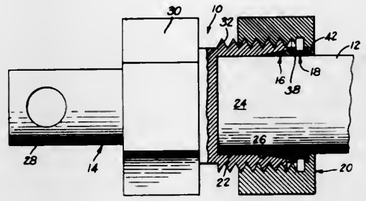
Apparatus for determining the stiffness of soil in situ includes a compact, sturdy assembly suitable for insertion into a borehole or for use as a penetrometer. An oscillatory portion of the assembly in coupled contact with the soil generates a signal when actuated by a magnet and coil means serving to oscillate that assembly portion in a controlled electrical circuit.

3,643,499
APPARATUS FOR SHEAR AND FATIGUE TESTING OF PINS
Arthur G. Thayer, Rossford, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Oct. 24, 1969, Ser. No. 869,115
Int. Cl. G01n *3/24, 3/32*
U.S. Cl. 73—101 **9 Claims**



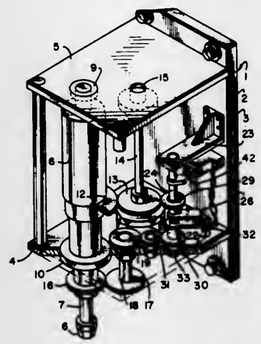
Apparatus for testing shear pins to determine the most efficient notch design and base composition of metals and metal alloys from which the pins can be produced by subjecting specimen pins to conditions simulating the actual conditions under which they are to be used.

3,643,500
GRIPPING DEVICE
Philip J. Anderson, Deerfield, Ill., assignor to Institute of Gas Technology
Filed Mar. 10, 1969, Ser. No. 805,476
Int. Cl. G01n *3/00*
U.S. Cl. 73—103 **3 Claims**



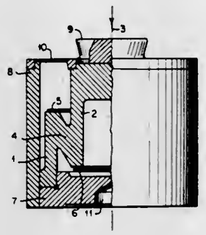
A device for gripping test specimens or workpieces. The device includes a body having an aperture therein for receiving one end of the specimen or workpiece. Means are mounted around the one end for translating axial forces into radial inward gripping forces. Means are mounted around the specimen or workpiece, adjacent the translating means and removably secured to the body for applying the axial forces to said translating means so that the inward radial forces are transmitted from the translating means to the specimen or workpiece for positively gripping the specimen or workpiece about its periphery.

3,643,501
WRENCHING SYSTEM AND METHOD
Reginald W. Pauley, Belle Mead, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,606
Int. Cl. G01l *5/24*
U.S. Cl. 73—133 **6 Claims**



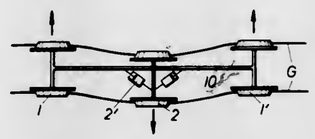
A wrenching system and method including a wrench for tightening a threaded fastener, measuring the torque placed on the fastener by the wrench, measuring the angle through which the fastener is rotated simultaneously with the measurement of the torque, simultaneously comparing the torque and the rotation angle of the fastener and determining when the rotation angle begins increasing at a nonlinear rate relative to the increase of torque, thereby indicating that the strain on the fastener is exceeding its elastic limit. A signal is created in response to the exceeding of the elastic limit of the fastener, and actuates a shutoff means to stop the wrench.

3,643,502
ELECTROMECHANICAL FORCE MEASURING CELL
Gottfried Birkholtz, Weiterstadt, Germany, assignor to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany
Filed Sept. 24, 1970, Ser. No. 75,042
Claims priority, application Germany, Oct. 3, 1969, P 19 49 924.2
Int. Cl. G01l *1/22*
U.S. Cl. 73—141 A **6 Claims**



Electromechanical force-measuring cell which includes a deformation member formed of two cylindrical tubes of different diameters having a common central axis extending in direction of measurement of a force, one end of each of the tubes being adapted, respectively, to absorb an applied force and a force reactive thereto, a conical tube interconnecting the other ends, respectively, of the tubes, the other ends facing in opposite directions along the common central axis, and force-measuring means comprising a mechanical-to-electrical transducing device disposed at the respective other ends of the cylindrical tubes to which the conical tube is connected, for converting to an electrical signal a deformation produced in the deformation member by action of a force applied thereto.

3,643,503
TRACK SURVEYING METHOD
Franz Plasser; Josef Theurer, both of Johannesgasse 3, 1010 Vienna, and Egon Schubert, Lainzerstrasse 246, Vienna XIII., all of Austria
Filed Apr. 7, 1969, Ser. No. 813,854
Claims priority, application Austria, Apr. 9, 1968, A3507/68
Int. Cl. E01b *35/00*
U.S. Cl. 73—146 **12 Claims**

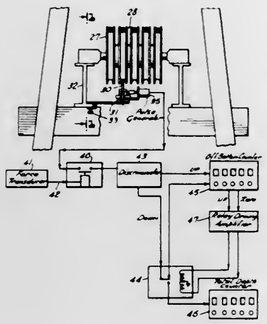


A surveying vehicle is continuously moved on and along a track, the track is subjected to mechanical forces from the continuously moving vehicle, and the change in the track produced by the mechanical forces is measured. Signals corresponding to the measured changes indicate track conditions at successive track points where the mechanical forces have been exerted.

3,643,504
SYSTEM FOR BOREHOLE DEPTH AND TOOL POSITION MEASUREMENTS

Herbert A. Rundell, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,057
Int. Cl. E21b 47/00
U.S. Cl. 73—151.5 1 Claim



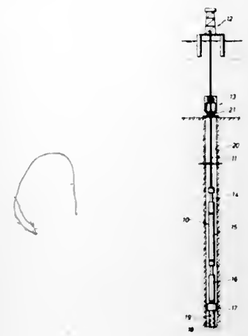
Disclosed is a method and system for monitoring the depth of a borehole and the distance between the drilling tool and the bottom of the borehole which is usable concurrently with the drilling of the borehole. A rotary pulse generator is provided driven by the slow sheave of the crown block which senses upward and downward movement of the drill string and which provides a pair of pulse train signals representing movement through incremental length segments of predetermined magnitude such as, for example, 1 foot. A discriminator is provided for discriminating between the upward and the downward pulses and for providing a pair of pulse train signals the first representing downward movement and the second representing upward movement, of the drilling tool. The pulses of the first signal are summed by a first pulse counter which in turn provides an output signal representing the accumulated depth of the borehole. A second pulse counter is provided for summing the pulses of the second signal and for subtracting from the resulting sum the pulses of the first signal and for providing a second output signal corresponding to the distance between the drilling tool and the bottom of the borehole. Inhibit means are provided for inhibiting the summing performed by the first counter when the aforementioned second output signal is greater than zero and for inhibiting the subtracting performed by the second counter when the second output signal is not greater than zero. Also, means are provided for inhibiting the operation of both counters when the weight of the drill string is off the drilling cable.

3,643,505
PROGRAMMED OFFSHORE FORMATION TESTERS

James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 2, 1970, Ser. No. 2
Int. Cl. E21b 47/00
U.S. Cl. 73—155 11 Claims

In accordance with an illustrative embodiment of the present invention, an apparatus is described for making automatic formation evaluation tests in a well bore. To accomplish this, a formation tester is provided with timing means for controlling execution of various predetermined operations, such execution continuing from initiation to termination of the test with no requirement for operator intervention. The invention is of particular utility in an offshore environment wherein the continually changing elevation of the

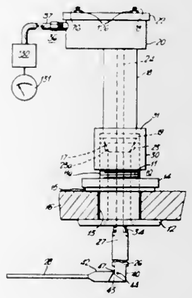


vessel with respect to the subsea well bore characteristically makes surface control difficult.

3,643,506
MARINE SPEEDOMETER

Frederick G. Miles, Ashurst, England, assignor to F. G. Miles Engineering Limited, Sussex and Chetwode Marine Sales Limited, London, England

Filed Dec. 29, 1969, Ser. No. 888,661
Claims priority, application Great Britain, Dec. 31, 1968, 61,945/68
Int. Cl. G01c 21/00
U.S. Cl. 73—186 9 Claims

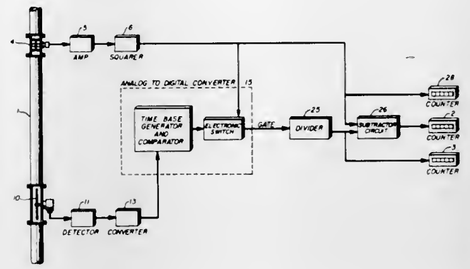


A marine speedometer for use on small boats has a mounting for fitting to the hull of the boat, the mounting projecting through the hull. The mounting supports a vertical shaft the lower end of which carries a wand deflectable against a restoring force by the movement of the water past the boat to turn the wand about the shaft axis to a position dependent on the speed of the boat. The shaft is turned with the wand and is coupled to the wiper of a rheostat located in board of the boat. The rheostat is part of an electrical circuit providing a speed indication. Additionally an integrating circuit may be provided to give a log of distance covered.

3,643,507
MEANS FOR DETERMINING FLOW RATE AND VOLUME OF A FLOWING FLUID MASS

Sheyrl W. Garrett, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,806
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R 4 Claims

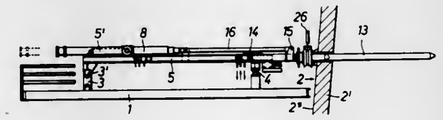


A system which includes a flow meter producing voltage pulses of a frequency proportional to the flow rate of a flowing mass, and a sensing element responsive to a physical condition of the flowing mass with a circuit which produces a DC voltage signal analogous to that condition. A generator provides linear sawtooth voltage pulses against which a comparator circuit compares the analog voltage from the sensing element and circuit. The voltage resultant of the comparison switches a portion of the voltage pulses from the flow meter to a divider circuit element and a subtractor circuit element of the system for conversion of relatively low order changes in the physical condition to their full range equivalents, and for correction of the flow rate or volume as a function of such changes. The flow rate or volume as thus corrected is registered on a suitable flow rate indicator or volume counter.

3,643,508
DEVICE FOR REMOVING GAS AND FURNACE CHARGE PROBES FROM SHAFT FURNACES AND/OR FOR TAKING TEMPERATURE AND GAS PRESSURE MEASUREMENTS IN THE INTERIOR SPACE OF THE FURNACE

Werner Schneider, Siegen/Westfalen, Germany, assignor to Dango & Dienenthal Kommanditgesellschaft, Siegen am Westfalen and Salzgitter Huttenwerk Aktiengesellschaft Salzgitter, Drutte, Germany

Filed Dec. 15, 1969, Ser. No. 884,971
Int. Cl. G01p 5/16; G01k 1/14; G01n 1/24
U.S. Cl. 73—344 9 Claims

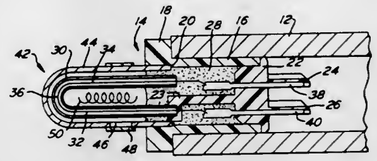


A lance for removing gas and furnace charge probes from shaft furnaces, and in particular from blast furnaces. The lance is also suitable for taking temperature and gas pressure measurements in the interior space of the furnace. The lance is horizontally movably mounted on a platform and is adapted to be inserted into the charge of the furnace via a stuffing box packing and a shutoff gate valve, both of which are arranged in the furnace wall.

3,643,509
THERMOCOUPLE LANCE

Hubertus Joannes Josephurs Surinx, Kuilenbroekstraat 2, Genk, Belgium

Filed July 7, 1969, Ser. No. 839,361
Claims priority, application Luxembourg, Feb. 4, 1969, 57920
Int. Cl. G01k 13/12
U.S. Cl. 73—354 10 Claims

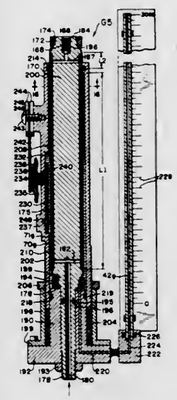


An expendable thermocouple unit facilitates measuring temperature of a molten bath, obtaining a sample of the bath, and facilitates ascertaining the liquidus arrest temperature of the sample. The unit contains a single thermocouple within a cup-shaped container having thin walls and good thermal conductivity so that the temperature of the sample may equalize the temperature of the bath through the container wall. The container has an entry port at one end so that the sample may enter thereinto to remote from the hot junction of the thermocouple.

3,643,510
FLUID DISPLACEMENT PRESSURE GAUGES

Frederic Lissau, Forest Hills, N.Y., assignor to Liquidonics Inc., Westbury, N.Y.

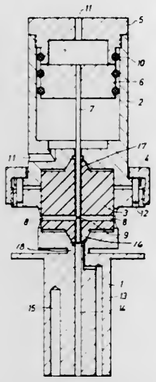
Filed Dec. 17, 1969, Ser. No. 885,933
Int. Cl. G01l 19/04
U.S. Cl. 73—393 14 Claims



Fluid displacement pressure gauges have pressure responsive elements which displace gauging fluid in readout tubes. Gauging fluid can be located inside or outside the pressure responsive elements. The pressure responsive elements may be capsules with flexible walls or tubular members with flat, curved, corrugated or round walls. Temperature-compensating means and spring rate adjustment means are provided to improve accuracy of reading precision instruments. Hermetically sealed gauges can be used in any position. Readout tubes may have bores of different sizes to improve readout resolution. Differently colored gauging fluids in the readout tubes serve to improve readability. Automatic compensation means may be provided to compensate for variations in fluid volume due to temperature changes. Readout tubes can be provided with means to eliminate parallax in reading scales.

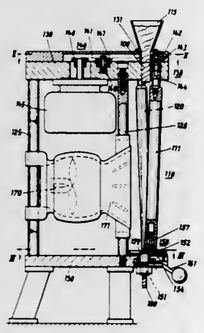
Readout tubes and scales can be coiled to improve readout resolution without increasing overall scale height.

3,643,511
SAMPLE-INLET VALVE FOR GAS CHROMATOGRAPHS
Heinz Warncke, Cologne, and Melchior Kahl, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 20, 1970, Ser. No. 21,310
Claims priority, application Germany, Apr. 24, 1970, P 19 20 768.2
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 GC **11 Claims**



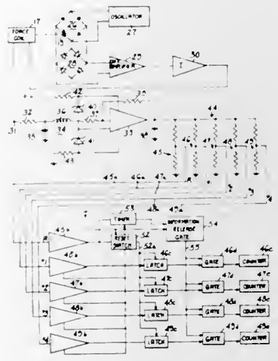
A liquid-inlet valve for a gas chromatograph is designed on the principle of a metering rod with a metering groove or bore milled into it, the rod being inserted into a heated evaporator, wherein that part of the valve which is to receive liquid upon loading of the metering groove before insertion into the evaporator, comprises of a solid cylinder of a highly corrosion-resistant material of limited thermal conductivity which seals without lubrication.

3,643,512
METHOD AND APPARATUS FOR WORKING SOIL SAMPLES
Hans Muller-Welt, Stuttgart, Germany, assignor to Amtliche Forschungs-und Materialprufungsantalt fur das Bauwesen, Otto-Graf-Institut an der Universitat Stuttgart, Stuttgart, Vaihingen, Germany
Filed Feb. 25, 1970, Ser. No. 14,146
Claims priority, application Germany, Feb. 24, 1969, P 19 09 609.4
Int. Cl. G01n *33/24*
U.S. Cl. 73—432 **24 Claims**



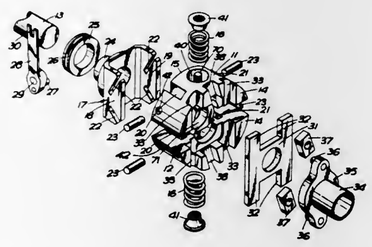
A method and apparatus for working soil samples to determine characteristics thereof. The soil is formed into a strand which is circular in cross section and the diameter of the strand is progressively reduced until the strand crumbles.

3,643,513
ACCELEROMETER
Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.
Filed Aug. 1, 1968, Ser. No. 749,416
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R **4 Claims**



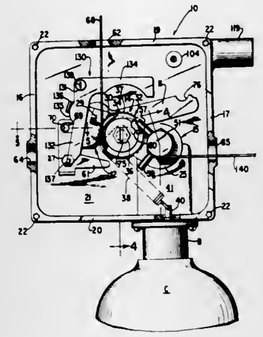
An accelerometer for sensing and recording maneuvering acceleration loading of an aircraft where an electrical signal is produced proportional to the loading and the magnitude of the loading above a threshold level is sensed and recorded if the loading is due to maneuvering acceleration.

3,643,514
GOVERNOR DEVICES
Frederick William Price, and Derek Williams, both of London, England, assignors to Simms Motor Units Limited, London, England
Filed Sept. 16, 1969, Ser. No. 858,440
Int. Cl. G05d *13/16*
U.S. Cl. 73—530 **9 Claims**



A governor device comprises two rotatably mounted governor weights. An output channel member has inclined slots engaging pins in one face of the weights so that the member is displaced axially when the weights are displaced radially. An output tube is coupled to the weights, for rotation therewith, through abutment members engaging inclined slots in the opposite face of the weights so that the rotational position of the tube is advanced when the weights move radially outwards.

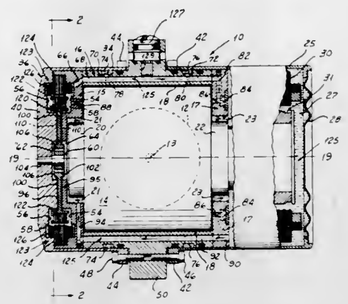
3,643,515
MULTIOPTION CONTROL HEAD
Arne H. Hansen, New City, N.Y., and Lester Victor Hebenstreit, Bloomfield, N.J., assignors to Walter Kidde & Company, Inc., Belleville, N.J.
Filed Jan. 20, 1970, Ser. No. 4,336
Int. Cl. G05g *17/00*
U.S. Cl. 74—2 **18 Claims**



A valve-operating control head for a fire extinguishing system which can be equipped to be operated by either an electrical, a pneumatic, or a mechanical fire detecting system. The control head mechanism includes a lever centrally mounted on a pivot and carrying a trigger member rotatably mounted on one end thereof. The trigger holds a rotatable spring-loaded valve-operating device against operation by engaging a pin extending from the valve-operating device. A spring extending from the control head casing holds the trigger in engagement with a ratchet wheel carried by the pivot and also tends to rotate the lever and the trigger about the pivot to move the trigger out of engagement with the pin. The trigger is held against rotation about the pivot by either holding the free end of the lever or by holding the ratchet wheel from rotating. When the control head is utilized with an electrical detecting system, a solenoid is positioned to hold the lever and when it is used with a pneumatic system a diaphragm-operated arm holds the lever. When the control head is used with a mechanical detecting system a tensioned cable extending from a fusible link is wound around the ratchet wheel to hold it from rotating.

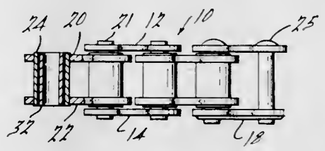
3,643,516
HYDROSTATICALLY SUPPORTED GYROSCOPE, A COMBINED CENTRIFUGAL AND VISCOUS SHEAR ROTARY PUMP
Oscar D. Jacobson, New York, N.Y., assignor to The Bendix Corporation
Filed Mar. 14, 1969, Ser. No. 807,232
Int. Cl. G01c *19/20*
U.S. Cl. 74—5 **9 Claims**

A combination in a hydrostatically supported gyroscope of a centrifugal and viscous shear rotary pump of a disc impeller type with extremely shallow spiral grooves fabricated in both sides of the disk and in close proximity to smooth stator surfaces so as to cause a high viscous shear in a low-viscosity fluid to effect an improved pressure rise in the spiral grooves as the disk rotates in a sense aiding in a centrifugal pumping action of the impeller disk. In operation, the disk floats hydrodynamically between the stator faces and on a center journal bearing so that there are no wear points during operation of the rotary pump which is particularly adapted



for use in an arrangement for supplying fluid pressure to hydrostatically supported bearings of the gyroscope.

3,643,517
POWER TRANSMITTING CHAIN WITH FLOATING BUSHING AND METHOD OF MANUFACTURE
William T. Paul, Holyoke, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 29, 1970, Ser. No. 85,053
Int. Cl. F16g *13/02*
U.S. Cl. 74—254 **7 Claims**

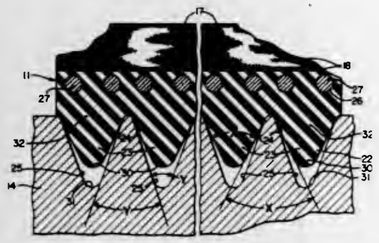


At least one floating metallic bushing acts as an intermediate bearing member between roller link subassemblies and link pin subassemblies of a power chain. At least one master connection link is held in place by means of a readily disconnectable spring clip. Manufacturing steps include placing a roller link subassembly over open link pin ends of adjacent link pin subassemblies, inserting at least one metallic floating bushing over each pin end and closing each link pin subassembly by fixing link pin members on the open link pin ends of each link pin subassembly.

3,643,518
BELT AND BELT DRIVE ASSEMBLY
Roy E. Semin, and Joseph C. Geist, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 8, 1970, Ser. No. 44,452
Int. Cl. F16g *7/02, 1/22*; **F16h** *5/20*
U.S. Cl. 74—219 **22 Claims**

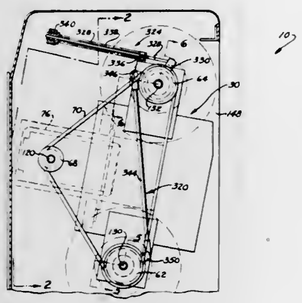
A flexible power transmission belt used in conjunction with toothed and/or grooved pulleys of a belt drive assembly and capable of driving from opposite portions thereof. The belt includes one driving portion which is preferably transversely toothed to mesh with toothed pulleys and an opposite longitudinal plural V-ribbed driving portion which engages at least one grooved pulley. The belt is particularly useful in belt drive assemblies in which the arc of contact between the

plural V-ribbed driving portion of the belt and the pulley is small or relatively small with the required high tension



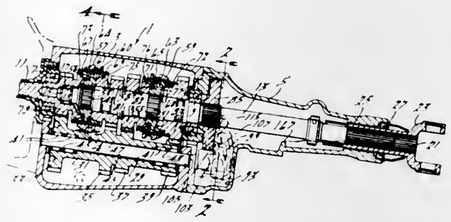
materially increasing stresses on the tension member of the belt.

3,643,519
TRANSMISSION ASSEMBLY
Robert C. Ebersold, Novelty, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Apr. 8, 1970, Ser. No. 26,675
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 A **21 Claims**



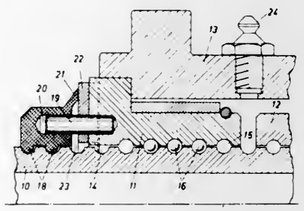
An improved transmission assembly includes a pair of variable diameter drive pulleys having effective diameters which can be changed in response to a command signal to vary the speed of rotation of an output member relative to the speed of rotation of an input member. To accomplish this, the command signal effects operation of a reversible servomotor to operate drive assemblies. One of these drive assemblies moves a section of one drive pulley toward another section of the drive pulley to increase the effective diameter of this drive pulley. Operation of the drive assemblies also moves a section of the other drive pulley away from an associated section of the pulley to decrease the effective diameter of this drive pulley. As the sections of the drive pulleys are being moved, a signal generator provides a feedback signal which varies with variations in the effective diameters of the drive pulleys. An error detector interrupts operation of the servomotor when the feedback signal is a predetermined function of the command signal. A belt stretch compensator assembly is provided to increase the effective diameters of both drive pulleys in response to an increase in the effective length of a drivebelt extending between the drive pulleys.

3,643,520
TRANSMISSION
Bohdan A. Andrushkiw, Dearborn Heights, and Lynn A. Range, Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 20, 1970, Ser. No. 29,978
Int. Cl. F16h *3/08*
U.S. Cl. 74—333 **4 Claims**



A fully synchronized four-forward-speed transmission with a reverse gear in an extension housing. The reverse gear is coupled to a constantly driven countershaft by a slideable reverse idler member. An interlock device including two levers having notches in the ends thereof into which pins are movable is also provided.

3,643,521
SEALING MEANS FOR A TRANSMISSION MECHANISM
Sven Walter Nilsson, Partille, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden
Filed Jan. 15, 1970, Ser. No. 3,106
Claims priority, application Sweden, Jan. 16, 1969, 521/69
Int. Cl. F16h *55/00;* **F16k** *41/00*
U.S. Cl. 74—459 **8 Claims**

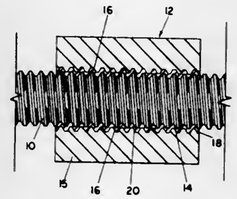


The nut component of a transmission mechanism is at each end provided with a sealing member designed as a tubular element enclosing the screw of the transmission and having an internal, helical ridge to cooperate therewith. The member is further provided with means for biasing the member away from the nut in such a manner that said ridge will be forced against the sidewall of the groove in the screw remote from the nut, whereby the groove is continuously swept clean as the nut is displaced along the screw. The sealing member is further designed as a reservoir for grease and is equipped to release surplus grease from the nut, when the latter is being filled.

3,643,522
LOW FRICTION BEARING LINER FABRICATION
John Peter Fullam, Baie D'Urfee, Montreal, Quebec, Canada, assignor to Abex Industries of Canada, Ltd., St. Laurent, Montreal, Canada
Filed Aug. 31, 1970, Ser. No. 68,116
Int. Cl. F16h *1/18, 55/22, 57/04*
U.S. Cl. 74—424.8 A **16 Claims**

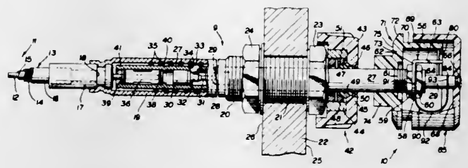
A low friction nut liner for lining the interior of the nut member of a jackscrew type actuating mechanism. The nut

liner is cut longitudinally into three arcuate segments, one segment being cut along two parallel planes. The three segments are bonded at the interior of the nut member with an epoxy adhesive which contains aluminum particles for improved heat transfer from the liner to the nut member. The



liner is mounted in the nut member by inserting each segment, in turn, axially into the nut member and then moving it radially outwardly against the inner wall of the nut member. The segment having parallel cuts is inserted last by similarly moving it axially into the nut member and then moving it parallel to its cuts into the remaining gap.

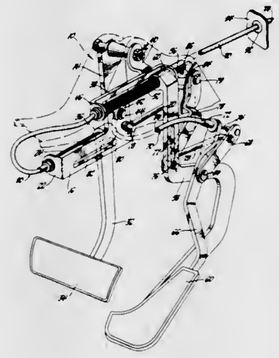
3,643,523
KNOB ASSEMBLY FOR VERNIER CONTROL DEVICE
John Mihalla, Alliance, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Mar. 30, 1970, Ser. No. 23,846
Int. Cl. F16c *1/16*
U.S. Cl. 74—502 **5 Claims**



A knob assembly particularly adaptable to a control device for moving the core of a push-pull cable with respect to the casing thereof in gross amounts, and, selectively, in accurately fine, or vernier, increments. The control device employs concentric inner and outer members that are rotatable in unison to provide vernier control, but the inner member must first be moved in one direction independently of the outer member and sequentially thereafter the inner and outer members must be moved axially in unison to effect gross control. The knob assembly has a fixed knob means secured to the inner member, and a floating knob means slidably mounted about the outer member. A lever arm is swingingly mounted on a fulcrum carried by the outer member and operatively joins the floating knob means to the inner member in order to effect the required coordination of movement between the inner and outer members in response to the natural application of forces to the knob assembly by an operator.

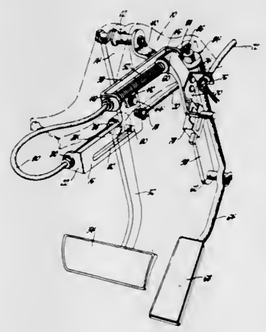
3,643,524
CONTROL PEDALS FOR VEHICLES
Lloyd D. Herring, Jenison, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 26, 1970, Ser. No. 40,668
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **6 Claims**

Control pedal apparatus including brake and accelerator pedals adapted for connection with the brake and throttle mechanisms of an automotive vehicle further includes a pivoted brake pedal carrier member suitably swingably mounted on support structure of the vehicle and an accelerator pedal bracket fixedly mounted on such support, each carrier and bracket having mounted for rotation thereon an Acme screw. One such screw carries an integrally formed nut end portion of the brake pedal member while the other rotatably mounts an elongated nut or throttle pedal carrier



member pivotally carrying on a distal end thereof a low-pivoted accelerator pedal member. Linkage between the support structure, the accelerator carrier and the pedal thereon adjusts the vertical attitude of the pedal on the carrier during rotation of the corresponding screw. The accelerator pedal connects with the vehicle throttle through push-pull cable means arranged to transfer actuation through flexure of a loop portion thereof within the passenger compartment.

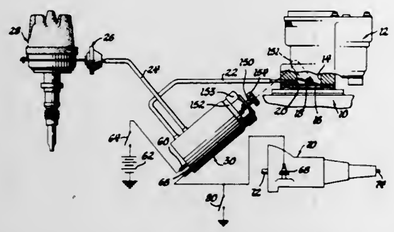
3,643,525
ADJUSTABLE CONTROL PEDALS FOR VEHICLES
Jack E. Gibas, Essexville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 26, 1970, Ser. No. 40,669
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **4 Claims**



An adjustable control pedal apparatus including brake and accelerator pedals adapted for connection with the brake and throttle mechanisms of an automotive vehicle further includes a pivoted brake pedal carrier member suitably swingably mounted on support structure of the vehicle and an accelerator pedal carrier fixedly mounted on such support, each of the carriers having mounted for rotation thereon an Acme screw. One such screw carries an integrally formed nut end portion of the brake pedal member while the

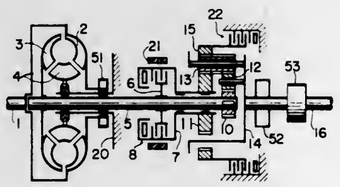
other rotatably mounts an elongated nut member pivotally carrying on a distal end thereof the accelerator pedal member. A tandem cable drive connects the two screws for simultaneous adjusting rotation under operation of a reversible electric motor connected with only one of the screws.

3,643,526
IGNITION TIMING AND THROTTLE POSITION CONTROL
William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 28, 1970, Ser. No. 75,939
Int. Cl. F02d *33/02*; **F02p** *5/12*
U.S. Cl. 74—860 **4 Claims**



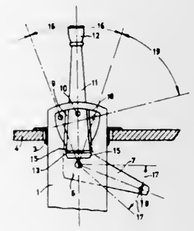
A solenoid is energized when the transmission is in high-drive ratio and is deenergized when the transmission is in the lower drive ratios or when the engine ignition system is shut off. A valve carried on the solenoid plunger closes the vacuum conduit between the induction passage and the distributor vacuum advance unit when the solenoid is deenergized to prevent vacuum advance during low-drive ratio operation and opens when the transmission is in high-drive ratio to permit vacuum advance during high-drive ratio operation. The solenoid plunger also carries a carburetor throttle stop which prevents closure of the carburetor throttle beyond a relatively fast idle position when the transmission is in high-drive ratio and which permits closure of the carburetor throttle to a relatively slow idle position when the transmission is in low-drive ratio or when the engine ignition system is shut off.

3,643,527
HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION FOR A MOTOR VEHICLE
Kiyoshi Ohnuma, Toyoda-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoda-shi, Japan
Filed Dec. 17, 1969, Ser. No. 885,849
Claims priority, application Japan, Dec. 28, 1968, 43/95922
Int. Cl. B60k *21/10*
U.S. Cl. 74—868 **4 Claims**



A hydraulic control system for an automatic transmission, having a torque converter or a hydraulic coupler and a servo-operated speed change gear, for use in vehicles, includes a pressure regulator regulating a control hydraulic pressure supplied to the servo-operated speed change gear, and further includes a pressure modulator valve connected to the pressure regulator to assure smooth torque transmission for a large torque demand during low speed operation of the vehicle. A compensating pressure provided by the pressure modulator valve is applied to the pressure regulator valve to assure a control pressure, proportional to the throttle pressure opening or the torque demand, being applied to the servo-operated speed change gear. The pressure modulator valve restricts the control pressure to a value below the maximum constant pressure for a throttle valve opening exceeding a certain value, preventing excessive increase in the control pressure and assuring a constant low control pressure when the vehicle speed increases to a predetermined speed or when the transmission is set for the usual driving range.

3,643,528
ACTUATING HANDLE ASSEMBLY
Jan van der Loos, Broekseweg 82, Meerkerk, Netherlands
Filed Mar. 2, 1970, Ser. No. 15,330
Int. Cl. B60k *21/00*
U.S. Cl. 74—876 **8 Claims**

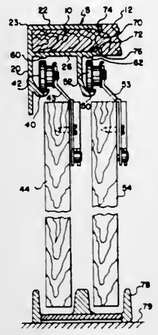


An assembly for actuating the reversing gear and the gas throttle of an internal-combustion engine, comprising a first lever for actuating the reversing gear and a second lever for actuating the throttle, the first lever being rotatable around a fixed axis and the second lever being mounted on a pivot on the first lever which pivot does not coincide with said fixed axis. The second lever is also used as an operating handle. During the first part of the stroke of this operating handle on either side of the neutral position, the extremity of the second lever lying in the vicinity of the fixed axis of the first lever is guided by guiding surfaces in such a manner that both levers substantially move as a unit, but after leaving these surfaces the second lever is independently movable around its pivot and the first lever is blocked in its extreme position.

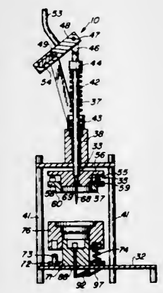
3,643,529
FURNITURE CONSTRUCTION
Joseph P. Bright, 315 Parkway Drive, Berea, Ohio
Filed July 17, 1969, Ser. No. 842,536
Int. Cl. E05d *13/02*, *15/06*
U.S. Cl. 16—96 **1 Claim**

Furniture construction including a sliding door support track structure comprising a vertical wall portion having a top flange member extending horizontally outwardly in one direction from its top edge and having an intermediate flange member extending in said one direction outwardly from the wall portion below and parallel to the top flange member. The flange members are spaced from each other to provide a cavity therebetween for receiving the top panel front edge portion of a cabinet. Depending from the intermediate flange member is a hook portion or first track for receiving rollers of a sliding door. The vertical wall portion also has a hook portion or second track formed in such wall portion parallel to the first track for receiving rollers of a second sliding door.

Another form of the invention includes a drawer handle comprising a flat top wall having first, second, and third flange portions depending therefrom. The first flange portion forms a handle for manual grasping. The second and third flange portions are spaced from each other to form a cavity therebetween for receiving the top edge portion of a drawer front wall.



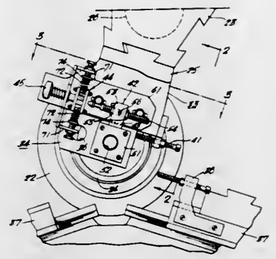
3,643,530
BUTTON ASSEMBLY APPARATUS
Malcolm J. Roebuck, La Salle, Ill., assignor to First National Bank in Peru
Filed Aug. 12, 1970, Ser. No. 63,125
Int. Cl. A44b *1/06*
U.S. Cl. 79—5 **11 Claims**



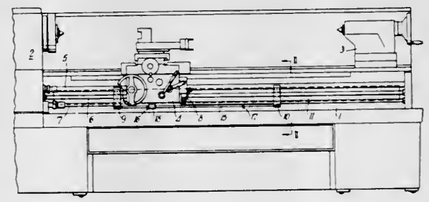
A button assembly apparatus including a die assembly having two die members movable between an open and closed position. The die members include means for applying a covering on a button shell upon closing of the die members. Upon closing the die members a second time, selectively positionable means render the die members suitable for assembling the covered shell to a body member to complete the button.

3,643,531
MECHANICAL CHECK
John E. Burke, Rroomall; Edward J. Kaiser, Philadelphia, both of Pa., and Charles J. Myers, Woodbury, N.J., assignors to J. E. Lonergan Company, Philadelphia, Pa.
Filed Nov. 13, 1969, Ser. No. 876,311
Int. Cl. B23b *5/36*
U.S. Cl. 82—11 **9 Claims**

An attachment for a lathe having a turret slide head which mounts a tool for normal movement in a stroke axially towards the chuck, and which may be displaced laterally away from its "home" position at the forward end of its stroke by a pusher mounted on a cross slide of the lathe. This mechanical check retains the tool in its displaced position against the bias of the spring which normally seeks to return the tool to its "home" position.



3,643,532
SHAFT SUPPORT FOR LATHES
Eric Frank Moos, Braiswick, England, assignor to The Colchester Lathe Company Limited, Colchester, England
Filed May 21, 1970, Ser. No. 39,209
Claims priority, application England, May 27, 1969, 26,750/69
Int. Cl. B23b *21/00*
U.S. Cl. 82—27 **5 Claims**

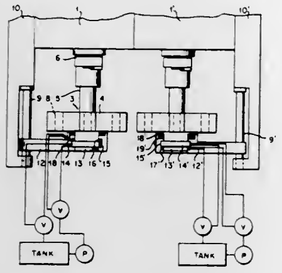


A lathe having a long feed shaft and lead screw in which such long shafts are supported against sagging and whirling by a shaft support assembly including a support beam mounted longitudinally on the lathe bed and two support brackets slidable along the support beam, the brackets being joined by a rod having stops engageable by a projection on the carriage so that the position of the carriage determines the position of the brackets to support the shafts remote from the carriage.

3,643,533
TURRET LATHE
Franz Reiners, Post Berg/Erkelenz-land, and Georg Walk, Rheydt, both of Germany, assignors to A. Monforts, Monchengladbach, Germany
Filed Dec. 1, 1969, Ser. No. 881,216
Claims priority, application Germany, Nov. 30, 1968, P 18 11 958.9
Int. Cl. B23b *29/30*
U.S. Cl. 82—36 A **4 Claims**

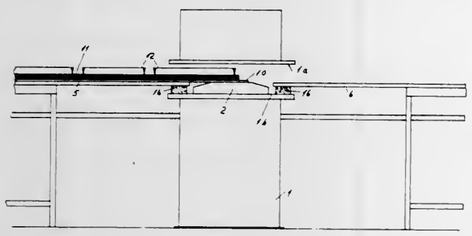
Turret lathe includes a multiarmed tool turret rotatably adjustable to at least two angular positions, and indexing arm carried by the tool turret for indexing the tool turret in each of the angular positions thereof, the indexing arm being

formed with an indexing bore, and an indexing pin continuously extending through the indexing bore for uninterrup-



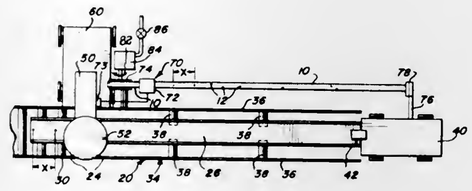
tedly holding the indexing arm against rotation with the rotatable tool turret.

3,643,534
METHOD FOR DIECUTTING SHEET MATERIALS BY MEANS OF A DIECUTTING MACHINE AND A DIECUTTING PLANT FOR THE PERFORMANCE OF THIS METHOD
Erik Chresten Jacobsen, Hong, Denmark, assignor to Vilh Pedersen A/S, Hoeng, Denmark
Filed Jan. 15, 1970, Ser. No. 7,299
Int. Cl. B26d *1/44*
U.S. Cl. 83—29 **2 Claims**



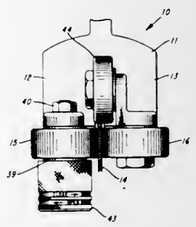
Die cutting of textiles, plastic foil, plastic fabric, paper and similar materials occurs by means of assembly of cutting dies having cutting edges corresponding to parts to be cut with a bridge diecutting machine including an upper pressure plate movable vertically up and down and including table frames having tabletops that form supporting surfaces for a pad for the material. Part of the supporting surfaces nearest to the diecutting machine has a resilient support and is pressed downwardly by the upper pressure plate of the diecutting machine during the downward stroke of the upper pressure plate. There is a step of placing the cutting die corresponding to the parts separately with their cutting edges facing downwards on the material according to a visually determined arrangement, having regard to the pattern of the material and the degree of the utilization of the material. With respect to that part of the pad which during the operation is outside the active scope of the diecutting machine, together with material and the cutting dies, there is a step of following the pressure plate in the movement of the latter so that the cutting dies within the scope of the pressure plate always lie approximately horizontally.

3,643,535
CONTROL METHOD AND APPARATUS FOR A FABRICATING SYSTEM
Raymond L. Valente, Kankakee, Ill.
Filed Apr. 27, 1970, Ser. No. 32,097
Int. Cl. B26d *5/32*
U.S. Cl. 83—50 **21 Claims**



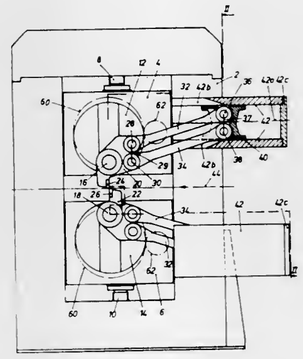
Control apparatus and a method for providing fabricating apparatus of the type employed with structural members, with an automated operating cycle, where various tool means at one or more tooling stations required for the fabrication of the structural members are actuated automatically. The apparatus utilizes a programming template formed from a thin, flexible metal ribbon that is coiled about a stationary reel, having a free end thereof fixed with regard to a structural member that is moving relative to said tool means. A sensing unit, also fixed, monitors movement of the programming template and upon the detection of the occurrences, indicia on said template at a monitored point produce signals that are employed to control the various functions of the operating cycle. The relationship between the control apparatus and the remainder to the system is such that the template movement corresponds exactly to that of the structural members, so that the dimensional relationship of the patterns of operations to be performed on said members may be transferred directly to the template.

3,643,536
SELF-ADJUSTING ROLLER GUIDE
Carl J. Alexander, Moorepark, Mich., assignor to Wells Manufacturing Corporation, Three Rivers, Mich.
Filed June 1, 1970, Ser. No. 42,158
Int. Cl. B23d *55/08*
U.S. Cl. 83—201.15 **2 Claims**



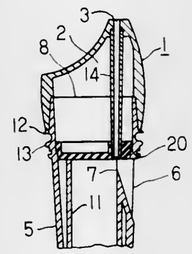
Self-adjusting band saw roller guide comprises a yoke having a pair of opposed legs with guide roller thereon. At least one of the rollers is carried by an eccentric sleeve bearing rotatably mounted on a leg of the yoke. A torque spring means mounted on the yoke engages the eccentric sleeve bearing and urges the roller to a predetermined position.

3,643,537
CONTINUOUSLY ROTATING SHEARS
Gunter Karl Fries, Neukirchen-Saar, Germany, assignor to Moeller & Neuman GmbH
Filed Aug. 17, 1970, Ser. No. 64,293
Claims priority, application Germany, Aug. 10, 1969, P 19 42 355.3
Int. Cl. B26d *1/56*
U.S. Cl. 83—305 **4 Claims**



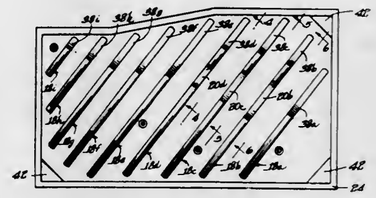
A continuously operating rotating shears for cutting rolled products to definite lengths includes cutter supports mounted on crankpins and controlled by pairs of parallel connecting rods guided at their remote ends by means of guideways. Shafts carrying the crankpins are supported in eccentric bushings which can be rotated at a different, but synchronously related, speed from the cutter shafts to provide for a variable number of miss-cuts between active cuts.

3,643,538
MOUTHPIECE OF WIND INSTRUMENTS
Nobuo Toyama, 375 Yodobashi, Shinjuku-ku, Tokyo, Japan
Filed Mar. 19, 1970, Ser. No. 21,039
Int. Cl. G10d *7/02*
U.S. Cl. 84—384 **6 Claims**



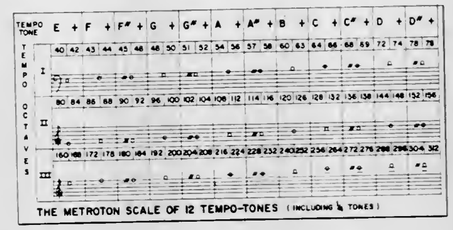
In a mouthpiece of wind instruments and the like, the improvement comprising an outer barrel portion and a thin-walled wind slot portion having a disc mounted at its base, said portions being combined together and connected to a hollow cylinder portion such that the wind slot portion is surrounded by the outer barrel portion.

3,643,539
TONE-BALANCING RIB MEMBER
Clifford W. Andersen, DeKalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed June 1, 1970, Ser. No. 41,977
Int. Cl. G10c *3/06*
U.S. Cl. 84—195 **7 Claims**



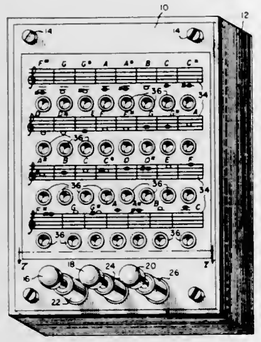
A laminated piano soundboard includes a treble and bass bridge for transmitting vibrations from the piano strings and a plurality of spaced-apart ribs for localizing the vibrations at the center, prime resonating area of the soundboard. Since the laminated character of the soundboard tends to inhibit localization thereby adversely affecting its tonal quality, carefully sized and shaped weakened areas are provided in certain preselected ones of said plurality of rib members for assuring enhanced resonance.

3,643,540
APPARATUS, INCLUDING ELECTRONIC EQUIPMENT FOR PROVIDING A TONAL STRUCTURE FOR THE METRONOMIC DIVISIONS OF MUSICAL TIME
Milton M. Rosenstock, 780 Riverside Dr., New York, N.Y., and George J. Doundoulakis, 2498 Kayron Lane, North Bellmore, Long Island, N.Y., assignors to Milton M. Rosenstock and Albert C. Nolte, Jr., part interest to each
Filed July 21, 1970, Ser. No. 57,385
Int. Cl. G10b *15/00*
U.S. Cl. 84—484 **10 Claims**



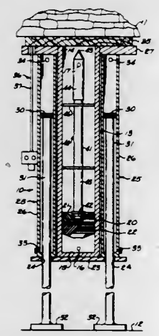
The repetition rates of audible sounds are correlated to the audio frequency values of tones. While the invention can be carried out by mechanical apparatus, the specific improvement disclosed utilizes electronic equipment for efficiency, effectiveness, accuracy and reliability. Electronic equipment produces audible tones and audible sounds. Manually operated controls select a tone or a sound, select an octave range for the tone or the sound and control the duration and repetition rate of the tone or the sound. A electroacoustic transducer connected to the controls produces the selected tone or sound in the controlled octave range at the controlled duration and repetition rate to relate pitch tonally and numerically to the repetition rate of pulse beats.

3,643,541
MUSIC TEACHING AID
Alver W. Ruth, 1125 Young Street, Honolulu, Hawaii
Filed May 26, 1969, Ser. No. 827,769
Int. Cl. G09b *15/02*
U.S. Cl. 84—485 **4 Claims**



An educational device for teaching a student chromatic notes and fingerings of horn instruments including a panel having note and scale representations, finger piston valves, and indicator and electrical circuit including jacks corresponding to the notes on the scale whereby placing the indicator in a jack and fingering of the piston valves causes the indicator to give a signal that the proper fingering corresponding to the selected note has occurred.

3,643,542
MINE ROOF PINS AND APPARATUS FOR SETTING THE SAME
Gerald W. Elders, Christopher, Ill., assignor to Pin-Set Corporation, Christopher, Ill.
Continuation-in-part of application Ser. No. 846,795, Aug. 1, 1969. This application Jan. 2, 1970, Ser. No. 110
Int. Cl. F16b *15/00*
U.S. Cl. 85—10 **8 Claims**

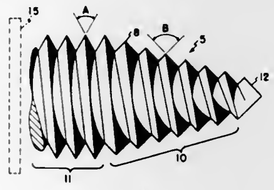


A roof pin adapted to be pressed into a mine roof which includes an elongate shank having a head at one end and a pointed tip at the other end, a first portion of the shank being of greater peripheral dimension than a second portion to control the amount of surface pressure and skin friction when pressed into the mine roof, and thereby predetermine the force required for insertion. The relative longitudinally axial length of the first and second shank portions are preselected to provide such regulation. In one embodiment, the first shank portion is located ahead of the relatively reduced second shank portion in the direction of the pointed tip to provide a passage in the roof strata that is larger than the reduced second shank portion.

The method of installing a pin of this type in a mine roof comprises the steps of inserting the elongate pin by pressing into the mine roof, subjecting the mine roof to a compressive pressure in the area of the pin to force the strata tightly together so that the pin will hold the strata in such condition, and releasing the compressive pressure after the pin has been inserted so that the roof strata will provide substantially full length contact with the pin to lock the pin in place. In those pins in which the first shank portion is located ahead of the relatively reduced second shank portion in the direction of the pointed tip, the roof strata will fill in behind the first shank portion and assist in locking the pin in place when the compressive pressure is released after the pin has been inserted.

The pin-setting device for use in fixing pins of this type in a mine roof include positioning means that locate the pin at a predetermined area of the roof and subject the mine roof to the compressive pressure in the predetermined area to force the roof strata tightly together so that the pin will hold the strata in such condition, and which will selectively release the compressive pressure after the pin has been inserted so that the roof strata will provide substantially full length contact with the pin to lock the pin in place.

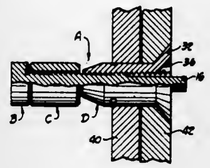
3,643,543
MACHINE SCREW
Charles E. Gutshall, Ellwood City, Pa., assignor to Textron, Inc., Providence, R.I.
Filed Sept. 4, 1970, Ser. No. 69,771
Int. Cl. F16b *25/00, 35/00*
U.S. Cl. 85—46 **4 Claims**



A coarse machine screw which terminates in a gimlet point has a plurality of threads adjacent to the point end which have an included angle substantially greater than the standard included angle. In the preferred embodiment, two thread forms are employed, the thread form adjacent the point end having an included angle of about 90° and the standard thread form, i.e. 60°, comprising the balance of the threads.

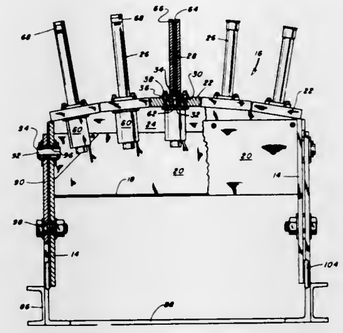
3,643,544
HIGH-STRENGTH STRUCTURAL BLIND FASTENER FOR USE IN AIRPLANES, ROCKETS AND THE LIKE
Joseph H. Massa, Rocky River, Ohio, assignor to The National Screw & Manufacturing Company, Cleveland, Ohio
Filed Feb. 27, 1969, Ser. No. 803,040
Int. Cl. F16b *13/06, 39/30*
U.S. Cl. 85—72 **3 Claims**

A three-part high-strength structural-type blind fastener of the bolt- and nut-type, the parts of which are made of high-strength material and have a structural design relationship



which provides in the fastener higher tensile and shear characteristics and improved clamp up characteristics.

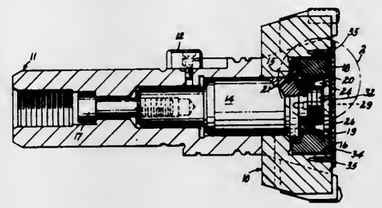
3,643,545
ZERO BREECH GRENADE-LAUNCHING SYSTEM
Joseph A. Nahas, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 13, 1969, Ser. No. 876,518
Int. Cl. F41f *1/06*
U.S. Cl. 89—1 F **4 Claims**



A grenade-launching pod including a housing supporting a matrix of spigots aimed to cover a sector of approximately 20°. Each spigot includes a hollow pipe containing a slidable firing pin biased rearwardly by a coil spring. A matrix of solenoids is secured to the inside of the housing, each one aligned with a respective spigot and having its plunger in contact with the firing pin of the associated spigot. A propellant cartridge is removably held in a slot in the end of each spigot and a grenade tail pipe is fitted over the spigot. When energized, the solenoid propels its plunger which pushes the firing pin into a primer in the propellant cartridge which in turn fires the cartridge and propels the grenade off the spigot and along a ballistic trajectory.

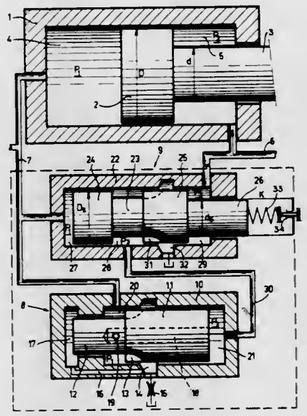
3,643,546
TUNED DAMPING MEANS FOR INCREASING THE MINIMUM DYNAMIC STIFFNESS OF A SPINDLE SYSTEM
Robert C. Richter, Cincinnati, Ohio, and Shimoga K. Srinath, Seattle, Wash., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Dec. 18, 1969, Ser. No. 886,063
Int. Cl. B23c *9/00;* **B23b** *47/00*
U.S. Cl. 90—11 A **12 Claims**

The minimum dynamic stiffness of a milling cutter and its holder, which form a spindle system, is increased by dispos-ing a tuned damped vibration absorber, which comprises a damping mass supported by a viscoelastic material element,



within the milling cutter. The element of viscoelastic material is retained within the damping mass by retaining means.

3,643,547
HYDRAULIC RECIPROCATING ENGINE
Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 16, 1969, Ser. No. 858,445
Claims priority, application Netherlands, Sept. 18, 1968, 6813313
Int. Cl. F15b *13/042, 11/08*
U.S. Cl. 91—48 **2 Claims**

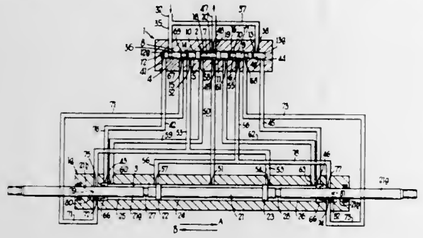


A hydraulic reciprocating engine having a piston which is movable in a cylinder, at least one piston rod is secured to the piston. On one side of the piston a supply pressure prevails, and on the other side a regulating pressure prevails. A pressure regulating system is connected between the duct in which the supply pressure and the regulating pressure prevails. The value of a regulating pressure is adjustable in accordance with the value of the supply pressure and in accordance with an adjusting element, for example a spring, acting on a regulating valve of the system. The pressure-regulating system has at least one regulating member, in which the ratio of the surfaces of the regulating member has such a value that in the absence of a force exerted by the adjusting element, the regulating pressure adjusted by the pressure regulating valve relative to the supply pressure, has a value which is inversely proportional to the ratio of the value of the piston surfaces of the hydraulic motor.

3,643,548
FLUID-PRESSURE-OPERATED MOTORS

Philip Butterworth, Bramhall, England, assignor to Butterworth Hydraulic Developments Limited, London, England

Filed Apr. 20, 1970, Ser. No. 29,782
Int. Cl. F01l *25/06*
U.S. Cl. 91—298 **27 Claims**

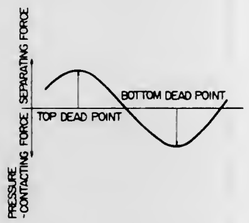


A fluid-pressure-operated reciprocating motor having a spool and piston slidable in spool and piston cylinders respectively in which the spool has a first pair of opposed faces which respectively communicate with a pair of spool-working chambers, and a second pair of opposed faces which respectively communicate with a pair of spool-biasing chambers, and the piston is double acting and has a pair of opposed faces which respectively communicate with a pair of piston chambers, reversal of the piston being initiated by reversal of the spool which serves to connect one piston chamber alternately to fluid pressure and to exhaust and to connect the other piston chamber alternately to exhaust and to fluid pressure respectively; in which the timing of reversal of the spool is determined according to the position of the piston in its cylinder, and the motor is so arranged that, with the spool at an end of its stroke, one spool-working chamber is open to pressure while the other spool-working chamber is open to exhaust to urge the spool to that end and one spool-biasing chamber is open to exhaust and, to reverse the spool, fluid pressure in both spool-working chambers is caused to apply equal and opposite axial thrusts on the spool and pressure is caused to be admitted to the other spool-biasing chamber in opposition to the load on the spool applied by fluid pressure in said one spool-working chamber.

3,643,549
AXIAL PISTON PUMP OR MOTOR

Kuniyasu Nagatomo, Fukuoka-ken, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,464
Claims priority, application Japan, Aug. 1, 1969, 44/60821
Int. Cl. F04b *1/20*
U.S. Cl. 91—505 **4 Claims**



An axial piston pump or motor comprises a cylinder barrel fixedly mounted on a rotating shaft, a plurality of cylindrical bores formed axially in the cylinder barrel, piston slidably fitted in the associated bores, a swashplate adjustably arranged at a desired inclination angle with respect to the axis of the shaft, slipper pads each engaged with an end of each piston and a retainer ring for keeping the slipper pads in contact with the swashplate.

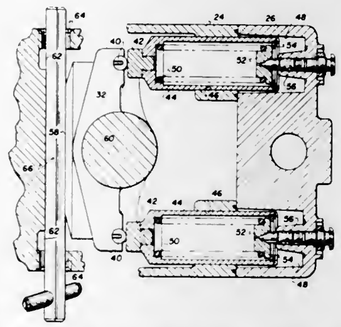
A spherical pressure member which externally engages a corresponding central bore of the retainer ring is internally slidably mounted on a cylindrical portion of an annular pusher having a flange portion which is in turn slidably mounted on the shaft. Between the spherical pressure member and the pusher is disposed a first spring while a second spring is disposed between the pusher and the cylinder barrel.

As inclination angles below a predetermined valve of the swashplate, the retainer ring is urged toward the swashplate through engagement of the flange of the annular pusher with the spherical pressure member under the force of the second spring. At an inclination angles above the predetermined valve, the retainer ring is urged through engagement of the flange of the pusher therewith at a point.

3,643,550
POWER TRANSMISSION

Robert J. Lease, Rochester, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 16, 1970, Ser. No. 11,528
Int. Cl. F04b *1/20*
U.S. Cl. 91—506 **3 Claims**

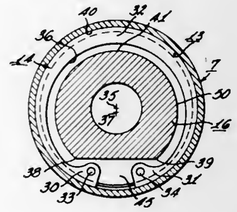


A variable displacement piston pump or motor unit has an oscillatable yoke controlled by double-acting preloaded spring centering mechanism. Abutments are provided in the casing and on the yoke between which a tool may be wedged to hold the yoke in neutral position while the centering springs are being adjusted. The housing has openings providing access for the tool, which openings may also serve as fluid connections.

3,643,551
HYDRAULIC CYLINDER

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 7, 1970, Ser. No. 62,028
Int. Cl. F01b *29/00*
U.S. Cl. 92—128 **9 Claims**

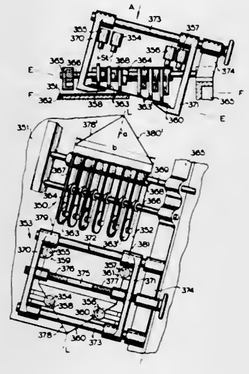


A hydraulic cylinder having a cylindrical sleeve with a closure wall on the end including a seal and a resilient lock element removably positioned to fix the axial position of the wall relative to the sleeve.

3,643,552
BAG-MAKING MACHINE

Willi Stork, Apfelallee 3, 4542 Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany, by Elfriede Stork geb. Aufderhaar, heir of said Stork, deceased

Filed Feb. 11, 1970, Ser. No. 10,486
Claims priority, application Germany, Feb. 11, 1969, P 19 06 774.4
Int. Cl. B31b *1/08*; **B65b** *57/02*; **B31b** *29/74*
U.S. Cl. 93—27 **11 Claims**



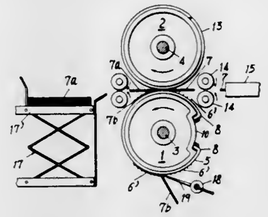
A machine for making bags having cross bottom end closures, comprising an end closure forming station from which each bag moves with the end closure folded over so that an inner half of the end closure lies flat against one side of the bag, a delivery station and, disposed between the stations, a diverter which is controlled by end-closure checking means and is effective to reject faulty moving bags from a conveying path for the bags between the stations, the checking means for said inner half comprising photoelectric reflection sensors cooperating with stationary reflectors for checking any deviation in the position of edges of the inner half from a predetermined desired position as the bags are moved past the checking means, wherein guide means provided in the conveying path for the bags are effective to engage each end closure and erect it to an oblique position so that the said inner half of the end closure is lifted off the said bag side, the reflectors being carried by a bracket disposed such that the reflectors pass between the bag side and the lifted inner half as the bag moves past the checking means.

3,643,553
STRIP MACHINE

Hideo Morimoto, 1090 Kono-machi, Adachi-ku, Tokyo, Japan

Filed Oct. 16, 1969, Ser. No. 866,962
Int. Cl. B26d *7/18*; **B31b** *1/14*
U.S. Cl. 93—36 A **5 Claims**

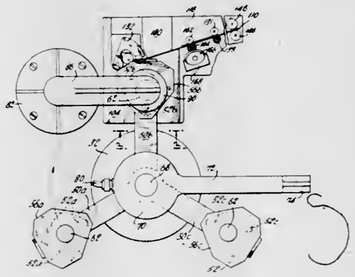
A strip machine comprising a waste strip roll and a press roll arranged opposite to each other. A waste contour corresponding to a waste portion to be cut from the material cardboard is placed on a soft plate such as rubber and a number of pins are pierced from the back side of said waste contour through said soft plate so that the tips of pins project from the surface of the soft plate. Such plate is removably placed on the circumferential surface of said strip roll. When another developed configuration of a cardboard box is applied to the strip roll, the old waste contour is replaced with a new one with a number of pins planted so that the positions of the pins are altered on the strip roll.



3,643,554
BOX MANUFACTURING APPARATUS

Gerald Lippman, Oceanside, N.Y., assignor to Thermo-Dielectric Machine Co., Inc.

Filed Mar. 20, 1970, Ser. No. 21,306
Int. Cl. B31b *1/12, 1/72, 9/60*
U.S. Cl. 93—36.3 **10 Claims**



A method and apparatus for manufacturing boxes. A sheet feeder feeds in succession sheets of predetermined peripheral configuration to a working station where a strip feeder feeds an elongated strip along the periphery of the sheet. After a given length of strip corresponding to the peripheral length of the sheet has been fed to a position next to the edge of the sheet, the strip is cut, and then a fastening unit presses part of the strip against an outer face of the sheet along the peripheral edge thereof while the remainder of the strip extends inwardly beyond the sheet form an endless side of a box. The apparatus and method are particularly suitable for manufacture of heart-shaped boxes.

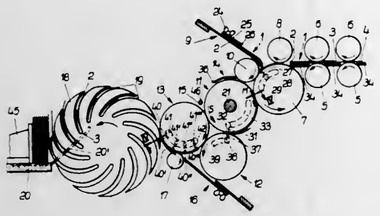
3,643,555
FLAP FOLDING APPARATUS FOR ENVELOPE MAKING MACHINES

Guenter Ehlscheid, Neiderbieder, Germany, assignor to Winkler & Duennebier, Neuwied am Rhine, Germany

Filed Sept. 23, 1970, Ser. No. 74,661
Claims priority, application Germany, Oct. 13, 1969, P 19 51 548.1
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 **3 Claims**

Machine for producing envelopes has a flap folding apparatus whereby the flap of an envelope is optionally folded against its rear side, or after being previously folded is opened once again, or is folded against the front side of the envelope. The apparatus has a first suction cylinder and delivery discs. The invention is particularly characterized in

that between the first suction cylinder and the delivery discs there are provided a second and third suction cylinder preceded by an adjustable stop abutment and a flap opener and associated with a folding pocket and a folding cylinder. The apparatus has three operational possibilities. According to the first one, each envelope with a closed flap is conveyed by the suction cylinders into a slot of the delivery discs. According to the second operation each envelope is conveyed by the first suction cylinder to a stop abutment, then is



gripped by the third suction cylinder and is conveyed in the opposite direction to a flap opener, so that the envelope with an open flap is conveyed into the slot of the delivery discs. According to the third operation each envelope which is provided with a precreased folding edge and a flap is transferred by the first and second suction cylinders into a folding pocket and then is conveyed by the third suction cylinder under a folding cylinder and into a slot of the delivery discs.

3,643,556

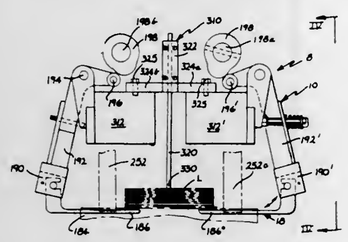
LABEL STACKING

Donald H. Drent, Belding, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.

Filed May 15, 1970, Ser. No. 37,621

Int. Cl. B31b *1/98;* **B65b** *27/08;* **B65c** *9/10*

U.S. Cl. 93—93 DP **5 Claims**



Apparatus for stacking labels or the like, employing cooperative apparatus that advances the individual labels successively to stacking comb means, where the previously advanced and stacked labels are momentarily elevated on a specially controlled basis, for insertion of the individual label beneath the stack portion and above the comb means, with unique reciprocated control means on the forming stack.

3,643,557

BAGMAKING MACHINES

Bruce Ian Hayes, Bristol, England, assignor to Beasley French & Company Limited, Bristol, England

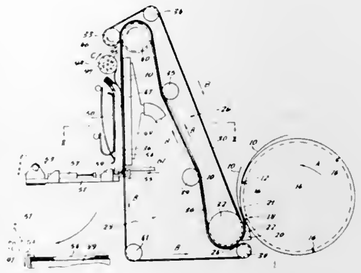
Filed Aug. 14, 1970, Ser. No. 63,801

Claims priority, application Great Britain, Aug. 14, 1969, 40,773/69

Int. Cl. B65h *33/00*

U.S. Cl. 93—93 DP **5 Claims**

At the delivery end of a bagmaking machine, upper and lower endless belt conveyors are arranged to run face to face over a common portion of their respective paths. The beginning of this portion provides a nip which receives the bottom end of each bag in turn as it is ejected from the surface of a rotating drum. The bags are conveyed between the conveyors through their common portion and are delivered therefrom downwardly to a delivery station at which they are



arrested. The conveyors are run more slowly than the drum so that the bags, which are spaced apart around the drum, overlap each other in a continuous shingled form when they pass through the conveyors. Thus, when arrested at the delivery station they from easily into a stack or wad of bags.

3,643,558

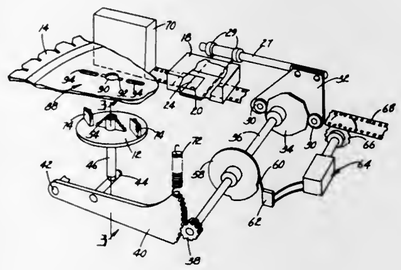
AUTOMATIC SETTING FOR PHOTOCOMPOSING MACHINE

Roland F. Hecker, Berkeley Heights, N.J., and Mahmut I. Goench, Queens Village, N.Y., assignors to Vari-Typer Corporation, Hanover, N.J.

Filed Aug. 13, 1970, Ser. No. 63,539

Int. Cl. B41b *21/08*

U.S. Cl. 95—4.5 **14 Claims**



A photocomposing machine of the type where an annular set of character transparencies mounted on a disc form carrier is utilized in conjunction with a sensitized strip and a light to expose the strip with the desired characters. The machine is provided with an arrangement wherein the disc has reference surfaces to set the aperture size for the lighthouse as well as a full font or half font mode of filmstrip advancement.

3,643,559

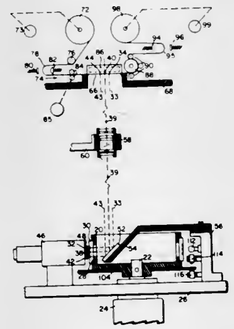
PHOTOGRAPHIC TYPE-COMPOSING MACHINE

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla.

Continuation-in-part of application Ser. No. 629,300, Apr. 7, 1967, now abandoned , Continuation-in-part of application Ser. No. 368,839, , now Patent No. 3,291,015, Continuation-in-part of application Ser. No. 441,738, , now Patent No. 3,422,736, Continuation-in-part of application Ser. No. 506,936, , now Patent No. 3,416,420, Continuation-in-part of application Ser. No. 617,912, Feb. 23, 1967, now Patent No. 3,512,562. This application May 21, 1969, Ser. No. 827,128

Int. Cl. B41b *19/00, 19/06, 21/24*

U.S. Cl. 95—4.5 **32 Claims**



A high-speed photographic type-composing machine is disclosed. Light is projected from a source of illumination such as a cathode-ray tube, laser, or multiplicity of flashlamps through a plurality of light-directing means such as light channels to an arcuate projection zone which is formed by a portion of the curved surface of a rotatable character-carrier. The light channels may be movable in unison among a plurality of discrete positions relative to the arcuate projection zone. The characters are carried on filmstrips which are mounted on a rotatable drum by rigid holding means in the form of arcuate segments, and the characters continually pass through the projection zone, which is large enough to include a plurality of characters at any given time. Selected characters are projected from the zone to an image-receiving surface (such as a film) by an optical projection system which may include a field-flattening lens. Control circuitry is provided for storing and sorting selected characters such that these characters may be illuminated in a sequence which is dissimilar to their respective positions in the composed line. The control circuitry is adapted to achieve this result by varying the time at which any selected character is illuminated as it passes through the projection zone, and is further adapted to center lines on the film by delaying the projection of the first character of the line by a time interval which is dependent upon the selected point size. Also, the film may be incrementally moved by stepping motors in order to compensate for relative displacement between the film and characters if the character-type style and/or point size is changed.

3,643,560

EXPOSURE TIME SETTING DEVICE FOR A PHOTOGRAPHIC CAMERA WITH A FROSTED GLASS PLATE PRECISION SETTING AND AN ELECTRONIC TIME SETTING ARRANGEMENT

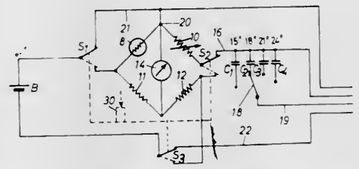
Heinrich Sylvester Bonk, Calmbach, Germany, assignor to Prontor-Werk Alfred Gauthier, GmbH, Calmbach Black Forest, Germany

Filed June 24, 1969, Ser. No. 836,081

Claims priority, application Germany, July 2, 1968, P 17 72 777.4

Int. Cl. G01j *1/44;* **G03b** *7/08*

U.S. Cl. 95—10 C **7 Claims**



A device for the light dependent setting of the exposure time of a photographic camera having a frosted glass pane observation plane for controlling the exposure adjustment and an electronic time setting arrangement comprising resistance-capacitance members which are separately selectable in accordance with the photographic sensitivity of the exposed medium. The device has a funnel-shaped housing with an opening for the entry of light. The housing is adapted to be placed upon the frosted glass pane of the camera. Disposed inside the housing is a light sensitive element that is a component of a bridge circuit which also has an adjustable resistance and a meter movement coil. With these components, the resistance value corresponding to the degree of brightness of the frosted pane is determined and delivered to the circuit of the electronic time setting device by a switch arrangement and a wire connection.

3,643,561

EXPOSURE CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

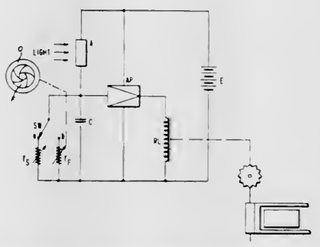
Saburo Numata, Ohmiya, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Ohmiya-shi, Saitama, Japan

Filed Feb. 3, 1970, Ser. No. 8,219

Claims priority, application Japan, Feb. 3, 1969, 44/7943

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **2 Claims**



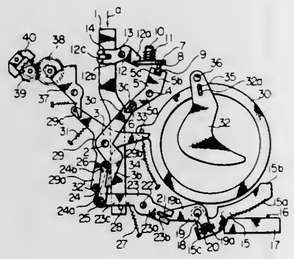
A single-lens reflex camera which includes a photosensitive light sensor having diode characteristics and a hinged mirror that is swung out of the view finder optical system during shutter release. The shutter is electrically operated through a relay coil under the control of an electrical condenser connected to the relay coil for controlling shutter speed. The photoelectric sensor is series connected to a source of voltage. A switch coupled to the shutter selectively connects a

pair of resistors in parallel with the condenser and in series with the sensor during shutter release.

3,643,562
PROGRAMMING SHUTTER FOR A PHOTOGRAPHIC CAMERA

Matsuzaki Soichiro; Masanobu Sato, and Kato Toshikazu, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1970, Ser. No. 90,289
Claims priority, application Japan, Nov. 22, 1969, 44/111050; Nov. 27, 1969, 44/112675
Int. Cl. G01j *1/04*
U.S. Cl. 95—10 CE **4 Claims**

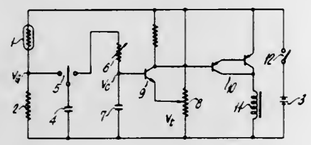


A photographic shutter in which the shutter blades are opened to such an extent as to define the effective aperture of the objective corresponding to the scene brightness for obtaining the proper exposure. The shutter has a first lever which pivots through a predetermined angle each time the shutter is operated, a second lever coupled with a shutter blade operating ring so as to open the shutter blades to an objective aperture corresponding to the pivoting movement of the second lever, and a third lever interposed between the first and second levers so as to transmit the movement of the first lever to the second lever. The pivot axis of the third lever is shifted in accordance with the scene brightness sensed by a photoelectric exposure control device so that the second lever is moved at a variable transmission ratio by the first lever in accordance with the sensed scene brightness for proper exposure.

3,643,563
SHUTTER-TIMING NETWORK

Tsukumo Nobusawa, Asaka-shi, Saitama-ken, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 23, 1969, Ser. No. 835,524
Claims priority, application Japan, July 3, 1968, 43/45878
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **5 Claims**

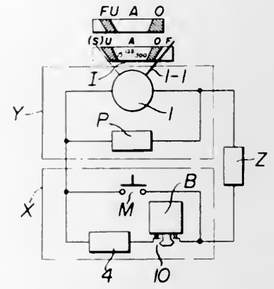


A shutter-timing network comprises a photoconductor and first resistor connected in a series, a timing circuit including a variable second resistor and timing capacitor connected in series, a memory capacitor, and a switch alternatively connecting the memory capacitor across the first resistor and across the timing circuit. The timing capacitor is connected to the input of a solid-state switch whose output controls a shutter closure release electromagnet. The first resistor may be variable and the switch response voltage may be adjusted by a variable resistor bias control. The various adjustments are made in accordance with photographing parameters other than the incident light.

3,643,564
INDICATOR FOR FLASHLIGHT PHOTOGRAPHY

Takashi Uchiyama, Tokyo, Japan, assignor to Canon Inc., Tokyo, Japan

Filed Oct. 21, 1969, Ser. No. 868,085
Claims priority, application Japan, Oct. 28, 1968, 43/78462; Dec. 6, 1968, 43/106459
Int. Cl. G01j *1/44*; G03b *7/02, 7/16*
U.S. Cl. 95—10 C **25 Claims**

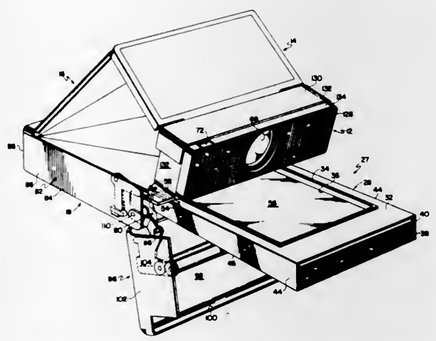


An indicator for flashlight photographing is provided with an exposure-measuring circuit Y comprising at least an ammeter 1 and a photosensitive current source P. "A flash-ready" range F is provided outside of an EE operation range A of a pointer 1—1 of said ampere meter 1, an overrange 0 and an under range U. As the exposure is adjusted the pointer 1—1 is brought in the flash-ready range F to indicate that the preparation for flash photography is completed.

3,643,565
FOLDING CAMERA WITH DEVELOPING MEANS

Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 30, 1970, Ser. No. 102,775
Int. Cl. **G03b** *19/02, 17/52*
U.S. Cl. 95—11 R **7 Claims**

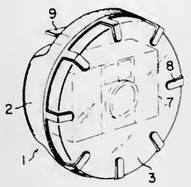


A compact folding camera of the self-developing type including an open ended chamber for receiving a film assemblage. A lens housing section and a processing housing section are mounted in closing relation to the open end of the chamber when the camera is folded. Both are movable, in opposite directions, to expose the open end of the chamber to allow a film assemblage to be inserted into or withdrawn from the chamber through the open end.

3,643,566
UNDERWATER CASE FOR CAMERAS

Sadanao Ando, Musashino-shi, Tokyo, and Nobuki Matsumoto, Yokohama-shi, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sept. 19, 1969, Ser. No. 859,498
Claims priority, application Japan, Sept. 27, 1968, 43/84592
Int. Cl. **G03b** *17/08*
U.S. Cl. 95—11 W **3 Claims**

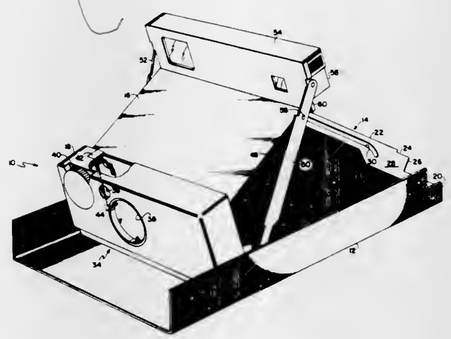


An underwater case for cameras whose specific gravity when housing a camera is less than unity and which has support members for supporting the camera within the case so as to deviate the center of gravity of the camera from that of the case toward the front face thereof. The case has a rear surface which is colored with a color which can readily distinguish the case in the water. Ordinary cameras can be used for underwater photography and the case housing the camera floats and can be readily recognized under water.

3,643,567
CAMERA LATCH

Lawrence M. Douglas, Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1969, Ser. No. 885,420
Int. Cl. **G03b** *17/04*
U.S. Cl. 95—11 R **11 Claims**

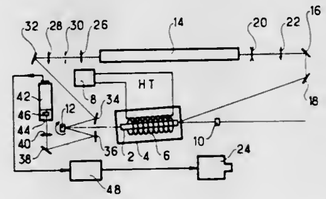


A folding camera including a plurality of housing sections pivotally coupled for movement between a compact, folded position and an extended, operative position. A shutter-actuating member is provided for actuating the camera's shutter and a detent located adjacent the shutter actuating member is adapted for movement into locking engagement with the shutter-actuating member to prevent actuation of the camera's shutter in all positions of the camera except the fully extended, operative position. In an alternative embodiment the camera's shutter actuating member is provided with a solenoid-controlled detent. The solenoid circuit includes three switches connected in series; the first being closed by movement of the shutter-actuating member; the second being closed only when the camera is in the fully extended position; and the third being closed only when the camera's loading door is closed thereby insuring operation of the shutter only when the camera is in the fully extended position and the loading door is closed.

3,643,568
LASER SYNCHRONIZING ARRANGEMENT FOR PHOTOGRAPHIC ILLUMINATION

Hubert Guillet, Arpajon, and Denis Le Goff, Enghien, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Sept. 15, 1969, Ser. No. 858,056
Claims priority, application France, Sept. 13, 1968, 166255
Int. Cl. **G03b** *9/70*
U.S. Cl. 95—11.5 R **8 Claims**



A laser synchronization system synchronizes the emission of a light pulse on a laser triggered by a rotating mirror and the control of the exposure of a photographic camera by means of a light pulse. The system comprises a light detector connected to the camera and is adapted to supply an electrical pulse suitable for controlling the camera. An auxiliary light source in the form of an auxiliary laser directs a light beam through an optical system onto the light detector when the rotating mirror is in appropriate angular position. Two semitransparent mirrors define the optical resonating cavity of the auxiliary laser, and the auxiliary laser emits light in two opposite directions in the form of a visual display beam and a synchronizing beam whereby a visual display of the path of light emitted by the triggered laser is achieved by a continuous light beam supplied by the auxiliary light source.

3,643,569
COLOR RESTORATION OF UNILAYER AND DUOLAYER COLOR PHOTOGRAPHIC ELEMENTS

William E. Vary, 4734 Bromley Avenue, Bradbury Park, Md.

Filed May 25, 1970, Ser. No. 40,400
Int. Cl. **G03b** *33/00*
U.S. Cl. 95—12.2 **13 Claims**

Full or partial color is restored to unilayer or duolayer emulsion films which have been sensitized to only one primary color per layer by adding the required subtractive primary color(s) to the viewing, projection, or printing illumination means.

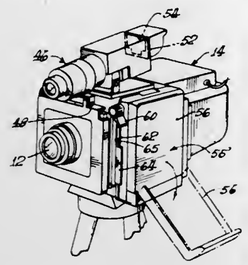
3,643,570
DUAL CAMERA

Marvin A. Reid, and William R. Swift, both of Placentia, Calif., assignors to Coleman Engineering Company, Inc., Santa Ana, Calif.

Filed Mar. 17, 1969, Ser. No. 807,718
Int. Cl. **G03b** *35/08*
U.S. Cl. 95—18 **10 Claims**

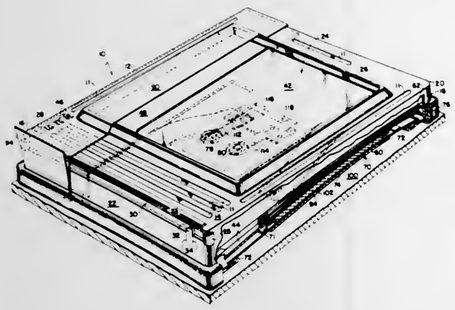
To provide an immediate duplicate of an image projected

by a beam of light onto a conventional film in a camera, a



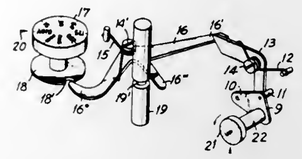
beam splitter is employed to reflect a portion of the beam to project the same image on "Polaroid" film in the camera.

3,643,571
PHOTOGRAPHIC FILM ASSEMBLAGE
Irving Erlichman, Wayland, and Maxwell E. Lawrence, West Acton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 19, 1968, Ser. No. 785,157
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 **26 Claims**



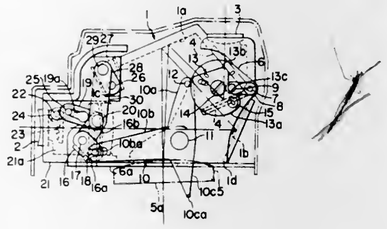
A photographic film pack including a container having a forward wall and dependent end and sidewalls formed of a rigid vapor-impermeable material such as sheet metal and an opening at the rear; a plurality of self-developing film units each including a photosensitive element stacked within the container; a support member located behind the stack of film units; a battery located behind the backing member; and a vapor-impermeable closure for the opening at the rear, the closure being displaceable relative to the forward wall. The forward wall includes an exposure opening and one end wall is formed with a withdrawal opening for the film units. A vapor-impermeable cover is removably secured to the container in closing relationship to the exposure and withdrawal openings. The film pack is adapted to be employed in electrically operated photographic apparatus, having a spring-biased pressure member adapted to extend into the container through the opening at the rear for urging the film units toward the forward wall to locate the forwardmost film unit in position for exposure, and spring-biased electrical contacts for engaging the terminals of the battery to couple the battery to electrically energized means within the camera.

3,643,572
CAMERA STRUCTURE FOR PREVENTING IMPROPER AUTOMATIC EXPOSURES
Hiroshi Kurei, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Oct. 30, 1970, Ser. No. 85,641
Claims priority, application Japan, Dec. 6, 1969, 44/115580
Int. Cl. G01j *1/00, 1/52*
U.S. Cl. 95—42 **10 Claims**



A single-lens reflex camera of the type which provides automatic exposure determination with light received through the objective. A mirror or reflector has a viewing position in the path of light received through the objective and permitting proper automatic exposure determination. This reflector also has an exposure position situated beyond the latter path of light and preventing proper automatic exposure determination. For special photography purposes, a manually operable positioning structure coacts with the reflector to maintain it in its exposure position. A manually operable selecting structure is provided for selecting either automatic exposure determination or one of a plurality of exposure-determining factors. A shutter release is available to be manually actuated for tripping the shutter. A blocking structure coacts with the shutter release as well as with the positioning structure and selecting structure to block the shutter release automatically in response to location of the positioning structure in its position maintaining the reflector in its exposure position and to location of the selecting structure in the position providing for automatic exposure determination.

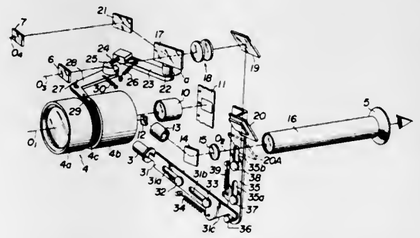
3,643,573
EYE-LEVEL EYEPIECE SHIELDING DEVICE FOR EYE-LEVEL AND WAIST-LEVEL VIEWFINDER
Kenji Hiruma, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 18, 1969, Ser. No. 850,711
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **5 Claims**



An eye-level eyepiece shielding device for a camera in which a waist-level eyepiece is disposed upwardly of a final reflecting surface of a pentaroof-type reflecting mirror of a viewfinder optical system of a single-lens reflex camera, an eye-level eyepiece is disposed in the vicinity of a light exit of said pentaroof-type reflecting mirror, a planar reflecting mirror is disposed between the waist-level eyepiece and the final reflecting surface, and a shielding plate which can optionally shield and open the eye-level eyepiece is disposed forwardly of the eye-level eyepiece, the shielding plate being adapted to

optically shield or open the eye-level eyepiece in response to the rotation of the planar reflecting mirror through a cam mechanism and a link mechanism so that when the waist-level eyepiece is used the external light through the eye-level eyepiece may be prevented from entering into the viewfinder optical system.

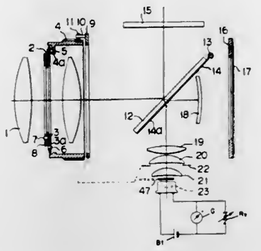
3,643,574
FOCUSING DEVICE FOR OPTICAL EQUIPMENT
Hisao Moriyama, Chino, and Katsuhide Takagi, Okaya, both of Japan, assignors to Sankyo Kogaku Kogyo Kabushiki Kaisha, Suwa-shi, Japan
Filed July 29, 1970, Ser. No. 58,828
Claims priority, application Japan, July 31, 1969, 44/73096
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 C **9 Claims**



A focusing device is provided for optical equipment of the type having a pair of windows providing respective focusing light beams, a taking lens system including a focusing lens having a bodytube, and a view finder optical system. The focusing device comprises a semitransparent focusing mirror positioned in the optical path of one focusing light beam and a focusing total reflector positioned in the optical path of the other light beam and reflecting the other light beam to the semitransparent mirror. Either the semitransparent mirror or the total reflector is connected to the bodytube of the focusing lens for angular displacement responsive to focusing movement of the focusing lens. An image-forming optical system of high magnification is positioned in the optical path behind the semitransparent mirror. An optical path switching reflector is disposed rearwardly of the image-forming lens system, and is moved into the optical path of the view finder optical system during focusing and moved out of the optical path of the view finder optical system after focusing has been effected. This movement of the switching reflector may be effected, through associated linkage, by depression of a manually operable switching button. Alternatively, the movement of the switching reflector can be effected, through suitable linkage, responsive to movement of a lens hood on the taking lens bodytube or cylinder.

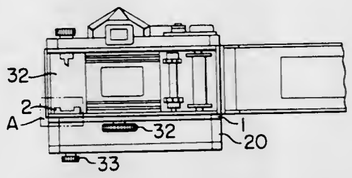
3,643,575
EXPOSURE-MEASURING DEVICE IN A SINGLE-LENS REFLEX CAMERA
Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Oct. 25, 1968, Ser. No. 770,666
Claims priority, application Japan, Oct. 31, 1967, 42/69584
Int. Cl. G03b *19/12, 9/02*
U.S. Cl. 95—42 **4 Claims**

An exposure meter system for a single-lens reflex camera which can function either by sensing the light passing through the maximum diaphragm opening of an interchangeable lens mounted on the camera or by sensing the light which has been restricted by the diaphragm of the interchangeable lens. Light from the interchangeable lens is directed through a relay optical system to a photocell. An adjustable aperture in the relay optical system is adapted to be connected to the diaphragm ring of the interchangeable lens to adjust the sensitivity of the photocell for different aperture ratios of different interchangeable lenses. When the adjustable aperture in the relay optical system is not connected,



compensating means associated with the photocell are automatically actuated to enable the exposure meter system to operate by using the diaphragm of the interchangeable lens to control the light reaching the photocell.

3,643,576
CAMERA CAPABLE OF COMBINATION WITH A POWER-DRIVEN HOUSING FOR FILM-REWINDING
Kouichi Daitoku, and Shuji Kimura, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 4, 1970, Ser. No. 95,147
Claims priority, application Japan, Dec. 12, 1969, 44/117539; 44/117540
U.S. Cl. 95—31 EL **7 Claims**

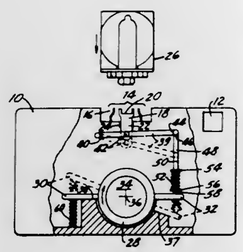


A camera of the type which uses a magazine provided with a supply spool having the opposite ends thereof exposed out of the shell of the magazine, a slit for passing a film therethrough and capable of being opened and closed, and a slit-operating means for opening and closing the slit provided in one end face of the magazine. The camera includes an aperture formed below a film magazine containing chamber, and a light-intercepting cover for covering the aperture to prevent the entry of any extraneous light therethrough while enabling the opening and closing of the camera's backplate and the slit of the film magazine, whereby power-driven film-rewinding operation can be accomplished by replacing the light-intercepting cover with power-driven film-rewinding means, and the camera's backplate and the slit of the film magazine can be opened and closed with the power-driven film-rewinding means mounted on the camera. The camera may further include a retaining member for retaining the light-intercepting cover so as to inhibit the removal of such cover unless the camera's backplate is opened, and a release member for releasing the light-intercepting cover from its retained position provided in the film magazine containing chamber.

3,643,577
CAMERA HAVING FOCUS ADJUSTMENT ASSEMBLY

Paolo Monachesi, Carcare, Italy, assignor to Societa' Per Azioni Ferrania

Filed Apr. 1, 1969, Ser. No. 811,885
Claims priority, application Italy, Apr. 4, 1968, 15,957
Int. Cl. G03b 3/00
U.S. Cl. 95—45 7 Claims

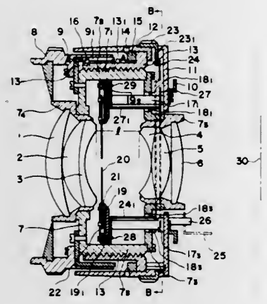


A camera is shown having a focus adjustment assembly, a focusing lens having a principal axis, and a support for attachment of an illumination device to the camera. The focus adjustment assembly causes the focusing lens to traverse its principal axis between near and distant focusing positions in response respectively to attachment to or removal from the camera of the illumination device.

3,643,578
PHOTOGRAPHIC CAMERA LENS AND DIAPHRAGM-MOUNTING MECHANISM

Tatsuo Kobayashi, Kaizuka; Keisuke Maeda, Osaka, and Kyozo Uesugi, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1970, Ser. No. 9,717
Claims priority, application Japan, Feb. 18, 1969, 44/12094; Mar. 19, 1969, 44/21049
Int. Cl. G03b 9/07
U.S. Cl. 95—64 B 3 Claims

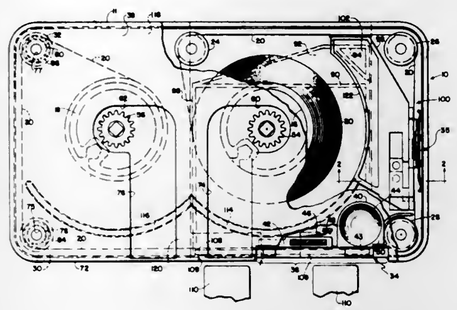


A lens and diaphragm mounting barrel mechanism for a photographic camera. The mechanism comprises a fixed barrel and a rotatable barrel interconnected by helicoid structures to cause relative axial movement of the rotatable barrel in response to rotation thereof. A diaphragm is mounted within the rotatable barrel and is interconnected with the fixed barrel to prevent its rotation relative to the latter.

3,643,579
MOTION PICTURE PROCESSING SYSTEM

Rogers B. Downey, Lexington, and Paul W. Thomas, Duxbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1969, Ser. No. 888,604
Int. Cl. G03d 3/00
U.S. Cl. 95—89 R 39 Claims



An applicator system particularly useful in a compact motion picture film-handling cassette and which includes a dispensing container having a reservoir chamber for retaining processing fluid with an orifice provided therethrough. A slider displaceably mounted for movement along the dispensing container includes a frame portion across which a strip of flexible material is mounted to overlay the container's orifice. An opening is provided through the strip of flexible material to be out of alignment with the orifice when the slider is in its initial position, to be aligned with the orifice when the slider is in a second position and to once again be out of alignment with the orifice when the slider is in a third position. A leaf spring carried by the slider continually urges a pressure plate towards the strip of flexible material. The filmstrip is progressively advanced across the orifice intermediate the strip of flexible material and the aforementioned pressure plate. When the slider is in its initial and third positions, guide tracks on the dispensing container position the pressure plate in spaced-apart relationship to the filmstrip. These guide tracks are configured such that, when the slider is in its second position, the pressure plate slideably engages the filmstrip against the flexible material. Cooperating portions of the slider and the dispensing container engage one another to preclude further movement of the slider once it has been displaced into its third position.

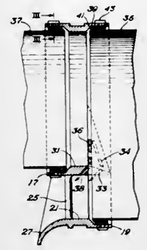
3,643,580
FLUID DISTRIBUTION APPARATUS PRESERVING ALIGNMENT OF LONGITUDINAL AXES OF FLOW

Matthew Siegel, 4051 Riverside Court, Fort Worth, Tex.

Filed Dec. 1, 1969, Ser. No. 881,016
Int. Cl. F24f 7/00
U.S. Cl. 98—40 C 16 Claims

Apparatus for use in a fluid distribution system characterized by a combination hanger and coupling adapter having a coupling means with ends adapted to receive and support ends of ducts with their respective longitudinal axes being maintained in linear alignment so as to preserve the velocity component of a fluid flowing therethrough; and fastening means such as spring clips retained in each end of the coupling means and adapted to move outwardly to allow passage of the end of the ducts and to snap inwardly once the ends have passed, retaining the ducts in the coupling means. Great flexibility is attainable since one end of the coupling means may be smaller than the other and may be concentrically or eccentrically positioned to provide a vent means for

general or directional distribution of a fluid flowing therethrough. The apparatus enables economical and rapid

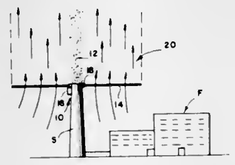


installation of a fluid distribution system, as well as low-operating cost.

3,643,581
FAN ARRANGEMENT FOR POLLUTION CONTROL

Lewis Feldman, 15 Ireland Place, Amityville, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,118
Int. Cl. A23c 9/10
U.S. Cl. 98—58 14 Claims

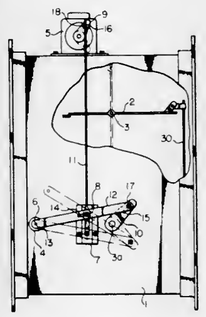


A rotary fan arrangement mounted on a structure such as a smokestack creates a plume of ambient air concentric with the pollutants rising upwardly from the stack, the plume of air serving both to dilute the pollutants and to carry the pollutants aloft. In one embodiment, the fan arrangement includes hinged blades and, in another, centrifugally erected sail rotors.

3,643,582
SAFETY MECHANISM FOR A FLOW CONDUIT DAMPER

Hisashi Mochida, Osaka, Japan, assignor to Daito Mfg. Co., Ltd., Osaka, Japan

Filed June 4, 1970, Ser. No. 43,423
Claims priority, application Japan, June 6, 1969, 44/53068
Int. Cl. F23l 17/02
U.S. Cl. 98—86 7 Claims

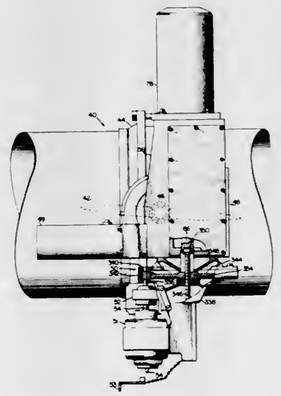


An additional safety mechanism of a fuse melt type applied to a damper arrangement for controlling a temperature condition of an objective circumstance such as air in a room by adjusting a flow rate of a heat medium through a conduit duct upon detection of the temperature for effecting instant intercepting of the flow path upon detection of an abnormal overheated medium's passing in a manner independent from the flow rate controlling action.

3,643,583
BLAST VALVE ACTUATOR

Norman George Fritz, Del Mar, Calif., assignor to International Harvester Company, San Diego, Calif.

Filed Jan. 21, 1969, Ser. No. 792,263
Int. Cl. F23l 17/00
U.S. Cl. 98—119 21 Claims

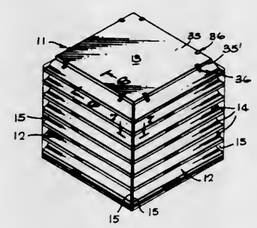


Blast valve assemblies having a rotary or butterfly-type valve member and an actuator including a valve-closing mechanism which is cocked in an inoperative configuration when the valve is open. Pressure on the valve member or a signal to a solenoid incorporated in the actuator unlatches the valve-closing mechanism which slams the valve to its closed position. Reset mechanism is incorporated in the actuator to recock the closure mechanism and reopen the valve.

3,643,584
READILY ASSEMBLED VENTILATOR HOUSING

Albert S. Sheppard, Granada Hills, Calif., assignor to The Exitaire Company, Pacoima, Calif.

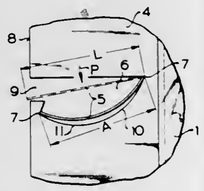
Filed June 8, 1970, Ser. No. 44,278
Int. Cl. F24f 13/08
U.S. Cl. 98—121 13 Claims



A housing formed of louvered panels having similar angularly disposed end plates for abutting relation at the corners to act as posts and to receive securing means for fastening

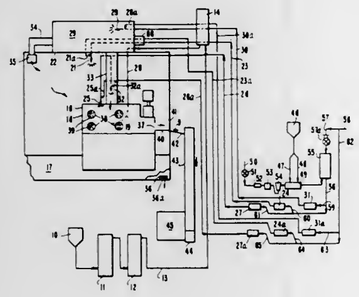
the panels together and a top plate secured by clips to the panels.

3,643,585
DISTRIBUTOR DUCT WITH FLEXIBLE BAFFLE PLATES
Ulrich Barteleit, Kornwestheim; Walter Regenscheit, Zuffenhausen; Helmut Schroder, Ludwigsburg, and Erich Wolf, Wangen, all of Germany, assignors to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany
Filed Sept. 19, 1969, Ser. No. 859,375
Claims priority, application Germany, Oct. 4, 1968, P 18 01 201.6
Int. Cl. F24f *13/06*
U.S. Cl. 98—121 **8 Claims**



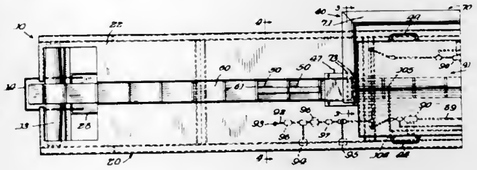
A distributor duct for a pressure airflow through a baking or drying oven has a lengthwise elongate outlet into which are transversely fitted a plurality of spaced-apart flexible baffle plates held in position by being each snapped in a pair of notches formed in the sidewalls of the outlet. The notches are at a distance from each other which is less than the distance between the engaged sides of the baffle plates thereby forcing the plates into a curved configuration and tensioning the plates against the notch walls.

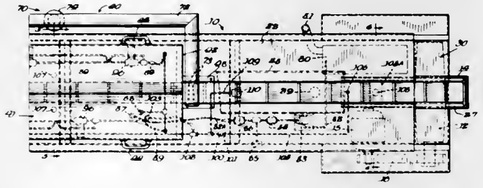
3,643,586
ASEPTIC PACKAGING OF FOODS
David V. Robinson, Laurel, Md., assignor to Donald A. Rosini, Shamokin, Pa., a part interest
Filed July 8, 1970, Ser. No. 53,087
Int. Cl. B65b *55/06*
U.S. Cl. 99—234 R **9 Claims**



A method is provided for producing an aseptically packaged food product in which the food is sterilized and then packaged under aseptic conditions in presterilized containers. An apparatus for carrying out the method is provided.

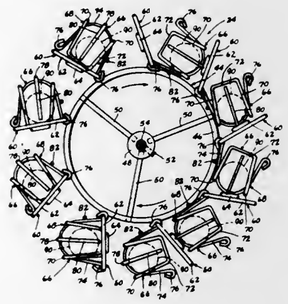
3,643,587
SMOKING MACHINE
Herbert A. Harrington; William M. Allen, both of Cincinnati, and William C. Kuhn, West Chester, all of Ohio, assignors to Beatrice Foods Company, Chicago, Ill.
Filed Nov. 10, 1969, Ser. No. 875,083
Int. Cl. A23b *1/04*
U.S. Cl. 99—261 **9 Claims**





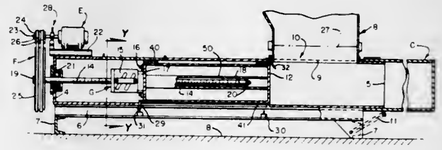
Apparatus for rapidly imparting a smokey flavor to a quantity of comestible products by moving a stream of said products through a smoke chamber wherein said products are exposed to nebulized liquid smoke.

3,643,588
COOKING WHEEL ASSEMBLY FOR BROILING HOT DOGS
John F. Schwarz, and Richard H. Bennett, both of St. Louis, Mo., assignors to Hercules Galion Products, Inc., Galion, Ohio
Filed Oct. 17, 1969, Ser. No. 867,200
Int. Cl. A47g *27/14*
U.S. Cl. 99—427 **9 Claims**



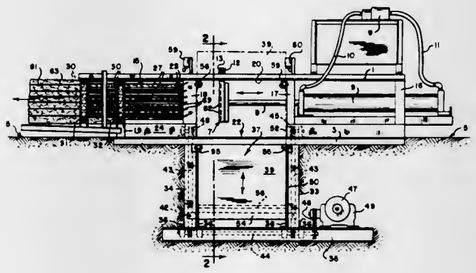
There is shown a cooking wheel assembly for broiling hot dogs rotatably mounted for power movement in a cabinet beneath an electric heater. The cooking wheel, which includes a plurality of circumferentially spaced elongated hot dog receiving wire baskets, each pivotally mounted on a wire platform or cover, is welded to the circumferences of two spaced wheels. The automatic relationship of each basket to its cover in 360° of rotation of the spaced wheels is such that in one segment of travel the basket is spaced from its cover, permitting removal of a cooked hot dog and insertion of one for broiling. In the remaining travel segment, the basket and cover trap and roll the hot dog to present all surfaces to the heater.

3,643,589
STATIONARY REFUSE PACKER
Franklin T. Carter, Waterloo, Ontario, Canada, assignor to Belgium Standard Limited, Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 758,889, Sept. 10, 1968, now abandoned. This application July 27, 1970, Ser. No. 58,598
Claims priority, application Canada, Feb. 23, 1968, 13,248
Int. Cl. B30b *15/14*
U.S. Cl. 100—49 **7 Claims**



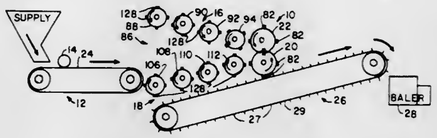
A refuse packer having a ram mounted slidably in a housing for reciprocation between a packing position and a loading position, a ball nut and feed screw ram actuator is connected operatively to the ram and electrically operated power means is arranged to actuate the ball nut and feed screw ram actuator to reciprocate the ram.

3,643,590
VERTICAL-HORIZONTAL BALING PRESS
Dominick M. Aluotto, Brooklyn, N.Y., assignor to Antonio Aluotto, Brooklyn, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,468
Int. Cl. B65b *13/02*; **B30b** *7/04*
U.S. Cl. 100—53 **5 Claims**



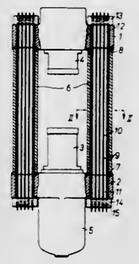
The baling press has a horizontal portion and a vertical portion and is adapted to bale waste paper and other loose and bulky materials. The horizontal portion embodies a conventional baling chamber and a plunger operated by a hydraulic cylinder. The vertical portion embraces a pit disposed between the baling chamber and the plunger when in retracted position, with a lifter of special construction within the pit and cooperating with the end walls of the pit.

3,643,591
CUTTING DEVICE
Charles Gail Bragg, 1238 York Avenue, Corpus Christi, Tex.
Filed Mar. 30, 1970, Ser. No. 23,832
Int. Cl. B30b *3/04*
U.S. Cl. 100—95 **11 Claims**



A cutting assembly comprising a plurality of interposed roller-type cutters that are driven by a prime mover through a torque transmitting device. Also, a feed material conveying device is provided which includes converging live-roll conveyors for simultaneously transporting, crushing and compacting the material being handled prior to insertion into said cutters.

3,643,592
PRESS
Harry Blaser, Oensingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland
Filed Mar. 23, 1970, Ser. No. 21,663
Claims priority, application Switzerland, Mar. 24, 1969, 4395/69
Int. Cl. B30b *15/28*
U.S. Cl. 100—214 **5 Claims**

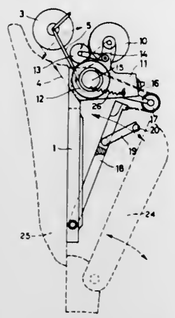


A press comprising a press frame formed of a lower yoke and an upper yoke and intermediate members for interconnecting said lower yoke with said upper yoke. Further, a plurality of preloaded tensioning cables, apart from the aforementioned intermediate members, serve to hold together both of said yokes.

3,643,593
FOIL-FEEDING UNIT FOR BED AND PLATEN HOT DIE PRINTING MACHINE
Hans Krosel, Gladbacherstr. 56, 4018 Langanfeld, Germany
Filed Dec. 11, 1968, Ser. No. 782,804
Claims priority, application Germany, Jan. 10, 1968, P 16 11 234.8
Int. Cl. B41k *3/58*
U.S. Cl. 101—27 **7 Claims**

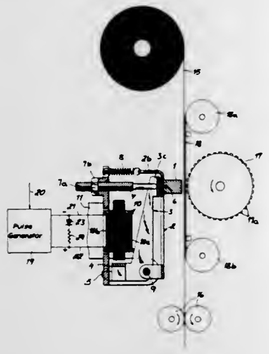
This invention relates to a printing unit for gold printing or the like for use in a platen press of the kind which prints the required symbols onto a substrate from a foil in the form of a web which is unwound outside a type bed of the press and rewound also outside the type bed. The unit comprises a

delivery roller for the foil, a winding roller on which the foil is rewound, a plurality of tension rollers which content the



foil, and a plurality of deflectors for the foil. These are arranged on a replaceable chase.

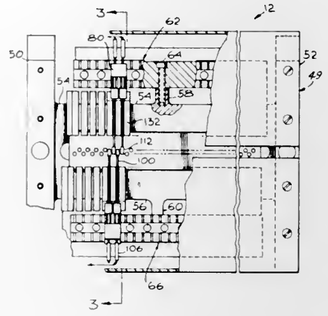
3,643,594
PRINT HAMMER FOR HIGH-SPEED PRINTER
Roberto Pipitone, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed June 9, 1969, Ser. No. 831,460
Claims priority, application Italy, June 11, 1968, 17,577
Int. Cl. B41g *9/38*
U.S. Cl. 101—93 C **11 Claims**



An electromagnetically actuated print hammer comprises two rockers independently pivoted on a common axle, one rocker carrying a striker and being urged by spring force against the other rocker which has a long lever arm acting upon the striker-carrying rocker and a short lever arm carrying an armature attractable by an electromagnet; upon energization of the electromagnet, the armature-carrying rocker is arrested before the striker contacts the working surface.

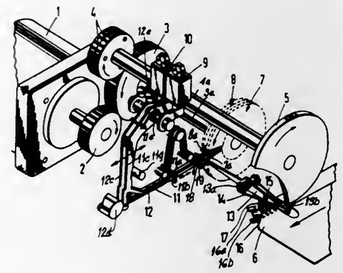
3,643,595
PRINTER HAMMER BANK ASSEMBLY
Clifford J. Helms, Woodland Hills, and Stelios B. Papadopoulos, Westlake Village, both of Calif., assignors to Data Products Corporation, Woodland Hills, Calif.
Filed June 25, 1969, Ser. No. 844,789
Int. Cl. B41j *9/10*
U.S. Cl. 101—93 C **13 Claims**

A hammer bank assembly useful in high-speed impact printers of the type generally employed in data processing systems. The assembly is comprised of a one-piece cast frame having openings therein to permit air cooling. A plurality of hammer modules are provided, each module including a pair of hammers resiliently mounted on a common foot member. A mounting bar having a plurality of aligned recesses is secured to the frame. Each recess is shaped so as to receive and precisely position a foot member along the length of the mounting bar. Additionally, each recess is provided with a cylindrical bore for receiving an internally threaded stud pro-



jecting from a foot member for precisely positioning the foot member in a direction perpendicular to the length of the mounting bar. Each hammer is comprised of an impact tip carried on a rigid coil structure disposed in a permanent magnet field. Energization of the coil develops a force on the coil structure to propel the hammer toward a print drum. An adjustable backstop, carrying a long wearing deformable and resilient sleeve, is provided for each hammer to establish a precise rest position.

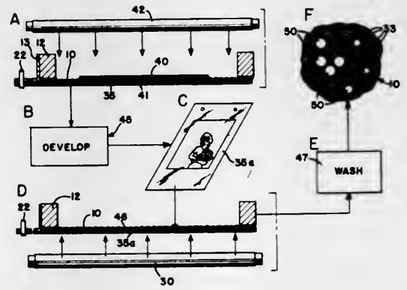
3,643,596
HIGH-SPEED IN-LINE PRINTER
Gunther Vorbach, Schwindegg, and Harald Koch, Baierbrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Nov. 26, 1969, Ser. No. 880,281
Claims priority, application Germany, Dec. 10, 1968, P 18 13 769.4
Int. Cl. B41j *7/06*
U.S. Cl. 101—93 C **10 Claims**



Apparatus for making flying impressions of type symbols by the use of two or more side-by-side impact wheels extending in planes parallel of the plane of a disklike-type carrier and spaced laterally therefrom. A rocking lever pivoted intermediate its ends forms the printing hammer and is actuated by coupling members independently engaged between the teeth of the rotating impact wheels. The impact wheels have teeth spaced one-half pitch apart, where two wheels are used. The teeth correspond to the characters on the type carrier,

and each impact wheel has one-half the number of teeth as the number of characters on the type carrier. The impact wheels are coupled to the type carrier to rotate therewith. The coupling members are actuated by electromagnets energized by an energy storer for the printing energy, and are selectively engaged between the teeth of the thrust wheels by the electromagnets, to actuate the rocking lever to effect the high-speed making of flying impressions of selected-type symbols. In a modified form the rocking lever moves between two stops and engages a vertically guided hammer, and moves the hammer radially to strike a recording medium against the type carrier and returns the hammer on its return stroke.

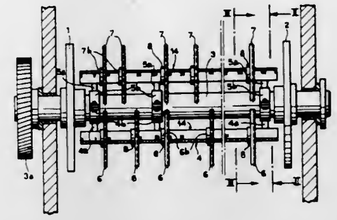
3,643,597
METHOD OF MAKING SCREEN PRINTING ARTICLES
Louis A. Lala, 1612 East Third, Dayton, Ohio
Filed May 12, 1969, Ser. No. 823,630
Int. Cl. B41n *1/24*; **G03c** *5/00*
U.S. Cl. 101—128.3 **10 Claims**



A screen printing article and method of making the article includes using the fibers of the screen to divide the image to be printed into a plurality of dots, the size of each representing the density of the light passing through the screen. Since the fibers of the screen themselves are used to break up the image, each dot being thus created falls substantially centrally in the openings between the fibers. A photographic film is placed adjacent the screen, exposed to the image to be printed and developed. The screen is then coated with a sensitized emulsion, and exposed to light projected through the developed photographic film. The film and the unexposed emulsion are then removed to leave a plurality of openings in the screen, each centrally positioned between the fibers of the screen, through which ink may pass.

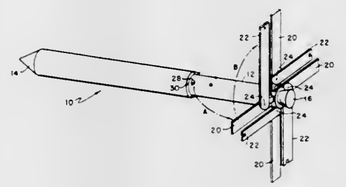
3,643,598
SHEET TRANSFER ROLLER FOR USE IN MULTICOLOR ROTARY PRINTING PRESSES
Paolo Papa, and Federico Capetti, both of Turin, Italy, assignors to Societa' Nebiolo S.p.A., Turin, Italy
Filed Dec. 1, 1969, Ser. No. 881,046
Claims priority, application Italy, Nov. 6, 1969, 50258
Int. Cl. B41l *41/06*
U.S. Cl. 101—420 **4 Claims**

A sheet transfer roller for use in multicolor printing presses is formed by a number of sets of arcuate elements arranged concentrically with the roller axis and slidably mounted on respective guides carried by the roller and extending parallel to the roller axis. The arcuate element can be clamped to the guides at the desired positions by clamping screws. It can be arranged that sheet supporting members carried by the arcu-



ate elements engage a sheet to be transferred at selected relatively print-free regions.

3,643,599
RETRACTABLE STABILIZER FINS AND DRAG BRAKES FOR MISSILES
Henry O. Hubich, Upperco, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 22, 1968, Ser. No. 746,583
Int. Cl. F42b *25/02*
U.S. Cl. 102—4 **5 Claims**

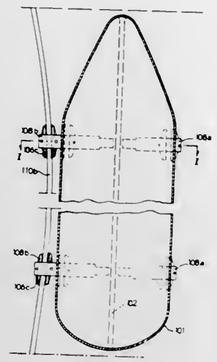


Retractable stabilizing fins and drag brake apparatus having coactive connection between the stabilizing fins and drag brakes. The stabilizing fins when deployed to a position perpendicular to the missile axis present an edge to air stream. The drag brakes when deployed to a position perpendicular to the missile axis produce aerodynamic drag as well as rotate the stabilizing fins to a position to produce aerodynamic drag.

3,643,600
GROUND-EFFECT TRANSPORTATION SYSTEM
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France
Continuation-in-part of application Ser. No. 782,968, Dec. 11, 1968. This application Apr. 16, 1970, Ser. No. 29,141
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **6 Claims**

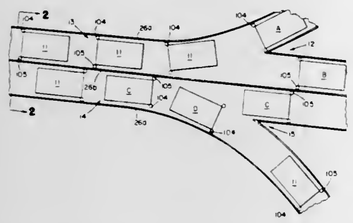
A ground effect transit system in which an air cushion vehicle moves over a track having a guiding upright which is laterally offset with respect to a bearing track surface. The vehicle is provided on each side with a retractable guiding device in the form of an inverted U straddling the upright when the device is in its operative position, so that the vehi-

cle may then be guided selectively from its port side, or from its starboard side, or from both its port and starboard sides.



Such a device is useful for marshalling the tracked air cushion vehicle.

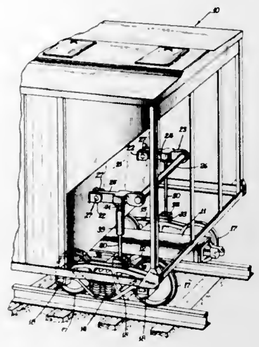
3,643,601
TRANSPORTATION SYSTEM
Paul A. Taylor, East Hartford, Conn., and Thomas A. Boissevain, Bedford, Mass., assignors to Alden Self-Transit Systems Corporation, Bedford, Mass.
Filed June 1, 1970, Ser. No. 41,954
Int. Cl. B61b *5/02, 13/00*
U.S. Cl. 104—88 **11 Claims**



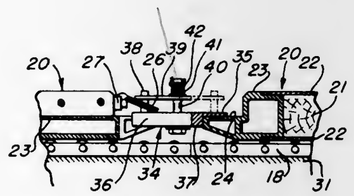
A vehicle includes a steering mechanism and a switching mechanism that includes biasing means for biasing the steering mechanism in a selected direction away from a predetermined vehicle path, and guide sensor means for resisting the biasing means in response to path defining means external of the vehicle for maintaining the vehicle on a predetermined path.

3,643,602
RAILWAY CAR HYDRAULICALLY DAMPENED ROLL STABILIZER
Raymond M. Astrowski, 192 Lafayette Lane, Hoffman Estates, Ill.
Filed Mar. 16, 1970, Ser. No. 19,804
Int. Cl. B61d *7/00*; **B61f** *3/02, 5/24*
U.S. Cl. 105—199 A **9 Claims**

A railroad car body has a crossframe above and extending approximately the width of the car truck. The proximal side of the crossframe is pivotally attached to the car body for movement about a horizontal axis. At one end of the crossframe, at a spaced distance from the proximal side, is an upright strut extending between the crossframe and the truck. The upper and lower ends of the strut are connected respectively to the crossframe and the truck by ball and socket joints. At the other end of the crossframe, and at the same distance from the proximal side, is an upright double-acting hydraulic energy absorber connected, by ball and socket joints, at the top to the crossframe and at the bottom to the truck.

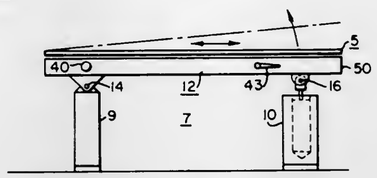


3,643,603
SPACER AND COUPLING DEVICE FOR CARGO PALLETS
Eddie L. King, 228 South 16th Street, Richmond, Calif.
Filed Dec. 29, 1969, Ser. No. 888,464
Int. Cl. B61g *5/00*; **B65j** *1/24*
U.S. Cl. 105—366 **6 Claims**



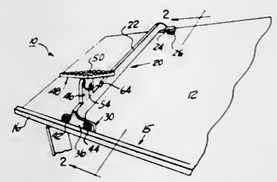
A coupling device for releasably interconnecting two successively adjacent cargo pallets to form a train thereof as when loading, unloading or while aboard a cargo aircraft or other transport therefor. Such pallets are relatively large and carry loads of several tons, and they are bordered with a perimetric frame having spaced-apart flanges therealong alternating with tiedown rings pivotally secured to the frame. The coupling device has a plate adapted to overlie the pallet flanges, and it also has a T-shaped spacer cooperative with the flanges and spaces therebetween to position two successive pallets in a predetermined spaced orientation. Posts carried by the coupling device receive tie rings from the successive pallets, and releasable lock means confines the rings in position upon the posts.

3,643,604
TILTABLE AND TRANSLATABLE TOP MEDICAL TABLE ASSEMBLY
William E. M. Jones, Pittsburgh, and James A. Richard, Monroeville, both of Pa., assignors to CGR Medical Corporation, Cheverly, Md.
Filed Oct. 1, 1970, Ser. No. 77,094
Int. Cl. A17f *5/12*
U.S. Cl. 108—5 **5 Claims**



Disclosed is a medical table assembly including a normally horizontal patient support table top translatable and tiltable longitudinally relative to a transversely extending horizontal axis, one way acting roller wedge lock means biased by an operating spring to lock such top automatically against translational movement downwardly when such top is tilted, and release means operable to unlock such roller wedge lock means against action of such operating spring.

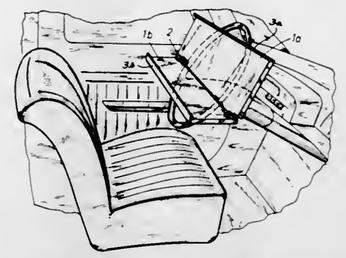
3,643,605
ADJUSTABLE TRAY FOR WORKTABLE
Russell W. Miller, Jr., 7121 Lindsdale Street, Detroit, Mich.
Filed July 30, 1970, Ser. No. 59,422
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **2 Claims**



A longitudinally and pivotally adjustable tray for a worktable which is mounted on the lower end of a traversing bar extending transversely across the table; the traversing bar is at both ends provided with antifriction rolling means and rail means are provided along the lower edge of the worktable to enable the traversing bar which supports the adjustable tray to be longitudinally moved along the table; the worktable may be inclined relative to a horizontal ground surface as is frequently the case in drafting tables and similar worktable arrangements and the tray is pivoted on a bracket extending upwardly from the lower end of the longitudinally movable traversing bar so that the tray may be adjusted in a horizontal position relative to the inclined position of the worktable.

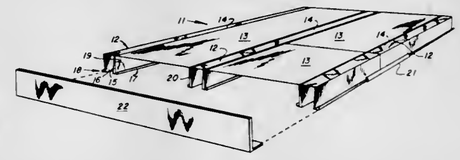
3,643,606
TABLE STRUCTURE FOR USE IN MOTOR VEHICLES
Mathias Joseph Vise, Untere Ibern 5, Eupen, Belgium
Filed June 25, 1970, Ser. No. 49,850
Claims priority, application Germany, June 26, 1969, P 19 32 357.0
Int. Cl. A47b *23/00*
U.S. Cl. 108—44 **8 Claims**

A table structure, especially for suspension on a steering wheel of a motor vehicle, which comprises two table sections hinged together and foldable selectively toward and away from each other into a plurality of positions in which they are arrestable while the back of the table structure is provided with a plurality of bearing means each being adapted selectively to receive suspension means for suspending the table



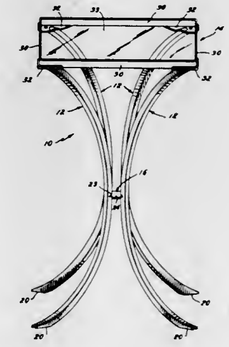
structure at different heights over a steering wheel so as to accommodate the height of suspension of said table structure to the convenience of the user of said table structure.

3,643,607
SHELVING COMPONENTS
James Alexander MacKenzie, 70 Gloucester Street, Ottawa, Ontario, Canada
Filed Nov. 29, 1968, Ser. No. 779,760
Int. Cl. A47b *96/00*
U.S. Cl. 108—111 **9 Claims**



The present invention provides a constructional component useful in forming shelving, framework and combinations thereof. By use of such constructional components, lightweight framework of any desired dimensions can be readily assembled by unskilled labor from a minimum number of standard sizes.

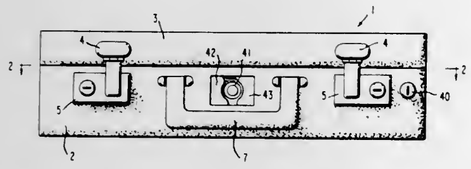
3,643,608
TABLE CONSTRUCTION
Frederick DeCesaris, Providence, R.I., assignor to Guild Metal Products, Inc., Providence, R.I.
Filed May 11, 1970, Ser. No. 36,005
Int. Cl. A47b *3/06*
U.S. Cl. 108—157 **2 Claims**



A table construction having a plurality of curved legs that are joined together by a clip element intermediate to the

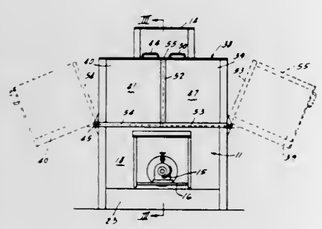
ends thereof. The clip element as joined to the leg requires no fasteners or screws and an upper frame is secured to the uppermost portions of the leg members and cooperates with the clip element to lock the legs in place.

3,643,609
SECURITY CONTAINER HAVING DESTRUCT MEANS
Dennis W. Maywald, P.O. Box 281, Bedford Hills, N.Y.; Solomon Wolff, 80 Rockland Parkway, Spring Valley, N.Y., and James R. Arcara, 9 Sixth Street, New Rochelle, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,632
Int. Cl. E05g *1/02*
U.S. Cl. 109—29 **4 Claims**



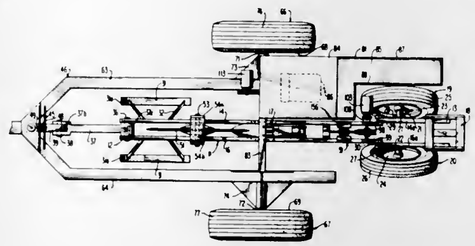
A piece of luggage in the form of an attache case is equipped with destruct means for destroying the contents therein in response to an intentionally given signal. The interior of the case comprises a compartment in the form of a metallic box with a cover, which box when closed serves as a combustion chamber to incinerate the contents therein when so desired. Fuel and electric igniter means are placed within the box and ignition current is supplied by a power pack housed in the attache case. A heat insulation barrier surrounds the box and prevents transfer of combustion heat to the walls of the attache case. The circuit interconnecting the electric power pack and the igniter means includes a number of normally open switches arranged in series; all of which must be closed to initiate and start the destruct cycle. One switch is closed in response to closure of the attache case, and others may be deliberately closed by key means or the like. The final switch is closed by a pushbutton in the vicinity of the attache case handle, whereby the carrier of the case may set off the destruct cycle by manipulating the pushbutton with a finger of the hand around the handle.

3,643,610
INCINERATOR
William R. Bycroft, P.O. Box 126, Williamsfield, Ill.
Filed July 15, 1960, Ser. No. 55,009
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **23 Claims**



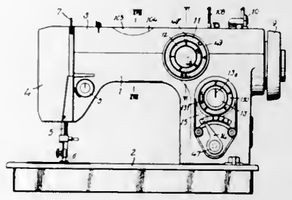
An incinerator includes a cabinet having a concave hopper that is apertured with draft openings, and a burner supplied by fluid fuel which directs a blast of flame inwardly through the cabinet against the material to be incinerated that is supported on the hopper. Door means expose substantially the entire upper side of the hopper, and within the cabinet there is provided a guard at the burner opening to prevent suffocation of the flame.

3,643,611
PLANTING APPARATUS
Edwin G. Owens, and Joseph J. Wiley, Jr., both of Summerville, S.C., assignors to Westvaco Corporation, New York, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,491
Int. Cl. A01c *11/02*
U.S. Cl. 111—2 **11 Claims**



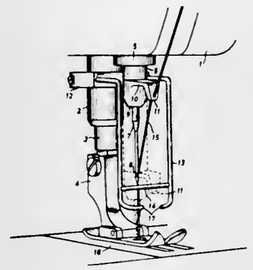
Apparatus for setting plants such as tree seedlings into the ground including a planter frame having a front end arranged to be attached to a tractor for freely pivotal movement in a vertical plane by means including a support frame and having a rear end supported on earth compacting means in front of which are supported on the planter frame, furrow-forming means and a plant-setting device, the planter frame being arranged to follow the contour of the ground during its forward movement independently of the support frame on which an operator is supported for manually feeding plants to the plant-setting device.

3,643,612
FEEDING ARRANGEMENT FOR ZIGZAG SEWING MACHINE
Susumu Hanyu, and Noboru Kasuga, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Chuo-ku, Tokyo, Japan
Continuation of application Ser. No. 645,585, June 12, 1967. This application Nov. 21, 1969, Ser. No. 872,449
Claims priority, application Japan, June 13, 1966, 41/37776
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 R **20 Claims**



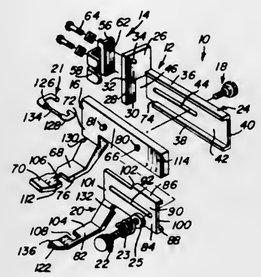
The feeding of a sewing machine can be automatically controlled by a cam, or manually controlled by a knob. Manual control means, which preferably can also be used for making buttonholes by setting the feed regulator to forward feeding, reverse feeding and minimum feeding, also connect and disconnect the cam follower from the cam of the automatic operating mechanism so that manual control and automatic operation of the feed regulator do not interfere.

3,643,613
DEVICE FOR GUIDING THE NEEDLE THREAD OF SEWING MACHINES
Lothar Schwehm, Kaiserslautern, Germany, assignor to G.M. Pfaff AG, Kaiserslautern Pfalz, Germany
Filed Aug. 9, 1968, Ser. No. 751,422
Claims priority, application Germany, Sept. 23, 1967, P 30 120/52
Int. Cl. B65h *59/12, 63/00*
U.S. Cl. 112—218 R **2 Claims**



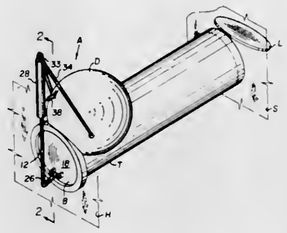
A device for guiding the needle thread of sewing machines including a lug having a thread guide eyelet mounted on the needle bar and a frame mounted on the stepper foot shaft, which frame has a crossbar that extends transversely proximate the path of the needle and is overlapped by the thread guide eyelet when the needle is in the lower position. This device serves to seize the excess thread between the needle eye and the thread carrier, thus facilitating the formation of the thread loops.

3,643,614
ZIPPER FOOT ATTACHMENT FOR SEWING MACHINES
Leoda J. Gooderum, 1133 Vine Street, La Crosse, Wis.
Filed June 11, 1968, Ser. No. 736,166
Int. Cl. D05b *29/12*
U.S. Cl. 112—240 **18 Claims**



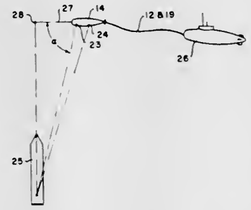
A presser bar attachment for sewing machines of different types, accommodating the sewing of zipper tapes to garments. Zipper chains of different widths may be received between adjustably spaced foot elements engageable with the garment fabric. The foot elements are adjustably positioned to receive the needle through one of the aligned slots formed in both confronting edges of the foot elements.

3,643,615
EXTERIOR-OPERATED BREECH DOOR
Paul Cohen, Glen Cove, N.Y., assignor to Subcom Inc., Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 848,419, Aug. 8, 1969. This application Apr. 22, 1970, Ser. No. 30,895
Int. Cl. B63g *8/00;* **B63b** *19/00*
U.S. Cl. 114—16.4 **10 Claims**



A communicating passage for submersible vessels in which a chamber has an entranceway and a closure door therefor with the operative structures for the door being exterior of the door and the chamber for moving the door between open and closed positions.

3,643,616
TORPEDO GUIDANCE SYSTEM
Louis F. Jones, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 24, 1964, Ser. No. 355,146
Int. Cl. F42b *19/01*
U.S. Cl. 114—21 W **11 Claims**

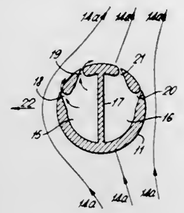


Method and means of guiding a torpedo along a collision course with a moving target ship, wherein the torpedo maintains a predetermined substantially constant lead angle with respect to the target ship. The lead angle is maintained constant by adjusting the torpedo speed as it travels toward the anticipated collision.

3,643,617
STABILIZER SYSTEMS FOR WATER-BORNE VESSELS
Stanley Joseph Holden, Portsmouth, England, assignor to Vosper Limited
Filed Feb. 24, 1970, Ser. No. 13,599
Claims priority, application Great Britain, Feb. 27, 1969, 10,552/69
Int. Cl. B63b *39/06*
U.S. Cl. 114—126 **16 Claims**

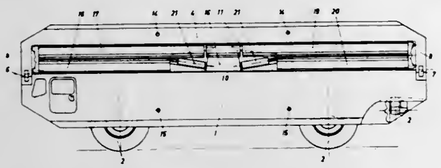
A stabilizer system for a ship having one or more hollow closed cylinders or fins projecting from the ship's hull into the water stream. Each cylinder or fin is provided with apertures through which water under pressure, supplied by a pump via valves, is directed to produce a variable boundary

layer flow of water giving positive or negative lift on the or each cylinder or fin. The valves are operated by a hydraulic actuator in accordance with signals from a gyroscopic



sensing mechanism so that the lift produced on each cylinder or fin opposes pitching, rolling and/or yawing motion of the ship.

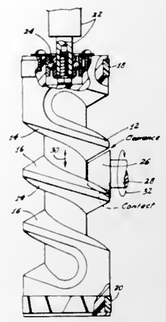
3,643,618
AMPHIBIOUS VEHICLE WITH AUXILIARY FLOATING ELEMENTS
Hermann Walter Gehlen, Pirmasenser Strasse 60, Kaiserslautern Pfalz, Germany
Filed Nov. 14, 1969, Ser. No. 876,855
Claims priority, application Germany, May 14, 1969, P 19 24 613.0
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 B **2 Claims**



Amphibious vehicle with lateral auxiliary floating elements which are of rigid construction and pivotable about joints at the upper lateral edge of the floating body of the vehicle and are linked on only at their two ends and equipped there with spacing members relative to the joints, which when the lateral floating elements are tilted upwardly provide a space over the deck of the main floating body which they cover which is of the extent thereof in horizontal direction and of a height determined by the spacing elements.

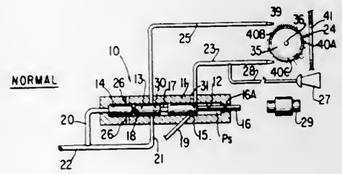
3,643,619
LONGITUDINAL TO ROTATIONAL MOTION
James H. Nicholson, 5501 Onacrest Drive, Los Angeles, Calif.
Filed Aug. 3, 1970, Ser. No. 60,527
Int. Cl. B63h *16/12*
U.S. Cl. 115—24 **16 Claims**

An apparatus for providing a conversion between longitudinal and rotational motion including a screw member having a thread having a constant angle and with individual ones of the opposing lands of the thread serving as the rolling surface for a cone member. The cone member is positioned within the lands of the thread and the cone member engages only one of the lands at a time along a line contact. Relative longitudinal movement between the screw member and the cone member is accomplished simultaneously with a relative helical movement between the screw member and the cone member and with the longitudinal motion and the helical motion between the screw member and the cone member occurring in either direction depending upon which of the lands is engaged by the cone member. The cone member also has a rotation about its central axis and such rotation occurs in a single direction.



Other aspects of the invention include the use of the apparatus for converting between longitudinal and rotational motion as part of a propulsion device for a boat.

3,643,620
MULTICOLOR INDICATOR FOR A FLUID OPERATED SYSTEM
Peter A. Penny, Stratford, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Sept. 8, 1969, Ser. No. 856,115
Int. Cl. G08b *1/04*
U.S. Cl. 116—65 **1 Claim**

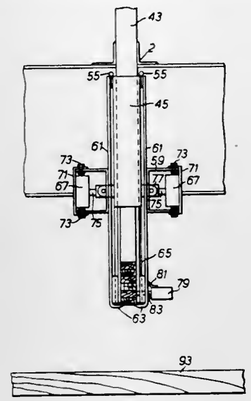


A visual indicator comprises a rotatably mounted body having three different positions and colors painted over a 120° portion of the body peripheral surface and vanes on each end of the body. A fluid flow acting upon the vanes on one end rotates the body in one direction through an angle of 120° so that a predetermined color is visible in a viewing window. Fluid flow on the vanes at the other end of the body rotates the body 120° in the other direction so that another color is visible in the viewing window. The body is weighted so as to remain in its normal position when there is no flow.

3,643,621
LUMBER STACKER STICK PLACER
Ray William Newnes, P.O. Box 8, Salmon Arm, British Columbia, Canada
Filed Aug. 14, 1970, Ser. No. 63,858
Claims priority, application Canada, Aug. 27, 1969, 60567
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 K **11 Claims**

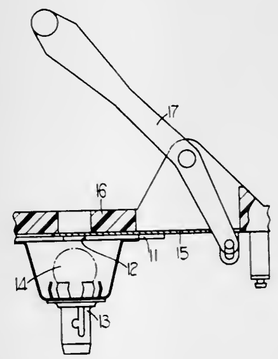
The apparatus of this invention consists of a number of stick-placing units, each unit consisting of a vertically disposed elongated magazine-type container for containing sticks, a holding mechanism for holding the sticks in the magazine, and movable means for transporting the lowermost stick from the magazine and placing it upon a layer of lumber. The units are positioned in places where sticks are required and all the units are operated simultaneously by an

operating mechanism. The operation of the apparatus id controlled by limit switches, and initiation of an operating cycle



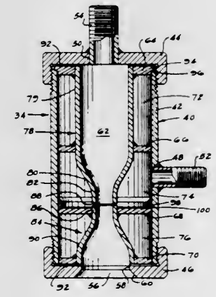
is controlled by a limit switch on a lumber stacker associated with the stick placer.

3,643,622
POSITION INDICATORS
Edward Cryer, Higham near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 10, 1970, Ser. No. 53,913
Claims priority, application Great Britain, Aug. 12, 1969, 40,190/69
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **2 Claims**



A position indicator includes a display panel which receives one end of each of a plurality of optical cables, the one ends of the optical cables being disposed to form a composite pattern such that predetermined sets of the one ends define required legends. The other ends of the optical cables terminate in a receiving station and the indicator further includes a light source capable of illuminating the other ends of the optical cables and a mask mounted for sliding movement between the light source and the receiving station. The mask serves in different positions to permit illumination of the other ends of only those optical cables whose one ends define, at the display panel, the legend corresponding to the position of the mask.

3,643,623
METHOD OF AND APPARATUS FOR PURIFYING POLLUTED GASES
Joseph W. Eng, Bayside, N.Y., and Stanley C. F. Lin, Matawan, N.J., assignors to Lin Eng Corporation, New York, N.Y.
Original application Aug. 30, 1967, Ser. No. 664,416, now **Patent No. 3,494,099. Divided and this application Sept. 12, 1969, Ser. No. 870,780**
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 **4 Claims**

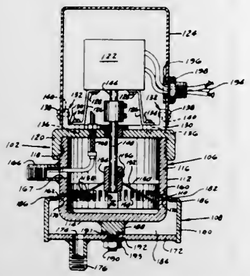


A method and apparatus for ultrasonically generating fog with a venturi having a converging section, a diverging section and an intermediate restricted throat section through which extends a slot for substantially the entire width thereof and in a plane substantially transverse to the axis thereof. Concurrently water is fed through the throat slot to form a continuously flowing thin sheet of water across the width of the throat section while gas under pressure is fed into the converging section of the venturi wherein the gas is formed into a stream. The gas stream is then fed into the throat section to increase its linear velocity to produce a sound wave which, together with the gas under pressure, moves through said sheet of water flowing across the width of said throat section continually, breaking the sheet of water into fine water droplets having vibrating surfaces. The comingled gas under pressure and the water droplets are then expanded in the venturi divergent section and pass therefrom as ultrasonically generated fog with fine vibrating droplets of water.

3,643,624
METHOD OF AND APPARATUS FOR PURIFYING POLLUTED GASES
Joseph W. Eng, Bayside, N.Y., and Stanley C. F. Lin, Matawan, N.J., assignors to Electro-Sonic Pollution Control Corporation
Original application Aug. 30, 1967, Ser. No. 664,416, now Patent No. 3,494,099. Divided and this application Sept. 12, 1969, Ser. No. 870,781
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 A **8 Claims**

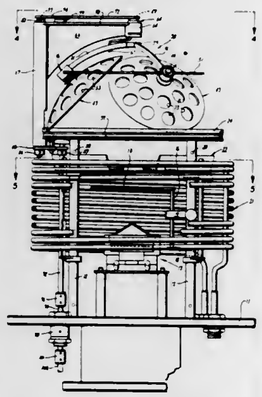
This invention relates to a method of and apparatus for removing contaminants from polluted gases with a low flow resistant, porous, infinite capacity filter in which ultrasonically generated, oscillating fog of substantially increased contact area and contact duration, contacts, absorbs and agglomerates contaminants carried by such gases, and from which the absorbed agglomerated contaminants are removed.

Preferably the fog droplets are charged electrically and activated chemically, as well as generated in a range of sizes



best suited for removing contaminants from the polluted gases.

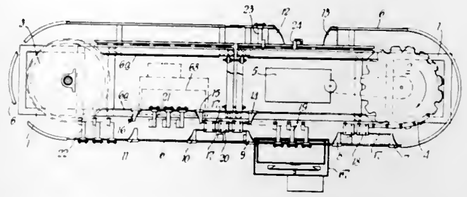
3,643,625
THIN-FILM DEPOSITION APPARATUS
Gunard O. B. Mahl, San Francisco, Calif., assignor to Carl Herrmann Associates, Inc., Menlo Park, Calif.
Filed Oct. 7, 1969, Ser. No. 864,377
Int. Cl. C23c *11/02*
U.S. Cl. 118—48 **13 Claims**



A thin-film deposition apparatus having a holder and a plurality of racks. Each of the racks has a surface which has the conformation of a portion of the surface of a sphere. Means is provided for rotatably mounting the racks on the holder in such a manner that said surfaces of the racks lie generally on the surface of a common sphere. Means is provided for rotating the holder upon an axis centrally disposed with respect to the racks and for rotating the racks about their own axes of rotation with respect to the holder.

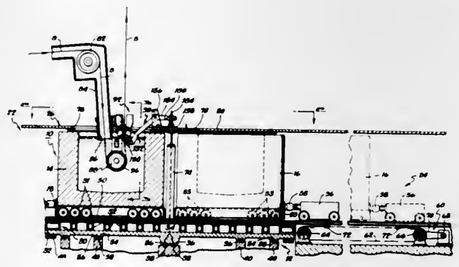
3,643,626
COATING OF ARTICLES WITH PLASTICS MATERIAL
Peter Henry McKay, and Morris James Legg, Surrey, both of England, assignors to Plastic Coating Limited, Surrey, England
Filed Jan. 19, 1970, Ser. No. 3,844
Claims priority, application Great Britain, Jan. 23, 1969, 3,991/69
Int. Cl. B05c *3/02*
U.S. Cl. 118—58 **10 Claims**

An apparatus for coating small articles with plastics material comprises an endless conveyor such as a chain upon which holders for the articles are mounted so that they can tilt laterally of the direction of movement of the conveyor. A heating means such as a gas burner is located adjacent the conveyor to preheat the articles carried by the holders. An open-topped vessel to contain the plastics material is located



adjacent the conveyor downstream of the heating means. Each holder engages with a guide which laterally tilts the holder after it has passed the heating means to introduce the preheated article into the plastics material in the vessel so that the article becomes coated with the plastics material.

3,643,627
APPARATUS FOR INTERCHANGING COATING POTS AT A COATING LINE STATION
King Dwight Killin, Middletown, and Ellis Homer Lieungh, Miamisburg, both of Ohio, assignors to Kaiser Industries Corporation, Oakland, Calif.
Filed July 23, 1970, Ser. No. 57,494
Int. Cl. B05c *3/00*
U.S. Cl. 118—421 **14 Claims**

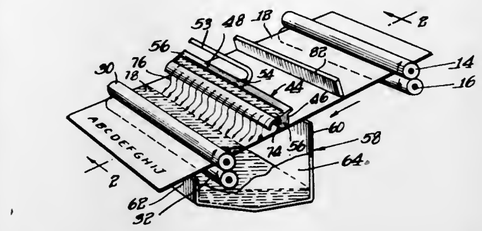


An apparatus for positioning coating pots at a coating line station constructed in a deep well such that the top of the coating pots is just below the level of the coating line.

In one embodiment, the two coating pots carried on transfer cars are conveyed through a 180° angle between a working position and hold position by a turntable mounted in the bottom of the well. The coating pot when in the hold position is adapted to be transferred to an adjacent repair area along rails extending radially on and away from the turntable.

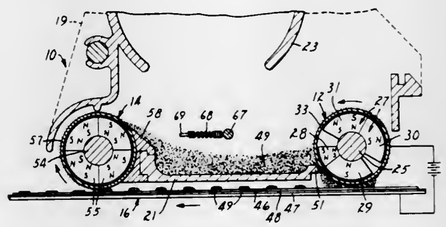
3,643,628
COMPACT LIQUID TONER APPARATUS WITH STRAIGHT-THROUGH FEED
Meyer L. Sugarman, and Joseph H. Jaeger, both of c/o Opto/Graphics, Inc. 512 Green Bay Road, Kenilworth, Ill.
Continuation-in-part of application Ser. No. 692,234, Dec. 20, 1967. This application July 11, 1969, Ser. No. 859,219
Int. Cl. B05b *5/02*; **B05c** *3/02*
U.S. Cl. 118—637 **3 Claims**

Apparatus for applying a liquid toner only to the surface of a sheet of paper or the like for developing an electrostatic image thereon, the paper being fed in a rectilinear path, and



the liquid toner being supported on the surface of the paper or the like, with a roller or other means serving as a dam.

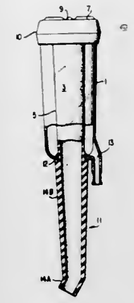
3,643,629
MAGNETIC POWDER APPLICATOR
Larry G. Kangas, St. Joseph Township, Saint Croix County, Wis., and Robert J. Kline, Grant Township, Washington County, Minn., assignors to Minnesota Mining & Manufacturing, St. Paul, Minn.
Filed Oct. 20, 1969, Ser. No. 867,768
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **6 Claims**



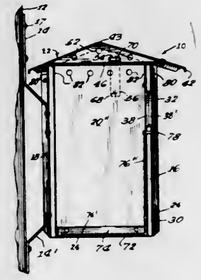
An applicator for uniformly applying magnetically responsive dry particulate material to broad areas on a web moved past the applicator to deposit the material in pattern areas attracting the material thereto. The applicator comprises an applicating roller having a plurality of magnetic members arranged about a shaft within a rotatable nonmagnetic sleeve to provide a magnetic field around the roller having a feed zone with a radial field changing to a tangential field, an applicating zone with a stronger radial field following the feed zone and a return zone extending from the applicating zone to the feed zone and having a stronger tangential field immediately following the applicating zone. A scavenging roller has a plurality of magnetic members arranged about a rotatable shaft within a nonmagnetic sleeve to carry any free particulate material applied by the applicating roller away from the web surface and back to a tray.

3,643,630
INFLATION TUBE CONNECTION
Lloyd P. Duncan, Washington, Mo., assignor to Zero Manufacturing Company, Washington, Mo.
Filed Jan. 8, 1970, Ser. No. 1,458
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.47 **5 Claims**

A milking claw assembly has a flexible inflation housed within a shell and the inflation has a thickened hose with a large interior diameter at its lower end. The terminal end of the hose is bent relative to the hose's remainder so that when attached to a bias cut inlet nipple on a milk receiver, the hose sags at its bent portion to close off the inlet and preserve the vacuum when not milking. At the same time the relatively stiff hose firmly fixes the receiver and claw assembly to a cow during milking providing lift and preventing excessive sway of the receiver.



3,643,631
DOUBLE-WALL INSULATED BIRDHOUSE
Jesse L. Wade, and Arthur E. Vail, both of Griggsville, Ill., assignors to Trio Manufacturing Company, Griggsville, Ill.
Filed Sept. 21, 1970, Ser. No. 74,096
Int. Cl. A01k *31/00*
U.S. Cl. 119—23 **13 Claims**

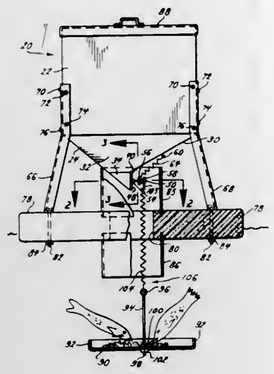


A metal birdhouse having a double-wall construction open at one end for achieving desirably cooler interior temperature conditions while still using darker, heat-absorbant finishes for exterior wall surfaces. The birdhouse has a ventilated attic and a hingedly mounted roof for access to the interior of the house; a perforate floor; an entrance opening in a sidewall of the house designed to accommodate adapter members for selectively varying the diameter of the opening for restricting the size of bird occupant; a removable drop floor for selectively changing the depth of the interior of the house, and, an internal climbing and drainage aide. Improved ventilation is realized by locating venting openings in upper portions of the birdhouse walls arranged to minimize exposure of the interior to driving rain and other adverse weather conditions.

3,643,632
AUTOMATICALLY OPERATED FEEDING DEVICE
Eugene M. Poirot, Golden City, Mo.
Filed Aug. 28, 1970, Ser. No. 67,751
Int. Cl. A01k *5/02*, *64/00*
U.S. Cl. 119—54 **10 Claims**

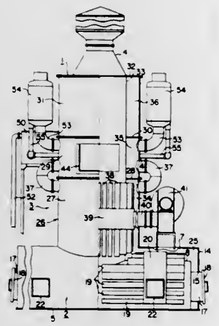
A feeding device for fish or other aquatic creatures has a feed-dispensing container disposed above the level of the

water, has a feed-supporting tray disposed below the level of the water, and has a yieldable connection between that tray and the valve of that container. That yieldable connection



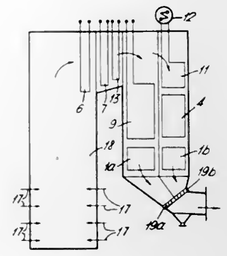
will permit waves to induce rising and falling of that container relative to that tray without causing excessive release of feed from that container.

3,643,633
INCINERATOR
Kumakichi Sugano, 346, 3 chome, Asakusabashi, Daito-ku, Tokyo-to, Japan
Filed July 27, 1970, Ser. No. 58,249
Claims priority, application Japan, Apr. 15, 1970, 45/31716
Int. Cl. F23g *5/00*
U.S. Cl. 122—2 **4 Claims**



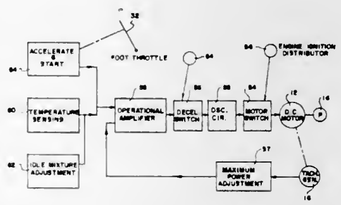
An incinerator comprising a first combustion chamber provided with a hearth. A second combustion chamber is superposed above the first combustion chamber and a flame extinguishing chamber is positioned above the second combustion chamber. The hearth has slanted portions for forming a well offset from alignment with the second combustion chamber and the second combustion chamber is provided with a gate through which material to be incinerated may be fed so as to be preheated as it falls into the first combustion chamber and is directed into the well.

3,643,634
STEAM TEMPERATURE CONTROL SYSTEM
Dohgi Soh, Yokohama-shi, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Dec. 8, 1969, Ser. No. 882,993
Claims priority, application Japan, June 11, 1969, 44/45452
Int. Cl. F22g *5/16*
U.S. Cl. 122—483 **3 Claims**



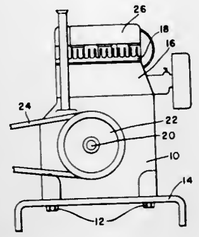
A steam temperature control system for a double reheating, forced circulation steam-generating unit is provided. The heat recover area of said unit is divided into two gas passages, a high-pressure reheater being disposed in one of the passages while a low-pressure reheater, in the other passage. A surface-type heat exchanger of the shell and the tube type is interposed in said low-pressure reheater so that the heat is transferred from the superheated steam bypassed from the main steam passage of said unit to the steam in said low-pressure reheater. By varying the temperature difference between said two steams, the quantity of heat to be transferred may be adjusted, thereby controlling the temperature of the steam in said low pressure reheater.

3,643,635
ELECTRONIC FUEL INJECTION SYSTEM
William T. Milam, 4501 Coltrane Road, Oklahoma City, Okla.
Filed Apr. 24, 1970, Ser. No. 31,613
Int. Cl. F02b *3/00*; **F02d** *1/04*
U.S. Cl. 123—32 EA **11 Claims**



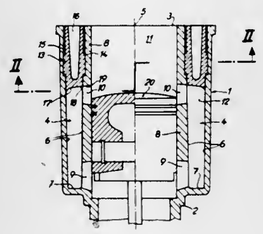
The invention is an electronic fuel injection system for use on internal combustion engines. The fuel is injected into the intake manifold by a variable flow positive displacement pump which varies the amount of fuel flow by varying the motor speed driving the pump. Sensing devices which sense the exhaust gas temperature, movement of the throttle and the r.p.m. of the fuel pump, continually feed signals to the electronic control unit which computes the proper pump speed for an optimum air-to-fuel ratio in accordance with the previously mentioned variable operating factors.

3,643,636
ENGINE VIBRATION DAMPER
Richard Erwin Miley, and John Gary Meylink, both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.
Filed June 11, 1970, Ser. No. 45,436
Int. Cl. F02b *75/06*; **F02f** *1/30*
U.S. Cl. 123—41.69 **5 Claims**



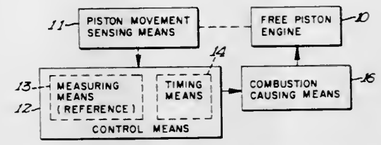
A vibration damper for a reciprocating internal combustion engine consisting of a weight rigidly mounted externally on the cylinder head of the engine. The weight, a solid mass of high-density, inert material, has a periphery generally conforming to that of the head, and is mounted thereon by means of the same threaded fasteners used to mount the head on the cylinder. The weight is mounted on the cylinder head in spaced relation thereto to serve also as a cooling air shroud.

3,643,637
LIQUID-COOLED SINGLE OR MULTIPLE CYLINDER TWO-CYCLE COMBUSTION ENGINE
Johannes Strossner, Nurnberg, and Armin Drebes, Grossbelfendorf, both of Germany, assignors to Firma Zundapp-Werke Gesellschaft mit beschrankter Haftung, Munchen, Germany
Filed Oct. 30, 1970, Ser. No. 85,374
Claims priority, application Germany, Nov. 5, 1969, P 19 55 586.3
Int. Cl. F02f *1/10*; **F02b** *33/04*
U.S. Cl. 123—41.72 **11 Claims**



Liquid-cooled single or multiple cycle two-cycle internal combustion engine produced by mold or die casting, particularly pressure-casting, having a cylinder liner with apertures to the waste gas and transfer port channels, as well as a piston controlling the changes in the load where conically tapering channels are formed in the cylinder block outside the cylinder liner parallel, or nearly parallel, to the longitudinal axis of the cylinder where the lower channel portion forms the transfer port channel and the upper channel portion the cooling water chamber, and both channel portions are tightly sealed relative to one another by an insert member in the area of the passage from the transfer port channel to the combustion chamber of the cylinder.

3,643,638
FREE PISTON ENGINE IGNITION APPARATUS
Anton Braun, 6421 Warren Avenue, Minneapolis, Minn.
Filed Aug. 24, 1970, Ser. No. 66,385
Int. Cl. F02b *71/00*; **F02n** *17/00*
U.S. Cl. 123—46 R **17 Claims**



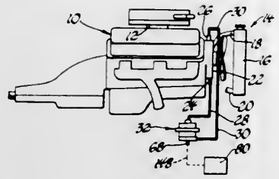
Apparatus and method features are disclosed for initiating combustion in free piston engines in response to a movement-related characteristic of the power piston, such as its rate of change of position in the power cylinder of the engine, so that combustion is caused to occur at a desired time which is related to the time the power piston reverses direction at the start of a power stroke, without regard to variations from one stroke to another in the actual physical position of the power piston along its path of movement in the power cylinder at the moment of piston reversal. Various means are shown or suggested for sensing piston movement and causing combustion in response to changes in the velocity or acceleration of such piston movement at a controlled time interval before or after such velocity drops to zero or after such velocity has reached a maximum, i.e., at or near the moment when the piston reaches its inner dead point in the power cylinder, and preferably somewhat before that moment.

Specific means disclosed for this purpose include means for sensing a desired movement-related characteristic near the end of the stroke and developing a signal dependent, for example, upon the rate of such movement or upon the acceleration of the piston. In one form, an auxiliary piston is moved in synchronism with the movement of the power piston to create, in an auxiliary compression chamber, a pressure signal related to the velocity of the power piston. The pressure signal thus created is then referred to suitable control means where the sensing signal is utilized, for example, by comparison with a reference means, to provide a control force or signal, which is employed to operate a combustion-causing means, such as a spark plug ignition circuit. The reference force for use with such a pressure signal may be obtained by the use of an adjustable spring-biased second auxiliary piston and a controlled orifice. More specifically, the pressure signal created by the first auxiliary piston and cylinder is modified or affected by the rate of flow through the controlled orifice, and the resultant pressure acts on the second auxiliary piston to actuate conventional ignition breaker points against the action of the adjustable spring. The points, in turn, control the delivery of electrical energy to the spark plug. In one embodiment shown, the pressure created by the first auxiliary piston is also used to control the rate of flow through the controlled orifice and thus further determine the point in time at which ignition will be initiated to maintain the proper timing of ignition in spite of variations in the cycle-to-cycle value of power piston velocity or stroke.

3,643,639
PRESSURE DIFFERENTIAL SPEED SENSOR
Kenneth C. Bier, Bloomfield Hills, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed July 28, 1970, Ser. No. 58,815
Int. Cl. F02d *11/08*; **F16k** *31/385*
U.S. Cl. 123—103 E **10 Claims**

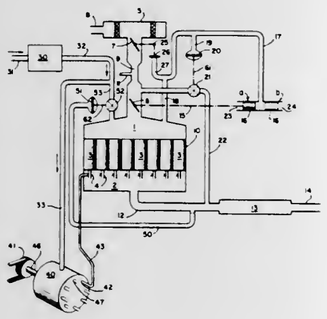
A pressure differential sensing device has a housing divided into two chambers on opposite sides of a diaphragm contained therein; a first of the two chambers has conduit means adapted for connection to the inlet of a fluid pump

while the other chamber has a first conduit connected to the discharge of the fluid pump and a second conduit leading to some associated device to be controlled thereby; a valve carried by the diaphragm is urged into seating engagement with



the inlet end of the second conduit by a spring so as to prevent communication between the other chamber and the second conduit whenever the differential of pressure between the pump inlet and pump outlet is less than a predetermined magnitude.

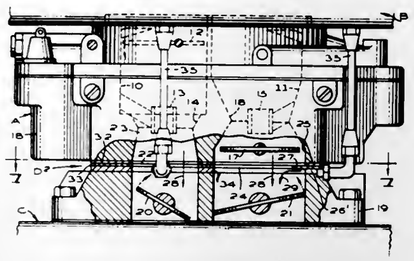
3,643,640
LOW-POLLUTING INTERNAL COMBUSTION ENGINE WHEREIN EXHAUST GASES ARE RECYCLED IN A CONTROLLED PATTERN
Bernard J. Kraus, Roma-Ostia, Italy, and Dae Sik Kim, Maplewood, N.J., assignors to Esso Research and Engineering Company
Filed Feb. 12, 1970, Ser. No. 10,906
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **7 Claims**



A low-pollution internal combustion engine wherein exhaust gas is recycled by control means only when the engine is operating intermediate idle and full throttle subject to the engine not being choked. A particular feature is the introduction of the recycle exhaust gases intermediate, the point of introduction of the fuel and the flapper valve.

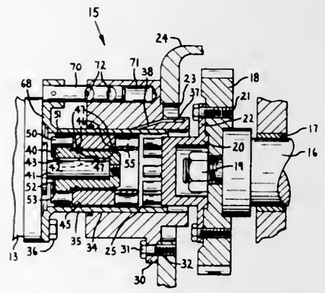
3,643,641
GASKET WITH PASSAGEWAY AND VACUUM BLADE FOR INTRODUCING AIR INTO BARREL OF CARBURETOR
Ewald A. Busse, 3276 Fair Oaks Avenue, Redwood City, Calif.
Filed Apr. 9, 1970, Ser. No. 27,005
Int. Cl. F02m *25/06, 23/00*
U.S. Cl. 123—119 A **4 Claims**

A gasket body formed with an opening disposed in registration with the bore of a carburetor barrel so that the fuel mixture will pass therethrough on its way to an intake manifold, the gasket body having an air inlet passageway leading from a source of air to the gasket opening and through which additional air may be conveyed to the carbu-



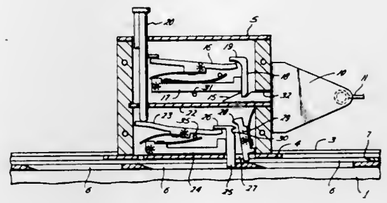
retor for intermixing with the fuel mixture for leaning down the air-fuel ratio, and a vacuum blade projects into the gasket body opening and arranged to create a vacuum in the air inlet passageway for drawing in the additional air.

3,643,642
POWER TAKEOFF ON MARINE DIESEL ENGINE
Norman E. Junes, Route 3, Box 148, Astoria, Oreg.
Filed July 6, 1970, Ser. No. 52,641
Int. Cl. F02b *77/00;* **F16d** *11/04, 3/48*
U.S. Cl. 123—198 C **7 Claims**



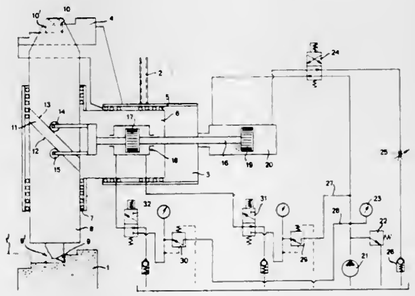
A hydraulic pump is mounted as an accessory on a marine diesel engine to operate hydraulic equipment on a boat. The driving connection includes a double universal joint which eliminates side loading on the engine shaft which is utilized for driving the pump whereby the pump may be driven from one of the engine cam shafts. An intermediate member is resiliently mounted on a pair of axially spaced rubber O-rings on a driven hub member on the pump shaft. One end of the intermediate member is equipped with a circle of axial pins which fit loosely in a circle of holes in the hub member to provide one of the universal joints. A driving member bolted to the engine cam gear has a circle of axial pins which fit loosely in a circle of holes in the other end of the intermediate member to form a second universal joint. The hub member and intermediate member are mounted in a sleeve for axial sliding movement in a housing bolted to the engine housing. The pump is mounted on the sleeve. By sliding the pump and sleeve bodily toward the engine, the last named pins and holes cooperate as a dental clutch to drive the pump. By sliding the pump bodily away from the engine, the last named pins and holes are disengaged from each other to declutch the pump. This sliding movement is effected by a hand lever and a spring detent is provided to hold the clutch parts in engaged and disengaged positions.

3,643,643
BOW OR ELASTIC DEVICE FOR PROPELLING PROJECTILES
Clarence C. Jordan, Box 224, Splendora, Tex.
Filed Sept. 29, 1969, Ser. No. 861,870
Int. Cl. F41b *5/00, 7/00*
U.S. Cl. 124—20 R **5 Claims**



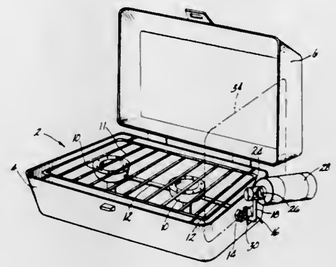
A device for launching missiles, such as rocks, steel balls, or arrows, having an adjustable lock and a novel triggering mechanism, mounted on a support, the rock or ball-launching mechanism having a missile pocket secured to the power unit by swivel connections and having a trigger-receiving latch mounted thereon, said triggering mechanism providing means for triggering the missile launch and for releasing the lock for readjustment, in sequence both the latch mechanisms are in the same housing and the lock engages the pocket member and the latch engages the base member.

3,643,644
TEMPLATE COPYING DEVICE FOR MACHINE TOOLS
Adino Nadalini, Padova, Italy, assignor to Soc. Az. Industrie Meccaniche Padovane Saimp, Padova, Italy
Filed Feb. 9, 1970, Ser. No. 9,918
Claims priority, application Italy, Feb. 11, 1969, 12706 A/69
Int. Cl. B24b *53/08;* **B23b** *3/28*
U.S. Cl. 125—11 **11 Claims**



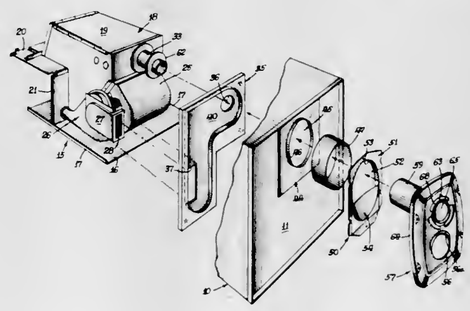
Device for working with a template, for lathes and grinding machines, in which a control support advances with continuous motion parallel to the axis of the machine, the tool is carried by a first slide of a pair of slides connected with the advancing support, one slide being movable parallelly to the axis of advance and the other being movable perpendicularly, said first slide being mounted on the other slide and being connected to it and to the advancing support through a rectilinear guide and follower, in which the guide is rigidly connected to the first slide and is oriented at 45° while the follower is rigidly connected to the advancing support.

3,643,645
VAPORIZING FITTING FOR PROPANE STOVE
Raymond E. Benson, Forest Park, Ill., assignor to Olin Corporation
Filed Dec. 7, 1970, Ser. No. 95,669
Int. Cl. F24c *5/20*
U.S. Cl. 126—38 **4 Claims**



A fitting for use with relatively flat and compact camping stoves and the like using bottled liquid propane for fuel. The fitting supports the fuel cylinder and holds it at an angle with the horizontal so that the liquid propane will settle at the bottom of the cylinder and propane vapors will rise to the top of the cylinder to be withdrawn therefrom to fuel the stove.

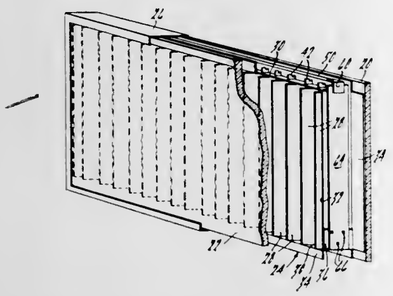
3,643,646
FLUE EXHAUST AND COMBUSTION AIR INTAKE ASSEMBLY FOR UNDERCOUNTER FURNACE
Bernard G. Honaker, Jr., Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Oct. 14, 1970, Ser. No. 80,605
Int. Cl. F23j *11/00;* **F24c** *3/00;* **F24h** *3/00*
U.S. Cl. 126—85 B **10 Claims**



The backwall of an outer casing for a sealed-combustion furnace is provided with an opening aligned with a similar opening through the wall. A vent hood having an upper exhaust opening and a lower intake opening are adapted for mounting on the exterior of the wall. An exhaust tube connects the exhaust opening of the vent hood with the hot air flue of the furnace; and a frustum is provided at the exhaust opening on the vent hood which flares outwardly to define a base at the vent exhaust opening which has an area slightly greater than the cross-sectional area of the exhaust tube to cause the forced exhaust gases to curl about it after exiting the exhaust opening for mixing with outside gases before rising thereby reducing the temperature of the surrounding wall portion and reducing recirculation of the spent combustion gases. A curved baffle about the upper part of the intake opening also reduces recirculation under certain downward

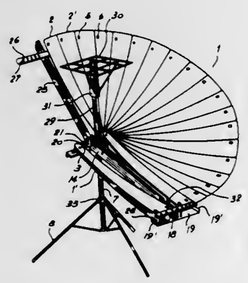
wind conditions. A thin intake conduit is formed on the inside back wall of the furnace casing which sealing communicates the annular intake space about the exhaust tube with an inlet to the fresh air blower.

3,643,647
THERMOSTATICALLY CONTROLLED HEAT SHIELD FOR WINDOW UNITS IN PYROLYTIC OVENS
Robert B. Larkin, Farmington, Mich., assignor to Mills Products, Inc., Farmington, Mich.
Filed Oct. 26, 1970, Ser. No. 83,793
Int. Cl. F23m *7/00*
U.S. Cl. 126—198 **9 Claims**



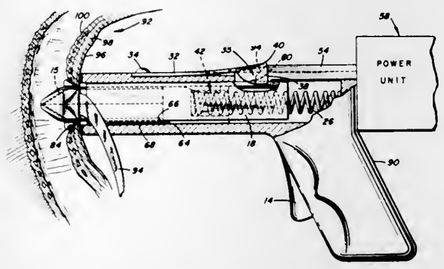
A window unit for use in the oven door of a self-cleaning oven comprising a pair of spaced glass panels separated by a spacer and clamped together by a peripheral clamping flange with a series of pivoted louvers disposed between the glass panels and supported at their opposite ends by the spacer, and a thermally responsive actuator for automatically pivoting the louvers to a closed position to prevent radiation of excessive heat to the outer glass panel when the oven is on the cleaning cycle. The louvers are automatically opened by the actuator to permit viewing through the window unit during normal cooking operations.

3,643,648
SOLAR HEATING DEVICES
Adnan S. Tarcici, Avenue de Bude 13, 1200 Geneva, Switzerland
Filed Aug. 21, 1970, Ser. No. 65,938
Int. Cl. F24j *3/02*
U.S. Cl. 126—270 **13 Claims**



A solar heating apparatus comprises a post, a collapsible tripod for holding the post perpendicular to a supporting surface and a frame universally mounted on the post. A pair of reflectors are mounted on the frame, each reflector comprising a plurality of sector-shaped segments pivotally joined at one end and alternate segments being interconnected by a flexible tape so that they can be collapsed in a superposed storage position and expanded with a fanlike movement to form a semiparabolic reflector. Means on the frame enable adjustment of the focal points of the reflectors. A second post is fixed, pivotally or otherwise, to the first post to enable an object to be held in the vicinity of the focal points of the reflectors. The frame can form a case for storage of the device.

3,643,649
MECHANIZED TRACHEOTOME
Joseph John Amato, North Riverside, Ill., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Nov. 20, 1969, Ser. No. 878,457
Int. Cl. A61b *17/00, 17/10*
U.S. Cl. 128—1 R **3 Claims**



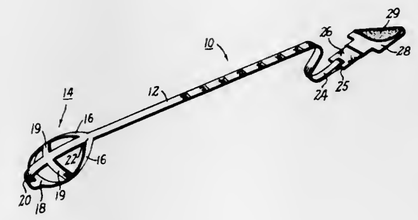
A tracheotome for the mechanized performance of a tracheostomy. The inventive tracheotome, upon triggering, makes an incision through the skin, fascia and trachea of the patient. Then, after the incision has been made, a delayed-action plunger is activated and serves to bend a staple which maintains the opening in the trachea.

3,643,650
METHOD AND APPARATUS FOR OBTAINING BACTERIOLOGICAL INFORMATION
Harvey A. Elder, 11577 Acacia Street, Loma Linda, Calif.
Continuation-in-part of application Ser. No. 744,279, June 10, 1968, now abandoned. This application May 25, 1970, Ser. No. 40,253
Int. Cl. B65d *79/00;* **A61b** *10/00*
U.S. Cl. 128—2 R **13 Claims**



A kit which permits bacterial cultures to be quickly and easily obtained from urine samples and transmitted to a clinical laboratory for bacteriological examination. The main component of the kit is a specimen sampler molded from clear plastic in the form of a jointed strip. The strip has symmetrical, longitudinal half-segments integral with a central joint segment through which the half-segments are movable relative to one another. The half-segments have two bowllike indentations with outwardly bulging walls which serve as deposit areas for beds of congealed culture medium. Melded to the bottoms of the bowllike indentations are four shallow cups with flaring rims, around which the beds of congealed culture medium are formed and which serve to anchor the beds in place, and hold them intact, during usage of the specimen sampler. The sampler is designed so that its two half-segments can be folded together until the bottoms of their bowllike indentations touch and their open fronts face outwardly in opposite directions. The sampler has a pair of finger grip indentations either side of its joint segment. The kit includes, in addition to the specimen sampler, a narrow, sealable container into which the folded sampler snugly fits. When the sampler is ready for use, it is pulled from the container by means of the finger grip indentations, then held by these indentations and dipped into a sample of urine until its culture bed areas are immersed. The sampler is then removed from the urine and sealed in the container for transmittal to a clinical laboratory for examination.

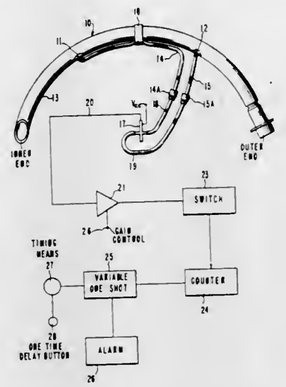
3,643,651
FINGER SCALE FOR GYNECOLOGIC AND OTHER MEASUREMENT OF BODY ORIFICE
Alvaro J. Cuadros, Hartsdale, N.Y., assignor to Lorton Laboratories, Ltd., New York, N.Y.
Filed Aug. 4, 1970, Ser. No. 60,815
Int. Cl. H61l *5/00*
U.S. Cl. 128—2 S **9 Claims**



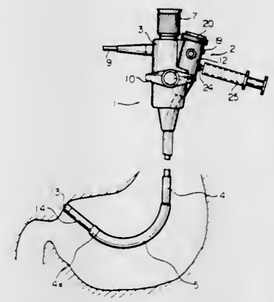
A diagnostic instrument for taking gynecologic and other pelvic measurements is adapted to be worn on the hand and includes a narrow measuring strip of flexible inextensible material having a finger stirrup at one end thereof which is adapted to retain a fingertip inserted therein, such that the strip extends along the finger from the fingertip to a band of elastic material which in turn is fixed to an adhesive strip for securing the instrument to the hand. The band of elastic material intervening between the measuring strip and the adhesive strip allows the instrument to conform to the hand when the fingers are flexed or extended. The narrow strip is calibrated in units of length from a zero point at the tip of the stirrup so that gynecologic and pelvic measurements may be taken upon insertion of the finger into a body orifice such as the vagina.

3,643,652
MEDICAL BREATHING MEASURING SYSTEM
Delfin J. Beltran, 2364 Bryant Street, Palo Alto, Calif.
Filed Dec. 31, 1969, Ser. No. 889,465
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **6 Claims**

A tube for measuring respiratory gas flow of a mammal, including a tube which fits into the mammal's trachea and a pair of ports spaced along its length. A pair of transmitting tubes are connected to the ports and the differential pressure measured across the free ends of the transmitting tubes in order to obtain an indication of the respiratory gas flow rate through the tube in the mammal's trachea.



3,643,653
ENDOSCOPIC APPARATUS
Nagashige Takahashi, and Kunio Kinoshita, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Shibuya-ku, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,552
Claims priority, application Japan, Dec. 24, 1968, 43/94475
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **8 Claims**



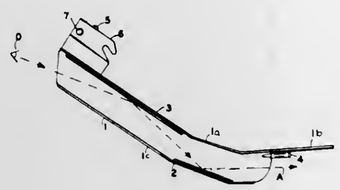
Endoscopic apparatus comprising a major endoscope and a minor endoscope adapted to be inserted in the major endoscope and capable of viewing on a magnified scale an object sought by the major endoscope. The forward end portion of the minor endoscope is provided with a cylindrical wall extending forwardly therefrom so that, by contacting the front end edge of the cylindrical wall with the object, the forward end portion of the minor endoscope can be firmly secured relative to the object, while a sharp image of the object can be properly observed on a magnified scale through an objective lens provided in the forward end portion by virtue of the proper spacing of the objective lens from the object by means of the cylindrical wall extending forwardly from the forward end portion of the minor endoscope. In order to positively fix the forward end portion in position relative to the object, the front end edge of the cylindrical wall may be provided with a plurality of pricking needles which prick the object when the cylindrical wall contacts the object or vacuum may be introduced into the hollow space defined by

the cylindrical wall between the object and the front end of the objective lens.

3,643,654
ILLUMINATING LARYNGOSCOPE WITH REFLECTING MEANS

Hector R. Felbarg, 12 Kingsley Road, Huntington, N.Y.

Continuation-in-part of application Ser. No. 733,394, May 31, 1968. This application Sept. 14, 1970, Ser. No. 72,044
Int. Cl. A61b *1/06*
U.S. Cl. 128—11 **1 Claim**

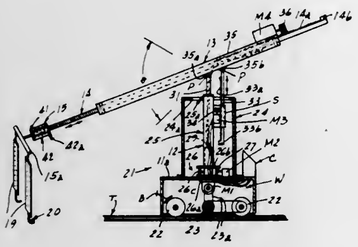


A laryngoscope of the type comprising a tubelike member of U-shaped cross section, open on one side and having a light source at the end thereof. The member has a flattened bend having an interior angle of more than 90°. A first mirror is mounted on the bottom interior of the tubular member in the area of the bend and a second mirror is mounted on the upper interior of the tubular member near the operator's end so that the operator can look at the second mirror and see a right-side-up image of the throat and larynx at the end of the blade.

3,643,655
AUTOMATIC SURGERY RETRACTOR

Anthony Peronti, Morton Grove, Ill., assignor to Michael S. White, Chicago, Ill., a part interest

Filed July 14, 1970, Ser. No. 54,728
Int. Cl. A61b *17/02*; **A61g** *13/00*
U.S. Cl. 128—20 **12 Claims**

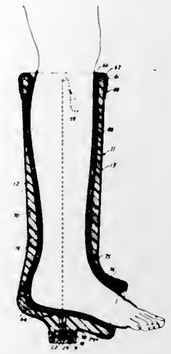


An automatic surgery retraction apparatus which is self-supporting away from an operating table or a patient and is selectively positionable along both. The apparatus includes a vertically extensible upright assembly mounted for rotation about a base member and a horizontally extensible boom assembly mounted for pivotal movement about the upright assembly. The upright and boom assemblies are provided with electronic precision servo-positioning systems allowing remote actuation thereof for precise and accurate positioning. The boom assembly is provided with one or more disposable strap members carrying retraction instruments, which may also be disposable.

3,643,656
INFLATABLE SURGICAL CAST

Joseph V. Young, Route 2, Box 90A, Lewisville, Tex., and Richard M. Johnson, 3815 Weeburn Drive, Dallas, Tex.

Filed June 16, 1969, Ser. No. 833,355
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 **10 Claims**

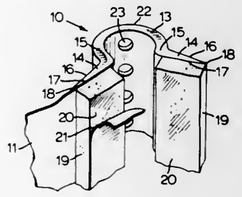


A water-impervious cast having a rigid tubular outer wall or shell and a flexible tubular inner wall which form a substantially cylindrical chamber about a body portion, such as a leg, arm, torso and the like, to be immobilized by the cast and a foamed-in-place rigid plastic filling the chamber and causing the inner surfaces of the flexible wall to contact the body portion and assume the configuration of the body portion to hold immobile the body portion. A method of forming a cast about a body portion by forming a substantially cylindrical chamber about a body portion by forming a substantially cylindrical chamber about a body portion closed at both ends and having an inner flexible wall movable into engagement with the body portion and introducing a foam-producing substance into the cylindrical chamber to cause it to foam and expand and move the flexible wall into engagement with and to conform to the shape of the body portion while the body portion is immobile.

3,643,657
SPACER FOR SURGICAL CAST

Francis Whyte, 2 Cascade Drive, Halifax, Nova Scotia, Canada

Filed June 1, 1970, Ser. No. 41,830
Int. Cl. A61f *5/04*
U.S. Cl. 128—91 R **2 Claims**



A spacer, for use in forming a surgical cast of hardenable material, consisting of an elongated, laterally arcuate central rib with flanges projecting outwardly from the lateral edges of the central rib and tapering to their free edges. The spacer is made of form-retaining, severable material. A cast is made by using one or more slabs of malleable, hardenable material having its lateral edges overlying the flanges of one or more spacers and contiguous with the central rib.

3,643,658
IMPLANTS OF TITANIUM OR A TITANIUM ALLOY FOR THE SURGICAL TREATMENT OF BONES

Samuel Steinemenan, Liestal, Switzerland, assignor to Institute Dr. Ing. Reinhard Straumann, Waldenburg, Switzerland

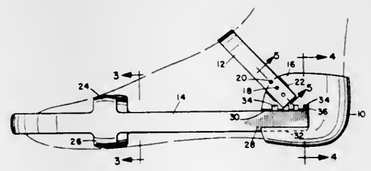
Filed Aug. 27, 1969, Ser. No. 869,428
Claims priority, application Switzerland, Sept. 3, 1968, 13217/68
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 D **2 Claims**

A titanium or titanium implant with the novel feature of the surface layer formed as an oxide, nitride, carbide and carbonitride. The surface layer is applied to prevent abrasion and corrosion of the implant and to prevent fretting between contacting implants as well as to improve the appearance thereof.

3,643,659
TOE GUARD

Arthur J. Storer, Mackay, Idaho

Filed June 20, 1969, Ser. No. 835,061
Int. Cl. A61f *5/30*
U.S. Cl. 128—153 **2 Claims**

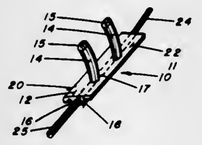


A toe guard, for supporting bedding or other covering, which is worn on the foot in the manner of a sandal. A heel cup with a retaining strap holds the guard in place and an adjustable guard band of straplike, open loop form encompasses that part of the foot forward of the heel. Actual contact of the guard with the foot is minimized to avoid discomfort.

3,643,660
NASAL CANNULA

Allan C. Hudson, 3323 Sparr Boulevard, Glendale, Calif.; John M. Kinnear, 20515 San Gabriel Valley Drive, Walnut, Calif., and Harold R. Havstad, 6612 Centralia, Lakewood, Calif.

Filed Nov. 21, 1969, Ser. No. 878,628
Int. Cl. A61m *15/08*
U.S. Cl. 128—206 **13 Claims**

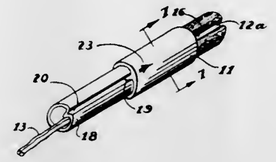


A unified nasal cannula comprises a hollow tubular body having an upper flat or plane surface and a pair of spaced and curved elongated tubular extensions, having exterior orifices for directing a gas flow which extensions project upwardly at an angle from the surface.

3,643,661
TAMPON FOR DIRECTIONAL PLACEMENT AND APPLICATOR THEREFOR

Joseph R. Crockford, Flushing, N.Y., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 15, 1969, Ser. No. 841,879
Int. Cl. A61f *13/20*, *15/00*
U.S. Cl. 128—263 **15 Claims**

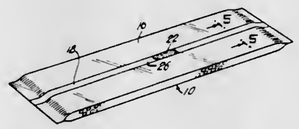


A catamenial tampon designed for directional placement in the vaginal cavity. The tampon is made of an oblong pledget of absorbent material, compressed into thin, flat, self-sustaining, resilient sheet form and folded longitudinally on itself in symmetrical segments to form an elongate body of substantially circular cross section of a size suitable for insertion in the vaginal tract. The folds are arranged to form at least one longitudinal groove in the tampon body. The folded tampon, which tends to spring back to flat form unless restrained, is held in its folded form within a tubular applicator which has at least one longitudinal rib in mated and slidable relationship with the longitudinal groove of the tampon, and which has a telescoping ejector disposed in one end. The applicator tube has indicia to show the radial disposition of the tampon within the tube in order to facilitate placement of the tampon in a predetermined position by the user.

3,643,662
REMOVABLE PROTECTIVE LINER FOR NETHER GARMENTS

Mary H. McGuire, and Chandra Kapur, both of East Brunswick, N.J., assignors to Personal Products Company

Filed Nov. 4, 1969, Ser. No. 873,865. **The portion of the term of the patent subsequent to Apr. 20, 1988, has been disclaimed.**
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **9 Claims**

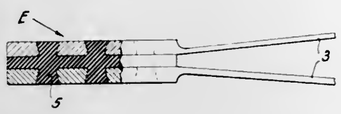


A protective liner which is temporarily, but securely, held to the interior crotch portion of nether garments by a narrow, double-faced, pressure sensitive adhesive tape provided on the under surface of the liner. The adhesive tape possesses differential adhesion levels such that the adhesive layer that secures the tape to the protective liner possesses a greater level of adhesion so as to permanently adhere the tape thereto, than does the adhesive layer of the tape that temporarily, but securely, adheres the tape and the liner to the crotch portion of the nether garment.

3,643,663
COAGULATING INSTRUMENT

Hermann Sutter, Wildtal near Freiburg, Germany, assignor to F. L. Fischer, Freiburg am Martinstor, Freeburg, Germany

Filed Oct. 15, 1969, Ser. No. 866,477
Claims priority, application Germany, Oct. 16, 1968, P 18 03 292.3
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.17 **8 Claims**

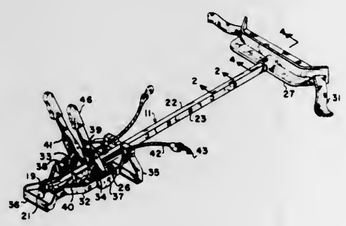


A forceps-type coagulating instrument provided with means for electrically connecting the relatively insulated blades of a forceps to a generator supplying a high-frequency voltage, for the purpose of coagulating a part held between the points of the blades of the forceps, wherein said connecting means are constituted by a push-on and pulloff connector.

3,643,664
DUAL-PULL VETERINARY FETAL EXTRACTOR

Robert L. McMillan, 133 Winn Avenue, Box 2189, Universal City, Tex.

Filed Apr. 1, 1970, Ser. No. 24,706
Int. Cl. A61b *17/42*; **A61d** *1/08*
U.S. Cl. 128—353 **8 Claims**



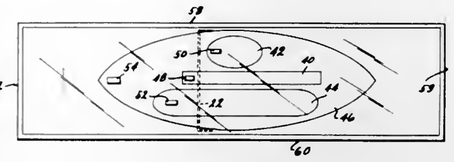
A veterinary obstetric instrument for assisting the birth of fetal animals to avoid the necessity of caesarian operations. The construction of the device comprises a quick-release progressively locked telescoping body portion, a breeching plate and belt for attaching the device to an animal, a ground support member and a positioning handle, dual cables mounted on lever-driven ratchet reels rotatably mounted on a reel bracket, and chain or cable means for attaching the reel mounted cables to the head or body portion of the fetal animal.

3,643,665
THERAPEUTIC PACK FOR THERMAL APPLICATIONS

James C. Caillouette, Pasadena, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Filed Apr. 4, 1969, Ser. No. 813,491
Int. Cl. A61f *7/04*
U.S. Cl. 128—403 **8 Claims**

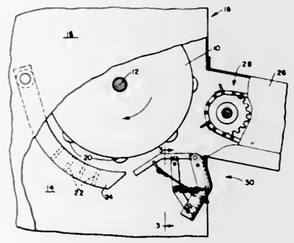
A therapeutic pack containing chemicals to produce a temperature-changing chemical reaction, e.g. endothermic or exothermic. The chemical components for the reaction are held spaced apart within a bag by a fracturable means, e.g. a diaphragm. The bag incorporates an insulation cover, e.g. minutely expanded polystyrene paper and aluminum foil, various portions of which may be selectively removed to provide an effective heat-transfer path of a predetermined size, to accomplish the desired therapeutic treatment.



3,643,666
STONE GUARD FOR COMBINES

Henry Hoyt Denison, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jan. 30, 1970, Ser. No. 7,002
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 JT **15 Claims**



A plurality of adjacent fingers form a door which extends fore-and-aft between the lower edge of the crop inlet opening in a combine body and the front edge of the concave. The door is composed of three individual sections, each of which is mounted on a transverse pivot adjacent the crop inlet opening and adapted to swing downwardly when a rock or like object is introduced between one of the sections of fingers and the threshing cylinder, thereby allowing such objects to fall away before entering the area between the cylinder and concave. A spring acting through a toggle-type linkage urges each of the finger sections upwardly against an adjustable stop, the linkage being so arranged that the urging force transmitted to the sections diminishes rapidly as the sections swing downwardly. The shape of the fingers is such that an entering rock will trip the mechanism a substantial distance forwardly of the leading edge of the concave.

3,643,667
METHOD OF MAKING A SMOKABLE PRODUCT FROM OXIDIZED CELLULOSE

Theodore S. Briskin, Beverly Hills, and Allen H. Remanick, Pasadena, both of Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.

Filed Jan. 22, 1970, Ser. No. 5,098
Int. Cl. A24d *01/18*
U.S. Cl. 131—2 **14 Claims**

A method for preparing a smokable product wherein a cellulosic material is first selectively oxidized with a gaseous nitrogen dioxide, and the resulting oxidized cellulosic material is thereafter subjected to a reduction reaction by means of a borohydride at an alkaline pH.

3,643,668
OXIDIZED CELLULOSE SMOKING PRODUCT COMPOSITION

Theodore S. Briskin, and Geoffrey R. Ward, both of Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.

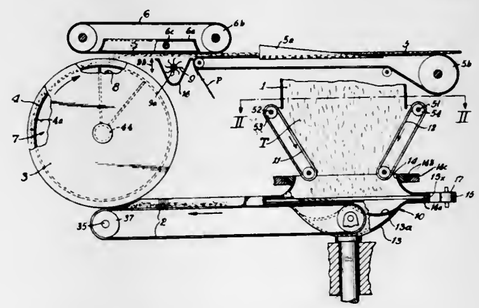
Continuation-in-part of application Ser. No. 802,229, Feb. 25, 1969, now Patent No. 3,559,655, Continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, now Patent No. 3,447,539, Continuation-in-part of application Ser. No. 674,994, Oct. 12, 1967, now abandoned. This application Aug. 12, 1969, Ser. No. 849,497
Int. Cl. A24b *15/02*
U.S. Cl. 131—2 **3 Claims**

A smoking product is disclosed which comprises a charge of oxidized cellulosic material in combination with a treating agent which is designed to enhance the aroma evolved from the burning of the oxidized cellulose by masking undesirable residual odors. The treating agents which have been found to be effective are long fatty aldehydes containing 9–18 carbon atoms, 3,7,-dimethyl-2,6-octadienol, methylheptyne carbonate, ethyl glyoxalate, sandalwood oil and amyris oil.

3,643,669
TOBACCO ROD FORMING MACHINE

Kurt Korber, Hamburg-Bergedorf, Am Pfingstberg 10, Germany

Continuation of application Ser. No. 264,145, Mar. 11, 1963, now abandoned, Continuation-in-part of application Ser. No. 852,060, Nov. 10, 1959, now abandoned. This application Apr. 18, 1966, Ser. No. 543,438
Claims priority, application Germany, Nov. 12, 1958, H 34791; Dec. 11, 1958, H 35078
Int. Cl. A24c *05/18*
U.S. Cl. 131—84 C **3 Claims**



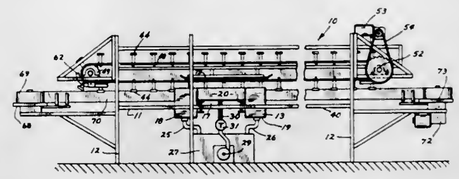
An automatic cigarette making machine wherein tobacco shreds are showered from a hopper through a guide and onto the upper stretch of a narrow elongated collecting tape which accumulates a stream containing a surplus of tobacco. Such stream is transferred into the circumferential groove of a suction wheel and is trimmed to remove the surplus prior to delivery to a horizontally extending rod former wherein the trimmed stream is enclosed in wrapper tape to form a cigarette rod.

3,643,670
APPARATUS FOR LIQUID TREATMENT OF FLAT MATERIALS

Winston E. Sabatka, Lakeville; Wilburn M. Bloomquist, Minneapolis, and Raymond W. Reinke, Rosemount, all of Minn., assignors to Finishing Equipment and Supply Co., Inc., Bloomington, Minn.

Filed Aug. 20, 1970, Ser. No. 65,467
Int. Cl. B05c *3/10, 11/14*; **B08b** *3/04*
U.S. Cl. 134—117 **12 Claims**

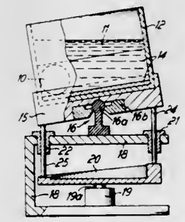
Plating or etching or other immersion treatment of lower portions only of horizontally fed, vertical positioned thin strips and arrays of workpieces is accomplished by recirculating electrolyte or the like through a bathtub provided with vertical slots to receive and discharge such workpieces. The rate of recirculation is such that an effective plating height well above the bottom of the vertical bathtub slots is maintained. A plurality of horizontally moving clamps support the workpieces and are electrically connected thereto as the workpieces move into, through, and out of the bathtub. These clamps are also electrically slidably connected to bus bars to form part of a complete electroplating circuit.



3,643,671
APPARATUS FOR TREATING ELEMENTS OF CIRCULAR OUTLINE

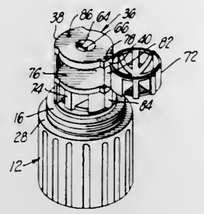
Karin Henninges, Stuttgart, and Bernd Schulze, Benninger, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Original application Dec. 5, 1968, Ser. No. 781,315. Divided and this application June 19, 1970, Ser. No. 47,805
Claims priority, application Germany, Dec. 14, 1967, P 16 21 428.1
Int. Cl. B08b *3/08, 11/02*
U.S. Cl. 134—118 **5 Claims**



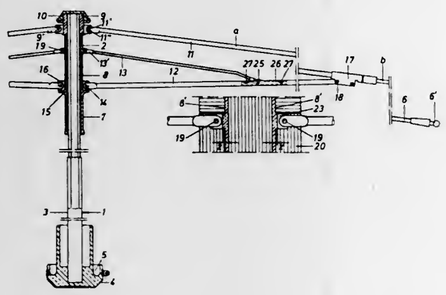
An apparatus for treating elements of circular outline. A vessel is provided with guide grooves which are either straight and parallel to one another or are torus shaped and concentric with one another. The vessel is mounted for tilting movement about a ball-and-socket joint and accommodates a bath of etching fluid. Disc-shaped elements to be treated are supported on edge in the respective guide grooves. A motor is mounted below the vessel and its output shaft drives a can follower having at least one ascending and at least one descending surface portion, and in the case of straight parallel guide grooves two rod-shaped follower members are mounted for sliding movement in axial direction of the motor shaft with their lower ends resting on the can disc surface and their upper ends engaging the bottom wall of the vessel so that, when they are shifted in axial direction of the motor output shaft, the vessel is tilted alternately to one side and the opposite side about the ball-and-socket joint. If the guide grooves are torus shaped, then three such follower members are used which are circumferentially spaced about the axis at equiangular locations.

3,643,672
CONTACT LENS CASE
Frank E. Brown, 1842 Emerald Terrace, Glendale, Calif.
Filed Mar. 2, 1970, Ser. No. 15,755
Int. Cl. B08b *3/04, 11/02*
U.S. Cl. 134—143 **9 Claims**



A case for storing and cleaning contact lenses, comprising: a container having an open end; a closure for the open end of the container; a receptacle carrier movable from a retracted position within the container to an extended position wherein it projects from the open end of the container; interengageable annular shoulders on the container and the carrier for limiting outward movement of the carrier and for closing the open end of the container to prevent loss of liquid therefrom when the carrier is in its extended position; a spring biasing the carrier toward its extended position; and two lens receptacles pivotable relative to the carrier, when the latter is extended, from aligned retracted positions to extended positions wherein the interiors of the receptacles are accessible for insertion or removal of contact lenses, the receptacles being pivotable about a common axis spaced laterally from and parallel to the central axis of the container. With the foregoing construction, the container is automatically sealed against loss of liquid therefrom when the carrier is extended, whereupon the lenses in the receptacles mounted on the carrier may be washed readily without any loss of liquid from the container.

3,643,673
UMBRELLA
Heinz Weber, Rhineland, Germany, assignor to Telesco **Brophey Limited, Montreal, Canada**
Filed July 16, 1970, Ser. No. 55,349
Claims priority, application Germany, July 25, 1969, P 19 37 891.7
Int. Cl. A45b *25/04*
U.S. Cl. 135—20 **5 Claims**



An injection molded runner for an umbrella with an integrally pivoted shaft to which a stretcher member is pivoted.

3,643,674
POCKET UMBRELLA WITH THREE-SECTIONAL STICK
Gunter Granrath, Solingen, Germany, assignor to Kortenbach & Rauh Kommanditgesellschaft, Solingen-Weyer, Germany
Filed Sept. 11, 1969, Ser. No. 856,973
Claims priority, application Germany, Jan. 11, 1969, G 69 00 937
Int. Cl. A45b *19/04, 25/08*
U.S. Cl. 135—25 **4 Claims**

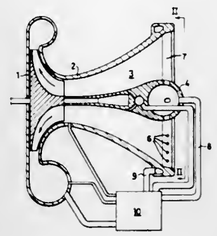


A multisectional umbrella frame having a stick section with a handle and having an intermediate stick section with a window located at the lower end of said intermediate stick section when the umbrella frame is in its unfolded position of use, in which that stick section which has the handle connected thereto is provided with guiding means, e.g. in the form of a longitudinal groove, arranged below said window while in use position of said stick between the lower edge of said window and the lower edge of the intermediate frame stick there is provided a guiding member for cooperation with said guiding means, said frame also comprising a runner having pivotally connected thereto a pawl the locking section of which has a first edge surface which in said window engaging position engages that window edge surface which faces away from said handle in such a way that the longitudinal plane of symmetry of said pawl is substantially perpendicular to said window edge surface, said pawl having a second edge surface opposite said first edge surface and being so inclined that the extensions of said first and second edge surfaces in the direction away from said stick define an acute angle, said pawl having a third edge surface interconnecting said first and second edge surfaces and forming with said first edge surface an obtuse angle and with said second edge surface an acute angle.

3,643,675
METHOD AND DEVICE FOR PROVIDING A CONTROL OF THE VELOCITY PROFILE OF THE WORKING MEDIUM IN THE INLET OF FLOW MEDIUM
Lennart Wetterstad, Storegardsvagen 27, Trollhattan, Sweden
Filed Jan. 2, 1970, Ser. No. 307
Int. Cl. F15d *1/02*
U.S. Cl. 137—13 **21 Claims**

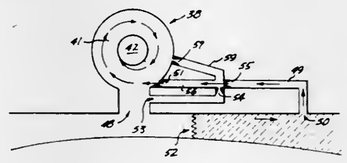
A method and apparatus for controlling the velocity profile of the working medium of fluid actuated or fluid impelling mechanisms, such as water and gas turbines, turbopumps, compressors, etc., having radial or axial flow patterns in which a control fluid of the same character as the working fluid is introduced tangentially into the working fluid at the working fluid inlet to impart a rotational motion to the working fluid either in the same direction as the direction of rotation of the rotor of the mechanism or in a direction opposite to the direction of rotation of the rotor, and at a substantial distance forward of the rotor, with respect to the direction of flow of working fluid, and the rotational movement is then amplified by restricting the flow path of the working fluid

prior to its contact with the rotor. Preferably, the control fluid is introduced through a plurality of orifices or nozzles distributed along radially disposed conduits in the working fluid inlet and the control fluid is obtained from the outlet of



the machine or from both the outlet and an external source and is passed through a control apparatus, such as a fluid amplifier system, to control the volume, pressure and distribution through the orifices or nozzles.

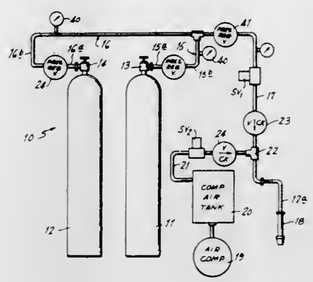
3,643,676
SUPERSONIC AIR INLET CONTROL SYSTEM
Charles R. Limage, Dallas, Tex.; Herbert P. Lindahl, Bellevue, and Elling Tjonneland, Kent, both of Wash., assignors to The United States of America as represented by the Administrator of the Federal Aviation Administration
Filed June 15, 1970, Ser. No. 46,082
Int. Cl. F02k *11/00;* **F15c** *1/08*
U.S. Cl. 137--15.2 **8 Claims**



A fluid flow stabilizing and terminal or normal shock wave stability control system, utilizing fluidic vortex throttling valves can be integrated with the intake of a jet propulsion power plant, to attenuate gust disturbances and the intake's terminal or normal shock wave movement, thereby preventing unstart or undesirable terminal shock wave expulsion from the intake during transonic or supersonic mode. Further, the vortex valve terminal shock stability system can be used for preventing unchoking of the intake during a noise abatement mode of operation, wherein the shock wave is positioned within the intake forward of the engine section to prevent the engine compressor noise from passing out through the cowl entrance. The vortex valve shock stability system can also stabilize buzz for mixed, internal, or external compression intakes.

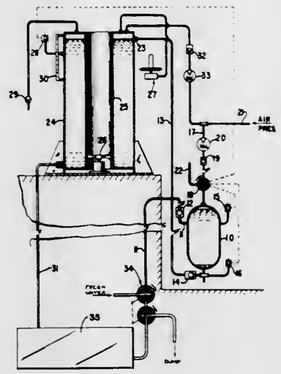
3,643,677
COMPRESSED GAS SUPPLY SYSTEM
Manny Begleiter, Bronx, N.Y., assignor to Miner Industries, Inc., New York, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,786
Int. Cl. G05d *16/06*
U.S. Cl. 137—113 **5 Claims**

In a compressed gas supply system, particularly for supplying helium under pressure to inflate balloons, as in balloon vending machines, two tanks containing gas under pressure are connected to a supply line through respective pressure regulating valves set to feed gas under relatively low pressures from the respective tanks to the supply line, and the regulating valve associated with one of the tanks is set to feed at a pressure slightly higher than that at which the other regulating valve is set to feed so that gas is initially supplied from the tank whose regulating valve is set at the slightly



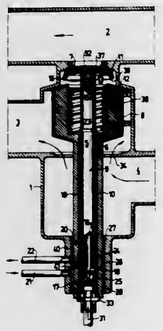
higher pressure and feeding of gas from the other tank commences automatically only when the pressure of gas in the first tank has been reduced substantially to the pressure setting of the regulating valve for that other tank.

3,643,678
SELF-CONTAINED PUMPLESS COOLING WATER SYSTEM
Kurt Genrich, Oak Park, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed May 27, 1970, Ser. No. 40,777
Int. Cl. F04f *1/06*
U.S. Cl. 137—209 **1 Claim**



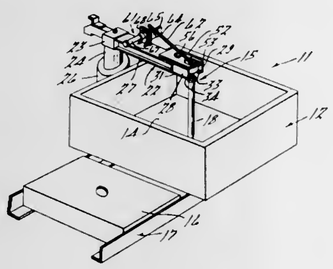
A water storage tank maintained under constant air pressure is supplied with water from a filler tank which can be connected to a source of air pressure or to the atmosphere through a three-way valve. The valve is actuated in response to the level of water in the filler tank to transfer water to the storage tank when the filler tank is full and permits the replenishment of water in the filler tank when a low level is reached.

3,643,679
EQUIPMENT DESIGNED TO REGULATE THE FLOW OF, PREFERABLY, A STERILE LIQUID AND A DISHWASHING LIQUID OR A STERILIZING AGENT
Jan Ingvar Hansson, Lomma, Sweden, assignor to Tetra Pak International AB, Lund, Sweden
Filed May 26, 1970, Ser. No. 40,540
Claims priority, application Sweden, June 26, 1969, 9059/69
Int. Cl. F16k *51/00*
U.S. Cl. 137—241 17 Claims



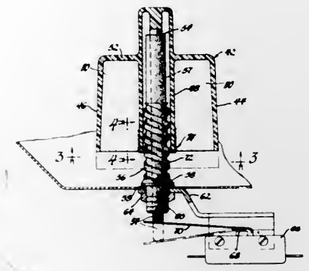
A valve structure for controlling the flow of a liquid in a pipe for filling packages and for controlling the flow of a liquid for cleaning the pipe whereby suitable separation is obtained and vapor seals are employed.

3,643,680
BOTTOM POUR STOPPER
Robert T. Hall, Orchard Lake, and Donald L. Justen, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Company
Filed Sept. 14, 1970, Ser. No. 71,756
Int. Cl. F16k *29/00*; B22d *37/00*
U.S. Cl. 137—331 11 Claims



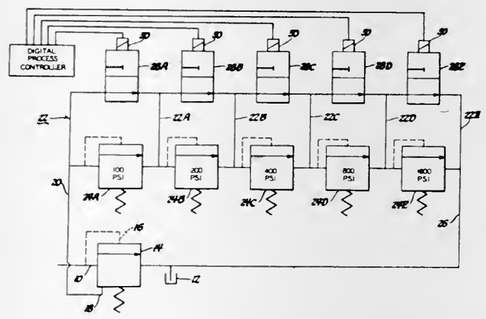
A stopper arrangement for controlling the flow of molten metal or the like through the bottom opening of a ladle. The stopper arrangement is supported for movement about a longitudinal axis between its opened and its closed positions. The supporting arrangement for the stopper element is such that the element may shift transversely with respect to the longitudinal axis but will always move in a direction parallel to the longitudinal axis as it is opened or closed. The stopper element is also supported for oscillation and is positively rotated when in its closed position for insuring good sealing engagement with the opening.

3,643,681
TURBULENCE-DAMPENED FLOAT CONTROL
Edward C. Simmons, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 16, 1970, Ser. No. 89,824
Int. Cl. G05d *9/12*
U.S. Cl. 137—429 4 Claims



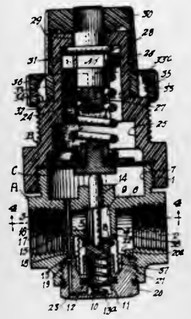
A standpipe extending upward from the bottom of a liquid container is provided with external helical square threads. A float fits over the standpipe and has a standpipe-operating rod extending down through the standpipe to a control switch below the container. The switch controls a valve for filling the container with liquid to a predetermined liquid level. The float is provided with a sheet metal nut having inwardly projecting teeth engaging the helical threads for rotating the float as the changing liquid level raises and lowers the float relative to the standpipe.

3,643,682
POWER TRANSMISSION
Bernard J. Chmura, Clawson, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Oct. 26, 1970, Ser. No. 84,014
Int. Cl. F16k *31/12*, *17/38*
U.S. Cl. 137—489 4 Claims



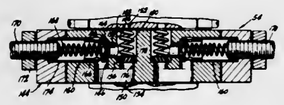
A fluid pressure control system includes a pilot-operated main relief valve having a vent connection by which its relieving pressure is controlled. A series of pilot relief valves with individual bypassing valves are connected in a ladder network to the vent. Their individual pressure settings vary in binary increments and may be controlled by a digital process controller to select any one of a number of discreet pressure settings equal to two raised to a power represented by the number of pilot relief valves.

3,643,683
DOUBLE VENTURI PRESSURE REGULATOR
Albert L. Semon, 11 Eliot Pl., Short Hills, N.J.
Filed Sept. 23, 1970, Ser. No. 74,746
Int. Cl. F16k *17/34*
U.S. Cl. 137—484.8 5 Claims



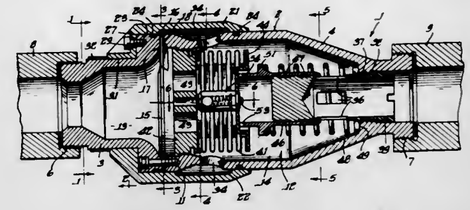
A fluid pressure regulator casing has a piston valve in a cylinder coactive with an adjustable spring-pressed diaphragm to control flow of fluid from an inlet passage through an outlet duct across which extends a venturi tube for subjecting both said diaphragm and said piston valve to the pressure produced by fluid flow through said outlet duct past the venturi tube, so that the regulator may be small and may have greater capacity or outlet flow and less pressure drop in relation to prior regulators. A locking ring coaxially rotatable on a resilient flange on the casing coacts with said flange to lock and release an adjusting knob for the regulation of the spring pressure on the diaphragm with a minimum of possibility of unintentional rotation of the knob from its adjusted position.

3,643,684
PRESSURE CONTROL DEVICES FOR PNEUMATIC CIRCUITS
William L. Moore, 560 S. Ann Arbor St., Saline, Mich.
Filed Mar. 16, 1970, Ser. No. 19,899
Int. Cl. F16k *17/18*
U.S. Cl. 137—493.7 11 Claims



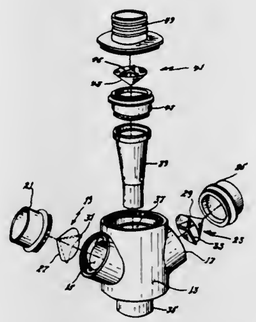
Pressure-reducing devices for use in pneumatic systems which include apparatus, such as air cylinders and the like, that are operated from a source of air under pressure. The devices are adjustable so that a common source of high-pressure air can be used in connection with different apparatus operable at different reduced pressures, and the devices will permit optimum selection of air pressures for each such apparatus. In one form, the device is a platelike structure that can be sandwiched in between a conventional solenoid operated air valve and a subplate manifold therefor. Other forms of devices are disclosed for use in other locations in pneumatic systems.

3,643,685
FLOW REGULATOR
Russell Duane Hays, Broadview, Ill., assignor to Schaub Engineering Co., Downers Grove, Ill.
Filed Nov. 4, 1970, Ser. No. 86,901
Int. Cl. G05d *7/01*
U.S. Cl. 137—501 10 Claims



An adjustable fluid flow regulator has an orifice through which the fluid flows. The regulator includes end-to-end housing sections which have precision facing surfaces that define the orifice. The effectively used part of the orifice is preset by a manifold rotatable on the housing. A spring-loaded sensing device comprising a bellows which operates a metering valve maintains a constant pressure differential across the orifice despite variations in upstream and downstream pressures.

3,643,686
HIGH-VELOCITY BREATHING VALVE
Ewald Koegel, 946 E. Sunshine Drive, San Antonio, Tex.
Filed Oct. 21, 1970, Ser. No. 82,656
Int. Cl. F16k *15/14*
U.S. Cl. 137—512 5 Claims

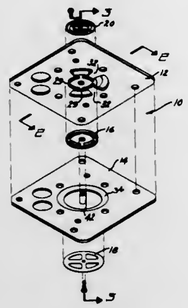


A high-flow, low-resistance minimal dead space breathing valve having intake and exhaust flow paths separated but coaxial and coupled with in-line K-valves which reduce turbulence and flow resistance to a minimum. The breathing valve is particularly suitable for making very accurate maximal breathing capacity and oxygen cost determinations under conditions of severe exercise.

3,643,687
COMPRESSOR VALVE ASSEMBLY AND METHOD OF PRODUCING THE SAME
Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Toledo, Ohio
Filed Nov. 25, 1969, Ser. No. 879,863
Int. Cl. F16k *15/14*
U.S. Cl. 137—512 15 Claims

A laminated valve plate assembly for a reciprocable piston compressor said plate being of the type formed substantially

by stamping processes and characterized by being only two laminations thick and having at least some of the port-defining surfaces which are smooth and have compound curvatures that are inclined with respect to the plane of the plate to provide a less turbulent flow through the ports and to reduce the required thickness of the finished valve plate. The outlet end portions of both the intake and exhaust means comprise continuous slots formed by stamping processes and stamped parts while the inlet end portions of these port



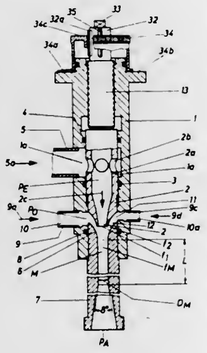
means comprise a plurality of discontinuous slots. Peripheral recesses are formed around the top and bottom surfaces of the plate by shearingly depressing the edges thereof to eliminate burrs and to protect the edges of the lapped top and bottom surfaces from damage due to rough handling prior to the installation of the valve assembly between the cylinder head and cylinder block of the compressor. The disclosure also includes novel methods for forming the above-mentioned structures.

3,643,688

DEVICE FOR THE CONTINUOUS MIXING OF BEVERAGE COMPONENTS IN A PREDETERMINED QUANTITY RATIO

Hartmut Meinert, Haddenhausen, Germany, assignor to Noll Maschinenfabrik GmbH, Minden, Westphalia, Germany

Filed Dec. 12, 1969, Ser. No. 884,681
Claims priority, application Germany, Jan. 28, 1969, P 19 04 014.3
Int. Cl. F16k *19/00*
U.S. Cl. 137—556 **15 Claims**



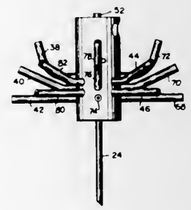
A device for the continuous combination and mixing of a plurality of liquid beverage components in an accurately maintained adjustable quantity ratio, where a jet mixer has a central pressure nozzle as part of an axially adjustable hollow plunger through which the pressurized liquid, water in the case of soft drinks, passes into a receiving nozzle past the infinitely variable annular opening of a suction chamber through which one or more admixed components are drawn into the receiving nozzle. The adjustment of the annular opening for the suction chamber determines the overall mixing ratio to water, while the flow volume of the various admixed components is controlled by separate throttle valves in their supply conduits. Distortions of the mixing ratio during startup and shutdown of the installation are minimized by accurately synchronizing all shutoff valves and by keeping the liquid volumes within the mixer cavities within predetermined ratios.

3,643,689

FLUID DISTRIBUTION MANIFOLD

Jack Isreeli, Mamaroneck, and Aaron Kassel, Brooklyn, both of N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,816
Int. Cl. B01d *15/08*
U.S. Cl. 137—561 **7 Claims**



A fluid distribution manifold for the division of a segmented fluid stream into a plurality of similarly configured segmented fluid streams is provided and comprises a manifold body forming a manifold chamber, a fluid stream inlet, and a plurality of fluid stream distribution outlets to flow the similarly configured fluid streams from the distribution chamber. The volume of said manifold chamber is no greater, and preferably substantially less, than the volume of the smallest of said fluid stream segments to thus insure substantial manifold chamber washout to prevent contamination of a succeeding fluid stream segment by the residue of a preceding fluid stream segment, and provide for accurate division of said segmented fluid stream into said plurality of similarly configured segmented fluid streams.

3,643,690

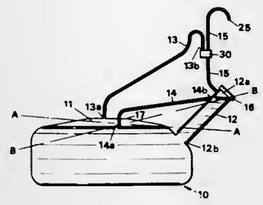
VENTED FUEL TANK

Hiroshi Sarai, Toyota, Japan, assignor to Toyota Jidosha **Kogyo** Kabushiki Kaisha, Toyota, **Japan**

Filed Sept. 10, 1970, Ser. No. 70,695
Claims priority, application Japan, Sept. 13, 1969, 44/87497
Int. Cl. F16k *45/00*
U.S. Cl. 137—587 **4 Claims**

A fuel tank comprising a fuel tank body, a first vent pipe, one end of which extends for a desired length into the tank body from an upper faceplate while its other end is in communication with the upper part of a fuel filling pipe which is connected at its lower end to the fuel tank body. For forming an air chamber having a desired capacity in the upper part of the tank body, the lower end of the fuel filling pipe opens into the inside of fuel tank body at a position below the lower opened end of the first vent pipe, a second vent pipe is provided with its lower end opening into the upper part of the fuel filling pipe and with its upper end opening into the atmosphere, and a third vent pipe communicating between the

second vent pipe and the air chamber in the fuel tank body through a check valve. By means of the check valve the third



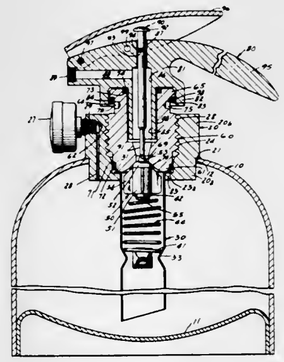
vent pipe is opened into the atmosphere through the second vent pipe only when the fuel overflows out of the fuel filling pipe.

3,643,691

VALVED HEAD ASSEMBLY FOR PRESSURIZED RECEPTACLES

Charles K. Huthsing, Jr., Old School Road, Libertyville, Ill.

Filed Feb. 3, 1969, Ser. No. 796,091
Int. Cl. F16k *31/44*
U.S. Cl. 137—590 **12 Claims**



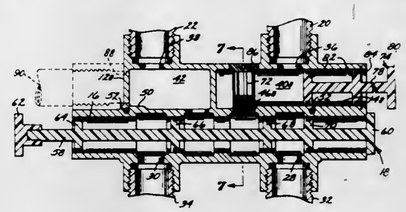
A fire extinguisher head assembly includes a core, a syphon tube seated in said core, a spring biasing a valve construction upwardly into engagement with a valve seat on a retaining bushing that is screwed into the core to clamp the syphon tube in place. An independent handle and valve-operating assembly may be attached to said retaining bushing with a quick-release coupling. Said operating assembly includes a body portion having a collar that fits about a retaining bushing, a handle means, an actuator pin connected therewith, a discharge rod extending through a vertical passage from the valve construction to a pivoted operating lever means whereby upon depression of the rod by the operating lever the valve is unseated and allows discharge of the receptacle contents through the vertical passageway and intersecting generally horizontal passageway. An alternate operating means includes a cam pivotable by a sliding trigger to depress the actuator pin.

3,643,692

VALVE

Paul L. Traylor, 2506 Lighthouse Lane, Corona Del Mar, Calif.

Filed Sept. 28, 1970, Ser. No. 76,076
Int. Cl. F16k *43/00*
U.S. Cl. 137—599.1 **10 Claims**



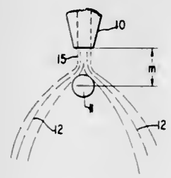
A valve for controlling fluid flow and particularly useful as a bypass valve for water treatment equipment. The valve is characterized by a casing provided with parallel main and auxiliary bores intersected by a plurality of passages and reciprocably accommodating a valve member for movement in the main bore between bypass and water treatment positions. The axes of the bores and passages lie in the same plane to facilitate water flow and simplify installation, and the auxiliary and main bores are preferably cylindrical and of approximately the same diameter so that the valve is thereby capable of flexibility in mounting auxiliary elements such as strainers, shutoff valve members and the like.

3,643,693

MULTISTABLE WAKE DEFLECTION AMPLIFIER

Raymond N. Auger, 456 Riverside Drive, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,945
Int. Cl. F15c *3/00*
U.S. Cl. 137—608 **9 Claims**



A fluidic amplifier for use in the performance of logical functions in digital systems utilizing a cylindrical or other shape obstruction in a power stream to produce a deflectable wake when the stream is a jet of approximately the same size as the deflecting shape.

3,643,694

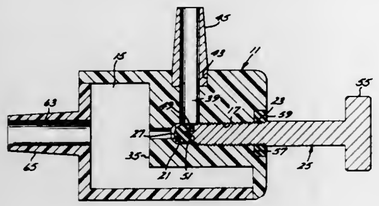
AQUARIUM GANG VALVE

Bernard Duke, Deal, N.J., and David Z. Levensohn, New York, N.Y., assignors to Miracle Pet Products, Inc., Jersey City, N.J.

Filed Nov. 10, 1969, Ser. No. 875,040
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 **1 Claim**

An aquarium gang valve including a manifold formed with an inlet chamber and a plurality of through stem-receiving bores leading therefrom. The bores are formed along their inner portions with reduced-in-diameter valve seats and on their outer extremities with internally threaded sections. The manifold includes outlet ports which are in communication with the respective bores. A plurality of elongated valve

stems are inserted in the respective bores and are formed on their axially outer lengths with externally threaded portions for engagement with the internally threaded bore portions. The valve stems include resilient poppets on their inner ends for engagement with the respective seats whereby the stems may be screwed inwardly in the respective bores to engage



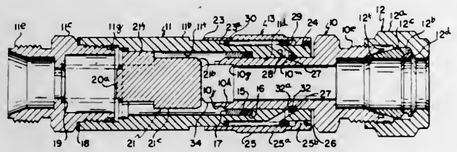
the respective poppets with the respective seats to gradually deform the poppets and progressively decrease the airflow past the respective seats to thereby provide for relatively fine metering of air to the outlet ports. Frictional grommets may be disposed concentric with the axially outer ends of the stems for providing resistance to turning of the stems to maintain such stems at their desired settings.

3,643,695

FLUID LINE COUPLER

Frank L. Strah, Richmond Hgts., and Edward J. Trepannier, Painesville, both of Ohio, assignors to Commercial Screw Products, Inc.

Filed Mar. 23, 1970, Ser. No. 21,728
Int. Cl. F16l *29/00*
U.S. Cl. 137—614.04 **5 Claims**



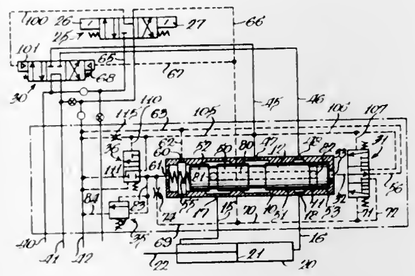
A single hand manipulatable quick-connect-disconnect fluid line coupler with female body portion and a male connector portion attachable to respective line ends by integral fittings. The body is proportioned for manual grasping with two-finger manipulatability of a slidable actuating sleeve; and the body slot convergency and the disposition therein of parallel locking pins engageable with a male portion circumferential locking groove are so related and a simple seal structure provided so as to afford a firm sealed lock under high pressure while facilitating manual actuation in a low-cost structure. Single, double, and nonvalving couplers are shown.

3,643,696

HYDRAULIC CONTROL CIRCUIT

Norman B. Christensen; Thomas A. Clark, and Robert J. Webers, all of Racine, Wis., assignors to Rex Chainbelt Inc.

Filed Sept. 2, 1970, Ser. No. 68,874
Int. Cl. F16k *11/07*; **F15b** *11/08*
U.S. Cl. 137—625.6 **12 Claims**



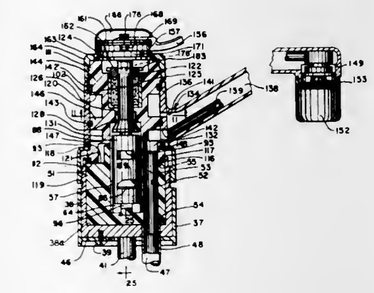
A hydraulic control circuit having a control valve with a multiposition control spool having hydraulically set cutoff positions wherein the spool is hydraulically blocked against movement including a plurality of ports communicating with the control valve bore and suitable hydraulic control components for opening or closing lines connected to said ports. Further, a circuit for regenerative cylinder operation wherein the cylinder is positively blocked against movement in both directions when the control circuit is set for such condition and wherein the regenerative position of the control spool is hydraulically locked and a pressure relief valve is in circuit whereby, when the cylinder pressure exceeds a predetermined amount, the relief valve opens to release the hydraulic locking of the control spool whereby the control spool can move to a position to discontinue the regenerative flow of fluid to the cylinder.

3,643,697

MIXING VALVE STRUCTURE

Aaron A. Staat, 82 Dudley Road, and Robert A. Staat, 350 Marmil Circle, both of Fort Mitchell, Ky.

Continuation-in-part of application Ser. No. 614,098, Feb. 6, 1967, now abandoned. This application Feb. 10, 1969, Ser. No. 797,737
Int. Cl. F16k *19/00*
U.S. Cl. 137—625.17 **23 Claims**



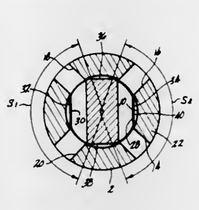
A valve including an outer casing having a pair of inlets, an outlet and a cup-shaped recess formed therein. A valve chamber cartridge is removably received in the recess, the cartridge including a body having a pair of end surfaces and a valve chamber formed in the body extending from one of the end surfaces. A pair of inlet passages are formed in the body of each of which has one end communicating with the valve chamber and its other end communicating with an exterior surface of the cartridge body. Ports in the casing connect each of the inlet passages with one of the pair of inlets, and a slide valve member is received in the valve chamber for controlling communication between the pair of inlets and the outlet through the inlet passages.

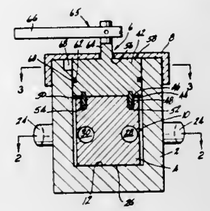
3,643,698

VALVE

Lester E. Smith, Herrin, Ill., assignor to Olin Corporation

Original application Dec. 5, 1968, Ser. No. 781,494, now Patent No. 3,535,874, dated Oct. 27, 1970. Divided and this application Feb. 5, 1970, Ser. No. 13,226
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.23 **6 Claims**





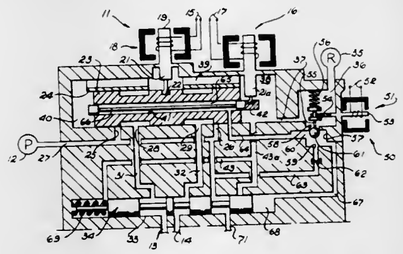
A valve including a body having four ports having coplanar axes. A floatable rotor, having a flow channel therethrough, is mounted in said body and is rotatable to a position where each opening of the flow channel is in communication with an adjacent port.

3,643,699

TORQUE MOTOR OPERATED VALVE

Richard K. Mason, Granada Hills, Calif., assignor to Textron, Inc.

Filed May 18, 1970, Ser. No. 37,985
Int. Cl. G05d *16/20*
U.S. Cl. 137—625.64 **8 Claims**



A valve slidably disposed within a bore and movable between first and second positions to control application of a source of fluid under pressure between an inlet and outlet port. An electrically operated torque motor is connected to the valve to drive the valve in response to an electrical signal applied to the torque motor. The valve is connected to a system and is responsive to a discrepancy between a control and monitor section of the system to effectively lock the system in a failure indicating mode of operation.

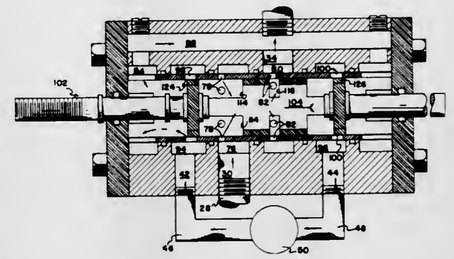
3,643,700

VALVE

Delbert L. Black, Route 1, Box 92, Wellington, Colo.

Filed Aug. 24, 1970, Ser. No. 66,360
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.68 **4 Claims**

A hydraulic system for independently controlling a plurality of individual reversible variable speed hydraulic motors from a common pressure supply source. A plurality of control valves, one for each motor to be controlled, are connected in a closed series circuit with a pump which is operable to recirculate fluid under pressure through the circuit. Each valve, when located in a centered or neutral position, permits all fluid entering the valve inlet to pass directly to the valve outlet. Upon displacement from the neutral position, a portion of the flow into the valve inlet is diverted to the associated motor, passes through the motor and is returned to the valve to rejoin the nondiverted portion of the flow. The magnitude and direction of flow through the motor is dependent upon the magnitude and direction of displacement of the valve from its neutral position. Displacement of a valve in either direction beyond a selected maximum displacement blocks the inlet port of the valve and the resultant increase of pressure at the pump triggers a pressure responsive switch to shut down the pump.

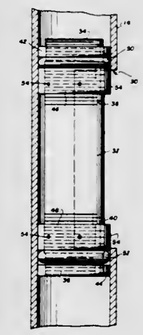


3,643,701

EMERGENCY MONOWALL TUBE REPAIR KIT

Michael Wadiak, Westfield, and George T. Higham, Parsippany, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Sept. 14, 1970, Ser. No. 71,955
Int. Cl. F16l *55/16*
U.S. Cl. 138—97 **2 Claims**

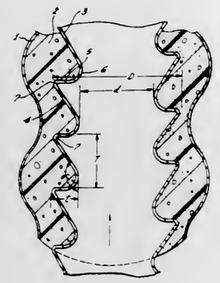


A quick temporary repair for a ruptured tube which is one of a number of parallel tubes making up a boiler furnace wall. The rupture is enlarged to form an opening large enough to accept a pipe having at each end a gasket, which may be compressed axially and consequently to expand radially to engage the sidewalls of the tube so that the water or steam will pass through the pipe rather than pass out of the rupture.

3,643,702
FLEXIBLE PIPE SYSTEM

Knut Kauder, Hannover, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Oct. 16, 1969, Ser. No. 866,843
Int. Cl. F16l *11/12*
U.S. Cl. 138—121 7 Claims

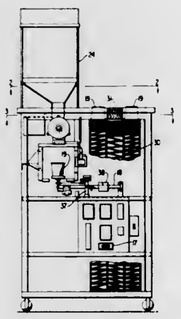


A pipe system is disclosed which includes a corrugated pipe for conduction of fluid, the corrugation defining an asymmetrical wave pattern in an axial plane, to establish a periodically recurring sequence of flow zones of gradually increasing cross section, alternating with nozzles.

3,643,703
METHOD AND APPARATUS FOR MILLING PEANUT BUTTER

Saul R. Rosenberg, 2220 Bagley Ave., Los Angeles, Calif.

Filed July 31, 1970, Ser. No. 59,947
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 4 Claims

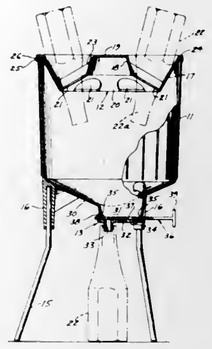


An automatic vending machine for producing fresh peanut butter from deshelled peanuts is provided which upon insertion of a coin enables the user to open a door, insert a cup, close the door and thereby cause automatic feeding of peanuts and milling of a predetermined amount of peanut butter which, when delivered into the cup, shuts off the mill and allows the user to open the door and remove the cup.

3,643,704
DEVICE FOR COLLECTING AND SELECTIVELY DISPENSING A FLOWABLE SUBSTANCE

William G. Carr, Brooklyn, N.Y., assignor to Stamco, Inc., Levittown, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,410
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—106 5 Claims

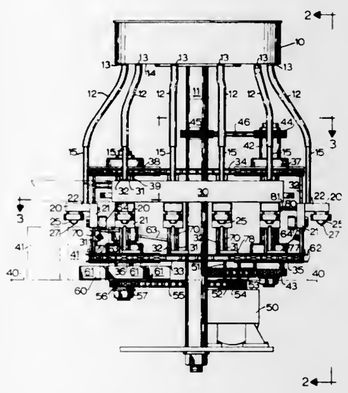


A device for draining a flowable substance such as ketchup in partly filled bottles into a receptacle and filling a bottle with ketchup collected in the receptacle includes a receptacle open at its top and including a holder for holding one or more partly filled bottles in draining position. A discharge valve in the bottom of the receptacle serves to fill a bottle placed underneath the receptacle by temporarily opening the valve.

3,643,705
LIQUID DISPENSER

Peter J. Pinto, Union City; Donald M. King, Alameda, and Roy B. McCarthy, San Leandro, all of Calif., assignors to Leslie Salt Co., San Francisco, Calif.

Filed Sept. 14, 1970, Ser. No. 71,660
Int. Cl. B65b *57/06*
U.S. Cl. 141—141 6 Claims

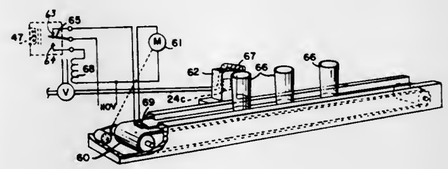


A device for dispensing liquid into cans moving along a straight path. A rotating reservoir holds liquid at a desired head pressure, and has spaced peripheral bottom outlets. A pair of chains is joined together by a series of vertical rods and driven by sprockets along a horizontal path, part of which parallels the can path, the chains and reservoir being driven in synchronization. Valve carriages are slidable up and down, each on a pair of the rods, and each carriage supports a valve housing that is connected by a conduit to a reservoir outlet. A valve closure member in each housing has a ferromagnetic upper portion. Each carriage has a lever which holds the carriage up to a desired height only when in contact with a can. A cam track is engaged by a follower for each carriage for elevating the carriage and valve from a normal lower position to an upper position, and a star wheel near this track synchronizes the valves with the cans, so that each valve accompanies a can for a predetermined distance along the straight path. An electromagnet above the can line opens and holds open each valve that is held up by a can engaging its lever.

3,643,706
PROXIMITY CONTROL APPARATUS

Edwin E. Ritchie, Bainbridge Island, Wash., assignor to Wyott Corporation

Original application Aug. 18, 1969, Ser. No. 850,967, now Patent No. 3,601,621. Divided and this application Apr. 30, 1971, Ser. No. 138,982
Int. Cl. B65b *57/02*
U.S. Cl. 141—160 2 Claims



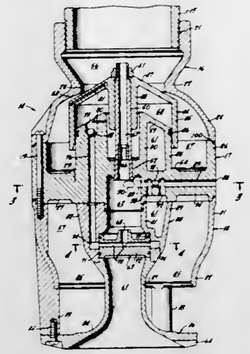
An electronic control responsive to the presence of an object in predetermined proximity to the probe thereof. The probe is connected to an oscillation generator which supplies electrical oscillations to a circuit which controls the initiation of the timing cycle of a timing device when an object is brought into proximity of the probe and electrical oscillations supplied by the generator are interrupted. The timing device supplies a signal to a control circuit after a predetermined timed interval to shut off the load circuit which was activated when the timing cycle was started.

3,643,707
STATIC-REDUCING AND VAPOR-REDUCING LOADING VALVE WITH LOW-PRESSURE DROP

Harold W. Ensign, Fullerton, Calif., assignor to Cla-Val Co., Costa Mesa, Calif.

Continuation-in-part of application Ser. No. 799,567, Feb. 17, 1969. This application Sept. 8, 1970, Ser. No. 70,247
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—286 25 Claims

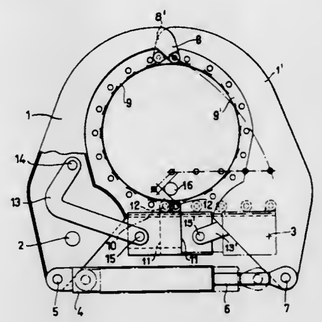
A valve for use in loading the tanks of tank trucks with gasoline or other dangerous liquid. The valve incorporates an automatic flow restrictor for greatly restricting flow when the tank is substantially empty, thus minimizing generation of vapors and static electricity, but for permitting rapid flow when the valve outlet into the tank is submerged. An internal shoulder, of small size and located close to the top of the valve, is provided to greatly reduce the flow velocity of the liquid when the tank is substantially empty. Such shoulder permits high-volume rapid flow to occur with minimized pressure drop. An external deflector causes the liquid to flow generally horizontally when entering the tank.



3,643,708
DELIMBING ARRANGEMENT

Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Jan. 20, 1970, Ser. No. 4,277
Claims priority, application Sweden, Jan. 31, 1969, 1303/69
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z 3 Claims



The delimbing apparatus of the present invention is an improvement over the conventional chain link type of delimber, the improvement being characterized in that the cutting circumference of the chain link device of the apparatus acts in the axial direction of the link pivots and is offset successively in said direction for consecutively shearing off limbs projecting from the same tree trunk level.

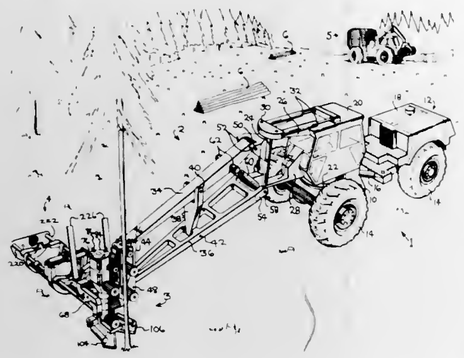
3,643,709
ROUNDWOOD STUMP PROCESSOR

Bruce J. McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc.

Filed Feb. 12, 1970, Ser. No. 10,976
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 10 Claims

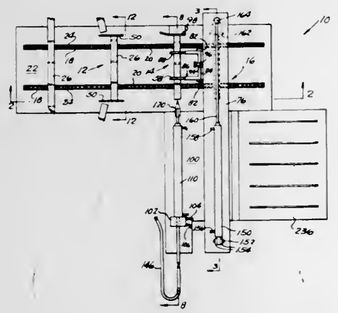
Apparatus for severing and processing trees into sectioned pulpwood bolts includes an extendable head-reach mechanism pivotally supported on a mobile vehicle for arcuate horizontal movement and vertical elevational movement

about and with respect to the machine. The head-reach mechanism supports at its outer end (a) a processing unit in-



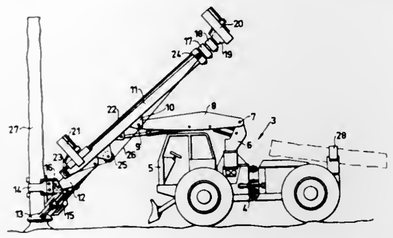
cluding tree grasping shearing debranching means and feed mechanism and (b) a storage magazine for pulpwood and unloading means.

3,643,710
METHOD AND MACHINE FOR MAKING BAMBOO VENEER AND PRODUCTS THEREOF
Chester Manfield Fitzgibbon, Seattle, Wash., assignor to Belize Plywood and Veneer Company, Inc., Union City, N.J.
Filed Nov. 5, 1969, Ser. No. 874,283
Int. Cl. B27l *5/02*
U.S. Cl. 144—3 R **7 Claims**



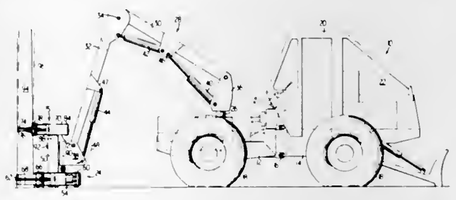
A method of making bamboo veneer including subjecting a debarked green bamboo trunk to softening by moisture and heat, cutting the trunk to a desired length, decoring the trunk by forcing a plunger longitudinally therethrough, straightening the decored and softened trunk by applying pressure internally and externally to the trunk, and simultaneously cutting a thin veneer from the trunk while rotating the trunk. The invention further contemplates a machine for performing the described method and bamboo products utilizing the formed veneer as, for example, bamboo plywood.

3,643,711
TREE HARVESTING MACHINE
Erich Puna, Gavle, Sweden, assignor to Brundell Och Jonsson AB, Gavle, Sweden
Filed Nov. 26, 1969, Ser. No. 880,154
Claims priority, application Sweden, Dec. 16, 1968, 17203/68
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z **5 Claims**



A tree harvesting machine comprising a vehicle carrying a crane. Clamping and cutting means are mounted on a common holder pivotally connected to the outer end of the fore crane arm which can be extended backwards to form a mast, and delimbing means are mounted at the top of the rearmost mast unit.

3,643,712
TREE-SHEARING HEAD
R. Garth Doel; William H. Bricknell, and Stephen Osipenko, all of Fort William, Ontario, Canada, assignors to Hawker Siddeley Canada Ltd., Toronto, Ontario, Canada
Filed June 9, 1969, Ser. No. 831,491
Claims priority, application Canada, June 28, 1968, 023,815
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **3 Claims**

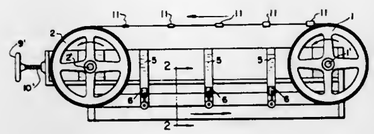


A tree-shearing head for use at the end of a boom attached to a logging vehicle has a shear with an associated tree retaining means which retains the butt of the sheared portion of the tree after cutting. A tree grasping means is spaced above the shearing means, and is pivotable with respect thereto, so that the tree can tilt during the shearing and while being grasped, thereby reducing binding of the shearing means.

3,643,713
MACHINE TO MANUFACTURE CLOSING FOLDING ELEMENTS AND THE DOORS AND SHUTTERS MANUFACTURED WITH THE SAME
Manlio Massetani, Bahia Blanca 2657-63, Buenos Aires, Argentina
Filed Sept. 20, 1969, Ser. No. 861,266
Claims priority, application Argentina, Jan. 7, 1969, 218964; June 26, 1969, 222452
Int. Cl. B27f *1/00*
U.S. Cl. 144—86 **1 Claim**

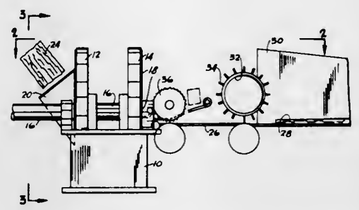
A machine for producing an internal cavity or slot in a workpiece, and articles manufactured therewith. The

machine includes two wheels rotatably mounted on a frame, and a motor for rotating one of the wheels. Disposed around the wheels is an endless tape having a segment provided with cutting teeth. The cutting teeth consist of notches along one



tape edge and a tooth element transverse to the tape and located at one of the vertices of the notch. The tooth elements have different dimensions and are arranged progressively from smallest to largest.

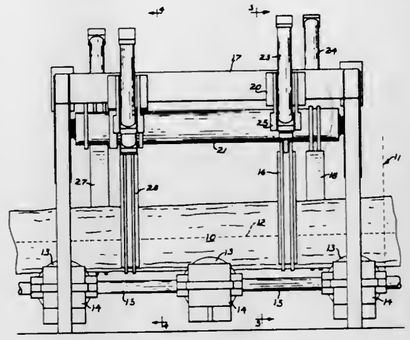
3,643,714
PULP CHIP FORMING APPARATUS
Victor I. Utterback, 4583 Sunnyview Road, N.E., Salem, Oreg.
Continuation of application Ser. No. 678,836, Oct. 30, 1967, now abandoned. This application Dec. 29, 1969, Ser. No. 888,995
Int. Cl. B27b *27/08*
U.S. Cl. 144—176 **2 Claims**



A pair of chipping wheels mounted on a common drive shaft have blades on their outer, plane working surfaces, the blades on one wheel being for chipping veneer material and the blades on the other wheel being for chipping core material. The blades extend across a major proportion of the radii of the wheels, and feed means are arranged to feed veneer and core material to the associated wheels across substantially the full radial length of the blades. The veneer material is fed to its wheel substantially perpendicular thereto and the core material is fed to its wheel at an acute included angle thereto.

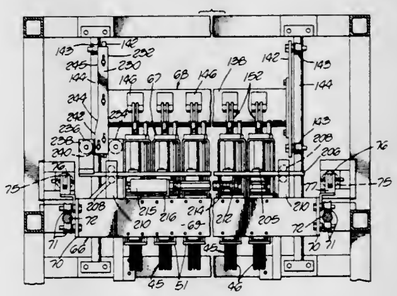
3,643,715
LOG POSITIONING APPARATUS
Leonard L. Hayes, and Gerald J. Hottinger, both of Lewiston, Idaho, assignors to Potlatch Forests, Inc., Lewiston, Idaho
Filed Sept. 28, 1970, Ser. No. 75,934
Int. Cl. B27l *5/00*
U.S. Cl. 144—209 A **4 Claims**

A positioning apparatus for aligning wood logs along a chosen axis in preparation for sawing or other processing in a plane perpendicular to the longitudinal log axis. A pair of transversely spaced grapples are used, each gripping the log securely. One set transversely centers the log with a minimal amount of lifting. The second set also transversely centers the log, and in addition locates the elevation of the log axis along a desired plane regardless of the amount or degree of taper in the log. The first set of grapples uses separate fixed pivotal axes, the second set uses a single grapple axis which is



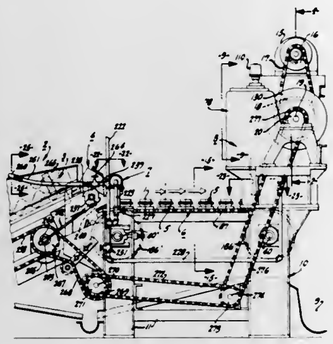
elevationally varied as a function of the degree of closing of the first set.

3,643,716
MEANS FOR SECTIONIZING CITRUS FRUIT
Ronald C. Bushman, Pomona; Donn J. Rickard, Glendora, both of Calif.; John D. Webb, Winter Haven, Fla.; L. Bruce Alexander, San Marino, and Cleveland B. Church, Whittier, both of Calif., assignors to Brown International Corporation, Covina, Calif.
Filed Nov. 4, 1969, Ser. No. 873,850
Int. Cl. B26d *1/28, 1/44, 3/00*
U.S. Cl. 146—3 N **29 Claims**



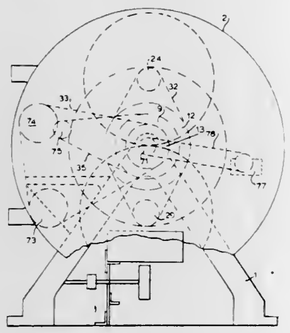
With a plurality of sectionizing tools partially inserted into a corresponding plurality of citrus fruit that are impaled on corresponding holders, each holder rotates until a radial membrane of the fruit thereon impinges on the corresponding sectionizing tool whereupon the sectionizing tool makes a sectionizing stroke. In the meantime, a new plurality of fruit is being loaded manually on corresponding loading spikes that are adapted to transfer the new plurality of fruit to the respective holders.

3,643,717
APPARATUS FOR HANDLING, ORIENTING AND PITTING DRUPE HALVES
Konrad E. Meissner, Lafayette; Etheridge R. McClelland, Hayward, and George E. Kilner, Alameda, all of Calif., assignors to Filper Corporation, San Ramon, Calif.
Original application Apr. 7, 1969, Ser. No. 814,118, now Patent No. 3,583,456. Divided and this application Dec. 21, 1970, Ser. No. 99,928
Int. Cl. A23n 3/08
U.S. Cl. 146—28 A 14 Claims



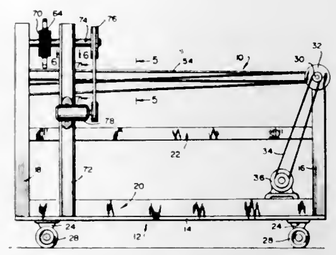
A pitter for removing pits from clingstone peaches and the like, in which conveyor and orienting means is provided for delivering a plurality of drupe halves having pits or pit halves therein to pit removing devices that operate in synchronism with the delivery of said halves thereto for removing said pits from said halves, and which orienting and conveyor means automatically adjusts the positions of the drupe halves for pitting and the conveyor means holds them for resisting rotation while applying a rotary force to the pits relative to said halves to remove said pits.

3,643,718
FOOD-SLICING MACHINES
William Richard Swann, Rudgwick, Nr. Horsham, Sussex, England, assignor to Jessett & Henry (Food Machinery) Limited, Feltham, Middlesex, England
Filed July 7, 1969, Ser. No. 839,425
Int Cl. B26d 1/18
U.S. Cl. 146—94 8 Claims



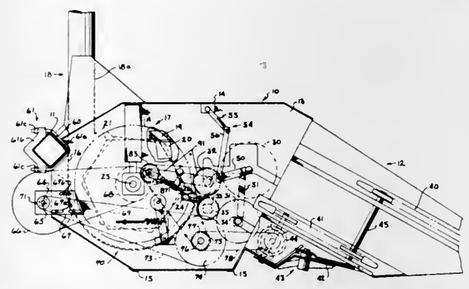
A solid food slicer for bacon and the like including a pair of circular blades journaled at the opposite ends of an elongated centrally pivoted rotor driven about a horizontal axis in a vertical plane. The blades are driven in a direction opposite to that of the rotor by a double pulley coaxial with but rotatable independently of the rotor drive shaft, a belt engaging one portion of the double pulley and both of a pair of drive pulleys attached to the respective rotatable cutting blades. The second belt engages the other portion of the double pulley to couple the same to a drive motor.

3,643,719
CONVEYING AND STACKING APPARATUS FOR BAKED GOODS
Garland W. Kimberling, R.R. 2, Metamora, Ill.
Filed June 29, 1970, Ser. No. 50,433
Int. Cl. B26d 1/14
U.S. Cl. 146—98 10 Claims



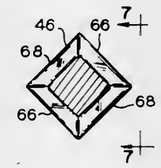
A portable wheeled frame is positioned between an oven and a packaging table in a bakery. The frame carries two motor-driven conveyor belt systems. One system includes a broad belt extending in a substantially horizontal plane and carrying two rows of aligned baked goods. The second system includes two narrow belts positioned alongside the broad belt and which are inclined downwardly at their terminal ends. Each narrow belt carries a single row of like baked goods. The baked goods carried on the broad belt actuate a switch to drive a stacking chain carrying hook members. Each hook member travels in a plane transverse to the path of travel of the baked goods and displaces two of the aligned baked goods items from the broad belt to a position wherein each is stacked above the corresponding baked goods items on one of the narrow belts. A pair of circular saw blades are secured to a forward shaft which drives the pulleys. The saw blades separate the baked goods items so that they are positioned on their appropriate belts.

3,643,720
FORAGE HARVESTER FEED ROLL DRIVE
Loren G. Sadler, Stevens, and Thomas W. Waldrop, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Aug. 26, 1970, Ser. No. 66,942
Int. Cl. A01d 57/00, 69/00
U.S. Cl. 146—120 9 Claims



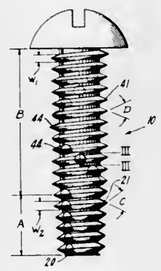
The drive for the floating and fixed feed rolls adjacent to the rotary cutter of a forage harvester comprises driven sprockets on the respective rolls, an input sprocket on the input drive and a pivotally mounted spring-loaded idler sprocket. The floating roll sprocket and the idler sprocket are rotatably attached at opposite ends to an arm pivotally mounted intermediately between the centers of the idler and floating sprockets to provide adequate arc of contact on the floating and fixed sprockets and a taut chain with variations in the floating roll.

3,643,721
METHOD AND APPARATUS FOR SLICING POTATOES
John E. Haubner, Portland, Oreg., assignor to Lamb Weston, Inc., Portland, Oreg.
Filed Aug. 5, 1970, Ser. No. 61,189
Int. Cl. B26d 4/22, 3/26
U.S. Cl. 146—241 4 Claims



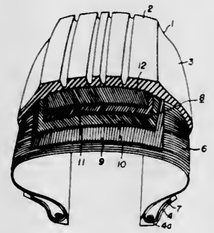
A rotary potato cutter has a stationary knife with an undulating cutting edge to obtain a corrugated surface on a potato slice. The outer surface of the knife is grooved along its full length to guide the slice therealong as the cut is made. Rotating crosscut knives adapted to cut the slice transversely into french fry size strips having cutting edges similar to the cutting edge on the stationary knife. Alternate ones of the crosscut knives are offset laterally in opposed directions from the stationary knife such that a ridge on a crosscut knife is 90° out of phase with a ridge on the stationary knife, adjacent crosscut knives being 180° out of phase with each other. Mounting the crosscut knives in this manner results in the surfaces of a potato strip cut by such knives having ridges and valleys therein in opposed relationship, whereby the finally cut potato strip appears to have ridges and valleys therein running substantially continuously therearound.

3,643,722
SELF-LOCKING THREADED FASTENERS
Louis Oesterreicher, Teaneck, N.J., assignor to Parker-Kalon Corporation, Clifton, N.J.
Filed May 16, 1969, Ser. No. 825,334
Int. Cl. F16b 39/30
U.S. Cl. 151—22 12 Claims



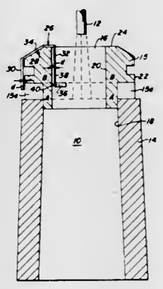
A self-locking threaded fastener adapted for assembly with a member in which a standard internal thread is formed either by the fastener or a conventional tap. A thread is carried on the shank of the fastener having an included thread angle less than the standard included thread angle, a major diameter greater than is standard for the particular fastener size, and a root width less than is standard. At least one locking lobe is formed on the thread which lobe is engaged by material displaced by the thread whereby to effect locking.

3,643,723
PNEUMATIC TIRE HAVING A BELT MEMBER
Tsuneo Mukai, and Toshiro Tezuka, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sept. 29, 1966, Ser. No. 582,961
Claims priority, application Japan, Mar. 11, 1966, 41/14601
Int. Cl. B60c 9/18
U.S. Cl. 152—361 10 Claims



A pneumatic tire having a carcass of at least one rubberized sheet including cord elements of flexible material, a tread portion mounted on but spaced from the carcass, and a breaker member mounted between the carcass and tread portion. The breaker member consists of at least two groups of sheets including parallel cord elements with different modulus of elasticity for each sheet. The groups each include at least a pair of sheets with the cord elements of the first group deviating from the equatorial direction of the tire by a first angle and the second group at a second angle larger than the first angle.

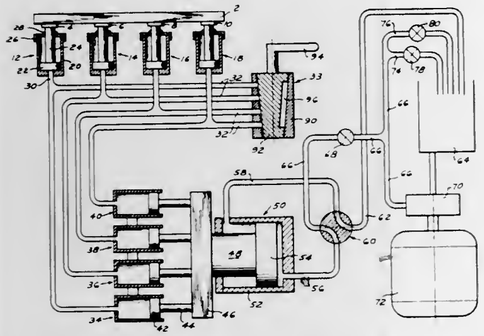
3,643,724
METHOD OF INDICATING THE LEVEL OF A MOLTEN FLUID
Verne E. Lee, Portage, Ind., assignor to United States Steel Corporation
Filed Mar. 26, 1970, Ser. No. 22,968
Int. Cl. B22c 19/04; G01f 23/06
U.S. Cl. 164—4 4 Claims



A method of indicating a predetermined level of a molten fluid contained in an ingot-forming member for forming the molten fluid into an ingot when it cools is disclosed. The ingot-forming member has a molten fluid receiving end, an inner wall, an outer wall and a top wall bridging the inner

wall and the outer wall. The method includes the steps of: (a) providing a support member in loose fitting engagement with the ingot-forming member and having an outside support portion adjacent the outer wall, an inside support portion adjacent the inner wall and a bridging support portion adjacent the top wall for connecting the outside support portion and the inside support portion; and (b) mounting a float member on the free end of the inside support portion to extend inwardly from the inner wall at the predetermined level substantially parallel to the level of the fluid line of the molten fluid. The float member has a molten fluid contact volume so that the mean density of the sum of the weights of the support member and the float member per unit of volume of the contact volume is less than the mean density of the molten fluid and so that when the molten fluid engages the float member the support member moves away from the top wall of the ingot-forming member thereby giving a visual signal of the molten fluid reaching the predetermined level. The float member is formed of a material having an ignition temperature lower than the temperature of the molten fluid so that the float member is partially consumed upon contact with the molten fluid thereby decreasing the weight of the indicating device and produces downward flowing gases from the float member against the molten fluid to aid in the elevation of the float member thereby speeding up the visual signal.

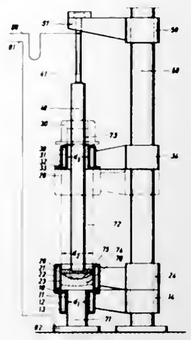
3,643,725
METHOD FOR LIFTING FLASKS AND MOLDS
William L. Fismer, 162 Franklin St., Verona, N.J.
Filed May 15, 1969, Ser. No. 824,777
Int. Cl. B22c *17/06*
U.S. Cl. 164—44 **4 Claims**



An arrangement is disclosed for improving the handling or stripping of the flasks or molds of the type which are used to cast large items such as cast metal plates or frames. A system is provided for lifting the flask or mold vertically from the pattern with assurance that each portion or part is moved at exactly the same rate and amount as every other part.

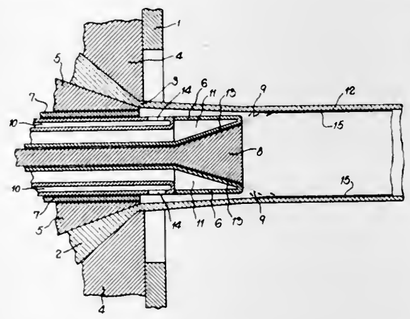
3,643,726
ELECTRIC SLAG REMELTING PROCESS AND APPARATUS FOR PRODUCING METAL INGOTS HAVING A CHANGE IN TRANSVERSE DIMENSION
Erwin Plockinger; Wolfgang Holzgruber, and Adolf Schneidhofer, all of Kapfenberg, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria
Filed Nov. 10, 1969, Ser. No. 875,397
Claims priority, application Austria, Nov. 15, 1968, A 11116/68
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **15 Claims**

A plurality of superimposed ingot molds are provided, which have open ends and differ in at least one inside transverse dimension. A slag layer is provided in said ingot molds. Electrode means which consist of a metal from which an ingot is to be formed are maintained dipped in said slag layer in each of said ingot molds for a period of time while electric current is passed through said electrode means to generate



heat and thus fuse down said electrode means in each of said ingot molds to form molten metal therein. Said molten metal is solidified in each of said ingot molds, whereby an integral, rigid ingot is formed.

3,643,727
PROCESS AND APPARATUS FOR LINING CONDUCTIVE TUBES WITH INSULATING MATERIAL
Sergio Longoni, Milan, and Antonio Portinari, Sesto San Giovanni (Milan), both of Italy, assignors to Industrie Pirelli S.p.A.
Filed Mar. 11, 1970, Ser. No. 18,666
Claims priority, application Italy, Apr. 5, 1969, 15148 A/69
Int. Cl. B22d *11/12*
U.S. Cl. 164—76 **13 Claims**



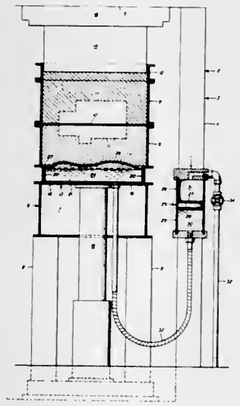
Process and apparatus for producing layer of insulating material on interior of a conductive tube in which the insulating material in a fluid carrier is sprayed interiorly of the tube by a spray and carrier evacuating head as the tube is extruded around said head and advanced.

3,643,728
PROCESS OF CASTING NICKEL BASE ALLOYS USING WATER-SOLUBLE CALCIA CORES
Charles O. Hulse, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 8, 1970, Ser. No. 53,291
Int. Cl. B22d *29/00*
U.S. Cl. 164—132 **6 Claims**

A process for producing heat-resistant metal articles from nickel base or cobalt base superalloys having at least one

cavity therein comprising fabricating a ceramic core to the configuration of the cavity, the core consisting essentially of at least 50 percent calcia, the balance, if any, being a refractory ceramic material, the whole fired at a density range of 70 to 100 percent of theoretical density, supporting the core in a mold, casting the nickel alloy therearound and dissolving the core with hot water.

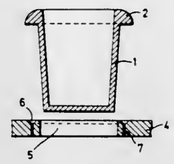
3,643,729
SQUEEZE HEAD ASSEMBLY FOR MOLDING MACHINES
Russell J. Smith, Toledo, and William H. Froman, Luckey, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Nov. 14, 1969, Ser. No. 876,882
Int. Cl. B22c *15/08*
U.S. Cl. 164—170 **6 Claims**



A molding machine for making metal casting sand molds having for compacting the sand a squeeze head presenting to the sand a diaphragm backed by a liquid-filled pressure chamber open to the liquid side of an accumulator which adds liquid to the chamber for an initial compacting of the sand under low pressure and receives liquid therefrom during projection of the head in a final high-pressure compacting stage.

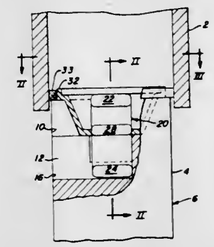
3,643,730
APPARATUS FOR THE PRODUCTION OF SYNTHETIC PLASTICS MOLDS FOR METAL CASTING SMALL DENTAL PROSTHETIC PARTS, SUCH AS CROWNS AND CAPS
Rudolf Scheu, Burgberg 20, 5868 Letmathe, Westfalia, Germany
Filed June 24, 1970, Ser. No. 49,458
Claims priority, application Germany, July 10, 1969, P 19 34 975.8
Int. Cl. A61c *13/08*; **B22c** *7/02*; **B29c** *1/02, 17/00*
U.S. Cl. 164—235 **11 Claims**

In the production, by fluid pressure deformation of plastic foils, of molds for metal casting of small dental prosthetic parts, and in which a stump model is imbedded in a vessel attachable to a work plate of a foil deforming appliance, an insert, formed with a number of openings, is provided for attachment to the work plate. At least one pot-type vessel, having a supporting edge formed with fine air discharged channels, is inserted into an appropriate opening of the insert and a kneadable composition is placed in the vessel and shaped to extend somewhat conically above the support edge. The unprepared stump model is pressed into the composition and, after any necessary preparation of the stump model, fine channels are notched into the surface of the conically shaped portion of the composition to extend between the base of the



stump model and the fine air discharge channels. Thereafter, a plastics foil is deformed into conforming relation with the model either by the application of fluid pressure or by vacuum drawing.

3,643,731
DETACHABLE JOINT BETWEEN CONTINUOUS-CASTING STARTER BAR AND CASTING
James T. Stull, Jackson Township, Butler County, Pa., assignor to United States Steel Corporation
Filed May 27, 1969, Ser. No. 828,161
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **2 Claims**

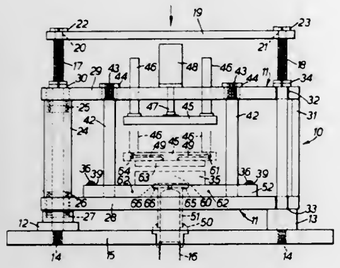


Described is a starter bar having a detachable head which when attached to the bottom of a continuous-casting may be detached from the starter bar by lateral deflection of the leading end of the casting relative to the starter bar. The detachable head consists of a cup-shaped chill plate slidably disposed in a recess in the head end of the starter bar. A key is fixedly attached to the bottom of the chill plate with its upper end projecting upwardly and its lower end depending downwardly from the chill plate bottom into a slot extending transversely of the head portion of the starter bar. The upper portion of the key serves as an anchor for the lower end of a continuously formed casting as it solidifies. In practice, the leading end of a descending continuous-casting supported by a starter bar is deflected by a bending roll which deflection causes the key and attached chill plate to slide laterally out of the recess and slot, respectively, of the starter bar head to thus effect separation of the starter bar from the casting.

3,643,732
METAL CASTING APPARATUS
Jon E. M. Carlsen, 2 Western Ave., Newport, Monmouthshire, England
Filed Dec. 16, 1969, Ser. No. 885,544
Claims priority, application Great Britain, Dec. 21, 1968, 60,901/68
Int. Cl. B22d *17/06, 33/04*
U.S. Cl. 164—309 **5 Claims**

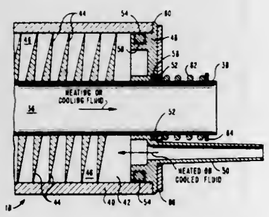
A low-pressure metal die casting furnace including a top die-supporting structure mounted on a cantilevered support

capable of pivotal movement about a vertical column at one side of the furnace, and also capable of vertical movement under control of a ram to give access to the furnace top. The



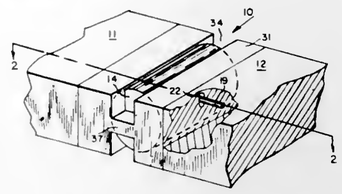
ram controlling the top die structure can also be coupled to a lower die-supporting plate, to raise the plate. A single mechanism can serve two adjacent furnaces.

3,643,733
HEAT EXCHANGER
Roger W. Hall, 7008 Stafford Ave., Apt. G, Huntington Park, Calif., and John M. Spicer, Mira Loma, Calif., assignors to said Hall, by said Spicer
Filed Feb. 5, 1970, Ser. No. 8,811
Int. Cl. F28f *7/00*
U.S. Cl. 165—81 **9 Claims**



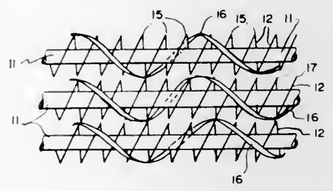
A heat exchanger in which fluid is passed through the inside of an inner tube to heat or cool fluid passing between the outside of the inner tube and the inside of an outer tube concentrically disposed about the inner tube accommodates substantial expansion and contraction of both the outer tube and the fluid to be heated or cooled without leakage or damage to the heat exchanger. The outer tube is made of resilient material so as to expand and contract in response to changes in the volume of the fluid to be heated or cooled, and the heat exchanger is provided with circular end bells between the inner and outer tubes at the opposite ends, one of the end bells being movable axially relative to the inner tube to allow for freezing of the fluid to be heated or cooled and to accommodate axial expansion and contraction of the outer tube. Each end bell includes a pair of elastomeric O-rings disposed between the end bell and different ones of the inner and outer tubes, and the axially movable end bell is restrained by a coil spring and included stop washer mounted on the inner tube adjacent the end bell.

3,643,734
ANISOTROPIC HEAT VALVE
Nicholas H. Deschamps, Ferry, N.H., assignor to Sanders Nuclear Corporation, Nashua, N.H.
Filed June 17, 1968, Ser. No. 737,753
Int. Cl. F28f *27/00*
U.S. Cl. 165—96 **12 Claims**



An anisotropic heat valve is provided for use between a heat source and a heat user to regulate flow of heat from the source to the user. A housing overlies an anisotropic member and means are provided for pivoting the anisotropic member to change the thermal conductivity through the member in one direction and thus provide regulation of heat flow through the valve. The valve is particularly useful in conjunction with radioactive isotopic thermal power sources.

3,643,735
FIN AND TUBE HEAT EXCHANGER
Homer D. Huggins, Racine, Wis., assignor to Modine Manufacturing Company
Filed Mar. 10, 1970, Ser. No. 122,757
Int. Cl. F28f *1/36*
U.S. Cl. 165—172 **8 Claims**

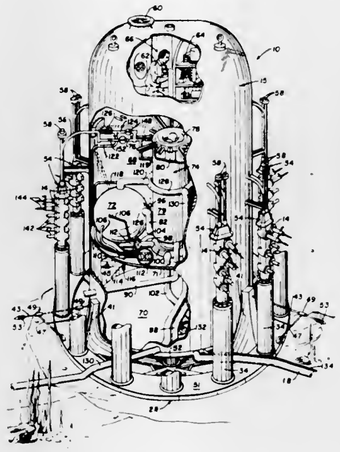


A metal fin and tube heat exchanger comprising laterally adjacent tubes and a helical fin around each tube in which each fin tip is closely adjacent the tip of the next fin so that shifting of the tube and its fin under thermal expansion and contraction tends to cause internesting and interlocking of these adjacent tips, and a helical metal strip around and engaging each fin adjacent its tip. Each strip has a pitch differing from that of its fin to provide barriers that block internesting and interlocking of the adjacent fins on relative movement between the adjacent fins.

3,643,736
SUBSEA PRODUCTION STATION
William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation
Filed June 27, 1968, Ser. No. 740,520
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **22 Claims**

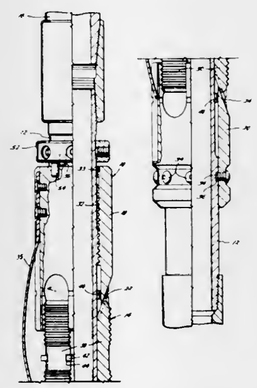
This specification discloses a method and apparatus for the production of subaqueous deposits of fluid minerals through a subsea satellite system. The wells are drilled in a circular pattern through a template on the marine bottom serving also as base upon which the satellite body is installed. The production and control passages of each of the wells are connected to production equipment within the satellite body by separate connector units, independently lowered into place from a surface vessel, to form portions of fluid paths between the passages within the subsea wellheads and the production

equipment within the shell of the satellite. Such an installation permits production through the satellite, installed on the template base, after only one of the wells has been drilled and completed. The produced fluids are separated and/or metered within the satellite prior to being transported to storage. Flowline tools are programmed to enter the various



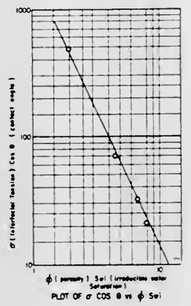
subaqueous wells through the connector units. Hydraulic circuitry and controls are provided for pumping the tools and chemicals down through the various wells and for retrieving the tools. Also disclosed is a hot water well utilized in conjunction with the heat exchanger within the satellite for warming the separated-off gases to prevent the formation of hydrates.

3,643,737
SLIP ASSEMBLY FOR A WELL TOOL
James H. Current, and Marion D. Kilgore, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.
Filed Nov. 27, 1970, Ser. No. 93,102
Int. Cl. E21b *23/00*
U.S. Cl. 166—216 **4 Claims**



An improved slip assembly for a well tool having a mandrel wherein unitary slips are positively held to an upper and lower cone by integral dovetail coacting engaging surfaces with a centering sleeve engaging each slip for maintaining the longitudinal movement of all slips in unison as they are moved outwardly and inwardly with the centering sleeve including an opening for each slip whereby the slip may be connected to the cones by inserting the slips from the interior of the sleeve openings thereby allowing improved slip construction. A tubing anchor utilizing said slip assembly and having a mandrel with the upper cone threadably engaged to the mandrel and a lower cone mounted for rotation on the mandrel but longitudinally secured thereto by shear pins and a bow spring connected to the upper cone for actuating the movement of the slips.

3,643,738
WETTABILITY CONTROL IN AN OIL RECOVERY PROCESS
Karl D. Dreher, and Michael Holmes, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed May 28, 1970, Ser. No. 41,477
Int. Cl. E21b *43/16, 49/00*
U.S. Cl. 166—252 **6 Claims**

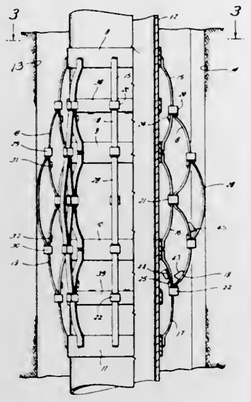


For a reservoir rock having constant lithology (i.e. a given rock type and/or grain size) there exists a linear relationship between the log-log plot of σ (interfacial tension) cosine θ (contact angle) vs. ϕ (porosity) S_{wi} (irreducible water saturation). The contact angle (measure of the wettability of the reservoir rock) can be determined at in situ conditions from the above relationship, ϕ and S_{wi} obtained from logging data, and σ representative of the reservoir fluids. With this in situ determined θ, a more efficient oil recovery process can be designed. For example, if the contact angle is less than 90°, the surfactant within the displacing fluid should have an HLB (hydrophil-lipophil balance) within the range of about 7–40 but if the contact angle is above 90°, the HLB number should be about 0–7. Such a design criteria is especially useful with petroleum sulfonates to obtain emulsion and micellar systems.

3,643,739
CENTRALIZER
John A. Hall, Sr., Weatherford, Tex., assignor to Weatherford Oil Tool Company, Inc., Houston, Tex.
Filed Sept. 6, 1966, Ser. No. 577,364
Int. Cl. E21b *17/10*
U.S. Cl. 166—241 **6 Claims**

The new centralizer for well casings consists of a pair of collars connected by bowed leaf springs of different curva-

ture and in stacked or side-by-side arrangement for increas-



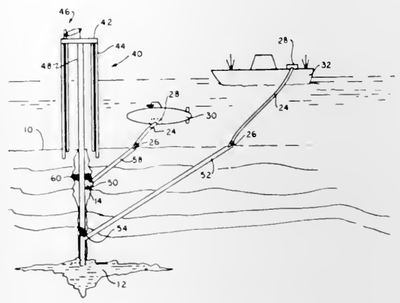
ing the resistance of the bows to radial bending and for increasing the radial extent of the centralizer.

3,643,740
METHOD AND APPARATUS FOR EFFECTING GAS CONTROL IN OIL WELLS
Kork Kelley, P.O. Box 387, Weatherford, Tex.
Continuation-in-part of application Ser. No. 650,286, June 30, 1967, now Patent No. 3,451,477, which is a continuation-in-part of application Ser. No. 433,909, Feb. 19, 1965, now abandoned. This application Apr. 28, 1969, Ser. No. 819,606
Int. Cl. E21b *39/00, 43/12;* **F04b** *21/00*
U.S. Cl. 166—265 **8 Claims**



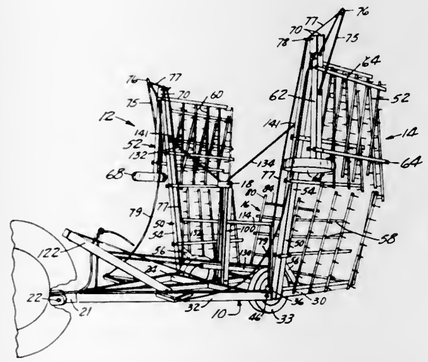
A method and apparatus for controlling the rate of production of oil wells including a seal at the casing head, an automatic pressure-responsive valve venting the casing to the atmosphere and a gas anchor to assure separation of oil from gas in the producing zone whereby the producing zone is held under controlled even pressures. The gas anchor includes a bucket vertically reciprocable in a housing, a double-acting lost motion valve member attached to the bucket to be pulled off its seat by the bucket, and a tubing string extending into the bucket and closed off by the seat for the valve member.

3,643,741
SEALING OF UNDERWATER FISSURES
Salvatore W. Miranda, P.O. Box 5746, Carmel, Calif.
Filed Feb. 3, 1970, Ser. No. 8,197
Int. Cl. E02d *3/14;* **E21b** *33/13*
U.S. Cl. 166—295 **4 Claims**



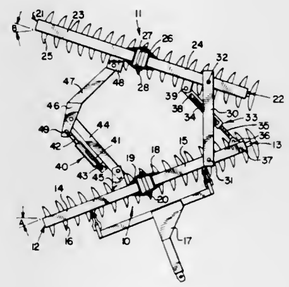
Oil flow from an open fissure on the ocean bottom is controlled by polymerizing in place in the fissure a resin composition which binds the oil or by placing a dome over the fissure to capture the oil. The dome may be tapped and the oil collecting in the dome recovered.

3,643,742
FOLDUP IMPLEMENT
Erwin W. Wellendorf, Ortonville, Minn.
Filed Jan. 2, 1969, Ser. No. 788,500
Int. Cl. A01b *63/22*
U.S. Cl. 172—316 **4 Claims**



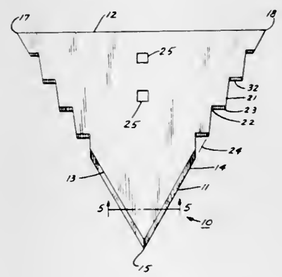
A foldable multiple section farm implement having a central wheeled cart, laterally extending folding units for supporting harrow sections, a rearwardly extending tail unit also for supporting harrow sections, and a single lift means for raising and lowering the lateral and tail units from an extended operating position to a raised storage and travel position. The laterally extending sections comprise inner and outer wings. When the inner wing is lifted, a static cable causes the outer wing also to be elevated for a short distance (so that the outboard wheel does not drag on the ground), then to fold down about the hinged junction between the inner and outer wings as the inner wing is further raised. Upon lowering of the inner wing the outer wing unfolds to a fully extended position without substantial dragging on the ground. Preferably, the initial load on the lift means is reduced by employing a lost motion connection between it and the tail unit whereby the tail unit does not begin to raise until the lateral units have been raised a substantial distance.

3,643,743
MECHANISM FOR OPENING AND CLOSING AN OFFSET DISK HARROW
Jerome L. Fueslein, Linden, Calif., assignor to International Harvester Company, Chicago, Ill.
Filed Dec. 29, 1969, Ser. No. 888,687
Int. Cl. A01b *23/04, 65/02*
U.S. Cl. 172—320 **1 Claim**



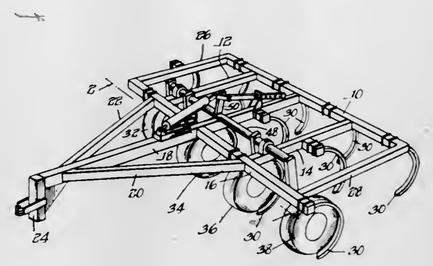
An agricultural implement having front and rear gangs of earth-working tools being interconnected in such a manner that they may easily be adjusted from a transport to a field operating position and also be laterally adjusted with respect to each other to provide the proper tool relationship between said front and rear gangs of earth-working tools for various field operating conditions.

3,643,744
GARDENING TOOL
Gunnard Turnquist, 230 Alice St., Bloomfield Hills, Mich.
Filed May 15, 1969, Ser. No. 824,825
Int. Cl. A01b *15/00*
U.S. Cl. 172—372 **1 Claim**



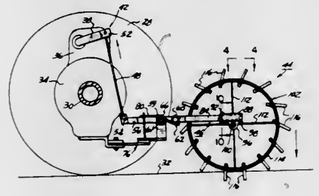
This invention is an improved garden hoe having a generally triangular one-piece flat sheet steel hoeing blade. The blade is attached detachably to the hoe handle by means of step bolts having male quadrilateral surfaces which engage centrally spaced female quadrilateral opening in the blade to prevent turning of the step bolts in the blade. Nuts are provided to secure step bolts, the blade, and hoe handle together as an assembly.

3,643,745
EARTHWORKING IMPLEMENT AND SUPPORT
Gilbert E. Betulius, and Norman W. Pfeiffer, both of Mount Vernon, Ind., assignors to Chem-Farm Inc., Evansville, Ind.
Filed June 25, 1969, Ser. No. 836,521
Int. Cl. A01b *63/22*
U.S. Cl. 172—413 **6 Claims**



An earthworking implement containing a plurality of earthworking tools attached to a rigid frame which is supported by at least four wheel assemblies. The wheel assemblies are spaced so as to provide stable support for the frame, when one or more of the wheel assemblies are disengaged from their supporting surface. The wheel assemblies are journaled to supporting struts which are attached to a cylindrical wheel support rod. The wheel support rod is journaled to the frame, and means are provided to rotate the wheel support rod to raise and lower the frame with respect to the wheels.

3,643,746
DRAWBAR AND HITCH CONNECTION FOR TRACTOR DRAWN IMPLEMENT
Arnold A. Dedoes, 2070 West Eleven Mile Road, Berkley, Mich.
Continuation-in-part of application Ser. No. 795,853, Feb. 3, 1969. This application Jan. 13, 1970, Ser. No. 2,582
Int. Cl. A01b *59/042, 63/102, 45/02*
U.S. Cl. 172—445 **10 Claims**

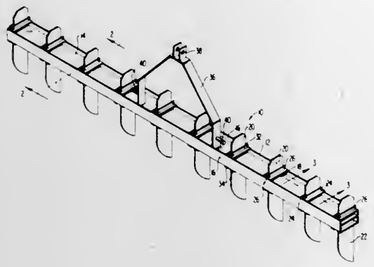


A drawbar and hitch connection for coupling implements to a tractor and including means for utilizing the power lift unit of the tractor to transfer a portion of the weight of the tractor to the implement and also including means for disconnecting the implement from the tractor without disturbing the weight transfer means.

3,643,747
FAIRWAY TOOL BAR CUTTER

Miller Taylor, and Dewey R. Davis, both of Box 518, Elizabethtown, N.C.

Filed Dec. 5, 1969, Ser. No. 882,797
Int. Cl. A01b *23/04, 45/02*
U.S. Cl. 172—657 **5 Claims**

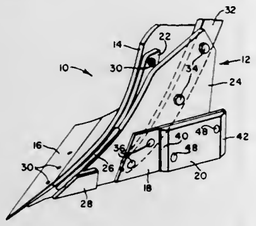


A tool bar cutter is formed by an I-beam crossmember having spaced-apart parallel apertures through the center portion of the I-beam member in which apertures are adjustably mounted a plurality of cutter blades.

3,643,748
PLOW BOTTOM

Charles Woodrow Matthews, East Moline, and Loren Glenn Arnold, Rock Island, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed July 31, 1969, Ser. No. 846,527
Int. Cl. A01b *15/00*
U.S. Cl. 172—704 **1 Claim**



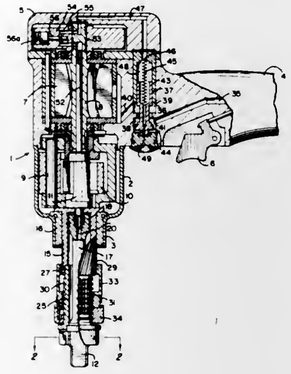
A plow bottom having a reversible landside. The plow bottom includes a frog, a landside mounting plate secured to the frog, and a landside releasably secured to the mounting plate by plow bolts which extend through a pair of apertures provided in the landside and a corresponding pair of apertures provided in the mounting plate. The apertures of each pair are spaced both horizontally and vertically from one another, with the front and rear apertures in the landside positioned equal distances from the front and rear edges, respectively, of the landside and the upper and lower apertures in the landside positioned equal distances from the upper and lower edges, respectively, of the landside.

3,643,749
SIGNAL INHIBITOR FOR IMPACT WRENCH

Reginald W. Pauley, Belle Mead, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed July 14, 1970, Ser. No. 54,702
Int. Cl. B25b *19/00*
U.S. Cl. 173—12 **8 Claims**

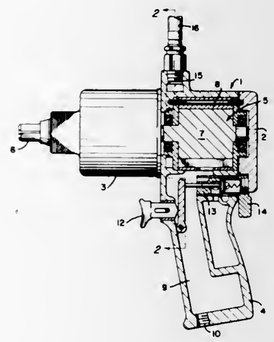
A rotary impact wrench containing a motor, a rotary impact mechanism, and a spindle adapted to drive a fastener. A resilient torsion bar is mounted between the motor and the spindle and includes a member for preloading or prewinding the torsion bar so that it does not wind up further until after the torque on the torsion bar exceeds a selected value. A shutoff valve in the wrench is connected to a hollow signal passage extending through the torsion bar and terminating in an exit port which is normally closed by the preloading means and is opened when the torsion bar winds up further in response to the rise of torque on the torsion bar above the selected value of torque, resulting in creating a fluid signal which causes the valve to shut off the power supply to the wrench motor. Means is provided for inhibiting the signal when the speed of the motor is abnormally high to avoid the motor from stopping prematurely. A second embodiment moves the signal passage out of the torsion bar.



3,643,750
FLUID POWER TOOL

Edward L. Allen, Athens, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,569
Int. Cl. B23b *45/04*
U.S. Cl. 173—170 **4 Claims**

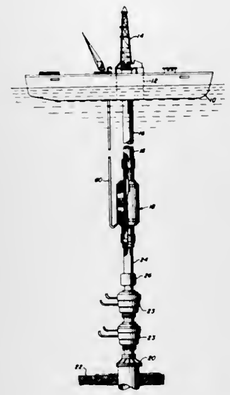


An air-powered tool having a pistol shape and an air hose inlet located on its body opposite the handle. The inlet is located where the tool will normally hang with its body axis located horizontally and its handle depending when the tool is attached to a vertically suspended air hose.

3,643,751
HYDROSTATIC RISER PIPE TENSIONER

Charles D. Crickmer, Box 1348, Houston, Tex.

Filed Dec. 15, 1969, Ser. No. 885,088
Int. Cl. E21b *17/02*
U.S. Cl. 175—7 **21 Claims**

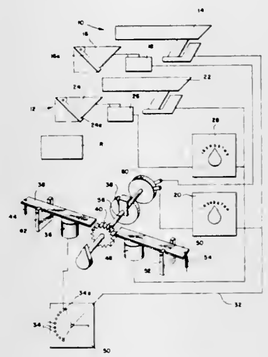


A hydrostatic riser pipe tensioner for use in underwater drilling operations and more specifically a means and method of insuring a resultant net tension force on an underwater riser pipe.

3,643,752
METHOD AND APPARATUS FOR CONTROLLING PRODUCT CHARGE WEIGHTS

Stewart B. Blodgett, 12322 Mossycup Drive, Houston, Tex.

Filed Nov. 14, 1968, Ser. No. 775,858
Int. Cl. G01g *13/08, 15/00*
U.S. Cl. 177—122 **4 Claims**

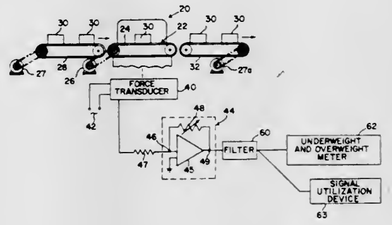


A method of controlling the weights of product charges and reducing product giveaway is provided wherein a predetermined percentage of charges are deliberately held underweight so that a high percentage of the charges are delivered at a weight near the minimum acceptable level. The underweight charges are then brought up to weight by adding additional product so that all charges are delivered at weights above the minimum. A method for maintaining the predetermined percentage of underweight charges are compared to determine whether the predetermined percentage is being maintained and a resultant control signal produced to increase or decrease the amount fed where the percentage is not maintained.

3,643,753
ELECTRICAL FILTERS FOR WEIGHING SYSTEM CIRCUITS

Gilbert A. Godwin, Oakland, N.J., and Anthony T. Kirkman, Ravenshead, Nottingham, England, assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Sept. 3, 1969, Ser. No. 854,994
Int. Cl. G01g *23/10, 11/04*
U.S. Cl. 177—185 **15 Claims**

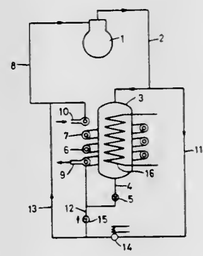


A weighing system comprising a transducer operatively connected to a load supporting structure for producing a DC analogue signal voltage having an amplitude which represents a weight condition of a load applied to the structure, at least one signal utilization device, and a circuit for transmitting the DC signal voltage to the signal utilization device and including an electrical filter for attenuating undulating voltage superimposed to the DC signal voltage. The filter includes an amplifier and is characterized by a variable impedance connected to the input of the amplifier for selectively varying the time response of the filter without altering the DC gain thereof. The damping coefficient of the filter is a function only of a preselected value of the percentage by which the filter output voltage initially overshoots its steady state value when the transducer voltage is applied as a step input to the filter.

3,643,754
APPARATUS FOR COOLING A LIQUID

Tore Brandin, and Sven Yngve David Johansson, both of Norrkoping, Sweden, assignors to Stal Refrigeration Aktiebolag, Norrkoping, Sweden

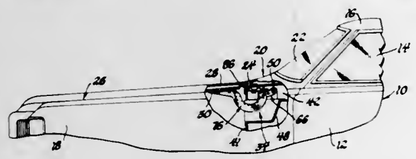
Filed Feb. 18, 1970, Ser. No. 12,404
Claims priority, application Sweden, Feb. 21, 1969, 2411/69
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **2 Claims**



An apparatus for cooling liquids comprising a compressor connected to an evaporator, the evaporator having a double-

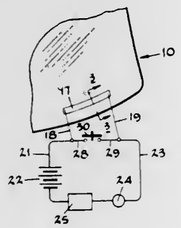
coil, the inner coil thereof being composed of a metallic material, the outer coil surrounding the inner coil and said outer coil being composed of a nonmetallic resilient insulating material such as plastic or rubber. Spacing provided between the inner and outer coils constitutes a passage for a cooling liquid. Means is provided for introducing hot gas from the high-pressure side of the apparatus to the low-pressure side, that is before the evaporator and after the evaporator. A solenoid valve controlled by a thermostat or pressurestat is used for the regulation of temperature.

3,643,755
CLOSURE INSTALLATION
Edmond R. Gionet, Warren, and Neil A. Hull, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 10, 1970, Ser. No. 53,858
Int. Cl. B62d *25/12*
U.S. Cl. 180—69 C **3 Claims**



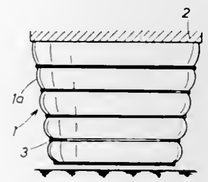
An improved hood-type closure installation for vehicles including a closure supported on the vehicle body by a pair of hinge assemblies for movement between open and closed positions relative to an opening in the vehicle body, each hinge assembly including an intermediate support pivotally mounted on the vehicle body for movement between extended and retracted positions. The intermediate supports carry pintles to support the closure for the aforementioned movement between the open and closed positions and are normally maintained by frangible locking means in the extended positions. Forced rearward bodily shiftable movement of the closure generally in the plane thereof initiates fracture of the frangible locking means after which each intermediate support pivots from the extended to a retracted position and simultaneously forcibly constrains the rear edge of the closure to move in a path of motion toward a position below the corresponding edge of the vehicle body opening.

3,643,756
SAFETY CIRCUIT CONTROL DEVICE
Ivan L. Soreghy, Swanton, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Dec. 16, 1969, Ser. No. 885,411
Int. Cl. B60l *3/04*
U.S. Cl. 180—103 **5 Claims**



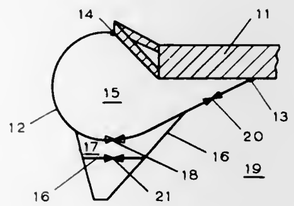
This application discloses an automatic safety switch in the form of a strip of silver-frit fired onto a margin of one of the glass sheets in the windshield of an automobile and interposed in the ignition circuit so that breaking of the windshield will cut off all electrical systems, thus stopping the engine and eliminating possible fire, shock and similar hazards.

3,643,757
FLEXIBLE SKIRTS FOR SURFACE-EFFECT MACHINES
Guy Robert Delamare, "Les Iris," Herblay, France, assignor to Societe d'Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M., Paris, France
Filed May 7, 1969, Ser. No. 822,595
Claims priority, application France, May 9, 1968, 151208
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **3 Claims**



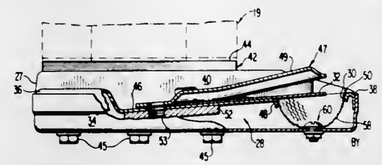
A skirt for peripherally confining a fluid cushion for a surface-effect machine, comprising a fluidtight flexible sheet encircled by a plurality of transverse hoops made of a material less deformable in the peripheral direction of the skirt than that of the sheet, whereby the said hoops cooperate with the said sheet in such a manner that the height of the skirt automatically decreases when the pressure of the cushion increases.

3,643,758
SKIRTS FOR AIR CUSHION VEHICLES
Anthony Winter, Sandown, England, assignor to British Hovercraft Corporation Limited, Somerset, England
Filed Sept. 9, 1970, Ser. No. 70,230
Claims priority, application Great Britain, Sept. 15, 1969, 45,376/69
Int. Cl. B60v *1/16*
U.S. Cl. 180—128 **10 Claims**



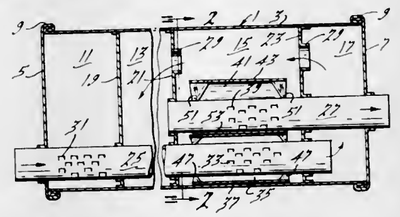
An air cushion vehicle wherein the cushion is bounded in part by a skirt including a plurality of segments extending from the rigid structure of the vehicle and includes a flexible diaphragm extending between and secured to the webs and arcuate part of each segment, the diaphragm extending from a position centrally of the arcuate part to the inner upper edge of each web. The diaphragm, together with the segment and the rigid structure of the vehicle, forms an inflatable compartment separate from the fluid cushion.

3,643,759
MUFFLER WITH REED VALVE PROVIDING CONTINUOUS VENTING
Jay Richard Bailey, Woodland Hills, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Dec. 28, 1970, Ser. No. 101,572
Int. Cl. F01n *7/10, 1/22, 3/06*
U.S. Cl. 181—40 **21 Claims**



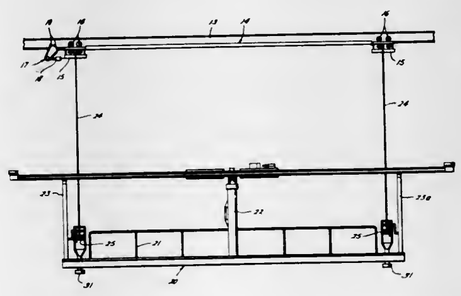
A muffling technique wherein a cantilever-supported spring reed normally blocks a major portion of an exhaust outlet opening while a minor portion of the exhaust outlet opening continuously vents an amount of exhaust gas sufficient to avoid substantial flutter of the reed during engine idle and to avoid substantial floating during engine operation.

3,643,760
OFFCENTER PINCH CAN FOR MUFFLER
Franklin R. Hubbell, III, Brooklyn, Mich., assignor to Tenneco Inc., Racine, Wis.
Filed May 18, 1970, Ser. No. 38,024
Int. Cl. F01n *1/02, 1/08, 7/18*
U.S. Cl. 181—48 **5 Claims**



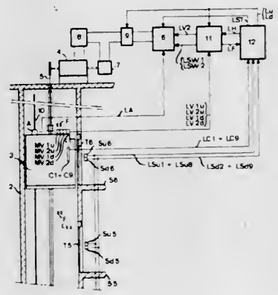
The inlet and outlet axis of a pinch-type chamber forming shell for a muffler tube is radially separated from the centerline of the chamber so that the width of the shell when mounted on a tube is variable and controllable with respect to a given angular position on the tube.

3,643,761
PLATFORM
Donald F. Melton, 899 West Highway 96, St. Paul, Minn.
Filed Sept. 12, 1969, Ser. No. 857,519
Int. Cl. E04g *3/10*
U.S. Cl. 182—19 **11 Claims**



This invention relates to a traveling suspended platform, for use with vertical work surfaces, which is stabilized against oscillation or sway while exerting relatively little force on the vertical work surface.

3,643,762
METHOD AND APPARATUS FOR CONTROLLING AN ELEVATOR FOR MEDIUM TO HIGH RUNNING SPEED
Marcel Schibli, Kussnacht a.Rigi, Switzerland, assignor to Inventio Aktiengesellschaft, Hergiswil NW, Switzerland
Filed Nov. 16, 1970, Ser. No. 89,996
Claims priority, application Switzerland, Nov. 18, 1969, 17259/69
Int. Cl. B66b *1/30*
U.S. Cl. 187—29 R **8 Claims**

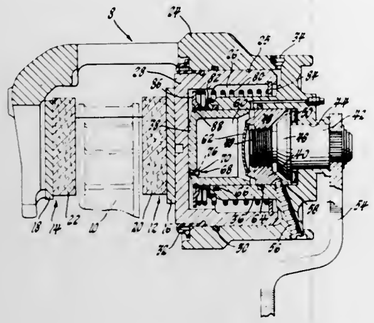


A nominal value element, an actual value element, a control panel and a selector are operatively associated with a speed regulated drive for an elevator cabin. Those floors lying in the selected running direction are successively searched for the presence of a call and, immediately after starting of the run, a pulse sequence is produced to advance the selector and a counter, in synchronism, step-by-step. Upon discovery of a call by the selector, or when a pulse total greater by one than the number of floors that can be served at a running speed not exceeding a predetermined first velocity, the pulse sequence is interrupted by the counter. In the absence of a call, after interruption of the pulse sequence, and until a call is discovered, the selector is advanced by brake engagement start pulses correlated with a predetermined second velocity. The braking nominal voltage, corresponding to the running speed adjusting itself, is preselected by evaluating the counting position of the counter. The brake engagement starting pulse, to be supplied to the nominal value element, is selected by the starting pulse correlated to the target floor as well as to the selected running direction and to the running speed. The nominal value element includes a time-dependent nominal value setter, a path-dependent nominal value setter, a root former and a discriminator. The control panel includes a selection circuit, connected to shaft switches, a nominal value starter, a blocking circuit, the counter, a pulse generator and a stopping transmitter. The nominal value element and the selector are connected to the control panel.

3,643,763
COMBINATION HYDRAULICALLY AND MECHANICALLY ACTUABLE DISC BRAKE WITH HYDRAULIC WEAR ADJUSTMENT
Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporaiton, Detroit, Mich.
Filed Sept. 16, 1970, Ser. No. 72,641
Int. Cl. F16d *55/20*
U.S. Cl. 188—71.8 **6 Claims**

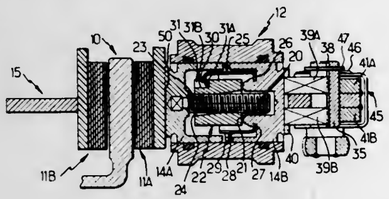
A disc-brake caliper assembly having a hydraulically actuable primary piston is provided with an extendible member including a fluid link between second and third pistons. The ex-

tendible member acts as a rigid link through which the brake is mechanically actuated and is extendible at the urging of a spring by addition of fluid to the fluid link to adjust for lining wear.



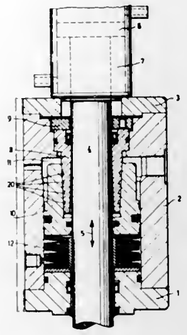
3,643,764
DISC BRAKE, ACTUATOR, AND ADJUSTING MEANS
Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France
Filed Dec. 29, 1969, Ser. No. 888,356
Claims priority, application France, Dec. 31, 1968, 182405
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **24 Claims**

A disc-brake system comprising a hydraulic control, a mechanical control, and means for automatically taking up play due to wear of the brake shoes, the said means comprising essentially a notched rod carried by one of the two pistons of the hydraulic operating system and a notched core engaged on the said rod, locking means being provided actuated by the mechanical control for putting the notches of the core into engagement with those of the notched rod.



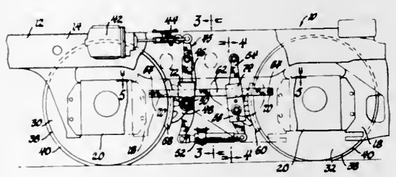
3,643,765
CLAMPING DEVICE FOR AN AXIALLY MOVEABLE PLUNGER SHAFT
Siegfried Hanchen, Brunnwiesenstr. 3, 7304, Ruit, Germany
Filed Oct. 24, 1969, Ser. No. 869,288
Claims priority, application Germany, Oct. 24, 1968, P 18 04 857.2
Int. Cl. F16d *65/24*
U.S. Cl. 188—170 **9 Claims**

A clamping device for an axially moveable plunger shaft as used in electroerosion machine tools where clamping and release must be accomplished without any kind of displacement or distortion of the shaft, clamping being effected by a fixed collet-type clamping sleeve with an exterior taper and a spring-loaded matching female sleeve which takes the form of a moveable hydraulic piston inside a stationary housing. Hydraulic pressure against the female sleeve releases the normally clamped shaft. The clamping sleeve itself has a slightly tapered bore to provide initial clamping close to the sleeve shoulders.



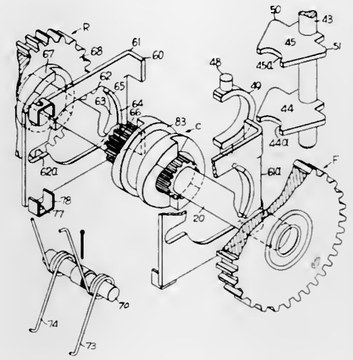
3,643,766
RAILWAY VEHICLE BRAKE RIGGING
Roy W. Roush, Jr., Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 19, 1970, Ser. No. 20,924
Int. Cl. B60t *8/24*
U.S. Cl. 188—190 **2 Claims**

In a preferred embodiment, a multiple axle railway vehicle truck has axle and wheel assemblies mounted with relatively large lateral clearances to provide for lateral movement when negotiating sharp curves. The brake rigging is provided with stabilizing means adapted to normally maintain the brake shoes in a desired nominal position relative to the frame so as to be properly aligned with the wheel treads in their centered axle positions, the stabilizing means being resiliently yieldable to permit any of the brake shoes to be deflected outwardly when they are contacted by their respective wheel flanges upon a sufficient lateral movement of the their respective axles.



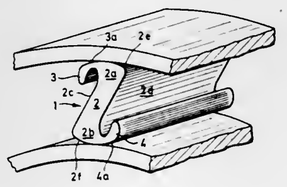
3,643,767
CLUTCH MECHANISM HAVING POWER DISENGAGEMENT
Philip F. Fleming, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.
Filed Nov. 27, 1970, Ser. No. 93,063
Int. Cl. F16d *11/04, 21/04*
U.S. Cl. 192—21 **4 Claims**

A power shift mechanism for causing a clutch to be disengaged by the power of the shaft of the transmission. In other words the mechanism is shifted out of gear under its own power and with little effort on the part of the operator. The mechanism is particularly useful in clutching arrangements for feed rolls of a forage harvester for example, when the rolls become clogged with an excess or slug of material and it is otherwise difficult to shift the clutch out of engagement.



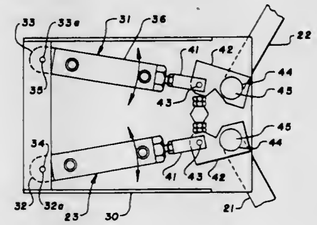
The mechanism includes a shifting assembly which first acts to shift a cam means out of the way to a position that permits the shiftable clutching part to be engaged and reverse feed roll direction, and then acts to permit the cam means to cause the shiftable part of the clutch to be forcibly disengaged due to the power of the shaft on which it is splined.

3,643,768
ONE-WAY SPRAG CLUTCH
Georg Titt, Furstenfeldbruck-Buchenau, Germany, assignor to Georg Muller Kugellagerfabrik K.G., Aussere Bayreuther Str., Nuernberg, Germany
Filed Jan. 29, 1970, Ser. No. 6,725
Claims priority, application Germany, Jan. 31, 1969, P 19 04 785.9
Int. Cl. F16d *41/07*
U.S. Cl. 192—41 A **5 Claims**



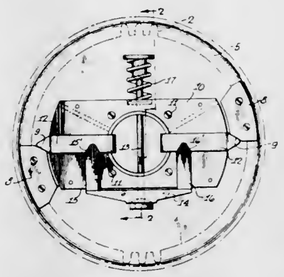
Clutches of the type having spaced clutch surfaces between which sprags extend for engaging and disengaging clutch bodies which have said clutch surfaces. Each clutch sprag has a wall of uniform thickness and substantially rectangular cross section adapted to extend between the clutch surfaces of the clutch bodies with this wall terminating in a pair of opposed end surfaces adapted respectively to be directed toward the clutch surfaces. The sprag has a pair of opposed clutch-engaging portions extending laterally from opposed end regions of the sprag wall in opposite directions from and merging with the end surfaces thereof, with these clutch-engaging portions having outer convexly curved clutch-engaging surfaces of substantially equal magnitudes. The wall of the sprag is inclined with respect to a pair of parallel planes which are tangent to the opposed end surfaces of the wall. With this sprag having a substantially Z-shaped profile. The sprag is manufactured from an elongated bar of initially rectangular cross section by cold rolling the bar to provide the laterally projecting portions which extend from the opposed side surfaces of the bar which initially is of rectangular cross section and which is converted by the cold rolling into the profile of substantially Z-shape. After this cold rolling the sprag bodies are simply struck from the bar.

3,643,769
CONTROL FOR HYDRAULIC FORWARD-REVERSE STEERING CLUTCHES
Donald H. Hagen, and Donald L. Leopold, both of Hennepin County, Minn., assignors to Ridge Runner, Inc., Minneapolis, Minn.
Continuation-in-part of application Ser. No. 27,085, Apr. 9, 1970, now abandoned. This application Nov. 12, 1970, Ser. No. 88,679
Int. Cl. F16d *25/10*
U.S. Cl. 192—51 **2 Claims**



A control mechanism for a dual and selectable drive system, which system includes hydraulically actuated clutches to deliver driving power to either or both driving members whether the driving members are tracks or wheels. Such a drive system commonly known as a caterpillar drive. The control mechanism includes a pair of control arms arranged to actuate a pair of moveable piston elements, the piston elements being of the dual action and accumulator variety. The pistons are directly connected to the clutches for one directional hydraulic control and being connected through the accumulator for the other directional control, and further the arms being arranged through an over center mounting for locking engagement for the other directional control.

3,643,770
OVERLOAD TORQUE CLUTCH
William W. Faulds, R.R. 3, St. Catharines, Ontario, Canada
Filed Nov. 16, 1970, Ser. No. 89,684
Int. Cl. F16d *11/06, 43/20*
U.S. Cl. 192—56 R **7 Claims**



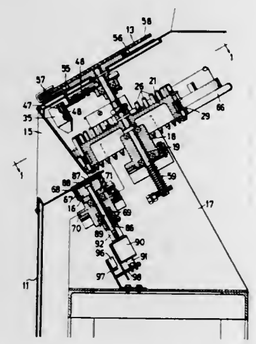
An overload torque clutch in which a pair of slidable fingers on a driving member engage rigidly mounted stops on a

coaxially mounted driven member. The slidable fingers are held in the engaged position by a transverse resiliently loaded yoke member which locates in specially designed recesses in the fingers. At a predetermined torque level of the fingers are forced out of contact with the stops and the yoke rides out of the recesses against the action of the resilient loading. The clutch may be reset manually, hydraulically or pneumatically. The device is particularly useful as a safety clutch to disengage heavy-duty equipment, such as conveyor belt systems, from an electric drive in the event of jamming or the like.

3,643,771
MEDAL STAMPING MACHINE

Kusutugu Takebe, No. 32, Higashi 3-chrome-Abiko, Sumiyoshi-ku, Osaka-shi, Osaka-fu, Japan

Filed July 16, 1969, Ser. No. 842,295
Int. Cl. B41j *1/30*
U.S. Cl. 197—6.7 **2 Claims**

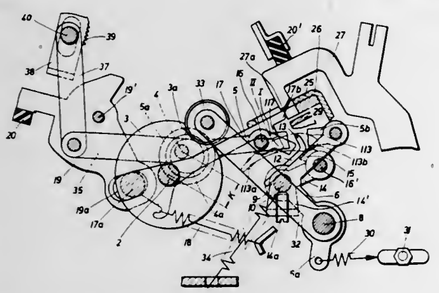


A medal stamping device having a finger dial, with a stamp disk beneath the dial, having alpha-numeric symbols, a hammer on one side and a revolvable medal receiver on the other side. Alpha-numeric symbols can be hammered into a medal on the medal receiver by dialing. The device may be coin operated by adding a coin detector and stopper. The dial rotation is stopped unless the correct coin is detected.

3,643,772
TYPEBAR DRIVE MECHANISM

Arthur Kittel, and Kurt Chvatlinsky, both of Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Feb. 2, 1970, Ser. No. 7,863
Claims priority, application Germany, Feb. 1, 1969, P 19 04 964.0
Int. Cl. B41j *23/38, 23/08*
U.S. Cl. 197—14 **10 Claims**

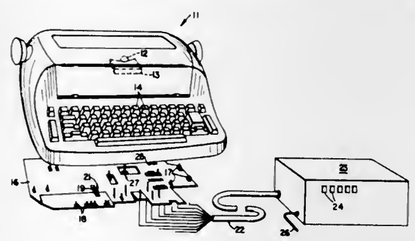


A typebar drive mechanism for a plurality of typebars has a drag link with a bellcrank and two associated links at the reciprocating end. A drive rail is rotatably mounted on the reciprocating end of the drag link so as to have a pushing edge that describes different paths during the outward and return movements of the reciprocating end of the drag link. A drive pawl is provided for each typebar; each pawl having a pushing tongue arranged to be actuated by the pushing edge during the outward stroke of the drive rail when the respective typebar has been selected. The pushing tongue is also arranged to be in a path other than that of the return movement of the pushing edge, so that the drive pawl of a next-selected typebar can be actuated before the drive rail has returned. The drag link and drive rail assembly can be adjusted in response to either type-shifting or the copy set.

3,643,773
CYCLE INHIBITOR FOR AN ELECTRICAL TYPEWRITER

Lawrence Holmes, Jr., 22 A Byrne Ct., Wayne, N.J.

Filed June 16, 1969, Ser. No. 833,647
Int. Cl. B41j *23/02, 5/30*
U.S. Cl. 197—16 **8 Claims**

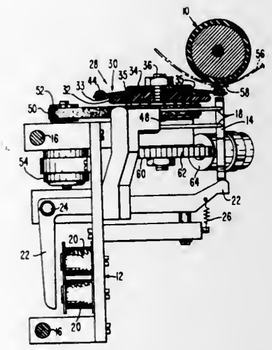


A typewriter baseplate with means for generating and transmitting electrical signals indicative of print and function cycles of the typewriter and having means for initiating typewriter operation in response to signals from a remote typewriter or computer is provided with mechanism for limiting the maximum cycle repetition rate of the typewriter to adapt to systems having slower signal processing rates. The cycling inhibit mechanism may serve other purposes such as preventing overloading of a buffer storage in the signal circuit and delaying cycling in response to uninterrupted input signals, during the carriage return periods.

3,643,774
PRINTING MECHANISM WITH RESILIENTLY BACKED PRINTING ELEMENT

Nicholas Kondur, Jr., Plymouth Township, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 12, 1969, Ser. No. 875,960
Int. Cl. B41j *1/22*
U.S. Cl. 197—18 **1 Claim**



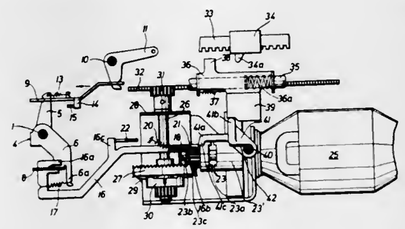
The disclosure embodies a printing mechanism wherein type is arranged on resilient arms radially extending in a

predetermined angular disposition from a continuously driven rotatable member to position the type between an actuator and an impression means.

3,643,775
APPARATUS FOR POWER-DRIVEN TYPEWRITERS AND SIMILAR MACHINES

Arthur Kittel, Wilhelmshaven; Rudi Frank, Sande, and Horst Purr, Wilhelmshaven, all of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Apr. 23, 1970, Ser. No. 31,078
Claims priority, application Germany, Apr. 26, 1969, P 19 21 414.3
Int. Cl. B41j *19/70*
U.S. Cl. 197—66 **6 Claims**

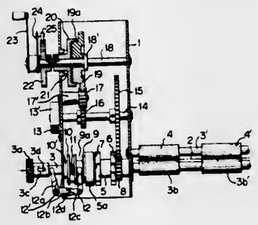


A mechanism for shifting lines and returning the carriage to its left-margin position in power-driven typewriters and similar machines having a drive motor, and including a manually controlled member for triggering both the line shifting and carriage return operations, two linkages resiliently connected to the member and each arranged for normally producing a respective one of the operations, and various blocking means for selectively blocking the operative connection between the member and either linkage when the operation produced by that linkage is not to occur; particularly for blocking the carriage return linkage when the carriage is already in its left-margin position. A link member resiliently connected by means of a spring to the other of the arm members of the pivotally mounted lever and operable to pivot a crank provided on the clutch to engage that clutch and return the carriage, and reciprocating elements provided to block either the connecting rod or the link when only a line shift or a carriage return, respectively, is desired.

3,643,776
LINE SPACE ADJUSTMENT DEVICE FOR USE WITH TYPEWRITER

Yoshitsugu Tanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 16, 1968, Ser. No. 784,073
Claims priority, application Japan, Dec. 20, 1967, 42/81758
Int. Cl. B41j *19/76*
U.S. Cl. 197—114 R **10 Claims**

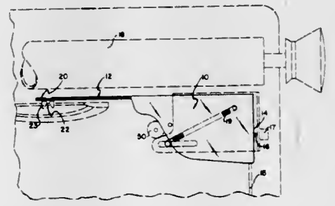


A line space adjustment device for a typewriter comprising a set of ratchet wheels having different pitches to provide different line spacing. Separate engaging levers are selectively engageable with each ratchet wheel, and each of the levers is operated by a common electromagnet and associated linkage to provide a selective desired spacing. Line spacing is also provided by a manually operated release lever.

3,643,777
TYPEWRITER RIBBON CARTRIDGE

Carl P. Anderson, Homer, and Thomas E. Hanson, Syracuse, both of N.Y., assignors to SCM Corporation, New York, N.Y.

Continuation of application Ser. No. 710,185, Mar. 4, 1968, now abandoned. This application July 23, 1970, Ser. No. 64,058
Int. Cl. B41j *33/14, 35/10, 35/04*
U.S. Cl. 197—151 **22 Claims**

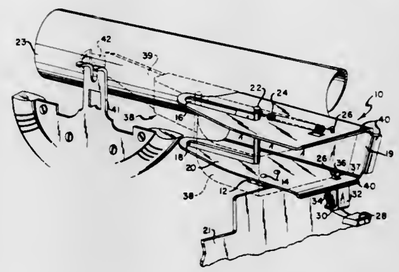


A cartridge for housing a supply of ribbon for typewriters or like machines. The cartridge includes an arm extending therefrom to guide the ribbon from the cartridge to the typewriter print point and to reverse the direction of the ribbon for guiding the ribbon back to the cartridge which is supported on a machine rigid frame on one side of the print point. The arm being capable of carrying the ribbon from a point adjacent the print point to the print point as a ribbon vibrator.

3,643,778
TYPEWRITER RIBBON CARTRIDGE GUIDE SUPPORT

Carl P. Anderson, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.

Continuation of application Ser. No. 710,064, Mar. 4, 1968, now abandoned. This application Sept. 25, 1970, Ser. No. 75,790
Int. Cl. B41j *33/14, 35/04*
U.S. Cl. 197—151 **5 Claims**



A typewriter support for guiding a ribbon cartridge to and retaining the cartridge in a rest position. The support includes a U-shaped member which is positioned near the machine side frame, a spring urged detent for retaining the cartridge after it is inserted to a predetermined depth within the guide support, and a biasing means for ejecting the cartridge from the support upon manual release of the detent means.

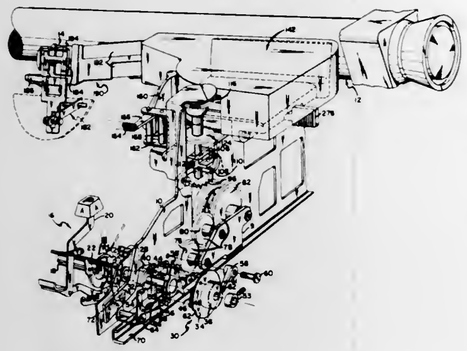
3,643,779
RIBBON MECHANISM FOR CARTRIDGE SUPPORTED RIBBONS

Carl P. Anderson, Homer; Charles H. Kennedy, Ithaca, and Donald S. Perry, Fayetteville, all of N.Y., assignors to SCM Corporation, New York, N.Y.

Continuation of application Ser. No. 732,343, May 27, 1968, now abandoned. This application Dec. 14, 1970, Ser. No. 98,145

Int. Cl. B41j *35/10, 33/10, 33/14*

U.S. Cl. 197—151 **24 Claims**



A ribbon mechanism for cartridge supported ribbons includes a gear train which is clutch operated in response to typing actuations and which provides incremental rotation to two independent cartridge-type ribbon driving means for feeding a ribbon past the machine print point. The two independent driving means are coaxially mounted and are driven in opposite directions thus accomplishing both a feed means and a takeup means for either a cartridge having an endless ribbon system supported therein or a cartridge having a two spool ribbon system support therein.

3,643,780
AUTOMATIC BOTTLE FEEDER

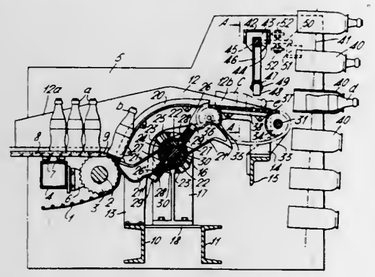
Toshio Shimogaki, Tokyo; Saburo Suzuki, Osaka, and Hiroaki Shigematsu, Nara, all of Japan, assignors to Barry-Wehmiller Co., St. Louis, Mo.

Continuation of application Ser. No. 808,166, Mar. 18, 1969, now abandoned. This application Sept. 24, 1970, Ser. No. 75,302

Claims priority, application Japan, Mar. 22, 1968, 43/18700; 43/18701

Int. Cl. B65g *47/52*

U.S. Cl. 198—25 **6 Claims**



This invention relates to an apparatus for handling bottles being fed to a bottling-washing machine. A plurality of bottles are placed in an upright position on a first conveyor means. At the output end of the first conveyor means is found a plurality of parallel divider plates for forming a plurality of discrete rows of bottles.

A rotatable lift having diametrically extending claw means thereon receives each row of upright bottles and places each bottle in a horizontal position on a second conveyor. Detection means located above the second conveyor serve to produce a detection signal to the operator if the bottle is fed from the second conveyor to the bottle-washing machine conveyor with its bottom directed forward. If this condition is not corrected in a predetermined time, the drive connection to the lift is broken and bottle-feeding operation for the particular row is stopped.

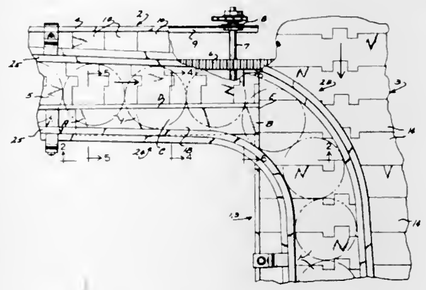
3,643,781
DEADPLATE CONSTRUCTION FOR A CONVEYOR SYSTEM

Robert F. Risley, Wauwatosa, and Wayne A. Smith, Shorewood, both of Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed May 27, 1970, Ser. No. 40,807

Int. Cl. B65g *47/04, 47/57*

U.S. Cl. 198—28 **7 Claims**



A conveyor system including a pair of conveyors located at right angles with respect to each other. An inclined deadplate is mounted adjacent the side edge of one conveyor and the high end of the deadplate abuts the side edge of the second conveyor. Guide rails are mounted above the conveyors and the articles to be conveyed are conveyed over the first conveyor across the deadplate and drop from the high edge of the deadplate onto the second conveyor.

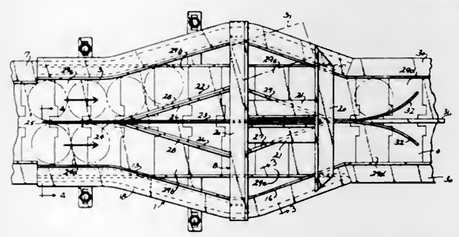
3,643,782
CONVEYOR SYSTEM HAVING APPARATUS FOR DIVIDING CONVEYED ARTICLES INTO ROWS

Robert F. Risley, Wauwatosa, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Oct. 20, 1970, Ser. No. 82,264

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **11 Claims**



A conveying system for containers including a mechanism for dividing the containers into separate rows and for eliminating tipped containers from the rows. The mechanism includes a central dividing wall disposed longitudinally of the conveyor and a pair of sidewalls, each of which defines a passage with the central wall. The upstream portions of the passages diverge outwardly toward the sides of the conveyor and while the downstream portions of the passages converge inwardly toward the longitudinal center of the conveyor. The central dividing wall is inclined upwardly and a tipped, crosswise-oriented container moving along the conveyor will engage and ride up the inclined central wall to automatically tilt the container to an upright position. The portions of the sidewalls which border the discharge or converging portions of the passages are provided with openings and if a tipped, longitudinally oriented container moves through the diverging upstream portion of the passage, it will be directed through the opening to the exterior of the conveyor. The mechanism separates an accumulation of containers into two distinct rows, as well as righting transversely oriented, tipped containers and removing longitudinally oriented tipped containers.

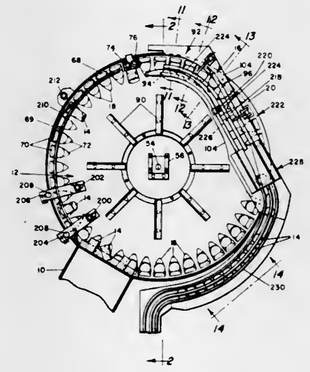
3,643,783
CLOSURE-HANDLING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Mar. 16, 1970, Ser. No. 19,911

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **12 Claims**



Closure-handling apparatus designed to effect orientation of relatively narrow elongated and slightly tapered cylindrical closures which are substantially greater in length than in diameter and in which the distribution of weight is substantially equal throughout its length. Randomly arranged closures are deposited on a rotary inclined carrier having a plurality of radially arranged pockets into which the closures are received, those assuming a desired position of orientation being transferred to the mouth of a supply chute.

3,643,784
TRANSPORT CONTAINER FOR USE WITH A CONVEYOR SYSTEM

Heinz Kretzschmar, Wiesensteig, and Franz Naumann, Muhlhausen, both of Germany, assignors to Organisation Ralfs KG, Wiesensteig, Germany

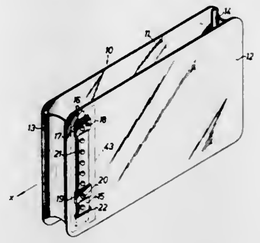
Filed Mar. 9, 1970, Ser. No. 17,757

Claims priority, application Germany, Mar. 7, 1969, P 19 11 596.9

Int. Cl. B65g *43/08*

U.S. Cl. 198—38 **14 Claims**

A transport container has peripheral walls including a pair of transversely spaced sidewalls which extend in at least substantial parallelism with the intended direction of movement of the container and are composed of flexible material. An elongated contact strip overlies the outer surface of at least one of the sidewalls and has two end portions. At least one of these end portions is connected with the respective sidewall in such a manner that the strip and the sidewall are connected with limited freedom of displacement relative to one another to thereby limit the transmission of stresses between them. The other end portion may be similarly connected or it may be immovably connected with the respective sidewall.



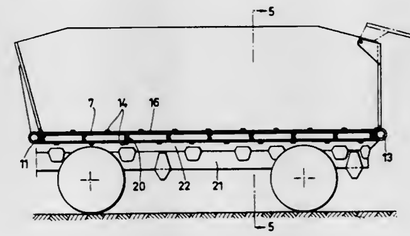
3,643,785
TRANSPORT SYSTEM

Hans Gunnar Bostedt, 8 Drottninggatan, Hudiksvall, Sweden

Filed July 22, 1969, Ser. No. 845,934

Int. Cl. B60p *1/36*

U.S. Cl. 198—75 **3 Claims**



A portable conveyor frame supporting a plurality of conveyors that are simultaneously and individually operative under selective control. Each conveyor has a pair of endless conveyor chains, the chains of each pair being interconnected by dogs movable over and supported on a platform. The platform has longitudinal grooves within which the conveyor chains are received along the upper flights.

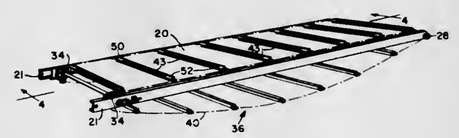
3,643,786
MANURE SPREADER FLOOR CONVEYOR MEANS

Raymond Steele Wilkes, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Aug. 26, 1969, Ser. No. 853,136

Int. Cl. B65g *19/02*

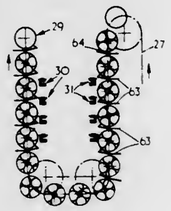
U.S. Cl. 198—173 **10 Claims**



A manure spreader floor conveyor means includes a conveyor that has a pair of spaced endless log or proof-coil

chains interconnected by transverse flights. Specially configured drive and idler sprockets operatively engage the links of the chains and accommodate cylindrical flight connections which interconnect central material engaging portions of the flights with the chains.

3,643,787
STERILIZING MACHINES
William Woof, Harwood; Colin Barlow, Radcliffe; Arthur Gray, Sharples, and Richard Wigram, Radcliffe, all of England, assignors to Mather & Platt Limited, Manchester, Lancashire, England
Filed Feb. 17, 1970, Ser. No. 12,154
Claims priority, application Great Britain, Feb. 20, 1969, 9,195/69; May 1, 1969, 22,181/69
Int. Cl. B65g *17/12*
U.S. Cl. 198—131 **5 Claims**



A sterilizing machine in which the carriers for the sticks of cans have a number of equiangularly spaced pockets in a beam which is relatively rotatable with an external shell having an axial inlet and outlet slot. Locking means are provided at one end of the carrier to prevent such relative rotation and an orientating means is provided at the other end of the carrier. The carrier is also provided with a toothed wheel which engages an agitating chain and an indexing means which is associated with a releasing means for the lock between the beam and shell. Cam and guide mechanism is provided for orientating the carrier if necessary to present the axial slot to discharging and loading stations.

3,643,788
ACCUMULATION LIVE ROLLER CONVEYOR
Charles W. Werntz, Ferguson, Mo., assignor to Alvey Inc., St. Louis, Mo.
Filed July 6, 1970, Ser. No. 52,286
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **8 Claims**



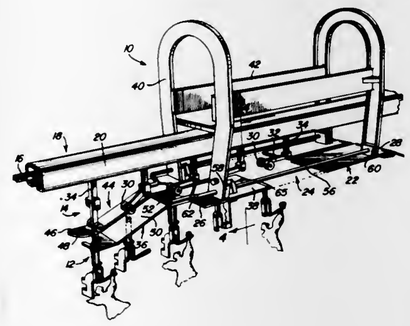
A live roller conveyor provided with a series of driving units and drive transfer wheels for delivering power to groups of article supporting and conveying rollers a power delivery belt drive connected to all of the driving units, and an article sensing conveying roller located downstream from a preceding drive unit to sense the continued presence of an article thereon and respond by disabling the associated driving unit so that trailing articles are not caused to exert pressure on leading articles should blockage of a leading article occur.

3,643,789
LIVE ROLLER CONVEYOR WITH VARIABLE DRIVE
Charles W. Werntz, Ferguson, Mo., assignor to Alvey Inc., St. Louis, Mo.
Filed July 6, 1960, Ser. No. 52,285
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **11 Claims**



A live roller conveyor having a belt drive for the load supporting rollers and means to position the drive belt more or less in friction driving contact with the rollers. The drive belt positioning means includes belt carrier rollers, roller positioning eccentrics and clip-on eccentric brackets, all of which is distributable along the length of a conveyor run to provide local drive variations from zero to maximum available power.

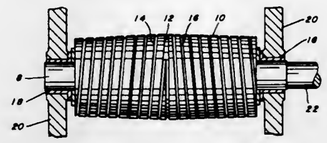
3,643,790
NONJAM LEAD-ON TRACK FOR CONVEYOR SYSTEMS
William F. Altenpohl, and Paul J. Altenpohl, both of Union Hill Road, Conshohocken, Pa.
Filed Oct. 16, 1970, Ser. No. 81,374
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **16 Claims**



Jamming of article carriers on the lead-on ramp of a track causes displacement of the ramps to retracted positions and stoppage of the conveyor from which the carriers are suspended. The ramps are pivotally mounted by crank elements projecting forwardly from the track and are yieldably held in operative and retracted positions by detents.

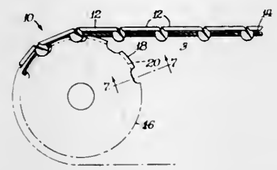
3,643,791
APPARATUS FOR AUTOMATICALLY CENTERING STRIP
George W. Thornsbery, Modesto, Calif., assignor to United States Steel Corporation
Filed Oct. 14, 1969, Ser. No. 866,351
Int. Cl. B65g *15/32*
U.S. Cl. 198—184 **2 Claims**

A roll for automatically centering and aligning a strip or belt includes a resilient outer sleeve having a helical slot extending around the roll on each side of a circumferential central slot. One helical slot has a right-hand lay and the other a



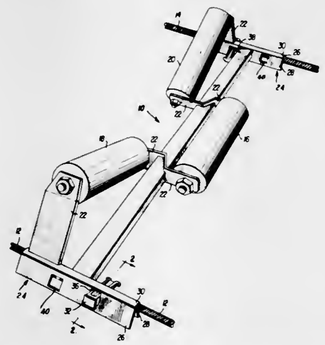
left-hand lay. Each slot is inclined radially toward the axis of the roll away from the circumferential slot.

3,643,792
CABLE CONVEYOR
Baird E. Resener, Indianapolis, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,348
Int. Cl. B65g *17/00*
U.S. Cl. 198—189 **5 Claims**



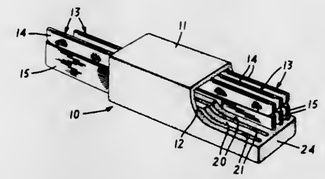
A cable conveyor having a series of removably mounted top plates that are snapped over spheres rigidly fastened to the cable. The top plate edges are tapered to allow the conveyor to travel around corners without having the adjacent top plates interfere with each other. Also disclosed is a new sprocket wheel for the cable conveyor having a peripheral groove formed around the sprocket wheel to define a circular path for the cable to travel thereby eliminating chordal action on the cable.

3,643,793
SELF-CAPTIVATING WEDGE
Daniel J. Diantolio, Nutley, N.J., assignor to Hewitt-Robins, Incorporated, Stamford, Conn.
Filed Feb. 24, 1970, Ser. No. 13,380
Int. Cl. B65g *15/08*
U.S. Cl. 198—192 R **7 Claims**



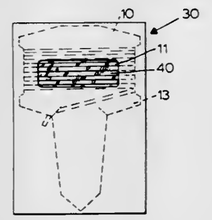
A self-captivating wedge is disclosed which has particular utility in securing idler assemblies onto the side cables of a flexible side frame conveyor and which wedge is formed with a generally wedge-shaped body having a self-captivating means formed at the front end thereof for preventing the wedge from being disengaged from the idler assembly. The self-captivating means consists of a pair of lugs formed on the wedge which extend substantially normal to the sides of the wedge body and a pair of slots formed in the body immediately adjacent, and to the rear of, the lugs. The self-captivating means is specifically designed so as to require a combination of movements in order to insert the front of the wedge into the aperture which captivates the wedge and the lugs are further designed so as to create an interference fit as the front of the wedge is moved through the above-mentioned aperture.

3,643,794
COMBINED BLADE HOLDER AND DISPENSER
Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Jan. 7, 1970, Ser. No. 1,135
Int. Cl. B65d *83/10*
U.S. Cl. 206—16 B **8 Claims**



A one-piece holder and dispenser for flat relatively thin oblong articles which have a thicker portion between their ends the dispenser having a plurality of slots or grooves each adapted to receive the article slidable endwise therein, the slots having a narrower portion in which the thicker portion of the article is wedged but releasable by endwise outward shifting of the article for a portion of its length. In accordance with the specific disclosure the article comprises a paper wrapped hair shaper blade the wrapper being overlapped midway of the ends of the blade which thereby comprises the thicker portion adapted to be wedged in the narrower portion of the respective slot.

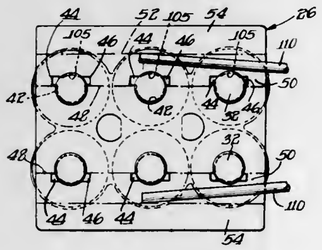
3,643,795
SEED-TAPE AND CARD-SPOOL-AND-ROW-MARKER ASSEMBLY
Robert P. Watwood, Salinas, Calif., and James A. Moore, Ringwood, N.J., assignors to Union Carbide Corportion, New York, N.Y.
Filed July 17, 1970, Ser. No. 55,666
Int. Cl. B65d *25/10, 77/22*; **B65h** *75/06*
U.S. Cl. 206—45.14 **13 Claims**



A seed-tape and card-spool-and-row-marker assembly. A flat, stiff sheet, such as cardboard or plastic, has an upper

spool portion with two generally parallel side edges lying between upper and lower flange portions. The upper flange portions have converging upper edges obtusely inclined to the side edges, and the lower flange portions have converging lower edges obtusely inclined to the side edges and leading to a narrower stem portion. The stem portion has two downwardly converging side edges that lead downwardly from the lower edges to a bottom pointed portion. Where at least one lower edge meets the stem portion, there is an anchor slit. The seed tape is wound around the spool portion and its free end anchored in the anchor slit. The card can be used to aid in unwinding the seed tape when planting it, and then the stem portion can be pushed into the ground, leaving the spool portion to stand as a row marker, which can be labeled with the name of the crop.

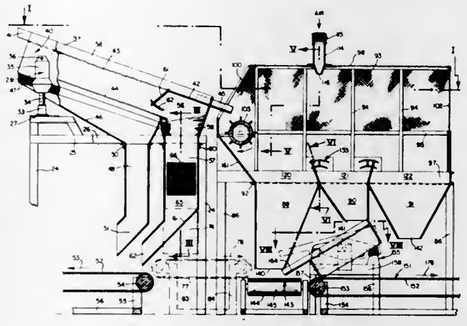
3,643,796
CONTAINER PACKAGE AND METHOD AND APPARATUS FOR ASSEMBLING SAME
Lawrence E. Arneson, 141 West Jackson Blvd., Chicago, Ill.
Filed July 7, 1969, Ser. No. 839,284
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 E **3 Claims**



A six-pack of bottles is provided by encircling mid portions of the bottles with a retainer and engaging a paper board carrier and retainer beneath the bottle caps. The paper board carrier has rows of apertures formed therein for receiving the upper ends of the bottles, and is assembled with the bottles by conveyor and guide means which advance the bottles and carrier continuously along a path of travel, initially fold sections of the carrier along lines intersecting the apertures for opening the apertures to receive the upper ends of the bottles and then reversely fold the portions of the carriers for closing the apertures and securing the carrier with respect to the bottles.

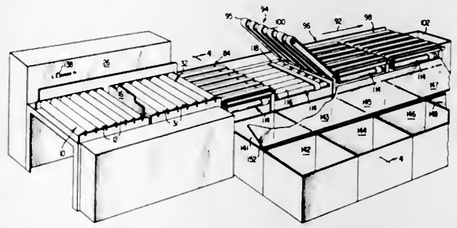
3,643,797
TRASH-SEPARATING APPARATUS AND METHOD
Lawrence Berkowitz, Willingboro; Georgs Novickis, Lindenwold, both of N.J., and Prafulchandra N. Sheth, Lansdowne, Pa., assignors to Dickson Paper Fibre, Inc., Philadelphia, Pa.
Filed July 31, 1969, Ser. No. 846,320
Int. Cl. B07b *15/00*
U.S. Cl. 209—2 **22 Claims**

A system is provided for reclaiming usable paper other selected materials from a heterogeneous trash mixture that has previously been shredded to a predetermined size. The trash is deposited on a sloped vibrating screen which permits the passage therethrough of smaller sized trash particles. These particles then pass onto another sloped vibrating screen whereby minutely sized particles may pass therethrough, to be discarded. The smaller sized particles that pass through the first screen, but not the second then enter a chute which has a cross current in the form of an air stream, whereby paper, light sheet plastic and the like are forced from the smaller sized mixture and are delivered onto a conveyor. The larger sized particles that do not pass through the first vibrating screen are delivered onto a trash wheel, which is rotating, and which throws the larger sized particles in a given direction whereby the particles travel a given distance depending upon their weight, or upon their ability to be thrown, with at least the heavier of these larger particles passing through an air screen directed toward a series of bins. The lighter of these larger particles are collected in a bin which is located most closely to the trash wheel,



which bin deposits these lighter particles onto the conveyor. Trash which is thrown into an intermediate bin is deposited onto another sloped vibrating screen, whereby larger paper materials are separated from smaller but heavier trash components such as heavier plastics, with the thus separated paper materials also passing onto the conveyor. The conveyor then passes beneath an extractor which removes sheet plastic films and the like therefrom, preferably by means of electrostatic attraction of the plastic films from the paper materials, resulting in paper reclamation having an acceptable minimum percentage (if any) of nonpaper materials therein.

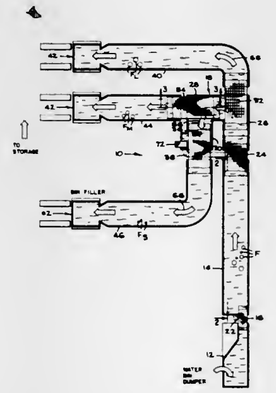
3,643,798
MAIL WEIGHING AND SORTING MACHINE
Edward A. Krupotich, Palo Alto, Calif., assignor to Bell and Howell Company, Sidney, Ohio
Filed Feb. 27, 1970, Ser. No. 15,088
Int. Cl. B07c *5/18*
U.S. Cl. 209—74 **13 Claims**



A synchronizing station sequentially interrupts the travel of serially fed pieces of mail so that they are both aligned and sequentially delivered to a weighing station one at a time. A means at the weighing station generates a signal representing a weight category for each piece of mail and delivers each signal to a memory. The pieces of mail are then moved in a first direction along a track having segments that are selectively pivotable upwardly by means operative in response to signals from the memory. In this manner, selected track segments are thusly pivoted to direct pieces of mail onto separate secondary track segments adapted to move the mail in a second direction. Each secondary track segments is also selectively pivotable about a horizontal axis to selectively direct given pieces of mail along either first or second planes into corresponding first or second bins.

A means is also provided for changing the weight range of the weighing station so that the above described structure is adapted for use with mail falling within a plurality of weight ranges.

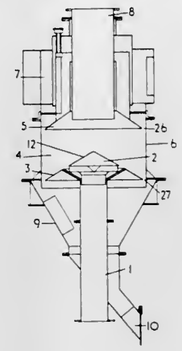
3,643,799
APPARATUS FOR SIZING FRUIT
Charles E. Sheetz, Woodstock, Va., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 30, 1970, Ser. No. 76,955
Int. Cl. B07c *5/04*
U.S. Cl. 209—73 **6 Claims**



A fruit-sizing system comprising a horizontally positioned, generally U-shaped water-filled conveyor tank having a recirculation pumping system connecting the ends of the tank to cause the water therein to continuously flow longitudinally through the tank. Fruit of different sizes is deposited in the water at the end of one of the legs of the tank and is conveyed through the tank by the movement of the water therein. At each corner of the tank and at the end of the other of the legs there is provided an endless sizing conveyor which removes certain of the fruit from the tank while permitting the remainder to flow therethrough and continue in their flow path through the tank.

3,643,800
APPARATUS FOR SEPARATING SOLIDS IN A WHIRLING GASEOUS STREAM
Bo Gustav Emil Mansson, Sandgatan 40, Enkoping, Sweden
Filed May 21, 1969, Ser. No. 826,527
Int. Cl. B04c *3/06*
U.S. Cl. 209—144 **6 Claims**

A device for separating solids having a cylindrical separating chamber, an axial inlet for introducing a whirling gaseous suspension into said chamber and including an annular plate extending radially outwardly and downward therefrom defining an annular gap with the chamber wall. An upper axially disposed outlet includes an upper annular plate defining an upper annular gap with the wall of said chamber. A scroll



structure imparts a rotary motion to a secondary gaseous stream in the same direction as the feed suspension.

3,643,801
DISPOSABLE AQUARIUM FILTER
Harry Zelenko, 150 East 61st St., New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,190
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **9 Claims**

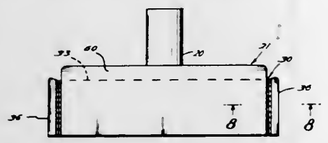


A disposable aquarium filter has a filter medium sealed within a filter housing. The housing has one compartment for the filter medium and another compartment for receiving the end portion of an air supply tube, the compartments being oriented and arranged so that air discharging from the air supply tube functions to circulate water through the filter compartment. When the filter medium becomes contaminated or clogged, the entire filter including the housing with the filter medium therein is discarded. A new, unused filter is installed by withdrawing the air supply tube from the old filter and reinserting it into the new filter.

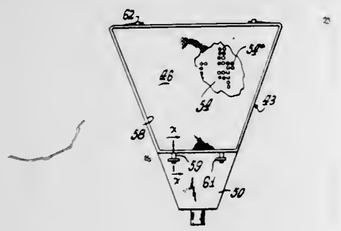
3,643,802
BILGE SCAVENGER
Andrew D. Jackson, Jr., Route 2, Box 524, Brownsville, Tex., assignor to Lee W. Pohl; Jack G. Carinhas, Jr., both of Cameron County, Tex., part interest to each
Filed Oct. 17, 1969, Ser. No. 867,188
Int. Cl. E03b *11/00*
U.S. Cl. 210—172 **15 Claims**

Scavenger comprises inverted channel-shaped body to be positioned with lower edges of sides resting on bilge bottom. A screen, shaped correlative to body lines, is spaced from sides of body. The screen is carried by a plate pressed

between lower side edges of body. Screen and plate form a removable, box-shaped receptacle for trash filtered out of water by screen. Outlet nipple at top of body is to be connected to pump which sucks water into body through end openings of receptacle. Replaceable end covers for receptacle each comprise an elastic plastics frame snapped over end of receptacle. Frame carries gate formed of a plurality of flexible, elastic plastics material, flat, tapered fingers secured to top of frame. Fingers overlap lower edge of frame on inside so they can swing in but not out, thereby to trap trash by admitting trash to receptacle and retaining same therein.

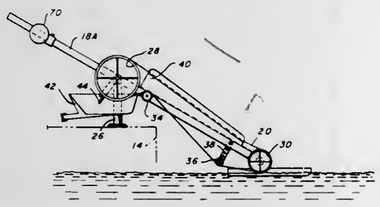


3,643,803
SECTION FOR DISC FILTER APPARATUS
Edward A. Glos, II, Deerfield, Ill., assignor to Gladys M. Glos; Thomas C. Nathan and Jack W. La Follette, part interest to each
Continuation-in-part of application Ser. No. 598,077, Nov. 30, 1966, now Patent No. 3,491,886. This application Jan. 19, 1970, Ser. No. 3,851
Int. Cl. B01d *33/26*
U.S. Cl. 210—232 **12 Claims**



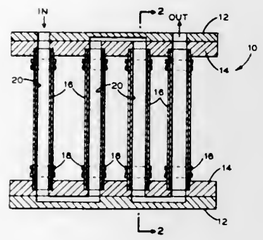
A polygonal section for filter apparatus in which each section consists of a hollow open-faced frame connected to a vacuum source with a perforated panel overlying each open face, and a stretcher element for holding filter media taut over the panel, accessible from one margin of the frame, and which may be removed from the section and apparatus independently of the frame and panel.

3,643,804
WASTE OIL RECOVERY UNIT
Dallas E. Sharpton, P.O. Box 444, Dewey, Okla.
Filed Sept. 24, 1970, Ser. No. 75,214
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **2 Claims**



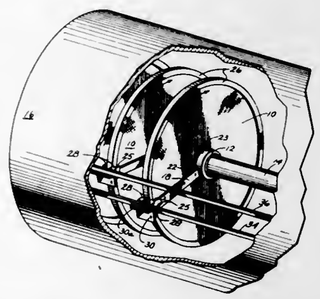
An endless conveyor belt having an affinity for oil is mounted on the bow of a barge and projects downwardly and forwardly therefrom towards a water surface having oil floating thereon. Buoyancy means located at the lower end of the belt are adjustable such that the lower run of the belt can be selectively positioned slightly below the interface of the water and oil to assure maximum oil absorption with minimum water pickup.

3,643,805
A MEMBRANE SYSTEM WHICH INCLUDES A TUBE SHEET FOR SECURING SUPPORTED MEMBRANE TUBES THEREIN
Robert R. Hoffman, Clark, N.J., assignor to Abcor Water Management Company, Inc., Cambridge, Mass.
Filed Jan. 20, 1970, Ser. No. 4,256
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 **11 Claims**



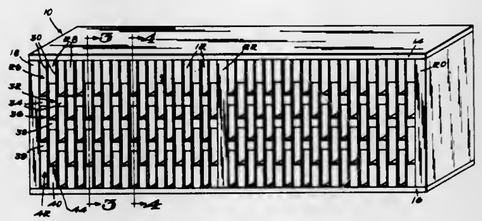
This disclosure is concerned with a tube sheet for holding a bundle of braided fiber support tubes in place for use in a reverse osmosis or an ultrafiltration system. The tube sheet is formed of a thermosetting plastic having a process temperature below the temperature at which the support tube will melt, degrade or deform. The thermosetting plastic is molded to the braided fiber tubes under pressure to provide a seal between the support tube and tube sheet when subjected to pressures in excess of 1,000 p.s.i. In order to prevent displacement of the braided fiber tubes from the plastic tube sheet during the molding process molded retaining members are provided which are molded to the tubes and tube sheet.

3,643,806
ADJUSTABLE KNIFE BLADE FOR DRY FILTER CAKE DISCHARGE
Theodore H. O'Cheskey, Whittier, Calif., assignor to United States Filter Corporation, Whittier, Calif.
Filed Mar. 24, 1969, Ser. No. 809,522
Int. Cl. B01d *29/34*
U.S. Cl. 210—327 **8 Claims**



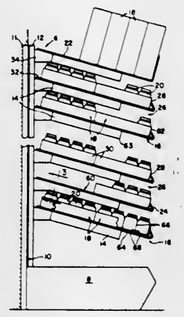
An elongated knife blade spans the surface of a filter leaf, with its inner end making a loose fit around the central shaft of the filter. After the filtration process, the blade is held stationary and the filter leaf is rotated under it to remove the filter cake which has accumulated on the leaf. The spacing between the blade and the surface of the leaf is adjustable so that the cake left on the leaf can be set to the desired thickness. The leaf can be rotated relative to the blade during filtration to continuously remove cake from the leaf and thereby increase the concentration of solids in the liquid circulated through the filter.

3,643,807
FILING CABINET
Harry F. Childs, Route 28 South Orleans Road, P.O. Box 427, Orleans, Mass.
Filed June 24, 1970, Ser. No. 49,249
Int. Cl. B42f *17/00*
U.S. Cl. 211—10 **1 Claim**



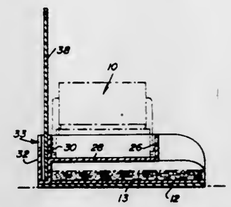
A filing cabinet having a plurality of rows or tiers of open compartments arranged in a novel manner such as to reduce the overall height of the cabinet for accommodating a predetermined number of compartments and to facilitate placing and removing of articles into and from the compartments.

3,643,808
GRAVITY FEED MERCHANDISING RACK
James D. Ryan, and Raymond L. Hoagland, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.
Filed Sept. 2, 1969, Ser. No. 854,481
Int. Cl. A47f *5/00, 7/00*
U.S. Cl. 211—49 D **10 Claims**



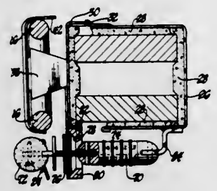
Flat-ended containers are shipped in cartons and arranged therein in a single layer so that the flat sides rest on the carton base. To merchandise the containers the carton tops are removed, while the containers remain in the open box, and a plurality of boxes are vertically stacked in a rack spacing the cartons sufficiently to permit removal of the containers from the cartons. The rack inclines the cartons so that the containers slide downwardly along the carton base towards the lowermost side of the carton from where the containers are removed.

3,643,809
HOLDER FOR CREDIT CARD RECEIVING MACHINE
David H. Donnan, Corpus Christi, Tex., assignor to Guaranty National Bank and Trust of Corpus Christi
Filed Jan. 26, 1970, Ser. No. 5,874
Int. Cl. A47f *7/00*
U.S. Cl. 211—49 **6 Claims**



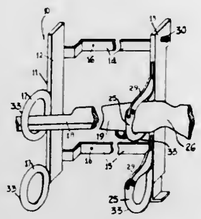
A receptacle having a plurality of bins underlying a tray which receives a credit car imprinter. Charge forms are placed in the bins. A pocket is formed in the rear of the receptacle for accommodating an enlarged card for advertising or for explaining use of the imprinter.

3,643,810
DEVICE FOR CARRYING AND SECURING SKI EQUIPMENT
Samuel M. Highberger, 5543 Westwood Lane, Birmingham, Mich.
Original application July 11, 1968, Ser. No. 744,197, now Patent No. 3,568,902. Divided and this application Dec. 17, 1970, Ser. No. 99,173
Int. Cl. A47f *7/00*
U.S. Cl. 211—60 SK **12 Claims**



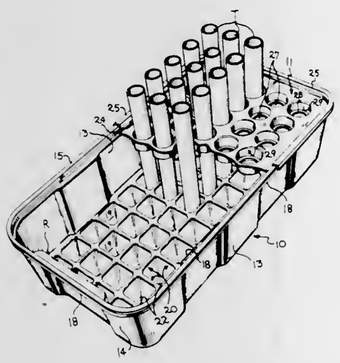
A device for use in carrying and securing ski equipment including a U-shaped member and a hinged member that is lockable with respect to the U-shaped member after the U-shaped member and hinged member are positioned around a pair of skis that are disposed in back-to-back relationship. The device also includes a pivotable member for locking ski poles into a fixed position, the pivotable member being positioned so that a single locking plunger can tie together the U-shaped member, the hinged member, and the pivotable member thereby adapting the device to be carried or alternatively secured to a fixed object.

3,643,811
LOCKING GUN RACK
Glen Howerton, Rural Route, Julianetta, Idaho
Filed Aug. 4, 1969, Ser. No. 847,187
Int. Cl. A47b 81/00
U.S. Cl. 211—64 3 Claims



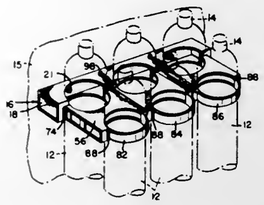
A rack securable within an automotive vehicle, the rack being adaptable for supporting a plurality of rifles or shotguns, and the rack including a locking means for securing the firearms and preventing theft thereof when the vehicle is open.

3,643,812
TUBE STORAGE RACK
Robert J. Mander, Mays Landing; Duane E. Ramm, and Robert J. Simms, both of Vineland, all of N.J., assignors to Owens-Illinois, Inc.
Filed June 12, 1970, Ser. No. 45,725
Int. Cl. A47b 73/00
U.S. Cl. 211—74 2 Claims



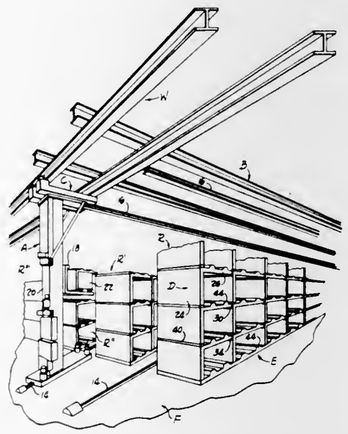
A storage rack for culture tubes or similar tubular articles is vacuum-formed from a plastic material, such as polypropylene and comprises two separably connected elements, one being a boxlike member with upstanding peripheral walls and a floor having a plurality of wells in which to receive the lower end of culture tubes or such articles and restrain them against lateral displacement and which also are provided with bottom drain openings for discharge of condensation. The other separably connected element which is in the form of a cover, or toppiece, separably attachable to the upper margin of the upstanding peripheral walls, has vertical, tube-receiving apertures with depending guide sleeves which are coaxial with the wells and which aid in initial placement of such tubes or articles in the rack.

3,643,813
HOLDER FOR PRESSURE CYLINDERS
Robert J. Noonan, 1178 West Seymour, Cincinnati, Ohio
Filed Apr. 6, 1970, Ser. No. 25,732
Int. Cl. A47b 73/00
U.S. Cl. 211—75 14 Claims



The holder for pressure cylinders comprises a series of pocket-forming elements which are hinged to one another and swingable relative to a fixed base member, so as to enable quick and easy release of spent cylinders for replacement with charged cylinders.

3,643,814
STORAGE RACKS
Stuart A. Martin, Euclid, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed Sept. 12, 1969, Ser. No. 857,440
Int. Cl. A47f 5/00
U.S. Cl. 211—177 6 Claims

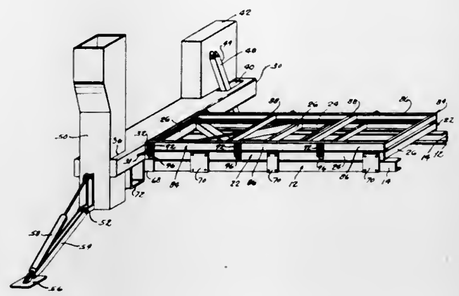


Pigeonhole-type storage racks, shelves, stands and the like constructed of a plurality of precast, molded or extruded duplicate members, preferably of concrete secured together by metal parts or members.

3,643,815
MOBILE DERRICK
Roy Balogh, St. Louis County, Mo., assignor to McCabe-Powers Body Company, St. Louis, Mo.
Filed June 23, 1969, Ser. No. 835,445
Int. Cl. B66c
U.S. Cl. 212—1 11 Claims

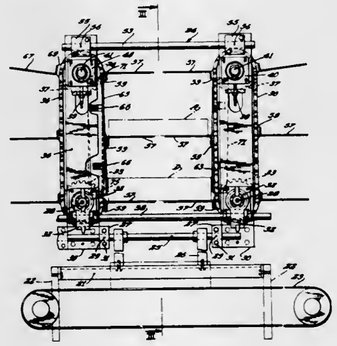
A mobile derrick includes a chassis frame and a mast frame rigidly mounted on the chassis frame. A mast is rigidly

secured to the mast frame and extends upwardly therefrom for supporting a derrick at its upper end. A body is mounted over the chassis frame in a manner which permits it to be



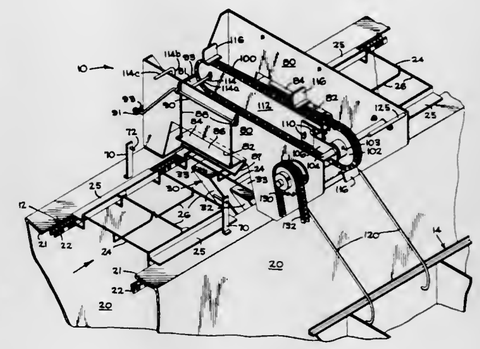
free from rigid connection with the mast so as to allow the mast, mast frame, and chassis frame to deflect independently of the body.

3,643,816
STACKER FOR BAGS AND THE LIKE
Paul W. Jacobsen, Kiel, Wis., assignor to H. G. Weber and Company, Inc., Kiel, Wis.
Filed May 25, 1970, Ser. No. 40,317
Int. Cl. B65g 57/03
U.S. Cl. 214—6 H 10 Claims



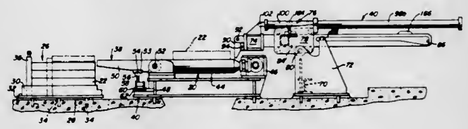
Counter and stacker for flat articles such as paper bags and the like. The stacker includes a frame having laterally spaced vertically extending side guides, which may be adjusted to converge towards each other at their lower ends. Conveyor chains move downwardly along the guides. The chains have spaced flights extending horizontally therefrom towards each other, with the flights extending from opposite chains registering with each other during downward travel of the flights to provide separated downwardly movable platforms spaced along the chains. The chains are driven by a Geneva drive mechanism to provide dwells in downward travel of the flights to accelerate and decelerate the flights and establish a series of holding areas during the periods of dwell, and to advance the flights downwardly ahead of the articles stacked at accelerated speeds when initially traveling from a holding station. The stacker is driven by the bag machine at a speed related to the delivery speed of the bag machine to effect the stacking of a preselected number of bags and to thereby count the bags stacked. The speed of the stacker may be varied in accordance with the size of stacks selected.

3,643,817
COMBINATION STACKER-FEEDER
Boyd W. Rose, Riverside, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 16, 1970, Ser. No. 72,706
Int. Cl. B65g 57/30
U.S. Cl. 214—6 BA 13 Claims



A combination stacker-feeder for filler flats which includes a member for lifting the flats individually from a primary conveyor onto a pair of opposed supports which are cammed outwardly by the upwardly moving flat. When it is desired to feed the flats individually from the supports, an endless chain conveyor having spaced pusher lugs thereon is positioned between the supports with its lower run in the plane of the supports. The endless conveyor is intermittently energized by the lifting of each flat so that the flat will be engaged by one of the lugs to be slid off the supports and moved laterally of the primary conveyor. When it is desired to stack the flats upon the supports, the endless chain conveyor is arranged for pivotal movement about one end thereof so that it can be rotated completely out of the stacking area.

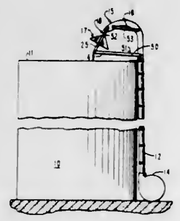
3,643,818
STACKING DEVICE
Francis Gallucci, North Huntingdon Township, Pa., assignor to United States Steel Corporation
Filed Oct. 30, 1970, Ser. No. 85,588
Int. Cl. B65g 57/10
U.S. Cl. 214—6 G 33 Claims



A stacking device for a longitudinal member being transported along a predetermined path of movement is disclosed. Arresting means are disposed along the predetermined path of movement for arresting the longitudinal member adjacent to a preselected location. The stacking device has a stacked supporting means adjacent the preselected location on one side of the predetermined path of movement. A movable guide means is disposed on the one side of the predetermined path of movement and is operable to guide longitudinal member from the predetermined path of movement and are reciprocable between a rest position and a stacking position to move the longitudinal member from the predetermined path of movement over the guide means and onto the stack supporting means. Elevating means are connected to the

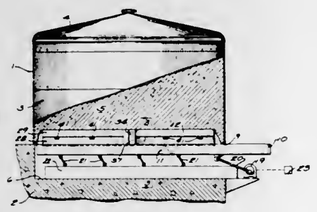
movable guide means for moving the guide means, after delivery of the longitudinal member to the stack supporting means, so that the guide means is aligned with the top of the stacked longitudinal member preparatory for the transfer of another longitudinal member by the stacking device onto the stacked longitudinal member on the stack-supporting means.

3,643,819
DISTRIBUTOR FOR SILAGE OR THE LIKE
Winston C. Halcomb, Route 2, Richmond, Ky.
Filed Sept. 21, 1970, Ser. No. 73,944
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB **10 Claims**



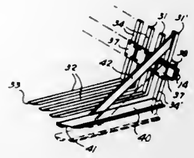
A pyramidal-shaped body is rotatably mounted beneath the outlet end of a silage supply pipe. Each side of the body has a fin thereon with the fin being slightly divergent to a junction between the side of the body on which the fin is mounted and an adjacent side of the body remote from the fin. The body is adjustably positioned relative to the outlet end of the supply pipe in both vertical and angular directions.

3,643,820
FLOW CONTROL BAFFLE FOR A BIN UNLOADER
Ronald W. Hammond, Villa Park, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Jan. 19, 1970, Ser. No. 3,673
Int. Cl. B65g *65/44*
U.S. Cl. 214—17 D **8 Claims**



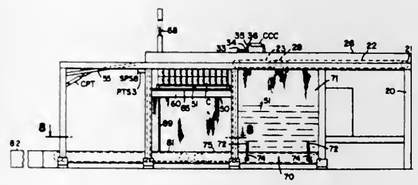
A flow control baffle is disposed over a conveyor operating in a channel pit at the bottom of a storage bin. The baffle extends upward into the bin and has inclined baffle walls which channel the stored material around the sides of the baffle into the conveyor. The baffle has a bottom surface disposed over the conveyor and has elongated ribs extending below the bottom surface to establish the level of stored material in the conveyor. A vibration motor assembly is used to agitate the baffle independently of the conveyor.

3,643,821
FRONT LOADER-TYPE ROCK PICKER
Floyd W. Viel, P.O. Box 632, Billings, Mont.
Filed Aug. 7, 1970, Ser. No. 61,929
Int. Cl. B65g *61/00*
U.S. Cl. 214—140 **9 Claims**



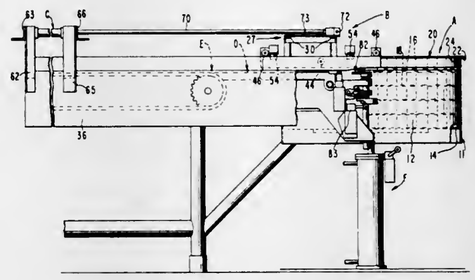
A rock picker attachment consisting of a crossbar adapted to be pivotally connected to the end of a boom structure swingably carried by the front portion of a tractor, the boom structure being provided with hydraulic cylinders for pivoting the crossbar around a transverse horizontal axis. Side-by-side L-shaped members are adjustably clamped to the crossbar, the L-shaped members having forwardly projecting bottom arms defining prongs.

3,643,822
CAN PALLETIZER
Thomas D. Birchall, Turlock, Calif., assignor to G. W. Hume Company, Turlock, Calif.
Original application July 16, 1968, Ser. No. 745,274, now Patent No. 3,522,890. Divided and this application Feb. 17, 1970, Ser. No. 14,857
Int. Cl. B65g *57/24*
U.S. Cl. 214—152 **10 Claims**



In this automatic can palletizer cans are presented to a long draper and moved thereby to the rear end of a normally stationary short draper having at its forward end can clamps normally holding a front row of cans. A stripper plate lies adjacent the forward end of the short draper, and cans are delivered to it at transfer time. A hoist supports a pallet beneath the normal position of the stripper plate and raises a pallet to a level slightly below the stripper plate. A switch on the long draper releases the can clamps when a desired number of cans have been backed up behind the front row, and thereupon the short draper moves cans onto said stripper plate. Switches are actuated by the cans reaching a stripping wall at the end of the stripper plate, and they reenergize the can clamps, stop the short draper, and cause said stripper plate to move out beneath the stripping end wall and drop the cans onto the pallet or onto a layer of cans already on said pallet, to make a palletized can layer. The hoist is then lowered by the height of one layer of cans and is stopped. The stripper plate then returns to its original position adjacent the short draper. Each time the stripper plate reaches its fully stripped position it picks up a paper sheet the size of the area of the pallet, carries it with it on its return, and releases the paper sheet over the layer of cans. After a preselected number of layers has been deposited on the pallet, the hoist is automatically lowered and the loaded pallet transferred away from said hoist to a dock where it can be picked up and moved elsewhere. Meanwhile, a stack of empty pallets is retained adjacent the hoist, and one empty pallet is transferred to the hoist as the filled pallet is being transferred away therefrom, the empty pallet is then raised to its uppermost position. During this pallet transfer operation, the stripper plate is held in its stripped position, and as the empty pallet is raised and nears its uppermost position, the stripper plate is returned to its original position and deposits on the empty pallet a sheet of paper.

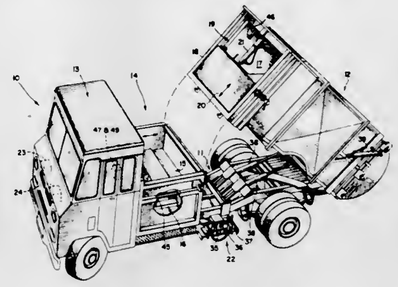
3,643,823
MACHINE FOR UNLOADING RETORT CRATES
George Argyres, San Leandro, and Donald Clendenen, Fremont, both of Calif., assignors to Gerber Products Company, Fremont, Mich.
Filed Aug. 1, 1969, Ser. No. 846,838
Int. Cl. B65g *65/34*
U.S. Cl. 214—310 **5 Claims**



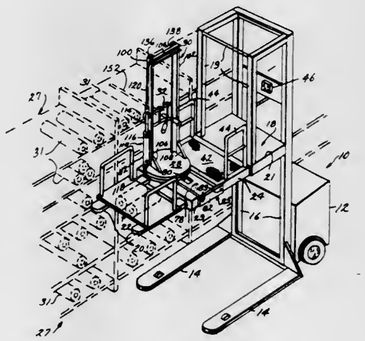
A machine for unloading retort crates of the type wherein successive stacked layers of containers can be exposed above the crate sidewalls for unloading by elevating the false bottom of the crate with respect to its sides. A bail mounted to the machine sweeps elevated and exposed layers of containers off the crate and onto an adjoining, moving conveyor. The bail in sweeping provides the containers with a substantially uniform acceleration to the conveyor speed to minimize the possibility of tipping the individual food containers in their transfer from the retort crate to the conveyor. The containers are free floating in their movement with respect to the bail so as to minimize the tendency of the individual containers to be broken or damaged during sweeping and to permit the containers during movement of the bail to frictionally orient themselves into a compacted mass. Provision is made to drive the bail by direct coupling to a single hydraulic cylinder.

3,643,824
AUTOMATIC PACKER CYCLE FOR REFUSE-CARRYING APPARATUS
Harvie C. Partridge, Port Credit, Ontario, Canada, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada
Filed Apr. 8, 1970, Ser. No. 26,700
Int. Cl. B60p *1/28*
U.S. Cl. 214—510 **1 Claim**

A refuse carrying vehicle receives refuse into a receptacle mounted thereon. An aperture extends through a wall of the receptacle for alignment with a carrying chamber pivotally mounted on the vehicle for movement between a horizontal position and a tilted dumping position. A hydraulic ram pushes refuse horizontally from within the receptacle through the aperture into the chamber, a second hydraulic compacting ram is located in said carrying chamber to plunge vertically onto the refuse in said chamber. A hydraulic pressure system is mounted on the chassis for operating the loading ram and the refuse-compacting ram and is controlled by electric switch means including ram movement limiting switches and pressure limit switches to cyclically activate and deactivate solenoid operated valves in said pressure system whereby said loading ram and said compacting ram are continuously synchronously reciprocating.



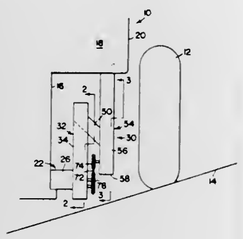
3,643,825
SIDE-LOADING ARTICLE-HANDLING ATTACHMENT
Edward Robert Zane, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation of application Ser. No. 698,293, Jan. 16, 1968, now abandoned. This application Dec. 1, 1969, Ser. No. 881,101
Int. Cl. B66f *9/14*
U.S. Cl. 214—512 **17 Claims**



The side-loading article-handling means is in the form of an attachment designed to be mounted on the vertically movable fork of a conventional lift truck, such as a so-called "order picker truck" or "hi-rider," and adjacent to the conventional operator platform or cage customarily mounted on the fork of such trucks. The article-handling attachment comprises a carriage adapted to be moved at right angles to the prongs of the fork, a turntable rotatably mounted on the carriage, a mast structure rigidly secured to the turntable, a second smaller carriage mounted on the mast for vertical movement relative thereto, and an article-handling means mounted on the second carriage. Hydraulic rams are produced as exemplary structure for effecting the various movements of the operative parts of the attachment, during use, and they are operatively connected to the conventional control panel, or the like, provided in the operator's cage, to

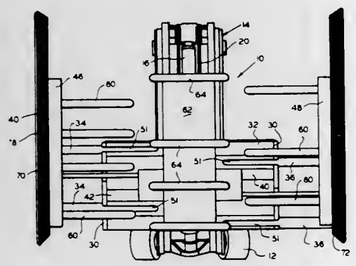
be under the control of an operator as the fork is raised, lowered, or held stationary during use.

3,643,826
COMBINE CLEAN GRAIN ELEVATOR
Marlin Earle Weakly, Moline, Ill., assignor to Deere & Company, Moline, Ill.
Filed Sept. 17, 1970, Ser. No. 73,048
Int. Cl. B63p *1/00*
U.S. Cl. 214—519 **6 Claims**



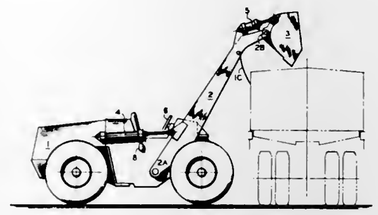
A hillside-type combine has a main separator body and an elevated grain tank mounted on the main separator body in a laterally overhanging disposition. A laterally extending auger-type conveyor collects the clean grain at the bottom of the body and feeds a first clean grain elevator, which extends upwardly alongside the body sidewall below the overhanging grain tank. The first clean grain elevator feeds a downwardly inclined chute which delivers the clean grain to a second elevator disposed outwardly of the first, the bottom end of the second elevator being substantially above the elevation of the bottom of the first clean grain elevator and delivering the grain upwardly along the lateral side of the grain tank to a grain tank loading system.

3,643,827
CLAMP ATTACHMENT FOR LIFT TRUCK AND THE LIKE
David H. Link, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 24, 1969, Ser. No. 879,063
Int. Cl. B66f *9/18*
U.S. Cl. 214—653 **9 Claims**



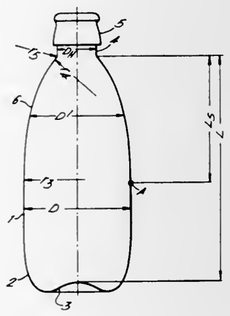
A clamp attachment especially for lift trucks in which the elements of each of a pair of pivotal clamp pad and supporting clamp arm assembly provide a substantially coplanar and continuous clamping surface.

3,643,828
AUTOMATIC CONTROL SYSTEM FOR FRONT END LOADER
James H. Elliott, 1441 Stoneygate Lane, Columbus, Ohio
Filed July 9, 1969, Ser. No. 840,367
Int. Cl. E02f *3/00*
U.S. Cl. 214—762 **4 Claims**



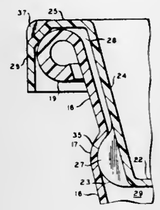
Automatic control system for a front end loader utilizing a bucket or fork at the end of a rigid boom. An automatic digging and dumping cycle is in parallel operation with a manual control system and which automatic control system may be changed to manual by an operator or be preselected for automatic or manual operation. Pressure sensitive means are utilized to determine and control the position and attitudes of the various elements that perform the necessary work functions.

3,643,829
PRESSURE-RESISTANT PLASTICS BOTTLE
Otto Lachner, Kempten, Allgau, Germany, assignor to Lever Brothers Company, New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,315
Int. Cl. B65d *1/02*
U.S. Cl. 215—1 C **5 Claims**



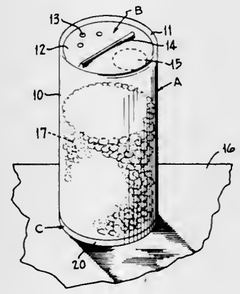
A blow-molded plastics bottle for carbonated drinks has a shoulder region, above a cylindrical main part, of height 0.5 to 0.6 of the bottle height and formed with an externally convex curvature, the radius of the curvature of which progressively decreases from less than infinity adjacent the main part to a value lying between 0.5 D and 2 D where D is the diameter of the main part. Between the shoulder and a cylindrical neck of the bottle is an externally concave curve of maximum radius 6 millimeters.

3,643,830
PACKAGING CONTAINER AND CLOSURE THEREFOR
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Feb. 5, 1970, Ser. No. 8,961
Int. Cl. B65d *51/16, 43/10, 21/02*
U.S. Cl. 220—44 R **5 Claims**



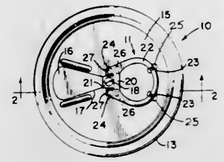
A container having a closure retention shoulder is combined with a closure having a retention bead. The closure is formed so that the portion thereof between the closure rim and the retention bead grips the portion of the container between the retention shoulder and the container rim to secure the closure to the container. The container wall section between the points of the rim and retention shoulder is substantially straight and at least approximately parallel to and positioned at least closely adjacent to a line through the points of contact at the retention shoulder and rim. This container wall section and a substantially parallel second wall section below the retention shoulder can serve as upper and lower stacking shoulders for the container.

3,643,831
CONTAINER FOR LIGHT-SENSITIVE PARTICULATE SOLIDS
Lee A. Casper, 323 Cherry Bend, Merion, Pa.
Filed Jan. 21, 1970, Ser. No. 4,599
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 B **4 Claims**



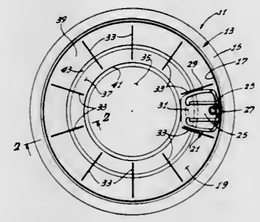
A container for light-sensitive particulate solids is generally cylindrical with opaque walls and top. The latter may be of any of the conventional dispensing types. The bottom, however, is of transparent material and is preferably in the form of a clear plastic plug. When stored normally on a shelf, the contents are shielded from light. However, when the container is removed temporarily from its position of rest on a horizontal surface, the contents may be observed through the transparent bottom.

3,643,832
PULL TAB ARRANGEMENT FOR EASY-OPENING CONTAINER
Nick S. Khoury, Worth, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,529
Int. Cl. B65d *17/24, 21/02*
U.S. Cl. 220—54 **4 Claims**



An easy opening container having a pull tab including a ring portion and pair of fulcrum legs straddling the weakening line defining a removable panel portion. The pull tab includes an attachment panel hingedly connected to the ring portion and between the fulcrum legs. The attachment portion receives a rivet formed integral with the removal panel portion. Cooperating means are formed on the pull tab and the panel for minimizing the stresses on the integral rivet. Wells disposed below the ends of the fulcrum legs reduce the force required to tilt the pull tab to a position in which the legs are the ends of a fulcrum lever.

3,643,833
EASY OPENING CONTAINER WALL
Ermal C. Fraze, 355 West Stroop Road, Dayton, Ohio, and Franklin C. Eickenhorst, Mason, Ohio, assignors to Ermal C. Fraze, Dayton, Ohio, a part interest
Filed Nov. 4, 1969, Ser. No. 873,889
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **7 Claims**

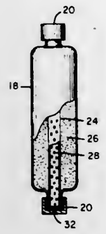


An easy opening container wall including a main score line in the container wall defining a panel removable therefrom and a tab connected to the panel to initiate severance of the panel. A plurality of generally radially extending secondary score lines are formed in the panel and sections of the panel are preferably axially offset relative to each other.

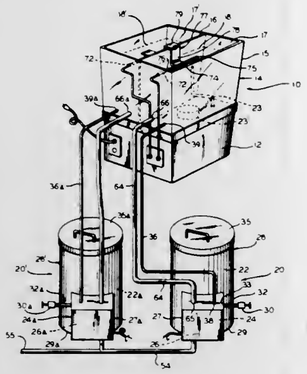
3,643,834
ACID DISPENSERS FOR DRY-CHARGED BATTERIES
Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., St. Paul, Minn.
Filed Nov. 24, 1969, Ser. No. 879,359
Int. Cl. B67d *5/08*
U.S. Cl. 222—54 **11 Claims**

An acid dispenser with a perforated tube mixing channel and two openings each of which is sealed by means of a rubber gasket held in place by a water-soluble pellet. The

dispenser is placed inside a battery. When water is added to the battery the pellet dissolves releasing the gasket and allowing the acid within the container to mix with the water in the channel and in the battery.



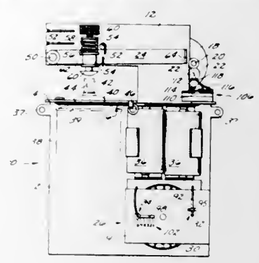
3,643,835
AUTOMATIC LIQUID PROPORTIONER
Leonard G. Popinski, Chicago, Ill., assignor to The Nedlog Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 739,806, June 25, 1968, now Patent No. 3,528,587. This application Feb. 13, 1970, Ser. No. 11,132
Int. Cl. B67d *5/08*
U.S. Cl. 222—56 **13 Claims**



An automatic liquid proportioner device for simultaneously feeding a predetermined amount of one liquid and a predetermined amount of another liquid into a beverage dispenser machine to provide a beverage comprising a mixture of said liquids.

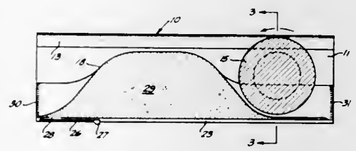
3,643,836
PROGRAMMED TIMER DEVICE AND DISPENSING APPARATUS INCORPORATING SAME
William Grayson Hunt, 322 McRae St., Laurinburg, N.C.
Filed Dec. 18, 1969, Ser. No. 886,251
Int. Cl. B67d *5/20*
U.S. Cl. 222—70 **8 Claims**

A self-contained and readily portable apparatus for at adjustably variable desired times dispensing desired amounts of liquid-spray or other material from containers such as pressurized aerosol cans, the apparatus including a drive motor and a driven linkage effective upon actuation and during each cycle of operation of the drive motor to momentarily depress the container's spring-biased discharge valve. The frequency at which cycles of operation are instituted is adjustable and is controlled by a novel timer device including a clockworks mechanism having an hour hand output shaft upon which is mounted a disc element having on one surface a plurality of electrically conductive segments arranged in circular sets concentric with and at varying radial distances from the central axis of the disc, the circumferential spacing between the segments being equal within each set and different from set to set. An electric contact is mounted for adjustment radially of the disc surface so as to overlie any desired set of conductive segments thereon, and so as to



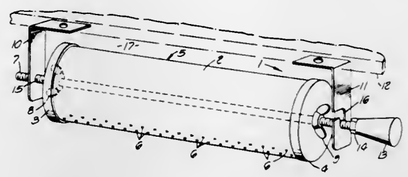
sequentially and periodically engage the segments of such set during disc rotation. Engagement between the contact and a conductive segment completes a circuit including the drive motor and its power source, which comprises a battery pack from which the clockworks mechanism is also energized, instituting a cycle of operation. The cycle is terminated by engagement between a switch element in the circuit and a cam member of the motor-driven linkage. Intermediate successive cycles of operation, a second contact engaging the disc surface actuates the motor momentarily to disengage the cam member and the switch.

3,643,837
COMBINATION CONTAINER-DISPENSER FOR VISCOUS MATERIALS
Ronald A. Green, 559 North Olive St., Orange, Calif.
Filed Aug. 25, 1969, Ser. No. 852,560
Int. Cl. B65d *35/28*
U.S. Cl. 222—101 **13 Claims**



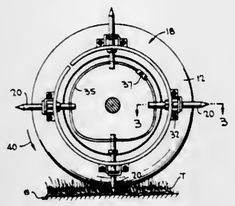
A combination container-dispenser for viscous materials comprising an elongated tubular container which is open along one side thereof, the ends of the container along the open side extending inwardly of the container. A roller or slider having first and second grooves therein is positioned within the container so that the inwardly extending ends of the container project into the grooves. By confining the viscous material within the container and by providing an opening in one end of the container, movement of the roller or slider forces the viscous material out of the opening. In addition, the interlocking connection between the ends of the container and the grooves in the roller or slider eliminates the need for a rigid, nondistortable container. Finally, a novel closure, including a slider which cooperates with an opening in the container, eliminates the standard nozzle and cap.

3,643,838
FOOD SEASONER APPARATUS
Wilford W. Allen, 323 Vista Pl., Los Angeles, Calif.
Filed Apr. 27, 1970, Ser. No. 32,127
Int. Cl. A47g *19/24*
U.S. Cl. 222—161 **3 Claims**



A commercial solid-particle food seasoner has a thin wall right cylinder length, each cylinder end being closed, the cylinder length and the closures cooperatively form the wall of a seasoning container. At least one seasoning filling aperture is formed in the container wall and has a detachable sealing closure. A multiplicity of seasoning-dispensing apertures are disposed in the cylinder length wall area bounded by a minor cylinder arc and the cylinder length. The seasoning container has a shaft coaxially secured to the pair of end closures and a container support shaft mount cooperatively holding the container in a superimposed horizontal position above a food preparation area. A handle secured to the shaft adapts the container to shaking and dispensing the contained seasoning.

3,643,839
FERTILIZER SPREADER MARKING SYSTEM
James R. King, 6804 Capstan Drive, Annandale, Va.
Filed July 9, 1969, Ser. No. 840,417
Int. Cl. A01c *15/00*
U.S. Cl. 222—177 **15 Claims**



A method and apparatus for marking the coverage of a lawn spreader are disclosed wherein one or more spikes are attached to the wheel of said spreader, which spikes serve to lift tufts of thatch to provide the guide lines. The spikes are mounted for radial movement and resiliently biased outwardly to allow retraction for free movement of the wheels over sidewalks or the like. The spikes are carried on an integral hoop having a guide box for each spike and the resilient means is in the form of a spring steel hoop engaging the upper portion of the spikes.

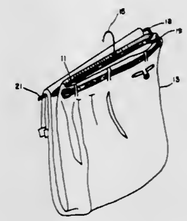
3,643,840
DEVICE FOR EVERTING A SLEEVE OF FLEXIBLE MATERIAL
Placide N. LeBlanc, 194, Jerry Road, East Hartford, Conn.
Filed Aug. 24, 1970, Ser. No. 66,434
Int. Cl. A41h *43/00*
U.S. Cl. 223—42 **11 Claims**

A device for everting a sleeve of fabric material without injury to the material. The device is comprised of a tubular member and a pair of resilient catches which project from one end of the member to engage a sleeve of material to be everted. The catches engage and pull the end of the fabric



sleeve within the end of the tubular member. The sleeve can be everted by sliding the remainder of the sleeve over the end of the tube where the end of the sleeve is caught by the catches.

3,643,841
HANGER
Walter H. Rhindress, 62 North Harbor Drive, Ocean Ridge, Fla.
Filed Nov. 5, 1969, Ser. No. 874,099
Int. Cl. A47j *51/12*
U.S. Cl. 223—95 **4 Claims**

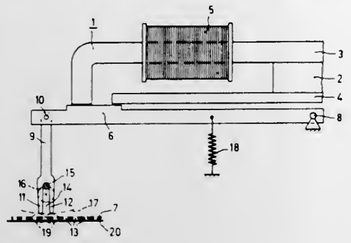


A hanger having spring-loaded means for gripping the inner waistband of trousers and a projecting arm for receiving folded trouser legs particularly for bedside use, inside the waistband to keep the pants smooth, permit wrinkles to fall out, and prevent the pockets from emptying; at the same time permitting the leg portions to be folded over the arm in order to present a very short profile, such that they can be hung along one's bedstand.

3,643,842
CLAW MECHANISM FOR ADVANCING A PERFORATED RECORD CARRIER ALONG A PATH
Johan van der Maaden, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,707
Claims priority, application Netherlands, Jan. 24, 1969, 6901273
Int. Cl. G03b *1/22*
U.S. Cl. 226—71 **6 Claims**

A claw mechanism for advancing a perforated record carrier, in particular a film, in a cinematograph film projector,

which mechanism comprises a pivotable arm arranged parallel to the direction of advance and a forked claw member which is arranged at right angles to the direction of advance and is hinged to the arm, the claw member being moved by a



continuously revolving crank pin which engages between the teeth of the fork, whilst the arm with the fork can be moved towards and away from the record carrier by means of an electromagnet in order to vary the speed of advance.

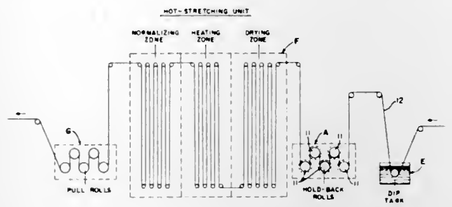
3,643,843
YARN SUPPLY CHAMBER
Jiri Havlas; Premysl Kostelecky; Zdenek Holy, all of Liberec; Jeromir Rydlo, Vesec u Liberce, and Vlastimil Rejnart, Krizany, all of Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Feb. 13, 1970, Ser. No. 11,072
Claims priority, application Czechoslovakia, Feb. 21, 1970, 1258/69
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **9 Claims**



A yarn supply chamber formed of regularly displaced, generally longitudinally extending bars connected at one end by a yarn introducing mechanism and at the other end by a closure having a yarn discharge orifice. The bars may be disposed at an angle of from about 0°to 20° with respect to the longitudinal axis of the chamber, the chamber preferably increasing in diameter in the direction of passage of yarn therethrough. The chamber virtually eliminates the formation of loops in the yarn reserve supply. Upon the interruption of the feeding of yarn into the chamber while continuing its withdrawal, the discharge end of the chamber remains substantially uniformly filled with yarn.

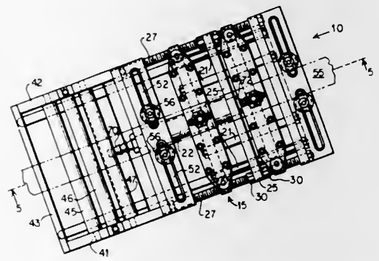
3,643,844
APPARATUS FOR TENSIONING FABRIC
Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 616,337, Feb. 15, 1967, Pat. No. 3,517,425
Filed Mar. 9, 1970, Ser. No. 22,727
Int. Cl. B65h *23/18*
U.S. Cl. 226—111 **9 Claims**

Apparatus for tensioning fabric such as tire cord fabric in which the fabric is pulled through one or more treatment chambers under substantial tension. The tension is created in an assembly of holdback rolls and the fabric is elongated during its passage through the assembly of rolls. Torque is applied to the shafts of the rolls through friction clutches which slip when a predetermined torque is exceeded, the clutches



being adjusted so that the rolls accommodate their speeds to variations in the speed of the web due to the elongation of the material without slippage taking place between the web and the rolls.

3,643,845
APPARATUS FOR FEEDING STRIP STOCK
Odis L. Phillips, Halls, Tenn., assignor to Phillips Industries, Inc., Frankfurt, Ind.
Filed Dec. 18, 1969, Ser. No. 886,186
Int. Cl. B65h *17/36*
U.S. Cl. 226—145 **4 Claims**

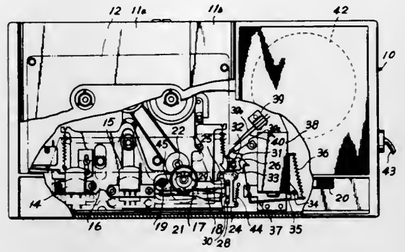


Strip stock feeding apparatus including a pair of diaphragm operated clamps, one movable and one stationary. A fluid cylinder is arranged to move the movable clamp back and forth. The two clamps are alternately actuated at the same time as the fluid cylinder so as to hold the stock in position while the movable clamp moves in one direction and so as to move the stock with the movable clamp as it moves in the opposite direction. Coil straightening rollers and guiding rollers are also provided.

3,643,846
TEMPORARY STOP DEVICE FOR TAPE RECORDER
Yoshiro Kato, Yokohama, and Kimio Uno, Kamakura, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed June 19, 1969, Ser. No. 834,767
Claims priority, application Japan, June 22, 1968, 43/5239
Int. Cl. B65h *17/22*
U.S. Cl. 226—181 **4 Claims**

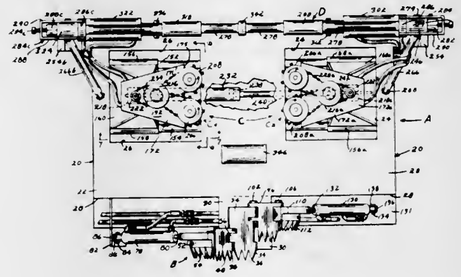
A temporary stop device for tape recorder temporarily or transiently stopping the running of a tape by parting a pinch roller from a rotating capstan which is contacted with the pinch roller by compression and thereafter instantly running

the tape by contacting the pinch roller with the capstan. Contacting and parting operations of the pinch roller with and from the capstan are made by a cam means. A cam operation



switch and a tape running indication part are housed in a remote control part at some distance apart from the tape recorder body.

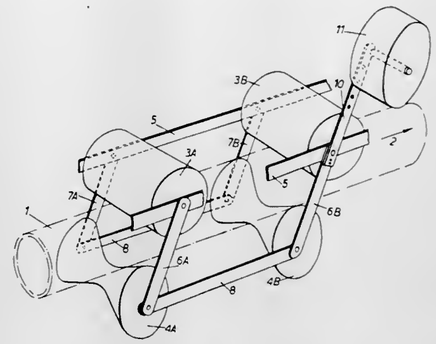
3,643,847
DEVICE FOR GRIPPING AND MOVING A FELLED TREE
Charles E. McElderry, C/O Mack Welding Co. Inc., 9206 Grand Ave. Pl., Duluth, Minn.
Original application Dec. 4, 1968, Ser. No. 781,148, now Patent No. 3,572,410. Divided and this application Dec. 28, 1970, Ser. No. 101,591
Int. Cl. B65h *17/20*
U.S. Cl. 226—186 **6 Claims**



A support means, a tree delimber unit having articulated arcuate limb cutting blades for placement about a felled tree, a pair of tree-cutting blades in alignment with the articulated blades together with gripping rollers positioned on the support means intermediate of and in alignment with the articulated limb-cutting blades and the tree-cutting blades for gripping and moving a felled tree through said limb-cutting blades and to the tree-cutting blades.

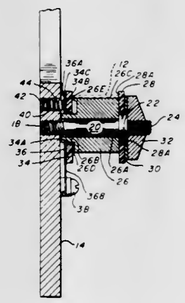
3,643,848
GLASS GRIPPING DEVICES
Harry Haller, Warley, England, assignor to Chance Brothers Limited, Warley, England
Filed Dec. 23, 1969, Ser. No. 887,582
Claims priority, application Great Britain, Jan. 2, 1969, 371/69
Int. Cl. B65h *11/22*
U.S. Cl. 226—186 **2 Claims**

A device for gripping a moving body of glass comprises two pairs of rollers supported for rotation about parallel axes and which engage between the rollers constituting each pair, opposite surfaces of the moving body of glass. The axes of the rollers are substantially perpendicular to the direction of glass movement and two tie members interconnect the ends



of the rollers of each pair, the tie members being pivotable about their axes which are parallel to the roller axes, and biassing means are provided to bias the members about the pivot axes so that the moving body of glass is gripped.

3,643,849
TAPE GUIDE
Clyde D. Roberts, Sapulpa, Okla., assignor to Midwestern Instruments, Inc., Tulsa, Okla.
Filed Feb. 25, 1970, Ser. No. 13,953
Int. Cl. B65h *23/32*
U.S. Cl. 226—199 **4 Claims**

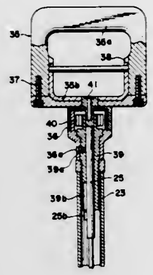


This invention relates to a tape guide for guiding a magnetic tape and includes means of aligning the tape by applying slight continuous pressure to one edge so that the other edge contacts at all times a fixed edge member, the means for urging the tape including a movable edge member displaceable in a direction towards the fixed edge member and including resilient means urging the movable edge member towards the fixed edge member.

3,643,850
PIN-DRIVING TOOL
Kumaji Endo; Fumio Ebisawa, and Masao Muratani, all of Yokohama-shi, Japan, assignors to Japan Drive-It Co., Ltd., Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,528
Int. Cl. B25c *1/14*
U.S. Cl. 227—8 **3 Claims**

A pin-driving tool actuated by explosive forces is shown. The tool includes a housing having an explosive chamber

therewithin, pin support means operatively connected with said explosive chamber, and a cartridge selectively contained within said explosive chamber. A connecting cylinder is mounted upon the housing and contains an actuating lever therewithin which, by movement of the handle, controls a

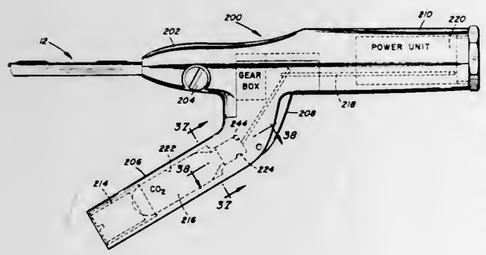


control lever. The control lever in turn abuts a forwardly biased spring-loaded ram which, in turn is adapted to strike a firing pin. A safety hook is provided which prevents the control lever from moving if the probe to which it is connected projects from the tool and the tool is not in abutting relationship with work.

3,643,851
SKIN STAPLER

David T. Green, Norwalk, and Graham W. Bryan, Ridgefield, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.

Filed Aug. 25, 1969, Ser. No. 852,822
Int. Cl. B25c *5/10, 5/16*
U.S. Cl. 227—19 **41 Claims**

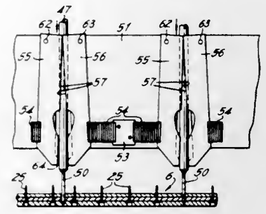


A surgical instrument for applying sterilized staples from a disposable staple-carrying cartridge to the disunited skin of a patient in order to effect a joining of the skin. The instrument consists of an anvil adapted to lie flush with the skin, a disposable cartridge housing a plurality of staples which are to be folded around the anvil, and a pusher for bending the staples around the anvil. The pusher is U-shaped with chamfers on the arms thereof to effect the bending with a minimum of force. A gas-powered unit serves to eject and form the staples in a neat and uniform manner. A novel disposable gas cartridge is also disclosed.

3,643,852
NAIL CHUCK

Adam V. Kowalczyk, 84-33 Penelope Ave., Rego Park, N.Y.

Original application Jan. 11, 1965, Ser. No. 494,467, now Patent No. 3,514,467, dated May 26, 1970. Divided and this application May 7, 1970, Ser. No. 35,535
Int. Cl. B27f *7/02*
U.S. Cl. 227—149 **4 Claims**

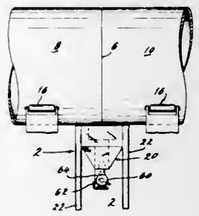


Nail chuck comprising a pair of pivoted jaws forming a bore therebetween, the jaws pivoting about pivot points to permit a punch to drive a nail out of the chuck, the points being adjacent the upper ends of the jaws.

3,643,853
FLUX BACKUP UNIT

James J. Hiller, Jennings, Mo., assignor to Valley Steel Products Company, St. Louis, Mo.

Filed Dec. 22, 1969, Ser. No. 886,857
Int. Cl. B23k *1/00*
U.S. Cl. 228—41 **9 Claims**



A flux backup unit applies a continuous flow of granular flux to the underside of a joint as a weld is made at that joint. The backup unit includes a hopper, an open top container within the hopper, and a feed screw for lifting the flux from the bottom of the hopper to the container. The continuous flow of flux into the container causes the container to remain full as the joint is moved relative to it so that the joint is continuously backed with flux. The excess flux introduced into the container overflows into the hopper and is thereby automatically recirculated through the container by the feed screw.

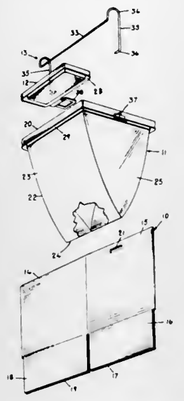
3,643,854
PAINT CONTAINER

Gordon W. Holmes, 1475 Larchview Trail, Port Credit, Ontario, Canada

Filed Aug. 26, 1969, Ser. No. 853,050
Int. Cl. B65d *5/60*
U.S. Cl. 229—14 B **1 Claim**

A container for paints and like liquids comprises a carton erected from a collapsible tubular blank, a rectangular lid which is secured to the top of the carton, and a flexible bag

having an opening which is peripherally sealed to a skirt depending from the lid within the carton. The carton can be

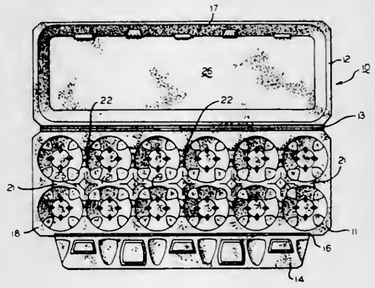


stored in a flat condition prior to assembly, and the lid and bag assembly can also be stored in a flat condition.

3,643,855
MOULDED CONTAINER

David Donaldson, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 10, 1969, Ser. No. 883,896
Int. Cl. B65d *1/24, 1/36*
U.S. Cl. 229—2.5 **3 Claims**

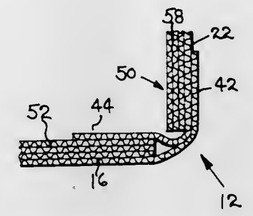


A moulded container, particularly for the packaging of frangible articles, such as eggs. The container is characterized by a tray having a plurality of cup-shaped cells formed therein, each receiving one of a number of similar articles, which may vary in size and contour, but each having a transverse cross section which is essentially circular. Each of the cells has at least one planar surface therein resulting in a diametrical distance which is less than the normal diameter of said cell in a plane normal to the longitudinal axis of said cell. The thickness of the moulded material at such planar surface is less than the thickness of the material forming the cell, so that when the cell is loaded, and the article contacts the planar surface, the latter deflects the larger articles, and increases materially the amount of wedging of the article as it approaches the bottom of the cell. The deflection of the thinner planar surfaces of the cell thus absorbs energy and minimizes rebound of the egg. By reason of such deflection, a range of different sized articles may be accommodated successfully.

3,643,856
BULK SHIPPING CONTAINER

Chandler H. Jones, Memphis, Tenn., assignor to Owens-Illinois, Inc.

Filed Aug. 19, 1970, Ser. No. 65,016
Int. Cl. B65d *5/32, 5/56*
U.S. Cl. 229—37 R **7 Claims**

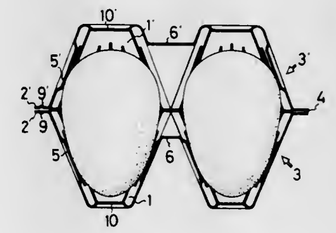


A bulk shipping package including an outer container constructed of suitable sheet material, such as corrugated paperboard, from a flat blank properly slit and scored and set up in parallelepiped form usually with the final connector joint for the adjacent end extremities of the blank at one of the vertical connectors of the package, an insert sleeve of triple wall corrugated paperboard, and a unique connector joint which provides increased strength to prevent failure of the package.

3,643,857
PLASTIC EGG PACKAGE

Hikoji Noguchi, No. 1251-10, Oaza-Narabashi, Yamato-cho, Kitatamo-gun, Tokyo-to, Japan

Filed Sept. 30, 1969, Ser. No. 862,324
Int. Cl. B65d *85/32*
U.S. Cl. 229—44 R **1 Claim**



An egg package made of transparent synthetic resin including a bottom portion and a cover joined together at one side, both the bottom and cover containing carrier concavities for holding eggs, said concavities having lateral ribs therein for contacting the eggs and spaces between the flanges of the bottom and cover to permit circulation of air around the eggs.

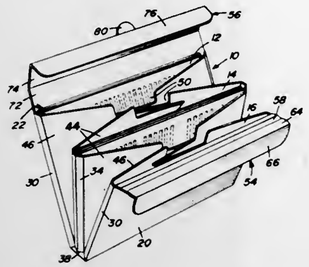
3,643,858
FOLDING COMPARTMENTED FILE

Jonas Deckys, 19155 66th Pl. N.E., Seattle, Wash.

Filed Mar. 11, 1970, Ser. No. 18,557
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 **10 Claims**

A three compartment file folded from a single blank. The blank, and file folded therefrom, includes a plurality of

panels and flaps, along with foldlines and expanding folds. The assembled file incorporates an expanding closure flap to



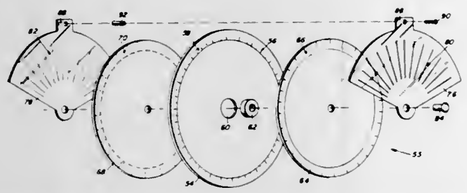
overlie the three compartments and a locking flap to lock the closure flap closed.

3,643,859

SHOPPER CALCULATOR AND COMPARISON DEVICE

George R. Kreisel, Jr., 4719 Parkman Ct., Annandale, Va.

Filed Aug. 11, 1970, Ser. No. 62,801
Int. Cl. G06c *3/00*
U.S. Cl. 235—88 **28 Claims**



This disclosure relates to a calculator and comparison device for use by shoppers in determining the most economical brand or package of a variety of brands or sizes of the same product. The device has a center disc which has a series of logarithmic scales which are marked-off in indicia of dollars and cents values, and an outer disc which is carried on the center disc which has a logarithmic scale measured in standard weight measure units. The outer disc is smaller in diameter than the center disc thus permitting the scales on the center and outer discs to be read simultaneously. The center disc and the outer disc are rotatable with respect to each other about their center axis. A transparent member is rotatably secured on the outer disc and is associated with the center and outer discs. The transparent member has a scale marked-off in indicia of units, cans, boxes, etc. The scale on the transparent member may be superimposed over the scales on the center and outer discs, thereby permitting the three scales to be read and used simultaneously. Some means to reduce friction is provided between the center and outer discs so that the outer disc and transparent member can be rotated together about the center axis of the disc without moving the center disc.

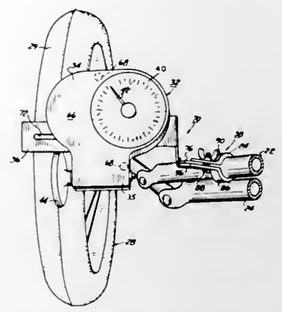
3,643,860

YARDAGE INDICATOR FOR HANDCART

Robert H. Murphy, Jr., 6242 Lake Forest, and William G. Goetz, 6346 Tanglewood, both of Grand Blanc, Mich.

Filed Mar. 21, 1969, Ser. No. 809,123
Int. Cl. G01c *22/00*
U.S. Cl. 235—95 **2 Claims**

A yardage indicator to be mounted on a manually driven handcart, such as a golf cart, having a friction wheel adapted to ride on either wheel of the cart to drive a reduction gear mechanism as the cart wheel rotates, the output of which is connected to a pointer which rotates around a dial to accurately and visually indicate the yardage traveled by the cart. The pointer is frictionally connected to the gear mechanism



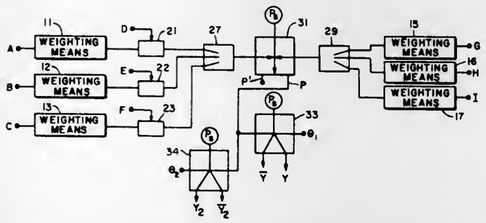
output shaft to permit a manual resetting of the pointer to any mark on the dial without affecting the gear mechanism. The indicator is provided with adjustable mounting means to compensate for different cart designs and different diameters and tracks of cart wheels.

3,643,861

FLUIDIC THRESHOLD GATE

Herbert M. Eckerlin, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,537
Int. Cl. G06d *5/00*
U.S. Cl. 235—201 **11 Claims**



A fluidic logic gate utilizing the principles of threshold logic. This type of fluidic gate, which realizes complex logical functions with fewer gates than conventional fluidic logic gates, consists basically of the following types of components: diverters or fluidic inverters which perform a selective inhibit function, passive summing junctions, a proportional fluid amplifier and a threshold biased bistable fluid amplifier.

3,643,862

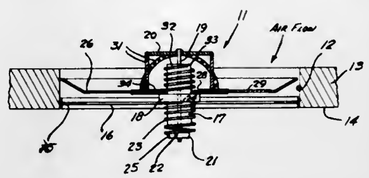
AUTOMATIC DAMPER ON REGISTER FOR COMBINATION HEATING-COOLING SYSTEM

Charles H. Byrne, 540 Orange Ave., South San Francisco, Calif.

Filed Jan. 23, 1970, Ser. No. 5,174
Int. Cl. G05d *23/02*
U.S. Cl. 236—1 **10 Claims**

An airflow-controlling damper mechanism consisting of a fixed frame in which a damper flap frame is rotatably mounted. The flap frame has damper segments pivoted therein on radial axes. A drive shaft is journaled axially in the

fixed frame and has a drive gear meshing with gear segments carried by the damper segments. Respective thermoresponsive torsion springs connect the flap frame and the drive shaft through the fixed frame, one being responsive to the temperature of incoming air and the other being responsive to the temperature of room air, whereby to open or close the damper segments in accordance with the relative temperatures of the incoming air and the room air.



3,643,863

COMBINATION CONTROL DEVICE HAVING A HYDRAULIC HIGH LIMIT VALVE ASSEMBLY

John W. Wright, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 13, 1970, Ser. No. 11,078
Int. Cl. G05d *16/16*
U.S. Cl. 236—80 **13 Claims**

A combination control device for main and pilot burner apparatus having a differential pressure operated diaphragm valve operated by an internal bleed line which is subject to pressure regulation, thermostatic on-off control, and high-temperature shutoff regulation. The pressure regulation, thermostatic on-off control, and high-temperature regulation features are independently provided by individual valve assemblies so as to increase the overall fail-safe characteristics of the combined device, the high-temperature valve assembly including a hydraulic snap acting mechanism actuated by a closed hydraulic system charged with a gas vapor having a vapor pressure which is less than atmospheric pressure for enabling rapid fuel flow cutoff upon the occurrence of a preselected excessive ambient temperature and for assuring fuel cutoff in the event of a rupture of the hydraulic system.

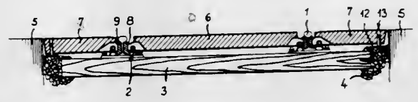
3,643,864

RAILROAD GRADE CROSSING

Hans Ziegler, Schurtannenstrasse 21, 9400 Rorschach, Switzerland

Filed Nov. 18, 1969, Ser. No. 877,607
Claims priority, application Switzerland, Nov. 19, 1968, 17246/68
Int. Cl. E01b *2/00*
U.S. Cl. 238—8 **9 Claims**

A novel railroad grade crossing is disclosed comprising elongated support members secured to each side of each rail and substantially complementing the rail profile. Resting upon the support members and secured thereto, are filler plate members which extend between the two rails and outwardly from either rail. Inasmuch as the filler plate members



do not directly contact the rail, and therefore do not need to be elaborately profiled, the filler plate members may be constructed of concrete, thereby effecting a great cost saving over known cast-iron filler plates.

3,643,865

VEHICLE TRACK FOR USE IN TOY BUILDING KITS

Wolfgang Mutz, Dornstetten; Theodor Killgus, Freudenstadt, and Artur Fischer, Altheimer Str. 219 D-7241, Tumlingen, all of Germany, assignors to said Fischer, by said Mutz and Killgus

Filed May 14, 1970, Ser. No. 37,090
Claims priority, application Germany, May 19, 1969, P 19 25 377.1
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 F **16 Claims**

A vehicle track for use in toy building kits of the type including connectable structural elements having interengageable connectors, has at least one elongated strip-shaped track member provided in its transversely spaced longitudinally extending margins with a plurality of slots spaced lengthwise of the track member and extending transversely of the latter. The slots may either extend from one margin towards but not quite to the other margin, or they may alternately extend from opposite margins substantially to the midpoint between the margins. The track member is thereby subdivided into a plurality of connected sections which may be angularly displaced relative to one another if the track member is bent in its plane for imparting to the track member a straight or a curved configuration as desired. Connecting means provided on the sections of the track member is interengageable with the connectors of the structural elements.

3,643,866

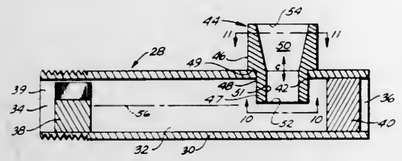
REVERBERATING LIQUID DISCHARGE DEVICE

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Continuation-in-part of application Ser. No. 686,410, Nov. 29, 1967, now Patent No. 3,547,351, dated Dec. 5, 1970. This application June 15, 1970, Ser. No. 46,400
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **3 Claims**

A liquid discharge device having no moving parts which inherently reverberates and pulsates liquid being discharged

therefrom, is especially adapted to provide unusually precise control over the degree and extent of the reverberation and



pulsation as well as over the nature and extent of the discharge pattern.

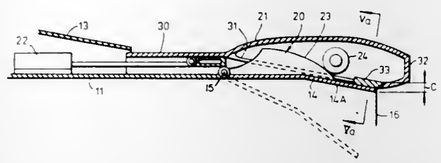
3,643,867
SELF-PROPELLED IRRIGATION SYSTEM
Rudolph N. Thietje, 1744 S. Dayton Pl., Kennewick, Wash.
Filed Nov. 14, 1969, Ser. No. 876,903
Int. Cl. B05b *3/18*
U.S. Cl. 239—183 **11 Claims**



A supply conduit is positioned across a field to be irrigated. The conduit has a slit formed along its length and a displaceable seal is located in sealing relation with the slit. A water commutator rides along the conduit and has riders connected thereto which depress that portion of the seal upon which the commutator is riding thereby allowing waterflow from the conduit to the commutator. Sprinkler supply pipes communicating with the commutator mount means for driving the sprinkler supply pipe and the commutator along the length of the supply conduit. The drive means comprises wheels powered by pressured water in the sprinkler supply pipes.

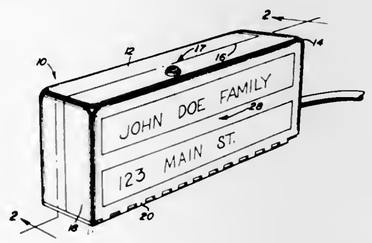
3,643,868
JET NOZZLE
David Roberts McMurtry, Bristol, England, assignor to Rolls-Royce Limited, Derby, England
Filed June 11, 1970, Ser. No. 45,526
Claims priority, application Great Britain, Sept. 6, 1969, 30,997/69
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.39 **4 Claims**

The disclosure of this invention pertains to a jet nozzle for a gas turbine engine wherein the throat diameter of the nozzle is defined by the downstream end of an annular arrangement of flaps connected to a jet pipe and pivoted by a shroud surrounding the flaps being moved axially along the jet pipe. Between the shroud and each of the flaps there is provided a cam and roller device to convert the movement of the shroud into that of the flaps. The shroud comprises walls extending at a boat tail angle and in relatively close proximity to the



flaps, from the position of maximum throat diameter to a larger diameter upstream thereof, each wall extending between two adjacent said cam and roller devices, and each of these devices is housed by a strake connected to the adjacent walls. The arrangement of the walls and the strakes ensures low-base drag.

3,643,869
CONVERTIBLE LAWN SPRINKLER
Marvin E. Lightfoot, Pacific Marina-Caravel Apt. #204, **Alameda, Calif.**
Filed Sept. 16, 1970, Ser. No. 72,660
Int. Cl. B05b *15/00*
U.S. Cl. 239—289 **7 Claims**

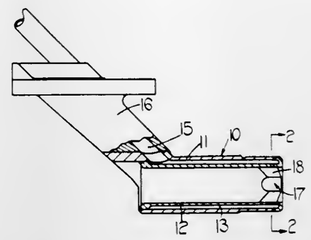


A sprinkler head of modern design is enclosed within a closed split housing that includes oppositely disposed wall sections connected to a base. Snap action springs selectively cause the outward rotation of the wall sections so that the wall sections become inverted and forcefully raise the base up off the ground. This elevates the sprinkler head above the ground and increases the irrigation efficiency thereof. A wall section of the housing carries indicia thereon indicating the name and location of a residence. With a closed housing placed on a lawn ground surface, the indicia becomes visible.

3,643,870
LIQUID-ATOMIZING DEVICES
Ronald D. H. Saunders, Clitheroe, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed May 12, 1970, Ser. No. 36,649
Int. Cl. B05b *7/10*
U.S. Cl. 239—403 **1 Claim**

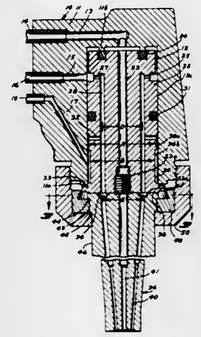
A liquid-fuel-atomizing device comprises a tubular body open at both ends and having inclined blades mounted within

one end to impart a swirling motion to air passing through the body. Fuel is supplied through nozzles which are directed



towards the faces of the blades which are, in use, at the higher pressure.

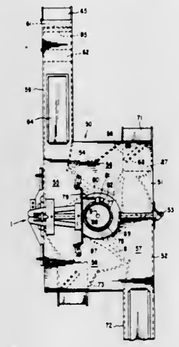
3,643,871
TORCH APPARATUS
Edward L. Hamernik, and Frank T. Kawamoto, both of Minneapolis, Minn., assignors to Tescom Corporation, Minneapolis, Minn.
Filed Jan. 30, 1970, Ser. No. 7,173
Int. Cl. F23d *11/16*
U.S. Cl. 239—419.3 **7 Claims**



Torch apparatus that includes a torch head having a torch bore, a mixer in the torch bore, a torch tip, a collar on the torch tip and a head nut threaded on the torch head to, through the collar, retain the seating surface of the torch tip against the seating surface of the mixer. A mixer cutting oxygen passageway at each end respectively opens to a corresponding passageway in the torch head and the torch tip. Torch head preheat oxygen and fuel gas passageways open to oxygen-fuel gas passageways in the mixer which in turn opens to an annular groove in the torch tip, the torch tip oxygen-fuel gas passageways opening to the groove. The tip seating surface is recessed from the flanged edge of the collar.

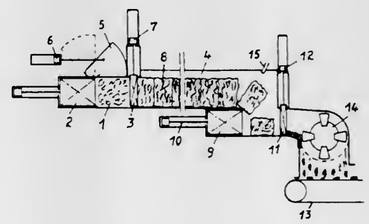
3,643,872
DEVICE FOR SPREADING GRANULAR OR POWDERY MATERIAL
Elwood Lee Smith, Elm City, N.C., assignor to The Lely Corporation, Wilson, N.C.
Filed Oct. 20, 1969, Ser. No. 867,733
Int. Cl. A01c *15/04*
U.S. Cl. 239—655 **19 Claims**

A spreading device including a hopper, a rotatable spreader disc and a hood beneath the hopper, the hood surrounding the disc. Within the hood, turnable feed or distributor rings with outlet ports are positioned between the spreader and the hopper. The hood has a plurality of ejection openings arranged around the disc to receive granular or powdery material which is first passed through the ports in the distributor rings and then propelled by the disc. Outlets in distributor arms are located downstream from the openings at varying distances from the disc. Air inlets are



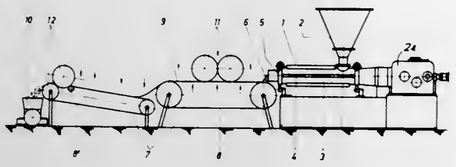
provided in the hood adjacent the spreader disc so that air can be drawn in and expelled by the rotating disc, carrying the granular or powdery material being spread. An internal web of guide segments within the hood divide the openings from one another and assist to dispense even amounts of material received from the hopper. Baffles are located near the outlets to guide ejected material towards the ground.

3,643,873
PROCESS FOR FRAGMENTING SCRAP METAL
Robert George, Liege, Belgium, assignor to George & Cie S.P.R.L., Liege, Belgium
Filed May 27, 1969, Ser. No. 828,283
Claims priority, application Belgium, July 25, 1968, 41957
Int. Cl. B02c *19/12*
U.S. Cl. 241—3 **5 Claims**



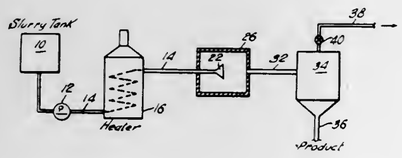
A process for fragmenting scrap metal comprises precompressing the scrap metal into blocks having numerous interstices therein, flowing liquid nitrogen at a temperature between $-\alpha°$ and $-120°$ C. through the interstices to cool and embrittle the blocks, and then compressing the cooled and embrittled blocks to fragment them into pieces of scrap metal. If desired, the fragmented scrap metal may then be seperated according to its size or composition. The process is particularly suitable for fragmenting automobile wrecks and if the scrap separated contains iron and iron alloys, the separating step may be magnetically performed.

3,643,874
PROCESS FOR THE PREPARATION OF INTERMEDIATES OF POLYADDITION RESINS
Peter Franz, Mumpf, and Andreas Maier, Pratteln, both of Switzerland, assignors to Buss A.G., Basel, Switzerland
Filed Sept. 9, 1969, Ser. No. 856,336
Claims priority, application Switzerland, Sept. 13, 1968, 14003/68
Int. Cl. B02c *21/00*
U.S. Cl. 241—3 **5 Claims**



Process for the preparation of polyaddition resins, including proportioning and feeding base compositions in a mixing and kneading machine, mixing them with simultaneous heating or cooling, in a solid and/or liquid state, plasticizing and homogenizing the compositions, expelling the resin mix through a heated die onto a cooling belt, solidifying and preforming the resin mix into loosely connected small pieces, and breaking up as well as grinding the preformed pieces of the resin mix. Optionally crushing may be performed before the breaking and grinding step.

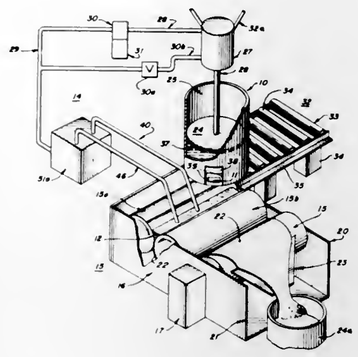
3,643,875
FLUID ENERGY GRINDING METHOD AND SYSTEM
Roger M. Dille, La Habra, and Warren G. Schlinger, Pasadena, both of Calif., assignors to Texaco Inc., New York, N.Y.
Filed June 27, 1969, Ser. No. 837,065
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **7 Claims**



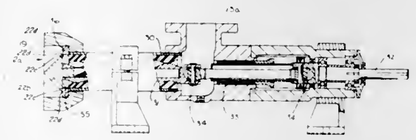
A fluid energy grinding system wherein a stream of a dispersion of solid particles suspended in gas or vapor is accelerated to supersonic velocity in a nozzle having a divergent discharge section sufficient to produce a standing shock wave along the path of flow of solid particles effecting size reduction of particles.

3,643,876
AUTOMATIC APPARATUS FOR SUPPLYING LIQUIDS TO ROLLER-MILLS
Leslie F. Stone, Westchester, Ill., assignor to The Richardson Company, Melrose Park, Ill.
Filed Dec. 11, 1969, Ser. No. 884,057
Int. Cl. B02c *4/28*
U.S. Cl. 241—34 **5 Claims**

An apparatus for automatically controlling the liquid level of a roller mill feed-pool embodying a pressurized vessel containing the liquid to be milled under uniform pressure and control means for regulating the pressure on the liquid to deliver the liquid to the feed-pool as required.



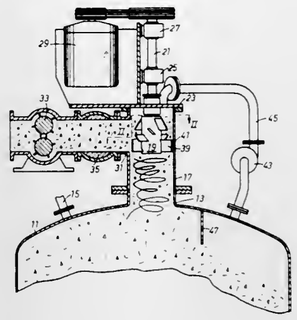
3,643,877
PUMP WITH MACERATOR
George H. Zimmer, Springfield, Ohio, assignor to Robbins & Myers, Inc., Springfield, Ohio
Filed Jan. 28, 1970, Ser. No. 6,445
Int. Cl. B02c *18/06*
U.S. Cl. 241—46.02 **3 Claims**



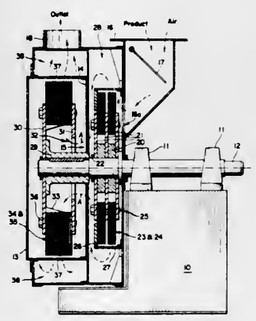
A pump of the progressing cavity type having a direct driven shredding or macerating unit combined therewith for the purpose of shredding or comminuting raw sewage or other large suspended bodies and pumping the fluids with the suspended solids therein to a holding tank and the like, as for example in recreational units such as trailers, campers, boats, and the like. A cutter element is secured to the rotor shaft at the pump intake, and coacts with a stationary cutter element surrounding the cutter intake to reduce the large and suspended solids to a state in which, while suspended in a fluid, they may be pumped.

3,643,878
DEVICE FOR FEEDING DENSE CELLULOSIC PULP INTO A CLOSED CONTAINER
Johan C. F. C. Richter, St. Jean Cap Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden
Filed Mar. 18, 1970, Ser. No. 20,760
Claims priority, application Sweden, Apr. 3, 1969, 4834/69
Int. Cl. B07b *9/00*
U.S. Cl. 241—48 **3 Claims**

A means for fluffing cellulosic pulp that should be treated in a gaseous environment, e.g., bleached with a gaseous bleaching agent, consists of a rotary breaker inserted in an inlet chamber at the top of the container in which the treatment takes place. The breaker comprises a hub carried by a vertical shaft and a number of inclined vanes distributed over the cylindrical face of said hub and having serrated edges working upon a plug of pulp continuously fed into said inlet chamber through a horizontal conduit having its orifice opposite the breaker.

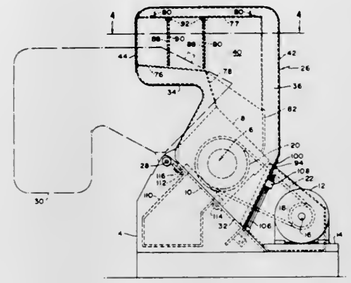


3,643,879
TWO-STAGE HAMMER MILL
Leslie Palyi, Don Mills, Ontario, Canada, assignor to Nicholas Pora
Filed July 10, 1969, Ser. No. 840,691
Claims priority, application Great Britain, July 17, 1968, 34,052/68
Int. Cl. B02c *13/04*
U.S. Cl. 241—55 **10 Claims**



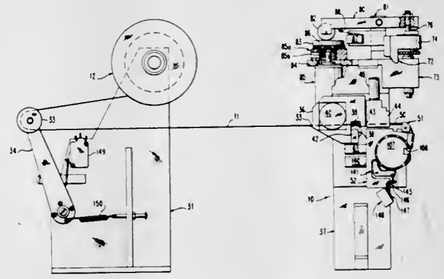
A two-stage rotary hammer mill having first and second rotary hammer mill stages mounted on a common drive shaft and driven together in unison, the first stage producing a semiground product, and the second stage receiving the semiground product and producing a finely ground product, in which the second stage incorporates blower means drawing air through the system and thereby ensuring free flow of product therethrough, the two stages being arranged in a common housing, and product released from the screen of the first stage being collected in a generally annular space and directed into a conduit and delivered to the second stage around the central axis thereof.

3,643,880
MATERIAL CUTTING MACHINE AND SOUND-ABSORBING HOOD THEREFOR
Russell I. Peterson, Jr., Seekonk, Mass., assignor to Cumberland Engineering Company Inc., Pawtucket, R.I.
Filed Aug. 12, 1970, Ser. No. 63,066
Int. Cl. B02c *23/00, 18/00*
U.S. Cl. 241—100 **12 Claims**



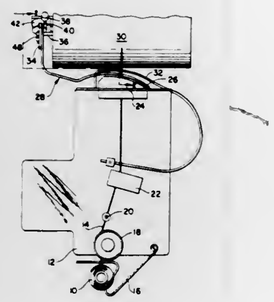
The invention is a machine for comminuting material in which a rotary cutting mechanism is used. A hood is mounted on the machine adjacent the inlet passage thereto, the function of the hood being to minimize the noise caused by the machine when it cuts material. Throughout the machine, additional sound-absorbing means are used at strategic locations to eliminate or minimize the passage of sound from the inside of the total enclosure of the machine to the outside thereof.

3,643,881
APPARATUS FOR WINDING A CORE AND SPLITTING MULTISTRAND WIRES
Karl W. Beumer, Poughkeepsie; Gerard M. Geany, Somers; John A. Haran, Peekskill; Edward P. Hecker; George E. Nyman, and Robert E. Post, Poughkeepsie, all of N.Y., **assignors to International Business Machines Corporation, Armonk, N.Y.**
Filed July 17, 1968, Ser. No. 745,459
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B **17 Claims**



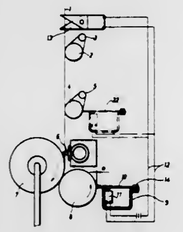
A flat multistrand wire is tightly wrapped around a core through utilization of a shuttle having a passage within which the multistrand wire is disposed during winding. The apparatus includes a device for separating each end of the strands of the wire after the wire has been tightly wrapped around the core.

3,643,882
YARN HANDLING
Donald W. Grant, Warwick, R.I., assignor to Lessona Corporation, Warwick, R.I.
Filed Mar. 9, 1970, Ser. No. 17,790
Int. Cl. B65h *63/00*
U.S. Cl. 242—36 **5 Claims**



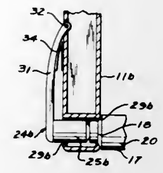
A breakage lever assembly and assembly control for a winder has an electromagnet connected in circuit with an electronic yarn clearer for withdrawing the breakage lever from contact with an advancing strand of yarn when the clearer detects that the yarn is advancing normally. When the clearer detects that the yarn is not advancing normally, the breakage lever is released for movement to a position in the normal yarn path and thereupon performs all of its normal functions in conjunction with the winder control, such as commencement of a knotting cycle to piece up a broken yarn, initiating a second knotting cycle in the event of a mistie and other functions as are well understood in the art.

3,643,883
LAP-DETECTING STOP MOTION
Olivier Wuest, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Aug. 4, 1969, Ser. No. 847,335
Claims priority, application Switzerland, Aug. 8, 1968, 12119/68
Int. Cl. B65h *63/00*
U.S. Cl. 242—36 **12 Claims**



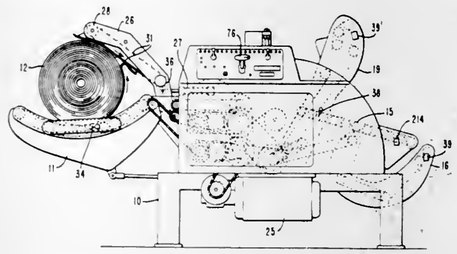
There is disclosed a lap-detecting stop motion for thread transporting rolls of draw-winding, drawtwisting or takeup machines for processing endless filaments. Such stop motion comprises a feeler set closely to the roll surface, the feeler in its rest or idle position being arranged substantially in a plane containing the roll axis, wherein the feeler portion nearest to the roll can be deflected in the direction of the roll circumference.

3,643,884
SPINDLE RELEASE HOLDER FOR ROLL PRODUCTS
Frank M. Curtin, 3747-9 Vista Compana, Oceanside, Calif.
Filed June 8, 1970, Ser. No. 44,100
Int. Cl. A47k *10/22, 10/32*
U.S. Cl. 242—55.2 **3 Claims**



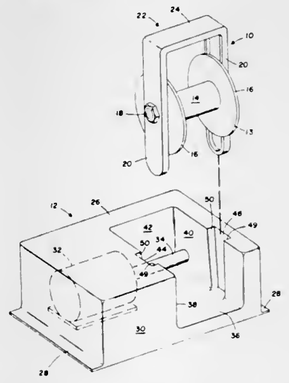
A holder for roll products such as toilet tissue and the like. Such roll products comprise a relatively stiff paper core having a continuous paper web wound thereupon, and the entire roll is rotatably supported by the spindle of a holder so that desired lengths of the web can be withdrawn and separated from the roll. The holder includes a pair of supports provided with axially spaced journal recesses that rotatably support an elongated spindle having bearing journals at the ends thereof which seat within such recesses. The spindle is equipped with spring means biasing the bearing journals away from each other so that they seat firmly within the bearing recesses, and means are provided for releasing the spindle from the supports therefor while the depleted core of such roll remains upon the spindle. The spindle release mechanism includes a reciprocable plunger movable into engagement with one of the bearing journals so as to displace the same from the bearing recess therefor, thereby enabling the core-equipped spindle to be removed from the supports.

3,643,885
CARPET SUPPLY CRADLE AND FEEDER MECHANISM FOR A CARPET MEASURING AND CUTTING MACHINE
Karl K. Keesling, Los Altos, Santa Clara County; Thomas B. Keesling, Los Gatos, Santa Clara County, and Clifford E. Keesling, San Jose; Santa Clara County, all of Calif., assignors to Functional Systems Corporation
Filed Dec. 1, 1969, Ser. No. 881,034
Int. Cl. B65h *17/12, 25/26*
U.S. Cl. 242—55 **2 Claims**



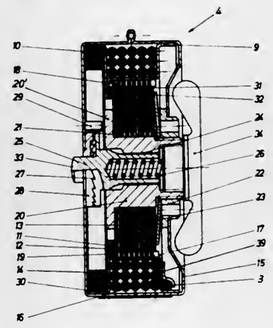
A cradle for supporting and rotating a supply roll of carpeting on a carpet measuring and cutting machine, the cradle drive being reversible to at times wind up the supply roll and at other times to drive the carpet in feed-out direction onto the lead bed of the machine. A cradle trigger is located in the cradle for sensing the free edge of the rug during rotation and operating upon sensing the free edge on the first revolution of the carpet after receipt of a "carpet advance" signal to terminate reverse rotation and initiate forward rotation to unwind the carpet onto the lead bed. Feeder drive belts contact the supply roll and are driven in a direction urging the free edge of the carpet away from the supply roll and onto the lead bed. The feeder belt is subsequently reversed in direction and serves to uncurl and flatten out the trailing edge of the carpet supply roll onto the lead bed when the carpet is fully unrolled.

3,643,886
WATER-SKI-ROPE-RETRIEVING DEVICE
Eldon L. Colton, 366 Brentwood Drive N.E., Cedar Rapids, Iowa
Filed Sept. 4, 1970, Ser. No. 69,701
Int. Cl. B65h *75/40*
U.S. Cl. 242—86.5 A **10 Claims**



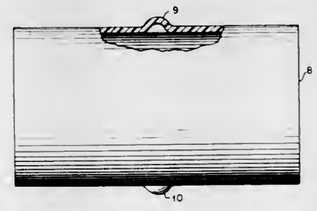
A water-ski tow-rope-retrieving device in which the tow rope is retrieved by winding it around a reel. The reel is not connected to the drive mechanism, but rather is driven by frictional engagement with a rotating shaft or drum. When the rope is to be let out, the reel is disengaged from the drum. The reel is mounted on an operating handle which is used to engage and disengage the reel from the drum and to lift the reel from the device whenever desired. Therefore, a single drive unit can be used with several reels on the same boat for retrieving several tow ropes.

3,643,887
PULLING ASSEMBLY FOR CONNECTING A LOAD TO A PULLING DEVICE
Hans Kuhl, Kornbergweg 12, Plochingen, Germany
Filed May 14, 1969, Ser. No. 824,632
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.3 **14 Claims**



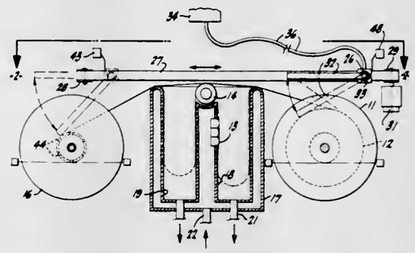
A pulling assembly where a rotary unit is acted upon by a tension-transmitting structure, such as a cable, in such a way as to tend to rotate this rotary unit in response to a pulling force which acts on the cable or other tension transmitting structure. A brake assembly coacts with the rotary unit to resist rotation thereof. Therefore, when the rotary unit is turned the force transmitted thereto will be converted into heat by the braking action.

3,643,888
BOBBIN SLEEVE FOR WINDING OF TEXTILE FIBERS
Louis D. Blue, Wyomissing, Pa., assignor to Essex Chemical Corporation, Myerstown, Pa.
Filed Sept. 11, 1970, Ser. No. 71,497
Int. Cl. B65h *75/26, 75/10*
U.S. Cl. 242—118.32 **4 Claims**



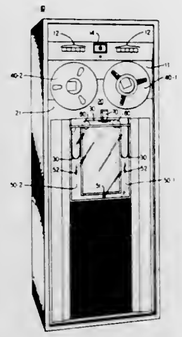
This invention relates to a bobbin sleeve upon which textile fibers, such as those made of glass, can be wound. The sleeve is made of a thermoplastic polymer, such as polypropylene, and is characterized by protrusions formed into the wall of the tube to minimize sliding of the fiber package.

3,643,889
AUTOMATIC TAPE-THREADING SYSTEM AND APPARATUS
Konrad A. Krause, 870 East El Camino Real, Mountain View, Calif.
Filed July 22, 1969, Ser. No. 843,452
Int. Cl. G11b *15/58, 15/66*
U.S. Cl. 242—182 **12 Claims**



A threading system and apparatus for automatically threading flexible tape such as magnetic recording tape through a tape device by a travelling carriage physically gripping a free tape end at a supply location and moving it along a tape traverse path for release at a takeup position. The tape requires no end connector and the free tape end is automatically located and gripped without prepositioning.

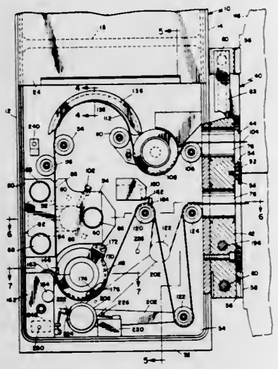
3,643,890
APPARATUS FOR THE AUTOMATIC THREADING OF A FLEXIBLE MEDIUM
Lee J. Milligan, Fairfield, and Douglas M. Mayer, Wayne, both of N.J., assignors to Certex, Inc., Fairfield, N.J.
Filed Nov. 18, 1969, Ser. No. 877,652
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **10 Claims**



A unit for transporting a flexible record-keeping member, such as magnetic tape, with respect to a transducer, such as a read-write head, in which the medium is automatically threaded over a circuitous path from a supply member to a takeup member.

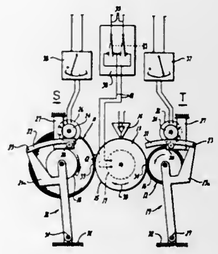
Automatic threading is accomplished despite the circuitry of the tape path by the retracting of the read-write head and using a jet of fluid, such as air, to directly carry the lead end of the tape from a supply reel to a takeup reel. The jet of air emanates from a rectangular aperture to prevent spiraling of the tape as it approaches the takeup reel. The latter includes a vacuum hub that seizes the tape and applies continuous suction during the threading operation. The tape is subsequently directed into its final position, and the read-write head repositioned for "reading" the tape and "writing" on it.

3,643,891
FILM TRANSPORT UNIT
Willard D. Isbell, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.
Filed Nov. 19, 1970, Ser. No. 90,982
Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *15/32*
U.S. Cl. 242—189 **14 Claims**



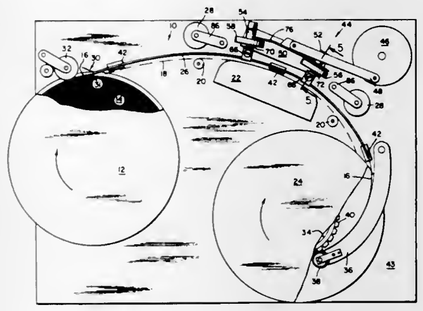
A film transport unit for use as a microfilm camera, or the like, and having quick release means for attachment of a variety of standard film magazines. Film is drawn from the supply magazine and a supply loop is maintained by a drive which grips only the edges of the film, and is advanced incrementally through an exposure gate by an edge gripping capstan driven by a stepping motor. The film loading path is very simple and the guiding elements incorporate means for maintaining constantly precise film advance over long periods of use, without damaging stresses or wear on the film.

3,643,892
RIBBON-FEEDING SYSTEM
Charles A. Vogel, Sunnyvale, and John A. Cuvelier, Mountain View, both of Calif., assignors to Newell Industries Inc., Sunnyvale, Calif.
Filed Aug. 27, 1969, Ser. No. 853,428
Int. Cl. G11b *15/32*
U.S. Cl. 242—192 **5 Claims**



Ribbon-feeding apparatus, e.g., of a type such as a magnetic tape transport, employs a tape drive capstan riding in contact with supply and takeup rolls while the rolls are urged against the capstan. The capstan carries a tire which forms a resilient drive surface to define a ribbon-feeding nip. The drive surface of the capstan is encircled by laterally spaced-apart grooves of a depth and width which drive the rolls at a slower speed than the speed of the driving surface of the capstan in response to application of the compressive forces, i.e., so that the rolls progress "negatively" relative to the direction of rotation of the capstan.

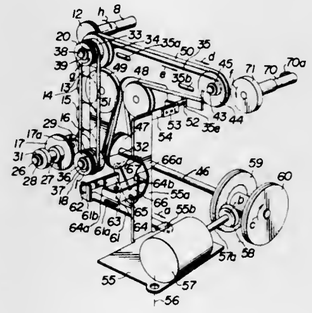
3,643,893
WEB-THREADING APPARATUS
Joseph J. Neff, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Aug. 4, 1969, Ser. No. 847,032
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—195 **9 Claims**



Automatic web threading apparatus providing an unobstructed and continuous temporary threading path between

web supply and takeup stations. A threading track having integral stripper means is normally positioned completely out of the web transport path, and during threading operation the track is caused to move to a position for receiving the web, or a "relatively stiff" leader attached thereto, when supplied by the supply station and for guiding the supplied web or leader to the takeup station.

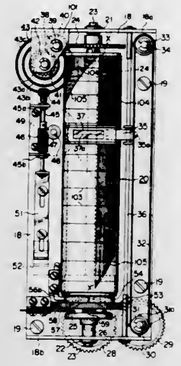
3,643,894
FILM MOVEMENT DIRECTION SWITCHING DEVICE FOR SMALL MOVIE PROJECTORS
Tatsusuke Kadowaki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 21, 1970, Ser. No. 73,726
Claims priority, application Japan, Sept. 29, 1969, 44/77973
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—201 **10 Claims**



A film movement direction switching device, for small movie projectors, includes an externally accessible control knob for switching the direction of rotation of the main shaft of the projector between a normal film feed forward direction and a film rewind reverse direction, as well as to disconnect the main shaft from a driving motor. A spindle driving mechanism is coupled to the main shaft and is automatically drivingly engaged with the takeup reel spindle upon rotation of the main shaft in a normal direction, with the supply reel spindle being idly rotatable, and is automatically drivingly connected to the supply reel driving spindle when the main shaft is rotated in the reverse direction, with the takeup reel spindle rotating idly. In the neutral position of the control, the drive mechanism is disconnected from both spindles. Selectively operable clutch means are provided additionally for rotating the supply reel spindle in the film rewind direction.

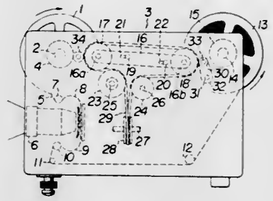
3,643,895
TAPE-RUNNING INDICATOR
Katsuya Atsumi, Tokyo, Japan, assignor to Akai Electric Company Limited, Tokyo, Japan
Filed Jan. 23, 1969, Ser. No. 793,497
Claims priority, application Japan, Jan. 23, 1968, 43/4267
Int. Cl. B65h *61/00;* **G11b** *19/28*
U.S. Cl. 242—201 **3 Claims**

A tape-running display unit for magnetic tape recorder, comprising a rotatable display drum provided with a dark-colored zone and a light-colored zone formed on the cylindrical surface of said drum the zones being defined by a helix and a generatrix, a slitlike window opening for viewing the movement of a part of said helix when said tape and said drum are moved in phase with each other; a selector runner adapted for showing a selected length of travel of said tape; an electrical switch arranged to be controlled by said selector



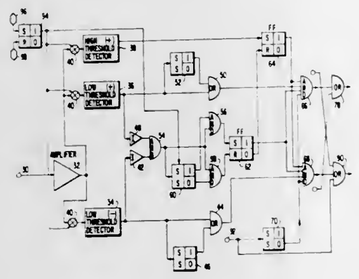
when the tape has travelled the selected length and to control in turn the operation of the tape-reeling mechanism of the tape recorder.

3,643,896
DEVICE FOR SWITCHING BETWEEN FILM ADVANCE AND FILM REWIND IN MOVIE PROJECTORS
Tatsusuke Kadowaki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 10, 1970, Ser. No. 70,696
Claims priority, application Japan, Sept. 20, 1969, 44/74351
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—205 **8 Claims**



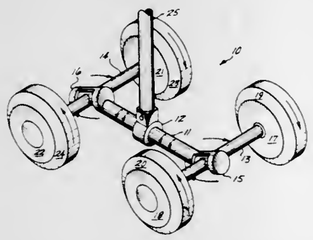
A device for switching between film-advancing and film-rewinding operations of a movie projector, having a main shaft included in the film-driving means, comprises respective wheels secured to rotate with the supply reel-mounting spindle and the takeup reel-mounting spindle. A support is slidably mounted between these wheels, and carries a pair of pulleys rotatably mounted at respective opposite ends thereof and each adjacent a respective wheel. A drive pulley is mounted on the main shaft for rotation therewith, and an endless belt is trained around the drive pulley and the two pulleys on the support. The direction of tension in the belt changes in accordance with the direction of rotation of the main shaft, to shift the support in the direction of the tension to effect driving of a respective spindle wheel by the belt through rotation of the adjacent pulley. A reversing wheel is rotatably mounted between one spindle wheel and its associated pulley. Either the takeup reel or the supply reel is selected automatically for driving in response to the direction of rotation of the main shaft.

3,643,897
NUTATION CORRECTION SYSTEM FOR SPIN-STABILIZED SATELLITE
George B. Johnson, Jr., Santa Clara, Calif., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Oct. 18, 1968, Ser. No. 768,631
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 **5 Claims**



A nutation control system for spin-stabilized satellites in which correction thrusters are cyclically fired by timed pulses generated in response to accelerometer signals. Correction is initiated when the accelerometer output exceeds a high-threshold level and continues until it is reduced below a low-threshold level. The termination point is detected by sampling the slope of the accelerometer signal during a window period in each half-cycle.

3,643,898
METHODS AND MECHANISMS FOR STEERING TRUCK WHEEL AXLES BY A ROTATABLE TRUCK BEAM
Philip C. Whitener, and Robert M. Weigel, both of Seattle, Wash., assignors to The United States of America as represented by the Administrator of the Federal Aviation Administration
Filed Dec. 17, 1969, Ser. No. 885,772
Int. Cl. B64c *25/50*
U.S. Cl. 244—50 **26 Claims**



Methods for steering a truck of wheels, particularly for a heavy vehicle, such as but not limited to aircraft, and mechanisms for carrying out the methods are disclosed comprising two fore-and-aft steerable axles on a truck beam and a truck beam actuator, the steerable axles being pivotally mounted on canted and eccentric ends on the truck beam and responsive to the truck beam actuator or rotation of the truck beam for being rotatable in a horizontal plane so that scrubbing of the tires is prevented and turning forces to steer the landing gear truck are substantially reduced.

Likewise, varying of the canting of the wheel axles' pivotal axes provides turning of all wheel axles about a common center of turning for prevention of skidding of the tires during turns on the ground.

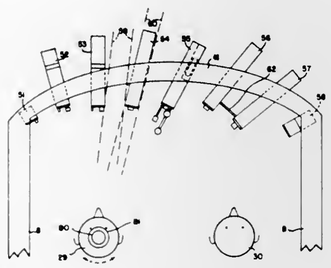
Further, rotation of the truck beam about a tilted axis provides increasing of the steering angle of the truck wheel axles without increasing the truck size.

In addition, retraction of the truck of wheels into a smaller and shallower wheel well results from the eccentricity of the fore-and-aft axle bearings.

Dual usage of the truck beam rotating actuators results in both steering of the fore-and-aft truck wheel axles and for rotating the truck prior to retraction.

Likewise, single axle steering is obtained with a rotatable fore-and-aft extending eccentric shaft.

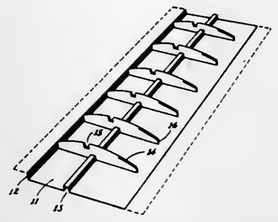
3,643,899
AIRPLANE WITH SPATIAL PANORAMA
Floyd A. Firestone, 172 Clinton Ave., Dobbs Ferry, N.Y.
Original application Mar. 7, 1969, Ser. No. 806,346, now Patent No. 3,572,615, which is a continuation-in-part of application Ser. No. 660,700, Aug. 15, 1967, now abandoned , Continuation-in-part of application Ser. No. 616,056, Feb. 14, 1967, now abandoned. Divided and this application Nov. 13, 1969, Ser. No. 876,434
Int. Cl. B64c *1/00*
U.S. Cl. 244—118 P **16 Claims**



A fixed wing airplane having a substantially transparent fuselage, which in straight and level flight permits both the pilot and copilot to see the entire ground and sky in all directions and from nadir to zenith, with the exception of roughly two steradians of solid angle in the quadrant above and behind him. The necessary opaque struts which cross the transparent areas are so oriented and dimensioned that the distant scene as seen through the major areas of the plane appears to be continuous, advantage being taken of the fact that the pilot has two eyes whose lines of regard are not simultaneously occulted by narrow struts properly spaced and oriented. Utilizing the same fact of vision, instrument arrays and stressed skin structures are described, that the pilot can see through.

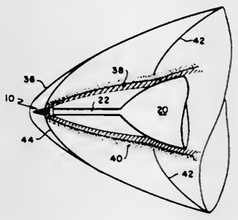
3,643,900
JIG PANEL FOR AIRFOIL
John P. Maloney, c/o World Engines 8960 Rossash Ave., Cincinnati, Ohio
Filed Mar. 2, 1970, Ser. No. 15,772
Int. Cl. B64c *3/20*
U.S. Cl. 244—123 **4 Claims**

A formed jig panel and method of fabricating therefrom an aircraft wing, aileron, flap, horizontal stabilizer, vertical stabilizer, or fuselage. The panel is formed with channels, into which spars are secured, the panel becoming an integral part of the finished structure and forming the top or bottom surface thereof. The configuration of the leading and trailing ends of the jig panel is such as to act as a locator and support for leading and trailing edge members which are secured



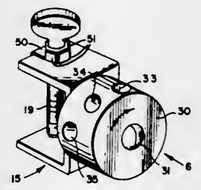
thereto. Ease of assembly, accuracy and proper alignment are assured.

3,643,901
DUCTED SPIKE DIFFUSER
Isidor C. Patapis, 4853 Cardell Ave. Apt. 1119, Bethesda, Md.
Filed May 27, 1970, Ser. No. 40,948
Int. Cl. B64c *23/04*
U.S. Cl. 244—130 **7 Claims**



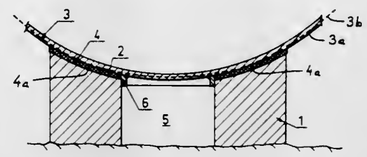
A ducted spike diffuser for reducing forebody drag and rain erosion of blunt bodies operating at supersonic speeds. The spike has a directed conical front section to receive high-pressure oncoming air. This air is ejected at substantially right angles to the freeflow from an annular gap at the rear of the conical front section. This not only decreases pressure drag on the conical section but causes the conical bow shock wave-shear layer to occur radially further from the blunt body, resulting in better rain dispersion and decreased erosion of the blunt body.

3,643,902
AUTOMOBILE STAFF HOLDER
Emil V. Gualano, 10711 Beverly Blvd., Whittier, Calif.
Original application Oct. 17, 1969, Ser. No. 867,304, now Patent No. 3,540,685. Divided and this application July 9, 1970, Ser. No. 53,390
Int. Cl. G09f *17/00*
U.S. Cl. 248—40 **4 Claims**



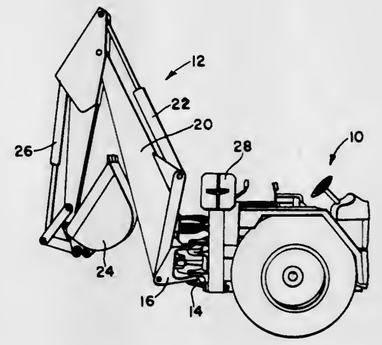
A staff holder having a C-shaped member for attachment onto an elongated flange portion of an automobile. A socket device is mounted on and movable relative to the C-shaped member to present a vertical socket for vertically receiving a staff, regardless of the orientation of the C-shaped member. One embodiment includes a socket pivotally attached to the screw of the C member and another embodiment includes a rotating element attached to the C-shaped member and having a plurality of sockets therein, each at a different angle of inclination.

3,643,903
BASE FOR A SPHERICAL CONTAINER
Per-Olof Eriksson, Sandviken, and Finn Borsum, Degerfors, both of Sweden, assignors to Uddeholms Aktiebolag, Uddeholm, Sweden
Filed Aug. 21, 1967, Ser. No. 662,176
Claims priority, application Sweden, Aug. 25, 1966, 11505/66
Int. Cl. F16m *13/00*
U.S. Cl. 248—146 **4 Claims**



When mounting a big spherical container on a base or foundation the bottom of the container has often to be provided with reinforcements. Such reinforcements can be omitted if the upper surface of the base has the general shape of a sphere, the radius of said sphere exceeding the radius of the container to such an extent that the weight of the container is substantially evenly distributed on the base when the container is filled to its maximal weight.

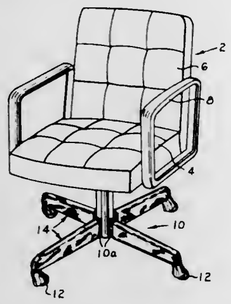
3,643,904
PIN-MOUNTING MEANS
Larry Gene McMullen, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Dec. 8, 1969, Ser. No. 882,925
Int. Cl. F16h *21/44*
U.S. Cl. 248—289 **7 Claims**



Means for mounting a pin between two spaced mounting plates utilizing a pin having tapered end portions, each of which is fitted with a complementary, internally tapered sleeve, each sleeve, in turn, being received in an appropriate aperture in its respective mounting plate. The sleeve received

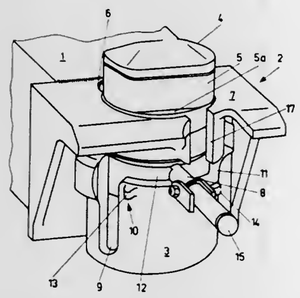
in the first mounting plate is provided with a shoulder to restrict its movement in a direction away from the second mounting plate, while the sleeve received in the second mounting plate is provided with a lock mechanism to urge the pin toward the first mounting plate and thus hold it rigidly in accurate alignment between the two plates.

3,643,905
PROTECTIVE SLEEVE FOR CHAIRS
Bernice V. Kint, 1600 S. Eads, #215 South, Arlington, Va.
Filed May 5, 1970, Ser. No. 34,659
Int. Cl. A47b 95/04
U.S. Cl. 248—345.1 2 Claims



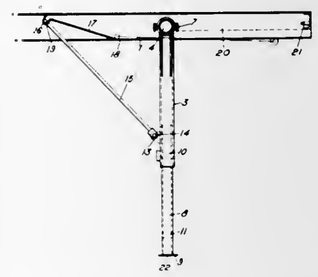
Decorative sleeve means for protectively covering the radial leg portions of the base of a swivel-type chair, characterized in that the sleeve means are provided at one end with fringe means that conceal the extremity of the leg portion and protect an occupant against damage thereby. Preferably the sleeve means comprises a tubular body consisting of a stretch fabric formed of a synthetic fiber. At least one end of the sleeve is provided with a resilient portion of reduced diameter adapted to tightly engage the leg portion upon which the sleeve is mounted.

3,643,906
RETRACTABLE PIVOT BOLT ARRANGEMENT
Hans Werner, deceased, late of Neu-Isenburg, Germany (by Carl Staub, Administrator); Baldur Koschinat, and Otto Vormbaum, both of Neu-Isenburg, all of Germany, assignors to Jost-Werke GmbH, Frankfurt am Main, Germany
Filed Sept. 3, 1969, Ser. No. 870,590
Claims priority, application Germany, Sept. 4, 1968, P 17 80 352.0
Int. Cl. A62b 35/00
U.S. Cl. 248—361 5 Claims



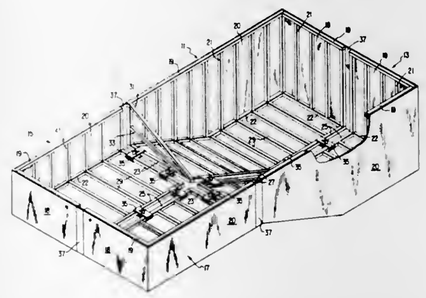
A pivot bolt arrangement for securing a container having socket-type openings to a housing mounted on a chassis frame support is arranged to be retracted into the housing when not in use. The housing forms a hollow or open space into which the bolt is retracted. The bolt extends upwardly through an opening in the top of the housing with its head resting on a collar. When the bolt extends through the socket-type opening in the container, it can be pivoted relative to the collar for securing the container to the housing. A pivot handle is attached to the bolt for rotating it and for retracting it into the housing.

3,643,907
LOAD-CARRYING VEHICLES
Rowland Herbert Ham, 10, Park Lane, Twyford, Berkshire, England
Filed Nov. 13, 1969, Ser. No. 876,248
Claims priority, application Great Britain, Nov. 19, 1968, 54,921/68
Int. Cl. B60s 9/00
U.S. Cl. 248—439 3 Claims



A demountable vehicle body with supporting legs, pivoted to the vehicle body frame with a stay pivoted to the lower portion of each leg and at its upper end having a pin moving along an inclined element fixed to the frame and engaging in a recess in the track in the erected position of the leg.

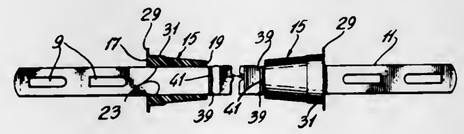
3,643,908
APPARATUS FOR CASTING LARGE MONOLITHIC STRUCTURES
Randolph Neil Laing, 4500 Richmond Henrico Turnpike, Richmond, Va.
Original application Apr. 2, 1968, Ser. No. 718,065, now abandoned. Divided and this application Apr. 10, 1970, Ser. No. 27,371
Int. Cl. E04g 11/02
U.S. Cl. 249—27 19 Claims



This disclosure describes a method and apparatus for casting concrete swimming pools, tanks or walls, etc. In the below-the-ground applications, the preferred method

generally comprises the steps of: excavating a hole in the earth; placing inner permanently prebraced forms in the hole; aligning the forms in spaced relationship with the sides of the hole; locking the forms together in an open position; anchoring the forms in the hole; filling open spaces in the sides of the forms; pouring concrete between the forms and the sides of the hole; disconnecting the forms; closing the forms; removing the forms; and, pouring a bottom. The apparatus is adapted to carry out the method and generally comprises a plurality of inner permanently prebraced form sections. Each form section includes outside wall surfaces that define the inner walls of the pool, or the like. These form sections are braced against inner or center brace members. The inner brace members of each form section are locked to inner brace members of other form sections in a separated, predetermined relationship. Also included are means for filling wall spaces occurring between the wall surfaces of adjacent form sections; and, where applicable, means for attaching the form sections to the bottom of a hold. In addition, in connection with swimming pools means are provided for forming a coping at the upper edges of the wall surfaces of the form sections.

3,643,909
PLASTIC PLUGS FOR USE IN CONCRETE FORMS
Louis Philippe Brosseau, Ville D'Anjou, Montreal, Quebec, Canada, assignor to Formex Ltd., Cite Jacques-Cartier, Quebec, Canada
Filed Aug. 15, 1969, Ser. No. 850,493
Int. Cl. E04g 17/06
U.S. Cl. 249—41 2 Claims



A plastic plug for use with a tie bar of concrete wall forms which is made of a plastic frustoconical body having an outer larger end intended to be applied against the inner surface of a form panel and having an inner smaller end that is embedded in the concrete of the wall. The plastic body is formed on the inside with a longitudinal through passage having a shape and size to slidably and snugly receive one end of a tie bar. The inner end of the body is closed but for the opening created by the passage so as to prevent entry of concrete inside the body. The outer end of the body has a circumferential sealing flange intended to be applied against the inner surface of a form panel to prevent entry of concrete inside the plug body.

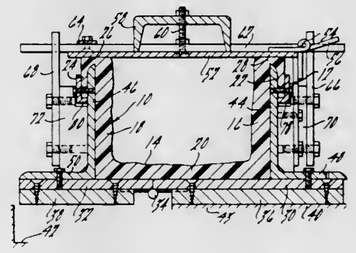
In combination with this plug, a flat tie bar for holding concrete form panels in position and formed at one end with a pair of notches each provided along one of the two edges of the bar and opposite one another. A resilient ring pressed into the notches for abutment by the plug, said notches and ring being spaced from the end of the bar a distance such that the plug outer surface and the sealing flange may be slightly pressed, in use against the inner surface of a form panel.

3,643,910
INFLATABLE FORMS
Haim Helfetz, 24 Shderot Hazvi, Haifa, Israel
Filed Mar. 7, 1969, Ser. No. 805,143
Claims priority, application Israel, Mar. 7, 1968, 29599/68
Int. Cl. B28b 7/32
U.S. Cl. 249—65 13 Claims

Inflatable forms for use in the construction of shells, such as shells used in building, from material such as concrete, plastic materials or the like which is cast or gunned on the form after the latter has been inflated. In particular the invention deals with base ring structures for use with such forms.

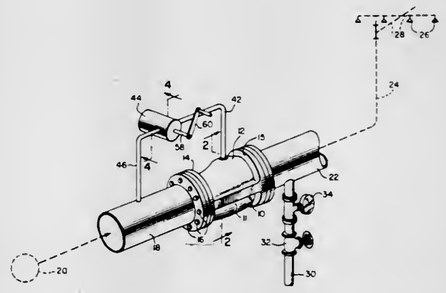


3,643,911
PLASTIC MOLDING APPARATUS
Glenn J. Reid, Bloomfield Hills, Mich., assignor to Williams Products, Inc., Troy, Mich.
Filed Aug. 24, 1970, Ser. No. 66,401
Int. Cl. B29c 7/00, 5/00
U.S. Cl. 249—170 7 Claims



A mold assembly for use in molding foam plastic products such as simulated beams. The assembly includes a rubber mold liner and a steel jacket or carrier in which the liner is confined. The carrier is hinged so that opposite sides of the liner can be inclined away from one another to facilitate the removal of the molded product from the liner.

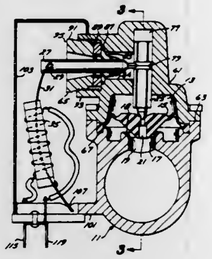
3,643,912
DYNAMIC SHUTOFF VALVE
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation
Filed Aug. 11, 1969, Ser. No. 848,986
Int. Cl. F16k 7/07
U.S. Cl. 251—5 8 Claims



A shutoff valve for main supply conduits in fluid-handling systems, such as fixed fire protection systems, where it is im-

perative that the supply conduit remain open at all times except when repairs and other maintenance operations require the system to be shut off. The valve is biased open and includes an actuator which moves the valve to and maintains it in a closed position in response to an energy input, the cessation of which effects return movement of the valve to its normal open position.

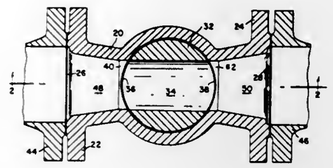
3,643,913
MODULATING VALVE
Harold A. McIntosh, South Pasadena, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 28, 1969, Ser. No. 853,728
Int. Cl. F03g *7/06*
U.S. Cl. 251—11 **7 Claims**



A modulating valve for controlling fluid flow in response to variance in a parameter and comprising a valve body having a flow port and a control chamber. One wall of the control chamber includes diaphragm which carries a poppet valve for seating over the flow port in response to pressure in the control chamber. A bleed passage communicates upstream pressure to the control chamber, and an exhaust passage relieves pressure from the control chamber. A plug is provided to selectively block flow through the exhaust passage, thereby to maintain the control chamber pressurized and to seat the poppet valve on the flow port. Positioning of the plug is controlled by an electrical control means which includes a thermally responsive element coupled with said plug and responsive to a parameter for adjusting the position of such plug to vary the pressure in said control chamber to control the positioning of said poppet. The thermally responsive element may be in the form of a thermostatic blade which has one end coupled with the plug and its opposite end constrained by the valve body to form an arcuate configuration. Such blade may then be heated by a heat motor having current therethrough controlled by a variable resistor including adjacent lengths disposed in heat exchange relationship with one another whereby expansion or contraction of the resistor, by means responsive to variations in said parameter, will vary the spacing and therefore the rate of mutual heat exchange between such lengths.

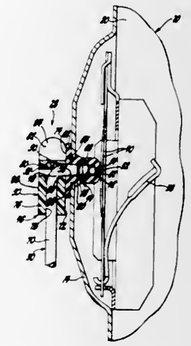
3,643,914
VALVE FLOW TRANSITION
Earl A. Bake, Pittsburgh, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 815,149, Apr. 10, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,779
Int. Cl. F16k *5/02, 5/04*
U.S. Cl. 251—124 **18 Claims**

A valve construction in which the flow transition region extending from a valve port to the end of the valve body comprises a diffuser section diverging to give cross-sectional area change equivalent to that produced in a cone with an included cone angle of from 6° to less than 20° from the port to a location at or near the end of the body where it terminates



in an abrupt discontinuous section which enlarges the flow transition region substantially to the flow area of the conduit to which the valve is connected.

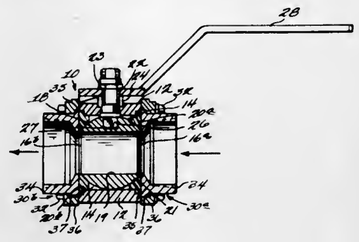
3,643,915
ELBOW COUPLING FOR LEVELER EXHAUST CONDUIT
Joseph W. Wanner, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 7, 1970, Ser. No. 78,844
Int. Cl. F16l *5/02;* **F16f** *9/04, 9/50*
U.S. Cl. 251—148 **5 Claims**



In preferred form, a coupling assembly including a resilient seal element located through the cylindrical outer movable wall of a pneumatic leveler unit for sealing an opening therein. An elbow coupling element has a longitudinal opening through a base portion thereof, a slotted head with shoulders thereon which cooperate to define a tube elbow support and a flat surface on one side thereof supported against the seal element to hold it tightly against the wall. The coupling element and the valve element are held together by a flexible tube that has one end directed through the valve element to be held in engagement therewith; an elbow portion supported by the elbow coupling element and a tube end maintained by the elbow coupling in parallelism with the outer surface of the cylindrical wall.

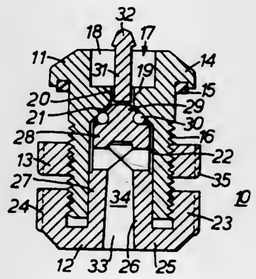
3,643,916
BALL VALVE AND PIPE FLANGE ASSEMBLY
George R. Sandenburgh, Wapping, Conn., assignor to Contromatics Corporation, Rockville, Conn.
Filed May 29, 1969, Ser. No. 829,078
Int. Cl. F16k *5/06*
U.S. Cl. 251—151 **5 Claims**

A ball valve assembly is described in which the end pieces are made of two separate pieces rather than being single integral members. Each end piece comprises a cylindrical insert made of a corrosion-resistant material having an end thereof secured in an abutting relationship with the valve body by a flange member made of a powdered metal or a casting or forging of a metal less precious than the cylindrical insert. Each cylindrical insert has an annular projection



around the exterior surface thereof which mates with an annular groove in the opening in the flange member which receives the cylindrical insert, and the annular projection on the insert has a machined indent which matches with a corresponding projection in the flanged member to prevent rotation of the insert with respect to the flange member.

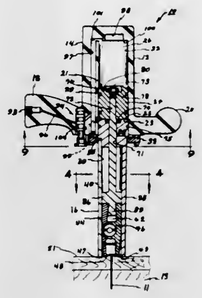
3,643,917
PLASTIC DRAIN COCK
Graham Ernest Griffiths, Horsham; Roger Keith Geiger, Shoreham, and John Walter Miles, East Grinstead, all of England, assignors to Shipston Engineering Company Limited
Filed May 25, 1970, Ser. No. 39,957
Int. Cl. F16k *31/50*
U.S. Cl. 251—215 **3 Claims**



Drain cock means including threadably connected first and second members, characterized in that the first member contains a first passage that is open at one end and is closed at the other end by the second member, said second member having a sealing portion adapted to engage the first member to close the drain cock. The second member includes also a spigot-forming portion that extends through said first passage and includes an enlarged end engageable with said first member to prevent or hinder the members from being completely detached from each other.

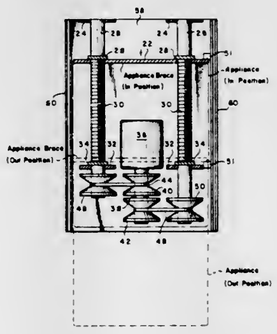
3,643,918
NAIL-EXTRACTING DEVICE
Rollo G. Ellis, Birmingham, Mich., assignor to Rollo G. Ditty and Gerald T. Gilleran, Detroit, Mich., part interest to each
Filed Dec. 15, 1969, Ser. No. 885,042
Int. Cl. B25c *11/00;* **B66f** *15/00*
U.S. Cl. 254—19 **15 Claims**

A device operable to remove nails, spikes or the like from any material within which said nails or the like may be driven, comprising a pneumatically operated impact member drivingly engaging a pair of pivotally mounted jaws and adapted to reciprocate the jaws between a first position in



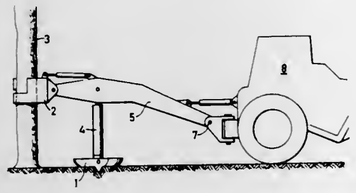
which the jaws are pivoted relative to one another to engage the head of the nail and a second position in which the jaws withdraw the nail from the material.

3,643,919
SCREW-DRIVEN SUPPORT FOR APPLIANCES OR THE LIKE
Andrew G. Sothen, 24 West National Drive, Newark, Ohio, and Richard S. Spaulding, 887 Woodhill Drive, Columbus, Ohio
Filed Oct. 13, 1970, Ser. No. 80,349
Int. Cl. B66f *3/08, 3/18*
U.S. Cl. 254—98 **4 Claims**



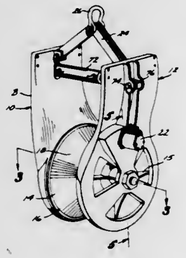
An apparatus for supporting and moving a major kitchen appliance to and from a given position. An electric motor operatively connected to a pair of screwjacks that are attached to the appliance readily facilitate the moving of said appliance a predetermined distance from its initial or original position. The motor is capable of rotatably driving the screwjacks in a forward or reverse direction to permit the appliance to be moved and then returned to its initial position.

3,643,920
PROCEDURE AND DEVICE FOR FELLING OF TIMBER
Lars Harald Widegren, Arent Frapegatan 31, Kiruna, and Tage Oskar Keskitalo, Knavagen 9, Tuolluvaara, both of Sweden
Filed Mar. 17, 1969, Ser. No. 807,755
Claims priority, application Sweden, June 28, 1968, 8943/68
Int. Cl. B66f *3/00*; A01g *23/08*
U.S. Cl. 254—124 2 Claims



Timber-felling method according to which the tree is drawn up with its roots by a mechanical device, the tree being first pulled out of the ground in a vertical direction and thereafter prized at an increasing angle thereto.

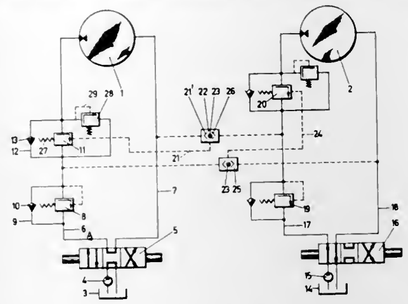
3,643,921
POWER BLOCK
Mario J. Puretic, 259 6th Ave. N., Monte Cristo Isle, Tierra Verde, Fla.
Continuation of application Ser. No. 715,926, Mar. 25, 1968, now abandoned. This application June 9, 1970, Ser. No. 66,598
Int. Cl. A01k *73/06*
U.S. Cl. 254—138 12 Claims



An improved power block for pulling a fishing net from a submerged expanded fish-catching position onto the deck of a fishing boat in a gathered-together position. The improved power block includes a spool having a pair of outwardly tapering spool halves, the proximate sides of which define a generally V-shaped gap that frictionally receives the fishing net. The spool halves are relatively tiltable for varying the angle of the gap to thereby accommodate varying bulks of the net passing through the gap and also varying friction requirements. The improved power block may either be suspended above the deck of the fishing boat or alternatively may be mounted on such deck.

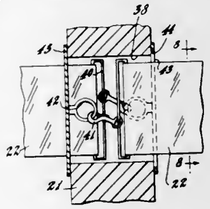
3,643,922
DEVICE FOR THE CONTROL OF THE SHIFT MOVEMENTS OF A FLOATING BODY
Franciscus Henricus Van Der Linde, Wassenaar, Netherlands, assignor to N. V. Industrieele, Handelscombinatie, Netherlands
Filed June 30, 1969, Ser. No. 837,632
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 2 Claims

A suction dredger comprising a floating body carrying a suction pipe having a rotatably driven cutter at the lower end thereof and hydraulically operated winches to haul and veer the suction pipe, is characterized by means to limit the braking action on the veering winch when the other winch is hauling, and to increase the braking action on the veering winch when the load on the hauling winch decreases below a



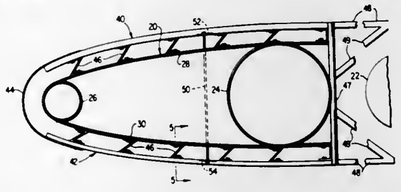
predetermined value. In the case of hydraulically operated winches, this is done by providing throttle valves in the fluid circuits of the winches, with each throttle valve responsive to the pressure in the high-pressure branch of the circuit of the other winch.

3,643,923
PADDOCK
Christian H. Kirchhoff, Jr., P.O. Box 286, Freehold, N.J.
Filed July 15, 1969, Ser. No. 841,942
Int. Cl. E04h *17/18*
U.S. Cl. 256—25 3 Claims



An improved paddock for conditioning of horses and comprising a plurality of anchor sleeves positioned at predetermined spacing, removable posts for insertion in these anchor sleeves and removable to other anchor sleeves to relocate the paddock, an elastic plastic stringers connecting the posts and defining the outline of the paddock.

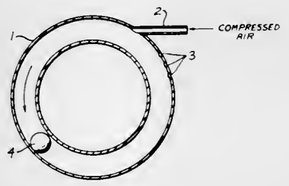
3,643,924
HIGHWAY SAFETY DEVICE
John C. Fitch, Falls Village, Conn., assignor to Fibco, Inc., Hartford, Conn.
Filed Sept. 24, 1970, Ser. No. 75,074
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 10 Claims



A highway safety device for deflecting or decelerating a vehicle as it approaches a highway hazard comprising a

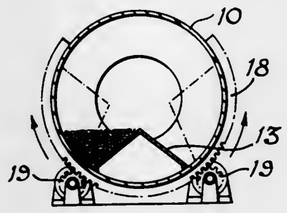
deformable container, the lower portion of which is filled with a low mass, collapsible core structure, and the upper portion of which contains a high-density dispersable mass, such as sand. In one form the device includes an attached or free-standing external guard rail. An impact attenuation system is also provided including the deformable container and an array of separate sacrificial containers each filled with a dispersable mass.

3,643,925
PNEUMATIC VIBRATOR
Phillipp Uebel, Munich, Germany, assignor to Wacker-Werke KG, Munich, Germany
Filed Sept. 4, 1969, Ser. No. 855,247
Claims priority, application France, Sept. 10, 1968, 165600
Int. Cl. B06b *1/18*
U.S. Cl. 259—1 R 3 Claims



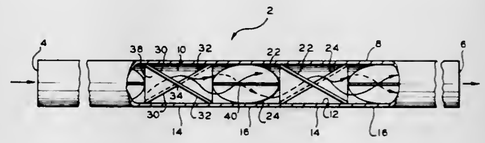
Method and apparatus for compacting concrete and similar masses according to which the medium to be compacted is, by means of a pressure medium, actuated eccentric mass circulated in a tubular housing with circular cross section, subjected to oscillations.

3,643,926
APPARATUS FOR THE TREATMENT OF PARTICULATE SOLIDS
Alan Grieve, Bramhall, England, assignor to Simon-Carves Limited, Cheshire, England
Filed Nov. 5, 1970, Ser. No. 87,051
Claims priority, application Great Britain, Nov. 18, 1969, 56,296/69
Int. Cl. B01f *13/00*
U.S. Cl. 259—2 11 Claims



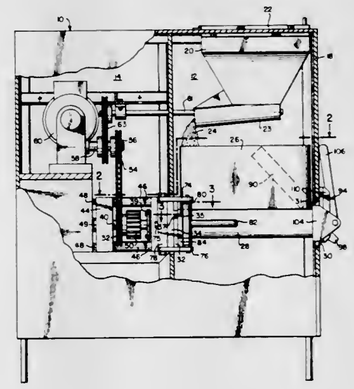
Apparatus for the treatment of particulate solids comprises a vessel disposed with its longitudinal axis in a horizontal or inclined direction and adapted to receive the material to be treated at one end for discharge at the other end after passage therethrough, the vessel having a longitudinally extending inwardly directed protuberance in its lower part and being mounted for oscillatory movement about a longitudinally extending axis and means for effecting said movement whereby material passing through the vessel is repeatedly transferred from side-to-side of said inwardly directed protuberance.

3,643,927
STATIONARY MIXTURE AND METHOD FOR MIXING MATERIAL
Ross A. Crouch, Borger, Tex., assignor to Phillips Petroleum Company
Filed Oct. 15, 1970, Ser. No. 81,080
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 14 Claims



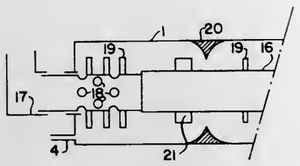
A conduit has at least first and second pairs of material guiding plates angularly disposed therein with each plate pair attached to a separate wall means for separately dividing a material stream and individually rotating and mixing each stream portion passing therethrough.

3,643,928
FOOD MIXING MACHINE
Richard A. Stollman, Cheltenham, Pa., and Vincent N. Cedrone, Marlton, N.J., assignors to Fantastic Fudge, Inc., New York, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,403
Int. Cl. B01f *7/08*, *15/02*
U.S. Cl. 259—6 7 Claims



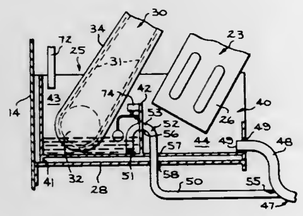
Mixing and extruding apparatus for the preparation of a confection comprises front and rear bearing blocks in which two axles are journaled, mix extrude screws detachably secured to said axles and extending into a mixing chamber, and means for detachably clamping the mixing chamber to the front bearing block. The mixing chamber includes a barrel in which a recirculation plate is positioned to rotate the mix back into the screws for continuous mixing and extruding. A slidable gate can be moved to open an outlet aperture in the mixing chamber so that the mixture can be expelled from the chamber by the screws.

3,643,929
APPARATUS FOR THE PREPARATION OF AGGLOMERATES
Bernardus B. Quist, and Jacobus A. J. Smit, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,461
Claims priority, application Netherlands, Feb. 26, 1969, 6902962
Int. Cl. B01f 7/04
U.S. Cl. 259—9 5 Claims



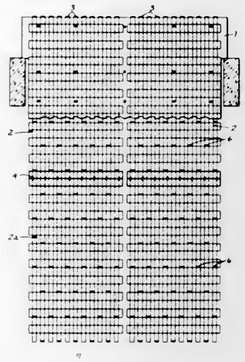
Apparatus for the preparation of agglomerates of one or more solid substances from a suspension thereof in a liquid with a density lower than that of the agglomerates. The apparatus includes an oblong, substantially cylindrical vessel which is provided near one of the ends with a supply for the suspension of the solid substances, and, if desired, with a supply for one or more auxiliary substances, near the opposite end, with a discharge for liquid and agglomerates. A stirring device consisting of a rotatable shaft is provided in the vessel which is in a coaxial position thereto and to which a number of stirring elements are attached. An annular baffle is disposed in the proximity of at least one, but at most half of the total number of those stirring elements, and on the downstream side thereof, perpendicular to the centerline of the vessel and fastened to the wall thereof.

3,643,930
APPARATUS FOR ADDING MOISTURE TO AIR
James L. Schulze, Sr., Middletown, Ky., assignor to General Electric Company
Filed May 4, 1970, Ser. No. 34,495
Int. Cl. B01d 3/04
U.S. Cl. 261—97 6 Claims



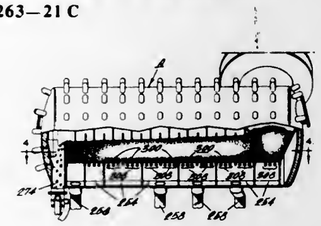
Improved apparatus is provided for adding moisture to air. The apparatus includes hollow cabinet means, having an air inlet and outlet, and humidifier means for adding moisture to an air stream flowing between the inlet and outlet. The humidifier means includes evaporative media means mounted for movement across the air stream and through a moisture reservoir that is supplied with liquid, such as tap water or the like. In accordance with the present invention, means are provided for purging or draining fluidized material, such as tap water and the mineral salts precipitated therefrom, from the reservoir and these drain means include a fluid inlet that is connected to the reservoir via siphon means comprising conduit means including an inverted generally U-shaped section.

3,643,931
SPRAY SYSTEM FOR COOLING TOWERS
Herbert Henning, Langenberg; Werner Alt, Bochum, and Paul Reiter, Hattingen, all of Germany, assignors to Maschinenbau-Aktiengesellschaft Balcke, Bochum, Germany
Filed Nov. 19, 1969, Ser. No. 878,014
Claims priority, application Germany, Nov. 19, 1968, P 18 09 605.4
Int. Cl. B01f 3/04
U.S. Cl. 261—111 6 Claims



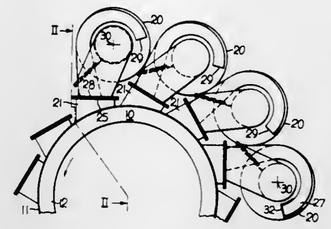
A trickling assembly for cooling towers, according to which lattice means are supported by trickling plates while at least a portion of said lattice means extends to a level lower than that of said trickling plates, said portion carrying spray slats arranged in a vertically spaced relationship to each other.

3,643,932
METHOD AND APPARATUS FOR CALCINING PARTICULATE MINERAL MATERIALS
Bolton L. Corson, Philadelphia, and Budd R. Royer, Lansdale, both of Pa., assignors to G. & W. H. Corson, Inc., Plymouth Meeting, Pa.
Filed Apr. 3, 1970, Ser. No. 25,392
Int. Cl. F27b 3/06, 15/00
U.S. Cl. 263—21 C 11 Claims



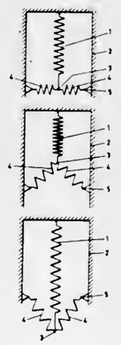
A method and apparatus for the improved calcining of particulate mineral materials adapted particularly for the vibratory type kiln wherein a bed of particulate material is intermittently vibrated or reciprocated during the burning of a gaseous fuel therein. In the present invention, gaseous fuel and preheated air are separately introduced into the particulate material bed at a plurality of regularly spaced locations. This permits a uniform penetration of the air and fuel into the interstices of the particulate material and a consequent uniform burning of the fuel throughout the material bed. As a result, a deeper bed may be maintained, and a more uniform product is obtained at a faster rate and with lower fuel consumption.

3,643,933
COOLER FOR ROTARY KILN
Daniel McDonald, Beaconsfield, Quebec, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 5, 1970, Ser. No. 87,246
Int. Cl. F27b 7/02
U.S. Cl. 263—32 4 Claims



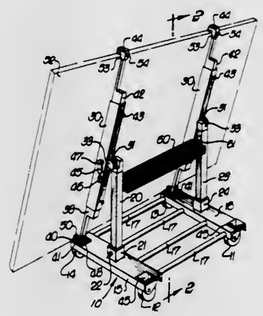
A plurality of material cooling tubes are attached in parallel alignment around the periphery of the material discharge end of a rotary kiln. An oblique passage is provided from each tube to the interior of the kiln for conducting air from the tube to the kiln. A first duct is provided for receiving hot material from the kiln. The first duct is within the oblique passage and extends from the kiln a predetermined distance to a terminal portion thereof intermediate the kiln and tube. A second duct is provided which has a first end portion connected to the terminal portion of the first duct and the second duct projects out of the oblique passage to be exposed to surrounding atmosphere. The second duct has a second end portion connected to the tube. The second duct is a spiral that turns away from the adjacent end of at least about 180° to where it discharges material into the tube and the tube projects through the space inwardly of the spiral duct toward the adjacent discharge end of the kiln. The spiral duct, being exposed to atmosphere, is cooled and material therein is cooled, to reduce thermal stress in the assembly.

3,643,934
RESILIENT SYSTEM WITH COMPENSATING DEVICE FOR VARIABLE FORCE EXERTED THEREBY
Cornelis Bordes, Bloemendaal, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands
Filed Dec. 4, 1969, Ser. No. 882,210
Claims priority, application Netherlands, Dec. 4, 1968, 6817380
Int. Cl. F16f 15/02
U.S. Cl. 267—155 6 Claims



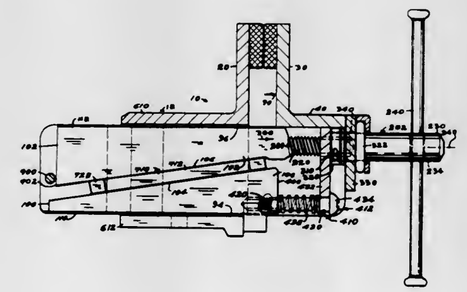
A mechanical or fluid spring acts with a force that varies according to its extension. These force variations are compensated by a compression spring that acts in concert with the main spring between overcenter positions in which the compression spring acts with or against the main spring. Preferably, there is an opposed pair of compression springs whose forces act toward and balance each other in the overcenter position.

3,643,935
DOOR-HANGING WORKBENCH
Archie Y. Bell, 1415 E. Mountain St., Glendale, Calif.
Filed Oct. 2, 1969, Ser. No. 863,050
Int. Cl. B25b 1/22; A47f 5/12
U.S. Cl. 269—16 9 Claims



A door-hanging workbench consisting of a chassis mounted on wheels for supporting a door in one position or another while cutouts are made on one side for hinges, on the other side for mounting such hardware has knobs, latch bolts and locks. Horizontal carriers support and clamp the door on the bench and are tiltably mounted on upright supports so that the door can be held with either edge uppermost or with the flat side horizontal. The carrier is adjustable so that the same workbench can accommodate doors of various different sizes.

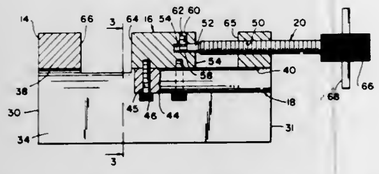
3,643,936
VISE
John L. Hostetter, Murray, Nebr. 68409
Filed Oct. 6, 1969, Ser. No. 863,928
Int. Cl. B25b 1/02
U.S. Cl. 269—190 3 Claims



A vise having a frame on which a stationary jaw is mounted, a sliding carriage mounted in said frame in a manner for movement of a movable jaw on the carriage to move toward and away from the stationary jaw, such free sliding being accomplished by an operator simply pushing the

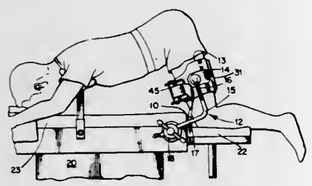
movable jaw toward the stationary jaw by hand quickly, pushing and pulling wedges which are adapted to lock themselves in a position in the frame at times when a lever is operated, following engagement of the jaws with the workpiece, further movement of the lever causing the jaws to be pressed together and rotation of the lever in an opposite direction causing the jaws to pull apart and the wedges to unlock themselves from the frame.

3,643,937
PRECISION VISE
Edwin Russ, 27736 Palmer Lane, Madison Heights, Mich.
Filed July 31, 1969, Ser. No. 846,560
Int. Cl. B25b *1/24*
U.S. Cl. 269—251 **4 Claims**



The precision vise has four major components including a base having a stationary jaw, a movable jaw, a cylindrical guide element or pin and a threaded operating rod or element. The base is provided with an accurately finished jaw support surface having a longitudinally extending slot or groove therein extending from one end of the base to the other end. The cylindrical guide element is located in the slot in engagement with curved or part cylindrical guide surfaces located on opposite sides of the slot. The movable jaw having an accurately finished bottom surface is mounted on the support surface and is fastened to the cylindrical guide element. The threaded operating rod is rotatably carried by the base and is connected to the movable jaw. Manipulation of the operating rod is effective to move the movable jaw in one direction only in a straight path towards or away from the stationary jaw depending on the direction of rotation of the rod, with the guide element traveling in the slot in engagement with the guide surfaces to thereby maintain the movable jaw properly oriented and aligned.

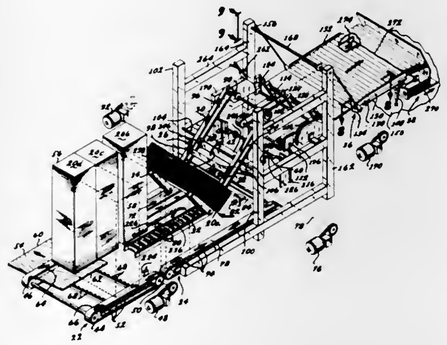
3,643,938
DETACHABLE BRACE FOR CULDOSCOPY OPERATIONS
John Henry Levasseur, Main St., North Berwick, Maine
Filed Nov. 24, 1969, Ser. No. 879,113
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **6 Claims**



A readily usable pair of braces for quick affixation, each on an opposite side of an elongated operating table, after a patient has assumed the knee-chest, hypoextension position. The braces each have a longitudinally extending, lower arm, supported generally horizontally in one of the table clamps, each have an integral, upwardly extending support arm, inclining inwardly toward the other laterally of the table and each have an inwardly facing, concaved thigh engaging padded plate with belt fastened around one of the thighs of the patient so that the knees of the patient are anchored against movement while the surgeon performs the operation.

The angle of affixation is quickly changeable if the surgeon finds the patient too obese, by merely loosening the table clamps.

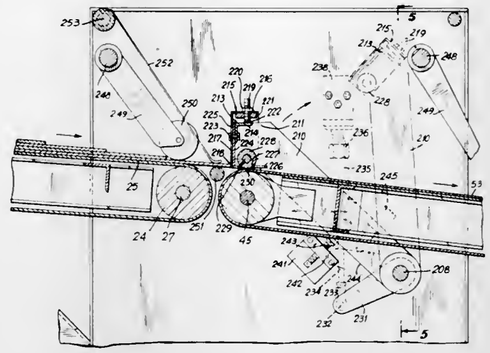
3,643,939
METHOD AND APPARATUS FOR TRANSPORTING STACKED FLAT ARTICLES SEQUENTIALLY TO A RECEIVER
Henry A. Nussbaum, Atlanta, Ga.; Henry W. Rehr, Concord, and Clair W. Tellier, Jr., Yuba City, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Filed June 22, 1970, Ser. No. 48,219
Int. Cl. B65h *1/00*
U.S. Cl. 271—62 **21 Claims**



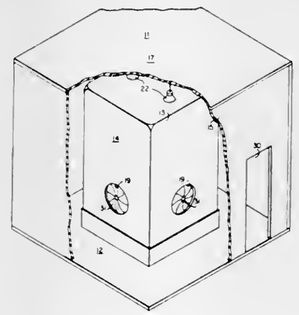
An endless transfer conveyor has its article-supporting surface initially positioned in a substantially vertical article-receiving position and a pair of legs extend perpendicularly from the bottom end thereof. A stack of box blanks is moved by a stack conveyor to a position over the legs and against the article-supporting surface of the transfer conveyor. The transfer conveyor is then pivoted through an arc slightly greater than 90° to an article-discharging position and the blanks are deposited sequentially from the discharge end of the transfer conveyor onto a shingling conveyor. The shingling conveyor transfers the blanks sequentially onto a receiver. Scraper arm means are provided to accelerate removal of the last several blanks from the transfer conveyor to accumulate a supply of blanks on the infeed end of the shingling conveyor while the transfer conveyor returns to pick up another stack of blanks. Appropriate switch actuators are provided to energize drive motors as required.

3,643,940
CONTROL ATTACHMENT FOR SHEET CONVEYING, STACKING AND DISCHARGE EQUIPMENT
John Lopez, Westfield, N.J., assignor to Universal Corrugated Box Machinery Corporation, Cranford, N.J.
Continuation-in-part of application Ser. No. 838,405, July 2, 1969, now Patent No. 3,574,024. This application May 6, 1970, Ser. No. 35,185
Int. Cl. B65h *29/68*
U.S. Cl. 271—76 **6 Claims**

In a sheet conveying, stacking and discharge apparatus of the type in which feed from a sheet-forming apparatus to a stacking apparatus is periodically interrupted to permit the stacked sheets to be cleared, pivotal gate means for blocking movement of fed sheets to the stacking apparatus during the period in which stacked sheets are cleared. The gate means is characterized by a freedom from interference with the orientation of sheets stacked thereagainst in the course of movement from the blocking to the unblocking position.



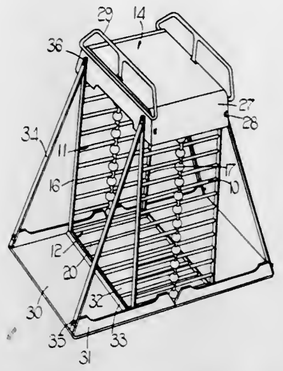
3,643,941
RELAXATION CHAMBER
Gail Carleton Kashar, 5737 Howe St., Pittsburgh, Pa.
Filed Mar. 18, 1969, Ser. No. 808,218
Int. Cl. A63g *31/00*
U.S. Cl. 272—2 **2 Claims**



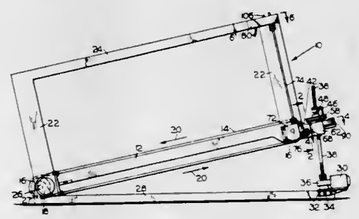
There is disclosed a relaxation chamber including a room in which there is a mass of very light, very white, small spheroidal particles, typically composed of expanded polystyrene such as is used in making Styrofoam. The occupants of the room can lie down, sit or move in the mass. The movement gives a sensation similar to that of moving in a swimming pool. The room typically has translucent walls and/or ceiling and colored lights, whose colors may change, are projected on the particles producing a pleasing color effect. The mass may be fluidized by blowing air through it from the base of the room.

3,643,942
PLAY DEVICES
Gerald G. Williams, 71 Listowel Road, Kings Heath, Birmingham, England
Filed July 23, 1969, Ser. No. 843,969
Claims priority, application Great Britain, July 27, 1968, 35,966/68; Dec. 18, 1968, 60,175/68
Int. Cl. A63b *17/04*
U.S. Cl. 272—60 **8 Claims**

A childrens' play device comprising side frame and end members, one of which is detachable. One alternative end member makes the structure suitable for use as a collapsible playpen or base for a table or trampoline and the other alternative end member makes the structure suitable as a climbing frame or a support for a swing, slide, seesaw, or other similar apparatus, such second alternative end member being rigidly connected to the side frame and being arranged in use at the top of the structure.



3,643,943
EXERCISER WITH WORK-INDICATING MECHANISM
Curtis L. Erwin, Jr., 1510 S.E. 41st, Portland, Oreg., and Gene D. Fosdick, 4910 S.E. 35th Ave., Portland, Oreg.
Filed July 28, 1969, Ser. No. 845,245
Int. Cl. A63b *23/06, 69/06, 69/16*
U.S. Cl. 272—69 **12 Claims**

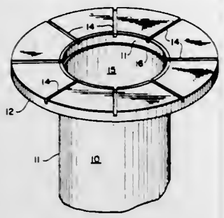


Exercise apparatus such as a treadmill, rowing machine, pedaling device or the like which includes an indicator arranged to be driven at a rate in proportion to the degree of difficulty of the exercise expended for recording work done. The apparatus in its embodiment employs an operating member on which the person exercises and adjustable controls for varying the difficulty of the exercise. The indicator is driven by the operating member through a drive connection, and the apparatus includes adjustment means incorporated in the drive connection which is connected directly to the adjustable controls so that the rate of operation of the indicator is in proportion to the degree of difficulty of the exercise.

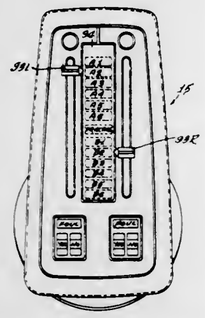
3,643,944
GOLF CUP RETAINING HOLDER
Bill A. Boyes, 131 West Maple, Columbus, Kans.
Filed Nov. 4, 1969, Ser. No. 873,923
Int. Cl. A63b *57/00*
U.S. Cl. 273—34 R **3 Claims**

A golf cup retaining holder is provided within which is supported a conventional golf cup for use on greens made of artificial grass. The retaining holder is positioned intermediate

the artificial green and underlying base over which the artificial green is installed and includes a flat channeled disc member having a central opening. The disc is adapted to be secured to the back side of the artificial green with the central opening over the hole. The channels serve to vent the area beneath the artificial green to the atmosphere. A cylindrical member extends downward into the hole and supports a golf cup.

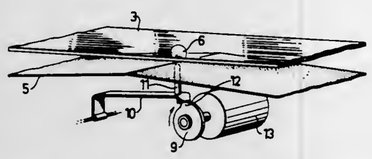


3,643,945
CONTROL FOR PRACTICE BOWLING
Robert Torresen, and Herbert D. Grosvenor, both of Muskegon, Mich., assignors to Brunswick Corporation
Filed June 5, 1969, Ser. No. 830,815
Int. Cl. A63d *5/00*
U.S. Cl. 273—54 C **8 Claims**



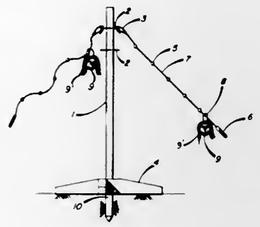
The improvement in a bowling scoring system including means for enabling the rolling of one or more practice balls without the cycling of the system so that pinfall achieved by the practice balls is not tabulated. In the exemplary embodiment, the same is achieved with the maintenance of various peripheral functions involving the automatic pinsetter and bowler identification interlocks.

3,643,946
TOY FOOTBALL GAME
Klaus Johannes Ylinen, Frejgatan 13, Stockholm, Sweden
Filed Nov. 24, 1969, Ser. No. 879,368
Claims priority, application Sweden, Nov. 22, 1968, 15896/68
Int. Cl. A63b *71/06*
U.S. Cl. 273—85 R **1 Claim**



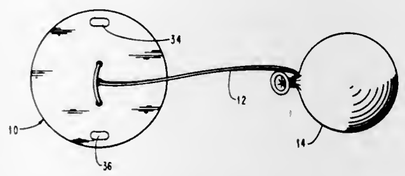
A ball game amusement device for two contestants comprises a playing field beneath a transparent cover and a ball that is sent back and forth across the field by a projector for each player. The central portion of the ball field can be raised to catch and retain the ball between the ball field and the underside of the transparent panel, and a power-driven rotating cam raises the central portion of the ball field at the end of play.

3,643,947
ROPE FLIPPING RACING GAME
Ronald B. Collins, 3581 Greenleaf, Memphis, Tenn.
Filed Jan. 2, 1970, Ser. No. 149
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 E **3 Claims**



A game to be played in or out of doors by one person against time or by a number of people in competition, the articles used in play comprising a removable but firmly upstanding center post, a length of rope for each player and tethered to the said post at substantially shoulder height, a handgrip at the outer end of the rope, a plurality of obstacles attached to the rope in spaced relation and, for each player, a play piece in this instance a wigged head linked to his respective rope and slidable thereon between successive ones of said obstacles and, according to rules of the game, hopped or flipped over the obstacles, one at a time, by up, down and sidewise manipulations of the rope.

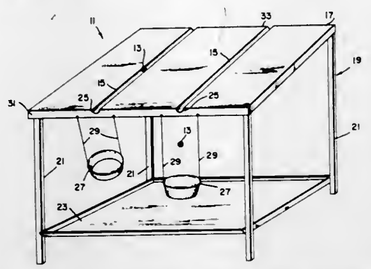
3,643,948
REBOUNDING TETHERED BALL
Leroy Coates, Covington, Ky., assignor to Willy Whoper, Inc., Covington, Ky.
Filed Oct. 24, 1969, Ser. No. 870,416
Int. Cl. A63b *33/00*
U.S. Cl. 273—97 **4 Claims**



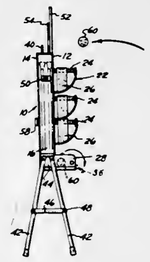
A toy comprises a circular plate having one end of a resilient member releasably connected thereto. The other end of the resilient member is releasably connected to a fluid-filled, collapsible element. The releasable connection between the resilient member and the fluid-filled collapsible element allows the fluid-filled, collapsible element to be filled whenever there is leakage of fluid from the collapsible element.

3,643,949
MARBLE GAME WITH MOVING TARGET
Naman G. Habash, 15249 S. Van-Ness, Gardena, Calif.
Filed Mar. 16, 1970, Ser. No. 19,901
Int. Cl. A63b *63/04*
U.S. Cl. 273—101 **3 Claims**

A game played with rolling bodies such as marbles and the like, the marbles being rolled along a track, under an end of which is suspended a swinging receptacle or basket to catch only those marbles which are caused to fall from the end of the track at a time to reach the basket directly below the end of the track as it swings to-and-fro through such position.

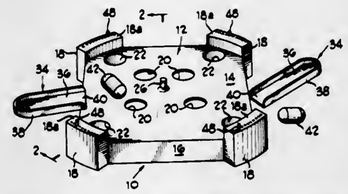


3,643,950
TARGET FOR BALL TOSS GAME
Howard A. Holk, 12025 Rutherford, Detroit, Mich.
Filed Sept. 18, 1970, Ser. No. 73,482
Int. Cl. A63b *63/00*
U.S. Cl. 273—105 R **1 Claim**



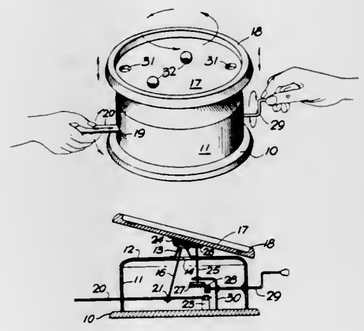
A ball toss game, suitable for either indoor or outdoor play, consisting of a box having in the front side thereof a plurality of openings. A target basket, adjacent each of the openings in the box, receives the tossed ball and directs the same into such openings. Ducts in the box conduct the balls from each of the openings to a separate compartment, having an assigned numerical value which the players use in computing their scores. In use, the box may either be suspended from a fixed support, or supported in an upright position by collapsible legs.

3,643,951
SURFACE PROJECTILE GAME DEVICE WITH INTERMITTENTLY CLOSED TARGET OPENINGS
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Aug. 21, 1970, Ser. No. 65,944
Int. Cl. A63b *67/14*
U.S. Cl. 273—108 **4 Claims**



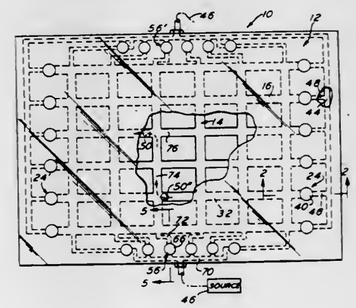
A game device including a base having apertures therein with a rotatable disc underlying the apertures and having a radial segmental opening therein. Launching trays and capsulelike playing pieces are also provided for launching the capsules towards the playing surface in an attempt to feed the capsules through one of the openings in the playing surface in timed relationship to the rotation of the underlying disc having the segmental opening therein.

3,643,952
TILTING SURFACE BALL GAME
Earl D. Sprowl, 251 West Eight St., Salem, Ohio
Filed Mar. 20, 1970, Ser. No. 21,280
Int. Cl. A63b *67/00*
U.S. Cl. 273—110 **2 Claims**



A game device having a housing and a rimmed plate mounted thereon for tilting about two axes while being revolved, the tilting of the plate being controlled by one lever and the revolving of the plate being controlled by a crank whereby two persons may control the action of the rimmed plate and one or more spheres rolling thereon.

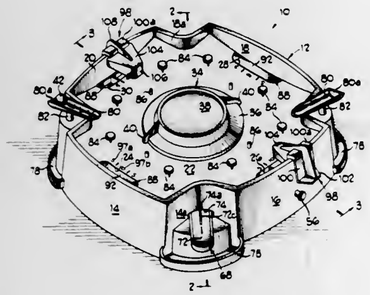
3,643,953
FLUID PRESSURE OPERATED GAME
Jon S. Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corp., Phila., Pa.
Filed Aug. 13, 1970, Ser. No. 63,382
Int. Cl. A63d *3/02*
U.S. Cl. 273—119 B **12 Claims**



A game device is disclosed, suitable for play by two or four persons representing two opposing sides, comprising a "-board" having interconnected sets of conduits, and projectiles normally disposed at opposite ends of one of the sets capable of being individually released and propelled through their conduits by selectively applied fluid pressure. The opposing sides control the release of their projectiles and the

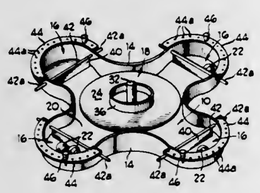
flow of fluid in conduits in one direction, the object of the game being for one side to drive its projectiles from its end of the conduits to its opponent's end, against a defense mounted by its opponent.

3,643,954
GAME WITH PROJECTILE LAUNCHING ROTOR
Burton S. Meyer, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin & Associates
Filed Aug. 8, 1969, Ser. No. 848,574
Int. Cl. A63d *3/02*
U.S. Cl. 273—119 A **10 Claims**



A game of the type having a playing surface, a playing piece and playing piece recesses at the edges of the playing surface characterized by the provision of a playing piece launching rotor positioned centrally of the playing surface, the speed and direction of the rotor being controllable by the player to launch the playing piece into a desired recess. Movable blocking elements are provided adjacent the recesses for preventing the entry of the playing piece into a recess. Also, the game is characterized by the provision of reversible recess insert pieces capable of being oriented in one fashion to block some of the recesses when the game is being played with a reduced number of players, or to be oriented in a reverse fashion to provide plural cavities for receiving the playing piece.

3,643,955
SKILL-TYPE GAME
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Oct. 10, 1969, Ser. No. 865,288
Int. Cl. A63d *3/02*
U.S. Cl. 273—119 R **12 Claims**



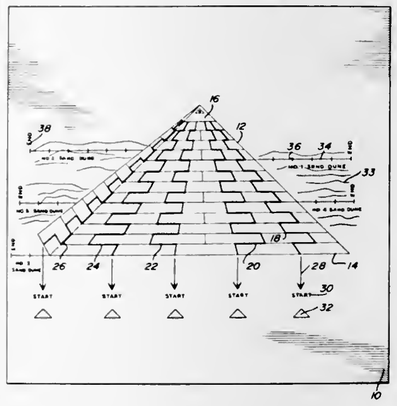
A skill-type game which comprises motive means for propelling objects outwardly therefrom at random intermittent intervals in a plurality of angular directions toward a plurality of receiving positions disposed angularly about the motive means. The receiving positions have gates normally blocking the entrance thereto and the gates are selectively movable by a player to open the entrance to the receiving positions in an attempt to "catch" the propelled objects.

3,643,956
BOARD GAME APPARATUS
Bernard X. Bovasso, Rm. 302, 1911 Jefferson Davis Hwy., Arlington, Va.
Continuation-in-part of application Ser. No. 849,118, Aug. 11, 1969, now abandoned. This application May 4, 1970, Ser. No. 34,443
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 R **3 Claims**



This invention relates to a game played with square members, which may be cards or blocks, disposable upon a playing board having squares defined thereon, each of said cards or blocks having an identical pattern marked thereon, said pattern comprising markings achieving equal divisions upon the sides of the square, and having contrasting colors defining said pattern, wherein each color occupies an identical portion of each side of said square and wherein any terminus of any marking will meet and mate with any other terminus of a like colored marking on any other member. The purpose of the game is to generate, by the sequential placement of said squares, either a continuity of pattern from one side of the playing board to another side of the playing board, or the completion of a circuit, i.e., an endless track or path, anywhere on the board.

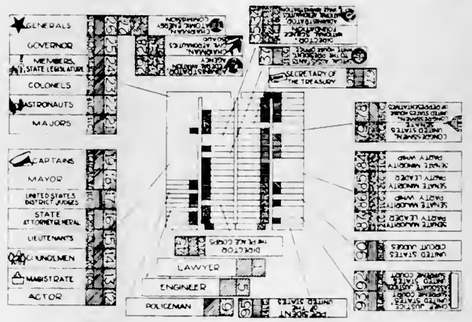
3,643,957
BOARD GAME APPARATUS
Clifford F. Bryant, 19 Washington St., Struthers, Ohio
Filed Mar. 19, 1970, Ser. No. 21,065
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AD **2 Claims**



A gameboard having a pyramid depicted thereon and a plurality of zigzag paths of movement from the bottom of the pyramid to the top thereof for movement of game pieces. Control cards having indicia thereon controlling the movement of the game pieces are provided so that a plurality of players may endeavor to move their game pieces from a start position to a finish position at the top of the pyramid by

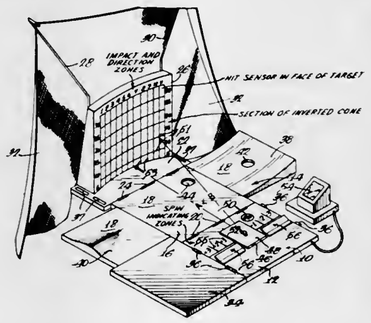
drawing cards which instruct them to move the game piece in a particular manner, with certain of the cards depicting an increment of movement along the zigzag paths of movement. Sand dunes are depicted alongside the pyramid to which the game pieces are directed in certain instances by the cards.

3,643,958
GAME SIMULATING ASPECTS OF SOCIETY
Solomon Sperber, 34 Blackburn Road, Hillside, N.J.
Filed Feb. 29, 1968, Ser. No. 709,410
Int. Cl. A63f *9/00*
U.S. Cl. 273—134 AD **9 Claims**



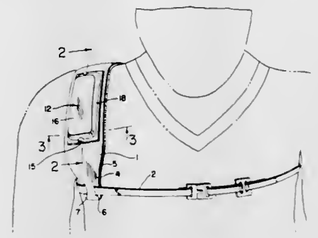
A game board, a first set of cards stating numbered issues, a recording set of cards, a second set of numbered cards stating laws, and having indicia identical to the issue numbers whereby one's opinion relating to the laws are correlated to the issues, a third set of cards stating cases and bearing indicia identical to the numbered issues and numbered law cards whereby one's opinions as to the cases are correlated to the laws and issues, a fourth set of cards allowing players to advance, and a set of chance cards stored in an used in conjunction with a game accessories container.

3,643,959
GOLF GAME
William D. Cornell, Grand Haven; Martin M. Schankler, Muskegon, and Charles R. Kenrick, Grand Haven, all of Mich., assignors to Brunswick Corporation
Original application Apr. 13, 1966, Ser. No. 542,414, now Patent No. 3,523,689. Divided and this application Dec. 18, 1968, Ser. No. 807,148
Int. Cl. A63b *67/02*, *69/36*
U.S. Cl. 273—176 FA **10 Claims**



The invention is a device for measuring the flight characteristics of a golf ball hit in the ordinary manner by a golfer from a stationary tee against a prepositioned target. The self-healing target, positioned a known distance from the tee, temporarily records the initial direction of the hit within a directional indicating grid on the surface thereof. The target resembles a section of an inverted cone wherein all points thereon in a given horizontal plane are equidistant from the tee, and points in a higher plane are further from the tee. The target absorbs most but not all of the kinetic energy of the ball allowing it to rebound at a low velocity so as to roll along a level ball receiving surface located in front of the target to a spin detection device positioned thereon. Numbered zones on the directional indicating grid represent direction from the tee, and numbered (plus and minus) zones associated with the spin detection device indicate the relative effect of spin upon the shot. By algebraically adding the number of the zone where the ball impacts upon the target and the number of the spin detection zone to which the ball rolls after impact, the golfer obtains a number which designates the directional indicating zone on the target face indicating the direction of the terminal impact point of the ball. A microphone associated with the tee and an electrical sensing element associated with the target measures the approximate distance the hit ball would theoretically travel in the direction of its terminal impact point had it not been intercepted by the target.

3,643,960
CORRECT HEAD POSITION TRAINING DEVICE FOR GOLFERS
Edwin E. Gentilly, 14029 Gramatan Ave., Cleveland, Ohio
Filed Nov. 12, 1970, Ser. No. 88,124
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **4 Claims**

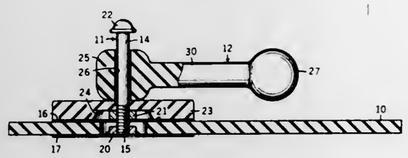


A training device adapted to teach a golfer to keep his head down during swings at the ball has a unitarily cast bellows with a whistle carried in a cavity formed in the lower wall thereof and operatively connected therewith. The bellows is fastened to the front part of a vertically disposed strap of foam-backed plastic that is adapted to be formed in inverted U shape to overlie a portion of the shoulder region of the golfer. The vertically disposed strap is held in place by a torso-encircling connecting strap passing under the arms of the golfer.

3,643,961
GOLF-PRACTICING DEVICE
Arthur C. Schroeder, 730 Emerson Road, Creve Coeur, Mo.
Filed July 22, 1969, Ser. No. 843,626
Int. Cl. A63b *69/36*
U.S. Cl. 273—197 R **2 Claims**

A golf-practicing device having a molded, integral driven member rotatively mounted on a substantially upright post attached to a resilient, flexible mat. The driven member includes a head portion rotatively mounted on the post, a ball portion at its free end which overlies the mat in spaced relation, and a rod portion interconnecting the head portion and ball portion and extending laterally at the post. The molded, integral driven member is constructed of a resilient material,

the head portion and ball portion being substantially the size of the conventional golf ball, and the interconnecting rod portion being of sufficient cross section to preclude permanent deformation when the ball portion is struck by a golf club. A spacer of resilient material is located on the post between the mat and the head portion of the driven member, the spacer providing a bearing for the rotative head portion and extending laterally of the post for a distance short of the ball portion. The spacer maintains the ball portion in spaced relation above the mat. The driven device is freely rotated on



the post when the ball portion is struck by the golf club.

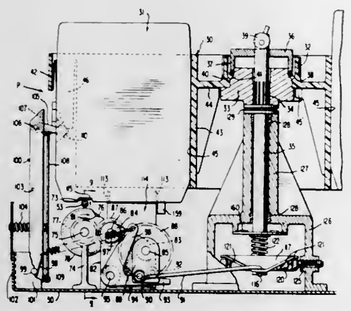
In one embodiment a pair of rigid plates are provided one above and one below the mat, the post extending through the mat and secured to the rigid plate. This construction provides a unit that can be utilized both indoors and outdoors.

In another embodiment particularly suite for outdoor use, an elongate sleeve, constituting a socket, is inserted into the ground to provide a permanent anchorage. In usage, the post extends through the mat and into the socket to secure the mat to the ground.

3,643,962
MAGNETIC TAPE PLAYING AND CHANGING APPARATUS

Rowland K. White, Rockville, and Simon L. Lindbeck, Bowie, both of Md., assignors to Qatron Corporation, Rockville, Md.

Filed Mar. 18, 1969, Ser. No. 808,110
Int. Cl. G11b *15/29*
U.S. Cl. 274—4 F **9 Claims**

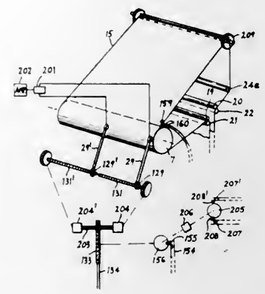


A plurality of tape cartridges are held in a rotary magazine. Mechanism is provided for indexing the magazine so as to move a particular cartridge to a play (or record) position. At the play position, the selected tape cartridge is shifted into engagement with a friction drive forming a part of the power train for indexing the magazine and shifting cartridges. A magnetic pickup (or record) head has an independent drive enabling the head to register with each of a plurality of tape channels. The entire apparatus is characterized by simplicity, compactness and economy as well as durability.

3,643,963
SIGNAL RECORDING AND/OR PLAYBACK APPARATUS

Jahangir Madjidi Ahy, 13 Duke St., Manchester Square, London, W. 1, England

Filed Apr. 28, 1969, Ser. No. 819,862
Claims priority, application Great Britain, Apr. 30, 1968, 20,507/68; 20,509/68
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 J **9 Claims**

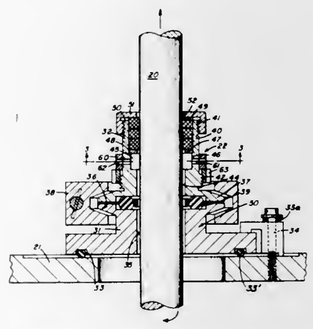


This specification describes a signal recording and/or playback apparatus for recording signals on a broad record band in a plurality of parallel tracks or track sections and/or for playing back signals so recorded. The apparatus described includes a transducer head which is driven across the record band in a series of steps, means being provided which ensure that each step corresponds to the spacing between two tracks or track sections. The apparatus described also includes a position indicator for indicating the position of the transducer head along the length of the band. This counter is reset to zero by means adapted to be actuated by trigger means provided on the band at a position corresponding to the ends of the tracks or track sections in which said signals are recorded or to be recorded. In a modification, two transducer heads are provided which are rendered operative during alternate periods, each of said heads being shifted to another track while it is inoperative.

3,643,964
PULL ROD SEAL

Christopher Snelling, Penfield, and Anthony J. Gardone, Rochester, both of N.Y., assignors to Kayex Corporation, Rochester, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,072
Int. Cl. F16j *15/10*
U.S. Cl. 277—24 **14 Claims**



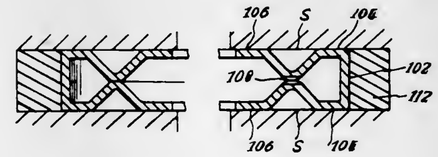
A seal is disclosed which permits a pull rod to be rotated and moved axially with respect thereto and which is provided

with a plurality of washers arranged in a stacked relation so that their engagement with the peripheral surface of the rod removes any oxide impurities therefrom and provides for deposition of the impurities into a chamber that is a part of the seal for the rod. The chamber is connected to the atmosphere through a series of radial holes and by a clearance hole surrounding the pull rod to the interior of the furnace. Consequently, the pressurized gas normally in the furnace moves or flows along the pull rod and into the chamber. The gas is still under sufficient pressure so that the impurities deposited in the chamber can be removed through the radial holes.

3,643,965
SEALING MEANS

Terence P. Nicholson, Craigmiller, Stocksfield, England, assignor to The Corrugated Packing and Sheet Metal Company, Limited, Hamsterley, Newcastle upon Tyne, England, a part interest

Filed Aug. 1, 1969, Ser. No. 846,692
Claims priority, application Great Britain, Aug. 2, 1968, 37,018/68
Int. Cl. F16j *15/08*
U.S. Cl. 277—75 **8 Claims**

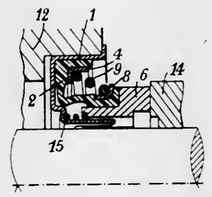


A sealing washer or gasket has a hollow section formed by walls which converge but leave at least one opening between the hollow section and the high-pressure side of the seal so that an increase in fluid pressure has the effect of urging the walls outwardly, thus tending to increase the sealing pressure with the surfaces between which it is located. Means are provided to prevent the opening being entirely closed by the normal pressures used to clamp the parts sealed by the washer or gasket. The outer periphery of the sealing washer or gasket, as seen in a section which includes the axis, is either generally straight or concave.

3,643,966
SHAFT PACKING

Jean-Claude Bardet, Puteaux, France, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg

Filed June 8, 1970, Ser. No. 44,199
Claims priority, application France, July 29, 1970, 6925890
Int. Cl. F16j *9/00*; **E21b** *33/00*
U.S. Cl. 277—80 **1 Claim**

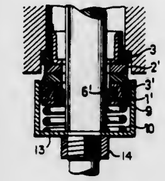


A shaft packing characterized in that it is capable of transmitting electric current, whether direct or alternating, from the fixed member to the rotary member; this possibility is particularly advantageous in case it is desired to control an electromagnetic device solid with the aforesaid rotary member.

3,643,967
SEALING RING FOR FACE SEALS

Filip Torvald Stahl, Alvsjo, Sweden, assignor to Stenberg-Flygt AB, Svetsarvagen, Solna, Sweden

Filed Feb. 4, 1969, Ser. No. 796,363
Claims priority, application Sweden, Feb. 16, 1968, 2081/68
Int. Cl. F16j *15/34*
U.S. Cl. 277—92 **3 Claims**

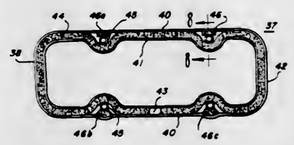


A sealing ring for face seals comprises a supporting ring, a hard material ring and a rubber ring bonded both to the supporting ring and to the hard material ring, the hard material ring and the rubber ring being bonded to one side of the supporting ring whereby the supporting ring is capable of dissipating the heat of friction. The supporting ring has a substantially L cross-sectional shape and the hard material ring can be either ceramic or sintered carbide.

3,643,968
GASKET

Guy E. Horvath, Williamsville, N.Y., assignor to Hercules Packing Corporation, Alden, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,988
Int. Cl. F16j *15/00*
U.S. Cl. 277—166 **10 Claims**



A gasket comprising in combination an elastomeric member and a resilient support member of sidewalls spaced from each other and a bottom wall joining such sidewalls at lower positions thereof and together with such sidewalls defining a cavity in which the elastomeric member is maintained in a supportive arrangement.

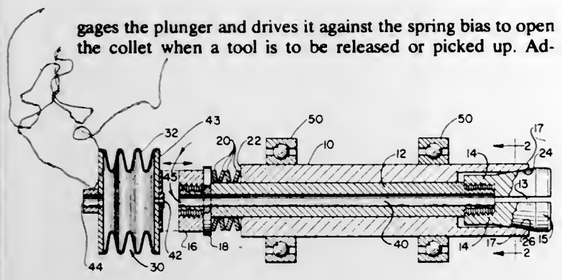
3,643,969
PLUNGER OPERATED ROTATABLE COLLET

Robert L. Finley, Norfolk, and Raymond E. Sansom, New Milford, both of Conn., assignors to Diventco, Inc., New Milford, Conn.

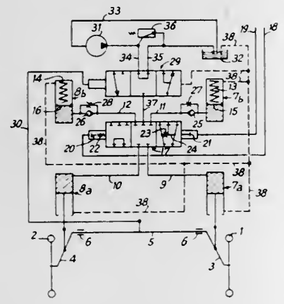
Filed Jan. 12, 1970, Ser. No. 2,428
Int. Cl. B23b *31/30*
U.S. Cl. 279—4 **16 Claims**

A machine tool spindle characterized by excellent dynamic balance at very high rates of rotation and adapted for automatic tool changing has a tool-holding collet actuated by a plunger coaxial with the spindle. The plunger is maintained in the tool-holding position by belleville springs that rotate with the plunger and collet and a nonrotating push rod en-

gages the plunger and drives it against the spring bias to open the collet when a tool is to be released or picked up. Advantageous embodiments of the invention, the collet draws air through a small conduit in the spindle, thereby cleaning dust from the collet fixture.



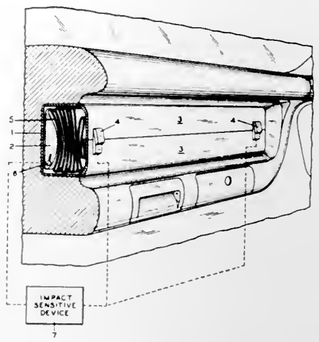
3,643,970
LOCKABLE SUSPENSION FOR VEHICLES
Yves M. Gauchet, Senlis, France, assignor to Societe Anonyme Poclain
Filed May 12, 1970, Ser. No. 36,551
Claims priority, application France, May 14, 2069, 6915773
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 F **4 Claims**



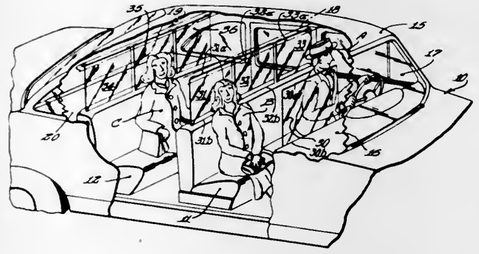
In an hydraulic suspension system for the wheels of an axle of a vehicle such as a public works machine and with respect to the chassis of the vehicle, two separate suspension arms articulated to the chassis, a jack coupled between the chassis and each of the suspension arms, a resilient member arranged in the chamber of each jack wherein the resilient member is capable of being compressed by hydraulic fluid feeding the jack, a conduit connecting the chambers of the two jacks, and selective isolating means arranged between the chamber and on the conduit connecting the chambers of the two jacks, whereby the suppleness of each of the suspension arms is adjustable for road travel of the vehicle and the suspension arms are lockable for stability of the vehicle at a worksite.

3,643,971
SELF-INFLATING IMPACT-ABSORBING BAG FOR VEHICLES
Julian H. Kushnick, Brooklyn, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Aug. 11, 1970, Ser. No. 63,196
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **13 Claims**

A vehicle safety device having normally contracted protective bags installed in a vehicle at convenient locations and which is adapted so that upon the occurrence of a collision of the vehicle a noninflammable gas generating medium produces and delivers a gas into the protective bags to inflate them, thus providing shock-absorbing cushions between passengers or other objects and rigid vehicle parts.



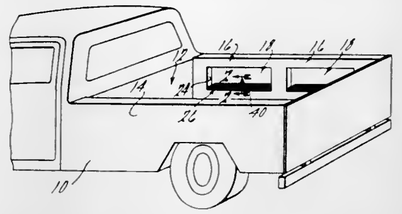
3,643,972
SAFETY SHIELD
Michael I. Caiati, Evanston, and William L. Lehle, Wilmette, both of Ill., assignors to H.M.K., Inc.
Filed Jan. 26, 1968, Ser. No. 700,855
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **8 Claims**



Injury to passengers in vehicles from either collision with hard surfaces and/or quick whiplash movement of the body is prevented by a safety shield comprising a yieldable, flexible transparent material removably mounted along at least two opposite edges and held taut to provide a shock-absorbing barrier between the person to be protected and the direction of movement of his person particularly in times where the movement is due to outside forces overpowering the persons ability to resist them e.g., during vehicle collisions.

3,643,973
SLIDING TIEDOWN DEVICE
John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich.
Filed Apr. 22, 1970, Ser. No. 30,665
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 R **3 Claims**

A slidable tiedown device for an automobile vehicle such as a pickup truck. A pair of channel members are mounted on the sidewalls of the truck bed and serve as mounts for one or more pairs of tiedown members. The tiedown members are slidable along the length of the channel members and may be locked in any desired position thereon by an internally threaded collar, nut or the like. The tiedown members have eyelet openings adapted to receive a rope or the like.

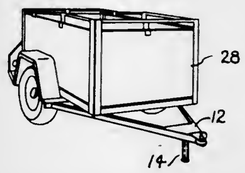


3,643,974
BICYCLE FORK EXTENSION
Norman T. Peate, 5951 East 18th St., Tucson, Ariz.
Filed Apr. 3, 1970, Ser. No. 25,459
Int. Cl. B62k *21/02*
U.S. Cl. 280—278 **1 Claim**



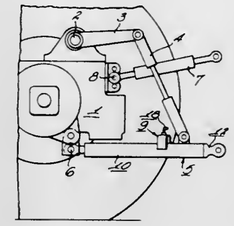
The present invention comprises a dragster rail or bicycle fork extension adapted to either nonmotorized or motorized bicycles, the respective elements of which are stabilized against misplacement by a yoke member.

3,643,975
RETRACTABLE TONGUE STAND FOR TRAILERS
William R. Parkhurst, Sedalia, Mo., assignor to Parkhurst Manufacturing Co., Inc., Sedalia, Mo.
Filed Feb. 3, 1970, Ser. No. 8,276
Int. Cl. B60s *9/02*
U.S. Cl. 280—475 **2 Claims**



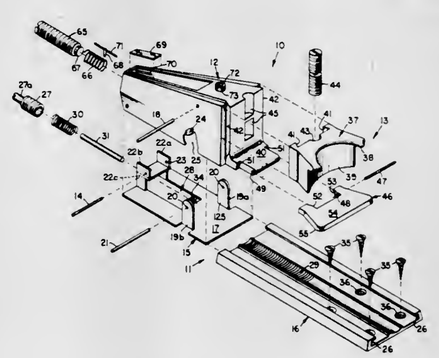
A retractable tongue stand assembly has a pair of spaced, depending plates rigidly secured to the tongue which pivotally carry a rigid support member therebetween for swinging movement between retracted and extended positions. A spring-loaded latch is shiftable along a longitudinal track on the member into locking engagement with sets of notches on the plates to releasably lock the member in either its retracted or extended positions.

3,643,976
LATCH FOR DRAFT ARM EXTENSION
Robert C. Haupt, Milwaukee, and Donald E. Peterson, Wauwatosa, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 19, 1970, Ser. No. 81,863
Int. Cl. B60d *1/00*
U.S. Cl. 280—478 R **10 Claims**



An extendible draft arm including an extendible member telescoping in a base member with a latch to retain the draft arm in its retracted position.

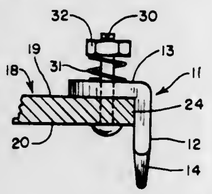
3,643,977
SKI BOOT HEEL BINDING
Bernard E. Berlenbach, Mill Valley, Calif., assignor to Ski Free Company, Mill Valley, Calif. and M. A. Miller Manufacturing Co.
Filed July 23, 1970, Ser. No. 57,696
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **23 Claims**



In a heel binding of the type having elongated body member having a forward heel boot holding means, a body member swingable relative to a base member about a rearward horizontal pivot axis substantially perpendicular to the axis of the ski runner substantially parallel to the top face of the runner, whereby the heel boot holding means is pivoted from a holding position in which the heel holding means is substantially abutting the top face of the runner, to a release position in which this heel holding means is raised from and inclined relative to the top face of the runner, the improvement including: (a) a single coil spring carried by one of the body members and the base member operating along a zone of action; (b) a V-frame connecting means positioned intermediate the rearward pivot axis of the binding and the heel-holding means in operative contact with the single coil spring, and including first and second leg means carrying cooperative broad-contacting, complementary surface means at their swingably engaging surfaces to each other, one of the

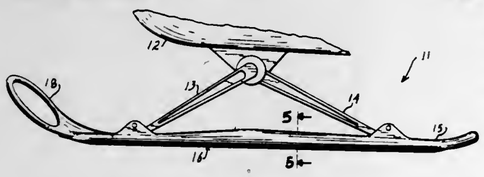
leg means also carrying thereto a substantially disconnectably connecting L-shaped cam surface aligned with the zone of action of the spring; (c) linking means for connecting the first and second leg means to the body member and the base member, respectively, a pair of horizontal pivot axes, and including a stationary pin means disconnectably positioned with respect to the disconnectably connecting L-shaped cam surface on the one leg means to normally prevent pivotal tilting of the body member relative to the base member, but being adapted to release from said cam surface allowing relative angular displacement of the first and second leg means when subjected to either of two load conditions corresponding to (i) an accident condition or (ii) a manual release condition above the operational release level of the binding; (d) the single coil spring adapted to undergo axial movement to release the stationary pin means of said linking means from the disconnectably connecting cam surface carried on the one leg means, by cooperative angular movement of said leg means in response to a load condition resolvable into an antibias component force acting along the zone of action opposite to the normal bias force of the single coil spring; (e) after release of the stationary pin means of the linking means from the cam surface, continued depthwise displacement of the horizontal pivot axis being aided, at least in part, by the normal bias force of the single coil spring until the release position of the heel-holding means is achieved, after the release position is attained and the load condition acting on the binding is terminated, the release position being maintained by the normal bias force of the single coil spring.

3,643,978
SKI FLANGE
Russell C. Westberg, 10342 Pleasant Ave. S., Bloomington, Mich.
Filed Dec. 9, 1969, Ser. No. 883,428
Int. Cl. B62b *17/00*
U.S. Cl. 280—28 **1 Claim**



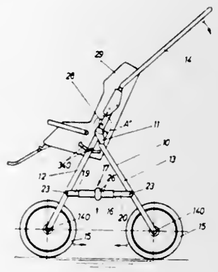
A flange for snowmobile ski. One or more flanges are attached to each of the steering skis of a snowmobile to prevent the ski and snowmobile from sliding sideways in snow or on icy surfaces. The flange engages the snow or icy surfaces and prevents lateral movement of the ski when the snowmobile is making a turn.

3,643,979
SNOWMOBILE SKI CONSTRUCTION
William R. Richards, Roseau, Minn., assignor to Textron Inc., Providence, R.I.
Filed Dec. 15, 1969, Ser. No. 885,091
Int. Cl. B62b *17/02*
U.S. Cl. 280—28 **3 Claims**



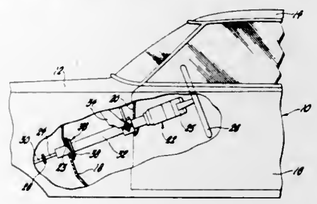
The disclosure is directed to a snowmobile ski of laminated construction, having an abrasion-resistant outer skin and an inner polyurethane fill bonded to the outer skin. An arcuate metal rod runs along the midline of the ski, bowing from the bottom surface of the ski to provide an abrasion-resistant runner to enhance control of the vehicle.

3,643,980
PUSHCHAIR
Guenther Klrsch, 5 In der Poelten, 3472 Beverungen, Weser, Germany
Filed July 7, 1969, Ser. No. 839,550
Claims priority, application Germany, July 5, 1968, G 67 51 042
Int. Cl. B62b *7/06*
U.S. Cl. 280—41 A **8 Claims**



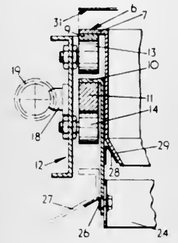
A pushchair comprising a supporting frame, a body, means for detachably mounting said body on said frame, a pair of sides for said frame, a pair of frame parts for each said side, a pivot interconnecting said frame parts so that at least the lower ends of said parts form an inverted V, an extensible spring unit interconnecting the lower ends of said parts, a pair of coextending hollow levers composing said unit, at least one tensioned spring within said levers, and a bendable joint between said levers.

3,643,981
STEERING COLUMN ASSEMBLY SUPPORT
Leonard F. Grandel, Carrollton; Floyd A. Schluckebier, Frankenmuth, and Dan R. Kimberlin, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,234
Int. Cl. B62d *1/18*
U.S. Cl. 280—87 R **3 Claims**



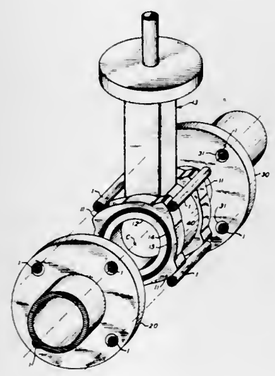
A vehicle steering column assembly is engaged by a support arrangement intermediate the ends thereof which generally rigidly connects a portion of the column assembly to the vehicle body but which is permanently deformable upon relative displacement between the column assembly and vehicle body and thereafter again rigidly supports the column assembly in the displaced position and without exerting thereon substantial restoring forces, the support arrangement including a support member having inner and outer rings attached respectively to the column assembly and vehicle body and interconnected by a plurality of permanently deformable webs the thickness and configuration of which determine the strength of the support member.

3,643,982
DUST SEALING MECHANISMS FOR HOPPERS OR THE LIKE
Arthur Douglas Murphy, Bramhall, England, assignor to Simon-Carves Limited, Cheshire, England
Continuation of application Ser. No. 804,966, Mar. 6, 1969, now abandoned. This application Aug. 7, 1970, Ser. No. 62,149
Claims priority, application Great Britain, Mar. 14, 1968, 12,402/68
Int. Cl. F16l *25/00*
U.S. Cl. 285—9 **12 Claims**



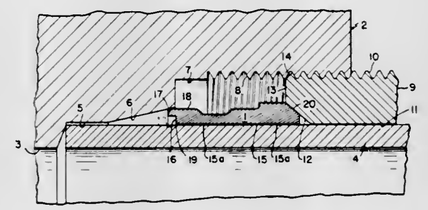
A dust sealing mechanism for use in association with a receptacle for dust containing material and comprising a pair of relatively movable telescoped sleeves, one of said sleeves being adapted to be moved into sealing engagement with an outlet from which the material is fed to the receptacle, and the other of said sleeves being adapted to cooperate with an inlet in the receptacle, and means interconnecting the two sleeves for effecting opposite axial movement of the sleeves into their operative position whereby material can be fed through the sleeves into the receptacle comprising a rotatable ring having camming engagement with the respective sleeves.

3,643,983
DEVICES FOR AXIAL ALIGNMENT OF PIPE OR OTHER FLANGES
Edwin H. Ludeman, Red Bank, N.J., assignor to Andrews Industries, Dayton, N.J.
Filed Nov. 21, 1969, Ser. No. 878,765
Int. Cl. F16l *23/00*
U.S. Cl. 285—31 **3 Claims**



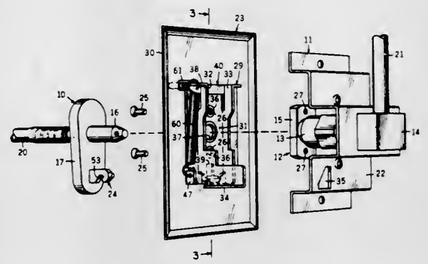
Devices are described which are adapted to be positioned between a pair of plain faced pipe or other flanges having a plurality of evenly spaced, oversize bolt holes to receive a like number of bolts to hold the flanges together. The devices are provided with a plurality of camming surfaces adapted to bear against the bolts and force them into a limiting position of their radial travel permitted by the clearance of the oversize bolt holes around the bolts, thus axially aligning the flanges.

3,643,984
PLASTIC COATED FERRULE FOR A TUBE COUPLING
Bernard J. Bucceri, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.
Filed Sept. 10, 1969, Ser. No. 856,711
Int. Cl. F16l *19/08*
U.S. Cl. 285—94 **3 Claims**



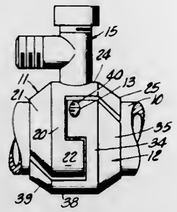
A plastic coated, positive-bite-type ferrule for a high-pressure tube coupling including cooperating body and closure members which engage the plastic coated ferrule therebetween to seal the coupling.

3,643,985
LATCHING DEVICE FOR COUPLING ASSEMBLY
Bidwell C. Cranage, Ferguson, Mo., assignor to Stile-Craft Manufacturers, Inc., St. Louis, Mo.
Filed Dec. 4, 1969, Ser. No. 882,211
Int. Cl. F16l *41/00*
U.S. Cl. 285—189 **8 Claims**



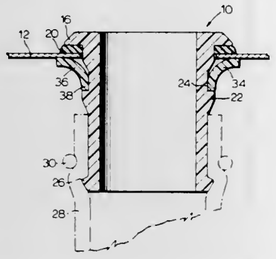
This latching device is used to couple connectable members together, one of which includes an adapter assembly having a valve plug, and the other of which includes a valve assembly having a valve plug receiving body. The adapter assembly includes an offset latch plug, and the valve assembly includes a latching unit engageable with the latch plug. The latching unit includes a slotted bracket member and an independent latch frame member capable of guided movement within the slots. A tension spring between these two members tends to pull them together. The latch plug includes a cammed nose portion and a transverse latch slot. The latch frame includes a cammed lip deflected by cam action and received into the latch slot to provide the latched condition. Unlatching is effectuated by depressing the latch frame.

3,643,986
PIPELINE SADDLE ASSEMBLY
Donald R. Allan, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Continuation of application Ser. No. 644,291, June 7, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 882,358
Int. Cl. F16l 41/04
U.S. Cl. 285—197 15 Claims



An assembly of a pair of axially slidable, interlocking parts which can be installed at any point on a continuous pipe to permit the attachment of a standard tee to the pipe.

3,643,987
SPOUT STRUCTURE
Ronal Charles DuPont, London, Ontario, Canada, assignor to GSW Limited-GSW Limitee, Toronto, Ontario, Canada
Filed Sept. 11, 1970, Ser. No. 71,325
Int. Cl. F16l 5/00
U.S. Cl. 285—205 2 Claims



A spout structure for liquid receptacles having an opening in a wall consists of a tube extending through the opening, a gasket on the inside of the wall surrounding said opening, a flange at one end of the tubular member engaging the gasket having a ledge on the tubular member outward of the wall and a dished resilient ring bearing against the ledge and the wall, the ring having legs which can be sprung apart to enable it to pass over the ledge and fixed into position.

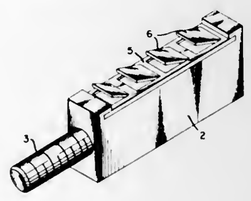
3,643,988
RELEASABLE CORNER JOINT ARRANGEMENT FOR STACKING FRAMES FOR LOADING PALLETS
Arne Ingvartsen, Bubbel, 5592 Ejby, Denmark
Filed Nov. 18, 1969, Ser. No. 877,758
Claims priority, application Denmark, Nov. 27, 1968, 5794/68
Int. Cl. F16b 2/04, 7/04
U.S. Cl. 287—53.5 1 Claim

This invention relates to a releasable corner joint for a stacking frame with detachable side members for a loading pallet. The detachable side members of such a stacking frame normally comprises two tubular outer posts held together by means of a girder, and are interconnected by means of a corner joint being formed as a U-shaped fitting pivotally connected to the girder so that its downwardly facing flanges in the locked position grip and hold the girder. The joint may further be provided with a gib member adapted to be introduced into one tubular side post of an adjacent side member. In accordance with the present invention the side post of the said side member supporting the joint is provided with a resilient locking member projecting through one or



two apertures in the wall of said tubular side post and adapted to cooperate with a recess in one or in both flanges of the said U-shaped joint, whereby easy handling and proper function is secured.

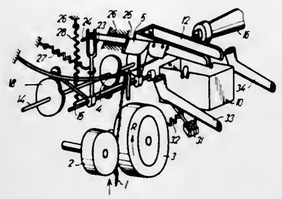
3,643,989
DOWEL FOR EXTRUDED SECTIONS OF PLASTICS MATERIAL
Erich Sattler, Wildbad (Bundesrepublik Deutschland), Sommerberg, Germany
Filed Oct. 29, 1969, Ser. No. 870,227
Int. Cl. F16b 7/16
U.S. Cl. 287—189.36H 1 Claim



A dowel adapted to be inserted into an open end of a tubular section of plastics material comprises a prismatic plug consisting of solid plastics material and having side face portions and an inserting end portion, and spring sheet steel means contacting said side face portions and formed with lug means extending away from said inserting end portion at an oblique angle to the longitudinal axis thereof.

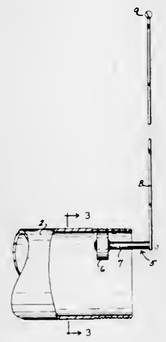
3,643,990
METHOD OF AND DEVICE FOR GRIPPING A MOVING YARN END IN TEXTILE MACHINES, PARTICULARLY YARN WINDING MACHINES
Rudolf Horatschke; Zdenek Holy; Jiri Havlas; Premysl Kostelecky, and Vlastimil Rejnart, all of Liberec, Czechoslovakia, assignors to Elitex Zavodny textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Jan. 23, 1970, Ser. No. 5,334
Claims priority, application Czechoslovakia, Feb. 7, 1969, 821/69
Int. Cl. A01d 59/04
U.S. Cl. 289—1.5 10 Claims

A method of and an apparatus for gripping a moving yarn end in textile machines, particularly yarn winding machines having yarn storage magazines which are impositively fed by driven pinch rolls. Upon the breakage of or exhaustion of yarn, the yarn end is automatically gripped in a novel manner. Thereafter, a new yarn end is fed into the apparatus



where it meets the old, gripped end in a knotter. After the two ends are tied and knotted, the free ends of the two yarn ends are cut off, the knotted portion of the yarn is released from the knotter, and feeding of the yarn into the yarn storage magazine is resumed.

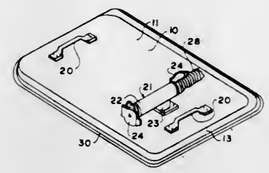
3,643,991
CONDUIT THREADING TOOL
Jack Eaton, Gleason, Wis., assignor to Van Ert Electric, Rudolph, Wis.
Filed June 1, 1970, Ser. No. 42,005
Int. Cl. A47f 13/06
U.S. Cl. 294—19 4 Claims



A tool to be used in threading conduit or pipe section together. The tool includes a roller to be inserted in the free end of the pipe section, and the roller is journaled on a shaft which extends outwardly from the lower end of a column. A pair of handles project from opposite sides of the column and are adapted to be grasped by a workman to hold the free end of the pipe section above the ground and in alignment with the other pipe section to be joined. As the pipe section is manually rotated to threadedly connect the pipe sections, the pipe section will rotate freely on the roller.

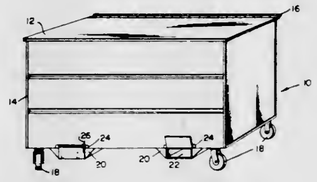
3,643,992
TILE HOLDING AND PLACEMENT DEVICE
Romeo Jacobucci, 337 Lynbrook Drive, Winnipeg 20, Manitoba, Canada
Continuation-in-part of application Ser. No. 847,065, Aug. 4, 1969, now abandoned. This application May 27, 1970, Ser. No. 40;915
Int. Cl. B66c 1/02
U.S. Cl. 294—65 4 Claims

A rectangular casing having a planar rubber facing apertured and communicating with the interior of the casing. A hose attachment on the back of the casing enables a vacuum hose to be attached thus transferring suction to the apertures.



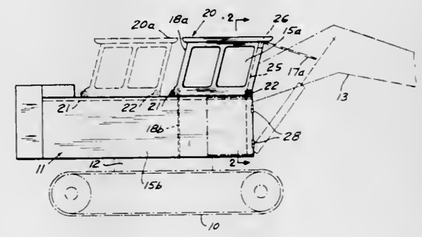
When the tiles are placed in position on the wall by the device, the vacuum is broken by releasing a cap on the other end of the hose attachment thus releasing the tiles.

3,643,993
FORK EXCLUDING FLAP FOR RUBBISH CONTAINER
Manuel Asadurian, Los Angeles, Calif., assignor to G. I. Rubbish Company
Filed Feb. 4, 1970, Ser. No. 8,662
Int. Cl. B65f 1/00
U.S. Cl. 294—73 3 Claims



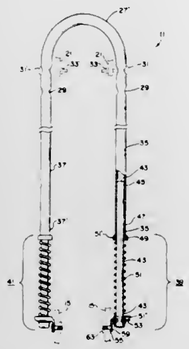
An improved container for refuse collection, which is adapted to be lifted and dumped by an appropriate elevating mechanism, is provided with a flap assembly on the supporting channels to prevent entry of lifting forks from the "wrong" side.

3,643,994
EXCAVATOR WITH AN OPERATOR'S CAB
Hans Egron Karlsson, Sater, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Dec. 10, 1969, Ser. No. 883,855
Claims priority, application Sweden, Dec. 12, 1968, 17058/68
Int. Cl. B62d 33/06
U.S. Cl. 296—28 C 4 Claims



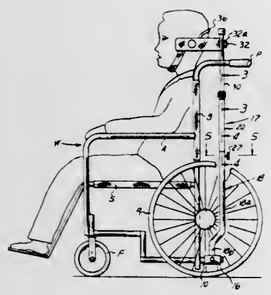
An excavator with an operator's cab which includes a cap which is displaceable from a forward end position in which it sealingly engages the front wall of the cab, to any desired rear position to expose a corresponding portion of the cab to the surrounding atmosphere for ventilating the cab.

3,643,995
SADDLE SUPPORT MEANS
Maurice E. Rich, Jr., Memphis, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.
Filed Nov. 3, 1969, Ser. No. 873,412
Int. Cl. B62j *1/02*
U.S. Cl. 297—209 13 Claims



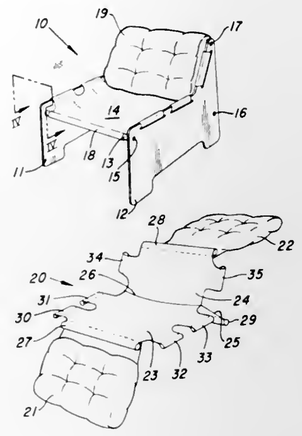
Assembly for supporting an elongated bicycle saddle or seat adjacent the rearward end. The assembly has an inverted U-shaped brace including a pair of elongated legs each having an elongated compression spring externally encircling the lower end thereof, to provide a more comfortable ride particularly over a bumpy or rough surface.

3,643,996
HEADREST APPARATUS FOR A WHEELCHAIR
William Carnahan, 2158 South M-47, Owosso, Mich.
Filed Feb. 27, 1970, Ser. No. 14,977
Int. Cl. A47c *7/36, 7/42*
U.S. Cl. 297—410 9 Claims



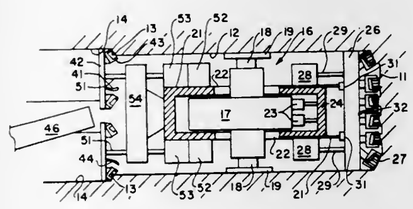
A wheelchair having rearwardly projecting frame members on which headrest apparatus is adjustably mounted for movements vertically and horizontally to accommodate patients of varying physiques. Mounting apparatus is provided to permit the headrest apparatus to swing in a horizontal plane and includes a swivel, and mechanism for selectively restricting the movement of the swivel.

3,643,997
SEATING UNIT AND WEB THEREFOR
Stuart John Gilbert, and Karen T. Gilbert, both of Constantine, Mich., assignors to Harter Corporation, Sturgis, Mich.
Filed June 4, 1970, Ser. No. 43,407
Int. Cl. A47c *4/02, 7/14*
U.S. Cl. 297—441 10 Claims



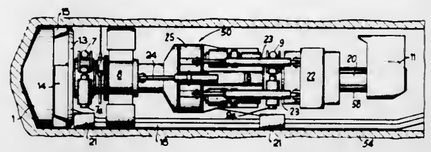
A knockdown-type seating unit comprises a pair of spaced, upwardly extending side panels, three horizontally spaced cross braces detachably secured between said side panels and together defining a seating frame, and an articulated web draped over said seating frame and held captive by said cross braces.

3,643,998
TUNNELING MACHINE FOR NONCIRCULAR BORES
Thomas N. Williamson, San Mateo, Calif., assignor to Jacobs Associates, San Francisco, Calif., a part interest
Filed Apr. 20, 1970, Ser. No. 29,998
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 4 Claims



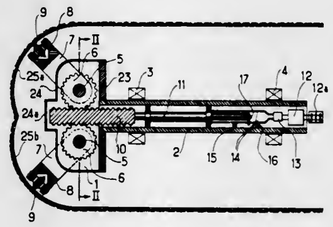
To bore a noncircular hole a conventional tunneling machine is provided with two or more rotatable cutter wheels mounted at the rear of the machine and rotating about axes parallel, but offset relative to, the main boring head of the machine. The main boring head digs the conventional circular bore. The rear-mounted wheels advance with the machine and dig into the circular bore to form the desired cross-sectional shape–D–or horseshoe-shape, etc.

3,643,999
TUNNEL DRIVING MACHINE
Gerd Kampf-Emden, Hosel; Heinz Horst, and Friedrich Klapdohr, both of Rheinhausen, all of Germany, assignors to Demag A.G., Duisburg, Germany
Filed Oct. 31, 1969, Ser. No. 872,808
Claims priority, application Germany, Nov. 9, 1968, P 18 07 971.5
Int. Cl. E21c *29/02*; E01g *3/04*
U.S. Cl. 299—31 6 Claims



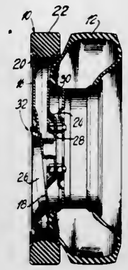
A tunnel driving machine includes an elongated machine frame having a central large frame portion accommodating a tunnel tool driving gearing and the associated driving motors and a forwardly extending and rearwardly extending tubular frame portion. The forwardly extending portion accommodates the main shaft for the forward driving tool and it is supported on front bracing in a manner permitting its longitudinal shifting movement relative to the bracing. A rearwardly extending tubular portion is supported in rear bracing which permits a longitudinal shifting movement. In addition to the front and rear bracing, there is a front support and a rear support for the tubular frame which may be selectively engaged with the tunnel wall during the times at which the front and rear bracing are removed from tunnel-wall engagement and shifted longitudinally. The construction includes driving motors connected between the main frame and the front bracing and main bracing and the rear bracing for facilitating advancing movement of each bracing element within the tunnel during those times at which the frame is supported on the front and rear supports.

3,644,000
TOOL HAVING A SWEEPING MOVEMENT FOR CONTINUOUS BORING OR CUTTING MACHINE
Marcel Montacie, Paris, France, assignor to Union Industrielle Blanzy-Quest, Paris, France
Filed Feb. 17, 1970, Ser. No. 11,992
Claims priority, application France, Feb. 17, 1969, 6903893
Int. Cl. E21c *27/24*
U.S. Cl. 299—86 5 Claims



A tool for a rotating head of a continuous boring or cutting machine wherein the tools are mounted in pairs and are symmetrically arranged in relation to the axis of the rotating head and are caused to oscillate automatically in a radial direction by a rack and pinion drive mechanism operated by a double-action hydraulic jack means powered by an automatically controlled electrically driven hydraulic pump, wherein the movement of each pair of tools is synchronized and operate in opposite directions to each other to thereby provide dynamic and static balancing of the rotating head to perform a continuous boring or cutting operation.

3,644,001
EMERGENCY WHEEL
Robert Lavallee, 2131 Chapdelaine Apt. 10, Quebec, 10 Quebec, Canada
Filed Feb. 17, 1970, Ser. No. 12,100
Int. Cl. B60b *11/00*
U.S. Cl. 301—38 S 13 Claims



An emergency wheel comprising an outer disc carrying a tire and an inner disc adapted for concentric attachment to the regular wheel of a vehicle. Both discs are rotatably joined by eccentrically and obliquely disposed mating portions, causing the outer disc to shift from a position eccentric and oblique with respect to the regular wheel of the vehicle, to a position concentric with and parallel to the regular wheel and closely encircling the same. Means are also provided for securing the inner disc with respect to the outer disc when shifted to such concentric and parallel position.

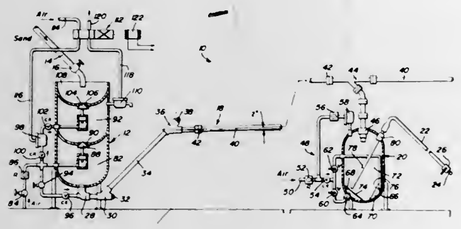
3,644,002
WHEEL WEIGHT ASSEMBLY FOR A TRACTOR
Hubert Barth, Mannheim, and Klaus Hauk, Altrip, Ludwigshafen, both of Germany, assignors to Deere & Company, Moline, Ill.
Filed Aug. 12, 1970, Ser. No. 63,093
Claims priority, application Germany, Aug. 20, 1969, P 19 42 315.5
Int. Cl. B60b *15/28*
U.S. Cl. 301—41 W 15 Claims



Individual, ring-shaped wheel weights are provided as ballast for increasing the traction of a tractor. The weights are constructed to be mounted coaxially, one against the other, in numbers sufficient to supply the ballast desired. The first weight mounted is bolted to the outer face of the wheel disc and the weights added thereafter are secured in succession only to the adjacent previously mounted weight. The connection between the adjacent weights is effected by a pair of interengaged hook and shoulder connection parts in cooperation with a bolt which is inserted into and held by a nut in an opening formed by cooperating, U-shaped grooves in the adjacent weights. The hooks, shoulders and grooves are so

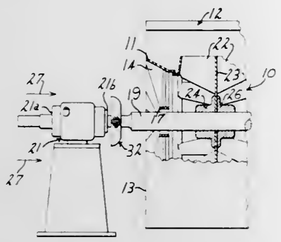
disposed relative to each other that by tightening the nut on the bolt the hooks of the weight being mounted become tightly engaged with the shoulders of the adjacent mounted weight.

3,644,003
PNEUMATIC PRESSURE CONVEYING SYSTEM
Irwin Von Funk, P.O. Box 157, Macungie, Pa.
Filed Jan. 12, 1970, Ser. No. 2,064
Int. Cl. B65g *53/40*
U.S. Cl. 302—53 **14 Claims**



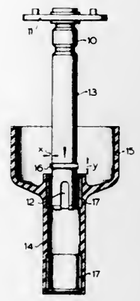
A conveying conduit is maintained completely filled with dry sand by an air pressurized supply from a refill vessel. The sand is transferred by the conduit to one or more dispensing vessels maintained at a substantially lower pressure than the conveying conduit. The sand is fluidized and selectively discharged from the dispensing vessel under this substantially lower pressure while the sand in the conduit is maintained pressurized when flowing as well as in a static condition when discharge from the dispensing vessel is stopped.

3,644,004
MEANS TO PREVENT LUBRICANT FROM BEING FORCED OUT OF BEARINGS AND THE LIKE
Alton E. Hand, Birmingham, Ala., assignor to Zurn Industries, Inc.
Filed Aug. 18, 1970, Ser. No. 64,785
Int. Cl. F16c *33/72*
U.S. Cl. 308—36.3 **2 Claims**



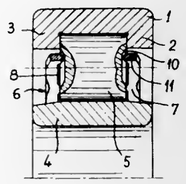
Means to prevent lubricant from being forced out of shaft supported bearings and the like when the bearing is subjected to differential in pressure at opposite ends. The pressure against the downstream end or face of the bearing is increased by reversely directing some of the air flowing axially of the bearing against the downstream end thereof, thus in part equalizing pressure at both ends, preventing lubricant from being drawn through the bearing.

3,644,005
METHOD OF MAKING JOURNAL CONSTRUCTIONS
Karl-Heinz Schneider, Sonthofen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 28, 1970, Ser. No. 6,511
Claims priority, application Germany, Jan. 29, 1969, P 19 04 275.2
Int. Cl. F16c *29/12*
U.S. Cl. 308—37 **5 Claims**



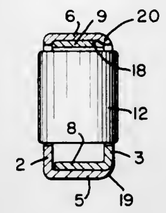
A tubular journal member of predetermined inner diameter and composed of material having a predetermined elasticity is provided. An element to be journaled in the journal member has an outer circumferential surface of a given diameter and at least one circumferential bead projecting from the surface by a predetermined amount. The bead is inserted through the journal member and the diameters, the predetermined amount of projection and the elasticity of the material of the journal member are so correlated that insertion of the bead through the journal member effects calibration of the inner diameter of the latter with the material of the journal member elastically yielding to the bead and thereupon returning to define with the outer circumferential surface a predetermined amount of play.

3,644,006
CAGES FOR ROLLER-BEARINGS
Pierre Feuillat, and Joseph Lyard, both of Annecy, France, assignors to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France
Filed Nov. 18, 1969, Ser. No. 877,782
Claims priority, application France, Nov. 20, 1968, 174606
Int. Cl. F16c *19/26*
U.S. Cl. 308—213 **1 Claim**



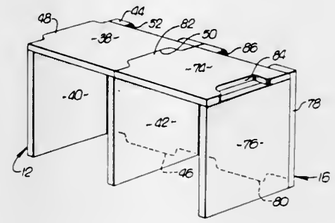
This cage, separator or retainer for roller-bearings consists of a one-piece envelope and the rollers are retained, in the absence of one of the bearing races, by bosses formed in said cage and engaging adequate cavities centered at each end of the rollers.

3,644,007
HIGH-SPEED ROLLER THRUST BEARING
Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed July 29, 1970, Ser. No. 59,097
Int. Cl. F16c *33/64*
U.S. Cl. 308—235 **5 Claims**



A roller thrust bearing including a cage composed of a pair of C-shaped cage members which have slotted faces and pairs of lips extending at right angles from the faces. The two cage members fit together with their lips overlapped and their faces spaced in parallel relationship with a group of bearing rollers having substantially flat ends housed in the cage and seated in the face slots. The face slots are extended radially outward far enough for the outer ends of the rollers to seat on the lips at the outer periphery of the cage without interferring with the rollers.

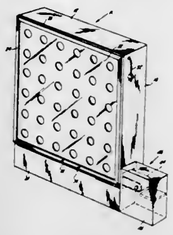
3,644,008
MODULAR CABINET CONSTRUCTION
Robert R. Overby, 4721 Clinton St., Los Angeles, Calif.
Filed May 11, 1970, Ser. No. 36,001
Int. Cl. A47b *87/02*
U.S. Cl. 312—107 **14 Claims**



Modular cabinet assembly wherein the modules are vertically stacked and horizontally sequenced, being in wall sharing, interlocked relationship. The modules in each vertical stack share horizontal walls, each having a top wall that serves as the bottom wall of the next module above; while the modules in each horizontal sequence share vertical walls, each having an outer sidewall that serves as the inner sidewall for the next added module in the sequence.

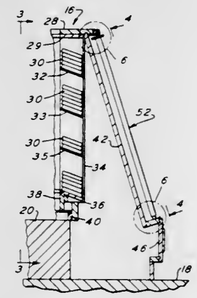
3,644,009
DISPLAY RACK FOR TAPE CARTRIDGES
Henry W. Tyler, 7112 Wilshire Blvd., Des Moines, Iowa
Filed July 28, 1970, Ser. No. 58,831
Int. Cl. A47f *3/00*
U.S. Cl. 312—117 **4 Claims**

A compartmented display rack for tape cartridges which includes a transparent barrier or door through which the cartridges can be viewed. The door is suitably spaced from the tape compartments and includes a plurality of openings through which a viewer can extend his hands for removing individual tapes from the compartments for inspection but with the openings being of a size that will not permit the tapes to be passed therethrough. A conveyor is disposed at



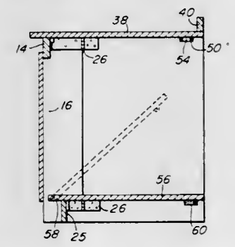
the bottom of the rack between the barrier and the compartments so that any cartridge selected for purchase can be deposited on the conveyor which delivers the same to a point of deposit under the control of the store management.

3,644,010
TAPE CASSETTE DISPLAY FIXTURE
John F. Murphy, Allentown, Pa., assignor to Hess's of Allentown, Inc., Allentown, Pa.
Filed Sept. 8, 1970, Ser. No. 69,640
Int. Cl. A47f *3/10*
U.S. Cl. 312—135 **12 Claims**



A tape cassette display fixture is disclosed wherein tape cassettes are displayed in a manner which minimizes the possibility of theft while exhibiting tape cassettes in an attractive manner, facilitating observation of both sides of the cassette by potential purchasers.

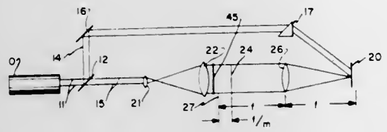
3,644,011
COLLAPSIBLE CABINET
Kenneth A. MacDonald, 251 York St., Canton, Mass.
Filed July 20, 1970, Ser. No. 56,535
Int. Cl. A47b *43/00*
U.S. Cl. 312—258 **3 Claims**



A cabinet is formed with hinged sidewalls, a removable top and a hinged inner shelf adapted to fold into a thin, compact

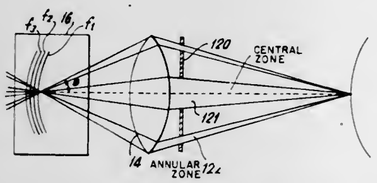
unit for shipping and storing. The cabinet is readily folded and erected without the use of tools, the top locking in and out of position by means of snap catches.

3,644,012
RECORDING MICROHOLOGRAMS OF MAGNIFIED VIRTUAL IMAGES
Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Oct. 16, 1970, Ser. No. 81,456
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **4 Claims**



A microhologram of a magnified virtual image of the object is recorded. This is accomplished by a lens interposed between the object and the hologram. The object is positioned in a plane spaced from the front focal plane of the lens by a distance which determines the desired magnification. The hologram itself is disposed approximately in the rear focal plane of the lens. The hologram is reproduced by the conjugate reference beam of the one that was used for recording it. This will generate a magnified real image which may be projected on a screen. By means of a lens, the image may be directed in a desired direction. However, no lens is required for viewing the magnified reproduced object.

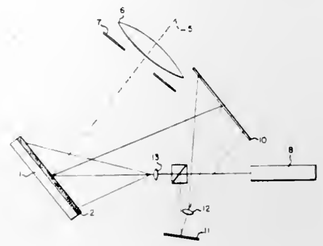
3,644,013
THREE-DIMENSIONAL CAMERA
Gordon Gould, New York, N.Y., assignor to Holobeam, Inc., Paramus, N.J.
Filed Aug. 21, 1968, Ser. No. 754,335
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **7 Claims**



A three-dimensional hologram producing camera utilizing a single lens system for providing a volumetric image on bulk sensitive film having a zone plate positioned in front of the lens to provide greater resolution to the recorded image point formed as a volumetric biconically shaped light distribution in the film bulk.

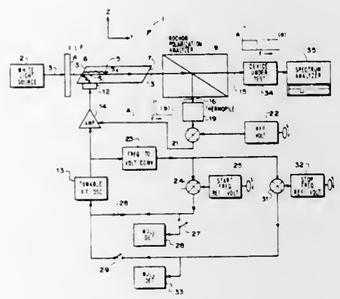
3,644,014
IMAGE-RECORDING METHOD AND DEVICE
Joseph G. Hirschberg, Coral Gables, Fla., assignor to Research Corporation, New York, N.Y.
Filed Oct. 23, 1969, Ser. No. 868,787
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **4 Claims**

Reproducible images of the transverse distribution of energy in a beam of radiation are formed by focusing the beam on a layer of an energy-absorbing substance of low heat conductivity which topically expands in proportion to the equivalent heat content of the radiant energy pattern in the beam to form a steric image thereof and recording the steric image thus formed by double-exposure holography. The



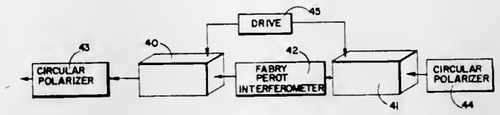
energy-absorbing reactive layer may be formed of natural substances, such as cork, or of artificial compositions, such as urethane or styrene foams. The reactive layer may be supported on a plate of metallic, plastic or vitreous material, and may be coated with an energy-absorbing coating.

3,644,015
ACOUSTO-OPTIC BAND REJECT LIGHT FILTER AND APPARATUS USING SAME
John R. Hearn, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 18, 1970, Ser. No. 47,267
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **12 Claims**



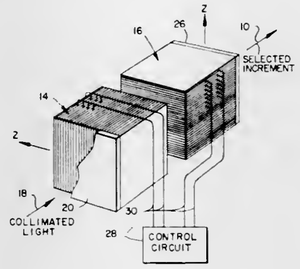
An acousto-optic band reject light filter is disclosed. The light filter includes an optically anisotropic medium, such as a birefringent crystal, in which an acoustic wave is excited at a certain selected radiofrequency corresponding to a selected optical frequency to be rejected. The crystal is disposed to receive an incident light beam containing the selected optical frequency to be rejected. The light beam is collinearly diffracted on the acoustic wave within the optically anisotropic medium to diffract light of a first polarization and of the selected optical frequency related to the acoustic frequency into light of a second polarization. The diffracted light beam is then passed through a polarization analyzer to reject from the diffracted light beam light of the second polarization while retaining in the diffracted light beam light of the first polarization. The selectable frequency in the light beam which is to be rejected can be tuned over a wide band by tuning the frequency of the acoustic wave within the crystal.

3,644,016
OPTICAL ISOLATOR
John A. Macken, Orange, Calif., assignor to North American Rockwell Corporation
Filed Mar. 19, 1968, Ser. No. 714,307
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **1 Claim**



An optical isolator is constructed using a pair of rotating half-wave plates as the active elements. In a first embodiment, the rotating half-wave plates are arranged in series between a pair of linear polarizers, the spacing between the plates being adjusted to pass light travelling in one direction but not in the opposite direction. In a second embodiment, a Fabry-Perot interferometer is positioned between two rotating half-wave plates so as to pass circularly polarized light travelling in one direction but not in the opposite direction.

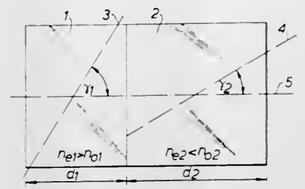
3,644,017
ELECTRO-OPTIC LIGHT MODULATOR WITH AREA SELECTION
Richard S. Ploss, Danvers, Mass., assignor to Baird-Atomic, Inc., Cambridge, Mass.
Filed Dec. 2, 1968, Ser. No. 780,345
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **6 Claims**



An electro-optic valve construction is capable of transmission throughout the entire field or at selected incremental regions. The construction is characterized by at least one stack of thin electro-optic plates, the opposite faces of which are in contiguity with interposed conducting strata. These plates are disposed in planes that are parallel to an axis of incident-collimated light in order to provide selected incremental windows under the control of selected pairs of conducting strata.

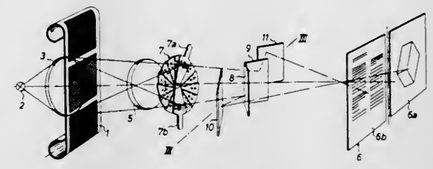
3,644,018
DOUBLY REFRACTING CRYSTAL ARRANGEMENT FOR REDUCING APERTURAL DEFECTS
Gunter Pasold, Dresden, Germany, assignor to Veb Kombinat Robotron, Radeberg, Germany
Filed Mar. 24, 1970, Ser. No. 22,202
Int. Cl. G02b *5/30*
U.S. Cl. 350—157 **5 Claims**

Arrangement of doubly refracting crystals for reducing apertural defects characterized in that there is added to a double refracting crystal a second double refracting crystal having the same geometrical form but having an opposite sign of double refraction, the optical axis of the second



crystal being located in the plane defined by the system axis and the optical axis of the first crystal.

3,644,019
OPTICAL APPARATUS FOR THE REPRODUCTION OF SUPERIMPOSED PICTURES
Friedrich Bestenreiner, Grunwald near Munich; Reinhold Deml, Munich; Ulrich Greis, Miesbach, and Josef Pfeifer, Unterhaching, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 6, 1969, Ser. No. 863,775
Claims priority, application Germany, Oct. 5, 1968, P 18 01 540.2
Int. Cl. G02b *27/18, 27/38*
U.S. Cl. 350—162 SF **13 Claims**

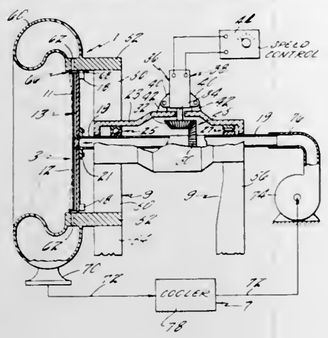


Images of two or more groups of pictures exposed onto a photosensitive record carrier in the presence of gratings are projected onto a screen by focusing all of the pictures into a focal plane which accommodates several adjustable diaphragms or analogous image selecting devices each blocking all but one image of the corresponding group. Mirrors or analogous optical deflecting components are used to project the unblocked images from the focal plane onto separate sections of a screen so that two or more images can be viewed simultaneously.

3,644,020
VARIABLE CONTOUR REFLECTOR WITH COOLING SYSTEM
Thomas E. Shannon, Knoxville, Tenn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 6, 1970, Ser. No. 17,103
Int. Cl. G02b *5/10;* **F21v** *29/00*
U.S. Cl. 350—295 **11 Claims**

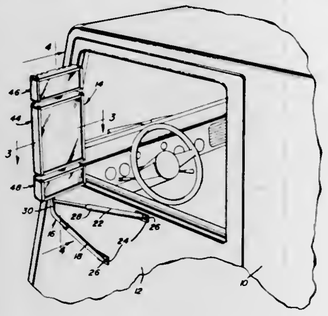
A circular reflector or mirror is mounted in a housing for rotation about a hollow shaft fixed to its center. A drive mechanism is provided to drive the reflector at various speeds. The reflector is provided with channels therein from its center to its outer periphery through which a coolant can flow from said hollow shaft to cool the reflector. A manifold is located around the periphery of the reflector to receive any coolant which passes therefrom. The coolant passes from the manifold and is recirculated through a cooler by a pumping means and directed back into the hollow shaft. Weights are located on the outer periphery of the reflector, offset

from the center plane of the reflector, to provide a force when the reflector is rotated to vary its contour. The outer periphery of the reflector is connected to the manifold by



sealing means to minimize loss of coolant at this point. The channels of the reflector can provide some pumping action if necessary.

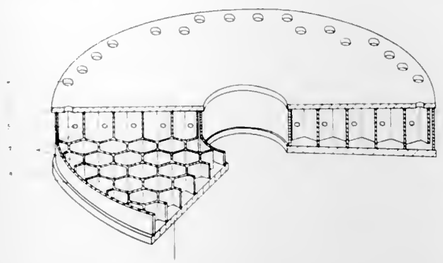
3,644,021
ADJUSTABLE VEHICLE MIRROR
Robert L. Hamby, Dodge City, Kans., assignor to Richard A. Wolfe, Dodge City, Kans., a part interest
Filed May 11, 1970, Ser. No. 36,011
Int. Cl. G02b *5/08*
U.S. Cl. 350—304 **4 Claims**



A rear vision mirror assembly for support from one side portion of a vehicle. The assembly includes a main upstanding mirror section of greater height than width and supported from a suitable support at two vertically spaced points for oscillation about an upstanding axis. The assembly further includes at least one upstanding secondary mirror section supported in vertically spaced relation relative to the main section by a ball and socket structure disposed between the main section and the secondary section whereby the secondary section may be universally adjusted relative to the main section.

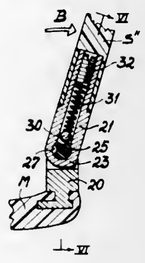
3,644,022
OPTICAL MIRROR
Reinhard Jagdt, Mainz-Gonsenheim, and Ingo Kloss, Grossauheim, both of Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau am Main, Germany
Filed Sept. 14, 1970, Ser. No. 72,062
Claims priority, application Germany, Oct. 18, 1969, P 19 52 584.9
Int. Cl. G02b *5/08*
U.S. Cl. 350—310 **5 Claims**

An optical mirror essentially consisting of a material containing silicon dioxide, for example, quartz glass, comprising a reflective plate, a carrier plate, and a supporting frame intermediate said plates and connecting them to each other and having a honeycomb structure consisting of a plurality of hexagonal cells, in which the supporting frame is composed



of a plurality of Y-shaped elements and the outer longitudinal edges of the three wings of each of these elements are welded together with the corresponding edges of the wings of the adjacent elements so that each hexagonal cell is formed by two wings of each of three adjacent elements.

3,644,023
SPRING-LOADED SPECTACLE HINGE
Luciano Villani, 2 Via Doria, 20026 Nova Milanese, Italy
Filed Jan. 21, 1970, Ser. No. 4,604
Claims priority, application Italy, Jan. 22, 1969, 11864-A/69
Int. Cl. G02c *5/16, 5/22*
U.S. Cl. 351—113 **4 Claims**

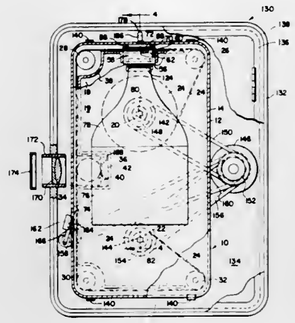


An improved hinge construction for spectacles, wherein two components are secured to the frontpiece and respectively the side arms of the spectacles' frame, the said components comprising cam means and spring-biased cam follower means for providing an elastic resistance to widening apart of the side arms, outside of a given service position, and planar faces complementary arranged for abutting on each other when a given excess-wide position is attained, providing a positive stop to further widening apart.

3,644,024
APPARATUS FOR PROCESSING A STRIP OF PHOTOGRAPHIC MATERIAL
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 3, 1969, Ser. No. 788,897
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **24 Claims**

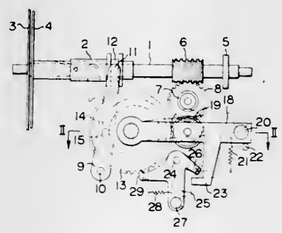
A motion picture film-processing system employing an applicator having an orifice through which processing fluid may be expressed onto a strip of exposed film as the film is drawn across the face thereof. Processing fluid is initially stored in a collapsible container having a weakened portion adapted to rupture when a predetermined compressive force is applied to the container. An expandable chamber having a restricted

exit orifice communicating with the applicator also has an entrance port connected to the weakened portion of the collapsible container. Positioned in operable relationship to the expandable chamber is a force-applying member adapted to exert a pressure on the fluid after it has been received into



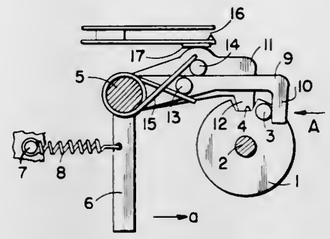
that chamber to cause the fluid to be fed from the expandable chamber to the applicator. This system can advantageously be employed in a compact multipurpose film-handling cassette adapted to be mounted in both a camera and a projector.

3,644,025
DEVICE FOR CONTROLLING ANGLE OF OPENING OF SHUTTER FOR MOVIE CAMERA
Yoshihisa Katsuyama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Mar. 2, 1970, Ser. No. 15,430
Claims priority, application Japan, Mar. 27, 1969, 44/26696
Int. Cl. G03b *21/36*
U.S. Cl. 352—217 **4 Claims**



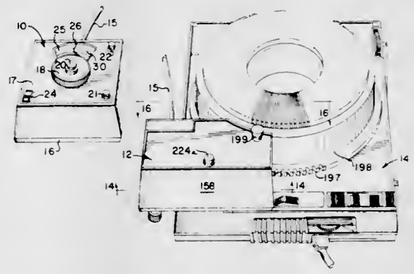
A device for controlling a variable shutter in a motor driven movie camera having a multibladed adjustable shutter in which relative movement between the shutter blades varies the opening angle of the shutter aperture. A driving train is provided for relatively moving the shutter blades which includes a cam connected to the shutter blades so that one revolution of the cam opens or closes the shutter aperture, a driven gear carried by the cam, clutch means, manually operable means for actuating the clutch means including a manually controlled lever movable between a first position in which a driven gear is disconnected from a driving gear and a second position in which the control lever actuates the clutch means to interconnect the driving gear with the driven gear. A detent pawl is engageable with the teeth of the driven gear for arresting variation of the shutter aperture, said detent pawl being movable in cooperation with the control lever to disengage it from the driven gear when the control lever is positioned in its second position.

3,644,026
STOPPER DEVICE FOR ELECTRICALLY OPERATED SHUTTER OF A CAMERA
Katuhiko Toda, Yokohama-shi, Japan, assignor to Canon Inc., Tokyo, Japan
Filed Dec. 22, 1969, Ser. No. 887,438
Int. Cl. G03b *9/10*
U.S. Cl. 352—219 **7 Claims**



A stop device for holding an electrically operated camera shutter in a locked position is provided by a pair of arms pivotally mounted on a shaft with a release lever arranged to pivot the arms. In the locked position one of the arms engages a stop block on a rotatable disc while the other arm has a detent at its free end which engages within a notch in the circumferential periphery of the disc. The disc is associated with the shutter and is rotatable by the device which electrically operates the shutter. When the release lever pivots the arms to unlock the disc for rotation, one of the arms closes a switch which actuates a motor for rotating the disc. The release lever and the arm are spring biased so that the arms are positioned relative to the disc to engage it in the locked position after it completes one revolution. In locking the disc one arm contacts the stop block while the detent on the other arm drops into the notch on the disc and breaks the switch for stopping the motor driving the disc.

3,644,027
RANDOM SELECTION SYSTEM FOR A SLIDE PROJECTOR
Frank P. Bennett, Northbrook, Ill., assignor to GAF Corporation, New York, N.Y.
Filed June 24, 1968, Ser. No. 739,353
Int. Cl. G03b *23/06*
U.S. Cl. 353—25 **13 Claims**



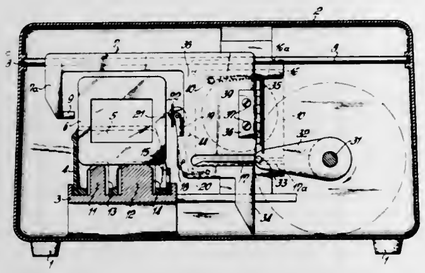
The random selection system consists of an attachment unit which is detachably mounted on the housing of the slide projector, a remote control unit which is separate and remote from the slide projector, and an extension cable connecting these units. The attachment unit contains a commutator. The remote control unit includes receiving means in the form of DC motor parts. The commutator acts as a transmitter and the motor parts as a receiver for stepping or rotating the

rotor in synchronization with rotation of the movable component of the commutator. The rotor drives a seeking contact for movement in an arcuate path.

3,644,028
SLIDE CHANGER MECHANISM FOR SLIDE PROJECTORS

Helmut Rube, Endersbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed Feb. 17, 1969, Ser. No. 799,558
Claims priority, application Germany, Feb. 17, 1968, P 16 22 087.4
Int. Cl. G03b *23/02;* **F16d** *7/02;* **F16h** *21/18*
U.S. Cl. 353—103 **8 Claims**

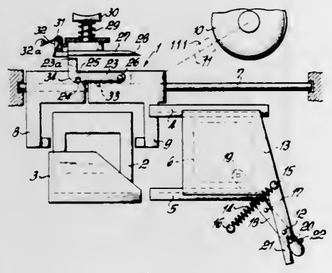


Slides in a slide projector are movable from their tray to projection position and vice versa by a reciprocable carriage which is driven by an electric motor through the intermediary of a friction clutch when it transports slides back into the tray and through the intermediary of the friction clutch and a second clutch, which latter can transmit a weaker force than the friction clutch, when the slides are moved from the tray to projection position so that a slide which jams during movement toward projection position can be returned to the tray because the carriage is driven with a greater force when it moves slides back into the tray.

3,644,029
SLIDE PROJECTOR

Albert Stieringer, Calmbach, Germany, assignor to Robert Bosch GmbH, Stuttgart-Unterturkheim, Germany

Filed Aug. 6, 1969, Ser. No. 848,010
Claims priority, application Germany, Aug. 14, 1968, P 17 97 084.1
Int. Cl. G03b *23/02*
U.S. Cl. 353—103 **10 Claims**

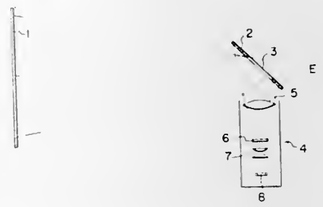


A slide projector wherein the slide changer comprises two arms connected to each other by a coupling and wherein the gate is normally overlapped by a shutter. One of the arms serves to move the shutter away from closed position by way of a slide which is being transported from the magazine to projection position, and the other arm serves to return the slide from projection position back to the magazine. When the operator wishes to skip a slide and to retain the shutter in closed position, the coupling is disengaged to hold the one arm against movement with the other arm until a desired slide reaches the position from which it can be transported into registry with the gate.

3,644,030
LIGHT SOURCE SYSTEM

Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 8, 1969, Ser. No. 839,936
Claims priority, application Japan, July 12, 1968, 43/49223
Int. Cl. G03b *21/28*
U.S. Cl. 353—98 **4 Claims**

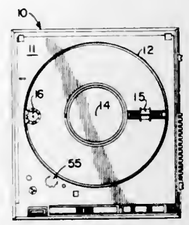


A light source system for a projection system wherein a reflecting mirror having an observation window formed through a center portion thereof is inclined in front of a projector and an object illuminated by light beam from a ring-shaped light source or ring-shaped light source image is projected upon a reflex reflecting screen through said reflecting mirror so that the projected image may be viewed through the observation window.

3,644,031
MEANS FOR ALTERNATELY INDEXING TWO SLIDE TRAYS WHICH DIFFER IN RESPECTIVE DISTANCES BETWEEN ADJACENT SLIDE-RECEIVING SPACES

Frank P. Bennett, Northbrook, Ill., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 739,353, June 24, 1968. This application Nov. 20, 1968, Ser. No. 777,280
Int. Cl. G03b *23/06*
U.S. Cl. 353—117 **1 Claim**

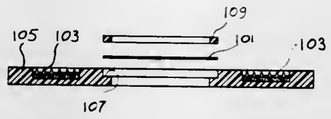


A slide projector is adapted for alternately receiving a "100-slide" tray and an "80-slide" tray. These trays have the same outside diameter. The "100-slide" tray is provided with 100 indexing teeth and the "80-slide" tray is provided with 80 indexing teeth, the teeth on the latter being shaped and spaced differently than the teeth on the former. The projector includes a single indexing gear having 12 teeth. During each slide-changing cycle, this indexing gear is rotated through 30°. Each tooth on the indexing gear engages the teeth on the "80-slide" tray at the distal end of the former such that a 30° rotational movement of the indexing gear rotates the "80-slide" tray 4.5°. Each tooth on the indexing gear engages the teeth of the "100-slide" tray at a location inwardly of the distal end of the former so that 30° of rotational movement of the indexing gear serves to rotate or advance the "100-slide" tray 3.6°.

3,644,032
AUDIOVISUAL PROJECTION SLIDES

Panayotis C. Dimitracopoulos, Montreal, Quebec, Canada, assignor to The A. V. Corporation N. V., Curacao, Netherlands

Filed Feb. 10, 1967, Ser. No. 615,141
Int. Cl. G03b *21/00*
U.S. Cl. 353—120 **8 Claims**

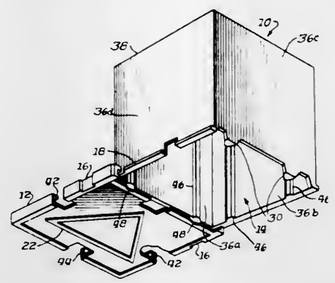


An audiovisual projection slide having a spiral sound track surrounding a projectable transparency, the sound track being formed on a magnetized film impressed with a spiral groove and the magnetized film having optionally beneath it a spongy, resilient, backing layer. The slide may constitute a data record card carrying on its surface the spiral sound track surrounding a window adapted to receive a projectable transparency, but in this case, the spiral sound track may also be of other desirable types, for example, phonographic.

3,644,033
SLIDE MAGAZINE

Richard Frystak, Park Ridge, and Irwin M. Gould, Skokie, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sept. 23, 1969, Ser. No. 860,856
Int. Cl. G03b *21/00*
U.S. Cl. 353—120 **8 Claims**



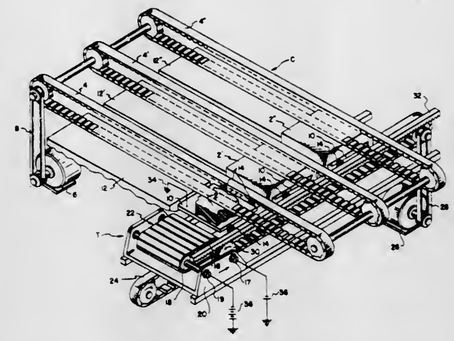
A novel slide magazine especially adapted to present slides accurately to a slide projector in a horizontal plane and to provide a convenient storage device for photographic slides.

3,644,034
BELT TRANSFER DEVICE

Raymond L. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,501
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 **7 Claims**

An electrostatic toner image transfer device is provided in which separate photoconductive elements are brought into registration at a transfer station against registration pins. Transfer of the toner image from the photoconductive element to a receiver sheet is accomplished by means of a transfer device comprising spaced rollers having an endless belt extending therearound which includes alternating conductor and insulative segments and has means for supporting the receiver thereon. A first potential can be applied to one roller to assure intimate contact between the receiver and the photoconductive element and a second and greater potential of the same polarity may be applied to the second roller to cause transfer of the toner image from the photoconductive

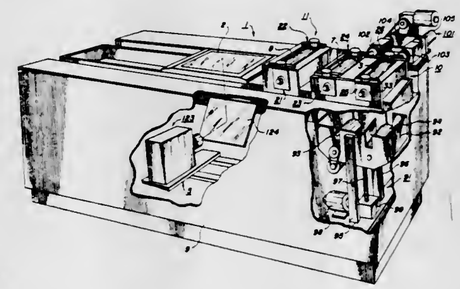


element to the receiver. As the transfer device is moved through the transfer station the receiver is brought into progressive line contact with the photoconductive element by the first roller followed by the second roller which causes image transfer from the photoconductive element to the receiver and separation of the receiver from the photoconductive element along a progressive line. The segmented belt supports the receiver stationarily against the photoconductive element and successively conducts the potential applied by the respective rollers to the receiver. A plurality of transfer stations can be provided so that a plurality of images can be transferred sequentially to a single receiver, if desired.

3,644,035
FLAT PLATE TRAVELING ROLLER IMAGING SYSTEM

Raymond K. Egnaczak, Williamson, and Gino F. Squassoni, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

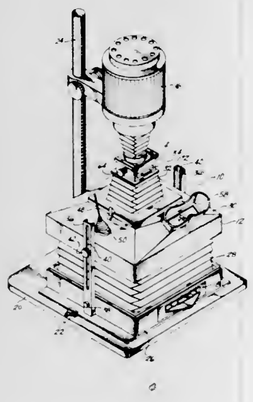
Filed Nov. 14, 1969, Ser. No. 876,848
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **19 Claims**



A photoelectrophoretic imaging machine employing a stationary electrode over which two imaging and one transfer roller electrode travels to form and transfer an image formed from photoelectrophoretic ink exposed to light and subjected

to electric field. The roller electrodes are journaled in two separate carriages with one drive mechanism employed to propel the carriages and a second drive mechanism employed to rotate the roller electrodes. The roller electrodes are lowered into contact with the stationary electrode by an elevator mechanism that enables the forces exerted on the roller to be varied from one end of a roller to the other. Means are provided for loading and ejecting a record sheet from the surface of the transfer roller. An auxiliary drive mechanism and cleaning station are positioned to engage the imaging roller electrodes after they pass over the stationary electrode.

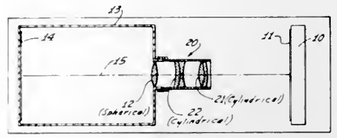
3,644,036
APPARATUS FOR PHOTOGRAPHIC PRINTING WITHOUT A DARKROOM
Merlyn O. Canfield, 27022 12th Ave. S., Kent, Wash.
Filed June 8, 1970, Ser. No. 44,477
Int. Cl. G03b *13/26*
U.S. Cl. 355—44 **18 Claims**



A lighttight casing adapted to be connected to the lens of a conventional photographic enlarger, and a lighttight photographic paper holding container movable in and out of the lighttight casing. The paper-holding container including a focusing target on one side, an opening having a slidable close on a second side opposite said focusing target and an internal paper display area aligned with the target and the opening. The paper-holding container adapted to be manipulated such that the focusing target and the internal paper display area may be placed an equal distance from the enlarger lens. The paper-holding container including light-trapping baffles which allow fluid to flow therethrough such that a sheet of exposed paper therein may be developed by immersing the paper-holding container serially in conventional photographic developing fluid baths. A method of exposing and developing a piece of photographic paper without a darkroom.

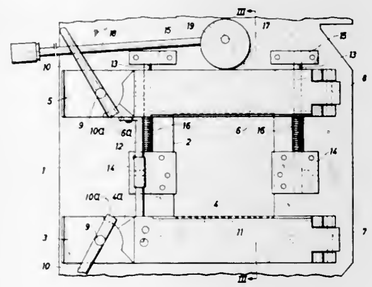
3,644,037
ANAMORPHIC LENS SYSTEMS
Philip Michel Larraburu, North Hollywood, Calif., assignor to CK Optical Co., Inc., Inglewood, Calif.
Filed Apr. 28, 1969, Ser. No. 819,790
Int. Cl. G03b *27/68*; **G02b** *13/08*
U.S. Cl. 355—52 **1 Claim**

An anamorphic lens system is provided which can be attached to a photographic camera. The anamorphic lens system takes width-compressed motion pictures and may be



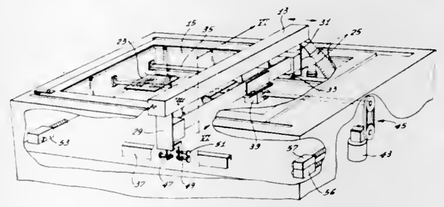
used for cinema-to-graphic projection at correspondingly concurring width expansion.

3,644,038
FILM-HOLDING DEVICE
Gunnar Nils Uddgren, Vaxelmyntscatan, 41 D Goteborg, Sweden
Filed Aug. 26, 1969, Ser. No. 853,111
Int. Cl. G03b *27/62*
U.S. Cl. 355—75 **3 Claims**



A film-holding device having two pairs of pivotally connected jaws for gripping and stretching film held therebetween, has one pair of said jaws fixedly mounted on a plate while the other pair of jaws is slideably mounted on said plate for movement to and from said first pair of jaws through operation of a cam or springs and said jaw pairs are each on an opposite side of an opening in said plate over which the film is positioned.

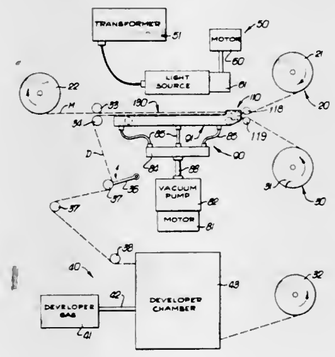
3,644,039
CONTACT PRINTER FOR PHOTOSENSITIVE MATERIAL
Barton H. Boyer, III, Santa Barbara, Calif., assignor to Varo Inc., Garland, Tex.
Filed Nov. 17, 1969, Ser. No. 877,389
Int. Cl. G03b *27/04*
U.S. Cl. 355—85 **1 Claim**



A cabinet for use with an optical system for exposure of either or both sides of a workpiece which is sensitive to light.

A transparent work holding frame, in which the workpiece is supported by a sheet of glass and covered by a sheet of plastic, is pivotally mounted on the cabinet. Air is withdrawn from between the glass and the plastic by a vacuum system acting through the pivot bearing structure and the vacuum created holds the workpiece firmly in place. A valve is mounted on the cabinet base for adjustment of the vacuum to preclude tearing or breaking the plastic when different sizes and shapes of workpieces are used. A sliding cam-latch is provided on the openable side of the frame to provide a positive closing between the members supporting the sheet of glass and the sheet of plastic. A safety interlock switch is provided to ensure that the lamp unit cannot be actuated when the work-holding frame is either open or pivoted from its normal position.

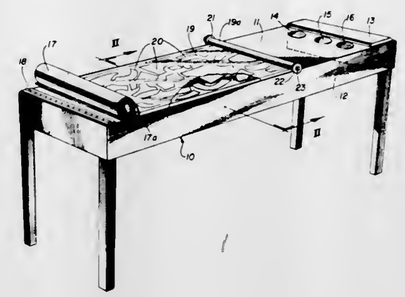
3,644,040
APPARATUS FOR CONTINUOUS CONTACT PRINTING
Robert Beispel, Westlake Village, Calif., assignor to Extek Microsystems, Inc., Van Nuys, Calif.
Filed Aug. 7, 1969, Ser. No. 848,201
Int. Cl. G03b *27/10*
U.S. Cl. 355—103 **9 Claims**



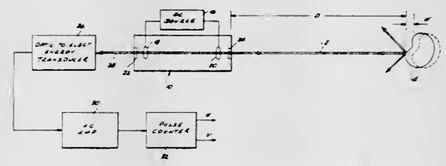
An apparatus for continuous contact printing from an image-bearing master transparent film to a continuous duplicate or light-sensitive strip of material, including, a frame carrying the master and duplicate on supply and takeup reels including means for driving such reels, a light source for exposing the duplicate when the master and duplicate are in an exposure zone, and means for positioning the master and duplicate during continuous movement of such master and duplicate including vacuum means for guiding and initially compressing the master and duplicate together and further vacuum means for maintaining the master and duplicate in registry during movement through the exposure zone. The duplicate and master have substantially no relative difference in speed and may also be laterally aligned so as to closely and accurately control the positioning of the master and duplicate with respect to one another.

3,644,041
COPIER FOR MAKING PRINTS OF PATTERN LAYOUTS ON LIGHT-SENSITIVE COPY PAPER
Hans Haus, 6250 Limburg/Lahn, Germany
Filed Aug. 28, 1969, Ser. No. 853,824
Claims priority, application Germany, Sept. 28, 1968, P 17 85 486.3
Int. Cl. G03b *27/04*
U.S. Cl. 355—122 **12 Claims**

This invention relates to a copier and, more particularly, to a copying machine for printing patterns and the like having means for holding the individual patterns in place while allowing the position to be adjusted.



3,644,042
LASER SYSTEM FOR MONITORING THE MOTION OF OBJECTS
William P. Kolb, Jr., Manhattan Beach, and Frank E. Goodwin, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 15, 1970, Ser. No. 46,080
Int. Cl. G01c *3/08*; **G01p** *3/36*
U.S. Cl. 356—5 **11 Claims**

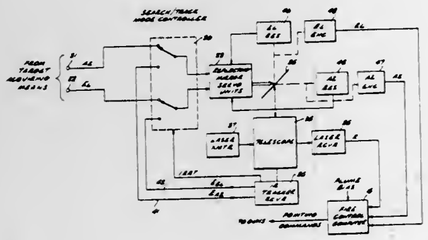


The motion of an object may be monitored by directing a laser beam at both 3.39μ and 0.6328μ from a helium-neon laser oscillator toward the object to be monitored in such manner that a portion of the laser beam is reflected by the object back into the laser, causing the laser to produce output laser energy at 0.6328μ which varies significantly in intensity in accordance with the motion of the object. The number of intensity maxima and minima is indicative of the distance moved, while the number of maxima and minima per unit time is indicative of the velocity of movement. The 0.6328μ output laser energy may be detected and processed electrically to obtain distance- and velocity-indicating signals. A laser amplifier may be disposed in the path of the laser beam to extend the range of the system and/or enable monitoring of lower reflectivity objects.

3,644,043
INTEGRATED INFRARED-TRACKER-RECEIVER LASER-RANGEFINDER TARGET SEARCH AND TRACK SYSTEM
Sheldon Jones, Palos Verdes Estates, and Raymond W. Briggs, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 11, 1969, Ser. No. 849,219
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **7 Claims**

For use in a fire control system, a target search and track system to which approximate azimuth and elevation information of the position of a searched target is applied, when the system is in a search mode. The information is used to cause

a pointing mirror to point to the target, so that infrared energy is received therefrom, and is reflected to an infrared tracker receiver. Once infrared energy from tee target is received, the system is switched to a track mode in which the position of the pointing mirror is controlled by error signals from the receiver. The receiver includes a detector array and an oscillating, of scanning mirror which, initially, is controlled to scan the array in a wide-angle coarse track mode, in which the array is scanned over a relatively large field of view. When the target is detected near the center of the receiver field of view, the receiver is switched to a small-angle fine track mode, in which the array of detectors is



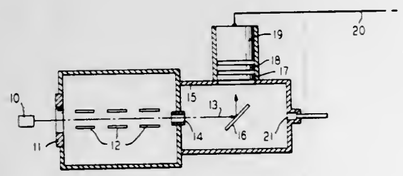
scanned over a much smaller field of view, so that the receiver provides a much higher rate of pointing mirror positioning signals. The positions of the pointing mirror, about two orthogonal axes of rotation, are encoded to provide tracked target azimuth and elevation information, which is supplied to a fire control computer. A laser rangefinder is incorporated, which uses the accurately positioned pointing mirror to reflect laser light to the target and receive laser light, which is reflected by the target back to the system. The laser rangefinder provides the tracked target range information.

3,644,044

METHOD OF ANALYZING A SOLID SURFACE FROM PHOTON EMISSIONS OF SPUTTERED PARTICLES

Norman Henry Tolk, Westfield, and Clark Woody White, Dover, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 20, 1970, Ser. No. 38,961
Int. Cl. H01j *37/26*; G01j *3/30*
U.S. Cl. 356—85 **6 Claims**



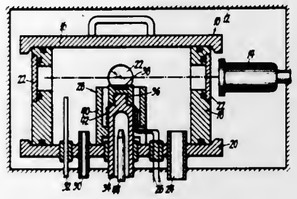
Identification of unknown constituents and their relative concentrations in a solid surface is made by bombarding the solid surface with an ion or molecule beam having low energy and low density, so as to achieve the sputtering of excited particles directly from the surface and resultant photon emissions characteristic of the sputtered particles.

3,644,045

ATOMIC ABSORPTION SPECTROSCOPY

Alan Walsh, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Victoria, Australia

Filed May 1, 1969, Ser. No. 821,008
Claims priority, application Australia, May 1, 1968, 37184/68
Int. Cl. G01j *3/42*
U.S. Cl. 356—85 **20 Claims**



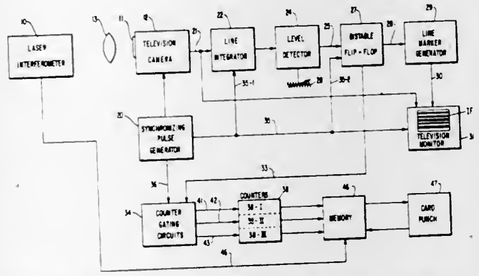
Method and apparatus for atomic absorption spectroscopic analysis, particularly of a solid sample substance, by sputtering the sample to produce an atomic vapor, illuminating the vapor with spectral radiation including the spectrum of an element to be determined and using a photodetector to measure the quantity of resonance radiation emitted by the vapor as a measure of the quantity of the element in the sample, with or without the use of modulation techniques to obtain usable signal to noise ratios in the detector output.

3,644,046

METHOD AND APPARATUS FOR MEASURING INTERFEROMETER FRINGE PATTERNS

William H. Ryan, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 2, 1969, Ser. No. 812,840
Int. Cl. ; G01b *9/02*; H04n *3/00*
U.S. Cl. 356—106 **15 Claims**



Method and apparatus for accurate automatic measurement of fringe pattern shift in an optical interferometer. Fringe patterns from an interferometer are imaged upon the photosensitive target of a television camera with fringe line patterns parallel to horizontal scanning lines or scanning raster of the TV camera. Scan line video signals from the camera are integrated and intensity detected to produce a corresponding binary fringe signal for controlling a bistable circuit which is caused to be in one or the other of its stable states according to whether the video signal from the TV camera is above or below, respectively, a selected threshold level, e.g. presence or absence of an interference fringe line during a line scan. Counters count the number of scanning lines occuring during the time the bistable circuit is in each of its states, respectively. Thus, the scanning lines between fringes as well as those covered by each fringe can be

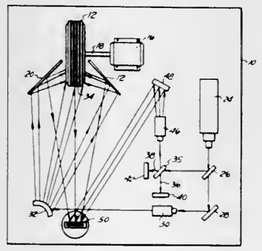
counted for as many fringes as necessary to determine fringe positions. The center of a fringe may be located by dividing the number of scanning lines per fringe by two. Consult the specification for further features and details.

3,644,047

APPARATUS AND METHOD OF SIMULTANEOUSLY INSPECTING A PLURALITY OF SURFACES OF A BODY BY HOLOGRAPHIC INTERFEROMETRY

Gordon M. Brown, Ann Arbor, and Kenneth R. Porter, Pinckney, both of Mich., assignors to GC Optronics Inc., Ann Arbor, Mich.

Filed May 8, 1956, Ser. No. 823,100
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **12 Claims**



To detect imperfections on at least two nonparallel surfaces of a pneumatic tire simultaneously the tire is inflated on a rotatably supported wheel and a hologram is formed of surfaces to be studied by photographically recording the interference pattern between an object beam originating from a laser and reflected from the tire and a composite reference beam derived from the laser. The object beam is formed by illuminating the tread surface of the tire directly and illuminating the sidewalls if the tire by means of mirrors which also direct the reflected light to a photographic plate. The composite reference beam is formed by passing the laser light through an interferometer which divides the light into two components and recombines them after they have gone through different path lengths. Since the components have traveled through different distances to arrive at the plate different components of the beam will be coherent with the reflections from the various nonparallel surfaces of the tire thereby allowing the photographic plate to record interference patterns with reflections emanating from the surfaces. With the use of either the real time or double exposure technique any variations in the surface contour of the nonparallel surfaces of the tire will be revealed in the form of anomalies in fringe lines or shaded areas which appear on the hologram because of the interference of the two optical wave systems and may be viewed by appropriately illuminating the hologram with the reference beam.

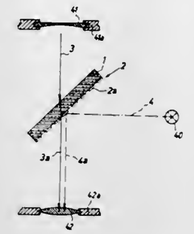
3,644,048

BRIGHTNESS INDICATING COMPARISON DEVICE

Hans Gunther, Unterhaching; Georg Konigl, and Hans Kortner, both of Muenchen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 23, 1970, Ser. No. 49,038
Claims priority, application Germany, June 27, 1969, P 19 32 751.6
Int. Cl. G01j *1/10*
U.S. Cl. 356—329 **10 Claims**

Reference light having a first color within a predetermined spectral range is combined with a colored part of the light to be measured which has passed through a filter having a second color within a spectral range complementary to the predetermined range. When the combined light assumes a third color, the brightness of the measured light is equal to the predetermined brightness of the reference light. Reflecting grid surfaces are used for deflecting the reference light into the path of the colored part of the measured light.

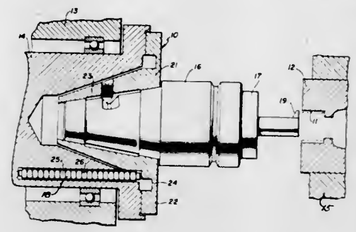


3,644,049

MACHINE TOOL

Robert S. Hahn, Northboro; David H. Youden, and Arthur F. St. Andre, both of Worcester, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Nov. 26, 1969, Ser. No. 880,239
Int. Cl. B23b *49/00*
U.S. Cl. 408—10 **4 Claims**



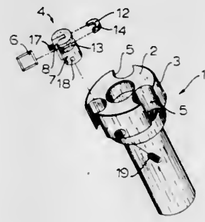
This invention relates to a machine tool and, more particularly, to apparatus for generating a surface of revolution with a single point tool where extreme accuracy is obtained by calculation of tool setting by means of electronic data processing.

3,644,050

CARTRIDGE-TYPE CUTTING TOOL WITH INSERT LOCK

Adam A. Schiller, Waukesha, Wis., assignor to Waukesha Cutting Tools, Inc., Waukesha, Wis.

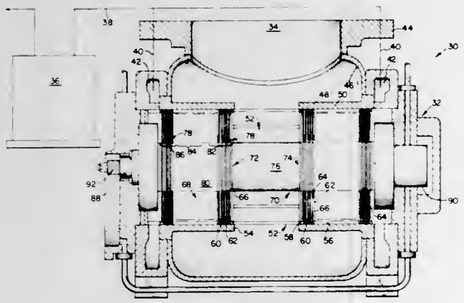
Filed Apr. 2, 1970, Ser. No. 25,113
Int. Cl. B23b *29/03*
U.S. Cl. 408—197 **9 Claims**



A rotary cutting tool having one or more cartridges for holding a cutting insert. Each cartridge is disposed in a lon-

gitudinal groove in the tool head, and a semicircular ringlike cam lock is disposed in a transverse slot in the cartridge body. Tightening of a setscrew in the cartridge body forces one cam lock end portion into engagement with the insert to lock it in place. The cam lock is also forced against the tool head groove wall to screw the assembly in place. An additional cartridge clamp is also provided for radial adjustment.

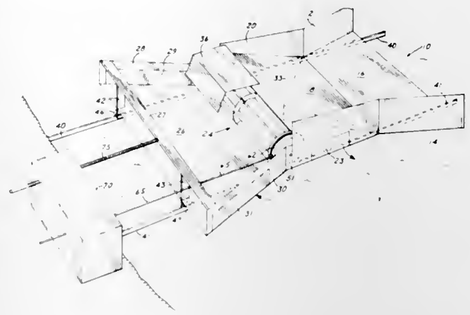
3,644,051
TURBOMOLECULAR AND STATOR PUMP HAVING IMPROVED ROTOR CONSTRUCTION
Ascher H. Shapiro, Cambridge, Mass., assignor to Sargent-Welch Scientific Company, Skokie, Ill.
Filed Oct. 27, 1969, Ser. No. 869,848
Int. Cl. F04b *19/16;* **F04d** *17/08*
U.S. Cl. 415—90 **21 Claims**



An axial turbo-type vacuum pump operating in the free molecule flow pressure range and characterized by a number of multistage groups, each group being operable principally in a different pressure range, and each stage of each group comprising a rotor element and an associated stator element. Each rotor includes a hub portion and a row of blades extending radially outwardly therefrom, with the blades having leading and trailing edges, and front and rear blade face portions in respect to the direction of travel on the rotor element. Each stator is of approximately mirror-image configuration in relation to its associated rotor. The relation between blade thickness blade chord, interblade spacing, radial blade span and blade angle are different for the elements of each group, and these and other characteristics of the rotors and stators, including the presence of trailing edge-leading edge overlap, are determined for each group to provide optimum performance characteristics for the entire turbopump.

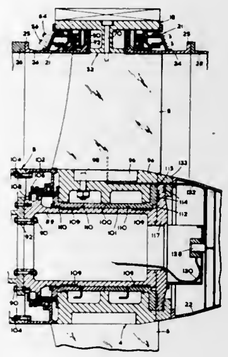
3,644,052
SEA WAVE POWER GENERATOR
William W. Lininger, 775 S. Corona St., Denver, Colo.
Filed Feb. 16, 1970, Ser. No. 11,481
Int. Cl. F01d *25/28*
U.S. Cl. 415—7 **2 Claims**

A power generator, utilizing sea waves as a motivating mechanism, having a rotatable paddle wheel arranged to rotate a propeller shaft, includes a gathering platform to guide incoming wave propelled sea water in an overshot flow onto the paddle wheel and discharging the same into a catch basin which releases impounded sea water, on the wave recession, in an undershot paddle wheel flow to utilize both



the incoming and outgoing sea waves as a source of power for the generator.

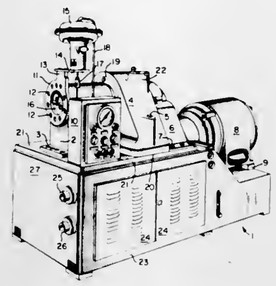
3,644,053
WATER TURBINES
Michael Braikevitch, and Emil Goldwag, both of Netherton, England, assignors to The English Electric Company, Limited, London, England
Continuation-in-part of application Ser. No. 804,446, Mar. 5, 1969, now abandoned. This application July 17, 1970, Ser. No. 55,641
Int. Cl. F01d *15/10;* **F16c** *7/04;* **F01d** *5/20*
U.S. Cl. 415—173 **8 Claims**



An axial flow water turbine comprises a runner disposed for rotation in a water flow tube and carrying a peripheral drive member such as an electrical generator rotor. The runner is mounted on a stub shaft carried by an upstream supporting structure. The stub shaft is provided with discrete resiliently mounted bearing pads between which and the runner hydrostatic lubrication can be provided.

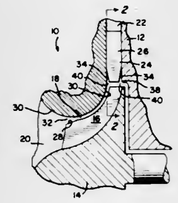
Preferably the stub shaft is hollow and each bearing pad is disposed in a recess formed in the stub shaft, the recess being provided with a detachable backing plate. Thus each pad can be withdrawn radially inwardly into the stub shaft and can be inspected or replaced without necessitating removal of the runner from the stub shaft.

3,644,054
COMPRESSOR BASE AND INTERCOOLERS
Karol Pilarczyk, Loudonville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 8, 1970, Ser. No. 44,034
Int. Cl. F04c *29/58;* **F24h** *9/08*
U.S. Cl. 415—179 **12 Claims**



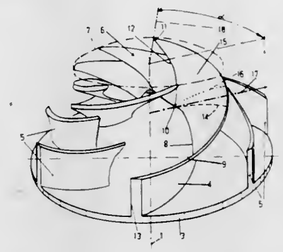
A base containing a pair of identical heat exchangers, demisters and separators has rigidly mounted thereon a cast multistage compressor casing provided with integral air inlet and discharge passages in direct communication with corresponding passages in the top wall of the base for providing the intercooling between stages. Fluid passes through the intercoolers by moving downwardly through the heat exchangers, downwardly through restricted nozzles and reversely upwardly for separating condensation, upwardly through the demisters and through central partition walls forming central manifold chambers. The liquid connections for the intercoolers may be uncoupled at one end for sliding the intercoolers off shelves from the opposite end. A telescopic resilient coupling between the casing inlet to the rotor and an inlet housing rigidly coupled to a fluid supply will prevent transmission of forces therebetween. The base further mounts the drive structure for the compressor and carries an oil sump below the drive structure.

3,644,055
FLUID-MOTION APPARATUS
Raymond C. Davis, Phoenix, Ariz., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,205
Int. Cl. F04d *1/00, 17/08*
U.S. Cl. 415—211 **9 Claims**



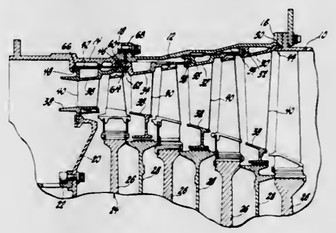
Fluid compressor, pump, or like fluid-motion apparatus having rotor with blades interposed in a housing chamber intermediate the fluid inlet and discharge ports. The blades have relieved areas formed in the lateral edges thereof which interface a wall of the chamber to communicate a high-fluid pressure zone on the one side of said blades with a low-fluid pressure zone at the other side of said blade, thereby to control the fluid boundary layer. Further included is a diffuser with similarly relieved areas in the vanes thereof to communicate the disparate pressure zones to either sides of the vanes.

3,644,056
CENTRIFUGAL PUMP
Samuel I. Wiselius, Hengelo, Netherlands, assignor to Koninklijke Machinefabriek Stork N.V., Hengelo, Netherlands
Filed Mar. 6, 1970, Ser. No. 17,135
Int. Cl. F04d *7/00*
U.S. Cl. 415—215 **2 Claims**



A centrifugal pump comprising a vaned impeller which has an axial inlet wherein the impeller vanes at the inlet end are extend in the normal direction of rotation of the impeller and in the axial direction, the extension from that end of the inlet edge adjacent the impeller hub, to the other end thereof gradually increasing from zero to a maximum value, and the total extension with respect to an axial plane through that end of the inlet edge which is adjacent the hub covering an arc length equivalent to an angle of between 30° and 180°.

3,644,057
LOCKING DEVICE
Jay O. Steinbarger, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 74,008
Int. Cl. F04d *29/40, 29/00;* **F01d** *9/00*
U.S. Cl. 415—218 **8 Claims**



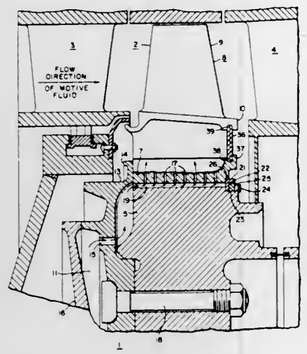
A locking device utilizing a part-circular disc which, when rotated, serves to lock concentric cylindrical parts against axial or rotary movement or both, the disc then being retained in its rotated position to retain this locking arrangement.

3,644,058
AXIAL POSITIONER AND SEAL FOR TURBINE BLADES
Philip S. Barnabei, Medford, N.J., and Norbert Vettel, Philadelphia, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 18, 1970, Ser. No. 38,197
Int. Cl. F01d *5/18*
U.S. Cl. 416—95 **9 Claims**

The invention comprises novel structure for axial positioning of turbine rotor blades and for sealing the cooling air

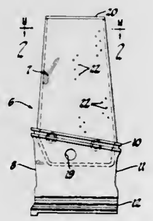
passages under the blade root portions thereof.

The periphery of each rotor disc is provided with spaced, axially extending, side entry channels for receiving the root portions of the rotor blades. Cooling fluid is led into a passageway under the root portion of each blade and escapes through radial holes in the blade. An integral grooved extension is provided laterally of each root portion which supports thereon a downstream seal plate.



Sealing and locking segments are located downstream in a peripheral groove formed on the rotor disc, which segments effectively seal the root portions of the blades to the disc and prevent escape of cooling fluid. The sealing and locking segments cover a plurality of blades so as to reduce the number of leakage paths.

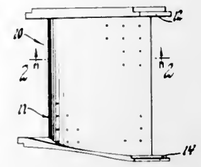
3,644,059
COOLED AIRFOIL
John K. Bryan, 28 Harwood Drive E., Glen Cove, L. I., N.Y.
Filed June 5, 1970, Ser. No. 43,838
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **9 Claims**



A transpiration-cooled turbine blade has a porous wall and may have an internal strut extending spanwise of the blade and carrying cooling air into the blade. A honeycomb material with the cells extending generally from face-to-face of the blade is bonded to the interior of the blade wall and to the strut, if present. If there is no strut, the honeycomb extends from face-to-face, and has air supply passages cut through the honeycomb extending spanwise of the blade.

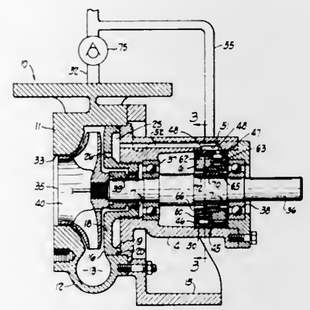
3,644,060
COOLED AIRFOIL
John K. Bryan, 28 Harwood Drive E., Glen Cove, Long Island, N.Y.
Filed June 5, 1970, Ser. No. 43,837
Int. Cl. F01d *5/08*
U.S. Cl. 416—97 **8 Claims**

A transpiration-cooled turbine vane has a porous wall and an internal strut with a slidable dovetail connection to the wall to reinforce the wall. The dovetails may be directly on the wall or on a fluid distributing plate bonded to the wall.



This fluid distributing plate, if present, or the strut provides for metering flow of cooling air to some areas of the wall.

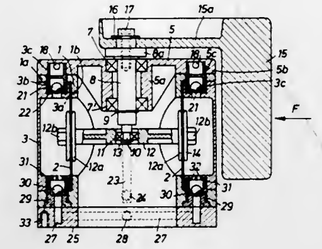
3,644,061
PUMP APPARATUS
Stanley B. McFarlin, Jeromesville, Ohio, assignor to The Gorman-Rupp Company
Filed July 31, 1969, Ser. No. 846,477
Int. Cl. F04d *9/00*; **F04c** *5/00*; **F04b** *17/00*
U.S. Cl. 417—203 **21 Claims**



Pump apparatus embodying a flexible conduit which is collapsed to effect a pumping action. In one embodiment the flexible pumping conduit forms a priming mechanism for a centrifugal pump and the actuating member for collapsing the conduit is connected to the pump shaft by a drive coupling which prevents operation of the mechanism when the pump is primed. In another embodiment the actuating member is connected to a shaft by a spiral spring which permits the member to shift radially with respect to the shaft.

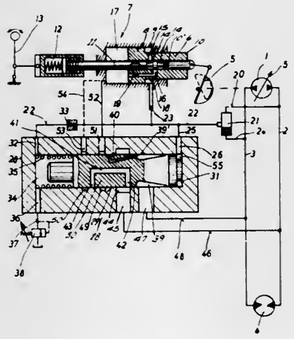
3,644,062
BILGE PUMP FOR BOATS
Albert Cozic, 49, Avenue Isola-Bella-06, Cannes, France
Filed June 2, 1970, Ser. No. 42,717
Claims priority, application France, June 6, 1969, 6918853; Oct. 2, 1969, 6933728
Int. Cl. F04b *19/00*
U.S. Cl. 417—211 **11 Claims**

A bilge pump for a boat or vessel of any type is provided which is operative in response to any movement of the boat in which the pump is provided, such as pitching or rolling. The pump includes preferably two or three diaphragm-type pumps mounted in a housing. A vertical shaft is rotatably mounted in a housing, the shaft is secured to an unbalanced mass exterior responsive to the movements of the boat to effect the rotation of the shaft. The end of the shaft remote from the end at which the mass is secured comprises an eccentric journal which is connected to a two- or three-arm



member by a bearing and whose arms are in turn connected to the diaphragms for operating same successively to take in bilge water through intake pipes and valves and discharge same through outlet valves and pipes.

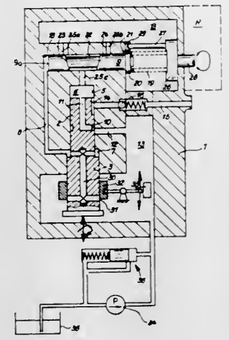
3,644,063
REGULATED HYDRAULIC APPARATUS
Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Apr. 6, 1970, Ser. No. 25,701
Claims priority, application Germany, Apr. 5, 1965, P 19 17 488.0
Int. Cl. F04b *49/00*
U.S. Cl. 417—213 **7 Claims**



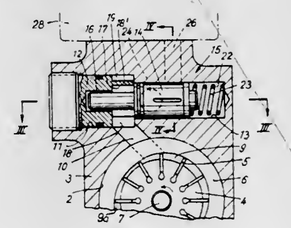
A hydraulic machine, which may be a pump, or hydraulic motor is adjusted by a control device so that pressure fluctuations are compensated. When a pressure increase is so rapid that it cannot be corrected soon enough by the slowly operating control device, a regulating device is actuated by a pressure-reponsive valve to directly connect the high- and low-pressure conduits of the machine so that the pressure drops immediately.

3,644,064
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Konrad Eckert, Stuttgart-Bad Cannstatt, and Gerald Hofer, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Apr. 16, 1970, Ser. No. 29,113
Int. Cl. F04b *49/00*
U.S. Cl. 417—293 **10 Claims**

In a fuel injection pump the quantities delivered during each pressure stroke thereof are varied by opening a bypass channel at a predetermined moment by means of a regulator shuttle driven from a constant abutment by hydraulic pressure generated by pump means operating synchronously with the main piston of the fuel injection pump. Said predetermined moment is variable by turning said regulator shuttle. The moment fuel delivery starts during each pressure stroke may be changed without affecting the delivered fuel quantities by means delaying to a lesser or greater extent the build-up of said hydraulic pressure.



3,644,065
APPARATUS FOR FILLING THE SUCTION CHAMBER OF A PUMP AT HIGH-PUMP SPEEDS
Rolf-Dieter Lettenmayer, Hirschlanden; Erich Schonherr, Ludwigsburg, and Egon Tittmann, Leonberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Mar. 18, 1970, Ser. No. 20,555
Int. Cl. F04b *49/00*
U.S. Cl. 417—300 **12 Claims**

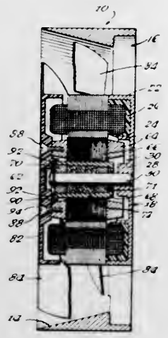


An apparatus including a valve for connecting the pressure discharge conduit of a pump with the suction conduit only at high-pump speeds so that the machine driven by the pump is partly bypassed. The pressure medium is acclerated in the suction conduit and applies suction to the outlet conduit of a container for the medium, which is connected by a filling conduit and by a single groove in the valve piston, with the suction conduit so that the suction chamber of the pump is completely filled.

3,644,066
FAN
Norvel J. Heob, Sturtevant, and Jon D. Stoor, Kansasville, both of Wis., assignors to MSL Industries, Inc.
Filed Oct. 13, 1969, Ser. No. 865,725
Int. Cl. F04b *35/04*; **H02k** *5/16*; **B23p** *15/02, 15/04*
U.S. Cl. 417—354 **12 Claims**

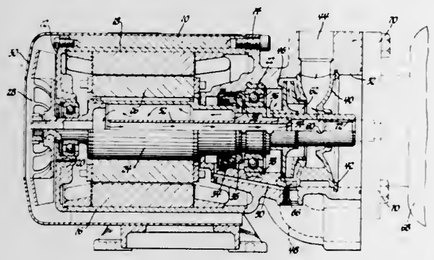
A ventilating fan in which a hub carrying a fan blade is affixed to a rotor which is rotatable about a fixed shaft. A sta-

tor assembly surrounding the rotor is fastened to a motor receiving member and has stator windings which are partially embedded in epoxy resin. The hub covers the rotor and stator assembly and serves as an oil seal for the rotor assembly.



A terminal block is provided having a pair of terminals which are twisted at one end with respect to their respective slots in an insulative member, to prevent longitudinal movement of the terminals in the direction of the other end.

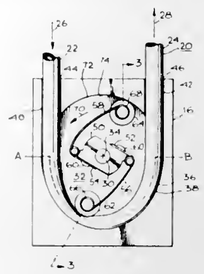
3,644,067
POWER TRANSMISSION
Gordon H. Yowell, North Branch, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed May 25, 1970, Ser. No. 40,176
Int. Cl. F04b *17/00, 35/00, 39/02, 39/06*
U.S. Cl. 417—370 **2 Claims**



An electric motor-pump unit utilizes a hollow drive shaft supporting the motor rotor and the pump impeller. A sleeve within the hollow shaft forms a reentrant passage for conducting a portion of the pumped fluid into heat conducting relation with the motor rotor for cooling purposes. The unit is especially adapted for driving and supercharging high-pressure hydraulic pumps in aircraft.

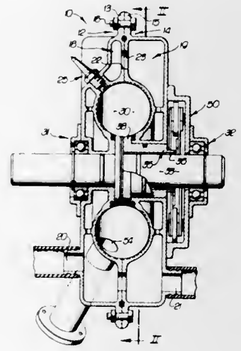
3,644,068
PUMP ARRANGEMENT
Carley J. Lepak, Huntington Beach, Calif., assignor to Kenneth Leeds
Filed Mar. 12, 1970, Ser. No. 18,919
Int. Cl. F04b *43/08*
U.S. Cl. 417—477 **5 Claims**

There is described herein an improved pump arrangement for pumping materials contained entirely within a resilient tube. The material to be pumped is in a resilient tube which is positioned within a case means adjacent of bearing wall. A motor rotates a shaft upon which are a pair of spring-mounted spools. The springs urge the spools outwardly into contact with the resilient tube and the force exerted by the spring on the spool causes the spools to sequentially compress the resilient tube as the spools roll thereon. At least one



spool is in contact with and compressing the tube at all times. Rotation of the shaft pumps the material contained within the tube by the sequential compressing of the tube by the spool means.

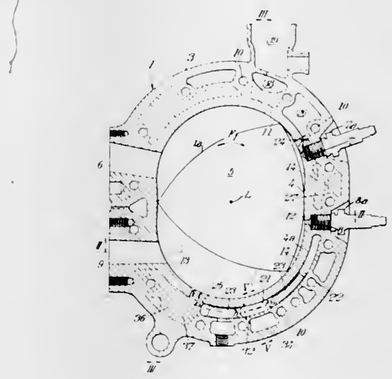
3,644,069
ROTARY ENGINE CONSTRUCTION
George R. Stewart, 10049 Sideview Drive, Downey, Calif.
Filed Aug. 11, 1969, Ser. No. 848,989
Int. Cl. F01c *19/00;* **F04c** *27/00;* **F02b** *53/00*
U.S. Cl. 418—33 **5 Claims**



A rotary internal combustion engine including a toroidal housing having an annular cylinder formed therein, provided with spaced inlet and exhaust ports; a plurality of drive pistons equally angularly spaced in the cylinder and fixed through a drive disk to an output shaft; compression pistons in the cylinder between successive drive pistons, the compression pistons being fixed through a compression disk to a tubular countershaft coaxial with the output shaft; means for oscillatorily moving the countershaft and compression pistons during rotation of the output shaft and countershaft, including a raceway and rollers cammingly rollable in the raceway, the rollers being linkingly connected to the output shaft and to countershaft; sealing ring assemblies between the disks and between each disk and the housing, each ring assembly comprising two interengaged relatively rotatable rings, each ring having an outer side lying in a plane normal to the ring axis, an inner side describing a single turn helix about said axis, and a juncture portion having an axial length equal to the pitch of the helix, the rings being assembled with their inner helical sides in slidable juxtaposition, the ring assembly including resilient means for biasing apart the two

juncture portions whereby to tend to increase the effective overall width of a ring assembly; means to minimize leakage and blowby of compressed gases past the pistons during operation, including turbulence-inducing elements carried by the pistons adjacent the edges of the piston faces, and turbulence-inducing configurations such as indentations on the walls of pistons, cylinder, or both, and on adjacent surfaces of other relatively movable members between which sealing is necessary, including radial surfaces of the drive and compression disks and adjacent radial surfaces of the housing; liners or coatings on piston and cylinder walls of material such as asbestos, fused silica and pyrolitic boron nitride having low-thermal conductivity, low coefficient of thermal expansion, and high-temperature strength to improve combustion efficiency.

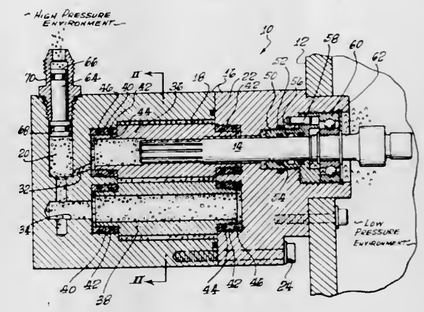
3,644,070
COOLING CIRCUIT FOR ROTARY PISTON INTERNAL COMBUSTION ENGINES
Lucien Lermusiaux, Saint-Etienne, France, assignor to Societe De Construction et D'Exploitation De Materiels et Moteurs S.C.E.M.M., Paris, France
Filed Sept. 30, 1969, Ser. No. 862,336
Claims priority, application France, Sept. 30, 1968, 168221
Int. Cl. F01c *21/06, 1/02, 21/10*
U.S. Cl. 418—61 **6 Claims**



The casing comprises a peripheral envelope having an inlet orifice, an exhaust orifice and spark plug wells. This envelope is cooled in its hot zone by a liquid circulating in a part of the cooling circuit. The successive cross sections of that part of the circuit are such that, at each cooled point of the envelope, the thermal exchanges take place in conditions of convection situated in the range 10° to 20° C. below the beginning of the nuclear ebullition conditions.

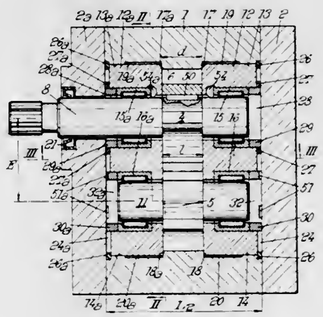
3,644,071
PUMP FLUID MOTOR WITH PRESSURIZED BEARING LUBRICATION SYSTEM
Stephen K. Schultheis, Tujunga, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 18, 1970, Ser. No. 90,559
Int. Cl. F01c *21/04;* **F03c** *3/00;* **F04c** *29/02*
U.S. Cl. 418—83 **7 Claims**

A pump fluid motor rotating impeller-type mechanism with pressurized bearing lubrication comprising: a body having an impeller cavity with an inlet and outlet, and an oil reservoir in communication with the cavity; a pair of hollow cylinder-type gear impellers mounted in the impeller cavity, the interior of each impeller being in communication with the oil reservoir; a pair of sleeve bearings rotatably mounting each impeller in the body for rotation in the cavity in an intermeshing relationship so as to be capable of transferring fluid between the inlet and the outlet; one end of each of the impeller sleeve bearings being in communication with the transferred fluid about the impellers and the other end of each of the impeller sleeve bearings being in communication with the oil reservoir; an O-ring sealing the rotary face of each sleeve



bearing, and another O-ring sealing the stationary face of each sleeve bearing; a shaft; means sealably mounting the shaft in the body with one end interconnected to one of the gear impellers and the other end extending from the body into a low pressure environment; and pressure reducing means communicating the oil reservoir with the exterior of the body for pressure application.

3,644,072
HYDRAULIC GEAR PUMPS AND MOTORS
Robert Gelin, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Paris, France
Filed Sept. 8, 1969, Ser. No. 856,108
Claims priority, application France, Sept. 9, 1968, 165536
Int. Cl. F01c *1/18;* **F03c** *3/00;* **F04c** *1/08*
U.S. Cl. 418—206 **7 Claims**



Hydraulic gear pumps and motors having different displacements are provided by means of families of interchangeable parts. Leakage pathways from internal zones of high pressure are provided to a low-pressure zone in the vicinity of the intake.

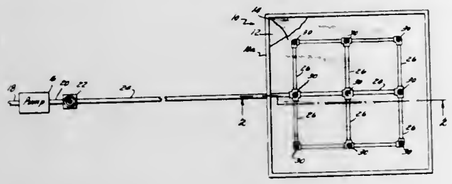
ERRATUM

For Class 425—83 see:
Patent No. 3,644,078

3,644,073
METHOD OF SMOKE REDUCTION AND APPARATUS THEREFOR

Alexander Goldsmith, Chicago, Ill., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 25, 1970, Ser. No. 92,620
Int. Cl. F23c *11/00*
U.S. Cl. 431—2 **10 Claims**

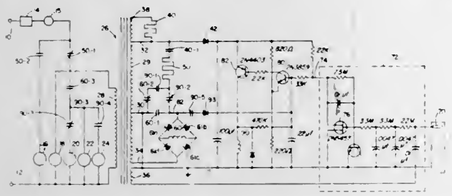


Reduction in amount of smoke associated with fuel oil fires in pans for firefighter training purposes is achieved by providing atomized water sprays impinging on the fire just above the layer of burning oil which floats on a body of water in the pan. Water is pumped through spray heads at controlled rates via distribution system immersed in the water beneath the burning oil to prevent generation of steam.

3,644,074
CONTROL APPARATUS

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Feb. 27, 1970, Ser. No. 15,014
Int. Cl. F23n
U.S. Cl. 431—26 **8 Claims**



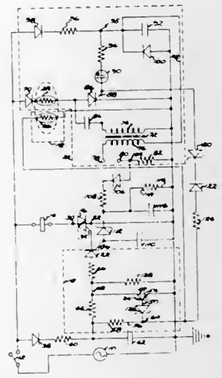
Control apparatus featuring a condition sensor, a first relay responsive to a signal from the condition sensor, the first relay being in a first state in the absence of a signal from the condition sensor and being switched to a second state in response to a signal from the condition sensor, a control relay adapted to be switched between first and second states, circuitry responsive to an operation request for switching the control relay from the first state to the second state after a time interval, and clamping circuitry operative in response to the detection of the first relay in its second state during the time interval to clamp the first relay in the second state and the control relay in the first state, overriding the influence of the condition sensor on the first relay.

3,644,075
FAIL SAFE ELECTRONIC-CONTROL SYSTEM

David J. Squiers, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 24, 1970, Ser. No. 75,007
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **19 Claims**

A system for maintaining a control device electrically energized only in response to the occurrence of a predetermined condition and for preventing energization of the control device in the absence of the condition. The system includes a first switch device, having a control element, the switch device being serially connected to the control device for controlling energization thereof. A system for producing high-voltage electrical signals for effecting the occurrence of the predetermined condition is provided, and is coupled to the first switch device for effecting energization thereof in response to the production of the high-voltage electrical signals. The system for producing the high-voltage electrical signals includes an actuating element which is rendered operable in response to continued production of the high-

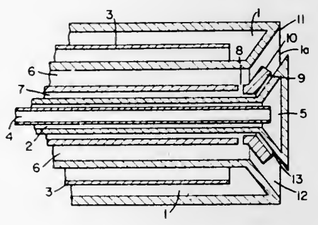


voltage electrical signals. A switch control network is coupled to the control element of the first switch device and includes a sensing element in communication with the actuating element. Operation of the sensing element in response to actuation by the actuating element is effective to prevent the application of trigger signals to the first switch device so as to render the same nonconductive thereby preventing energization of the control device, while the occurrence of the predetermined condition renders the actuating element inoperable so as to permit the continued application of trigger signals to the first switch device, thereby maintaining the control device conductive.

3,644,076
LIQUID FUEL BURNER

Leonard P. Bagge, Workingham, England, assignor to Shell Oil Company, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,572
Claims priority, application Great Britain, May 8, 1969, 23,443/69
Int. Cl. F23q *9/00*
U.S. Cl. 431—284 **10 Claims**



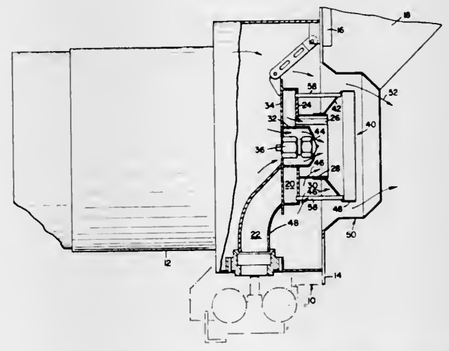
A liquid fuel furnace comprising a hollow coolant enclosure and at least a first annular oxidant channel therein adjacent to and concentric with a second annular liquid fuel channel inwardly of the first channel. A fuel supply opening

is in communication with both of the channels and a bluff body is disposed downstream of the opening and retracted with respect to the end face of the enclosure thereby forming, together with the opening, an annular fuel and oxidant discharge duct common to the first and second channels.

3,644,077
FLAME STABILIZING SYSTEM FOR POWER GAS BURNERS

Enoch Alfred Dimick, Berkeley, Calif., assignor to S. I. Johnson Co., Oakland, Calif.

Filed Nov. 2, 1970, Ser. No. 85,866
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 **9 Claims**

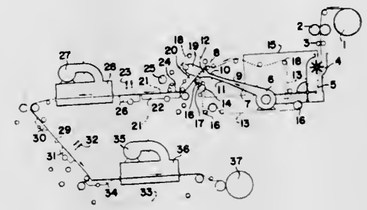


A power gas burner having a plurality of circumferentially spaced conventional gas jets directed axially of the burner. A conventional flame retention ring surrounds these gas jets. In accordance with this invention, said ring is provided with a plurality of secondary gas nozzles surrounded by an air supply and arranged circumferentially and disposed axially forwardly of the pure gas jets for introducing excess air to stabilize the flame.

3,644,078
APPARATUS FOR PRODUCING NONWOVEN FABRICS

Sachihiko Tachibana; Susumu Nakai; Yoichi Makino; Hisashi Matsumura; Kimitaka Tabuchi; Michio Hiraoka; Shigeichi Akoh, and Hiroshi Orito, all of Tokyo, Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Original application Apr. 27, 1966, Ser. No. 545,678. Divided and this application Oct. 2, 1969, Ser. No. 871,044
Int. Cl. B29c *13/00, 27/10;* **D04h** *1/64*
U.S. Cl. 425—83 **6 Claims**



An apparatus for producing nonwoven fabric comprising a duct for blowing fibers, a screen at the open end of said duct, a first endless wire-netting for receiving the fibers passed through said screen to form a band-shaped fiber mass on said first endless wire netting, a second endless wire-netting receiving said fiber mass from said first endless wire-netting, an adhesive sprayer provided at said second wire-netting, a suction section opposite to said sprayer, a dryer provided at said second wire-netting, a third endless wire-netting receiving said fiber mass from said second wire-netting, a second adhesive sprayer provided at said third wire-netting, a second suction section opposite to said second sprayer, a fourth endless wire-netting receiving said fiber mass from said third wire-netting, and a second dryer provided at said fourth wire-netting.

CHEMICAL

3,644,079
METHOD FOR IMPROVING THE DYEABILITY AND FOR HEAT SETTING SYNTHETIC LINEAR POLYESTERS

Vernon C. Smith, Huntersville; James Barnette Hobgood, Roxboro, and Frederick E. Barwick, III, Charlotte, all of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

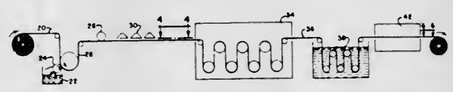
Filed July 11, 1969, Ser. No. 840,936
Int. Cl. D06p *3/00*
U.S. Cl. 8—4 **13 Claims**

A method is provided for improving a dyeability and for heat setting synthetic linear polyesters, wherein the polyester in fibrous or film form is contacted at an elevated temperature, for example, 120° to 200° C. for about 1 to 20 seconds with a monocyclic or bicyclic halogenated aromatic hydrocarbon. The halogenated aromatic hydrocarbon is extracted from the polyester after treatment. The polyester fibers and films treated in accordance with the method of this invention exhibits superior dyeing properties being readily dyed to deep shades in the absence of a carrier. The polyester fibers and films treated in accordance with the present invention likewise exhibit improved dimensional stability.

3,644,080
METHOD OF PRINTING SYNTHETIC LINEAR POLYESTER SHEET MATERIALS

Robert W. McCullough, Riverside, Conn.; Vernon C. Smith, Huntersville; Frederick E. Barwick, III, Charlotte, and James B. Hobgood, Roxboro, all of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,843
Int. Cl. D06p *3/00*
U.S. Cl. 8—4 **10 Claims**



A method is provided for printing synthetic linear polyester sheet materials such as films and fabrics, in which the area of material which is to be printed is initially treated with a halogenated aromatic hydrocarbon at an elevated temperature. The halogenated aromatic hydrocarbon is then removed and a composition containing a dyestuff is applied to the treated area to provided desired indicia on the polyester material. The method of this invention is particu-

larly useful in providing printed polyester films and printed heavy weight fabrics such as carpeting.

3,644,081
PROCESS FOR THE TREATMENT OF POLYESTER FIBEROUS MATERIALS

Shogo Matsuda, Toyonaka-shi; Yutaka Shimodoi, Suita-shi; Hiraku Yamada, and Kiyoshi Takao, both of Ibaraki-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1968, Ser. No. 708,506
Claims priority, application Japan, Mar. 7, 1967, 42/13892
Int. Cl. D06m *15/24*
U.S. Cl. 8—115.6 **5 Claims**

A process for improving the handling of fibrous materials made of polyester by impregnating said fibrous materials with a solution containing an alkaline substance and a polymeric substance soluble or dispersible in said alkaline solution, and then treating said fibrous materials with dry heat at a temperature higher than 120° C. and lower than the melting point of the polyester fiber.

3,644,082
PREPARATION OF DIETHYLAMINOETHYL COTTON USING NONAQUEOUS SOLVENTS

Ralph J. Berni, Metairie; Ruth R. Benerito; John B. McKelvey; Truman L. Ward, and Donald M. Soignet, all of New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed June 24, 1970, Ser. No. 49,412
Int. Cl. D06m *13/08, 13/38*
U.S. Cl. 8—116.2 **7 Claims**

Fibrous cellulosic material was impregnated with a swelling agent, solvent exchanged to remove any water present, and reacted with a solution containing sodium methoxide. This product was rinsed, then reacted with a solution containing 2-chloroethyldiethylamine and washed. The finished product was a partial cellulose ether having anion exchange properties with a wide range of ion exchange capacities. By converting the finished product to the acid salt form in situ catalytic sites for cross-linking reactions are provided. In addition, the diethylaminoethylated product may be converted to the quaternary form by refluxing with methyl iodide.

3,644,083
DURABLE FLAME RETARDANT FINISH FOR CELLULOSIC TEXTILE MATERIALS

Richard Frederick Stockel; William Frank Herbes, both of Bridgewater Township, Somerset, and Samuel James O'Brien, Dunellen, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 9, 1970, Ser. No. 27,167
Int. Cl. D06m *13/28, 13/44;* **C09k** *3/28*
U.S. Cl. 8—116.3 **7 Claims**

Flame retardant finishes for cellulosic textile materials containing tetrakis(hydroxymethyl)phosphonium phosphate, tris(hydroxymethyl)phosphine, and at least one organic nitrogenous compound.

3,644,084
TREATMENT OF KERATIN FIBERS

Du Yung Hsiung, Park Forest, Ill., and Leszek January Wolfram, Rockville, Md., assignors to The Gillette Company, Boston, Mass.

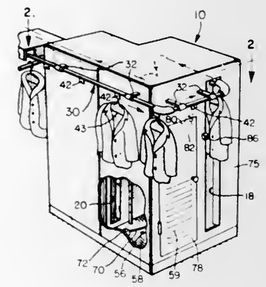
Filed Nov. 25, 1968, Ser. No. 778,797
Int. Cl. A61k *7/10*
U.S. Cl. 8—127.51 **8 Claims**

Keratin fibers are softened by sulfitolysis which forms S-sulfo groups or a mixture of S-sulfo groups with thiol groups in the fibers, then changed in configuration and maintained in the new configuration while restoring the fibers by treating with an aqueous solution containing at pH 5 to 11 from 0.02 to 0.3 mole per liter of an alkali metal, ammonium or lower alkanolamine sulfide or hydrosulfide, an aliphatic mercaptan, or mixtures thereof with each other or with an aliphatic disulfide. An aliphatic disulfide may be used alone when the ratio of S-sulfo groups to thiol groups in the sulfitolyzed keratin fibers is from 4:1 to 1:4.

3,644,085
GARMENT FINISHER AND METHOD OF FINISHING GARMENTS

Michael G. Beeley, North Salt Lake; Paul W. Frisby, and Richard D. Thompson, both of Salt Lake City, all of Utah, assignors to McGraw-Edison Company, Elgin, Ill.

Filed June 29, 1970, Ser. No. 50,578
Int. Cl. B08b *3/02;* **D06c** *1/06*
U.S. Cl. 8—150 **17 Claims**



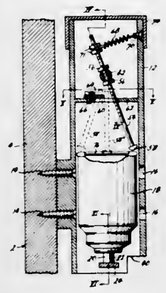
A garment finisher with adjacent internally communicating conditioning and drying chambers, respectively each having horizontally narrow inlet and outlet openings, means discharging steam within the conditioning chamber and as converging inwardly directed jets from opposite sides of the inlet and outlet openings, and means directing heated air downwardly at high velocity within the drying chamber, a first conveyor for carrying successive garments suspended in adjacent generally edge-to-edge spaced orientation on approximately 20 to 30 inch centers to within the conditioning chamber and then through the drying chamber, a second conveyor for carrying the garments suspended within the conditioning chamber but in adjacent spaced generally front-to-rear orientation on approximately only 3 to 6 inch centers, means to transfer the garments from the first conveyor to the second conveyor and back again from the second conveyor to the first conveyor all in the conditioning chamber, means driving the conveyors in synchronization where the second conveyor feed is slower than the first conveyor feed by an approximate ratio of the garment center spacings of the respective conveyors, and the method of finishing garments including a dual-speed garment feed through adjacent conditioning and drying chambers where the garments are normally in general edge-to-edge orientation at liberal center spacings except in the conditioning chamber where they are in general front-to-rear orientation and at much reduced center spacings.

It is possible to finish garments, particularly those of a material having memory retaining characteristics, without actually pressing the garment between hot press faces. The garment is initially conditioned, by steam for example, and then is fluffed and dried typically with high-velocity heated air to remove the wrinkles. Equipment is available to finish the garments individually or in batches for each cycle of the finisher unit, or successively on a continuing progressive cycle basis where the garment moves relative to the finisher unit. Tunnel-type finishers, as they are called, operate according to the last-mentioned basis and pass a series of garments successively and continuously, through adjacent internally communicating conditioning and drying chambers.

3,644,086
DEODORANT DISPENSER

Jimmy R. O'Dell, 2240 West 72nd Street, Prairie Village, Kans.

Filed Apr. 27, 1970, Ser. No. 32,077
Int. Cl. A61l *9/00*
U.S. Cl. 21—77 **5 Claims**



A deodorant dispenser for use in connection with portable toilet enclosures, consisting of a housing adapted to be secured to a wall of said enclosure adjacent the door thereof, and to receive therein an aerosol container of deodorant having a press-type release valve, a lever carried movably by said housing and projecting therefrom to engage said door, whereby to be moved by the opening or closing of said door, and mechanism carried by said housing and operable to press said release valve each time said door is opened and closed.

3,644,087
PROCESS FOR SCRUBBING SULFUR DIOXIDE FROM A GAS STREAM

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 9, 1970, Ser. No. 9,968
Int. Cl. C01b *17/64*
U.S. Cl. 23—2 SQ **13 Claims**

A process for the removal of SO_2 from a gas stream containing SO_2 and O_2 wherein the use of a conventional scrubbing solution containing an alkaline reagent results in the formation of undesired, intractable sulfate byproducts, is improved by adding to the scrubbing zone a reducing agent selected from the group consisting of finely divided sulfur, a polysulfide compound, a water-soluble sulfide compound and mixtures thereof, and by thereafter operating the scrubbing zone under thiosulfate-production conditions, thereby suppressing the production of undesired sulfate byproducts. Principal utility of this improved process is associated with a process for scrubbing SO_2 from a flue or stack gas stream. Key feature of this improved process involves the selective conversion of the absorbed SO_2 to the corresponding thiosulfate compound within the scrubbing zone, thereby minimizing the opportunity for the oxygen contained in the gas stream to oxidize the sulfite salt to the undesired sulfate byproducts.

3,644,088
PREPARATION OF TRANSITION METAL OXYHALIDES

Jay G. Bryson, Tallmadge; Henry R. Menapace, Stow, and Gereld S. Benner, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 14, 1970, Ser. No. 72,182
Int. Cl. C22b *59/00*
U.S. Cl. 23—15 W **6 Claims**

There is disclosed a method of preparing tungsten oxychloride, tungsten oxybromide, vanadium oxychloride and vanadium oxybromide which comprises passing at least one transition metal halide from the group of tungsten hexachloride, tungsten hexabromide, vanadium pentachloride and vanadium pentabromide, while in vapor form, over a catalyst comprising at least one oxide selected from the group of alumina, magnesia, silica, boria, calcium oxide, chromia, manganese dioxide, cobaltic oxide, nickel oxide, phosphorous pentaoxide, zinc oxide and mixtures thereof, at temperatures ranging from about 200° C. to about 300° C.

3,644,089
PREPARATION OF SODIUM CARBONATE

Franz-Rudolf Minz, Dormagen, and Eberhard Zirngiebl, Cologne-Flittard, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

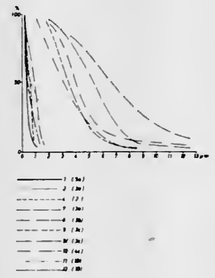
Filed Nov. 25, 1969, Ser. No. 879,667
Claims priority, application Germany, Nov. 27, 1968, P 18 11 168.7
Int. Cl. C01d *7/00*
U.S. Cl. 23—63 **6 Claims**

Preparation of sodium carbonate monohydrate by reacting caustic soda solution of a concentration of 10 to 70 percent and carbon dioxide in the presence of solid sodium carbonate at temperatures of 80° to 115° C. the caustic soda solution and the carbon dioxide are continuously reacted in an aqueous sodium-carbonate-containing slurry at a pH-value of 11.3 to 11.5. By driving off the water fed in together with the caustic soda solution and by withdrawing a portion of the slurry, from which the sodium carbonate monohydrate formed in the reaction is recovered a sodium carbonate solid concentration of about 100 to 600 g./l. is maintained in the slurry.

3,644,090
PROCESS FOR THE PRODUCTION OF ACTIVE LEAD DIOXIDE

Hermann Beecken, Cologne-Stammheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 9, 1969, Ser. No. 856,354
Claims priority, application Germany, Oct. 2, 1968, P 18 00 489.2
Int. Cl. C01g *21/08;* **B01j** *1/00*
U.S. Cl. 23—146 **9 Claims**



Suspending lead sulphate, lead carbonate or mixtures thereof in water and adding to said suspension a halide and alkali in such quantitative proportions to obtain a higher basic lead halide or lead halide carbonate and thereafter oxidizing said compound with halogen or hypohalite under neutral or alkaline conditions thereby effecting precipitation of highly active lead dioxide.

3,644,091
CLARIFICATION OF PHOSPHORIC ACID

John H. Naschke, and Robert L. Taylor, both of Houston, Tex., assignors to Esso Research and Engineering Company

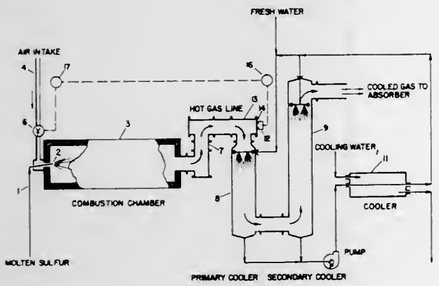
Filed Mar. 17, 1970, Ser. No. 20,181
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 23—165 **13 Claims**

Phosphoric acid in a wet phosphoric acid process is clarified by introducing into the acid a small but effective amount of a clarification additive which is a sulfonated polystyrene or a water soluble salt thereof having a molecular weight from about 1 to about 40 million and sulfonated in the para-position in the benzene ring in an amount of about 1 to 3 moles per mole of benzene ring, the clarification additive being added to the acid in one or more zones of the process.

3,644,092
PROCESS FOR CONTROLLING THE BURNING OF SULFUR

Ivan D. Campbell, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Dec. 22, 1969, Ser. No. 887,292
Int. Cl. C01b *17/54;* **F23n** *5/00*
U.S. Cl. 23—179 **8 Claims**



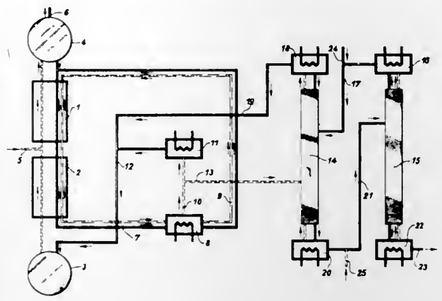
A method for controlling the burning of sulfur to obtain sulfur dioxide by determining the ultraviolet radiation of the combustion gases discharged from the combustion chamber and adjusting the ratio of air to sulfur being used to obtain a flame of a predetermined magnitude in the combustion gases discharged from the combustion chamber.

3,644,093
METHOD AND APPARATUS FOR TREATING PRE-ENRICHED AMMONIA

Fortunat Hartmann, Zurich, and Hans Rudolf Gisler, Winterthur, both of Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed May 5, 1969, Ser. No. 821,862
Claims priority, application Switzerland, May 8, 1968, 6871/68
Int. Cl. C01b *5/02;* **B01j** *1/00;* **F25j** *3/00*
U.S. Cl. 23—204 C **12 Claims**

The pre-enriched ammonia is delivered into the exchange column prior to the final enrichment stage and is placed into a material exchange with a portion of the deuterium-impoverished water from the rectifying column. The material exchange enriches the water with deuterium. The enriched



water is then fed into an intermediate point in the rectifying column for final enrichment.

3,644,094
PROCESS FOR THE RECOVERY OF DIAMOND PARTICLES FROM ALUMINA OR SILICATE WASTES

Douglas N. Stevens; Ramond E. Bisque, and Duane N. Bloom, all of Golden, Colo., assignors to Earth Sciences, Inc., Golden, Colo.

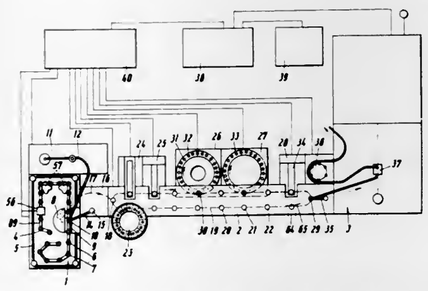
Filed Feb. 16, 1970, Ser. No. 11,922
Int. Cl. C01b *31/06;* **C01f** *7/34*
U.S. Cl. 23—209.9 **8 Claims**

Alumina wastes, and various silicate wastes, produced by grinding ceramic workpieces with diamond impregnated wheels are intermixed with a borax flux and heated in a nonoxidizing atmosphere to produce a fluid melt of the alumina and flux. The melt or resulting solid phase is then acid treated to dissolve and liquefy the alumina or silicate contents and the resulting liquor is drawn off leaving the particulate fraction which contains the desired diamond particles.

3,644,095
APPARATUS FOR PERFORMING CHEMICAL ANALYSES

Heinrich Netheler; Gunter Bechtler, and Wilhelm Bergmann, all of Hamburg, Germany, assignors to Eppendorf Geraetebau Netheler & Hinz GmbH, Hamburg, Germany

Filed June 18, 1968, Ser. No. 737,981
Claims priority, application Germany, Dec. 20, 1967, P 16 48 900.2
Int. Cl. G01n *1/10, 1/14*
U.S. Cl. 23—259 **7 Claims**



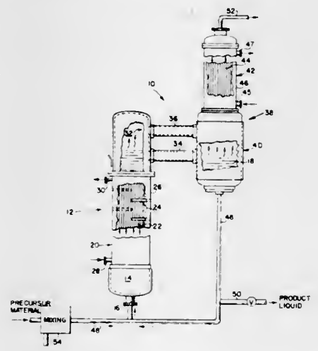
Apparatus for handling samples of material wherein a first transport system intermittently moves units of the material in small steps and a second transport system receives sample portions of said units and intermittently moves these portions in larger steps; both systems operating with the same cadence.

3,644,096
APPARATUS FOR USE IN A CONTINUOUS FLOW REACTION FOR PRODUCING A MONOMER AND/OR A PROTOPOLYMER

Alan E. Lewis, and Frederick W. Voigt, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Original application Aug. 12, 1968, Ser. No. 752,058. Divided and this application Mar. 30, 1970, Ser. No. 29,318
Int. Cl. C07c *69/82;* **B01j** *1/00*
U.S. Cl. 23—263 **3 Claims**

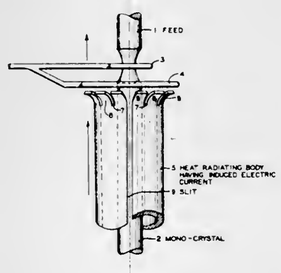
Apparatus by which an esterification precursor is continuously converted to an esterification reaction product liquid by admixing a feed stream of the precursor into and with a circulating stream of the product liquid, heating the admixture to vaporize a low-boiling component, the heating being at a sufficient temperature and for a sufficient time to convert the precursor to the product liquid, and continuously withdrawing a stream of the product liquid from the circulating admixture.



3,644,097
APPARATUS FOR CONTROL OF HEAT RADIATION IN ZONE MELTING

Poul E. Knudsen, Skodsborg, Denmark, assignor to Haldor Frederik Axel Frydenlundsvej, Vedbaek, Denmark

Filed Nov. 13, 1968, Ser. No. 775,309
Claims priority, application Great Britain, Nov. 16, 1967, 52,181/67
Int. Cl. B01j *17/10*
U.S. Cl. 23—273 SP **1 Claim**

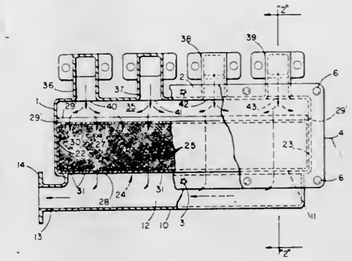


Control of heat radiation from the "critical zone" adjacent the molten material in a floating-zone purification of a semiconductor monocrystal to achieve a low level of dislocations.

3,644,098
CATALYTIC CONVERTER FOR EXHAUST GASES

Ted V. De Palma, Roselle, and Robert S. Carleton, Libertyville, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 18, 1969, Ser. No. 858,918
Int. Cl. B01j *9/04;* **B01d** *53/34;* **F01n** *3/16*
U.S. Cl. 23—288 F **8 Claims**

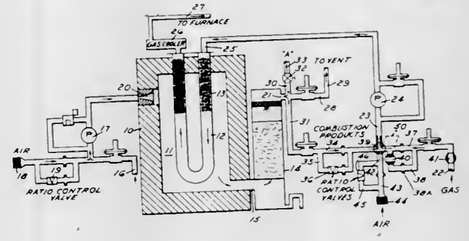


A catalytic converter for treating exhaust gas streams which has a removable catalyst cartridge embodied therein and which is designed to be connected directly to the exhaust ports of an internal combustion engine.

3,644,099
GAS ATMOSPHERE GENERATING MEANS FOR HEAT-TREATING FURNACES

Roland C. Crans, Detroit, Mich., assignor to Holcroft & Company, Livonia, Mich.

Filed Sept. 15, 1969, Ser. No. 858,030
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **7 Claims**



Gas atmospheres for use in metallurgical furnaces are prepared by burning hydrocarbon gas and circulating the products of combustion, together with additional hydrocarbon gas, through a catalytic retort subjected to the heat produced by the combustion. The gas-generating apparatus has a valved outlet for withdrawing excess products of combustion to be used for purging furnaces. It also has valve-controlled auxiliary air and hydrocarbon gas inlets which can be adjusted to produce various gas compositions including AGA gas-types 101, 302 and 501.

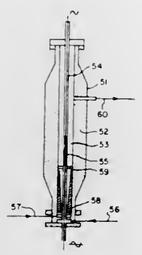
3,644,100
APPARATUS FOR REFORMING HEAVY HYDROCARBONS

Pierre Lhonore, Douai; Jacques Quibel, Maisons Laffitte, and Michel Senes, Saint-Nazaire, all of France, assignors to La Societe dite Societ Chimique de la Grande, Paroisse, France

Filed Sept. 10, 1968, Ser. No. 758,768
Claims priority, application France, Sept. 12, 1967, 120743
Int. Cl. B01j *9/20;* **C01b** *2/22*
U.S. Cl. 23—288 S **2 Claims**

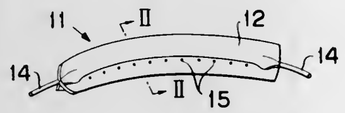
A process for the catalytic reforming, with steam in a fluidized bed, of heavy hydrocarbons with a boiling point

higher than 220° C., carried out under an effective pressure of 2 to 150 bars, in which the reforming mixture is introduced to the catalyst in the form of catalytic particles of a solid solution of nickel oxide and refractory oxides, with a grain size which is between 1 mm. and 60 μ, at a temperature



between 300° and 700° C., the volumetric speed on the fluidized bed is between 5 and 0.1 liter/hour per liter of catalyst, the ratio between steam and carbon in moles being between 0.75 and 3.0 and without regeneration or reoxidization of the catalyst.

3,644,101
CESIUM EVAPORATOR
Haruo Takashio, Tokyo, and Takayoshi Matsuzawa, Yokohama-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 6, 1968, Ser. No. 734,963
Claims priority, application Japan, June 10, 1967, 42/36770
Int. Cl. B44d *1/02*; **C23d** *1/02*
U.S. Cl. 23—294 **1 Claim**

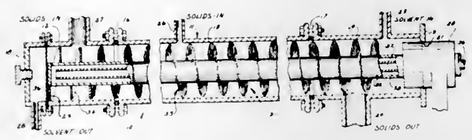


Cesium evaporator filled with a mixed powder of a silicon and cesium chromate and/or cesium bichromate for depositing cesium vapor on the face plate of a photoelectric tube, the silicon powder has such a particle size distribution that the average particle size is 30 to 80 microns, with particles larger than 100 microns or those smaller than one micron constituting not more than 30 weight percent, and the cesium chromate or cesium bichromate powder has such a particle size distribution that the average particle size is 3 to 10 microns with particles larger than 25 microns constituting not more than 30 weight percent and those smaller than 0.5 micron constituting not more than 40 weight percent.

3,644,102
CRYSTALLIZATION OF POTASSIUM CHLORIDE FROM CARNALLITE DECOMPOSITION
Hans Svanoe, Warren, Pa., assignor to Struthers Scientific and International Corporation
Filed Nov. 30, 1967, Ser. No. 686,826
Claims priority, application Great Britain, Dec. 1, 1966, 53,867/66
Int. Cl. B01d *9/02*; **C01d** *3/08*
U.S. Cl. 23—298 **3 Claims**

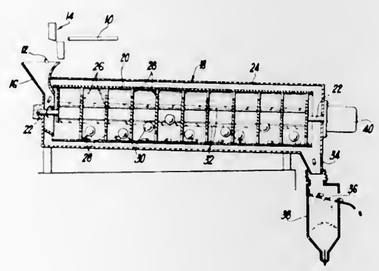
Carnallite is decomposed by adding it to water under optimum conditions so that potassium chloride may be crystallized therefrom using potassium chloride seed crystals of over 60 mesh size.

3,644,103
COUNTERCURRENT SOLID-LIQUID CONTACTING USING FLEXIBLE BRISTLE SCREW FLIGHT MEANS
Chong Y. Yoon, Kalamazoo; Robert E. Melson, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Original application Oct. 6, 1967, Ser. No. 674,381, now Patent No. 3,529,938. Divided and this application Mar. 13, 1970, Ser. No. 24,409
Int. Cl. B01d *11/02, 9/00, 9/04*
U.S. Cl. 23—310 **8 Claims**



A process for separating components of a mixture of chemicals in which a selective liquid solvent is fed through a treating zone countercurrent to the mixture of chemicals in such a fashion that a multistage leaching or solvent crystallization operation is carried out.

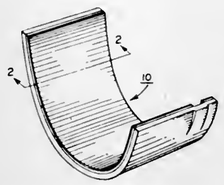
3,644,104
PROCESS FOR PROCESSING CANNED IRRADIATED CERAMIC FUEL ELEMENTS
Georges Manevy, 68 Rue Velpeau, 92-Antony, and Georges Matcheret, Cite de la Plaine, Immeuble M 21, Apt 1599, 92-Clamart, both of France
Filed Oct. 23, 1968, Ser. No. 769,898
Int. Cl. C01g *56/00*
U.S. Cl. 23—324 **6 Claims**



The decanning step constituting the first step in the reprocessing of ceramic nuclear fuel elements is carried out by cutting the fuel elements in short-length fragments and then crumbling the fuel into a powder which leaves the can fragments by processing the fuel fragments in a ball mill. Prefluoration of the fuel into UF_4 and PuF_4 may take place in the ball mill.

3,644,105
MULTILAYER BEARING
Milton L. Selker, Shaker Heights; Betty L. Berdan, and Betty M. Luce, both of Willowick, all of Ohio, assignors to Clevite Corporation
Filed Mar. 3, 1970, Ser. No. 16,112
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.3 **4 Claims**

There is provided a multilayer bearing and method of forming same, said bearing characterized by its resistance to seizure under high-load conditions, said bearing comprising a steel backing member, an electrodeposited intermediate

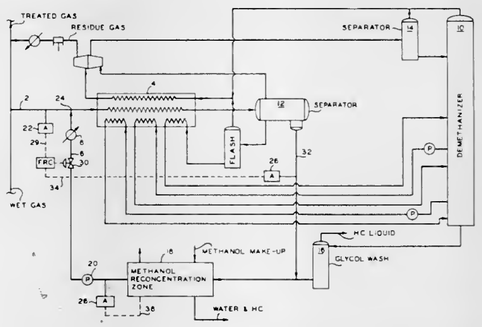


composite layer consisting of copper and molybdenum disulfide and an overlay of lead-tin alloy.

3,644,106
COLLOIDAL DISPERSIONS
Victor C. E. Burnop, Church Croft, West Challow near Wantage, England
Continuation of application Ser. No. 660,896, Aug. 16, 1967, now abandoned. This application Aug. 3, 1970, Ser. No. 64,148
Claims priority, application Great Britain, Aug. 24, 1966, 38,025/66
Int. Cl. C10l *1/32*
U.S. Cl. 44—51 **7 Claims**

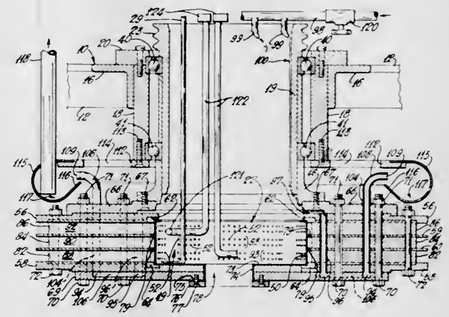
The tendency of a liquid hydrocarbon fuel to produce smoke when it is burned is reduced by incorporating into the fuel a colloidal dispersion of a sulphate, phosphate, or halide of an alkaline earth metal, the average size of the colloidally dispersed salt being less than 0.2 micron. The invention is particularly applicable to fuels for diesel engines. To prepare the dispersion, an alkaline earth metal oxide, hydroxide, carbonate, phenate, or salt of any weak acid is first dispersed in a lubricating oil or hydrocarbon fuel with the aid of a dispersing agent such as a phosphosulfurized hydrocarbon, an alkyl phenol or bisphenol, or a long-chain fatty acid amine. The dispersion is then treated with a hydrogen halide, or hydrochloric, sulphuric or phosphoric acid, or with an ammonium or volatile amine salt of one of those acids, thereby forming the desired dispersed salt in situ. The product is usually a concentrate which is then added to hydrocarbon fuel in the desired quantity.

3,644,107
METHOD FOR PREVENTING THE FORMATION OF HYDRATES AND ICE
Merlin O. Clark, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Mar. 9, 1970, Ser. No. 17,622
Int. Cl. F17d *1/04, 1/05*
U.S. Cl. 48—190 **4 Claims**



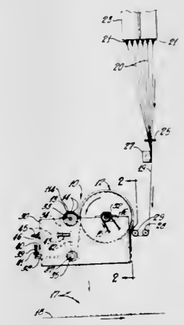
A method for preventing the formation of hydrates and ice in a gas by conditioning methanol and injecting said conditioned methanol into the gas conduit.

3,644,108
METHOD AND APPARATUS FOR PRODUCING FILAMENTS BY CENTRIFUGAL FORCES
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Jan. 23, 1969, Ser. No. 793,269
Int. Cl. C03b *37/04*
U.S. Cl. 65—8 **12 Claims**



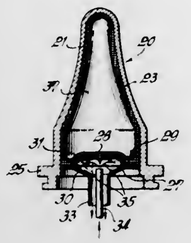
The disclosure embraces a method of and apparatus for producing fine fibers or filaments of heat-softenable material such as glass and involves the formation of discrete streams of heat-softened glass of comparatively low viscosity by centrifugal forces, and dissipating or transferring heat from the streams to moving surfaces having passageway to accommodate a cooling liquid to thereby increasing the viscosity of the material of the streams to enable the attenuation of the streams by centrifugal action to fibers or filaments.

3,644,109
APPARATUS FOR SEVERING LINEAR MATERIAL
Jerome P. Klink, and Walter F. Fulk, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation
Filed Dec. 29, 1969, Ser. No. 888,709
Int. Cl. B23d *25/12*
U.S. Cl. 65—11 **12 Claims**



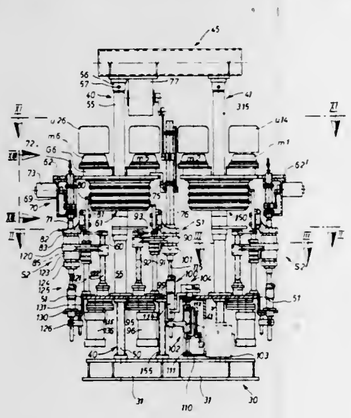
Apparatus for severing linear material including a cutter roll having blades thereon extending outwardly of the circumferential surface of the member and means communicating with the opposite sides of the blades in a region spaced from the circumferential surface to fix the cutting edge of the blades against movement circumferentially of the cylindrical member.

3,644,110
GLASS-MAKING TOOL AND METHOD OF USE
Alfred Sendt, Gutersloh, Germany, assignor to Firma Hermann Heye, Obernkirchen, Allee, Germany
Filed Mar. 5, 1970, Ser. No. 16,755
Claims priority, application Germany, Mar. 18, 1969, P 19 13 579.6
Int. Cl. C03b *11/12*
U.S. Cl. 65—137 **20 Claims**



In a glass-making method and a tool involved in carrying out the method, the tool is subjected to heating. The invention provides for controlling the temperature of the tool by providing the latter with at least one internal chamber and accommodating therein a vaporizable volatile heat-exchange medium which is evaporable in the chamber in one region thereof as a result of the heating of the tool, moves to another cooler region where it becomes condensed, and is returned to the one region by capillary means accommodated in the chamber.

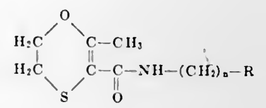
3,644,111
MACHINE FOR THE PRODUCTION OF GLASS BOTTLES OR THE LIKE
Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Obernkirchen, Germany
Filed Dec. 26, 1968, Ser. No. 786,899
Claims priority, application Germany, Jan. 9, 1968, H 65000
Int. Cl. C03b *9/40*
U.S. Cl. 65—158 **48 Claims**



A press-and-blow bottle-making machine wherein several neck rings orbit about a vertical axis and wherein each neck ring is moved by a separate motor so that the length of intervals during which the rings dwell at various treating stations and the speed of rings during travel between the stations can be selected as a function of the time required for treatment of workpieces carried by the neck rings at or between the stations.

3,644,112
METHOD OF CONTROLLING UNWANTED PLANTS
Hans Osieka, Ludwigshafen; Adolf Fischer, Mutterstadt, and Hans Eugen Kiefer, Wachenheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen Rhine, Germany
Filed May 20, 1969, Ser. No. 826,266
Claims priority, application Germany, May 24, 1968, P 17 68 542.6
Int. Cl. A01n *9/12*
U.S. Cl. 71—90 **3 Claims**

New and valuable substituted 1,4-oxathiins having the formula



wherein *n* denotes one of the integers 0 and 1 and *R* denotes a monocycloaliphatic, bicycloaliphatic, tricycloaliphatic or tetracycloaliphatic radical having in all five to 15 carbon atoms, but not a cyclohexyl radical if *n* is 0, which have a good herbicidal action. The compounds are particularly suitable for controlling unwanted plants without damaging crop plants. The compounds are also suitable for destroying all plants on a certain area.

3,644,113
AGGLOMERATE INCLUDING GRAFT COPOLYMERS OF ACYLIC ACID AND METHYL CELLULOSE AND METHOD OF MAKING
William J. Lang, Libertyville, Ill., and Joseph M. Chelini, Denver, Colo., assignors to International Minerals & Chemical Corporation
Filed Sept. 4, 1968, Ser. No. 757,468
Int. Cl. C21b *1/26;* **C08f** *25/00, 43/00*
U.S. Cl. 75—3 **21 Claims**

Water-soluble graft copolymers of acrylic acid and methyl cellulose, including water-soluble salts thereof, are useful as binders in the agglomeration of finely divided materials. The graft copolymers are especially useful as binders in the pelletization of minerals and ores, such as taconite.

3,644,114
METHOD FOR LEACHING REDUCED LATERITE ORES
Eva A. Vosahlova, Edmonton, and Donald Robert Weir, Fort Saskatchewan, Alberta, both of Canada, assignors to Sheritt Gordon Mines Limited, Toronto, Ontario, Canada
Filed Jan. 26, 1970, Ser. No. 5,658
Int. Cl. C22b *23/04*
U.S. Cl. 75—101 **7 Claims**

Reduction roasted laterite ore is leached in ammoniacal ammonium carbonate solution under oxidizing conditions. The first stage leach is prolonged for a period of time beyond that required to obtain maximum extraction of nickel and cobalt values from the reduced ore and is then terminated after the dissolved magnesium content of the leach solution reaches a constant low value. As a result of this procedure, more magnesium contamination precipitates on the leach solids as an insoluble compound. The resulting low-magnesium content of the leach solution, together with a novel cooling scheme in which the leach feed slurry is cooled to below 115° F. prior to the first stage leach, obviates the heretofore serious problem of magnesium scale development in leach solution recycle lines.

3,644,115
SOLDERING FILLER METAL
Hachiro Hamaguchi; Misao Sakashita, and Mamoru Koyama, all of Osaka, Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Osaka City, Japan
Filed Mar. 23, 1970, Ser. No. 22,016
Int. Cl. C22c *11/00, 13/00*
U.S. Cl. 75—134 B **2 Claims**

Tin-lead alloys used for soldering and plating metal wires are improved in their resistance to oxidation when they contain a small amount of aluminum.

3,644,116
IDENTIFICATION CARDS HAVING DIFFUSION TRANSFER LAMINATIONS
Paul A. Andrews, Belmont, and Bernard T. Coyle, Jr., Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Feb. 27, 1967, Ser. No. 618,685
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **14 Claims**

Laminar structures comprising a photographic image in silver laminated to a transparent layer through or via a layer comprising a water-activated plasticized vinyl acetate polymer.

3,644,117
IMAGE-FORMATION IN STABLE POLARIZING MEDIA
Bruce E. De Palma, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 19, 1967, Ser. No. 610,378
Int. Cl. G03c *5/00, 5/04*
U.S. Cl. 96—35 **8 Claims**

This disclosure concerns image-formation methods for forming visible images in polarizing media which are not generally considered photosensitive. The disclosed subject matter includes information pertaining to instantaneous film recording from television-type scanning signals, and the production of stereoscopic vectographic images.

3,644,118
POLYDIACRYLYL PHOTOSENSITIVE COMPOSITIONS
Ram K. Agnihotri, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,567
Int. Cl. G03c *1/52, 1/68*
U.S. Cl. 96—115 R **42 Claims**

A photoresist composition for use in photolithographic and photomechanical processes comprised of either cinnamates or quinone diazide sulfonates of polymeric materials derived by the alkaline condensation of vinyl ketones and acrylates, also referred to as polydiacrylyl methane polymers, and light sensitive elements coated with such compositions.

The cinnamates of the polydiacrylyl methane polymers form negative photoresists, and the diazoquinone sulfonates thereof form positive photoresists.

3,644,119
PHOTOGRAPHIC MATERIALS AND ELEMENTS
Evan T. Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 18, 1970, Ser. No. 38,495
Int. Cl. G03c *1/28, 1/36, 1/84*
U.S. Cl. 96—108 **12 Claims**

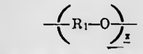
Direct positive emulsions fogged with a reducing agent and a compound of a metal more electropositive than silver contain a dinitro-substituted thiacyanine dye as electron acceptor. Preferably, the emulsions contain a synthetic polymeric latex and the dye contains a sulfoalkyl substituent.

3,644,120
PHOTOSENSITIVE COMPOSITIONS
Tsunetoshi Kai, 328 Mizonuma, Asaka-cho, Kitaadachi-gun, Saitama-ken, and Mitsuhiro Inoue, 27-6, 3-chome, Nakadai, Itabashi-ku, Toyko, both of Japan
Filed Sept. 14, 1967, Ser. No. 667,656
Claims priority, application Japan, Sept. 27, 1966, 41/63381; Sept. 28, 1966, 41/63428
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 **8 Claims**

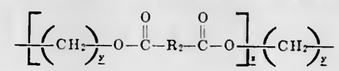
The photosensitive compositions comprising (a) an unsaturated polyester (b) at least one addition polymerizable ethylenically unsaturated monomer having at least one



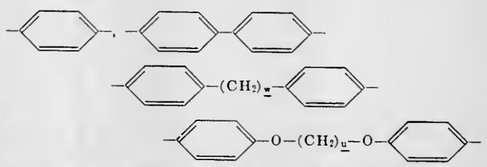
group and having a boiling point above 100° C. at normal atmospheric pressure and (c) a photopolymerization initiator, said unsaturated polyester comprising the segment (I) of the formula;



(wherein R_1 is alkylene group having two to four carbon atoms; and x is 2 to 100) the segment (II) of the formula



(wherein R_2 is



or naphthylene; y is 2 to 4; z is 1 to 10; w and u are respectively 1 to 4) and the segment (III) corresponding to the residue of an unsaturated dicarboxylic acid. These photosensitive compositions are soluble in water or aqueous solvent such as an aqueous alkali solution and are nontacky solids at a temperature of 20° C.

3,644,121
METHOD OF PREPARING REHYDRATABLE DEHYDRATED PROTEIN PRODUCTS
Robert A. Boyer, Creve Coeur; Arthur A. Schulz, and Edmond A. Schatzman, both of St. Louis, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 210,843, July 18, 1962, now abandoned, Continuation-in-part of application Ser. No. 841,899, Aug. 23, 1965, now abandoned, Continuation of application Ser. No. 729,370, May 15, 1968, now abandoned. This application Jan. 5, 1970, Ser. No. 505
Int. Cl. A23l *1/20*
U.S. Cl. 99—17 R **6 Claims**

A rehydratable dehydrated protein product is made by mixing stretched, oriented precipitated isolated protein filament fibers with a food flavor and a heat-setting protein binder to form a moldable mixture, setting up the mixture and dehydrating it. The dehydrated product rapidly reconstitutes upon addition of water to form a product analogous to the mixture before dehydration.

3,644,122
ALKALINE TREATMENT OF COFFEE
James A. Yeransian, Pearl River, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sept. 25, 1969, Ser. No. 861,140
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **8 Claims**

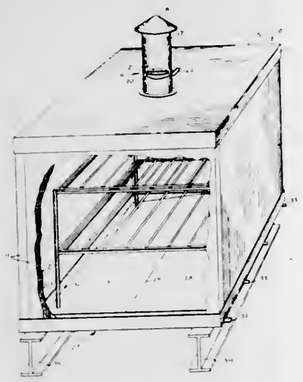
Ground, roasted coffee or spent coffee grounds are treated

with an alkaline material to provide coffee extract in increased yield and with improved color.

3,644,123
PROCESS FOR REMOVING DELETERIOUS ACID COMPONENTS FROM STEAMED COFFEE
Esra Pitchon, Flushing, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
Filed Nov. 19, 1969, Ser. No. 878,227
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **7 Claims**

Roasted and ground coffee is subjected to a dearomatization, steaming operation prior to percolation of the coffee. The flow of extract in the percolators is then controlled such that it passes through the steamed coffee and then through a bed of unsteamed coffee. The unsteamed coffee deacidifies the extract which contains acids picked up from the steamed coffee.

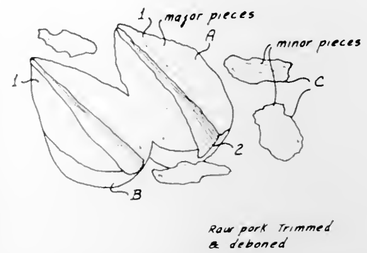
3,644,124
METHOD OF COOKING AND IMPORTING NATURAL BARBECUE FLAVOR TO PORK MEAT
Raymond A. Bedsole, 202 West Hudson Street, Fayetteville, N.C.
Filed Jan. 7, 1970, Ser. No. 1,194
Int. Cl. A22c *18/00*; A23b *1/04*
U.S. Cl. 99—107 **1 Claim**



In abstract, a preferred embodiment of this invention is a barbecue type cooking process and device which uses an incline heat conductive drip plate having a controlled temperature to produce a pleasing barbecue flavor and aroma in cooked meats without necessitating the use of wood coals and other artificial flavoring means.

3,644,125
PROCESS FOR PRODUCING COOKED HAMS
Salvatore J. Lobiondo, 12 Decamp Court, West Caldwell, N.J., and Joseph V. Lobiondo, 12 Winding Lane, Bloomfield, N.J.
Filed Jan. 29, 1970, Ser. No. 6,661
Int. Cl. A22c *18/00*; A23b *1/00*
U.S. Cl. 99—107 **2 Claims**

The bone is removed from a ham in known manner and the ham is cut in an axial plane of the hole that was formed when the bone was removed to provide two major integrally connected sections which re relatively moved to dispose their cut surfaces in approximately a common plane. Minor sections are severed from said major sections, after which said cut surfaces of the major sections and said minor sections are macerated. The minor sections are placed between the major sections which are moved into superposed relation to each other with the macerated surfaces of the pieces contacting each other, whereupon the assembly of major sections and



minor sections is compressed in a mold and cooked so that the pieces are bonded together with bonds which are practically as strong as the tissue of any of the pieces.

ERRATUM

For Class 99—135 see:
Patent No. 3,644,169

3,644,126
METHOD OF MAKING A STARCH CONVERSION SYRUP
Dean A. Bodnar; Charles W. Hinman, both of Clinton, and William J. Nelson, Camanche, all of Iowa, assignors to Standards Brands Incorporated, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,982
Int. Cl. C12b *1/00*
U.S. Cl. 99—142 **10 Claims**

The disclosure is directed to a method of making a starch conversion syrup which includes treating an aqueous slurry of starch with a starch-liquefying enzyme under conditions to obtain therein a D.E. of less than about 35. This liquefied starch slurry is then digested with glucoamylase and malt enzymes to obtain a conversion syrup having less than 45 percent dextrose and sufficient maltose to provide at least 85 percent total fermentable sugars.

3,644,127
PRODUCTION OF SOLID FLAVORING COMPOSITIONS
Ralph G. Moores, Briarcliff Manor, and Charles L. Teitelbaum, New York, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Sept. 16, 1969, Ser. No. 858,506
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **9 Claims**

Solid flavoring compositions are produced by heating a sugar-water mixture to caramelization and then combining this mixture with a flavor oil such as a citrus fruit oil. The resultant liquid is then emulsified in a typical flavor fixative and spray dried to form a free flowing powder consisting of spherical particles having an outer surface flavor fixative literally encapsulating the flavor oil component.

3,644,128
METHOD OF PREPARING COMMINUTED MEAT PRODUCTS
Stuart Lipner, P.O. Box 2087, Newark, N.J.
Continuation-in-part of application Ser. No. 622,422, Mar. 13, 1967, now abandoned. This application Dec. 28, 1970, Ser. No. 102,135
Int. Cl. A22c *11/00, 18/00*
U.S. Cl. 99—108 **3 Claims**

Protein enriched meat food products of improved texture, composition and nutritional value which comprises from

about 95.0 to 99.96 percent by weight of product of comminuted meat solids base and from 5.0 to 0.04 percent by weight of product of an edible nontoxic proteinaceous binder composition.

The protein binder of the meat product is water-soluble though it comprises principally spray-dried plasma from the blood of slaughtered livestock. However, this protein binder also includes less than 1 percent and preferably from 0.05 to about 0.01 percent by weight of a unique edible anticoagulant which remains in the plasma to complex the protein binder prior to use. This organic material is known popularly as carrageenan. The process for preparing meat products using the unique binder is also described and claimed.

3,644,129
METHOD OF PROCESSING POTATOES PRIOR TO COMBINED FREEZE DRYING AND AIR DRYING
Jerry L. Sloan, Portland, Oreg., assignor to Lamb-Weston, Inc., Portland, Oreg.
Filed Oct. 15, 1969, Ser. No. 866,712
Int. Cl. A23b *7/03*; A23l *1/12*; A23b *7/04*
U.S. Cl. 99—207 **3 Claims**

A process of treating potatoes prior to dehydration in which potatoes are cut into pieces of desired physical shape, blanched, cooled in either air or water, and then blanched again. The potato pieces are individually quick frozen and then dehydrated by combined freeze drying and air drying.

3,644,130
POWDERED WAX SUITABLE FOR EMULSIONS AND RUBBER BLENDING
Robert R. Evans, Fullerton, and Peter S. Backlund, Anaheim, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Jan. 23, 1967, Ser. No. 610,821
Int. Cl. C08h *9/08*
U.S. Cl. 106—270 **2 Claims**

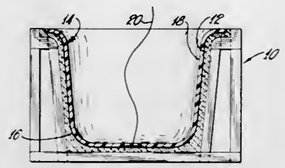
Wax powder which is resistant to congealing is prepared by blending molten wax and an antiblocking agent, dispersing the blend, and then cooling the dispersed blend below its melting point to form the powder.

3,644,131
REINFORCING AGENT FROM SCRAP RUBBER CHAR
William W. Gotshall, 3081 Walma Drive, Orchard Lake, Mich.
Filed Mar. 25, 1970, Ser. No. 22,648
Int. Cl. C09c *1/44*
U.S. Cl. 106—307 **10 Claims**

Scrap rubber, e.g., scrap tire stock, is destructively distilled to produce a carbonaceous char which is then ground to particles having an average particle size of less than about 2.5 microns with at least 99 percent by weight less than 5 microns. The grinding is accomplished under a nonoxidizing atmosphere and the particles are protected from oxygenation of their surfaces until they have been coated with an organic liquid. The resulting coated carbon particles are useful in the production of reinforced elastomeric compositions, e.g., SBR or EPDM or natural rubber, butyl or chlorobutyl tire components.

3,644,132
CONDUCTIVE MOLD COMPRISING A NONCONDUCTING SUPPORTING WALL AND A CONDUCTIVE GEL COAT APPLIED THERETO
Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Oct. 21, 1968, Ser. No. 821,158
Int. Cl. B29c *1/04*
U.S. Cl. 117—5.1 **2 Claims**

An inexpensive conductive mold designed primarily for low-production output is provided. The mold includes an insulating supporting wall having an exposed surface covered with a conductive gel coat comprising a tooling base resin and an electrically conductive filler of a carbonaceous material in particle form, particles being in contact to form a conductive network throughout the gel coat. Ground con-

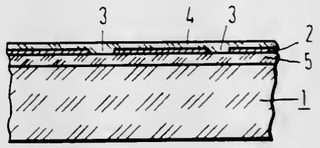


ductors are molded into the supporting wall and are in contact with the conductive gel coat, the conductors being sufficient in number that the conductive gel coat has a resistance of not more than about two thousand megohms from any point on the mold surface to the nearest conductor.

3,644,133
LAYER LATTICE STRUCTURED DRY LUBRICANT COATING METHOD
Robert D. Nelson, Sunnyvale, Calif., assignor to Lubrication Sciences, Inc., Mountain View, Calif.
Continuation-in-part of application Ser. No. 777,161, Nov. 19, 1968, now abandoned , Continuation-in-part of application Ser. No. 656,028, July 26, 1967, now abandoned. This application Nov. 19, 1969, Ser. No. 878,257
Int. Cl. B44d *1/094*; C23c *7/00*
U.S. Cl. 117—31 **10 Claims**

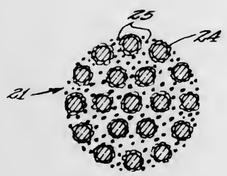
Method of applying a dry lubricant coating to a metal substrate by air impingement in the absence of a vehicle or binder including pretreating the particulate dry lubricant by heating at elevated temperature in a vacuum.

3,644,134
CONTACT EXPOSURE MASK FOR THE SELECTIVE EXPOSURE OF PHOTOVARNISH COATINGS FOR SEMICONDUCTOR PURPOSES
Dietrich Widmann, Munich; Rudolf Kappelmeyer, Oberhaching; Kurt Schluter, and Hermann Steggewentz, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Dec. 11, 1968, Ser. No. 783,784
Claims priority, application Germany, Dec. 12, 1967, P 16 14 677.3
Int. Cl. B44d *1/14*; G03c *1/84*; C23c *15/00*
U.S. Cl. 117—45 **5 Claims**



Described is a contact exposure mask for selective exposure of photovarnish layers for semiconductor fabricating purposes. The contact exposure mask consists of a metallized layer which is deposited upon a carrier plate of transparent, hard material and is provided with exposure windows. The metallized layer is covered by a layer of transparent, hard material having a thickness of at most 3 microns.

3,644,135
IN-SITU CARBIDING OF PYROLYZED COMPOSITES
Fred B. Speyer, Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Oct. 18, 1968, Ser. No. 768,685
Int. Cl. C23c *3/04, 9/06;* **C03c** *17/20*
U.S. Cl. 117—46 **5 Claims**

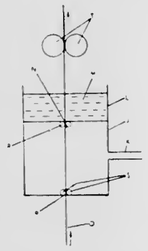


Ablation-resistant compositions for use in high-temperature environments produced by impregnating bundles of carbonaceous filaments with an organometallic compound of a refractory metal followed by pyrolysis and carburizing to thereby form the refractory metal carbide in uniformly dispersed form throughout the bundles of carbonaceous filaments.

3,644,136
PROCESS FOR IMPROVING THE ADHESION OF POLYESTER FIBROUS MATERIAL TO RUBBER
Robert W. McCullough, Riverside, Conn., assignor to Collins and Aikman Corporation, New York, N.Y.
Filed Nov. 4, 1969, Ser. No. 874,043
Int. Cl. B44d *1/092;* **B32b** *25/08*
U.S. Cl. 117—47 A **8 Claims**

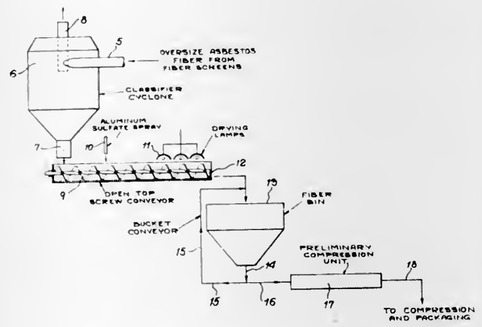
Polyester fibrous materials are provided which have improved adhesion to rubber. The polyester fibrous materials of this invention are obtained by treating the polyesters in the form of fibers, filaments, yarns or fabrics with halogenated aromatic hydrocarbon at an elevated temperature for a short period of time and then advantageously removing substantially all of the halogenated aromatic hydrocarbon from the treated material. The polyester fibers prepared in accordance with this invention are especially useful as reinforcement for rubber products such as tires, conveyor belts and the like.

3,644,137
METHOD OF APPLYING PROCESSING LIQUORS TO TEXTILE MATERIALS AND APPARATUS THEREFOR
Maurice Rayner Fox; Neil David Stewart, and Alfred Peter Lockett, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Oct. 9, 1967, Ser. No. 673,647
Claims priority, application Great Britain, Oct. 10, 1966, 45,197/66
Int. Cl. D06p *7/00*
U.S. Cl. 117—61 **5 Claims**



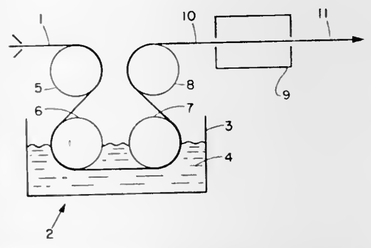
A method for impregnating fibrous materials with processing liquors, such as dye liquors, comprising the steps of (1) subjecting the fibrous material to a subatmospheric pressure, (2) bringing the processing liquor and the fibrous material into mutual contact, (3) restoring the pressure on the material to atmospheric pressure. An apparatus for performing the method having an evacuation chamber for the fibrous material, means for bringing the processing liquor and the material into mutual contact and means for restoring the pressure on the material to atmospheric pressure.

3,644,138
METHOD FOR PREPARING AN ASBESTOS FIBER PRODUCT OF IMPROVED FILTRATION CHARACTERISTICS
Charles E. Stiefken, Westfield, N.J., assignor to American Smelting and Refining Company, New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,754
Int. Cl. C03c *25/02*
U.S. Cl. 117—100 S **7 Claims**



Asbestos fiber having aluminum sulfate deposited on its surfaces and especially well suited for forming fast-filtering asbestos-cement slurries, the preparation of such fiber, and the production of water-laid asbestos-cement products involving the formation of the fast-filtering asbestos-cement slurries utilizing the asbestos fiber having the aluminum sulfate previously deposited thereon. Such asbestos fiber product is preferably dry but can be only partially dry or wet.

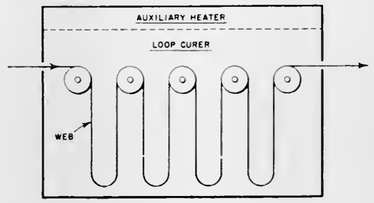
3,644,139
OPAQUE POLYMER FILM AND METHOD OF PRODUCING
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 31, 1969, Ser. No. 889,530
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **16 Claims**



An opaque microporous thermoplastic film useful as paper including printing paper. The film contains dispersed throughout it microscopic voids. The voids are apparently created by the shrinking of globules of a reaction product of

an organic anhydride introduced into the film in the fused or dissolved state of the polymer and then reacted with an agent capable of acylation.

3,644,140
METHOD FOR RENDERING CELLULOSIC MATERIALS FLAME RETARDANT
Herman S. Weisz; Bernard Scheffler, and Lester W. Neely, all of Rock Hill, S.C., assignors to M. Lowenstein & Sons, Inc., New York, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,480
Int. Cl. B44d *1/46;* **C09k** *3/28*
U.S. Cl. 117—119.6 **6 Claims**



The invention provides a teaching of method and apparatus for utilizing certain substituted phosphono-amide flame retardant containing compositions on cellulosic materials in a manner effective for mass production by continuous movement of the material. In particular, the invention utilizes apparatus which avoids sticking of the material to any conveying means during curing in the utilization of a festoon- or loop-curing-type oven. A critical material temperature range during curing has been found to be particularly effective in the process disclosed herein and the curing may be assisted by means of an auxiliary heater to render certain the maintenance of a predetermined temperature in the material itself as it passes through the oven.

3,644,141
METHOD OF DISPERSING REACTION OF ORGANOSILANE AND POLYOLEFIN
Jerome A. Preston, Fort Wayne, Ind., assignor to Owens-Corning Fiberglas Corporation
Filed Dec. 5, 1968, Ser. No. 781,618
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GS **9 Claims**

A method of dispersing polyolefins in water and a resulting product useful as a coating material for glass fibers. Glass fibers coated with the products and mixed with polyolefin molding resins produce molded parts having increased strength. The polyolefin material is combined with an organosilane and the combination is then mixed with a water dispersible polyester material which acts as a carrier for the polyolefin-silane material during a subsequent emulsification or dispersing operation.

3,644,142
PROTECTIVE GARMENT AGAINST WHITE PHOSPHORUS
Francis Clyde Rauch, Stamford, Conn.; Michael Albert Murray, White Plains, N.Y., and Richard Vincent O'Lenick, Parsippany, N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Dec. 11, 1968, Ser. No. 783,152
Int. Cl. B32b *27/20;* **A62b** *17/00*
U.S. Cl. 117—138.8UF **5 Claims**

Protective garment fabric impervious to burning phosphorus is made with fibrillated polytetrafluoroethylene containing an incorporated copper adjuvant which consists of metallic copper or a copper compound, e.g., copper sulfate, cuprous or cupric oxide and the like. The fabric comprises 10 to 95 percent weight of the copper adjuvant. In preferred embodiments the fabric may also include inorganic fibers, e.g. asbestos. Incorporated polytrifluorochloroethylene improves strength of the fabric. Protective garments can be fashioned from the new fabrics.

3,644,143
LUBRICATING COMPOSITION
Alexander Campbell Flett, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 5, 1968, Ser. No. 750,021
Claims priority, application Great Britain, Aug. 11, 1967, 37,029/67
Int. Cl. D06m *13/00*
U.S. Cl. 117—138.8 N **1 Claim**

A polyamide yarn-lubricating composition of particular value to yarns that are to be subjected to a false-twisting operation which comprises in dispersion a volatile aliphatic ester (A), optionally a volatile oil-soluble surfactant (B), an anionic surfactant (C), that is different from (B) if (B) is present and an antistatic agent (D).

3,644,144
COATED ELECTRODE FOR ELECTRIC ARC WELDING OF STEEL OF VARIOUS STRUCTURE
Mikhail Mikhailovich Timofeev, ulitsa Velozavadskaya, 11/1, kv. 323, Moscow; Vladimir Leonidovich Sokolov, ulitza Komsomolskaya 5, kv. 96, Reutovo, Moskovskaya Oblast; Samuil Iosifovich German, ulitsa Mayakovskogo, 11, kv. 21; Ninel Efimovna Levenberg, ulitsa Galana, 3, kv. 58, both of, Kharkov, and Nikolai Ivanovich Popov, ulitsa Kovskkova 8/50, kv. 36, Elektrostal, Moskovskaya Oblast, all of U.S.S.R.
Filed July 24, 1970, Ser. No. 58,208
Int. Cl. B23k *35/22*
U.S. Cl. 117—205 **1 Claim**

The present invention relates to welding coated electrodes and is used for welding steel of various structure.

The electrode comprises a rod containing carbon, silicon, manganese, molybdenum, nickel, titanium and iron, and a coating of the fluoric-calcium type.

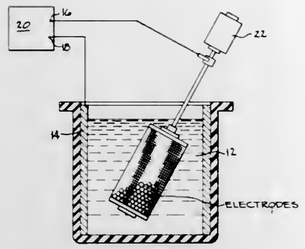
3,644,145
INCORPORATION OF VALVE METALS INTO CURRENT-PRODUCING CELL CONSTRUCTIONS
Anthony Vincent Fraioli, Essex Falls, N.J., and John Phillip Mohns, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 2, 1969, Ser. No. 863,347
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 **13 Claims**

In electrochemical current-producing cells having nonaqueous electrolyte solutions, metal parts of the positive electrode which contact the electrolyte are of a valve metal, e.g., aluminum, coated with a corrosion-resistant film of the valve metal oxide.

3,644,146
METHOD FOR CYCLING BATTERY ELECTRODES IN BULK
Bernard G. Bergum, Monona, Wis., assignor to ESB Incorporated
Continuation-in-part of application Ser. No. 703,296, Feb. 6, 1968, now abandoned. This application Mar. 23, 1970, Ser. No. 21,850
Int. Cl. H01m *35/30*
U.S. Cl. 136—76 **12 Claims**

Battery electrodes are cycled in bulk in a conductive container by depositing the container in an electrolyte (or alternatively, by depositing the electrolyte in the container) and

then passing a current between the container and another conductor present in the electrolyte. The electrodes are then removed from the container and assembled into batteries.

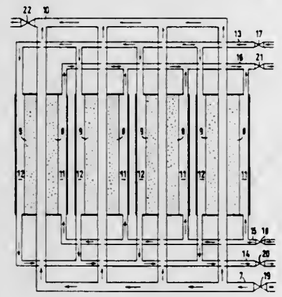


Preferably the electrodes are agitated while the current is being passed. Cylindrical rotating containers may be used for the cycling.

3,644,147
MIXED VALENCY TRANSITION METAL PEROVSKITES AS CATHODIC REDUCTION CATALYSTS
Archie R. Young, II, Montclair, N.J., assignor to Esso Research and Engineering Company
Filed Apr. 24, 1969, Ser. No. 819,107
Int. Cl. H01m *27/04, 13/00*
U.S. Cl. 136—86 D **6 Claims**

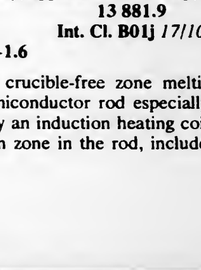
Ionic crystals having a perovskite structure and comprising a solid solution of oxides of the formulas ABO_3 and $A'BO_3$ where A and A' are nontransition metals and B is a transition metal present in two different valency states are effective cathodic electrocatalysts for use in electrochemical cells such as fuel cells.

3,644,148
METHOD OF PLACING AND HOLDING A FUEL-CELL BATTERY IN INACTIVE MAINTENANCE-FREE READY CONDITION
Heinrich Gutbier, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 19, 1969, Ser. No. 851,232
Claims priority, application Germany, Aug. 28, 1968, P 17 96 080.4
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 E **4 Claims**



Method of placing and holding in inactive maintenance-free ready condition a fuel-cell battery having electrode chambers, respective electrodes in the chambers, and respective supply means for two reactants, namely fuel and oxidant, the supply means having respective inlet valves for controlling the supply of the reactants, includes the steps of displacing one of the reactants of the electrodes and electrode chambers by filling the electrodes and electrode chambers with nonreactant substance, closing the inlet valve for the one reactant and holding the valve closed during the inactive-and-ready state of the battery.

3,644,149
BATTERY TERMINAL CONSTRUCTION AND METHOD FOR FORMING BATTERY TERMINALS
James P. Coffey, Hatboro, and Frank A. Vengrofski, Rockledge, both of Pa., assignors to ESB Incorporated
Filed June 22, 1970, Ser. No. 47,989
Int. Cl. H01m *5/00*
U.S. Cl. 136—135 S **18 Claims**



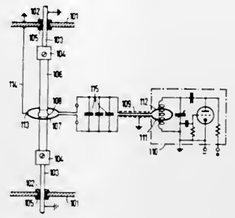
Batteries are described having battery posts disposed wholly within the battery container. Terminal inserts are installed through the walls of the battery container and into the posts within by a method combining high-speed rotation and pressure. The terminal inserts make permanent electrical and mechanical contact with the interior battery posts and provide external electrical contact means. Means are described to lock the wall of the container to the post and insert and provide a liquidtight seal therebetween.

3,644,150
STABILIZING OF AQUEOUS SOLUTIONS OF POTASSIUM PERSULPHATE
Joris Jan Cornelis Oomen, and Jan Adrianus Visser, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 7, 1969, Ser. No. 874,962
Int. Cl. H01m *15/04*
U.S. Cl. 136—137 **7 Claims**

Aqueous solutions of potassium persulfate may be stabilized by a sulfonic acid salt.

3,644,151
METHOD AND DEVICE FOR CRUCIBLE-FREE ZONE MELTING A CRYSTALLINE ROD
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 13, 1970, Ser. No. 19,290
Claims priority, application Germany, Mar. 19, 1969, P 19 13 881.9
Int. Cl. B01j *17/10*
U.S. Cl. 148—1.6 **10 Claims**

Method of crucible-free zone melting a crystalline rod, such as a semiconductor rod especially, wherein the rod is surrounded by an induction heating coil energizable so as to form a molten zone in the rod, includes passing the molten zone axially through the rod, and simultaneously maintaining the crystalline rod and the induction heating coil at the same



electric potential during passage of the molten zone through the rod; and device for carrying out the method.

3,644,152
METHOD AND COMPOSITION FOR PRODUCING A BLACK MATTE FINISH ON FERROUS METALS
Louis Schlossberg, Farmington, and Stanley M. Sokalski, Southfield, both of Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.
Filed Oct. 21, 1969, Ser. No. 868,218
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 R **8 Claims**

A method is provided for producing a black matte finish on ferrous metal objects, wherein the ferrous metal object is contacted with a sulfuric acid solution of a trivalent antimony salt and a complexing agent and thereafter a phosphate coating is deposited on the object. The treating solution may also contain a minor amount of hydrochloric acid or a salt of hydrochloric acid. The finish produced on the ferrous metal is of a uniform black stable shade.

3,644,153
ABRASION-RESISTANT MATERIALS AND CERTAIN ALLOYS THEREFORE
John J. Rausch, Antioch, and Ray J. Van Thyne, Oak Lawn, both of Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
Filed Jan. 28, 1970, Ser. No. 6,379
Int. Cl. C22c *27/00;* **C23c** *11/14*
U.S. Cl. 148—31.5 **12 Claims**

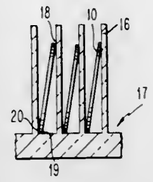
A novel group of alloys consisting essentially of:

A. columbium and/or tantalum and/or vanadium;
B. titanium and/or zirconium;
C. chromium and/or manganese and/or rhenium; and optionally,
D. molybdenum and/or tungsten.

Such alloys illustrate utility in themselves and when nitrided as hereinafter taught are characterized by excellent wear and abrasion resistance and show considerable utility, for example, as cutting tool materials.

3,644,154
METHOD OF FABRICATING SEMICONDUCTOR STRUCTURES WITH REDUCED CRYSTALLOGRAPHIC DEFECTS
Cornelius Hoogendoorn; Mattie Moody, and Guenter H. Schwuttke, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 9, 1969, Ser. No. 831,675
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 **6 Claims**

A method of fabricating semiconductor structures and devices with reduced crystallographic defects by supporting said wafers in close proximity to a substrate which serves to maintain a linear temperature gradient across the surface of the wafer. The wafer is positioned so that one entire surface thereof is less than one-fourth inch and may be flush against the substrate which has a heat capacity of at least 10 times that of the wafer. The wafer is maintained in this position whenever it is at a temperature above 850° C. The wafer is so



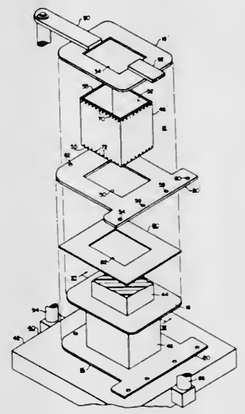
maintained during both the periods when such high-heat processing is being carried out, as well as when the wafer is removed from the source of heat and being cooled.

There is also provided a wafer holder having a plurality of spaced walls and means for supporting a plurality of wafers in the above-described positions between said walls.

3,644,155
CLEANING AND BRIGHTENING OF LEAD-TIN ALLOY-RESISTED CIRCUIT BOARDS
Bernard James Hogya, Sayreville, N.J., and Joseph Thomas McManamon, Levittown, Pa., assignors to FMC Corporation, New York, N.Y.
Filed May 1, 1969, Ser. No. 821,088
Int. Cl. C23g *1/06;* **C23f** *3/04*
U.S. Cl. 156—20 **6 Claims**

Etched copper circuits having a solder-plated resist are cleaned and brightened by contacting the solder surface with hydrobromic acid.

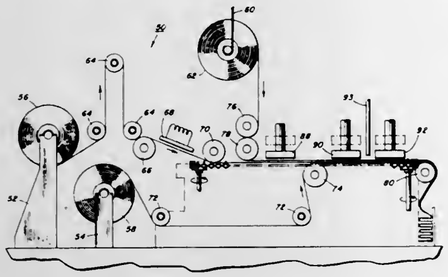
3,644,156
METHOD OF MAKING A COIL BOBBIN
Emerick J. Petrinjak, Masury, Ohio, and William J. Grasinger, Stoneboro, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 15, 1969, Ser. No. 857,962
Int. Cl. B29d *3/00;* **H01f** *27/02, 27/28*
U.S. Cl. 156—90 **2 Claims**



A method of making coil bobbins wherein a plurality of bobbins are assembled on an upstanding guide form, while simultaneously gauging the length dimension between the

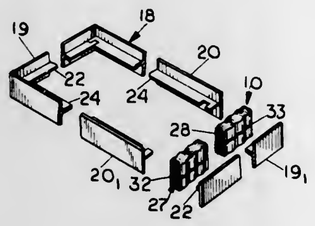
flanges of each bobbin, gauging the squareness of the flanges to the longitudinal dimension of the bobbins, and regauging the openings in the tubular member of each bobbin to its original as formed configuration.

3,644,157
METHOD OF MAKING LAMINAR GARMENT BY AUTOGENOUS BONDING OF CONTINUOUS WEBS
Neal M. Draper, 25 Hawthorne Road, Short Hills, N.J.
Filed Jan. 27, 1970, Ser. No. 6,155
Int. Cl. B32b *31/00*
U.S. Cl. 156—160 **4 Claims**



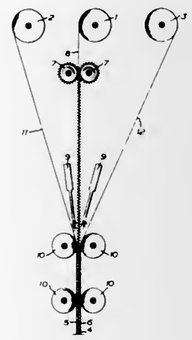
A laminar garment comprising a first layer of finished material, a second layer of finished material and an intermediate layer of elastic material disposed between the first and second layers of finished material is disclosed as being manufactured by a process wherein the first layer of finished material and the intermediate layer of elastic material are bonded together at selected points, thereafter the second layer of finished material is positioned adjacent the intermediate layer of elastic material and bonded to both the first layer of finished material and the intermediate layer of elastic material at points other than the points of initial bonding between the first layer of finished material and the intermediate layer of elastic material. The method of bonding is disclosed as being heat-pressure bonding, the elastic material being heat-pressure sealable material such as polyester urethane foam.

3,644,158
METHOD FOR CONSTRUCTING A HONEYCOMB CORE STRUCTURE
William P. Strumbos, 85 Middleville Road, Northport, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,698
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 **10 Claims**



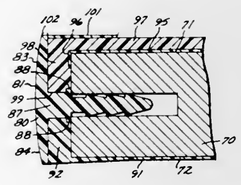
In the art of constructing honeycomb core structures, a method for treating the honeycomb core material during the manufacturing process with a self-contained force-generating substance such that it can be shipped in the unexpanded condition and can be expanded when required by activating the substance. The force-generating substance is a stable, but potentially reactive, foamable material coated on the walls of the unexpanded core cells with the reactants of the material isolated from one another by impermeable barrier means. These barrier means are ruptured or dissolved by suitable means to trigger the foaming reaction that provides the forces to expand the core. Because the foamable means for expanding the core are self-contained, and can be remotely activated, honeycomb core structures can be produced having a foamed-in-place core in which, also, the expansion of the core locks the components of the structure together such that the need for other fastening means is thereby eliminated.

3,644,159
METHODS FOR MANUFACTURING CORRUGATED BOARD
Ake Evald Edkvist, Lockarp, Sweden, assignor to Palson Corporation AB, Malmo S, Sweden
Filed June 13, 1967, Ser. No. 645,673
Claims priority, application Sweden, June 20, 1966, 8371
Int. Cl. B31f *1/28*
U.S. Cl. 156—210 **7 Claims**



A method and an apparatus for manufacturing corrugated board in which layers of material for the corrugated board are coated with a mixture of a thermoplastic and a wax which can be brought into liquid form and which after melting and setting on the layers keeps said layers together.

3,644,160
METHOD OF MAKING MULTILAYER ARTICLES
James R. Valentine, Jr., Orange, and Ralph C. McBee, Fountain Valley, both of Calif., assignors to Comatico Tiles, Inc., Artesia, Calif.
Filed June 26, 1968, Ser. No. 740,279
Int. Cl. B32b *31/00*
U.S. Cl. 156—250 **15 Claims**



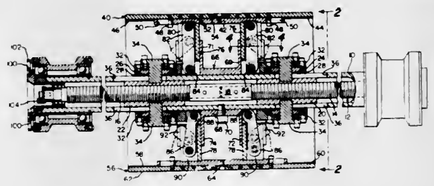
A method of making multilayer articles having a flat frame board wherein each of the faces of the frame board receive a sealing coat and, after a dam is formed around the perimeter of the board, one of the board faces receives a color coat which is considerably thicker than the respective seal coat,

which color coat has veins of a contrasting color formed therein, and then a final coat is applied over the color coat, said frame board being cut, in some cases, to the final shape of the article before said coats are applied. The method also effects a seal at the edge of the frame board where an edge mold is located, even though the sealing compound used will not adhere to the edge mold. This is accomplished by providing that the edge mold main body is spaced slightly away from the board edge to permit the sealing compound to fill the space between the board edge and the main body of the edge mold and providing that the edge mold anchor flange, which is received in a slot in the board edge, is provided with a recess thereon which is filled with sealing compound to effect a mechanical gripping by the sealing compound on the edge mold.

3,644,161
PROCESS FOR CURING AIR-INHIBITED RESINS BY RADIATION
Roger P. Hall, Mayfield Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio
Filed Nov. 13, 1967, Ser. No. 682,140
Int. Cl. B29c *19/02*
U.S. Cl. 156—272 **12 Claims**

A process for curing a normally air-inhibited, thermosetting resinous reaction product comprising exposing a film or coat of the resin while overlying a substrate to high-energy radiation to cure at least a depthwise segment of the film that is contiguous to the substrate to provide a nontacky, mar-resistant undersurface to the film, then inverting the film on a substrate, and again exposing the inverted film to high energy radiation or to heat. Electron emission, microwaves, ultraviolet light, and the like may be used as the high-energy radiation. As a modification, the resin film or coat may be stretched prior to completing the second exposure. As a further modification, the resin film may be laminated to a substrate during the second exposure, preferably with an adhesive curable by exposure to such high energy radiation.

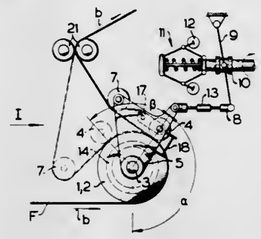
3,644,162
TIRE-BUILDING DRUM
Paul E. Appleby, Silverlake; Denver C. Folden, Akron, and Robert S. Riggs, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 6, 1970, Ser. No. 52,232
Int. Cl. B29h *17/16*
U.S. Cl. 156—415 **12 Claims**



A tire-building drum of the collapsible type having a plurality of segments which, in the expanded condition of the drum, collectively form a tire-building surface. Radial movement of the segments between the expanded and collapsed condition of the drum is controlled by two sets of links one of which set has a through center toggle action as the segments associated therewith move into or out of expanded condition. The segments are guided in their radial movement by pistons mounted on the segments and received in cylinders which are fixed relative to the drum shaft. In the expanded condition of the drum, the links are contained within the pistons to provide a compact structure.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,644,163
WELDING APPARATUS
August Schwarzkopf, and Fritz Achelpohl, both of Westphalia, Germany, assignors to Windmoller & Holscher, Westphalia, Germany
Filed Sept. 10, 1969, Ser. No. 856,563
Claims priority, application Germany, Sept. 18, 1968, P 17 79 733.0
Int. Cl. B32b *31/20;* **B30b** *15/34*
U.S. Cl. 156—583 **9 Claims**



Apparatus for forming a longitudinal seam in heat sealable layers of a traveling web of material comprising a rotatable guide roll extending longitudinally the width of the web to be sealed, the guide roll being provided on its periphery at one end with a striplike heating element, and a pressure roll to press the web against the heat element located where the web leaves the surface of the guide roll, the pressure roll longitudinally extending only over the region of the heating element.

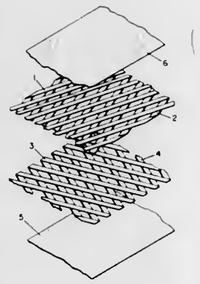
3,644,164
PLASTIC GREENERY STRIPS FOR DECORATIVE PURPOSES
Wesley S. C. Chin, P.O. Box 8412 Crenshaw Station, Los Angeles, Calif.
Filed July 27, 1970, Ser. No. 58,219
Int. Cl. A41g *1/00*
U.S. Cl. 161—25 **5 Claims**



A series of molded plastic greenery sprigs, each having an orificed cylindrical base, are strung upon a flexible longitudinally extending element. The latter is polygonal in cross section and the orifice of each cylindrical base is of a similar cross section but sufficiently greater in its inside dimension to permit the element to be passed therethrough in a mating fit. In one form, the flexible element may be a plastic jacketed wire. In assembling the sprig onto the longitudinally extending element, its angular orientation relative to the axis of the element and to other sprigs slipped onto the same element

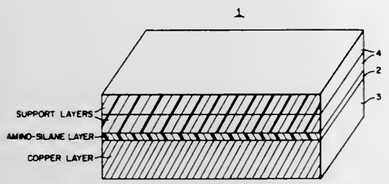
may be varied. The polygonal configuration of the element prevents any rotation of the sprig base after it is assembled onto the element.

3,644,165
FIBER REINFORCED LAMINATED PLASTIC FILM AND METHOD OF MAKING SAME
Wei-Gwo Chen, Houston, Tex., assignor to Griffolyn Company, Incorporated
Filed Oct. 15, 1969, Ser. No. 866,599
Int. Cl. B32b *5/08*
U.S. Cl. 161—58 **10 Claims**



An improved fiber reinforced laminate, in which the nonwoven reinforcement is oriented in four different planes, each of the four containing fibers parallel with each other. Describing the construction in another way, it consists essentially of two diamond patterns superimposed on each other, one of which has its longer diagonals parallel with the longitudinal direction of the laminate (the machine direction), and the other has its shorter diagonal parallel with this direction. The invention also contemplates a method for mass producing this laminated article, by means of modulating the speed of the fiber angularizing means of the laminate producing machine.

3,644,166
OXIDE-FREE MULTILAYER COPPER CLAD LAMINATE
Smith A. Gause, Hampton, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 28, 1968, Ser. No. 716,819
Int. Cl. H05k *1/00*; **B32b** *15/08*
U.S. Cl. 161—89 **9 Claims**



A copper-clad laminate is made with a copper foil, an intermediate thin film of an amino-silane applied over the copper surface and layers of a resin impregnated support material. The amino-silane film uniformly covers the copper surface and prevents oxide transfer to the support material.

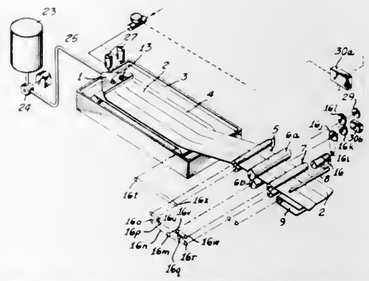
3,644,167
PREPARATION OF CORRUGATING LINERBOARD
Warren E. Mowry, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed July 14, 1969, Ser. No. 841,578
Int. Cl. D21h *1/04, 3/28*
U.S. Cl. 161—125 **10 Claims**

A corrugating linerboard is prepared from a paperboard made from waste paper fiber by surface sizing the paperboard with an aqueous solution of 5 to 30 weight percent solids concentration of an alkali metal borate treated mixture of lignosulfonate and starch. The starch is present in the mixture in an amount of from 15 to 25 weight percent of the lignosulfonate solids and the mixture is treated with the alkali metal borate in an amount of from 1 to 5 weight percent of the lignosulfonate solids.

3,644,168
VARIED DENSITY POLYISOCYANURATE FOAM STRUCTURE
Henry W. Bonk, Wallingford; Robin L. Grieve, North Guilford; Herbert G. Nadeau, North Haven, and Peter G. Palmer, Wallingford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of application Ser. No. 798,103, Feb. 10, 1969. This application June 12, 1970, Ser. No. 45,756
Int. Cl. B32b *3/26, 5/14*; **B29d** *27/00*
U.S. Cl. 161—160 **11 Claims**

A novel structural material is described. The material is a rigid cellular polymer having an integrally formed continuous noncellular surface layer. There is an abrupt change of density at the juncture of the inner cellular core and the outer noncellular layer, the thickness of the latter being not less than about 0.25 millimeters. The inner cellular core and the outer noncellular layer are of uniform chemical composition and comprise a polymer having isocyanurate moieties as the major recurring chemical linkages and oxazolidinone, amide, imide, and urethane moieties as minor recurring units. Optionally the novel structural material can contain fillers and/or reinforcing elements. The novel structural material is further characterized by high-insulating capacity, high-structural strength and high resistance to heat and to flame spread. It can be used in place of sheet metal, wood, reinforced resin and the like, in the fabrication of automobiles, appliances, furniture, buildings, marine vessels, sporting goods equipment, pipe insulation, and many allied fields.

3,644,169
LAMINATED SLABS OF CHEWING GUM BASE
Michael Phillips, North Brunswick, N.J., assignor to L. A. Dreyfus Company, South Plainfield, N.J.
Original application Dec. 31, 1963, Ser. No. 334,870, now Patent No. 3,455,755. Divided and this application Sept. 9, 1968, Ser. No. 774,558
Int. Cl. A23g *3/00, 3/30*
U.S. Cl. 99—135 **3 Claims**



A laminated chewing gum base slab comprising a ribbon of chewing gum base in which the ribbon is folded in accordion

fashion with the faces of separate folds adhered together. The adjacent faces of some folds can be separated by a nonadherent layer.

3,644,170
FIBRILATING FIBROUS PULP STOCK IN A GAS STREAM
Teizo Mekata, 3474, Showa-dori; Takashi Yoda, and Masaharu Shiraishi, both of 579/41 Ishizaka, all of Yoshiwara, Shizuoka-ken, Japan
Continuation-in-part of application Ser. No. 598,407, Dec. 1, 1966, now abandoned. This application Dec. 10, 1969, Ser. No. 883,947
Claims priority, application Japan, June 18, 1966, 41/39219
Int. Cl. D21d *1/38*
U.S. Cl. 162—21 **11 Claims**

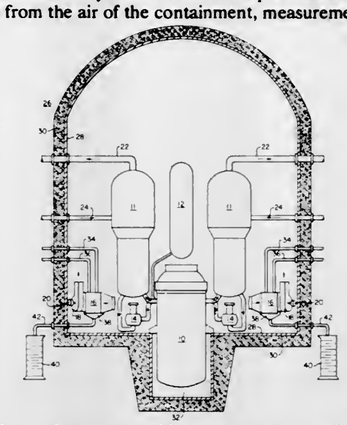
Pulp stock in the form of dehydrated pulp flakes having a moisture content of between 20 and 50 percent is entrained in an airstream and is fed into a fibrilator where it is subjected to a three-dimensional turbulent flow resulting from the unidirectional propulsive force of the airstream and centrifugal force caused by rotating blades within the fibrilator. The flakes impinge upon one another and when disintegrated are withdrawn from the fibrilator by the unidirectional force of the airstream. The less fully disintegrated flakes undergo mechanical impact with a toothed surface in the fibrilator and are then withdrawn. The temperature of the airstream may be controlled by a heat exchanger and the moisture content thereof by valved water and steampipes connected to the airstream carrying duct upstream of the fibrilator.

3,644,171
PROCESS FOR PREPARING A WOOD CHIP PILE FOR DIGESTION BY COATING THE PILE WITH A GAS IMPERMEABLE LAYER AND PRODUCTS THEREOF
Rhys Dilwyn Bevan, 245 Springhill Road, Rosemore, Quebec, Canada, and Ingemar Liss-Albin Croon, S. Aspgatan 1, Alfredshem, Ornskoldsvik, Sweden
Filed July 7, 1969, Ser. No. 839,674
Claims priority, application Great Britain, July 12, 1968, 33,275/68
Int. Cl. D21c *3/04*
U.S. Cl. 162—70 **7 Claims**

Wood chips, at least 1 percent of which, by volume are impregnated with a cooking liquor are cooked while stored in the form of a pile. The pile is characterized by being coated, except for a limited area at the top, with a gas impermeable layer of a foamed resin or of an admixture of a wood derivative selected from saw dust, kraft pulp or screenings and sulphite pulp screenings with a binding agent which can be cross-linked to form a gel. The coating facilitates the control of the temperature and the circulation of air in the pile.

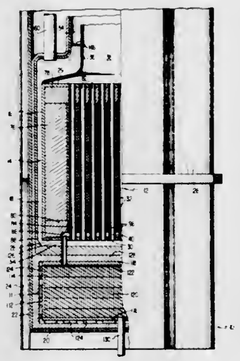
3,644,172
SYSTEM FOR DETERMINING LEAKAGE INSIDE A REACTOR CONTAINMENT
Donald A. Campbell, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 23, 1968, Ser. No. 761,638
Int. Cl. G21c *17/00*
U.S. Cl. 176—19 LD **6 Claims**

The invention provides a system for determining the total leakage of steam and water systems inside a reactor containment by measuring the condensate collected by the containment cooling coils. The leakage from the system is present in the containment as vapor, either directly or by subsequent evaporation from the liquid state, is transported by air circulated within the containment and removed by condensation at the cooling coils of the air recirculation system. As equilibrium normally exists between vapor addition to and removal from the air of the containment, measurement of the



collected condensate provides measurement of leakage within the containment.

3,644,173
NUCLEAR REACTOR OF THE METAL HYDRIDE CONTROL TYPE
Robert E. Magladry, Baltimore, Md., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Nov. 6, 1967, Ser. No. 680,618
Int. Cl. G21c *7/00*
U.S. Cl. 176—42 **21 Claims**

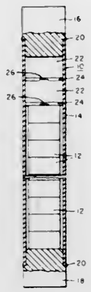


A nuclear reactor comprising thermally isolated first and second sealed containers carrying metal hydride, one of which also includes nuclear fuel material with the metal hydride material forming essentially the reactor core, circulating coolant passages through the core containing container means for fluid connecting the sealed containers to allow intercontainer transfer of released hydrogen and means for heating the nonreactor core container to control reactivity within the reactor core.

3,644,174
PRESSURIZED FUEL ELEMENT
Harry M. Ferrari, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 19, 1968, Ser. No. 738,237
Int. Cl. G21c *3/04*
U.S. Cl. 176—68 **7 Claims**

A metallic clad sealed fuel element for a nuclear reactor is internally pressurized to resist creep collapse in the early

stage of burnup. The fuel element has a normally sealed plenum chamber which is rupturable when a predetermined



increased pressure is reached during burnup to provide a void space for fission gases.

3,644,175

DETOXIFICATION OF GRAM-NEGATIVE BACTERIA GROWN IN A FERMENTATION PROCESS

Bruce L. Dasinger, Scotch Plains, and Lars A. Naslund, Morganville, both of N.J., assignors to Esso Research and Engineering Company

Filed July 8, 1968, Ser. No. 743,012
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **7 Claims**

The present invention is concerned with the detoxification of gram-negative bacteria produced in an aerobic biosynthesis fermentation process. It is preferred that the detoxification be carried out at elevated temperatures using an inorganic or organic acid. Preferred acids comprise inorganic and organic acids, such as hydrochloric and acetic acids.

3,644,176

SYNTHESIS OF 6-HYDROXYNICOTINE

William C. Squires, and Lawrence E. Hayes, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 14, 1969, Ser. No. 824,498
Int. Cl. C12d *13/00*
U.S. Cl. 195—51 R **8 Claims**

Process for preparing 6-hydroxynicotine by conversion of nicotine using Arthrobacter oxydans micro-organisms.

3,644,177

MONITORING PENICILLIN IN BIOLOGICAL SUBSTANCES

Naomi Zyk, Jerusalem, Israel, assignor to Yissum Research Development Company, Jerusalem, Israel

Filed Nov. 12, 1969, Ser. No. 875,667
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **17 Claims**

A method of determining the penicillin content in biological, metabolic, and alimentary substances by partially inactivating penicillinase with iodine in the presence of and in proportion to the amount of a penicillin contained in a specimen, and measuring the residual activity of the enzyme by contact with a suitable substrate such as an S-type penicillin in the presence of an indicator whose color change signifies accumulation of the hydrolyzate penicillinoic acid and is correlated in terms of time or hue to a standardized amount of the penicillin under test. Monitoring strips for carrying out the procedure consisting of 2 sorbefacient pads one of which is impregnated with the test enzyme while the other is suffused with an S-type penicillin and an indicator which may be a soluble starch-iodine complex or a pH-sensitive organic dye.

3,644,178

AROMATIC ESTER RECOVERY

Albert J. Shmidl, Crosby, and Edgar C. Winegartner, Baytown, both of Tex., assignors to Esso Research and Engineering Company

Filed June 12, 1969, Ser. No. 832,843
Int. Cl. C07c *67/06*
U.S. Cl. 203—29 **4 Claims**

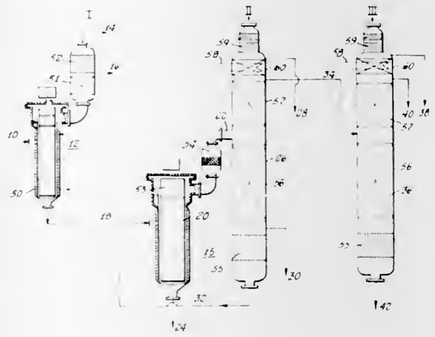
In the recovery of aromatic esters, a product of improved color is obtained when heated in the presence of antimony trioxide.

3,644,179

METHOD AND APPARATUS FOR CONTINUOUS FRACTIONATION OF TALL OIL AND SIMILAR MIXTURES OF ORGANIC SUBSTANCES WITH PRELIMINARY PLURAL STAGE THIN FILM EVAPORATION

Peter Knoer, Zurich, Switzerland, and Gerhard Pleh, Krems an der Donau, Austria, assignors to Krems-Chemie Gesellschaft m.b.H., Krems an der Danube, Austria and Lurva A.G., Zurich, Switzerland

Filed Sept. 23, 1968, Ser. No. 761,774
Claims priority, application Austria, Sept. 28, 1967, A8825/67
Int. Cl. B01d *3/18*
U.S. Cl. 203—72 **9 Claims**



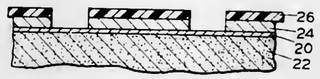
Method and apparatus for continuous fractionation of tall oil and similar mixtures of organic substances containing components prone to react upon heating. One or more fractionating columns are utilized to separate the mixture into at least two main fractions, for example, a rosin acid fraction and a fatty acid fraction with a pretreating device comprising an evaporator, a fractionating column and a condenser. The evaporator of the pretreating device and the evaporator which precedes the first fractionating column are both thin film evaporators whereby evaporation occurs so quickly as to avoid reaction of the components of the light and heavy ends of the mixture which are otherwise prone to react upon heating. Preferabiy, a pair of fractionating columns are utilized, the first serving as a rosin acid distilling column and the second serving as a fatty acid distilling column, with the bottoms from the first fractionating column being recycled to the evaporator which precedes the first fractionating column to subject the same to further evaporation and fractionation. Improved yield and improved quality of yield are found.

3,644,180

METHODS OF USING INORGANIC RESISTS

Russell Burock, Allentown; David M. Swirsky, Minersville, and Robert A. Whitner, Allentown, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,478
Int. Cl. C23b *5/48;* **B23p** *1/00;* **B01i** *17/00*
U.S. Cl. 204—15 **11 Claims**



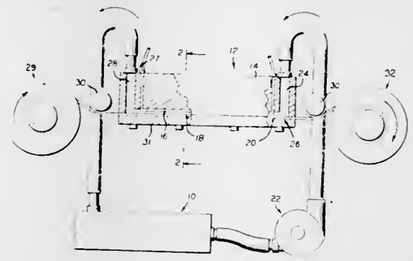
Chemical treatment of surfaces is limited to selected portions of the surface by applying inorganic resists to the surface in a desired pattern. In a specific example, silicon dioxide is deposited at a low temperature on a titanium surface surrounding a platinum interconnection pattern on a silicon semiconductor slice. The silicon dioxide is patterned to expose the platinum but cover the titanium. Gold is then electroplated onto the platinum in a well-defined pattern.

3,644,181

LOCALIZED ELECTROPLATING METHOD

John G. Donaldson, Warren, Pa., assignor to Sylvania Electric Products Inc.

Filed July 24, 1969, Ser. No. 844,323
Int. Cl. C23b *5/48, 5/58;* **B01k** *3/00*
U.S. Cl. 204—15 **7 Claims**



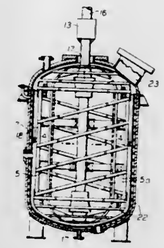
An improved electroplating process is disclosed wherein a metal is deposited in the form of a predetermined pattern upon a continuously advancing strip of electrically conductive substrate. The process involves providing a potential difference between an anode and a cathode wherein the cathode is the strip of electrically conductive substrate, and the current density at the cathode is at least about 300 amperes per square foot per feet per minute of the advance of the cathode, and circulating an electroplating solution containing the metal to be deposited between the anode and the cathode at a velocity of at least 6.5 ft./sec. at the cathode. In addition, an apparatus is disclosed that comprises a means of continuously advancing the strip of electrically conductive substrate past at least one electroplating station that comprises a housing having one face adapted for contact with the strip, an anode recessed in the housing, a channel having specific dimensions and connecting the anode and the strip and a pair of passages at opposite ends of the channel that are in close proximity to the channel, the passages have one end terminating at the face that is in contact with the strip and the other end terminating at a face other than the one that is not adapted for contact with said strip and a container for an electroplating solution and a means for circulating the electroplating solution through the electroplating station and a means for receiving the electroplated strip.

3,644,182

PROCESS AND APPARATUS OF PLATING ENCLOSED VESSELS

Karl Wittel, Kahl, am Main, Germany, assignor to Industrie-Hartverchromung Praezisionsmechanik GmbH, Kahl, am Main, Germany

Filed Oct. 13, 1969, Ser. No. 865,805
Claims priority, application Germany, Nov. 25, 1968, P 18 08 865.8
Int. Cl. C23b *5/56, 5/68;* **B01k** *3/00*
U.S. Cl. 204—26 **9 Claims**



The inside surfaces of pressure vessels are electroplated by mounting the anode within the vessel, continuously circulating electrolyte through the vessel and passing an electrolysis current from the anode to the wall of the vessel. Vessels having permanently mounted heads, as by welding, are uniformly plated.

3,644,183

PROCESS FOR COATING AN OBJECT WITH A BRIGHT NICKEL/CHROMIUM COATING

Jules Marie Odekerken, Vught, Netherlands, assignor to N.V. Research Holland, 's-Hertogenbosch, Netherlands

Continuation-in-part of application Ser. No. 336,015, Jan. 6, 1964, now abandoned. This application Feb. 19, 1968, Ser. No. 706,619
Claims priority, application Netherlands, Jan. 9, 1963, 287612
Int. Cl. C23b *5/50;* **C23c** *3/02*
U.S. Cl. 204—38 B **10 Claims**

Objects are coated with a basic bright nickel layer, an intermediate layer in which solid particles are embedded, and a chromium layer. The solid particles comprise particles of a solid, nonacid-resistant silicate which gives an alkaline reaction in aqueous suspension. The resulting composite coating has an outstanding corrosion resistance.

3,644,184

ELECTROLYTIC GOLD PLATING SOLUTIONS AND METHODS FOR USING SAME

Paul T. Smith, Pascoag, and Augustus Fletcher, Coventry, both of R.I., assignors to Sel-Rex Corporation, Nutley, N.J.

Filed June 29, 1970, Ser. No. 50,969
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 **10 Claims**

Electrolytic solutions containing gold and small amounts of thallium wherein the solution is neutral or alkaline yield uniformly deposited gold platings possessing good aesthetic qualities and having good attachability to surfaces. Thallium inclusion in the range of from about 1 to 140 milligrams per liter of solution are especially suitable.

3,644,185
METHOD OF IMPROVING MAGNETIC PERMEABILITY OF CUBE-ON-EDGE ORIENTED, SILICON-IRON SHEET STOCK

James G. Benford, Monroeville Boro, and Edward B. Stanley, Washington Township, Westmoreland, both of Pa., assignors to United States Steel Corporation

Filed Nov. 10, 1969, Ser. No. 875,562
Int. Cl. C23b *1/00, 3/06*
U.S. Cl. 204—140.5 4 Claims

The method of improving the magnetic properties of conventional cube-on-edge oriented, silicon-iron sheet stock by providing the sheet with a light electropolish before or after the final high-temperature orientation anneal sufficient to substantially eliminate large microscopic peaks but insufficient to significantly enhance average surface smoothness.

3,644,186
PROCESS FOR IRRADIATING SYNTHETIC RUBBER TO IMPROVE GREEN STRENGTH

Albert J. Gracia; Patrick J. Reilly, both of Akron, and Sandra J. Walters, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

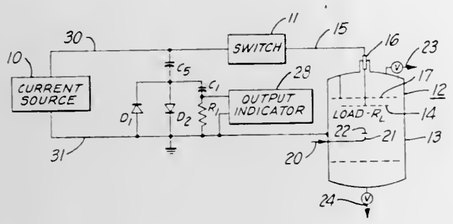
Filed June 27, 1968, Ser. No. 740,459
Int. Cl. C08l *1/00*; C08d *5/00*; C08f *1/88*
U.S. Cl. 204—159.2 5 Claims

The green strength of synthetic cis-1,4 polyisoprene is increased to levels equivalent to those of natural rubber by irradiating the polyisoprene with 0.1–6.0 Mrads.

3,644,187
INSTRUMENT FOR MEASURING CONDUCTANCE OR CAPACITANCE OF AN ELECTRICAL LOAD DURING OPERATION

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Original application Mar. 29, 1968, Ser. No. 717,346, now Patent No. 3,566,259, dated Feb. 23, 1971. Divided and this application June 15, 1970, Ser. No. 46,260
Int. Cl. B23c *5/00*; B03c *5/02*
U.S. Cl. 204—186 11 Claims

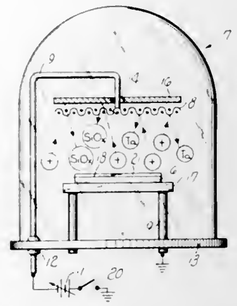


Instrumentation for measuring electrical characteristics of a load during application of stored electrical energy to the load. The current to the load is accurately monitored over a wide dynamic range. An instrument including a current source for charging a capacitance, a switch for discharging the capacitance through a diode into the load, and an RC circuit for developing an output signal which is the derivative of the voltage across the diode, with this output signal being directly proportional to the conductance of the load at any time during the discharge of the capacitance. A similar instrument for measurement of capacitance of a load. The instruments are suitable for the measurement of conductance and capacitance of an electric emulsion treater during operation of the treater.

3,644,188
ANODIZABLE CERMET FILM COMPONENTS AND THEIR MANUFACTURE

Donald J. Sharp, Trenton, N.J., and Richard D. Sutch, Allentown, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 19, 1968, Ser. No. 776,962
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 29 Claims

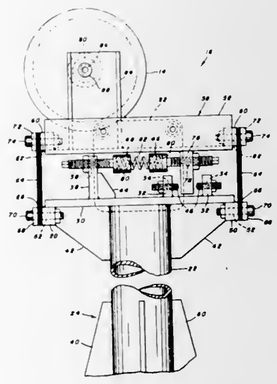


A film-forming metal and a ceramic are cosputtered on a glass substrate to form an anodizable cement film whose resistance, as measured between a pair of conductive terminals deposited thereon, is less than a predetermined value. The film is anodized electrolytically to increase or "trim," its terminal resistance to the predetermined value. Interaction between the ceramic and the anodically grown oxide of the film-forming metal during the anodizing step stabilizes the terminal resistance so that the trimmed value is maintained within close tolerances during subsequent thermal aging and operation.

3,644,189
APPARATUS FOR CONTINUOUSLY PROCESSING WIRE OR THE LIKE INCLUDING VIBRATING MEANS

Robert C. Moyer, Monroeville Borough, Pa., assignor to United States Steel Corporation

Filed Sept. 9, 1969, Ser. No. 856,353
Int. Cl. B01k *3/00*
U.S. Cl. 204—209 9 Claims

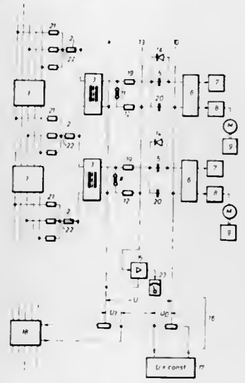


Apparatus for processing wire, strip or the like passing through a medium which reacts with the wire has means for vibrating the wire longitudinally without striking the wire so as to provide more efficient reaction.

3,644,190
CIRCUIT ARRANGEMENT FOR INDICATING AND AUTOMATICALLY ELIMINATING SHORT CIRCUITS IN ELECTROLYSIS CELLS

Martin Weist, Leverkusen, and Walter Busing, Koeln-Stammheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 30, 1969, Ser. No. 837,675
Claims priority, application Germany, July 20, 1968, P 17 63 702.4
Int. Cl. B01k *3/00*
U.S. Cl. 204—228 3 Claims

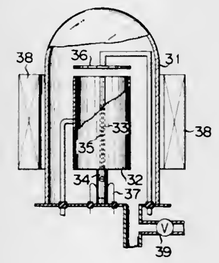


A circuit arrangement for indicating and automatically eliminating short circuits in electrolysis cells, particularly alkali metal chloride electrolysis cells. Alterations in the cell voltage caused by the appearance and disappearance of short circuits are detected by a monostable or bistable electrical circuit and fed to a short circuit indicator. The cell voltage is separated from the electrical indicator and control device by interposition of a direct current transformer.

3,644,191
SPUTTERING APPARATUS

Katsuo Matsushima, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 13, 1969, Ser. No. 806,972
Claims priority, application Japan, Mar. 15, 1968, 43/19904
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 4 Claims

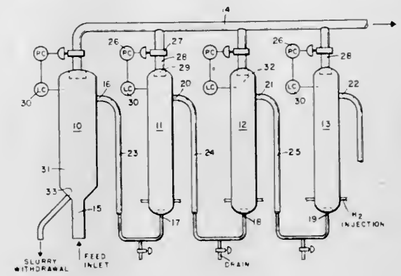


In a sputtering apparatus a plasma is formed between a cylindrical first electrode and a second electrode concentric with the first electrode. Either one of the electrodes is made of a material to be sputtered and the surface of the other electrode is covered by a thin film of the sputtered material.

3,644,192
UPFLOW THREE-PHASE FLUIDIZED BED COAL LIQUEFACTION REACTOR SYSTEM

Sik U. Li, 42 Dorothy Drive, Morris Township, Morris County, N.J.; Edward Effron, 45 Fernhill Road, Springfield, N.J., and Robert M. Koros, 6 Faulkner Drive, Westfield, N.J.

Filed Aug. 28, 1970, Ser. No. 67,729
Int. Cl. C10g *1/08*
U.S. Cl. 208—8 7 Claims



A coal/liquid slurry is conducted upwardly in a three-phase fluidized state through a plurality of vessels connected in series, with the gas generated in each individual vessel being purged to a common header by a pressure control system included in each stage for ensuring control of flow through the reactors. The lead vessel includes the following features: a narrow, bottom entrance section designed to produce a superficial liquid velocity which is higher than the minimum fluidization velocity of the heaviest, largest particles in the slurry, so that all entering particles can be fluidized in the entrance section; an expanded upper section designed to slow the upflow of the slurry to a superficial liquid velocity sufficiently lower than the aforesaid minimum fluidization velocity to carry upwardly all particles which are essentially organic in composition but insufficient to carry upwardly a major portion of particles which are essentially nonorganic in nature, so that such major portion of essentially nonorganic particles settle from the upper section and do not carry over to a subsequent vessel; and a side opening at the intersection of these two sections for the continuous withdrawal of a slurry of those particles which settle from the upper section. The vessels subsequent to the leading vessel each have a uniform diameter smaller than the diameter in the lead vessel, so that particles passed from the lead vessel will not settle in the subsequent vessels. Each subsequent vessel also has vertical internals to provide a close approach to plug flow performance. Also, entry ports are provided at the base of each subsequent vessel for hydrogen gas addition.

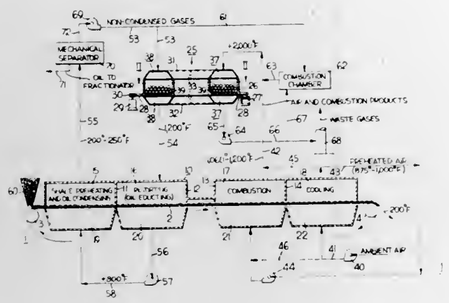
3,644,193
PROCESS AND APPARATUS FOR THE RECOVERY OF OIL FROM SHALE BY INDIRECT HEATING

Ralph W. Weggel, Wauwatosa, and William A. Blann, Manitowoc, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Continuation of application Ser. No. 686,038, Nov. 28, 1967, now abandoned. This application May 11, 1970, Ser. No. 56,037
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 3 Claims

A system is disclosed for recovering oil from oil-bearing shale rock in which shale is placed on a traveling grate and transported through a preheating zone; a retorting zone where oil is educted from shale; a combustion zone where residual carbon in the shale after the oil is removed, is burned; and a cooling zone. A first gas stream, which may be

air, is passed through shale that has traveled on the grate at least to where combustion takes place. This air is thereby heated, and then used to heat a heat-transfer media such as alumina balls from which a second and oxygen-free gas stream extracts the heat. The second gas stream, heated indirectly by the first gas stream but not contaminated with



combustion gases from the first gas stream, passes through the shale in the retorting zone to educt oil from the shale and then through the shale in the preheating zone where the educted oil is condensed and becomes suspended as a stable mist in the second gas stream from which the oil may be mechanically separated.

3,644,194
RECOVERY OF OIL FROM TAR SANDS USING WATER-EXTERNAL MICELLAR DISPERSIONS

Joe T. Keely, deceased, late of Littleton, Colo. (by LaVerne S. Kelly, executrix), and Fred H. Poettman, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1969, Ser. No. 888,899
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **15 Claims**

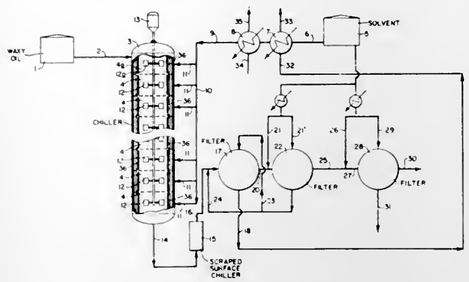
Oil from tar sands is recovered by contacting the tar sands with a water-external micellar dispersion in amounts sufficient to solubilize at least portions of the oil from the tar sands. Thereafter, the solubilized oil within the micellar dispersion is separated from the "spent" tar sands and the oil is recovered from the micellar dispersion. To facilitate the solubilization, the micellar dispersion can have a pH of about 7–14 and the micellar dispersion and/or the tar sand can be heated to temperatures above 100° F. Volume amounts of about 0.05 to about 30 volumes of micellar dispersion per volume of tar sand is useful with the invention. The micellar dispersion contains hydrocarbon, surfactant, aqueous medium, and optionally cosurfactant and/or electrolyte.

3,644,195
SOLVENT DEWAXING-DEOILING PROCESS

David A. Gudelis, and John F. Eagen, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Dec. 1, 1969, Ser. No. 881,025
Int. Cl. C10g *43/08*
U.S. Cl. 208—33 **16 Claims**

Wax-containing oil is chilled in a multistage tower by the introduction of cold solvent to each stage under intense agitation so that substantially instantaneous mixing and cooling occurs in each stage. The wax is separated from the oil



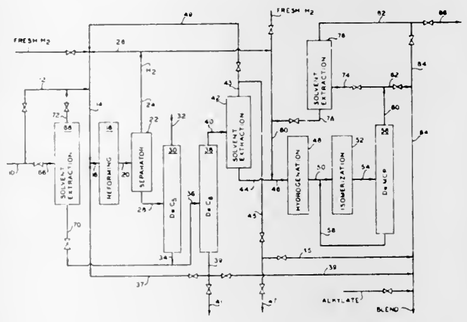
COMBINED DEWAXING DEOILING PROCESS

and is again mixed with solvent at a temperature sufficient to dissolve the low-melting wax only from which the high-melting wax is then separated.

3,644,196
PRODUCTION OF MOTOR FUEL-BLENDING COMPONENTS

Shelby D. Lawson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 6, 1970, Ser. No. 52,416
Int. Cl. C10g *35/20, 39/00*
U.S. Cl. 208—62 **14 Claims**



Motor fuel-blending components are produced by a combination of steps comprising naphtha reforming, hydrogenation of aromatics, e.g., benzene, separated from the reformate, and isomerization of cyclohexane to methylcyclopentane.

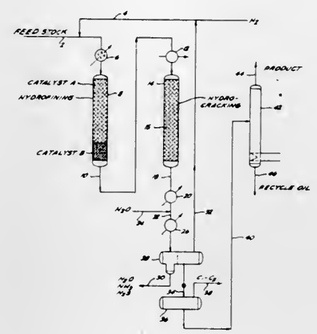
3,644,197
DUAL-CATALYST HYDROFINING PROCESS

Arnold E. Kelley, Orange, and Frederick C. Wood, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 31, 1969, Ser. No. 795,500
Int. Cl. C10g *23/02*
U.S. Cl. 208—89 **17 Claims**

A hydrofining process to reduce the nitrogen content of mineral oil feedstocks at relatively high-space velocities which comprises contacting the feedstock and added hydrogen with a conventional, substantially nonzeolitic,

amorphous-based hydrofining catalyst, and contacting the effluent therefrom with a second hydrofining catalyst compris-



ing a hydrogenating metal or metal sulfide supported on an active zeolitic cracking base.

3,644,198
HYDROGEN-CONSUMING PROCESS AND CATALYST THEREFOR

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 15,960, Mar. 2, 1970. This application May 11, 1970, Ser. No. 36,374
Int. Cl. C10g *23/02;* **B01j** *11/40;* **C10g** *23/00*
U.S. Cl. 208—111 **13 Claims**

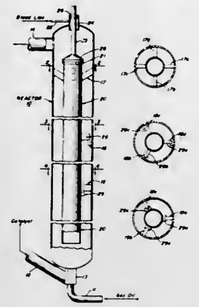
A hydrocarbon hydroprocess utilizing a catalytic composite of a porous carrier material, a nickel component, a Group VIII noble metal component and a Group IV-A metal component, in which process there is effected a chemical consumption of hydrogen. A specific example of one such catalyst is a composite of a crystalline aluminosilicate, a nickel component, a platinum component, and a germanium component, particularly for utilization in a hydrocracking process. Other hydrocarbon hydroprocesses are directed toward the hydrogenation of aromatic nuclei, the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, hydrogenation, etc. The catalyst contains 0.01 to about 2.0 percent by weight of the noble metal component, 0.01 to about 5.0 percent by weight of the nickel component, and the atomic ratio of the Group IV-A metal component to the noble metal component is in the range of 0.05:1 to 10.0:1.

3,644,199
CONTROL OF CONTACT TIME IN TRANSPORT REACTORS

Richard E. Evans, Highland, and Harold D. Zacher, Hammond, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed May 27, 1970, Ser. No. 40,967
Int. Cl. C01b *33/28;* **C10g** *11/18, 11/20*
U.S. Cl. 208—120 **10 Claims**

Conversion of a petroleum stock is effected catalytically in a vertical, elongated transport reactor having an internal elongated open-ended tube closable at its upper end. Passage of the fluid catalyst-oil dispersion through the internal tube is controlled by the degree of closure effected by the positioning of the closure means. Intensity of conversion is regulated



by selection of catalyst-oil ratio and control of dispersion velocity in response to the degree of closure.

3,644,200
AMMONIATED ZEOLITE CATALYSTS

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

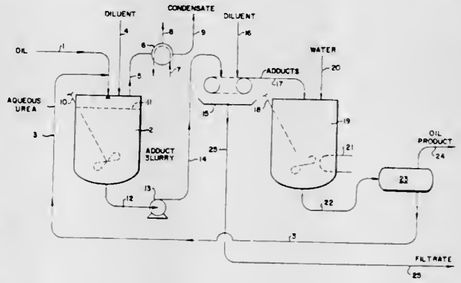
Filed Dec. 23, 1968, Ser. No. 786,437
Int. Cl. B01j *11/40;* **C10g** *13/02, 23/00*
U.S. Cl. 208—120 **24 Claims**

A new class of aluminosilicate zeolite catalysts is described, comprising a crystalline aluminosilicate zeolite modified by the incorporation therein of ammonia in non-zeolitic form. They are prepared by ammoniating the parent aluminosilicate at temperatures above about 350° C., with resultant displacement of water from the zeolite structure ("-dehydroammoniation"). The ammonia is believed to be incorporated into the zeolite structure in the form of amide and/or imide groups bonded to silicon and/or aluminum atoms. The resulting compositions are found to display an unique selectivity for catalyzing carbonium ion reactions in hydrocarbon conversions, while competing free radical reactions (leading typically to polymerization and coke formation) are suppressed.

3,644,201
EVAPORATION OF WATER DURING UREA ADDUCT FORMATION

Cornelis W. C. Van Paassen, Hague, and Hubrecht C. A. Van Meurs, Amsterdam, both of Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,791
Claims priority, application Netherlands, Dec. 16, 1968, 6,818,024
Int. Cl. C07b *21/00*
U.S. Cl. 208—308 **9 Claims**



Extractive crystallization separation process in which adduct formation and concentration of an aqueous solution of

the adduct-forming agent are simultaneously performed in the same reaction zone.

3,644,202
COLLAGEN MEMBRANES FOR REVERSE OSMOSIS DESALINATION

Willard S. Higley, 837 Huerte Verde Road, Glendora, Calif.

Filed Mar. 31, 1970, Ser. No. 24,337
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **5 Claims**

A collagen membrane is employed as reverse osmosis membrane in desalination of water. The process is particularly applicable to desalination of brackish waters containing substantial amounts of divalent ions.

3,644,203
FABRIC SOFTENER

Vincent Lamberti, Upper Saddle River, N.J., and Ralph R. Sepulveda, Suffern, N.Y., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 9, 1968, Ser. No. 782,469
Int. Cl. D06m *13/38*; **C11d** *1/12, 1/86*
U.S. Cl. 252—8.75 **6 Claims**

An improved fabric softener is disclosed comprising a mixture of a softener such as a quaternary ammonium compound or an imidazoline with an antiyellowing agent which is a complex of C_{12} to C_{22} alkyl alcohol and C_{12} to C_{19} alkylsulfate.

3,644,204
AGENT FOR THE POST-TREATMENT OF WASHED LAUNDRY

Arnold Heins, Hilden Rhineland; Hans-Werner Eckert, and Horst Bellinger, both of Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed July 10, 1968, Ser. No. 743,610
Claims priority, application Germany, Aug. 14, 1967, H 63600
Int. Cl. D06m *13/40*
U.S. Cl. 252—8.8 **8 Claims**

Compositions for the posttreatment of washed laundry, the same being adapted for addition to the rinse water either as a solid or in liquid form comprising a softening agent corresponding to the following formula:

$$R_1-N(Z)-CO-R_2 \quad (I)$$

alone or in combination with a softening agent corresponding to the following formula:

$$R_1-N(CH_2-(CHOH)_n-CH_2OH)-CO-R_2 \quad (II)$$

wherein R_1 is alkyl containing 10 to 22 carbon atoms and may be interrupted by ether oxygen atoms in the vicinity of the NH_2 group, R_2 is alkyl containing seven to 21 carbon atoms, the total number of carbon atoms contained in R_1 and R_2 amounting to from 23 to 39, *n* is either 3 or 4 and Z is either

$H_2C-CHOH-CH_2OH$ or $CH_2OH-CH(-CH_2OH)-CH_2OH$,

the polyhydroxyl radicals present in the compounds I and II may be etherified with additional polyhydroxylalkeyl radicals. The aforesaid softening agent (I) or agents (I and II) can be employed per se or in combination with other conventional laundry agents such as optical brighteners, deacidifiers, disincrusting agents, colorants, perfumes, antimicrobial agents, etc.

3,644,205
INHIBITION OF AQUEOUS SYSTEMS FROM DEPOSITION OF SCALE

William G. DePierri, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

Original application Apr. 4, 1968, Ser. No. 718,901. Divided and this application July 10, 1970, Ser. No. 54,014
Int. Cl. C02b *5/06*
U.S. Cl. 252—8.55 B **7 Claims**

The deposition of scale-forming salts from an aqueous system containing a scale-forming amount of a salt such as calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, strontium carbonate and magnesium carbonate is inhibited by adding to the system an effective amount of triorthophosphate ester of trimethylol propane and the alkali metal and ammonium salts thereof. The aqueous system is suitably a brine in a subsurface formation to which the inhibitor is added.

3,644,206
LUBRICATING OILS OR FUELS CONTAINING ADDUCTS OF PHOSPHORODITHIOATE ESTERS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation

Filed Nov. 14, 1968, Ser. No. 775,916
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.7 **11 Claims**

Reaction between diorganophosphorodithioate esters and hindered aldehydes, i.e. those having no alpha-hydrogen atoms, produce products having antioxidant and thermal stability characteristics. Such products would be effective in organic base media, such as lubricating oils. The reaction is one of addition rather than condensation.

3,644,207
LITHIUM-TITANIUM-ZINC FERRITES

Paul D. Baba, San Carlos, and Giltan Michael Argentina, Belmont, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Oct. 2, 1969, Ser. No. 863,372
Int. Cl. C04b *35/26*
U.S. Cl. 252—62.59 **1 Claim**

Microwave ferrites with narrow resonance linewidths, good temperature performance, low losses, low costs, and rectangular hysteresis loops are made from a lithium-titanium ferrite containing a small amount of zinc. In addition, small amounts of copper or manganese can be present in the ferrites.

3,644,208
LEAK-STOPPING COMPOSITION

Achim R. Krueger, Cherry Hill, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 748,930, July 31, 1968, now abandoned. This application Dec. 19, 1968, Ser. No. 785,332
Int. Cl. C09k *3/12*
U.S. Cl. 252—72 **10 Claims**

There is disclosed a liquid composition which is adapted for use as a leak-stopper in heat-exchangers (e.g. automobile radiators) or other vessels designed to hold a liquid; said composition comprises (A) a liquid (e.g. water and/or a suitable alcohol) which is inert to the inside of the vessel and to certain polymeric particles (component B) dispersed therein under the conditions of using the composition, and (B) dispersed in said liquid, substantially spherical particles (within certain size requirements) of a polymeric material which is a solid (nonliquid) under the conditions of using the composition (e.g., a polymeric material containing certain proportions of polyvinyl pyrrolidone (PVP) and polystyrene or a copolymer of styrene and methacrylic acid); preferably at least some of said particles are hollow.

3,644,209
FUNCTIONAL FLUID COMPOSITIONS

Kurt A. Nowotny, Dublin, Calif., and Robert W. Street, Bloomington, Ind., assignors to Monsanto Company, St. Louis, Mo.

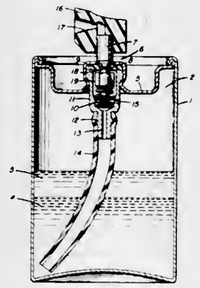
Continuation-in-part of application Ser. No. 398,080, Sept. 21, 1964, now abandoned. This application Nov. 14, 1967, Ser. No. 682,980
Int. Cl. C09k *3/02*
U.S. Cl. 252—78 **5 Claims**

Functional fluid compositions particularly useful as hydraulic fluids comprising as base stocks dihalogenated diphenyl ethers or sulfides and as blending agents halogenated lower alkylbenzenes, monohalogenated diphenyl ethers, halogenated benzenes and chlorinated biphenyls or combinations thereof.

3,644,210
OVEN CLEANER

Homer E. Crotty, and Michel T. Zalzal, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Filed Mar. 15, 1968, Ser. No. 713,382
Int. Cl. C11d *1/86*
U.S. Cl. 252—548 **2 Claims**



Burnt food and grease is removed from cooking surfaces by applying an oven cleaning composition comprising from 1.0 to 20 parts alkali metal hydroxide, from 0.4 to 5.0 parts of sodium gluconate, potassium gluconate or glyconic acid, from 0.8 to 10.0 parts of polyethoxylated higher fatty alkanolamides, from 0.8 to 10.0 parts of higher fatty acid sulfonates, from 0.6 to 7.5 parts alkyl benzene sulfonic acid salts, from 0.4 to 5.0 parts disodium N-fatty alkyl B-iminodiproprionate, and from 96.0 to 42.5 parts water; and removing the softened food and grease from the cooking surfaces. The composition can be applied to the cooking surfaces with a brush or from an aerosol spray can containing a halogenated hydrocarbon propellant liquid.

3,644,211
DISTYRYLBENZENE-DERIVATIVE SCINTILLATOR SOLUTIONS

Adam Heller, Berkeley, Calif., assignor to New England Nuclear Corporation

Original application June 4, 1963, Ser. No. 285,202, now abandoned. Divided and this application Oct. 30, 1967, Ser. No. 698,999
Claims priority, application Israel, June 27, 1962, 17,560
Int. Cl. C09k *1/02*; **G01t** *1/20*
U.S. Cl. 252—301.2 **3 Claims**

Scintillating solutions containing as solute at least one distyrylbenzene derivative compound from the group consisting of P,p'-bis-(3,4-methylene-dioxystyryl)-benzene, 2,2', 3,3'-tetramethoxy-distyrylbenzene, 4,4'-diisopropyl-distyrylbenzene, 2,2'-dimethoxy-distyrylbenzene, 2,2', 5,5'-tetramethyl-distyrylbenzene, 3,3', 4,4'-tetramethyl-distyrylbenzene, readily soluble in organic solvents such as dioxane, xylene and toluene.

3,644,212
ZINC-MAGNESIUM SILICO-GERMANATE PHOSPHOR COMPOSITION AND METHOD OF PREPARING SAME

William A. McAllister, Convent Station, and Joseph W. Sausville, Glen Rock, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

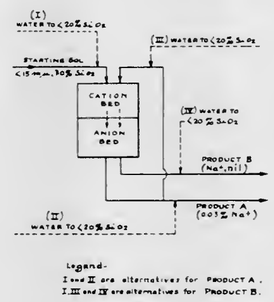
Continuation-in-part of application Ser. No. 834,971, June 20, 1969, now abandoned. This application Feb. 18, 1971, Ser. No. 116,572
Int. Cl. C09k *1/54*
U.S. Cl. 252—301.6 F **6 Claims**

Phosphor composition is manganese-activated zinc-magnesium silico-germanate which also includes a small addition of arsenic and lead. In the method of preparing the phosphor composition, the magnesium is added as the fluoride. The phosphor is excited by 254 nm. ultraviolet radiations to fluoresce with a narrow-band, very efficient emission which is concentrated in the green region of the visible spectrum.

3,644,213
STABILIZING AQUEOUS DEIONIZED SILICA SOLS OF SMALL PARTICLE SIZE AGAINST CELLING

Peter H. Vossos, Berwyn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 4, 1968, Ser. No. 781,205
Int. Cl. B01j *13/00*; **C01b** *33/14*
U.S. Cl. 252—313 S **1 Claim**



A starting aqueous silica sol of greater than 20 percent solids content and of no more than about 8 millimicrons average particle size is stabilized by deionization, and by adding deionized water to the resulting sol before the lapse of about 48 hours following deionization until the solids concentration is reduced to about 15 percent.

3,644,214
EMULSION BREAKING

Robert B. Akell, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1969, Ser. No. 872,181
Int. Cl. B01d *17/00*
U.S. Cl. 252—320 **3 Claims**

Breaking emulsion forming at the interface in a relatively immiscible liquid-liquid contacting process by withdrawing it, adding one component thereof in an amount sufficient to shift the composition to the one-phase region of the solubility diagram, then collecting the product obtained.

ERRATUM

For Class 252—364 see:
Patent No. 3,644,433

3,644,215
PROCESS FOR CONVERTING LIQUID ANTIOXIDANTS TO PULVERULENT FORM
Karl-Hans Muller, Grossauheim, Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Dec. 2, 1969, Ser. No. 881,612
Claims priority, application Germany, Dec. 3, 1968, P 18 12 352.9
Int. Cl. A23k *3/00*; **B01j** *1/16*
U.S. Cl. 252—404 **6 Claims**

Liquid antioxidants such as are used in milk replacers and mixed feed compositions are converted to pulverulent form by placing an active, highly dispersed, synthetic silica into a mixing vessel and then spraying or pouring the antioxidant upon the silica while subjecting the mass to a mixing operation.

A homogeneous mixture between the liquid additive and the solid components can thus be obtained even in those cases where the liquid is used only in small amounts.

3,644,216
CATALYSTS
Roger Egalon, and Ramiro Tella, both of Saint Andre, Nord, France, assignors to Societe Anonyme: Ugine Kuhlmann, Paris, France
Continuation-in-part of application Ser. No. 705,862, Feb. 15, 1968, now abandoned , Continuation-in-part of application Ser. No. 386,481, July 22, 1964, now abandoned. This application Aug. 19, 1969, Ser. No. 851,434
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R **7 Claims**

This invention relates to a method of preparing iron-promoted catalysts in a pelletized form for the synthesis of ammonia which comprises the steps of fusing a mixture consisting essentially of iron oxides of the approximate composition of magnetite together with additional oxides of promoter metals in a total proportion of the oxides of promoter metals of from about 1 percent to about 10 percent, rapidly cooling the fusion product, grinding the fusion product to give fine, regular granules, reducing substantially completely the fused granules, coarsely grinding the reduced fused granules, agglomerating the coarsely ground product into pellets by simple compression and recovering said catalyst in a pelletized form. The invention also relates to the catalysts so produced.

3,644,217
SYNERGISTIC MIXTURE AND USE THEREOF
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 2, 1968, Ser. No. 780,584
Int. Cl. C08c *13/08*; **C08d** *11/04*; **C08f** *45/58*
U.S. Cl. 252—400 **9 Claims**

Synergistic mixture of a boron compound devoid of nitrogen and at least one of a hydroxyphenone, an N-hydroxyphenylbenzotriazole and a salicylic acid ester. The mixture is used as an additive to stabilize plastic, resins and fibers against deterioration due to weathering, oxidation, heat, etc.

3,644,218
CATALYSTS FOR OLEFIN DIMERIZATION
Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company
Original application May 5, 1969, Ser. No. 822,053, now Patent No. 3,558,738. Divided and this application July 24, 1970, Ser. No. 58,177
Int. Cl. C07c *3/10*
U.S. Cl. 252—431 C **9 Claims**

A catalyst for olefin dimerization is formed from an organoaluminum compound and one of the following nickel complexes:

a. a N,N-dihydrocarbyldithiocarbamato nickel complex;
b. a bis(pyridinecarboxylato)nickel complex;
c. a thiobisphenol nickel complex;
d. thiobisphenol nickel amine complex; or
e. an amine-N-oxide nickel complex.

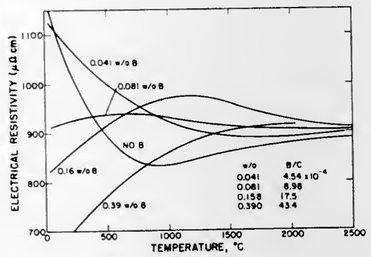
3,644,219
PREPARATION OF A CRYSTALLINE ALUMINOSILICATE-ALUMINA CATALYST COMPOSITION
Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 760,691, Sept. 18, 1968, now Patent No. 3,562,345. This application Feb. 11, 1970, Ser. No. 10,637
Int. Cl. B01j *11/78*, *11/40*
U.S. Cl. 252—442 **5 Claims**

A method of preparing a catalyst composition comprising as essential components thereof, a crystalline aluminosilicate with a mordenite crystal structure containing alumina fixed in combination therewith. The catalyst composition is aged in an alkaline media to yield a catalyst substantially improved in activity, particularly with respect to the transalkylation of alkylaromatic hydrocarbons.

3,644,220
METAL HALIDE CONTAINING ZEOLITES AND METHOD FOR THEIR PREPARATION
Kenneth K. Kearby, Watchung, N.J., assignor to Esso Research and Engineering Company
Continuation of Ser. No. 672,690, Oct. 4, 1967 abandoned
Filed Nov. 13, 1969, Ser. No. 871,627
Int. Cl. B01j *11/78*, *11/40*
U.S. Cl. 252—442 **24 Claims**

This disclosure relates to novel metal halide containing zeolites, particularly crystalline aluminosilicate zeolites and methods for their preparation. Such materials are prepared by treating alkali or alkaline earth forms of crystalline aluminosilicate zeolites with a volatile halide of a less positive metal or nonmetal than the alkali or alkaline earth metals under relatively anhydrous conditions. The resulting products may be used as formed or may be washed free of soluble halides prior to use. Utility for these materials is to be found as adsorbents, particularly selective adsorbents and as catalysts for acid-catalyzed reactions such as catalytic cracking, alkylation, polymerization, isomerization and other carbonium ion type reactions.

3,644,221
POLYCRYSTALLINE GRAPHITE WITH CONTROLLED ELECTRICAL CONDUCTIVITY
Paul Wagner; James M. Dickinson, and Morton C. Smith, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 14, 1969, Ser. No. 876,931
Int. Cl. H01b *1/04*
U.S. Cl. 252—503 **1 Claim**



An electrical resistance element which comprises polycrystalline graphite containing 0.08 weight percent of boron and which has an electrical resistivity that is constant within a 5 percent band over the temperature range 0°–2500° C.

ERRATUM

For Class 252—522 see:
Patent No. 3,644,505

3,644,222
ABLATIVE EPOXY RESIN COMPOSITION AND METHOD OF PREPARATION
Gerald J. Fleming, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 31, 1967, Ser. No. 679,560
Int. Cl. C08g *30/12*
U.S. Cl. 260—2 EA **8 Claims**

A method of decreasing the erosion rate and thermal conductivity of epoxy resins by the addition of bridged Diels-Alder anhydride adducts and the resulting ablative compositions.

3,644,223
PROCESS OF PREPARING POLYEPOXIDES
Koji Hashimoto; Noboru Mogi, both of Yokohama-shi, and Makoto Shindo, Kawasaki-shi, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of application Ser. No. 527,083, Feb. 14, 1966. This application Aug. 13, 1969, Ser. No. 849,860
Int. Cl. C08f *7/12*
U.S. Cl. 260—2 **6 Claims**

A process for preparing polyepoxides comprising polymerizing or copolymerizing 1,2-epoxides, using as the catalyst a composition composed of:

a. A metal salt of a carboxylic acid, e.g., lead, chromium, manganese, cobalt, nickel or iron salt;
b. at least one organoaluminum compound, e.g., trialkylaluminum and dialkylaluminum halides; and optionally
c. at least one ether;

said catalyst composition being prepared by mixing (a), (b) and (c) and thereafter holding the mixture at a temperature higher than that at which the 1,2-epoxides are to be polymerized, for a period ranging from 1 minute to a few hours.

3,644,224
PROCESS FOR POLYMERIZING EPOXIDES
Hiroshi Hani, and Yasushi Masuda, both of Kanagawa-ken, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
Filed Sept. 25, 1969, Ser. No. 862,162
Claims priority, application Japan, Oct. 4, 1968, 43/71840
Int. Cl. C08g *23/06*, *23/14*
U.S. Cl. 260—2 A **12 Claims**

In the polymerization of an epoxide, a high conversion of the monomer to the polymer and a high yield of solid polymer are attained by use of a new catalyst which is formed by reacting an imide with the reaction product of a hydrocarbon-aluminum compound with an ether. The amount of the catalyst required is small in comparison with the conventional processes.

3,644,225
ION-EXCHANGE COPOLYMERS AND MEMBRANES MADE THEREOF
Jean Pierre Quentin, Lyon, and Michel Ruaud, Villeneuve-Par-Ternay Rhone, both of France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Sept. 25, 1969, Ser. No. 861,187
Claims priority, application France, Sept. 27, 1968, 167,943
Int. Cl. C08f *19/00*
U.S. Cl. 260—2.1 E **22 Claims**

Ungrafted copolymers of vinyl alcohol units and vinyl monomer units containing tertiary amino groups cross-linked by reaction with a polyquaternization agent are useful for making anion-exchange membranes.

3,644,226
ANION-EXCHANGE COPOLYMERS
Henri Chabert, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Sept. 29, 1969, Ser. No. 861,991
Claims priority, application France, Oct. 1, 1968, 168323
Int. Cl. C08f *19/08*
U.S. Cl. 260—2.1 E **2 Claims**

Crystalline, sequence-type, propylene-styrene copolymers containing quaternary ammonium residues are useful for making anion-exchange membranes.

3,644,227
SEPARATION OF POLY(2,6-DIMETHYL-1,4-PHENYLENE OXIDE) FROM ITS BLENDS WITH OTHER POLYMERS
Arnold Factor, Scotia, N.Y., assignor to General Electric Company
Filed July 7, 1969, Ser. No. 839,690
Int. Cl. C08g *53/22*
U.S. Cl. 260—2.3 **6 Claims**

Poly(2,6-dimethyl-1,4-phenylene oxide) can be separated from a blend of this polymer with any other polymer which is soluble in dichloromethane, dibromomethane or bromochloromethane. Initially, the entire blend is soluble in these solvents, but on standing the polyphenylene oxide precipitates and can be separated from the balance of the solution. Exposing the polymer blend to vapors of these solvents, also causes the polyphenylene oxide to become insoluble, so that the polymer or polymers with which it is blended can be extracted away from the insoluble polyphenylene oxide by use of these solvents. The separated, insoluble polyphenylene oxide can be rendered soluble by vacuum treatment, evaporation of the contained solvent, washing with a polyphenylene oxide nonsolvent, etc. Therefore, this technique is useful for recovering or separating this polyphenylene oxide in a useable form from such blends.

3,644,228
PROCESS FOR THE PRODUCTION OF SYNTHETIC RESINS WHICH CONTAIN URETHANE GROUPS
Hans Joachim Diehr; Rudolf Merten, and Konrad Uhlig, all of Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 19, 1970, Ser. No. 4,028
Claims priority, application Germany, Jan. 29, 1969, P 19 04 232.1
Int. Cl. C08c *17/08*
U.S. Cl. 260—2.5 AJ **7 Claims**

A process is provided for the production of synthetic urethane resins from polyhydroxyl compounds, polyisocyanates organic, flame protective agents and, if desired; blowing agents and other additives in which N-methylol compounds of the structure

$$\text{Acyl}-\text{N}-(\text{CHO})_n-\text{CH}-\text{OH}$$
(with R′ substituents)

are employed wherein the Acyl radical represents a $-COH$, $-COR''$, $-COOR''$, $-SO_2R''$, $-SO_2R'''$ or $-PO(OR'')_2$ radical in which R″ is a C_1 to C_{18} alkyl radical and R‴ is a C_6 to C_{11}, preferably C_6, aryl radical, R and R′ are hydrogen or a C_1 to C_4 alkyl radical and n is an integer of 1 to 3 are used in a quantity of from about 1 to about 20 percent by weight based on the quantity of polyisocyanate.

3,644,229
HYDROPHILIC-POROMERIC FOAM METHOD OF MAKING, AND ARTICLES MADE THEREFROM
Eugene B. Butler, Kent; Ivan A. Fak, Munroe Falls, and Lawrene L. Line, Kent, all of Ohio, assignors to The General Tire & Rubber Company
Filed June 1, 1970, Ser. No. 42,592
Int. Cl. C08f *47/10*; **C08g** *22/44*
U.S. Cl. 260—2.5 AD **15 Claims**

This invention relates to a hydrophilic and poromeric foam made from a blend of plastisol grade vinyl chloride resin, at least one compatible liquid plasticizer, a stabilizer for said vinyl chloride resin, a polyurethane precursor and a mixture of specific emulsifiers.

3,644,230
EXTRUSION PROCESS FOR POLYOLEFIN FOAM
Edward W. Cronin, Wilmington, Del., assignor to Haskon, Inc., New Castle, Del.
Filed Feb. 19, 1968, Ser. No. 706,661
Int. Cl. C08f *47/10*, *3/04*; **B29d** *27/00*
U.S. Cl. 260—2.5 E **4 Claims**

Post extrusion cell collapse in polyolefin foams is prevented by the incorporation of a small amount of a partial ester of a long chain fatty acid and a polyol.

3,644,231
POROUS MEMBER FOR DIFFUSING AIR AND PROCESS FOR PRODUCING THE SAME
Mitsuru Maruya, Tokyo; Yoshio Oono; Bunji Fukuda, both of Ichikawa, and Kenji Takahashi, Tokyo, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 1, 1968, Ser. No. 709,775
Int. Cl. C08j *1/16*, *1/18*
U.S. Cl. 260—2.5 F **10 Claims**

The invention relates to a method of foaming a solution of a polyvinyl acetal resin containing a foaming agent and thereafter impregnating said foam with a precondensate or monomer of curable resin. The final product is used as a member for diffusing gas.

3,644,232
FLAME-RESISTANT, NONBURSTING POLYISOCYANURATE FOAMS
David L. Bernard, Pittsburgh; John K. Backus, Allison Park, and William C. Darr, Bridgeville, all of Pa., assignors to Mobay Chemical Company, Pittsburgh, Pa.
Filed May 24, 1968, Ser. No. 731,705
Int. Cl. C08g *22/18*, *22/46*
U.S. Cl. 260—2.5 AW **4 Claims**

Polyisocyanurate foams are prepared by reacting an organic polyisocyanurate mixture of polyphenyl polymethylene polyisocyanates wherein from about 10 to about 70 percent of the total methylene groups are ortho to at least one NCO group and from about 2 percent to about 20 percent of the total methylene groups are ortho to two NCO groups on adjacent aromatic rings. The polyisocyanurate foam is prepared from this mixture of isocyanates in the presence of a trimerization catalyst and an inert blowing agent and preferably a foam stabilizer. These foams when subjected to a flame do not pop and burst into fragments.

3,644,233
PROCESS FOR PREPARING MICROPOROUS FOILS FROM POLYURETHANES CONTAINING HYDRATED ELECTROLYTES
Harro Traubel, and Harald Oertel, both of Farbenfabriken Bayer A.G., Leverkusen Bayerwerk, Germany
Filed July 18, 1968, Ser. No. 745,687
Claims priority, application Germany, Aug. 9, 1967, F 53187
Int. Cl. C08b *22/44*, *53/08*; **C09d** *5/00*
U.S. Cl. 260—2.5 AY **3 Claims**

Microporous sheet structures having increased permeability to water vapor are prepared by coagulating a solution of a polyurethane by washing out the solvent of the solution with a nonsolvent, the coagulation being conducted in the presence of an electrolyte.

3,644,234
METHOD OF PREPARING CELLULAR POLYMERS FROM ORGANIC POLYISOCYANATES AND POLYCARBOXYLIC ACID COMPOUNDS
Robin L. Grieve, North Guilford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Jan. 27, 1969, Ser. No. 794,367
Int. Cl. C08q *22/44*
U.S. Cl. 260—2.5 **13 Claims**

High-temperature resistant cellular polymers are prepared in a one-shot procedure by reacting a polycarboxylic acid or polycarboxylic anhydride with an organic polyisocyanate in the presence of a catalytic amount of a monomeric homocyclic polyepoxide and a tertiary amine. The use of the latter catalyst system permits foam formation to proceed without the need to supply external heat to the reaction mixture after the reactants are brought together. This permits pouring in place of the foam-forming system, for example, in the insulation of cavity walls for construction purposes, in trailer walls, and in cold storage frameworks and the like.

3,644,235
POLYURETHANE FOAMS
Michael Alexander Howat Gray, Harlington, England, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 20, 1969, Ser. No. 801,148
Claims priority, application Great Britain, Feb. 22, 1968, 8,725/68
Int. Cl. C08g *22/44*, *53/10*
U.S. Cl. 260—2.5 AM **9 Claims**

In processes for producing flexible polyurethane foams having sag factors higher than 2.5, which processes include the step of reaction of a polyisocyanate with a polymeric polyol, the improvement of using as the polyisocyanate an undistilled primary diamine phosgenation product having an amine equivalent of from 87 to 168, and conducting the reaction in the presence of a catalyst, a blowing agent, and a chain extender consisting of a primary amine.

3,644,236
LEAD FILLED POLYURETHANE FOAMS
James Macoustra, Sutton, Surrey, England, assignor to BP Chemicals (U.K.) Limited, London, England
Filed Feb. 20, 1969, Ser. No. 801,159
Claims priority, application Great Britain, Feb. 21, 1968, 8,377/68
Int. Cl. C08g *22/44*; **B32b** *27/20*; **E04b** *1/74*
U.S. Cl. 260—2.5 **5 Claims**

Lead filled polyurethane foams having a Young's Modulus value above 30,000.

3,644,237
POLYURETHANE FOAM MATERIALS
Raymond V. Crawford, Liverpool, and Gavin E. Roscoe, Formby, both of England, assignors to Bibby Chemicals Limited, Liverpool, England
Filed Feb. 26, 1969, Ser. No. 802,656
Claims priority, application Great Britain, Mar. 8, 1968, 11,324/68
Int. Cl. C08g *22/44*, *53/10*
U.S. Cl. 260—2.5 AM **7 Claims**

The invention is concerned with the production of polyurethane foams of the kind formed by reaction between a polyisocyanate (which term includes a di-isocyanate) and a glycol ester of a tribasic adduct obtained by reaction between a reactive dienophile e.g. maleic anhydride and an unsaturated fatty acid or ester. The process of the invention is directed to the production of polyurethane foams of that

kind which are of finer cell structure and are less friable than previous foams of this kind by a more economic method which also avoids the distillation of unreacted acids from the tribasic adduct reaction product.

3,644,238
CELLULAR MATERIAL INHIBITED FROM FOULING WITH MICRO-ORGANISM GROWTH
Richard L. Smith, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 22, 1969, Ser. No. 827,019The portion of the term of the patent subsequent to May 27, 1986, has been disclaimed.
Int. Cl. C08g *22/04*
U.S. Cl. 260—2.5 AK **4 Claims**

A method and apparatus for inhibiting or preventing fouling of open-cell reticulate foams which are made of a material such as polyurethane or the like and which are used as inserts in aircraft fuel tanks. The micro-organisms present in turbine aircraft fuel such as kerosene can produce a gellike contaminant which rapidly forms in the cellular structure of open-cell foams and can completely fill or clog such structure, thus diminishing the fuel-carrying capacity of the tank and adding unwanted weight to the aircraft. The formation and adhesion of micro-organism growth in open-cell foams is eliminated or materially reduced by providing a foam incorporating a systemic toxin such as an acid addition salt of rosaniline. Dyes generally known as "Brilliant green" or "Malachite green" are suitable for use as such systemic toxins.

3,644,239
RETICULATED NYLON STRUCTURES
Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Original application May 29, 1967, Ser. No. 641,769, now Patent No. 3,496,266, dated Feb. 17, 1970. Divided and this application July 17, 1969, Ser. No. 842,663
Int. Cl. B29d *27/00*; **B29h** *7/20*; **B29c** *25/00*
U.S. Cl. 260—2.5 **2 Claims**

A reticulated nylon structure formed of strands integrally interconnected by thickened strand junctures at spaced-apart points so as to form the skeletal structure of a multitude of polyhedrons whose faces are polygonal, are common to a polyhedron adjacent thereto, and are open and substantially free of membranes, with such structure being suitable, for example, as a filter.

3,644,240
ROOF INSULATION ADHESIVE
Harlan E. Tarbell, Torrance; Donald W. Mogg, Redondo Beach, both of Calif., and Frederick L. Shea, Johnson City, Tenn., assignors to Grefco, Inc., Philadelphia, Pa.
Continuation-in-part of application Ser. No. 493,218, Oct. 5, 1965, now abandoned. This application Oct. 14, 1968, Ser. No. 767,478
Int. Cl. C08d *9/12*; **C08f** *45/52*
U.S. Cl. 260—4 R **8 Claims**

Excellent adhesives are prepared with: asphalt, about 40 parts by weight; an unsaturated rubber such as devulcanized tire rubber, 1 to 18 percent; a saturated rubber such as butyl rubber, 0.7 to 3 percent; a water-immiscible asphalt solvent, 20 to 41 parts; and water 5 to 20 parts. The devulcanized rubber, when used, may have been rendered more compatible with asphalt by having been previously compounded with about half its weight of polyethylene.

3,644,241
ANTISOILING AEROSOL STARCH PREPARED FROM ETHOXYLATED STARCH AND A FLUOROACRYLATE OR FLUOROALPHA SUBSTITUTED ACRYLATE POLYMER
Pasquale Joseph Falivene, Union City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,764
Int. Cl. C08f *45/58*
U.S. Cl. 260—17.4 ST **8 Claims**

Aerosol spray starch compositions containing fluoropolymer emulsion in alkaline aqueous medium stabilized by ethoxylated starch.

3,644,242
DIALLYL CARBONATE FILLED COMPOSITIONS
David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, **both of Ohio, assignors to Dart Industries Inc.**
Filed Apr. 16, 1969, Ser. No. 816,794
Int. Cl. C08f *45/04*, *45/18*
U.S. Cl. 260—17.4 CL **6 Claims**

Compositions comprising diallyl carbonate polymers and at least a primary filler such as alpha cellulose, glass fibers, polyester fibers, and mixtures thereof have better stain resistance and better impact resistance and other strength properties than prior art compositions recognized as outstanding for use in dinnerware. The compositions can also contain such secondary fillers as clay, calcium carbonate, magnesium carbonate, silica powder and the like. They also have excellent hardness and resistance to chemical attack by alkali and detergents and have excellent high-temperature properties.

3,644,243
THIASPIROACETAL POLYMERS
Frank V. Zalar, South Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Filed July 3, 1968, Ser. No. 742,179
Int. Cl. C08g *23/00*
U.S. Cl. 260—18 R **10 Claims**

Polymers with high tensile and flexural strength, suitable for molding or milling, are obtained by the reaction of pentaerythritol with a thiadialdehyde or derivative thereof, or by the reaction of a reactive metal sulfide with a 3,9-bis(halomethyl)-spirobi(meta-dioxane) or a similar spiro intermediate. "Copolymers" may be prepared by substituting a salt of a dithiol for the sulfide.

ERRATUM

For Class 260—22 see:
Patent No. 3,644,612

3,644,244
POLYBUTADIENE-POLYNITRILE GRAFT COPOLYMER DISPERSIONS STABILIZED WITH HYDROXYLAMINES
Michael Fryd, Broomall, and Walter W. Kaminski, Chester, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 15, 1969, Ser. No. 791,497
Int. Cl. C08g *51/60*
U.S. Cl. 260—23 R **28 Claims**

Organosols of polybutadiene-polynitrile graft copolymers, stabilized against gelation by hydroxylamines. These compositions are useful as can coatings.

3,644,245
HOT MELT ADHESIVES CONTAINING SILANE COMPOUNDS

Thomas P. Flanagan, Green Brook, and Irving Kaye, Murray Hill, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed June 25, 1969, Ser. No. 836,642
Int. Cl. C08f *21/04*
U.S. Cl. 260—23 **5 Claims**

Hot melt adhesive compositions characterized by their improved adhesion under conditions of high humidity or moisture; said adhesives comprising a blend of a synthetic polymer base and a specified silane compound.

3,644,246
LUBRICATING STABILIZERS FOR CHLORINE-CONTAINING POLYMERS

Merrill Lozanou, East Lyme, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,377
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 XA **5 Claims**

Lubricating heat and light stabilizer compositions for chlorine-containing polymers comprising a mixture of an organotin carboxylate and a metal salt of a monoalkyl ester of an unsaturated dicarboxylic acid, and plastic compositions prepared therefrom.

3,644,247
ENCAPSULATING ELASTOMERIC COMPOUND

Robert G. Grunther, Crofton; Clarence K. Chatten, Annapolis, and Alexander Lebovits, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 731,278, May 22, 1968, now abandoned. This application Aug. 17, 1970, Ser. No. 64,664
Int. Cl. C08d *11/00*
U.S. Cl. 260—23.7 H **3 Claims**

An encapsulating compound for deep submergence use is a butyl and chlorobutyl copolymer containing reactive chlorine and having added thereto specific fillers, activators, accelerators and curing agents. The resulting compound is useful in encapsulating components exposed to deep sea environments. One such specific compound includes the following constituents:

Parts per 100 by weight of	an elastomeric isobutylene-isoprene copolymer containing reactive chlorine
50	filler
10	lead monoxide
1	flaked stearic acid
3	polyethylene plasticizer
2/1.5	diphenylguanidine and 2-mercaptoimidazoline accelerators
1	magnesium oxide activator and
5	zinc oxide curing agent.

3,644,248
PROCESS FOR PREPARING A NOVEL THERMOPLASTIC RUBBER AND NOVEL THERMOPLASTIC RUBBER COMPOSITION

Pieter Luijk; Evert Van Gelderen, and Gervinus P. Schipper, all of Delft, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed June 13, 1969, Ser. No. 833,154
Claims priority, application Great Britain, July 4, 1968, 31,986/68
Int. Cl. C08f *27/00*
U.S. Cl. 260—23.7 M **9 Claims**

A polyisoprene rubber derivative having the properties of a thermoplastic elastomer is prepared by reaction of polyisoprene with maleic anhydride and subsequent reaction with a fatty acid salt of a Group II or IV metal such as zinc stearate.

3,644,249
POLYVINYL CHLORIDE RESIN COMPOSITION HAVING EXCELLENT TRANSPARENCY, SURFACE GLOSS AND IMPACT STRENGTH

Fumio Ide; Kenji Okano, and Seiji Deguchi, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd. and Nitto Chemical, Tokyo, Japan

Filed July 8, 1969, Ser. No. 839,946
Claims priority, application Japan, July 10, 1968, 43/48360; July 12, 1968, 43/48854
U.S. Cl. 260—23.7 R **4 Claims**

PVC resin compositions of improved transparency, surface gloss and impact resistance are obtained by mixing the PVC with a graft polymer. The graft is produced by grafting first methyl methacrylate and then styrene onto an elastomer of butadiene, n-butyl acrylate, and styrene in the proportions shown in the accompanying ternary constitutional diagram. When the monomer(s) used in preparing the aforesaid graft polymer have a small quantity of C_{10} to C_{18} saturated fatty acid dissolved therein, the PVC compositions prepared from the graft polymer show further improvements in their properties.

3,644,250
POLYVINYL CHLORIDE RESIN COMPOSITION HAVING EXCELLENT TRANSPARENCY AND IMPACT STRENGTH

Fumio Ide; Kenji Okano, and Seiji Deguchi, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd. and Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,240
Claims priority, application Japan, July 10, 1968, 43/48360; July 12, 1968, 43/48854
U.S. Cl. 260—23.7 R **4 Claims**

PVC resin compositions of improved transparency and impact are obtained by mixing the PVC with a graft polymer. The graft is produced by grafting first styrene and then methyl methacrylate onto an elastomer of butadiene, n-butyl acrylate, and styrene in the proportions shown in the accompanying ternary constitutional diagram. When the monomer(s) used in preparing the aforesaid graft polymer have a small quantity of C_{10} to C_{18} saturated fatty acid dissolved therein, the PVC compositions prepared from the graft polymer show further improvements in their properties.

3,644,251
NONWOVEN FABRICS AND BINDERS THEREFOR

Werner Alfred Wilhelmi, Bussum, Netherlands, assignor to Nederlandsche Bewoid Maatschappij N.V.

Filed Apr. 8, 1969, Ser. No. 814,456
Int. Cl. C08d *9/12*; **C08g** *17/16*; **D06n** *3/04*
U.S. Cl. 260—26 **14 Claims**

Nonwoven fabrics that have excellent wet strength and dry strength are formed by adding to an aqueous suspension of natural and/or synthetic fibers a binder comprising (a) an anionic polymer latex and (b) a mixture of alkali metal salts of disproportionated rosin and fortified rosin, precipitating the binder on the fibers, and forming the treated fibers into a nonwoven fabric.

3,644,252
ADHESIVE COMPOSITIONS CONTAINING STYRENE/ISOBUTYLENE COPOLYMER

Richard S. Shenfeld; Frederick M. Musser, and Girish U. Kothari, all of Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 13, 1969, Ser. No. 824,317
Int. Cl. C08f *41/12*
U.S. Cl. 260—27 R **7 Claims**

This invention discloses a new hot-melt, pressure-sensitive adhesive composition comprising a primary polymer consisting of a solid, homogeneous and essentially random copolymer of styrene and isobutylene having a number average molecular weight of from about 1,000 to about 4,000, a heterogeneity index of from about 1.50 to about 2.25 and a styrene content of from about 40 to about 90 weight percent, and a secondary polymer selected from the group consisting of a copolymer of ethylene and vinyl acetate, a copolymer of ethylene and an alkyl acrylate, a polyvinyl-alkyl ether, a terpolymer of ethylene, vinyl acetate and acrylic acid, and a terpolymer of ethylene, vinyl acetate and methacrylic acid.

3,644,253
AQUEOUS EMULSIONS

Armin Hiestand, Binningen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed Apr. 1, 1970, Ser. No. 24,870
Claims priority, application Switzerland, Apr. 9, 1969, 5451/69
Int. Cl. C08g *51/52*
U.S. Cl. 260—28 **8 Claims**

Aqueous emulsions are provided, which are used for the preparation of baths serving to produce wash-fast water-repellent finishes on fiber materials. These emulsions contain relative to the dry weight of the components (a) 9 to 54 percent of a methylolaminotriazone etherified with higher fatty alcohols, (b) 4.5 to 48 percent of a waxy substance and (c) 40 to 55 percent of a reaction product of an aminoplast precondensate, a monohydroxy compound, a polyethylene glycol and an oxygen-containing aliphatic or heterocyclic amine. The solids content of these emulsions is 10 to 50 percent by weight. For use these emulsions are diluted with water, and a curing catalyst is added.

3,644,254
COATING COMPOSITIONS

Jimmy S. Dew, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed May 21, 1968, Ser. No. 730,928
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AV **4 Claims**

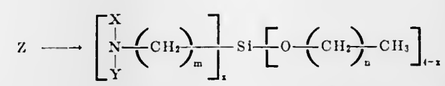
Heat-sealable compositions containing ethylene-vinyl acetate copolymers, petroleum wax, and at least one polyethylene resin, and a process for their preparation.

3,644,255
STABLE DISPERSIONS

Darrell R. Thompson, Charlotte, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 776,774, Nov. 18, 1968. This application Dec. 9, 1969, Ser. No. 883,648
Int. Cl. B01f *17/54*; **C08f** *45/26, 45/32*
U.S. Cl. 260—29.1 R **37 Claims**

A dispersion of particles in an organic liquid containing, as an antiflocculating agent, molecules of a polymeric material represented by the structure



where

Z can be a polymeric segment bearing functional groups capable of bonding to the nitrogen atom, and

X and Y can be any substituent which does not interfere with bonding to the nitrogen atom.

3,644,256
RESORCINOL-FORMALDEHYDE-LATEX ADHESIVE CONTAINING TRIALLYL CYANURATE WITH HIGH-RINGBOUND CHLORINE CONTENT

Raymond Broisman, Linden, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1969, Ser. No. 848,690
Int. Cl. C08g *5/10*
U.S. Cl. 260—29.3 **4 Claims**

A. 50–95 parts of a resorcinol-formaldehyde-latex adhesive composition.

B. 5–50 parts of an aqueous dispersion of 10–70 percent of the reaction product of

1. a composition derived by reacting a triallyl cyanurate composition having 0.05 to 3.0 percent ring-bound chlorine, with 6–10 moles or resorcinol per mole of cyanurate; and
2. 0.2 to 0.6 mole of formaldehyde per mole of resorcinol in (1)

These compositions are useful in bonding rubber to reinforcing fibers.

3,644,257
ACID CURABLE VINYLACETATE COPOLYMER LATEX-POLYVINYL ALCOHOL ADHESIVE

Richard Gorham Nickerson, Harvard; Barry Russell Harris, Concord, and Morris Breslouf, South Acton, all of Mass., assignors to Borden Inc., New York, N.Y.

Filed Oct. 31, 1968, Ser. No. 772,407
Int. Cl. C08f *15/36, 37/14, 37/18*
U.S. Cl. 260—29.6 WB **10 Claims**

This invention relates to corrugating adhesives comprising a polyvinyl alcohol and an aqueous emulsion copolymer of vinyl acetate with a minor amount of a coreactive olefinically unsaturated carboxylated monomer; to a process of manufacturing corrugated paperboard having improved water resistance, said process comprising the steps of applying said adhesives between at least one nonfluted liner and one fluted medium and curing the adhesive while it is at a pH below 6; and to the resultant corrugated paperboard.

3,644,258
METHOD OF PREPARING HIGH-SOLIDS LATEXES OF OLEFIN POLYMERS

Carl Moore, Midland; James B. Louch, Coleman, both of Mich., and Russell L. Stainfield, Williamsburg, Va., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1969, Ser. No. 808,690
Int. Cl. C08f *3/42*
U.S. Cl. 260—29.6 H **10 Claims**

Fluid, high-solids latexes of normally solid, water and alkali insoluble thermoplastic organic addition polymers containing a plurality of acid groups in the polymer structure are prepared by (1) heating a low-solids aqueous emulsion of the polymer, e.g., ethylene/acrylic acid copolymer, at the softening point of the polymer while simultaneously lowering the pH of the emulsion to a value between about 6.0 and about 8.3 and (2) concentrating the emulsion.

3,644,259
METHOD FOR MAKING BREATHABLE POLYVINYL CHLORIDE FILM

Joe Kobylak, Berea, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,363
Int. Cl. C08f *29/18, 45/42*
U.S. Cl. 260—29.6 MH **5 Claims**

Breathable polyvinyl chloride film in thicknesses from about 1 to 5 mils and having moisture vapor transmission rates above 50 are prepared by casting a mixture of a vinyl

chloride resin, solvent naphtha, a plasticizer and water and heating to dry and fuse the film.

3,644,260

COATING COMPOSITIONS CONTAINING FLUOROCARBON POLYMER AND ALKYL SILICATE

Clifford Hugh Strolle, Springfield, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1969, Ser. No. 873,624
Int. Cl. C08f *45/24, 45/34*
U.S. Cl. 260—29.6 F **6 Claims**

A composition for priming a surface to improve adhesion of a fluorocarbon polymer topcoat. The composition contains an alkyl silicate, a particulate fluorocarbon polymer and a liquid carrier.

3,644,261

COATING COMPOSITIONS CONTAINING FLUOROCARBON POLYMER AND ALUMINUM BOROPHOSPHATE

Clifford Hugh Strolle, Springfield, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1969, Ser. No. 873,633
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F **7 Claims**

A composition for priming a surface to improve the adhesion of a fluorocarbon polymer topcoat. The composition contains about 50–90 percent fluorocarbon polymer by weight and 10–50 percent aluminum borophosphate by weight and a liquid carrier.

3,644,262

PROCESS FOR INCREASING THE ETHYLENE CONTENT OF VINYL ACETATE-ETHYLENE EMULSION COPOLYMERS

Peter Fallon Stehle, Media; Chan K. Wu, Philadelphia, both of Pa.; Samuel Loshaek, Stamford, Conn., and Jack Dickstein, Huntingdon Valley, Pa., assignors to Borden Inc., New York, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,410
Int. Cl. C08f *45/22*
U.S. Cl. 260—29.6 R **5 Claims**

This invention relates to copolymerizing vinyl acetate and ethylene in aqueous emulsion in contact with a pressurized ethylene gas phase and in particular to a method of copolymerizing substantially larger amounts of ethylene into the copolymer than have heretofore been copolymerized at equivalent temperature and pressure, said method comprising adding vinyl acetate to an aqueous emulsifying composition containing initiator and maintained under ethylene pressure, the rate of vinyl acetate addition during copolymerization being such as to maintain the concentration of unpolymerized vinyl acetate at a level not exceeding about 3.5 percent by weight of the aqueous emulsifying composition. The resulting latexes of this invention are useful as adhesives and bases for paints and paper coatings.

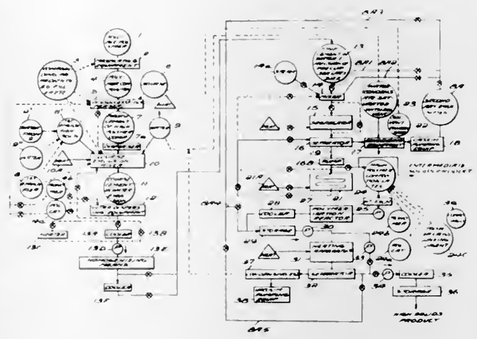
3,644,263

HIGH POLYMER LATICES AND METHODS AND MEANS FOR PRODUCING SAME

Oliver W. Burke, Jr., 506 Intracoastal Drive, Fort Lauderdale, Fla.

Continuation-in-part of application Ser. No. 621,997, Mar. 7, 1967, now Patent No. 3,503,917, Continuation-in-part of application Ser. No. 691,823, Dec. 19, 1967, now abandoned , Continuation-in-part of application Ser. No. 767,790, Oct. 15, 1968. This application Dec. 18, 1968, Ser. No. 784,596
Int. Cl. C08f *3/16, 47/18*
U.S. Cl. 260—29.7 EM **34 Claims**

The preparation of aqueous latices from solvent dispersions of elastomers and other high-polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps are disclosed which reduce or eliminate various of these problems, especially coagulum; enable the preparation of latices of high-solids content; enable preparation of high-solids content latices of grafted or filler-extended or filler-reinforced elastomers; enable preparation of high-solids



latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer; and enable the preparation of improved stable latices both dilute and of high-solids content, which are useful for example for adhesive and film-forming purposes. The process in common with that of related copending applications is characterized, inter alia, by the establishment of a flow of steam as a continuous phase into which an emulsion of a cement of the polymer is dispersed as an aerosol of latex droplets in a solvent-vapor continuum, followed by coalescence of the latex droplets and separation of the resulting coalesced liquid phase from the resulting solvent-vapor phase. In one embodiment of the present method an unstable emulsion is prepared employing only a limited quantity of emulsifier, so that the homogenizing thereof produces an emulsion the dispersed phase of which is only temporarily of precursor latex particle size. This unstable emulsion is converted to a stable latex by provisions for dispersing the same as the aerosol before coalescence of over 5 percent of the dispersed polymer phase of the emulsion into droplets of greater than precursor latex particle size, (or for stabilizing the same by the addition of a secondary emulsifier to the same before such condition is reached without further reducing the size of the cement droplets of the dispersed phase) so that the latex in the aerosol and separated therefrom is kept free of coagulum during the coalescing of the latex droplets and the separation and further treatment, e.g., stripping and concentrating, with or without correlated further additions or emulsifier to stabilize the latex for storage or use.

The separation of the gaseous and liquid latex phases is preferably effected with the aid of partially concentrated liquid latex; and in certain embodiments herein disclosed a mixture of such partially concentrated latex commingled with water vapor generated therefrom is added to and commingled with the aerosol before or after at least a part of the aerosol has been coalesced, and the combined liquid phases and combined gas phases of the resulting mixture are thereafter separated. Also in certain embodiments of the invention a liquid flow of secondary emulsifier may be added to the uncoalesced or partially coalesced aerosol, or to the mixture thereof with the partially concentrated latex, prior to the separation of the gaseous and liquid phases thereof.

3,644,264

N-ALKYL PYRROLIDONE-PLASTICIZED COPOLYLACTAM COMPOSITIONS

Thomas J. Hyde, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 710,771, Mar. 6, 1968, now abandoned. This application Aug. 1, 1969, Ser. No. 846,974
Int. Cl. C08g *51/44*
U.S. Cl. 260—30.2 R **14 Claims**

Polymerizable lactam compositions comprising an anionic catalyst, a polymerization promoter, 50 to 90 percent of caprolactam, at least 1 percent of a lactam having seven to 12 carbon atoms in the lactam ring, and 2 to 20 percent of the plasticizer N-alkyl pyrrolidone, and the manufacture of impact-resistant articles by casting and anionically polymerizing the mixture.

3,644,265

STABILIZED SOLUTIONS OF ACRYLONITRILE-VINYLIDENE CHLORIDE COPOLYMERS

Carlhans Suling, Odenthal-Hahnenberg; Heino Logemann; Dieter Kramer, both of Leverkusen; Heinz Rachwalsky, and Herbert Marzolph, both of Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 6, 1968, Ser. No. 781,957
Claims priority, application Germany, Dec. 15, 1967, P 16 94 233.9
Int. Cl. C08f *45/60*
U.S. Cl. 260—32.6 N **5 Claims**

This invention relates to a stabilized solution of a copolymer from acrylonitrile and vinylidene chloride in an organic solvent, the chlorine content of the copolymer is in the range from 20 to 60 percent by weight based on the polymer. The solution of the copolymer contains a salt of a mercapto sulphonic acid with a guanidine as stabilizing agent, said salt is present in the solvent in the range of from 0.001 to 5 percent by weight based on the polymer.

3,644,266

SAND CONSOLIDATION COMPOSITION

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Original application Dec. 23, 1968, Ser. No. 786,368, now Patent No. 3,537,522, dated Nov. 3, 1970. Divided and this application Dec. 31, 1969, Ser. No. 21,228
Int. Cl. C08f *45/34*
U.S. Cl. 260—32.8 R **9 Claims**

Method of and composition for the treatment of unconsolidated sandy formations to stabilize the formation comprising injecting a treating composition of 2–25 percent of acrolein dimer and 75–98 percent of an aromatic-type solvent into said formation, effecting polymerization of said dimer by contact with an acid forming polymerization catalyst and water, and formation of a fluid permeable consolidated sand in said formation.

3,644,267

LOW-VISCOSITY HIGH-STRENGTH THERMOPLASTIC ADHESIVE

Winston J. Jackson, Jr., and John R. Caldwell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,645
Int. Cl. C08g *39/10, 51/28*
U.S. Cl. 260—33.6 R **6 Claims**

Low-viscosity high-strength thermoplastic adhesives comprising a thermoplastic linear polyester, a polymer of a monoolefinically unsaturated monomer, a viscosity decreasing additive and optionally a granular metallic material. Substrates such as sheets, film or shaped articles are bonded together with the adhesive, or single substrates are coated therewith as when surface defects are to be eliminated. Useful viscosity decreasing additives include chlorinated biphenyl, terphenyl and other aromatic compounds having a boiling point above about 250° C. and a Tg below about 10° C.

3,644,268

TREATING RUBBER TO ENHANCE FIBER BONDING

Elichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed July 31, 1970, Ser. No. 60,161
Int. Cl. C08d *9/10*
U.S. Cl. 260—38 **7 Claims**

Fiber to rubber adhesion is enhanced by incorporating into the rubber a formaldehyde donor and a saturated polymer comprising alkylene bridged resorcinol.

3,644,269

COLLAPSIBLE MOLD AND MOLDING COMPOSITIONS

Howard Eugene Hoyt, Huntingdon Valley, Pa., and Robert B. Dean, Cincinnati, Ohio, assignors to Borden, Inc., New York, N.Y.

Continuation of application Ser. No. 463,342, June 11, 1965, now abandoned , which is a continuation of application Ser. No. 856,345, Dec. 1, 1959, now abandoned. This application Nov. 5, 1969, Ser. No. 871,528
Int. Cl. C08g *5/10*
U.S. Cl. 260—38 **9 Claims**

This invention relates to molding compositions, collapsible molds made therefrom, and the method of making such molds wherein granules of a solid nonabsorbent material are coated with a nontacky layer comprising a potentially unstable thermosetting resin selected from the group consisting of the reaction products of formaldehyde with an isoalkylidene bisphenol and formaldehyde with phenol and an isoalkylidene bisphenol, said resin being an alkaline condensation product which has not been precipitated in acid.

3,644,270

PROCESS FOR COLORING POLYESTERS WITH RHODAMINE, XANTHENE OR BENZOPHENYL SAFRANINE DYES

George Devasia Valiaveedan, Freehold Township, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 21, 1969, Ser. No. 818,139
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **6 Claims**

A process for mass-coloring polyesters characterized that there is admixed with the bis(hydroxyalkyl) aromatic dicarboxylic acid ester before carrying out a polyesterification or condensation, one or more ionic-polycyclic-heterocyclic dyestuffs selected from the group of substituted xanthylium and 5-6 mono- and 1-2, 5-6 dibenzophenazinium sodium and ammonium salts during the polymerization. Polyethylene terephthalate can be colored in this way and formed into colored films and filaments.

3,644,271

COMPOSITION AND PROCESS FOR INJECTION MOLDING THERMOPLASTIC MATERIAL AND GLASS FIBERS

Frederick T. Tulley, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,921
Int. Cl. C08f *45/10;* **B28b** *1/24*
U.S. Cl. 260—41 **6 Claims**

A composition and process for the manufacture of shaped articles by injection molding of thermoplastic material and glass fibers. The process involves the heating and masticating of from about 20 to about 40 percent weight thermoplastic material in the form of a powder having a particle size from about 30 to about 200 mesh, with from about 40 percent to

about 60 percent weight of the same thermoplastic material in the form of pellets having a maximum dimension of about 1/16 inch to about 3/8 inch, together with from about 20 to about 40 percent weight of glass fibers having a maximum length of about 1/16 inch. The mixture is then injection molded to produce the article.

3,644,272

MODACRYLIC FIBERS CONTAINING COMPOUNDS OF THE AZULENE SERIES

Marshall V. Otis, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 13, 1970, Ser. No. 54,600
Int. Cl. D06p 3/70; C08f 45/14
U.S. Cl. 260—41 13 Claims

A modacrylic textile fiber having uniformly dispersed therein, based on the weight of the fiber, from about 0.001 to about 0.01 weight percent of an acetone-soluble whitening agent of the azulene series.

3,644,273

MELT FLOW STABILIZATION OF POLYOLEFINS

Kenneth R. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 4, 1969, Ser. No. 882,350
Int. Cl. C08f 45/04, 45/56
U.S. Cl. 260—41 A 10 Claims

A method of incorporating a polymer melt flow stabilizer into a polymer by absorbing the stabilizer in a porous absorbent and incorporating the stabilizer-containing absorbent in the polymer.

3,644,274

FURAN NO-BAKE FOUNDRY BINDERS

Frank A. Maurukas, Cicero, Ill., assignor to CPC International Inc.

Filed Dec. 22, 1969, Ser. No. 887,367
Int. Cl. C08f 45/04
U.S. Cl. 260—41 A 13 Claims

Describes a process for the acid-catalyzed polymerization of a fusible furan resin, by incorporating a source of fluoride ion in the acid catalyst. Also covers the process for forming foundry cores or molds from sand using a fusible furan resin binder and an acid catalyst that contains a source of fluoride ion.

3,644,275

METHOD FOR THE REDUCTION OF PHOTOCHEMICAL DEGRADATION IN POLYURETHANES

Albert Thomas Betts, 35, Stonyshotts, Waltham Abbey, and Norbert Uri, 27, Chestnut Close, London, N. 14, both of England

Continuation-in-part of application Ser. No. 652,698, July 12, 1966, now Patent No. 3,546,159. This application Aug. 21, 1970, Ser. No. 66,101
Int. Cl. C08g 51/56
U.S. Cl. 260—45.7 R 6 Claims

A composition having improved resistance toward photochemical degradation comprises a polyurethane containing at least about 0.01 percent by weight of a dissolved alkali metal fluoride selected from the group consisting of caesium, rubidium, potassium and sodium fluoride.

3,644,276

ORTHOESTER STABILIZED POLYVINYL CHLORIDE RESINS

Louis L. Wood, 11715 Smoketree Road, Potomac, Md.

Continuation-in-part of application Ser. No. 736,256, June 12, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 612,066, Dec. 14, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 499,093, Oct. 20, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 403,353, Oct. 13, 1964, now abandoned. This application Jan. 30, 1970, Ser. No. 7,258
Int. Cl. C08f 45/58
U.S. Cl. 260—45.8 A 9 Claims

Vinyl chloride resins are stabilized with orthoesters derived by the condensation of lower alkyl substituted orthoesters with polyhydric alcohols such as glycerol, sorbitol, mannitol, 1,2,4 butane triol, and 1,2,6 hexane triol.

3,644,277

PHENOLIC ISOCYANURATES USED AS STABILIZERS

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Oct. 25, 1968, Ser. No. 770,846. Divided and this application Sept. 28, 1970, Ser. No. 76,259
Int. Cl. C08f 45/60
U.S. Cl. 260—45.8 N 13 Claims

Novel mixed esters of isocyanuric acid have been prepared. These bis-(hydroxyphenylalkylene)alkyl isocyanurate compounds provide excellent stabilization for organic materials against oxidative, thermal and photochemical degradation. The stability of α-monoolefin homopolymers and copolymers is particularly enhanced by the use of stabilizing amounts of the bis-(hydroxybenzyl)isocyanurates.

3,644,278

SUBSTITUTED HYDROXYLAMINE STABILIZERS

Peter Klemchuk, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation, Ardsely, N.Y.

Filed Mar. 4, 1968, Ser. No. 709,882
Int. Cl. C08f 45/60, 45/62
U.S. Cl. 260—45.8 N 5 Claims

Substituted hydroxylamines exhibit activity and antioxidants for a diverse group of substrate materials above specific conditions of exposure to an oxidizing environment. Illustrative embodiments of substituted hydroxylamine antioxidants are bis(p-nitrobenzyl)hydroxylamine and 2-diethylamino-4,6,-bis(N-n-propyl-N-hydroxyamino-s-triazine.

3,644,279

POLYMERS OF MONO-1-OLEFINS STABILIZED AGAINST DEGRADATION BY ULTRAVIOLET LIGHT

Ronald D. Mathis and Jack P. Guillory, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,819
Int. Cl. C08f 45/58, 45/60
U.S. Cl. 260—45.8 N 7 Claims

Carbazole, indole, a hydrocarbyl - substituted form thereof or an amide thereof is added to a monoolefin polymer to stabilize it against the effects of ultraviolet light. Di - n - octadecyl-3,5-di-tert-butyl-4-hydroxy benzyl phosphonate is used in combination with the ultraviolet light stabilizers.

3,644,280

STABILIZATION OF POLYCAPROLACTAM WITH A MIXTURE OF A DI-SUBSTITUTED PHENYLENE DIAMINE AND A TRI(ALKYLPHENYL) PHOSPHITE

Joseph H. Tazewell, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,172
Int. Cl. C08g 51/60
U.S. Cl. 260—45.9 R 10 Claims

Nylon 6 is stabilized with a trialkylphenyl phosphite and di-beta-naphthyl-para-phenylenediamine.

3,644,281

STABLE ORGANIC COMPOSITIONS CONTAINING A PHENOLIC ANTIOXIDANT

Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Original application July 9, 1965, Ser. No. 470,890, now Patent No. 3,579,561, dated May 18, 1971. Divided and this application Jan. 22, 1970, Ser. No. 5,099
Int. Cl. C08c 27/66; C08d 11/04; C08f 45/58
U.S. Cl. 260—45.85 11 Claims

Hydroxybenzylphenyl carbonates and carboxylates are useful as stabilizers for organic material. They may be used alone or in combination with a dihydrocarbylthiodialkanoate.

3,644,282

TERNARY STABILIZER SYSTEM FOR POLYOLEFINS

Clarence R. Bresson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,746
Int. Cl. C08f 45/58
U.S. Cl. 260—45.85 6 Claims

A polymer stabilizer comprising mixtures of diesters of thiodicarboxylic acids. In another embodiment, said polymer stabilizer further comprises at least one hindered mono or polyphenolic compound. In another embodiment, said diesters of thiodicarboxylic acids are produced by reacting a mixture of alcohols characterized by the formulas ROH and R'OH wherein R and R' are the same or different and are hydrocarbon radicals selected from the group consisting of alkyl or cycloalkyl-substituted alkyl in the range of from 10 to 20 carbon atoms per R and R' group with at least one thiodicarboxylic acid of the formula $S—(C_nH_{2n}COOH)_2$ wherein n is an integer from 1 to 6.

3,644,283

AROMATIC AZO BLOCK COPOLYMERS

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 715,161, Mar. 22, 1968. This application Aug. 20, 1970, Ser. No. 65,711
Int. Cl. C08g 20/20, 20/32, 33/02
U.S. Cl. 260—47 CZ 5 Claims

Aromatic azo block copolymers having an azo group containing wholly aromatic block polymer unit and a second wholly aromatic non-azo block polymer unit are prepared and are useful in the preparation of fibers, filaments, films and other shaped articles for application where thermal resistance, light stability, semi-conducting and photochromic properties are desired.

3,644,284

ELASTOMERIC COMPOSITION CONTAINING POLYESTER STABILIZERS

Richard D. Cassar, West Chester, Pa., and Jackson S. Boyer, Northridge, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,874
The portion of the term of the patent subsequent to Feb. 9, 1988, has been disclaimed
Int. Cl. C08c 27/66; C08f 45/58
U.S. Cl. 260—45.85 R 14 Claims

An elastomeric composition having improved resistance to ultraviolet initiated degradation comprising an elastomer containing an ultraviolet stability improving quantity of a polyester of a polymethylated muconic acid selected from the group consisting of α,β′-dimethylmuconic acid, α,α′-dimethylmuconic acid, α,α′,β-trimethylmuconic acid, α,β,β′-trimethylmuconic acid, α,α′,β,β′-tetramethylmuconic acid and mixtures thereof with a polyethylene glycol of a molecular weight in the range of 100 to 1000, said polyester having a molecular weight in the range of 600 to 20,000.

3,644,285

POLYAROMATIC PYRAZINES

Jerry G. Higgins, Normal, Ill., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,154
Int. Cl. C08g 33/02
U.S. Cl. 260—47 R 7 Claims

Polyaromatic pyrazines having high-temperature stability are prepared by the condensation of bis-α-halo-aromatic ketones with ammonia, said polymers having utility in the form of film and fibers.

The solubility of polymeric polyaromatic polyimides is increased by heating with peroxides, preferably in the presence of a strong acid.

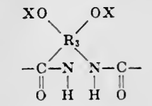
3,644,286

RETICULATED POLYAMIDES AND METHOD OF PREPARATION

Jean Odier, Antony, France, and Joerg Sambeth, Carouge, Geneva, and Friedrich Grundschober, Confignon, Geneva, Switzerland, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

No Drawing. Filed June 5, 1968, Ser. No. 784,959
Claims priority, application France, June 5, 1967, 109,040
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C08g 33/02
U.S. Cl. 260—47 CP 25 Claims

Reticulated polyamide comprising divalent radicals and trivalent radicals which may be aliphatic or aromatic radicals, substituted or not, or a plurality of aromatic radicals linked together either directly or by at least one radical selected from the group comprising the alkyl, dioxy-alkyl, cyclanilidenes, —S—, $—SO_2—$, —O—, —CO— radicals, the divalent radicals and the trivalent radicals being linked together by the structure:



in which R_3 represents a tetravalent radical which may be an aromatic radical, substituted or not, or a number of

aromatic radicals linked together directly or by at least one radical selected from the group of radicals recited above; X representing a hydrogen or at least one of the three radicals: R_4,

$$-\overset{\overset{O}{\|}}{C}-, \text{ and } -\overset{\overset{O}{\|}}{C}-R_4$$

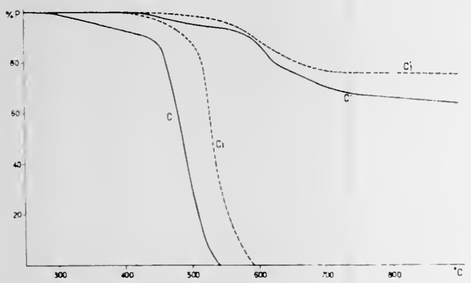
in which R_4 represents an alkyl or aryl radical having each OX group fixed directly on a carbon atom of the tetravalent radical, in the ortho or peri position with respect to the carbon atom on which is fixed the amide group —NH CO—, the ratio of the trivalent radicals to the divalent radicals being comprised between 1:20 and 1:5. The method of preparation comprises essentially the reaction of one or more diamine compounds with at least one compound of dicarboxylic acid and at least one compound of tricarboxylic acid.

3,644,287

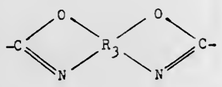
METHOD OF PREPARING RETICULATED POLYBENZOXAZOLE

Jean Odier, Antony, France, and Joerg Sambeth, Carouge, Geneva, and Friedrich Grundschober, Confignon, Geneva, Switzerland, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

Filed June 5, 1968, Ser. No. 784,960
Claims priority, application France, June 5, 1967, 109,042
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C08g *33/02*
U.S. Cl. 260—47 CP **7 Claims**



Reticulated polybenzoxazole comprising divalent and trivalent aliphatic or aromatic radicals, substituted or not, or a plurality of aromatic radicals bound to each other either directly or by at least one of the radicals selected from the group comprising the alkyl, dioxy-alkyl, cyclanilidenes, —S, —SO_2—, —O—, —CO-radicals, said divalent radicals and said trivalent radicals being coupled together by the structure:



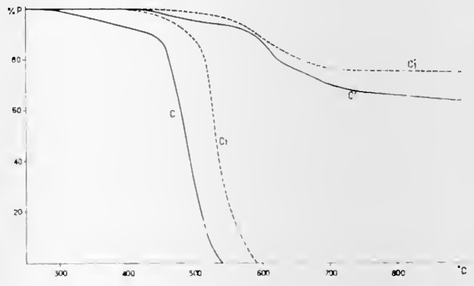
in which R_3 is a tetravalent radical which may be an aromatic radical, substituted or not, or a plurality of said aromatic radicals bound together directly or by at least one of the radicals selected from the group cited above, the ratio of the trivalent radicals to the divalent radicals being comprised between 1:20 and 1:1 and preferably between 1:20 and 1:5. The reticulated polybenzole can be produced in the form of shaped or moulded objects. The method of preparation comprises essentially a gradual heating of a reticulated alkoxyl polyamide mixed with pyridine hydrochloride in excess and brought up to a temperature between 180° and 220° until the cyclization is complete.

3,644,288

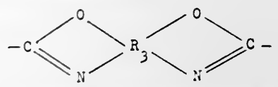
METHOD OF PREPARING RETICULATED POLYBENZOXAZOLES

Jean Odier, Antony, France, and Joerg Sambeth, Carouge, Geneva, and Friedrich Grundschober, Confignon, Geneva, Switzerland, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

Filed June 5, 1968, Ser. No. 784,961
Claims priority, application France, June 5, 1967, 109,041
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C08g *33/02*
U.S. Cl. 260—47 CP **6 Claims**



Reticulated polybenzoxazoles and a method of their manufacture, comprising divalent radicals R_1 and trivalent radicals R_2 which may be aliphatic or aromatic radicals, substituted or not, or a plurality of aromatic radicals bound to each other either directly or by at least one of the radicals selected from the group comprising the radicals: alkyl, dioxy-alkyl, cyclanilidenes, —S—, —SO_2—, —O—, —CO—, said divalent radicals and trivalent radicals being bound together by the structure:



in which R_3 represents a tetravalent radical which may be an aromatic radical, substituted or not, or a plurality of said radicals coupled together directly or by at least one of the radicals selected from the group comprising the radicals: alkyl, dioxy-alkyl, cyclanilidenes, —S—, —SO_2—, —O—, —CO—, the ratio of the trivalent radicals to the divalent radicals being comprised between 1:20 and 1:1, and preferably between 1:20 and 1:5.

3,644,289

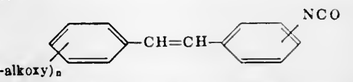
LIGHT SENSITIVE POLYURETHANES PREPARED FROM HYDROXYL CONTAINING POLYMER AND AN ISOCYANATO-STILBENE COMPOUND

Adnan A. R. Sayigh and Fred A. Stuber, New Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 29, 1969, Ser. No. 829,100
Int. Cl. C08g *22/00, 22/22*
U.S. Cl. 260—47 CB **8 Claims**

Light-sensitive polyurethanes are prepared by reacting (a) a polymer having a free hydroxyl group in the re-

curring unit thereof with (b) an isocyanato-stilbene of the formula:



wherein n is an integer from 1 to 3. The above polyurethanes undergo cross-linking on exposure to ultraviolet light and, accordingly, can be used in photoresist systems.

3,644,290

ELASTIC MOULDING COMPOSITIONS OF POLYACETALS AND PROCESS FOR THEIR MANUFACTURE

Karl-Heinz Häfner, Bad Orb, and Harald Cherdron, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,568
Claims priority, application Germany, Dec. 8, 1967, F 54,257
Int. Cl. C08g *22/14*
U.S. Cl. 260—67 TN **4 Claims**

Elastic moulding compositions on the basis of polyacetals are prepared by reacting copolymers of trioxane containing free amino groups with polyethers containing isocyanate groups. The elastic moulding compositions so obtained are thermoplastic and distinguished by high impact strength and are used alone or in admixture with polyacetals to form shaped particles.

3,644,291

TITANIUM COMPOUNDS AS POLYCONDENSATION CATALYSTS IN PREPARATION OF LINEAR POLYESTERS

John A. Price, Swarthmore, and Mary J. Stewart, Riddlewood, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 20, 1968, Ser. No. 777,460
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **10 Claims**

Process for preparing linear polyesters comprising carrying out an ester-interchange reaction between a diol and a lower dialkyl ester of a saturated aromatic dicarboxylic acid or carrying out a direct esterification reaction between a diol and a saturated aromatic dicarboxylic acid and then polycondensing the reaction product thereof in the presence of a polycondensation catalyst selected from the group consisting of titanium (III) oxalate, titanium oxyacetylacetonate, titanium disulfide, titanium phosphide, titanium (II) acetylacetonate, sodium titanium silicate, titanium tri-acetylacetonate, and titanium ammonium citrate.

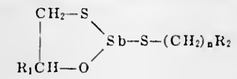
3,644,292

ORGANO MERCAPTO-ANTIMONY COMPOUND AS POLYCONDENSATION CATALYSTS

Mary J. Stewart, Media, and John A. Price, Swarthmore, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,595
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **6 Claims**

Process for preparing linear polyesters comprising carrying out an ester-interchange reaction between a diol and a lower dialkyl ester of a saturated aromatic dicarboxylic acid or carrying out a direct esterification reaction between a diol and a saturated aromatic dicarboxylic acid and then polycondensing the reaction product thereof in the presence of a catalytic amount of a mercapto-antimony catalyst selected from the group consisting of compounds represented by the general formula:



3,644,293

INHIBITING ETHERIFICATION IN CATALYTIC ESTERIFICATION

Glenn D. Fielder, Beaumont, Tex., assignor to Mobil Oil Corporation

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,056
Int. Cl. C08g *17/003, 17/013;* **C07c** *67/00*
U.S. Cl. 260—75 R **8 Claims**

Undesired ether formation is suppressed in catalytic esterification by introducing ammonia or preferably an amine (e.g. trimethylamine) in a reaction mixture containing a carboxylic acid (e.g. terephthalic acid), an alcohol (e.g. ethylene glycol) and an organo-titanium or organo-zirconium esterification catalyst, such as diisopropyl di-triethanolamine titanate. It is often preferable to use a volatile nitrogenous base that can be readily stripped from the reaction mixture, especially at temperatures suitable for condensation of the product ester into the low molecular weight polyesters known as "prepolymer."

3,644,294

PROCESS AND EQUIPMENT FOR THE CONTINUOUS PRODUCTION OF POLYESTERS

Francesco Siclari, Cesano Maderno, and Franco Magnoni, Milan, Italy, assignors to Snia Viscosa Societá Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Apr. 4, 1969, Ser. No. 813,628
Claims priority, application Italy, Apr. 11, 1968, 15,146/68
Int. Cl. C08g *17/001*
U.S. Cl. 260—75 M **14 Claims**

A process for continuous production of a spinnable polyester including a plurality of steps of precondensation and of progressive condensation accompanied by removal of gaseous co-products. The individual steps are carried on applying thin-layer technique within separate environments at differing temperature and pressure conditions and wherein the walls defining said environments are so heated to maintain the temperature gradient at the interface of wall and liquid thin layer within a small value preferably not greater than 6° C., and the said liquid thin-layer in each environment prevailingly consists of partially reacted product recycled in same environment. An equipment comprising a plurality of reaction environments, recycling means and surface heat-exchanging means for carrying out the process.

3,644,295

SATURATED LINEAR POLYESTERS CONTAINING A SALT OF CAMPHORSULFONIC ACID

Mary J. Stewart, Riddlewood, and John A. Price, Swarthmore, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed May 14, 1969, Ser. No. 824,700
Int. Cl. C08g *39/04*
U.S. Cl. 260—75 S **11 Claims**

A polyester composition comprising a saturated linear polyester resin containing a minor amount of an ammonium or metal salt of camphorsulfonic acid.

3,644,296

PROCESS FOR THE HIGH-MOLECULAR-WEIGHT POLYMERIZATION OF LACTAMS

Hendrik Bosch, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Dec. 23, 1968, Ser. No. 785,970
Claims priority, application Netherlands, Dec. 22, 1967, 6717621
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L **2 Claims**

A process and apparatus are disclosed for the preparation of high-molecular-weight polymerization products by ionogenic catalytic polymerization of lactams, in which one portion of the monomer is mixed with a catalyst and another portion with a promoter for accelerating the polymerization, after which these two components are

mixed in the liquid state and introduced into a heated mould in which the polymerization takes place.

3,644,297

NOVEL HIGH TEMPERATURE RESISTANT RESIN HAVING N-ALKYLHYDRAZIDE UNITS AND A METHOD OF PRODUCING THEREOF

Hideo Sekiguchi, Yokohama, and Kazuo Sadamitsu, Tokyo, Japan, assignors to The Furukawa Electric Company Limited, Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,060
Claims priority, application Japan, Jan. 22, 1968, 43/3,379, 43/3,380
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **21 Claims**

Novel high temperature resistant resin having N-alkylhydrazide units whose alkyl group has 2 to 4 carbon atoms, is prepared by reacting polyoxadiazole with alkyl sulfate whose alkyl group has 2 to 4 carbon atoms in concentrated sulfuric acid. Thus obtained resin is fusible and soluble or insoluble in organic solvents and can be converted into polyoxadiazole again by heat-treatment which has higher temperature resistance.

3,644,298

PRODUCTION OF FIBER-FORMING POLYAMIDES OF IMPROVED DYEABILITY

Klaus Gerlach, Obernau, Wolfgang Grimm, Erlenbach, and Helmut Linhart, Aschaffenburg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Jan. 13, 1969, Ser. No. 790,640
Claims priority, application Germany, Jan. 13, 1968, P 17 20 886.5
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **14 Claims**

Process for improving the dyeability of high molecular weight linear fiber-forming synthetic polyamides while retaining sufficient solution viscosity wherein there is added to the initial polyamide-forming monomeric reactant, prior to or during its conventional polycondensation, (A) an alkylene diamine such as hexamethylene diamine and (B) a carbonic acid ester such as ethylene carbonate. The resulting product has a much higher affinity for acid dyes while avoiding certain disadvantages of adding (A) or (B) alone.

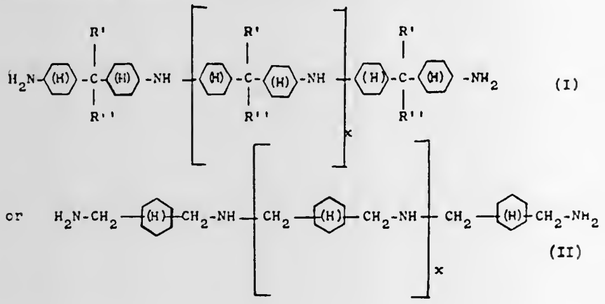
3,644,299

FIBER-FORMING POLYAMIDES HAVING AN INCREASED CONTENT OF AMINO GROUPS

Walter Fester, Konigstein, Taunus, Ernst Hanschke, Burghausen (Salzach), and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,400
Claims priority, application Germany, Mar. 26, 1968, P 17 70 057.1
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 TF **6 Claims**

Polyamides having an especially high dye affinity with respect to basic dyestuffs are obtained by adding certain amounts of a polyamine.



(I)

or

(II)

or a mixture of these polyamines, in which formulae *x* represents zero or a whole number from 1 to 30, preferably zero or a whole number from 1 to 10, R_2 represents H, $—CH_3$, $—C_2H_5$, R'' represents H, $—CH_3$, $—C_2H_5$, and the bonds of the rings in Formula II preferably being meta- and para-bonds, to the polyamide-forming starting material or subsequently to the polyamide. From the modified polyamides fibers are obtained which have an improved dye affinity with respect to basic dyestuffs.

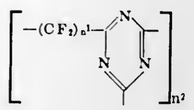
3,644,300

CROSSLINKING OF PERFLUOROALKYLENE TRIAZINE POLYMER

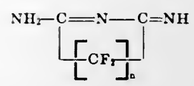
Edwin Dorfman and William E. Emerson, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 634,878, May 1, 1967. This application Apr. 14, 1969. Ser. No. 816,103
Int. Cl. C08f *15/06;* **C08g** *33/02*
U.S. Cl. 260—78.4 N **12 Claims**

This invention is directed to the crosslinking of polymers containing at least one fluoroalkylene triazine unit typically of the formula:



in which n^1 is at least 4 up to about 20, n^2 is at least 1. However, the invention is also directed to any alkylene-triazine polymer having at least one fluorine substituent on the carbon adjacent to the triazine ring. Polymers of the general type of these polymers described above include the polymers of the copending application, Ser. No. 533,430, filed Mar. 11, 1966, for example. The cross-linking agent of this invention is selected from the group consisting of amidines and imidines, preferably halogenated alkyl imidines and amidines, a preferred embodiment being a perfluoroalkylene such as perfluoroglutarimidine. Representative amidines typically include perfluorosuberamidine and perfluorosebacamidine. The characteristic structure of the imidine of this invention is typically represented by the following formula:



in which *n* is from 1 to 3.

3,644,301

1-METHYLCYCLOPROPENE COPOLYMERS

William S. Anderson, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,590
Int. Cl. C08f *17/00*
U.S. Cl. 260—78.5 R **9 Claims**

Novel copolymers of 1-methylcyclopropene useful for preparing adhesives, coatings, films, fibers and molded objects are disclosed. The copolymers are prepared by ordinary polymerization processes.

3,644,302

PREPARATION OF THERMOSTABILISABLE POLYTHIIRANES

Adrien Nicco and Bernard Boucheron, Bethune, France, assignors to Societe Ethylene-Plastique, Paris, France

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,746
Claims priority, application Great Britain, Dec. 14, 1967, 56,856/67
Int. Cl. C08f *1/04, 1/74*
U.S. Cl. 260—79 R **9 Claims**

A process for the preparation of thermostabilisable polythiiranes in which is used at least one monomer selected from compounds of the group of thiirane and products obtained by substituting in thiirane at least one hydrogen atom by one alkyl radical having from 1 to 4 carbon atoms, characterized in that at least one phenyl phosphine out of the three phosphorus valences is used as a catalyst and that polymerization is effected in the absence of solvent or in the presence of at least one aprotic solvent, and the polymers thus obtained.

3,644,303

PROCESS FOR THE PREPARATION OF MODIFIED POLYETHYLENE POWDERS

Harald Berger, Kelkheim, Taunus, Herbert Bestian, Frankfurt am Main, and Helmut Korbanka, Gersthofen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,911
Claims priority, application Germany, Dec. 2, 1968, P 18 12 143.2
Int. Cl. C08f *15/02, 19/02*
U.S. Cl. 260—79.3 R **5 Claims**

A process for the preparation of pulverulent copolymers prepared by saponifying acrylamide-N-sulfonic acids consisting of ethylene structural units and vinyl-amide structural units, and possibly further structural units of ethylenically mono-unsaturated copolymerizable monomers. The modified polyethylene powders obtained in accordance with the invention are extremely suitable for the powdering of rubber sheets and/or rubber granules, for whirl-sintering coating, as a textile reinforcement to be ironed into the material, as a supporting base for pigment preparations, as a powder base for pharmaceutical or cosmetic preparations, as a lubricant for the tablet manufacture, as well as additives to polyester and polyvinyl chloride extrusion material in order to increase the flow property in the extrusion process and to improve the impact strength of such polymers.

3,644,304

ETHYLENE-PROPYLENE-DIENE ELASTOMER

Rudolf Adolf Behrens, Gladstone, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 31, 1969, Ser. No. 846,608
Int. Cl. C08f *15/04*
U.S. Cl. 260—79.5 B **9 Claims**

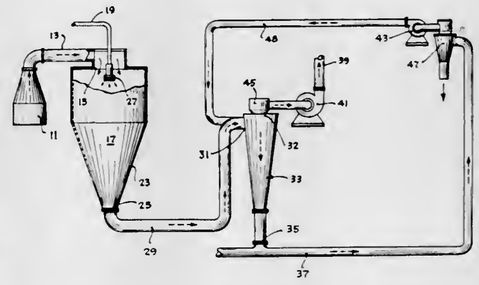
A vulcanizable composition containing a diene modified ethylene-propylene elastomer, copper 2-mercaptobenzothiazole and a thiuram sulfide or a metal dithiocarbamate.

3,644,305

SPRAY POLYMERIZATION

Alvin J. Frisque, La Grange, and Robert Bernot, Chicago, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 29, 1969, Ser. No. 872,319
Int. Cl. C08f *1/60*
U.S. Cl. 260—80.3 N **3 Claims**



A new process of polymerization is disclosed by the use of a spray dryer. Polymer gels and polymers of low molecular weight can be prepared by this spray polymerization method.

3,644,306

HIGH MOLECULAR WEIGHT, VULCANIZABLE TERPOLYMERS OF ETHYLENE, PROPYLENE AND ALKENYLSILANES AND PROCESSES FOR THE PREPARATION THEREOF

Paolo Longi and Francesco Greco, Milan, and Ermanno Bernasconi, Caronno Varesino, Varese, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 686,688, Nov. 29, 1967. This application Aug. 18, 1969, Ser. No. 853,588
Claims priority, application Italy, Nov. 30, 1966, 30,561/66
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.71 **5 Claims**

There are disclosed crosslinked terpolymers obtained from high molecular weight, normally solid, essentially linear, addition terpolymers of ethylene, propylene and alkenylsilanes selected from the group consisting of vinylsilane, allylsilane, propenylsilane, butenylsilane, dimethylallylsilane, butenylallyl silane, cyclohexylallylsilane, and cyclohexylbutenylsilane, which terpolymers contain, by mols, from 65% to 80% of ethylene, from 20% to 35% of propylene, and from 0.02% to 5.0% of alkenylsilane. The crosslinked terpolymers are characterized in having Si—O—Si crosslinks between silicon atoms of the polymerized alkenylsilane units in different macromolecular chains of the terpolymers, as evidenced by examination of the infra-red spectra thereof. A process for obtaining the terpolymers with the aid of catalysts prepared from transition metal compounds and organometallic compounds of aluminum, and a process for crosslinking the terpolymers in a liquid non-solvent swelling agent for the terpolymers are also disclosed.

3,644,307

ALKENE STYRENE POLYMERS

Giovanni Biale, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 19, 1969, Ser. No. 851,475
Int. Cl. C08f *1/13, 1/16*
U.S. Cl. 260—80.73 **9 Claims**

A low molecular weight alkene such as ethylene is copolymerized with styrene by a low pressure emulsion or

suspension polymerization by incorporating a water soluble olefin complexing agent in the aqueous medium used in the polymerization. In a typical embodiment, ethylene is contacted with an aqueous emulsion of styrene, a peroxide catalyst and an ethylene complexing agent which is a water soluble salt of a multivalent metal. The polymerization can be performed at mild conditions of temperatures from about 10° to about 200° F. and pressures from about 10 to about 100 atmospheres. Other comonomers can be included to prepare terpolymers of ethylene, styrene and desired other monomers. The products have improved properties over polystyrene.

3,644,308

PARTIALLY HYDROLYZED TERPOLYMERS OF DISSIMILAR VINYL ESTERS AND AN UNSATURATED CARBOXYLIC ACID AND PROCESS FOR MAKING THEM

Pieter de Carpentier, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed June 20, 1969, Ser. No. 835,227

Claims priority, application Great Britain, July 15, 1968, 33,600/68

Int. Cl. C08f *27/14, 15/40*

U.S. Cl. 260—80.75 **7 Claims**

Polymeric compounds useful as a superior baking enamel component are prepared by a process which comprises co-polymerizing (1) at least one vinyl ester of a saturated carboxylic acid, (2) at least one alpha, beta ethylenically unsaturated carboxylic acid, and (3) at least one vinyl ester of a saturated carboxylic acid having a tertiary or quaternary alpha carbon atom and partially hydrolyzing said polymerization product in an acid medium.

3,644,309

HYDROCARBON-SOLUBLE RUBBERY COPOLYMERS OF α-OLEFINS

Edward William Duck, Dibden Purlieu, Southampton, John Howard Farmer, Southampton, and Brian John Ridgewell, Hythe, Southampton, England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

No Drawing. Filed July 19, 1968, Ser. No. 745,982

Claims priority, application Great Britain, July 21, 1967, 33,661/67

Int. Cl. C08f *15/04, 15/40;* **B01j**

U.S. Cl. 260—80.78 **14 Claims**

A catalyst system for the preparation of homo- and copolymers of α-olefins comprises

(a) a hydrocarbon-soluble compound of vanadium, titanium or zirconium,

(b) a hydrocarbon soluble adduct of

(i) aluminium trichloride or aluminium dichlorohydride and

(ii) a polar compound, and

(c) an organo-metallic compound of lithium.

3,644,310

POLYMER COMPOSITIONS

Hubert Brian Hopkins, Penarth, South Wales, assignor to Distrene Limited, London, England

No Drawing. Filed Nov. 22, 1968, Ser. No. 778,343

Claims priority, application Great Britain, Nov. 29, 1967, 54,264/67

Int. Cl. C08f *7/04, 29/02;* **C08d** *5/02*

U.S. Cl. 260—80.78 **12 Claims**

An antistatic agent composition for polymeric materials comprises a major proportion by weight of an alkyl or aryl or alkaryl sulphonate and a minor proportion by weight of an alkyl alkanolamide or a hydroxypolyalkoxyamide.

3,644,311

REDUCTION OF POLYMER BUILD-UP IN ETHYLENE COPOLYMERIZATION

Bart A. Diliddo, Seven Hills, and Bernard F. Cinadr, Brecksville, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 772,373, Oct. 31, 1968. This application Nov. 3, 1969, Ser. No. 873,490

Int. Cl. C08f *15/04*

U.S. Cl. 260—80.78 **6 Claims**

In the suspension polymerization of ethylene, propylene and a polyene in the absence of substantial amounts of extraneous diluents, particularly in a continuous system, where polymer build-up interferes with the polymerization reaction and causes mechanical problems, the amount of polymer build-up is reduced by including in the polymerization system an aliphatic hydrocarbon solubilizing agent containing 6 to 10 carbon atoms which comprises from 5 to about 75% of the total of propylene and aliphatic hydrocarbons present in the reaction mixture.

3,644,312

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Tai Chun Cheng, Akron, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,877

Int. Cl. C08d *1/32, 3/06;* **C08f** *15/04*

U.S. Cl. 260—83.7 R **17 Claims**

Conjugated dienes are polymerized by a new catalyst system which is more economically and more easily prepared and used than present catalyst systems used for similar purpose. This catalyst system comprises a combination of a free radical anion component modified by potassium hydroxide. The free radical anionic component is made, in an appropriate solvent, from an alkali metal and an anion forming compound, such as naphthalene. The catalyst system is used to polymerize conjugated dienes to polymer products of controlled molecular weight, suitable for easy processing and having properties desirable for ultimate use in tires and other molded products. The molecular weights of the products are increased by virtue of the modifier as compared to the molecular weights obtained with the radical anion component alone.

3,644,313

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Tai Chun Cheng, Akron, Thomas A. Antkowiak, Cuyahoga Falls, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,878

Int. Cl. C08d *1/32;* **C08f** *1/28*

U.S. Cl. 260—83.7 R **23 Claims**

Conjugated dienes are polymerized by a new catalyst system which is more economically and more easily prepared and used than present catalyst systems used for similar purpose. This catalyst system comprises a combination of a free radical anion component modified by an alkali metal alkoxide or aryloxide. The free radical anionic component is made, in an appropriate solvent, from an alkali metal and an anion forming compound such as naphthalene. The alkali metal compound is preferably potassium alkoxide or aryloxide, but can also be other alkali metal alkoxides or aryloxides. The catalyst system is used to polymerize conjugated dienes to polymer products of controlled molecular weight, suitable for easy processing and having properties desirable for ultimate use in tires and other molded products. The molecular weights of the products are increased by virtue of the modifier as compared to the molecular weights obtained with the radical anion component alone.

3,644,314

PREPARATION OF COPOLYMERS USING ORGANOLITHIUM/PYRIDINE COMPOUND CATALYST SYSTEM

Akira Onishi, Shiro Anzai, Koichi Irako, Ryota Fujio, Yoshihiro Hayakawa, Minoru Kojima, and Hiroshi Kawamoto, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

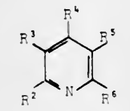
No Drawing. Filed Dec. 13, 1968, Ser. No. 783,705

Claims priority, application Japan, Dec. 22, 1967, 42/81,899

Int. Cl. C08f *1/28, 1/76, 15/04*

U.S. Cl. 260—84.7 **17 Claims**

Random copolymer is prepared by copolymerizing a conjugated diene, such as 1,3-butadiene and a vinyl-substituted aromatic hydrocarbon, such as styrene at a temperature of —80° to 150° C. in the presence of a substantially anhydrous liquid hydrocarbon by means of a catalyst system consisting essentially of an organolithium compound and a pyridine compound having the formula



wherein R^2, R^3, R^4, R^5 and R^6 is selected from the group consisting of hydrogen and hydrocarbon radicals and at least two of them are hydrocarbon radicals selected from the group consisting of alkyl, alkenyl, cycloalkyl and aralkyl radicals.

3,644,315

MOISTURE-CURABLE POLYMERS

Irwin J. Gardner, Fanwood, and Thomas A. Manuel, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 600,725, Dec. 12, 1966. This application Mar. 14, 1969, Ser. No. 807,433

Int. Cl. C08d *3/02;* **C08f** *15/04*

U.S. Cl. 260—85.3 **3 Claims**

Moisture-curable polymers are prepared by reacting an elastomeric or mastic copolymer of a C_4–C_7 isoolefin (e.g. isobutylene) with an acyclic conjugated diolefin yielding type II unsaturation in the copolymer backbone (e.g. butadiene or piperylene) with a silane (e.g. trichlorosilane) in the presence ~~of a~~ peroxide (e.g. benzoyl peroxide).

3,644,316

PRODUCTION OF COATINGS AND IMPREGNATIONS COMPRISING ALKYLENE GLYCOL ACRYLIC ACETO ACETATE POLYMERS

Matthias Marx, Bad Durkheim, Heinz Pohlemann, Limburgerhof, and Hans Klug, Lampertheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,775

Claims priority, application Germany, Nov. 25, 1967, P 16 44 990.4

Int. Cl. C08f *15/16*

U.S. Cl. 260—85.5 R **3 Claims**

Air-drying coating agents and impregnants which contain (a) an ester of an olefinically unsaturated carboxylic acid with the acetoacetic monoester of an at least dihydric alcohol; (b) at least one other polymerizable ethylenically unsaturated compound and (c) a conventional polymerization initiator.

3,644,317

PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE

Sergio Lo Monaco, Corrado Mazzolini, Luigi Patron, and Alberto Moretti, Venice, Italy, assignors to Chatillon Società Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy

No Drawing. Filed Dec. 12, 1968, Ser. No. 783,413

Claims priority, application Italy, Dec. 15, 1967, 23,916/67

Int. Cl. C08f *3/30, 1/62, 1/80*

U.S. Cl. 260—85.5 **9 Claims**

In the low-temperature polymerization of vinyl chloride alone, or in admixture with small quantities of other copolymerizable monomers, by using as a catalyst a catalytic system comprising an organic hydroperoxide, sulphur dioxide and a compound selected from the group consisting of alcohols, alcoholates, their derivatives and their mixtures, it is possible (according to the present invention) to stop the polymerization at the desired degree of conversion and to avoid post-polymerization in the reaction mixture as well as during the recovery of the monomers, by treating the reaction mixture with a water-soluble hydroxylamine salt such as the hydrochloride, sulphate, oxalate, phosphate or acetate.

3,644,318

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Bernd Diedrich and Karl Diether Keil, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 25, 1969, Ser. No. 836,589

Claims priority, application Germany, Aug. 21, 1968, P 17 95 197.2; June 6, 1969, P 19 28 772.0

Int. Cl. C08f *1/56, 3/02*

U.S. Cl. 260—88.2 **8 Claims**

Process for homo- and copolymerizing olefins in the presence of a mixed catalyst comprising, as component A, a reaction product of magnesium alcoholates with tetravalent halogenated titanium compounds and, as component B, organo-aluminum compounds. Already under a pressure of less than 20 atmospheres the yields per catalyst obtained are so high that the remainders of catalyst

need not be removed from the polymer. Optionally, products can also be prepared which have a very narrow molecular weight distribution and very good color and corrosion values.

3,644,319

AFTERTREATMENT OF VINYLIDENE FLUORIDE POLYMERS PREPARED IN THE PRESENCE OF ALKYLPEROXYDICARBONATE COMPRISING HEAT TREATMENT OF THE POLYMERS WITH WATER

Shigeru Seki and Hisao Sanada, Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 10, 1968, Ser. No. 720,365
Claims priority, application Japan, Apr. 20, 1967, 42/25,361
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 4 Claims

A vinylidene fluoride polymer obtained by polymerization with the use of organic peroxide as a catalyst is subjected, prior to drying, to a heat treatment at a temperature of from 70 to 120 degrees C. and in the constant presence of water in order to cause decomposition and removal of residual catalyst, whereby the thermal stability of the polymer is greatly improved. The heat treatment can be carried out by indirect heating from outside, by blowing steam into a suspension of the polymer in water, or by fluidized treatment of the polymer with steam.

3,644,320

PROCESS FOR PRODUCING HIGHLY CRYSTALLINE POLYOLEFINS

Shotaro Sugiura, Haruo Ueno, Hideo Ishikawa, and Takefumi Yano, Ube-shi, and Tuneo Shimamura, Onoda-shi, Japan, assignors to Ube Industries, Ltd., Ube-shi, Japan

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,423
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 7 Claims

A process for producing solid, highly crystalline polyolefins which comprises polymerizing the alpha-olefins with a three-component catalyst system obtained by mixing together an organoaluminum compound, a titanium trihalide and either a trithiophosphite or trithiophosphate.

3,644,321

POLYOLEFIN PURIFICATION

Michio Koga and Masaru Kani, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed July 16, 1969, Ser. No. 842,393
Claims priority, application Japan, July 17, 1968, 43/50,415; Mar. 19, 1969, 44/20.403
Int. Cl. C08d *5/00;* C08f *3/06, 3/10*
U.S. Cl. 260—93.7 4 Claims

After alcohol treatment, a polyolefin is treated with an alkaline aqueous solution of a pH value of at least 5 in which catalyst residue separates, thereby causing stratification and formation of an aqueous phase in which at least a majority part of the catalyst residue is suspended and an oil phase in which the polyolefin is suspended, and the aqueous phase is then separated from the oil phase. Purification is still further improved by a process step of neutralization of acidic substances prior to the alkaline solution treatment.

3,644,322

POLYMERIZATION OF CONJUGATED DIENES AND MONOVINYL AROMATIC COMPOUNDS WITH MULTIFUNCTIONAL POLYMERIZATION INITIATORS

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,204
Int. Cl. C08d *1/32;* C08f *1/74, 7/04*
U.S. Cl. 260—94.2 8 Claims

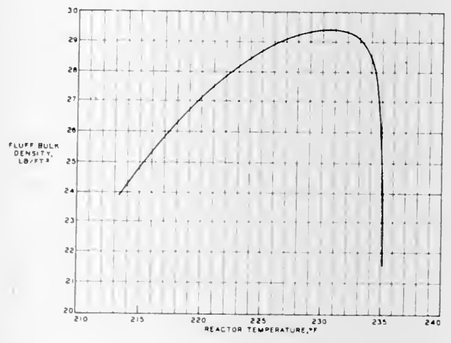
An improved multifunctional polymerization is prepared in a two step process by reacting an organomonolithium compound with a polymerizable additive and then contacting the reaction mixture with a polyvinyl aromatic compound.

3,644,323

PRODUCTION OF HIGH FLUFF BULK DENSITY PARTICLE-FORM POLYETHYLENES

Donald D. Norwood and Stanley J. Merwil, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 12, 1969, Ser. No. 823,832
Int. Cl. C08f *1/11, 1/66, 3/06*
U.S. Cl. 260—94.9 D 5 Claims



A method of producing, in a slurry-type reactor, polyethylenes with a high fluff bulk density by operating the reactor within very close parameters of monomer concentration, temperature, pressure.

3,644,324

POLYMERS AND COPOLYMERS OF BUTADIENE, ETC., HAVING RELATIVELY WIDE MOLECULAR-WEIGHT DISTRIBUTION

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 749,593, Aug. 2, 1968. This application Feb. 2, 1970, Ser. No. 8,069
Int. Cl. C08d *5/04*
U.S. Cl. 260—94.7 R 2 Claims

Polymers which are homopolymers of hydrocarbon conjugated dienes of 4 to 6 carbon atoms or copolymers of such dienes or copolymers of such dienes with styrene or a derivative of styrene, which polymers possess objectionable cold flow, are joined by use of a lithium-based catalyst and titanium chloride to produce a polymer having no cold flow. The resulting polymers and copolymers have a broadened molecular weight distribution and excellent mill-processability.

3,644,325

USE OF AMMONIA IN THE PREPARATION OF CATALYSTS FOR OLEFIN POLYMERS HAVING IMPROVED PROCESSABILITY

Reginald F. Roberts, Jr., Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,345
Int. Cl. C08f *1/56*
U.S. Cl. 260—94.9 C 5 Claims

Linear olefin polymers having improved processability are provided by low pressure polymerization of ethylene monomer in the presence of an aluminum alkyl and titanium trichloride which has been pretreated with a small amount of ammonia.

3,644,326

EXTRACTING PROTEINS FROM LACTOSERUM

Jean Lucien Joseph Pien, Paris, France, assignor to Genvrain, Paris, France

Filed Nov. 25, 1968, Ser. No. 778,537
Claims priority, application France, Nov. 30, 1967, 130,410
Int. Cl. A23c *19/02, 21/00;* A23j *1/20*
U.S. Cl. 260—122 11 Claims

Proteins in lactoserum are continously extracted by a process involving the steps of adjusting the pH to between 6.2 and 6.4, heating to 90–100° C. for 10 to 30 minutes, acidifying to between pH 4.4 and 4.9 to precipitate the proteins, cooling to 20–60° C. and centrifuging to separate the proteins.

3,644,327

AROMATIC AZOXY COMPOUNDS FROM AROMATIC NITROSO COMPOUNDS

Martin A. Robinson, Orange, and Thomas J. Hurley, Jr., Madison, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,835
Int. Cl. C07c *105/00*
U.S. Cl. 260—143 8 Claims

A process for preparing an aromatic azoxy compound by reacting an aromatic nitroso compound with carbon monoxide at an elevated temperature and elevated pressure.

3,644,328

SYMMETRICAL AROMATIC DIAMINES CONTAINING A CENTRAL AZO LINKAGE

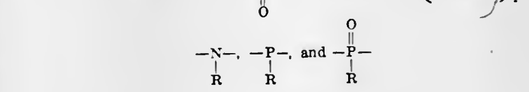
Hartwig C. Bach and Helmuth E. Hinderer, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,243
Int. Cl. C07c *107/06;* C09b *27/00, 43/06*
U.S. Cl. 260—169 4 Claims

Symmetrical aromatic diamines are provided having the formula

$$NH_2—A_r(X)_nA_r—N=N—A_r(X)_nA_r—NH_2$$

wherein n is 0 or 1, X is a divalent radical selected from the group consisting of



wherein R is a lower alkyl radical and Ar is a divalent aromatic single ring, fused ring, or multi-nuclear ring system, wherein the rings of said multi-nuclear ring system are connected only through aromatic carbon to aromatic carbon valence bonds or X radicals, with the proviso that where Ar is phenylene, n is 1. The symmetrical azo aromatic diamine products are useful for the preparation of fiber and film forming polyimides having outstanding thermal resistance and mechanical properties.

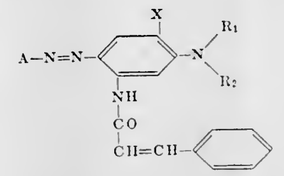
3,644,329

WATER-INSOLUBLE MONO-AZO DYESTUFFS CONTAINING A CINNAMOYLAMINE COUPLING COMPONENT

Jean Marie Louis Le Roy, Saint-Etienne-du-Rouvray, and Claude Marie Henri Emile Brouard, Sotteville-les-Rouen, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,319
Claims priority, application France, Mar. 21, 1968, 144,667
Int. Cl. C09d *29/00*
U.S. Cl. 260—207.1 5 Claims

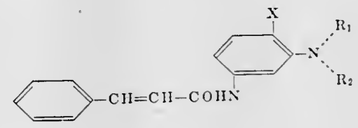
Dyestuffs, containing no acid groups, of the formula:



(I)

in which A represents the residue of a diazotisable amine, R_1 and R_2 each represent an alkyl group having up to four carbon atoms and X represents a hydrogen atom or a methyl, ethyl, methoxy or ethoxy group.

Coupling compounds of the formula:



(II)

in which R_1, R_2 and X have the meanings given above.

The dyestuffs are of particular interest for the colouration of hydrophobic fibres and processes for the preparation of the dyestuffs and the coupling compounds are disclosed.

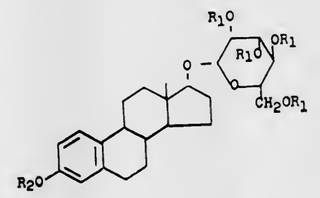
3,644,330

DERIVATIVES OF ESTRADIOL-17β-GLUCOSIDES

Wolfgang Eberlein, Biberach an der Riss, Joachim Heider, Warthausen-Oberhofen, and Hans Machleidt and Gunther Engelhardt, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed May 1, 1969, Ser. No. 821,557
Claims priority, application Germany, May 3, 1968, P 17 68 351.1–42
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 4 Claims

Estrogenic estradiol-17β-glucoside derivatives of the formula



wherein

R_1 is hydrogen or lower alkanoyl, preferably acetyl, and R_2 is lower alkyl, lower alkanoyl, tetrahydropyranyl, or MeO_3S—, where Me is an alkali metal; the compounds are useful for the treatment of the menopausal syndrome, amenorrhea, endometritis and colpitis.

3,644,331
LOWER ALKOXY INOSINE-5'-PHOSPHATES AND SALTS THEREOF

Ryuji Marumoto, Minoo, Yoshio Yoshioka, Osaka, Hisashi Aoki, Suita, and Jun Toda, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 26, 1968, Ser. No. 740,094
Claims priority, application Japan, June 26, 1967, 42/40,899
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **7 Claims**

The 2-(lower-alkoxy)inosine-5'-phosphates (2-methoxy-, 2-ethoxy-, 2-n-propoxy- and 2-isopropoxy-inosine-5'-phosphates) have a high capacity for improving the flavor of foods and beverages. Moreover, there is a significant synergistic action therebetween and monosodium glutamate.

3,644,332
PREPARATION OF GRANULAR STARCH DERIVATIVES

Robert A. Mooth, Tinley Park, and Stanley F. Ciesla, Brookfield, Ill., and Hugh J. Roberts, Wauwatosa, Wis., assignors to CPC International Inc.

No Drawing. Filed Sept. 5, 1968, Ser. No. 757,761
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 **1 Claim**

Derivatives of starch heretofore unattainable by aqueous reaction techniques as well as increased efficiency of attainable derivative formulations by aqueous reaction techniques are achieved by reacting a hydrophobic reagent with a granular starch in a three phase system comprised of (1) granular starch (2) water, and (3) a hydrophobic reagent which is emulsified in the continuous aqueous phase by an emulsifier.

3,644,333
TRANSESTERIFICATION IN THE PRESENCE OF A TRANSPARENT EMULSION

Lloyd I. Osipow, New York, and William Rosenblatt, Spring Valley, N.Y., assignors to the State of Nebraska, Lincoln, Nebr.

No Drawing. Filed Jan. 28, 1969; Ser. No. 794,793
Int. Cl. C07c *69/32*
U.S. Cl. 260—234 R **5 Claim**

An improved process for synthesizing organic compounds is provided in which a reaction is conducted between immiscible reactants, the process comprises combining the immiscible reactants in the presence of water and suitable emulsifying agents to form a transparent emulsion, and carrying out a reaction between said immiscible reactants to form a reaction product. The improvement also provides a process in which water is distilled from the transparent emulsion to form a microdisperison, and a reaction is carried out between two immiscible reactants, one of which is in the form of very fine solid particles dispersed in a liquid medium. Furthermore, an improved process of preparing sucrose esters is provided which comprises employing water as the solvent for the sucrose component in a transparent emulsion, distilling off the water to form a microdispersion of sucrose, and reacting the solid sucrose particles to form sucrose esters of fatty acids.

3,644,334
7-AZIDO-BENZODIAZEPINES

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,022
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **14 Claims**

7-azido-benzodiazepines and processes for preparing the foregoing. Such 7-azido-benzodiazepines are useful as anticonvulsants, muscle relaxants and sedative agents.

3,644,335
PREPARATION OF AMIDINES FROM AMIDES

James Valentine Earley, Cedar Grove, Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 621,434, Mar. 8, 1967. This application May 7, 1968, Ser. No. 727,339
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **8 Claims**

Amides are converted to their corresponding amidines by reacting the amides with an amino compound in the presence of a non-aqueous acid reagent, e.g., p-toluenesulfonic acid or titanium tetrachloride. This procedure is applicable to primary and secondary amines. In a specific embodiment 1,4-benzodiazepin-2-ones are directly converted into 2-amino-1,4-benzodiazepines.

3,644,336
2,3-DIHYDRO - 4 - HYDROXY-5-PHENYL-1H-1,4-BENZODIAZEPINES AND PREPARATION THEREOF

Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 19, 1967, Ser. No. 647,226, now Patent No. 3,498,973, dated Mar. 3, 1970, which is a division of application Ser. No. 267,908, Mar. 25, 1963. Divided and this application Dec. 5, 1969, Ser. No. 882,744
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **3 Claims**

Novel 2,3-dihydro-4-hydroxy-5-phenyl-1H-1,4-benzodiazepines and preparation thereof prepared via reduction of 2,3-dihydro-5-phenyl-1H-1 4-benzodiazepine 4-oxides, are described. These novel products are useful as anticonvulsant agents.

3,644,337
PROCESS FOR THE MANUFACTURE OF 3-FORMYLRIFAMYCIN-SV

Hans Bickel and Bruno Fechtig, Binningen, and Wilhelm Kump, Therwil, Switzerland, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Filed June 4, 1968, Ser. No. 734,199
Claims priority, application Switzerland, June 16, 1967, 8,583/67
Int. Cl. C07d *87/54*
U.S. Cl. 260—239.3 **22 Claims**

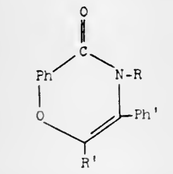
A new process for preparing 3-formylrifamycin-SV from 3-aminomethyl-rifamycin S compounds without the use of an oxidant is based on a finding that 3-aminomethyl-rifamycin-S compounds whose amino group in position 3 is derived from a secondary amine is split by acids in the presence of water to give 3-formylrifamycin-SV and the amine corresponding to the amino group in position 3 of the starting material used. The said 3-aminomethylrifamycin S compounds probably react in the presence of acid in a tautomeric form which by addition of acid gives amine derivatives of 3-formyl-rifamycin-SV; the latter split hydrolytically into 3-formylrifamycin SV and an amine.

3,644,338
4-AMINOALKYL-3-ARYL-1,4-BENZOXAZEPIN-5(4H)-ONES

Karl Schenker, Binningen, Switzerland, assignor to Ciba Corporation, Summit, N.J.

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,300
Claims priority, application Switzerland, Mar. 21, 1968, 4,171/68; Feb. 19, 1969, 2,508/69
Int. Cl. C07d *87/54*
U.S. Cl. 260—239.3 **9 Claims**

4-aminoalkyl - 3 - aryl-1,4-benzoxazepin-5(4H)-ones of the formula



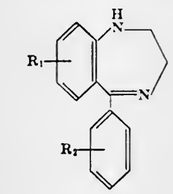
in which Ph represents an optionally substituted o-phenylene radical, Ph' an optionally substituted aryl radical, R an aminoalkyl radical disubstituted at the amino nitrogen atom, in which the amino nitrogen atom is separated from the cyclic nitrogen atom by at least 2 carbon atoms, and R' stands for a hydrogen atom or an alkyl group are useful as antiphlogistics and as mild analgesics.

3,644,339
PROCESS FOR THE PRODUCTION OF BENZODIAZEPINE DERIVATIVES

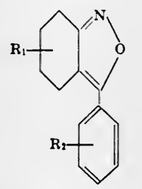
Toru Masuda, Nishinomiya, Yoshiro Usui, Ibaraki, Yukio Hara, Kawanishi, and Toshikatsu Komatsu, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed July 14, 1969, Ser. No. 841,611
Claims priority, application Japan, July 17, 1968, 43/50,306
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 **6 Claims**

Process for producing benzodiazepine compounds of the formula



in which R_1 and R_2 are hydrogen, halogen or nitro, which involves reacting an anthranyl compound of the formula



(I)

wherein R_1 and R_2 have the significances above with (2) an acid salt of glycine ester, said reaction being carried in the presence of an organic base under heating. The finally produced benzodiazepine compounds have excellent pharmacological properties and may specifically be used as sedative agents.

3,644,340
PREPARATION OF 21-CHLORO STEROIDS

Belig M. Berkoz, Los Altos Hills, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,215
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **7 Claims**

A process for preparing 21-chloro steroids which involves the step of treating a 21-hydroxy steroid with triphenylphosphine and carbon tetrachloride in dipolar aprotic reaction media. The 21-chloro steroid products are known, useful anti-inflammatory agents.

3,644,341
6-GEM-DIFLUORO PREGNANES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,955
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **24 Claims**

6α,6β-difluoropregn-4-en-3-ones; optionally substituted at C–1,2-with methylene, at C–21 with fluoro or chloro, at C–16 with hydroxy, methyl or methylene, at C–17 with hydroxy or the esters thereof, or C–16 and C–17 are bridged by a cyclic acetal or ketal, optionally there is a double bond between C–1,2; exhibit progestational activity.

3,644,342
OZONOLYSIS OF 2-HYDROXY-3-OXO-$\Delta^{1,4}$ STEROIDS

Robert J. Chorvat, Raphael Pappo, and Mike G. Scaros, Arlington Heights, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed May 5, 1969, Ser. No. 821,948
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **9 Claims**

Ozonolysis of 2-hydroxy-3-oxo-$\Delta^{1,4}$ steroids results in A-nor-1,2-seco aldehydo acids, which intermediates are useful in the manufacture of pharmacologically active 2-oxa-3-oxo-Δ^4 steroids.

3,644,343
PHENYL AND SUBSTITUTED PHENYLSULFONYL-ALLYL AMINES AND SUBSTITUTED AMINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,110
Int. Cl. C07d *87/46*
U.S. Cl. 260—240 R **7 Claims**

Phenyl and substituted phenylsulfonylallyl amines and substituted amines, e.g., 1-(3 - phenylsulfonylallyl)-pyrrolidine hydrochloride, are prepared by treating a phenyl or substituted phenylsulfonyl-2-propen-1-ol with an amine or substituted amine, treating the resulting intermediate with $SOCl_2$ and then with sodium carbonate and allowing the resulting intermediate to rearrange to the final product. The compounds are useful as anti-inflammatory agents

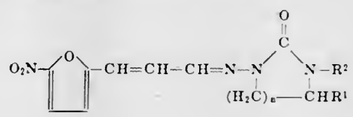
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3,644,344
NITROFURYLACRYLIDENE DERIVATIVES

Max J. Mousseron, Montpellier, Herault, France, assignor to Etablissements Clin-Byla, Paris, France

No Drawing. Filed July 2, 1969, Ser. No. 838,656
Claims priority, application France, July 5, 1968, 158,054
Int. Cl. C07d *49/30, 51/42*
U.S. Cl. 260—240 A **3 Claims**

(5-nitrofuryl-2)acrylidene derivatives of a cyclic urea having the formula



in which *n* is 1 or 2, R^1 is hydrogen or lower alkyl and R^2 is hydrogen or a carbamoyl group of the formula —C:O—NHA in which A is alkyl, alkenyl, aryl, haloaryl, polyhaloaryl, acyl, haloacyl, polyhaloacyl, aroyl, haloaroyl or polyhaloaroyl, have pharmacological properties which render them useful in combatting staphylococci, streptococci and in salmonellosis.

3,644,345
BENZOXAZOLYL-1,3,4-OXDIAZOLE DERIVATIVES

Adolf Emil Siegrist, Basel, Peter Liechti, Binningen, Erwin Maeder, Aesch, and Leonardo Guglielmetti, Birsfelden, Switzerland, assignors to Ciba Limited, Basel, Switzerland

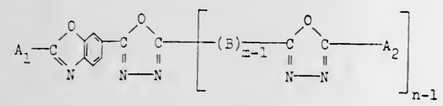
No Drawing. Continuation-in-part of application Ser. No. 798,258, Feb. 3, 1969, which is a continuation of application Ser. No. 548,413, May 9, 1966. This application July 18, 1969, Ser. No. 843,199

Claims priority, application Switzerland, May 10, 1965, 6,472/65

Int. Cl. C09d *23/16;* **C07d** *85/48, 31/40*

U.S. Cl. 260—240 CA **13 Claims**

New benzoxazolyl-1,3,4-oxdiazole compounds are provided which may be represented by the formula



wherein A_1 and A_2 are identical and each represents phenyl, diphenylyl, naphthyl, styryl, stilbenyl, benzoxazolylphenyl, 1,3,4 - oxdiazolylphenyl, 6 - benzoxazolyl, thienyl, pyridyl, phenylthienyl, benzoxazolylthienyl, phenylbenzoxazolyl or 1,3,4-oxdiazolylthienyl residue; B represents 1,4-phenylene, 2,5-furoylene or 2,5-thienylene, and *m* and *n* each is 1 or 2. The benzoxazolyl-1,3,4-oxdiazole compounds of this invention may be further substituted by non-chromophoric, monovalent substituents.

The compounds of the present invention are especially valuable as optical brighteners for organic materials.

3,644,346
DIBENZOXAZEPINE SEMICARBAZONES

John W. Cusic, Skokie, Ill., and William E. Coyne, St. Paul, Minn., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,885

Int. Cl. C07d *87/54, 93/42*

U.S. Cl. 260—240 G **4 Claims**

Semicarbazones of dibenzoxazepine-N-carboxylic acid hydrazides and related compounds are described herein. The compounds are useful as anti-ulcer agents, anti-protozoal agents, and anti-algal agents. They are prepared by the reaction of the appropriate aldehyde with a semicarbazide.

3,644,347
3-AMINOMETHYL CEPHALOSPORIN COMPOUNDS

J. Alan Webber and Earle M. van Heyningen, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 703,523, Feb. 7, 1968. This application Feb. 26, 1969, Ser. No. 802,644

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **3 Claims**

A new class of metabolically stable cephalosporin compounds is disclosed. These compounds have an aliphatic aminomethyl group in the 3-position of the molecule.

3,644,348
PROCESS FOR THE PREPARATION OF 6-CHLORO-7-SULFAMYL, 3-POSITION SUBSTITUTED-3,4-DIHYDRO-1,2,4-BENZOTHIADIAZINE-1,1-DIOXIDE

Tsutomu Irikura, 72 Shimura Nakadaimachi, Itabashi-ku, Tokyo, Japan, and Seigo Suzue, 97, 1-chome, Kohan, Okaya-shi, Nagamo-ken, Japan

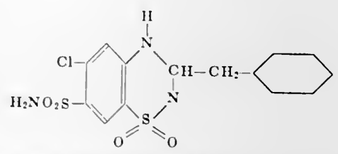
Continuation of application Ser. No. 574,371, Aug. 23, 1966, which is a continuation-in-part of application Ser. No. 100,512, Apr. 4, 1961. This application Apr. 25, 1969, Ser. No. 820,701

Claims priority, application Japan, Mar. 4, 1961, 36/7,520; Mar. 6, 1961, 36/7,636

Int. Cl. C07d *93/34*

U.S. Cl. 260—243 D **5 Claims**

This invention relates to 6-chloro-7-sulfamyl, 3-position substituted-3,4-dihydro-1,2,4 - benzothiadiazine - 1,1-dioxide of



The compound exhibits remarkable diuretic and blood pressure lowering effects. The invention also relates to processes of preparing the above compound.

3,644,349
NOVEL VITAMIN B_6 DERIVATIVE AND THE PREPARATION THEREOF

Kentaro Okumura and Ichizo Inoue, Hyogo-ken, Tatsuo Oda, Osaka-shi, and Kazuhiko Kondo, Higashi-Osaka-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed July 10, 1969, Ser. No. 840,849

Claims priority, application Japan, July 19, 1968, 43/51,043

Int. Cl. C07d *93/06*

U.S. Cl. 260—243 R **4 Claims**

N-[2-(3-hydroxy - 5 - hydroxymethyl - 2 - methyl-4-pyridyl) - tetrahydro-1,3-thiazine-4-carbonyl]glycine and its pharmaceutically acceptable acid addition salts. These compounds are readily absorbed and afford prolonged pyridoxal levels in the body. Pyridoxal free base or an acid addition salt of pyridoxal is reacted with homocysteinylglycine. Alternatively, a betaine or an alkali metal salt of (2-methyl-3-hydroxy-5-hydroxymethyl - 4 - pyridyl)-hydroxymethane-sulfonic acid is reacted with homocysteinylglycine.

3,644,350
4-(1-SUBSTITUTED-3-PYRROLIDINYL)-2H-1,4-BENZOXAZIN-3(4H)-ONES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed July 7, 1969, Ser. No. 839,658

Int. Cl. C07d *87/48*

U.S. Cl. 260—244 R **5 Claims**

4 - [1 - substituted - 3 - pyrrolidinyl] - 2H - 1,4 - benzoxazin-3(4H)-ones prepared by ring closure of 1-substituted - 3 - (N - chloromethylcarbonyl) - o - hydroxyanilinopyrrolidines. The compounds are analgetics.

3,644,351
2-ALKYL-7-SUBSTITUTED-4*H*-PYRIMIDO[5′,4′:4,5]THIENO[3,2-*d*][1,3]OXAZIN-4-ONES

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,050

Int. Cl. C07d *87/20*

U.S. Cl. 260—244 R **5 Claims**

This invention concerns 2 - alkyl - 7 - substituted-4*H*-pyrimido[5′,4′:4,5]thieno[3,2-*d*][1,3]oxazin - 4 - ones

which are useful intermediates in the preparation of 2-alkyl - 3,7 - disubstituted thieno[2,3-*d*:4,5-*d*′]dipyrimidin-4(3*H*) - ones which are pharmacologically active as central nervous system depressants. Further this invention is also concerned with a process for preparation of these intermediate compounds by the reaction of a 5 - amino-2-substituted thieno[2,3-*d*]pyrimidine-6-carboxanilide with a carboxylic acid anhydride.

3,644,352
N-α-AMINO ACYLAMIDO PYRROLES

Richard Rips, Paris, France, assignor to Centre National de la Recherche Scientifique and Institut National de la Sante et de la Recherche Medical, both of Paris, France

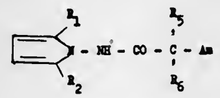
No Drawing. Filed Dec. 4, 1968, Ser. No. 781,241

Claims priority, application France, Nov. 20, 1968, 176,071

Int. Cl. C07d *27/26*

U.S. Cl. 260—247.2 A **5 Claims**

N-α-amino acylamido pyrroles of the formula:



in which

R_1 and R_2 are each cyclic or acyclic hydrocarbon radicals

Am is a cyclic or acyclic secondary amine radical linked by its nitrogen atom to the α-carbon atom of the acyl group,

R_5 and R_6 are each hydrogen or methyl,

and their salts are useful in treating disorders of the central nervous system, the cardiovascular system and the endocrine system.

3,644,353
4, HYDROXY-α′AMINOMETHYL-m-XYLENE-α′,α³-DIOLS

Lawrence H. C. Lunts and Paul Toon, London, England, assignors to Allen and Hanburys Limited, London, England

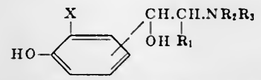
No Drawing. Filed Sept. 20, 1967, Ser. No. 669,263

Claims priority, application Great Britain, Sept. 23, 1966, 42,590/66

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 R **10 Claims**

Novel 1-phenyl-2-amino ethanol derivatives of the formula:



are disclosed. Some have stimulant action and some have blocking action on β-adrenergic receptors. α¹-tert.-butylaminomethyl-4-hydroxy-m-xylene α¹,α³-diol has a particularly marked stimulant action. Pharmaceutical compositions are also disclosed of which aerosols are particularly effective.

3,644,354
5-SUBSTITUTED-2,3-DIHYDROIMIDAZO[1,2-c]QUINAZOLINES

Goetz E. Hardtmann, Florham Park, and Hans Ott, Convent Station, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Sept. 16, 1968, Ser. No. 760,054

Int. Cl. C07l *57/12*

U.S. Cl. 260—247.5 R **31 Claims**

The invention discloses 5-N-substituted-2,3-dihydroimidazo[1,2-c]quinazolines, e.g., 5-diallylamino-8,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazoline, which are pharmaceutically active and useful, for example, as hypotensive agents and as coronary dilators. Also disclosed are processes involved in preparation of said 2,3-dihydroimidazo[1,2-c]quinazolines employing intermediates which are 5-chloro-2,3-dihydroimidazo[1,2-c]quinazolines and 2-chloro-4-ethylenimino-quinazolines.

3,644,355
PYRIDAZONE DERIVATIVES

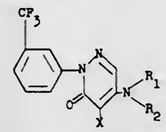
Cuno Ebner, Reinach, and Max Schuler, Arlesheim, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 691,249, Dec. 18, 1967. This application Dec. 4, 1969, Ser. No. 882,294

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **7 Claims**

Compounds of formula:



in which X signifies chlorine or bromine, R_1 signifies hydrogen or methyl and R_2 signifies methyl or, when R_1 signifies hydrogen, R_2 may also signify ethyl, are disclosed as possessing selective herbicidal activity in cotton and carrots.

3,644,356
ADAMANTANOPYRIMIDINE COMPOUNDS AND INTERMEDIATES THEREFOR

Jiban Kumar Chakrabarti, Frimley, and Stephen Slomo Szinai, Wokingham, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed May 1, 1969, Ser. No. 821,063

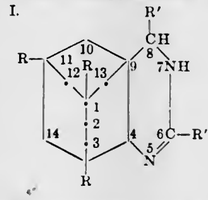
Claims priority, application Great Britain, May 21, 1968, 24,224/68

Int. Cl. C07d *51/46*

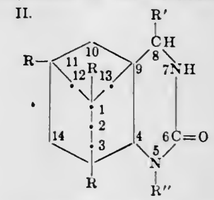
U.S. Cl. 260—251 A **4 Claims**

Adamantanopyrimidine compounds of the formulae:

I.



II.



useful as analgesics and as local anaesthetics; and intermediates useful in the synthesis of the foregoing adamantanopyrimidino compounds. In the above formulae each R represents hydrogen or C_1–C_3 loweralkyl, the sum of the number of carbon atoms in all three R groups being not greater than 6; each R′ independently represents hydrogen or straight-chain C_1–C_6 alkyl; and each R″ independently represents hydrogen or C_1–C_3 loweralkyl.

3,644,357
DERIVATIVES OF THIENO[3,4-α]PYRIMIDINE AND PREPARATION THEREOF

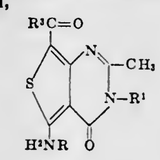
Real Laliberte, Laval, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, St. Laurent, Quebec, Canada

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,083

Int. Cl. C07d *99/06*

U.S. Cl. 260—256.5 R **5 Claims**

5 - aminothieno[3,4-d]pyrimidin - 4(3H) - one derivatives of Formula I,



I

in which R^1 represents a lower alkyl group containing from one to two carbon atoms, a dimethylamino group or a piperidino group; R^2 represents a lower alkyl group containing from one to two carbon atoms, a phenyl group or a 3-nitrophenyl group; and R^3 represents a methyl group, a phenyl group, or a 4-biphenylyl group.

3,644,358
ANTI-INFLAMMATORY 1,2,4-TRIAZINES
Patrick Roffey, Camberley, and John Pomfret Verge, Henley-on-Thames, England, assignors to Lilly Industries, Ltd., London, England
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,934
Claims priority, application Great Britain, Jan. 21, 1969, 3,364/69
Int. Cl. C07d *51/04, 55/10*
U.S. Cl. 260—248 AS **3 Claims**

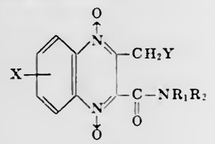
A series of substituted pyridazines and 1,2,4-triazines having anti-inflammatory activity is described. These compounds are prepared from 3,6-disubstituted-s-tetrazines by treatment with a cyclic enol ether, an acetylenic amine, an acetylenic ether, a cyclic enol ester, or an imino ether.

3,644,359
FREE-FLOWING CYANURIC ACIDS
Raymond N. Mesiah, Somerset, N.J., and Harold R. Chancey, Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,911
Int. Cl. C07d *55/36*
U.S. Cl. 260—248 A **5 Claims**

Cyanuric acid which has been purified by acid digestion is not free-flowing, and it cakes upon storage. This invention provides a method of making the acid-digested cyanuric acid free-flowing and non-caking.

3,644,360
3-SUBSTITUTED METHYLQUINOXALINE-2-CARBOXAMIDE-1,4-DIOXIDES
Marwan J. Abuel-Haj, Groton, Conn., assignor to Pfizer Inc.
No Drawing. Filed May 5, 1970, Ser. No. 34,871
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 **10 Claims**

Novel 3-substituted quinoxaline - 2 - carboxamide-1,4-dioxides having the formula



wherein

X is a 6- or 7-position substituent and is hydrogen, methyl, methoxy, bromo, chloro, fluoro and trifluoromethyl;

Y is lower alkylthio, lower alkyl sulfinyl and lower alkyl sulfonyl;

R_1 is hydrogen and lower alkyl; and

R_2 is hydrogen, lower alkyl and substituted lower alkyl wherein the substituent is

(a) amino, mono(lower alkyl)amino, di(lower alkyl) amino, pyrrolidino, piperidino, morpholino, N-(lower alkyl)piperazino, N-hydroxy(lower alkyl)piperazino, N-(lower alkanoyl)piperazino, N-carbo(lower alkoxy)-piperazino, pyrrolo, piperazino, imidazoli dino,

(b) hydroxy, lower alkoxy, carboxy, carbo(lower) alkoxy, carbamyl, mono(lower alkyl)carbamyl, di-(lower alkyl)carbamyl, lower alkanoyloxy, lower alkanoylamino; and

R_1 and R_2 when taken together with the nitrogen to which they are attached are pyrrolo, pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino, N-(lower alkyl)piperazino, N-hydroxy(lower alkyl) piperazino, N-(lower alkanoyl)piperazino and N-carbo(lower alkoxy)piperazino;

and the pharmaceutically-acceptable acid addition salts of those compounds wherein R_2 is substituted lower alkyl wherein the substituent is selected from group (a); methods for their preparation; and their use as antibacterial agents and as agents for promoting growth and improving feed efficiency of animals.

3,644,361
PHTHALAZINES
Elvio Bellasio, Albate, Italy, Emilio Testa, Ticino, Switzerland, and Giulio Maffii, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy
No Drawing. Filed June 9, 1969, Ser. No. 831,707
Claims priority, application Italy, June 12, 1968, 17,703/68
Int. Cl. C07d *51/06*
U.S. Cl. 260—250 **24 Claims**

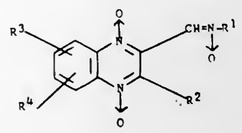
Novel 3,4-dihydro-1-alkoxyphthalazines are prepared by the reaction of the corresponding 3,4-dihydro-1(2H)-phthalazinones with a trialkyloxonium fluoborate. The novel compounds are useful sedative hypnotic and anti-convulsant agents.

3,644,362
1,2-DIAZABICYCLO[2.2.2]OCTANES
Philip M. Carabateas, Shodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 411,706, Nov. 17, 1964, which is a continuation-in-part of application Ser. No. 236,705, Nov. 9, 1962. This application June 30, 1969, Ser. No. 837,953
Int. Cl. C07d *51/02*
U.S. Cl. 260—250 A **25 Claims**

Novel 1,2-diazabicyclo[2.2.2]octanes are prepared by intra-molecularly cyclizing a 1-aminopiperidine compound containing in the 4-position a substituent capable of reacting with the 1-amino group to form either one or two carbon-to-nitrogen bonds, for example, cyclizing a 1-amino-4-Y-[C(=O)B]-piperidine, where Y is H, Ar-lower-alkyl or Ar where Ar is phenyl and related groups, and B is O-(lower-alkyl) or R′ where R′ is lower-alkyl, lower-cycloalkyl, lower-alkenyl or various substituted lower-alkyl groups to yield, respectively, 3-oxo-4-Y-1,2-diazabicyclo[2.2.2]octane or 3 - B(or R′) - 1,2 - diazabicyclo [2.2.2]octane which is used to prepare various 2-substituted-1,2-diazabicyclo[2.2.2]octanes or other 3-substituted-1,2-diazabicyclo[2.2.2]octanes. The 1,2-diazabicyclo [2.2.2]octanes are useful antitussive agents.

3,644,363
1,4-DIOXIDOQUINOXALINYL NITRONES
Hyun Koo Kim, Ashland, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,796
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 **4 Claims**

1,4-dioxidoquinoxalinyl nitrones having the formula



in which R^1 is an alkyl radical of 1 to 10 carbon atoms of straight, branched chain or cyclic configuration which may be substituted with hydroxy, dihydroxy, alkoxy, acyloxy, halogen, or trihalo groups; or R^1 may be a phenyl radical or a phenyl radical substituted with a lower alkyl group of 1 to 4 carbon atoms or a halogen; R^2 is hydrogen, lower alkyl of 1 to 4 carbon atoms, and R^3 and R^4 are chosen from the group consisting of hydrogen, alkoxy or alkyl of 1 to 4 carbon atoms, halogen, trihalomethyl, or nitro groups. These new compounds, which are potent antibacterial agents, are effective orally, topically and parenterally in low concentrations in inhibiting the growth of both gram-negative and gram-positive bacteria. The compounds may be made by reacting an appropriate 2-formylquinoxaline 1,4-dioxide with an N-substituted hydroxylamine.

3,644,364
COMPOUNDS AND PROCESS
William Crawford Anthony, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,351
Int. Cl. C07d *51/34*
U.S. Cl. 260—256.4 H **3 Claims**

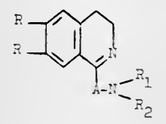
Process for the preparation of 6-substituted-4-amino-1,2-dihydro-1-hydroxy-2-iminopyrimidines and 6-substituted-4-halo-1,2-dihydro-1-hydroxy-2-iminopyrimidines utilized as intermediates in said process. The 6-substituted-4-amino-1,2-dihydro-1-hydroxy-2-iminopyrimidines prepared by said process are useful as antihypertensive agents.

3,644,365
CERTAIN BIS(α-AMINOPROPYL)HYDROURACILS
Juergen Habermeier, Allschwil, Daniel Porret, Binningen, and Wolfgang Seiz, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Dec. 1, 1969, Ser. No. 881,267
Claims priority, application Switzerland, Dec. 3, 1968, 18,012/68; Jan. 10, 1969, 310/69
Int. Cl. C07d *51/34*
U.S. Cl. 260—256.4 C **4 Claims**

New di-N,N′-γ-aminopropyl-dihydrouracils, for example 1,3-di-(γ-aminopropyl)-5,5-dimethyl-5,6-dihydrouracil, and their use as curing agents in curable moulding, coating and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A. Curing can be carried out at relatively low temperatures, for example at 40° C. The new type of curing agent bridges, in respect of its gradation of reactivity, a gap between aliphatic polyamines and cycloaliphatic polyamines. The new curing agents furthermore have the advantage relative to the aromatic polyamines of being non-toxic.

3,644,366
1-AMINO-3,4-DIHYDROISOQUINOLINES
Claude Jeanmart, Brunoy, Mayer Naoum Messer, Bievres, and Pierre Edouard Simon, Boulogne, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,672
Claims priority, application France, Mar. 6, 1968, 142,607; Jan. 20, 1969, 6900907
Int. Cl. C07d *35/14*
U.S. Cl. 260—286 R **8 Claims**

The 3,4-dihydroisoquinoline derivatives of the formula:



wherein the symbols R represent hydrogen, halogen or methoxy or together form a methylenedioxy group, A represents a single bond or a grouping

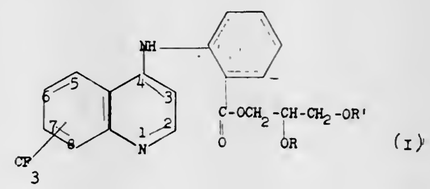
linked by the sulphur atom to the isoquinoline nucleus and A_1 represents an alkylene group of 1 through 5 carbon atoms, and R_1 and R_2 represent hydrogen, alkyl, halogenoalkyl, hydroxyalkyl, cyanoalkyl, dialkylaminoalkyl, 4-methyl-1-piperazinylalkyl, aralkyl, amino, thioureido, or a C-linked nitrogen-containing 5- or 6-membered mononuclear heterocyclyl group, or R_1 and R_2 together with the nitrogen atom to which they are attached collectively represent a 5- or 6-membered mononuclear heterocyclic group, are useful as therapeutics, possessing in particular anti-tussive and anti-fibrillating properties.

3,644,367
17α-AZA-D-HOMOSTEROID[17,17a-e]TETRAZOLES
George Rosenkranz and Pierre Crabbé, Mexico City, Mexico, assignors to Syntex Corporation, Panama, Republic of Panama
No Drawing. Filed Apr. 30, 1968, Ser. No. 725,536
Int. Cl. C07d *10/00*
U.S. Cl. 260—287 R **6 Claims**

17α-aza-D-homosteroid[17,17a-e]tetrazoles of the estrane and androstane series exhibit estrogenic or anabolic activity.

3,644,368
NOVEL QUINOLINES
André Allais, Les Lilas, and Jean Meier, Coeuilly-Champigny, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,398
Claims priority, application France, Dec. 29, 1967, 134,404; Aug. 23, 1968, 163,980
Int. Cl. C07d *33/52*
U.S. Cl. 260—287 R **1 Claim**

Novel 4 - [ortho-(2′,3′-dihydroxypropyloxycarbonyl)-phenyl]-amino-quinolines of the formula



(I)

wherein the CF_3 radical is in the 7 or 8-position, R and R′ are hydrogen and taken together form a ketonide of the formula



P and Q being selected from the group consisting of alkyl aralkyl and aryl and the non-toxic, pharmaceutically acceptable addition salts when R and R′ are hydrogen, which possess notable anti-inflammatory activity and intense analgesic activity.

3,644,369
ISOINDOLO[1,2-a]ISOQUINOLINE-8-ONES
William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Original application Mar. 15, 1967, Ser. No. 623,239, now Patent No. 3,498,988, dated Mar. 3, 1970. Divided and this application Nov. 17, 1969, Ser. No. 877,432
Int. Cl. C07d *57/04*
U.S. Cl. 260—289 R **7 Claims**

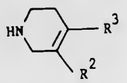
The compounds and certain intermediates are useful as central nervous system stimulants and anti-inflammatories. They are prepared by converting an isoindolo[1,2-a]isoquinoline to its quaternary ammonium salt by treatment with a lower alkyl halide, e.g. methyl iodide, and reducing the salt by sodium in liquid ammonia to cleave the bond common to the five membered ring of the isoindolo moiety and six membered ring to the isoquinolino moiety, thus forming the nine membered N-heterocyclic ring of dibenz[c,f]azonine. For example, 2,3-dimethoxy-7-methyl-5,6,7,8-tetrahydrodibenz[c,f]azonine can thus be prepared from 2,3-dimethoxy-5,6,8,12b-tetrahydroisoindolo[1,2-a]isoquinoline.

3,644,370
ISOINDOLO[1,2-a]ISOQUINOLINES
William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Original application Mar. 15, 1967, Ser. No. 623,239, now Patent No. 3,498,988, dated Mar. 3, 1970. Divided and this application Nov. 17, 1969, Ser. No. 877,452
Int. Cl. C07d *57/04*
U.S. Cl. 260—289 R **8 Claims**

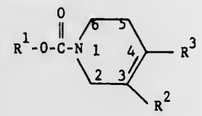
The compounds and certain intermediates are useful as central nervous system stimulants and anti-inflammatories. They are prepared by converting an isoindolo[1,2-a]isoquinoline to its quaternary ammonium salt by treatment with a lower alkyl halide, e.g. methyl iodide, and reducing the salt by sodium in liquid ammonia to cleave the bond common to the five membered ring of the isoindolo moiety and six membered ring to the isoquinolino moiety, thus forming the nine membered N-heterocyclic ring of dibenz[c,f]azonine. For example, 2,3-dimethoxy-7-methyl-5,6,7,8-tetrahydrodibenz[c,f]azonine can thus be prepared from 2,3-dimethoxy-5,6,8,12b-tetrahydroisoindolo-[1,2-a]isoquinoline.

3,644,371
PROCESS FOR THE PRODUCTION OF TETRAHYDROPYRIDINES
Hermann Oediger, Cologne-Flittard, and Rudolf Merten, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,899
Claims priority, application Germany, Sept. 18, 1967, F 54,331
Int. Cl. C07d *29/38*
U.S. Cl. 260—290 H **1 Claim**

Tetrahydropyridine of the formula



is produced by hydrolysing an N-carboalkoxytetrahydropyridine of the formula



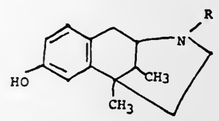
in which R^1 represents a lower alkyl radical, and R^2 and R^3 each represents hydrogen or a lower alkyl radical, but do not simultaneously represent hydrogen, by heating the N-carboalkoxytetrahydropyridine at a temperature of from about 200° C. to 300° C. in a pressure-tight vessel with at least the stoichiometrically necessary quantity of a solid anhydrous alkali metal hydroxide or alkaline earth metal oxide in the absence both of water and of organic solvents.

3,644,372
1-(4-PIPERIDYL) INDENES
Vasken Paragamian, Dresher, Pa., assignor to McNeil Laboratories, Incorporated
No Drawing. Continuation-in-part of application Ser. No. 635,370, May 2, 1967, which is a continuation-in-part of application Ser. No. 422,390, Dec. 30, 1964. This application Jan. 14, 1970, Ser. No. 2,959
Int. Cl. C07d *29/18*
U.S. Cl. 260—293.56 **7 Claims**

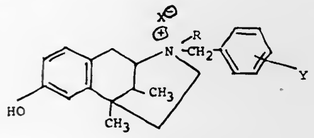
The compounds are of the class of substituted indenes useful for their pharmacological properties as hypotensive agents.

3,644,373
METHOD FOR THE PRODUCTION OF 3-SUBSTITUTED-1,2,3,4,5,6-HEXAHYDRO-6,11-DIMETHYL-8-HYDROXY-2,6-METHANO-3-BENZAZOCINES
Kazuo Kigasawa, Kawasaki, and Mineharu Hiiragi, Nagatoshi Wagatsuma, and Osamu Kusama, Tokyo, Japan, assignors to Grelan Pharmaceutical Co., Ltd., Tokyo, Japan
No Drawing. Filed Dec. 5, 1969, Ser. No. 882,734
Claims priority, application Japan, Dec. 6, 1968, 43/89,044
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 **14 Claims**

A method for producing compounds of the formula



wherein R represents a member from the group of alkyl of up to 10 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, cycloalkylalkyl of 4 to 10 carbon atoms and alkenyl of 2 to 10 carbon atoms, whereby a compound of the formula



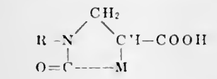
is reacted with thiophenoxide anion.

3,644,374
PROCESS FOR THE PREPARATION OF ACYLATED AMIDES
Raoul Buijle, 44 Dreve Pittoreque, Brussels 18, Belgium, and Heinz G. Viehe, 36 Avenue Schaveys, Beersel, Linkebeek, Belgium
No Drawing. Continuation-in-part of abandoned application Ser. No. 593,651, Nov. 14, 1966. This application Apr. 4, 1969, Ser. No. 813,755
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.88 **1 Claim**

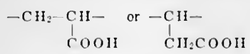
A process for the preparation of acylated amides is disclosed wherein an amide, such as N,N-dimethyl propionamide, is contacted with phosgene in a mole ratio of phosgene to amide of at least about 1.5 to 1. The acylated amide is useful in the preparation of various heterocyclic compositions by ring closure of the amide with compounds having two active hydrogens, such as hydroxyl amines.

3,644,375
LACTAM DICARBOXYLIC ACIDS AND PROCESS FOR PRODUCING THEM
Tsuneo Kobayashi and Kenichi Morita, Kanagawa, Hiroshi Kitagawa, Nagoya-shi, Aichi, Toshimitsu Yokoyama, Aichi, and Shigeo Makida, Kyoto, Japan, assignors to Toray Industries, Inc., Chuo-ku, Tokyo, Japan
No Drawing. Filed May 2, 1969, Ser. No. 821,493
Claims priority, application Japan, Oct. 18, 1968, 43/75,583
Int. Cl. C07d *27/08, 29/22*
U.S. Cl. 260—293.62 **26 Claims**

Lactam dicarboxylic acids represented by the general formula:



R represents a hydrogen atom or a hydrocarbon group having less than 20 carbon atoms. M represents either

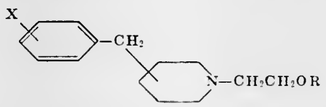


Derivatives of the lactam dicarboxylic acid are also disclosed.

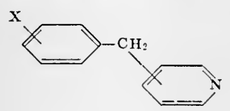
Process for preparing the diester or diamide of the above lactam dicarboxylic acid which comprises reacting 3-butene-1,2,3-tricarboxylic acid triester with ammonia or a primary amine having less than 20 carbon atoms is also disclosed.

3,644,376
1-(β-HYDROXYETHOXY-ETHYL) - 4 - PARA-CHLOROBENZYLPIPERIDINE AND ITS LOWER ALKANOYL DERIVATIVES
Yasunobu Sato, Hiromu Takagi, Teruo Tanaka, and Katsuo Kamoshida, Tokyo, Japan, assignors to Sankyo Company Limited, Chyuo-ku, Tokyo, Japan
No Drawing. Filed Apr. 10, 1969, Ser. No. 815,176
Claims priority, application Japan, Apr. 11, 1968, 43/24,167; Apr. 12, 1968, 43/24,389
Int. Cl. C07d *27/24*
U.S. Cl. 260—293.82 **3 Claims**

Novel benzylpiperidine derivatives having the formula



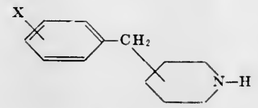
wherein X is a halogen atom, preferably chlorine atom, and R is a hydroxyalkyl group having 2 to 4 carbon atoms, preferably β-hydroxyethyl group, or an acyloxyalkyl group having 2 to 4 carbon atoms in the alkyl moiety, the acyl moiety of which may be an aliphatic acyl group having 2 to 5 carbon atoms or an aromatic acyl group having 6 or 10 carbon atoms in the aromatic ring, preferably β-acetoxyethyl group. These novel benzylpiperidine derivatives are useful as a non-narcotic antitussive agent and they are prepared by (A) reacting a benzylpyridine derivative having the formula



wherein X is as defined above with a substituted alkyl halide having the formula

$$XCH_2CH_2OR$$

wherein R and X are as defined above followed by subjecting the intermediate pyridinium salt to a catalyic reduction or (B) a benzylpiperidine derivative having the formula



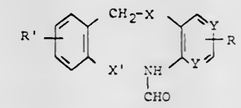
wherein X is as defined above with the above-mentioned substituted alkyl halide.

3,644,377
PROCESS FOR THE PREPARATION OF (4-PYRIDYLTHIO)ACETIC ACID
Chester Sapino, Jr., and Paul David Sleezer, Dewitt, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
No Drawing. Filed Apr. 8, 1970, Ser. No. 26,753
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 G **5 Claims**

A new and more efficient process for the preparation of 4-(pyridylthio)acetic acid has been found which produces yields of approximately 70–95%. The process comprises treating a solution of 4-(1-pyridyl)pyridinium chloride with 2-mercaptoacetic acid preferably with the aid of heat. The compound, (4-pyridylthio)acetic acid is a valuable intermediate in the preparation of biologically active cephalosporins.

3,644,378
PROCESS FOR PREPARING FORMAMIDES
Harry Louis Yale, New Brunswick, and Jelka Pluscec, East Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Filed June 25, 1969, Ser. No. 836,654
Int. Cl. C07d *31/50, 31/48*
U.S. Cl. 260—294.8 F **3 Claims**

An improved process for preparing compounds of the formula



wherein X is oxy or thio; one Y is aza; the remaining Y is



R and R′ are the same or different and represent hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl, trifluoromethylmercapto, trifluoromethoxy or N,N-dimethylaminosulfonyl; and X′ is chloro or bromo, is disclosed. These compounds are useful in the preparation of dihydropyridobenzoxazepines and dihydropyridobenzothiazepines.

3,644,379
2-AMINO-4,5,6,7-TETRAHYDRO - 4,7 - ETHANOTHIENO[2,3-b]PYRIDINES AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF
Ian Wellings, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 23, 1969, Ser. No. 868,898
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 B **7 Claims**

This invention relates to the discovery of a group of compounds herein described as 2-amino-4,5,6,7-tetrahydro-4,7-ethanothieno[2,3-b]pyridines which are effective topically against *Herpes simplex*/H_4/virus, *Herpes simplex*/2/ALA/SM virus and adenovirus-2.

3,644,380

PREPARATION OF 3-CYANOPYRIDINE

Ronald Harmetz, Dover, and Roger J. Tull, Metuchen, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,519
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 8 Claims

A process for preparing 3-cyanopyridine which comprises the steps of reacting 2-methyleneglutaronitrile with chlorine, bromine or iodine and reacting said 2-halo-2-halomethylglutaronitrile with a Lewis acid producing the intermediate compound, 3-halo-dihydro-3-cyano-pyridine wherein the latter compound undergoes dehydro-dehalogenation when reacted with a base and converted to the expected 3 - cyanopyridine(nicotinonitrile). The latter compound is a valuable intermediate for the production of niacin (nicotinic acid), the anti-pellagra B complex vitamin.

3,644,381

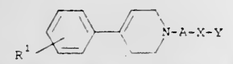
CERTAIN 1 - [3-(LOWER-ALKYL OR PHENYL CARBAMOYLOXY)PROPYL]4 - PHENYL-1,2,3,6-TETRAHYDROPYRIDINES AND DERIVATIVES THEREOF

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Original application Dec. 13, 1967, Ser. No. 690,097, now Patent No. 3,523,950, dated Aug. 11, 1970. Divided and this application Jan. 19, 1970, Ser. No. 4,129
Int. Cl. C07d *31/34*
U.S. Cl. 260—295 CA 8 Claims

There are disclosed compositions of matter classified in the art of chemistry as derivatives of arylpyridinyl-alkyl alcohols as well as processes for making and using such compositions.

The novel chemical compounds are represented by the following formula:



wherein R^1 represents hydrogen, lower alkyl, lower alkoxy or trifluoromethyl; A represents alkylene having 2 to 4 carbon atoms; X represents —O—C(O)—; Y represents phenyl, substituted phenyl, and NHR^2 wherein R^2 represents hydrogen, lower alkyl, phenyl and substituted phenyl.

The pharmaceutically acceptable acid addition salts of the arylpyridinyl-alkyl alcohol derivatives embraced by the above formula are also included within the scope of this invention.

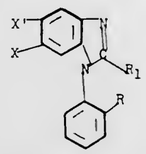
3,644,382

BENZIMIDAZOLE DERIVATIVES OF BENZOIC ACID AND ITS ESTERS AND AMIDES

Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, France, assignors to Roussel-UCLAF, Paris, France

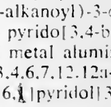
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,298
Claims priority, application France, Mar. 20, 1968, 144,581, June 20, 1968, 155,808, 155,810
Int. Cl. C07d *49/38*
U.S. Cl. 260—295 F 19 Claims

Benzimidazoles of the formula



(I)

wherein X and X′ may be different and are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, trihalomethyl and nitro, R is selected from the group consisting of —COOH, —COOR′, and



R′ is selected from the group consisting of aliphatic and hydroxylated residue of a glycol, A and B are selected from the group consisting of hydrogen and optionally substituted aliphatic and R_1 is selected from the group consisting of hydrogen, lower aliphatic hydrocarbon, unsubstituted and polysubstituted aryl, arylaliphatic, a thienyl, a β-pyridyl and a furyl with the proviso that when R_1 is phenyl, X′ and X are other than halogen, alkoxy and trifluoromethyl which compounds possess anti-inflammatory and antiviral activity and a novel process for their preparation.

3,644,383

MANUFACTURE OF 1,1′-DISUBSTITUTED-4,4′- (OR -2,2′-) BIPYRIDYLIUM SALTS FROM 1,1′-DISUBSTITUTED TETRAHYDROBYPYRIDYLS

John Gerard Carey and John Edward Colchester, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,250
Claims priority, application Great Britain, May 29, 1968, 25,774/68
Int. Cl. C07d *31/42*
U.S. Cl. 260—295 AM 12 Claims

A process for the manufacture of 1,1′-disubstituted-4,4′- (or -2,2′-) bipyridylium salts which comprises reacting the corresponding 1,1′-disubstituted tetrahydrobipyridyl with an inorganic oxyacid anhydride which is capable of accepting hydrogen ions and has a redox potential in water more positive than —1.48 volts as compared with the saturated calomel electrode.

3,644,384

CERTAIN 2-(α-HALOACETYL) - 1,2,3,4-TETRAHYDRO - 9H - PYRIDO[3,4-b]INDOLE-3-CARBOXYLATES AND DERIVATIVES

John W. Schulenberg, Bethlehem, N.Y., assignor to Sterling Drug, Inc., New York, N.Y.

No Drawing. Filed June 9, 1969, Ser. No. 831,750
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 C 3 Claims

New 1,2,3,4,6,7,12,12a-octahydro-2-phenylpyrazino[2′,1′:6,1]pyrido[3,4-b]indoles having useful pyschomotor stimulant properties are prepared by thermal cyclization of a 2-(α-halo-lower-alkanoyl)-3-carbo-lower-alkoxy-1,2,3,4-tetrahydro - 9H - pyrido[3,4-b]indole with an aniline derivative, and alkali metal aluminum hydride reduction of the resulting 1,2,3,4,6,7,12,12a-octahydro-1,4-dioxo-2-phenylpyrazino[2′,1′:6,1]pyrido[3,4-b]indole.

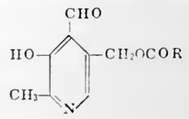
3,644,385

α5-O-ACYL-PYRIDOXAL DERIVATIVES

Isamu Utsumi, Kyoto-shi, Kyoto-fu, Toshiro Watanabe, Takatsuki-shi, Osaka-fu, Keiichi Kohno, Toyonaka-shi, Osaka-fu, Isamu Daira, Kawanishi-shi, and Akira Otsubo, Kobe-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,793
Claims priority, application Japan, Nov. 27, 1967, 42/76,016
Int. Cl. C07d *31/34*
U.S. Cl. 260—295.5 R 3 Claims

α5-O-acyl-pyridoxals according to the formula



and a method of manufacture thereof by oxidation of the corresponding α5-O-acyl-pyridoxine using manganese compounds as oxidizing agents.

3,644,386

2-AMINOALKYL PYRROL-3-YL KETONES

Irwin J. Pachter, 42 Juneau Blvd., Woodbury, N.Y. 11797, and Karl Schoen, 83–36 Beverly Road, Kew Gardens, N.Y. 11415

No Drawing. Application Sept. 1, 1967, Ser. No. 664,942, which is a continuation-in-part of application Ser. No. 575,303, Aug. 26, 1966, which in turn is a continuation-in-part of application Ser. No. 599,387, Dec. 6, 1966. Divided and this application July 15, 1968, Ser. No. 768,565
Int. Cl. C07d *27/26*
U.S. Cl. 260—296 4 Claims

Process for preparing 2-aminoalkyl pyrrol-3-yl ketones and derivatives thereof, and oxopyrroles thus produced. The process is carried out by quaternizing 2-dimethylamino- or 2-piperidinyl-alkyl-pyrrol-3-yl ketones or derivatives thereof, particularly derivatives having bi- and tricyclic nuclei, and reacting the quaternary salts either with a base and an amine, or, alternatively, with an amine only.

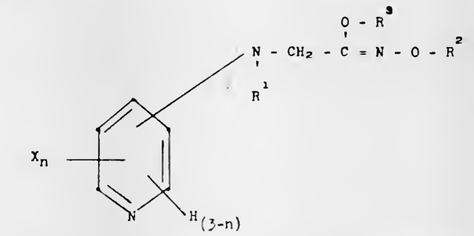
3,644,387

CERTAIN SUBSTITUTED (PYRIDYLAMINO) 2-LOWER-ALKOXY IMINO-2-LOWER-ALKOXY ETHANES

Dietmar H. Olesch, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,172
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 6 Claims

This invention discloses compounds of the general formula



wherein X is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, nitro, haloalkyl and halogen; *n* is an integer from 0 to 3; R^1 is selected from the group consisting of hydrogen and alkyl; R^2 is selected from the group consisting of alkyl and haloalkyl; and R^3 is alkyl. The compounds of the above description are useful as insecticides and acaricides.

3,644,388

PROCESS FOR MAKING 2,3,5-TRICHLORO-4-PYRIDINOL

Clive Dudley Spencer Tomlin, Maidenhead, and Anil Sunderji Mangalji, Loughborough, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,823
Claims priority, application Great Britain, Feb. 25, 1969, 9,954/69
Int. Cl. C07d *31/30*
U.S. Cl. 260—297 R 6 Claims

A process for preparing 4-hydroxy-2,3,5-trichloropyridine, which consists essentially of reacting 4-hydroxy-2,3,5,6-tetrachloro pyridine or an alkali or alkaline earth metal salt thereof which an alkyl-lithium compound in which the alkyl group has 1 to 6 carbon atoms in a liquid diluent at a temperature of up to 20° C. and hydrolizing the resulting product. The compound produced by this process is commercially known as "pyriclor" an effective pre-emergence and post emergence herbicide against a variety of grasses and broadleaf herbs.

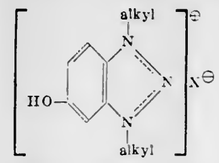
3,644,389

6-HYDROXY-1,3-DIALKYL BENZOTRIAZOLIUM DERIVATIVES

Robert Frédéric Michel Sureau, Enghien-les-Bains, Marie-Josephe Jeanne Alicot, Montmorency, and Victor Marie Dupré, Louvres, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed May 26, 1969, Ser. No. 827,964
Claims priority, application France, Dec. 9, 1965, 41,598
Int. Cl. C07d *55/04;* C07f *3/06;* C09b *29/36*
U.S. Cl. 260—299 4 Claims

The present invention relates to new 6-hydroxy-1,3-dialkylbenzotriazolium salts of the following formula:



(I)

wherein $X^{\ominus}$ represents a monovalent anion and the alkyl groups in positions 1 and 3 are the same or different.

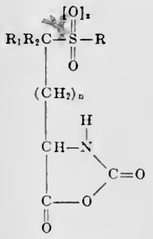
3,644,390

2,5-OXAZOLIDINEDIONE DERIVATIVES OF S-OXIDIZED SULFUR-CONTAINING AMINO ACIDS

Raffaele Bernetti, Palos Park, and David W. Holty, Naperville, Ill., assignors to CPC International Inc.

No Drawing. Filed Dec. 17, 1968, Ser. No. 784,483
Int. Cl. C07d *85/34*
U.S. Cl. 260—307 3 Claims

Amino acid derivatives represented by the following structural formula:



where R is selected from the group consisting of alkyl, aralkyl, aryl, and alkenyl groups, R_1 and R_2 are selected from the group consisting of hydrogen, alkyl, aralkyl, aryl and alkenyl groups, *n* is a positive integer ranging from 0 to 5, and *x* is either 0 or 1. Polypeptides prepared from the above amino acid derivatives are useful as temporary skin substitutes.

3,644,391

PROCESS FOR PREPARING 4(5)-NITRO-IMIDAZOLES

William A. Sklarz, Clark, Victor J. Grenda, Warren, Glenn W. Lindberg, Metuchen, and Albert D. Epstein, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,839
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 3 Claims

Improved process for preparing 4(5)-nitroimidazoles by nitrating imidazole compounds using an anhydrous sul-

furic acid and nitric acid reaction medium containing an excess of free sulfur trioxide during the entire nitration.

3,644,392
1-SUBSTITUTED-5-NITROIMIDAZOLE-2-CARBOXIMIDATES
David W. Henry, Menlo Park, Calif., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Continuation-in-part of application Ser. No. 654,290, May 22, 1967, which is a division of applications Ser. No. 300,675, Aug. 7, 1963, and Ser. No. 567,060, Sept. 12, 1967, now Patent No. 3,341,549. This application May 12, 1969, Ser. No. 823,991
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **7 Claims**

1-substituted - 5 - nitroimidazole-2-carboximidates and 1-substituted - 5 - nitroimidazole-2-carboxylic acid esters are prepared from 2-substituted - 5 - nitroimidazoles by treating a 1-substituted-2-cyano - 5 - nitroimidazole with base and by reacting a 1-substituted-2-cyano-5-nitroimidazole with a lower alkanol in the presence of base and treating the product formed with a mineral acid. The 1-substituted-5-nitroimidazole-2-carboxylic acid esters and the 1-substituted - 5 - nitroimidazole-2-carboximidates are useful as intermediates in the synthesis of biologically active 1-substituted-5-nitroimidazole-2-carboxamides.

3,644,393
LECITHIN MIXTURES AND REACTION PRODUCTS OF 1,2-DISUBSTITUTED IMIDAZOLINE
Helen I. Thayer, Oakmont, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 544,838, Apr. 25, 1966. This application Aug. 29, 1969, Ser. No. 854,277
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **2 Claims**

The mixture and reaction product of lecithin and certain 1,2-disubstituted imidazolines are useful as gasoline antiwear and antifilter-clogging agents.

3,644,394
CONDENSATION PRODUCTS OF N-COUMARIN ALKYLPYRAZOLES AND ALDEHYDES
John Albert Gurney, Tarrytown, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed June 24, 1968, Ser. No. 739,139
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **6 Claims**

Brightening compounds are incorporated as mass brighteners of synthetic polyester and polyacrylonitrile materials to produce a highly fluorescent product characterized by a high degree of retentivity and stability without affecting the desirable properties of the aforesaid synthetic materials. A species of the color brightening compounds is bis [1 - (3-phenylcoumarin-7-yl)-3-methylpyrazol-4-yl]methane.

3,644,395
PHENYLBUTAZONE-SODIUM-MONOGLYCERATE
Heinrich Urwyler, Reinach, Basel-Land, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Filed Dec. 5, 1969, Ser. No. 882,693
Claims priority, application Switzerland, Dec. 11, 1968, 18,458/68
Int. Cl. C07d *49/08*
U.S. Cl. 260—311 **1 Claim**

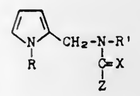
Phenylbutazone-sodium-monoglycerate is prepared in crystalline form; the compound is comprised in pharmaceutical compositions and has advantageous properties in the treatment of inflammatory diseases.

3,644,396
CHRYSANTHEMUM ACID ESTERS OF 1-SUBSTITUTED PYRROLIDINOLS
John Martin Clegg, New York, N.Y., and John Swidinsky, Newark, and Bernard Beau Brown, Westfield, N.J., assignors to CPC International Inc.
No Drawing. Filed June 27, 1968, Ser. No. 740,472
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 **20 Claims**

This application covers chrysanthemum acid esters. More particularly this application covers 1-substituted-3-pyrrolidinol or 1-substituted-3-pyrrolidinyl alkyl esters of chrysanthemum acid, and their use as insecticides.

3,644,397
SUBSTITUTED 2-AMINOMETHYLPYRROLES
Stephen Raines, Plymouth Meeting, Pa., and Csaba A. Kovacs, Hyattsville, Md., assignors to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Nov. 12, 1968, Ser. No. 775,145
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.3 **7 Claims**

Compounds having the generic formula:



wherein R and R′ may be hydrogen or lower alkyl; X may be either oxygen or sulfur; and Z may be lower alkyl, lower alkoxy, phenyl, halophenyl, alkoxyphenyl, benzyl, anilino, lower alkylamino, cyclohexylamino, or phenylacetoxymethyl, have useful pharmacological properties as central nervous system depressants. The compounds are prepared by reacting the desired substituted 2-aminomethylpyrrole with acid chlorides or anhydrides, isocyanates, isothiocyanates, or chloroformates to give the desired amide, urea, thiourea, or carbamate derivative.

3,644,398
1-CARBAMOYL-3-PHENYLPYRROLIDINES
Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.
No Drawing. Filed Apr. 11, 1969, Ser. No. 815,496
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 **7 Claims**

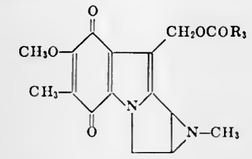
1-carbamoyl-3-phenylpyrrolidines useful as muscle relaxants and anticonvulsants are disclosed. The compounds are prepared by reacting 3-phenylpyrrolidines with lower-alkyl isocyanates and N,N-dilower alkyl carbamoyl halides.

3,644,399
PYRROLE LOWER ALKANOIC ACIDS AND DERIVATIVES
Kevan Brown, Reading, and John Frederick Cavalla, Iseworth, Middlesex, England, assignors to John Wyeth & Brothers Limited, Taplow, England
No Drawing. Filed May 1, 1969, Ser. No. 821,075
Claims priority, application Great Britain, May 7, 1968, 21,615/68
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.3 **7 Claims**

The invention concerns diaryl furan, thiophene, and pyrrole lower alkanoic acids and derivatives which are pharmacologically efficacious as anti-inflammatory agents.

3,644,400
AZIRIDINO MITOSENES
Keizo Uzu, Kinichi Nakano, and Toshinaka Takahashi, Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed July 8, 1969, Ser. No. 839,921
Claims priority, application Japan, July 23, 1968, 43/51,644
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.3 **9 Claims**

A process for preparing compounds of the formula



is provided wherein R_3 's NH_2 or lower alkyl. These compounds are antibiotics.

3,644,401
N-(2-BENZOYLPHENYL)-2-PYRROLIDINONES
Peter H. L. Wei, Upper Darby, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed June 10, 1968, Ser. No. 735,534
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 **2 Claims**

The invention is directed to N-aryl-2-benzoyl-α-oxocyclopolymethylene amines which have anticonvulsant properties particularly in preventing convulsions such as are produced by metrazol or electric shock.

3,644,402
PROCESS FOR PRODUCING α-PYRROLIDONE
Kazumi Takagi, Teruo Matsuda, and Masahiro Murakami, Niihama-shi, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan
No Drawing. Filed May 6, 1969, Ser. No. 822,307
Claims priority, application Japan, May 16, 1968, 43/33,083
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 **8 Claims**

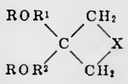
High yields of α-pyrrolidone are obtained by reacting succinonitrile with hydrogen under pressure in the presence of a hydrogenating catalyst at a temperature of 80° to 200° C. in a nitrogen-containing basic organic solvent for a reaction period shorter than 3.7 minutes and then contacting the thus obtained reaction mixture with water or aqueous ammonia solution at a temperature of 200° to 300° C. Alpha-pyrrolidone is useful as an important raw material of 4-nylon and as a raw material for the production of N-methyl pyrrolidone and N-vinyl pyrrolidone, both useful as a high boiling solvent, or as a fiber raw material.

3,644,403
3-SUBSTITUTED-1-PHENYL-INDOLINES
Antonio Canas-Rodriguez and Peter R. Leeming, Canterbury, England, assignors to Pfizer Inc., New York, N.Y.
No Drawing. Filed Dec. 15, 1969, Ser. No. 885,321
Claims priority, application Great Britain, Dec. 18, 1968, 60,083/68
Int. Cl. C07d *27/38*
U.S. Cl. 260—326.11 **4 Claims**

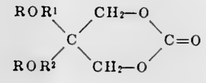
Novel 3-mono-aminoalkyl - 1 - phenyl - indolines and 2-indolinones are disclosed.

3,644,404
PROCESS FOR PREPARING HETEROCYCLIC POLYOLS AND ETHER DERIVATIVES
Peter E. Throckmorton, Prior Lake, Minn., assignor to Ashland Oil, Inc., Houston, Tex.
No Drawing. Filed Apr. 21, 1967, Ser. No. 632,562
Int. Cl. C07d *61/00*
U.S. Cl. 260—327 **6 Claims**

In abstract, the specification discloses a process for preparing a heterocyclic compound of Formula I:

(I) 

comprising reacting a carbonate of Formula II:

(II) 

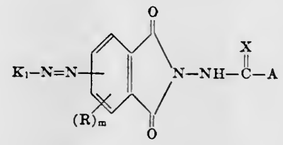
with an alkali metal thio or seleno cyanate of Formula III:

(III) QXCN

and formation of the heterocyclic compound by pyrolysis or hydrolysis of said reaction product. In the above formulae, X is sulfur or selenium, R^1 and R^2 are alkylene radicals of 0 to 8 carbon atoms, R is alkyl of from 1 to 8 carbon atoms or hydrogen and Q is an alkali metal. The polyols of Formula I are used as radiation inhibitors in the products of ADM–446.

3,644,405
PHTHALIMIDE CONTAINING MONOAZO DYESTUFFS
Walter Horstmann, Cologne, Dietmar Kalz, Leverkusen, Gerhard Wolfrum, Opladen, and Edgar Siegel, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,225
Claims priority, application Germany, Dec. 6, 1967, P 16 44 236.7
Int. Cl. C09b *29/36*
U.S. Cl. 260—156 **2 Claims**

Monoazo dyestuffs free from sulfonic acid groups are prepared which are valuable new pigment dyestuffs characterized by good fastness to light, solvents and migration, and by a good thermal stability when used for coloring papers, lacquers, varnishes, synthetic materials, pigment paste and printing colors. The dyestuffs correspond to the general formula



where A stands for an optionally substituted alkyl, aralkyl, carbocyclic or heterocyclic radical or for the radical



where

R_1 and R_2, independently of one another, mean hydrogen, an optionally substituted alkyl, aralkyl or aryl radical;
X stands for an oxygen or sulfur atom or for NH;
K_1 is the radical of a monofunctional coupling component;
R is a substituent; and
m is an integer from 0–3.

3,644,406

WATER SOLUBLE AZOFORMATE ESTERS

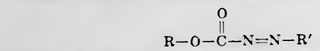
Chester Stephen Sheppard, Tonawanda, and Ronald Edward MacLeay, Williamsville, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,342

Int. Cl. C07c *107/00, 107/02, 107/04*

U.S. Cl. 260—192 **5 Claims**

Water soluble azoformate esters of the formula



wherein at least one of R and R′ contains a water solubilizing group, such as 2-hydroxyethyl t-butylazocarboxylate which are useful as polymerization initiators in aqueous medium for polymerization reactions such as vinyl monomer polymerization by the emulsion technique.

3,644,407

PROCESS FOR THE PREPARATION OF STEROIDAL COMPOUNDS BY CYCLIZATION OF A AND B RINGS

Michael Rosenberger, Bloomfield, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,135

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 C **7 Claims**

Tetracyclic steroidal molecules may be prepared by simultaneous cyclization of the A and B ring. The substrate for this cyclization process is a bicyclic polyketone. The reaction is conducted in the presence of an acid or preferably an acid-base complex system. In a specific embodiment 4-(3,7-dioxo-octyl) - 1a - methylperhydroindan-1,5-dione is converted into 19-nor-androsta-4,9(10)-dien-3,17-dione in the presence of piperidine acetate. The steroidal compounds prepared by the process described herein are useful intermediates in the preparation of steroids having valuable pharmacological activity.

3,644,408

PROCESS FOR PREPARING MORPHOLINE DISULFIDE

Harry E. Hill, Wallingford, Conn., assignor to R. T. Vanderbilt Company, Inc., New York, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,440

Int. Cl. C07d *87/46*

U.S. Cl. 260—246 B **11 Claims**

This disclosure is concerned with an improved process for preparing morpholine disulfide from morpholine and sulfur monochloride. In the improved process, morpholine, solvent, a critical amount of water and a critical amount of alkali metal hydroxide are mixed prior to any sulfur monochloride addition.

3,644,409

RADIOPAQUE COMPOUNDS AND METHODS OF PREPARING THE SAME

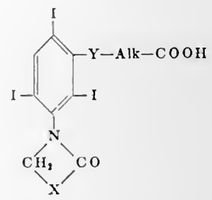
Ernst Felder and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica, Societa per Azioni, Milan, Italy

No Drawing. Continuation of application Ser. No. 709,778, Mar. 1, 1968. This application May 28, 1970, Ser. No. 41,724

Int. Cl. C07d *27/08, 29/22, 87/30*

U.S. Cl. 260—247.2 **11 Claims**

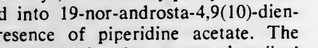
Compounds of the formula



are radiopaque, tend to collect in the gall bladder when ingested orally, and are well tolerated, if X has 2–4 carbon atoms and is alkylene or alkylenoxyalkylene, Y is a single carbon-to-carbon bond or oxygen, and Alk is lower alkylene or phenyl-lower-alkylene having not more than four carbon atoms in the alkylene group. The physiologically tolerated salts of the above carboxylic acids have the same effects. The compounds are prepared by closure of the ring



when otherwise similar compounds having the group



are exposed to alkali metal hydroxide in a strongly alkaline aqueous medium and are precipitated when the medium is acidified after ring formation.

3,644,410

PREPARATION OF TRIALLYL CYANURATE

Harry D. Gregg, Jr., and Howard V. Lemaster, Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,221

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **7 Claims**

Triallyl cyanurate is prepared by reacting allyl alcohol with cyanuric chloride in the presence of an alkaline agent under specific conditions allowing the preparation of a very pure product.

3,644,411

BIOSTATIC USE OF SUBSTITUTED PHENYL-SULFONYL-HYDROXAMINES

Don R. Baker, 3136 Estates Ave., Pinole, Calif. 94564; Llewellyn W. Fancher, 1662 Foothill Park Circle, Lafayette, Calif. 94549; and Malcolm B. McClellan, 1112 Arlington Lane, San Jose, Calif. 95129

No Drawing. Continuation of application Ser. No. 823,217, Feb. 14, 1969, which is a division of application Ser. No. 568,372, July 28, 1966, now Patent No. 3,458,570. This application July 13, 1970, Ser. No. 56,195

Int. Cl. A01n *9/16, 9/20, 9/30*

U.S. Cl. 424—286 **12 Claims**

This invention relates to the use of certain N-substituted phenylsulfonylhydroxyamines in bacteriostatic and fungistatic composition.

3,644,412

PROCESS FOR THE PRODUCTION OF N-CARBOXY ANHYDRIDES AND AMINO ACIDS AND DERIVATIVES THEREOF

Yasuo Fujimoto and Masayuki Teranishi, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

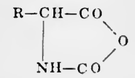
No Drawing. Filed Aug. 23, 1968, Ser. No. 754,999

Claims priority, application Japan, Aug. 23, 1967, 42/53,745

Int. Cl. C07d *85/34*

U.S. Cl. 260—307 B **6 Claims**

A process for the preparation of N-carboxy anhydrides of amino acids having the general formula:



which comprises reacting an amino acid or the salts thereof with phosgene in the presence of an organic triester of phosphoric acid. Preferably, the reaction is carried out with heating in an organic solvent.

3,644,413

3-PHENYL COUMARINS

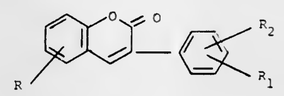
Durvasula V. Rao, Hamden, Adnan A. R. Sayigh, North Haven, and Henri Ulrich, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,062

Int. Cl. C07d *7/28*

U.S. Cl. 260—343.2 **8 Claims**

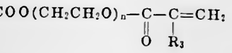
Novel alkoxy-substituted 3-phenylcoumarins of the formula:



wherein R is lower alkoxy, R_1 is $NHCOCH_3$,

$NHCOCH{=}CH_2$, NCO

or



wherein *n* is an integer of from 1 to 3 inclusive and R_3 is alkyl of from 1 to 4 inculsive carbon atoms, and R_2 is H or R_1 are prepared. Such compounds are useful, by virtue of fluorescence in ultraviolet light, as optical brighteners, as ultraviolet stabilizers for plastics such as polyethylene, polyvinylchloride, etc., in the preparation of polyurethane and vinyl polymers and in the preparation of photoresist resins.

3,644,414

1-SUBSTITUTED-3-PHENYLPYRROLIDINES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed Apr. 11, 1969, Ser. No. 815,495

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.3 **4 Claims**

1-substituted-3-phenylpyrrolidines useful as muscle relaxants and anticonvulsants are disclosed. The compounds are prepared from 3-phenylpyrrolidines.

3,644,415

THIABICYCLONONANES AND PROCESS

Edward D. Weil, Yonkers, and Keith J. Smith, Lockport, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 482,261, Aug. 24, 1965. This application Aug. 22, 1968, Ser. No. 754,732

Int. Cl. C07d *63/04, 65/04*

U.S. Cl. 260—327 **12 Claims**

Beta-substituted 9 - thiabicyclo[3.3.1]nonanes, 9-thiabicyclo[4.2.1]nonanes and the 9-oxides and 9-dioxides thereof are new compounds possessing insecticidal and, fungicidal, nematocidal antibacterial, and herbicidal activities.

3,644,416

SUBSTITUTED 9-THIABICYCLONONENES

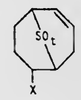
Edward D. Weil, Yonkers, and Keith J. Smith, Lockport, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 482,297, Aug. 24, 1965, which is a continuation-in-part of application Ser. No. 260,909, Feb. 25, 1963. This application Aug. 23, 1968, Ser. No. 754,980

Int. Cl. C07d *65/04;* **A01n** *9/12*

U.S. Cl. 260—327 TH **16 Claims**

Compounds of the formula



wherein *t* is from 0 to 2, and X is a substituent selected from the group consisting of halogen, hydrocarbyloxy, hydrocarbylthio, acyloxy, acylthio, amino or substituted amino, carboxyl, or salt, nitrile, amide, ester or acid halide of carboxyl, —NCO and —NCS.

3,644,417

CORONARY VASODILATOR COMPOUNDS

Abraham Weber, Paris, Jacques Frossard, Champigny, and Daniel Bouzard, Franconville, France, assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed July 2, 1969, Ser. No. 838,671

Int. Cl. C07d *93/42;* **A61k** *27/00*

U.S. Cl. 260—327 B **3 Claims**

5,5-dioxo-6-methyl-11 - [13 - (N-methyl-N-(1-phenyl-2-propyl)amino)propyl]dibenzo[1,2,5]thiadiazepine possesses coronary vasodilator action and freedom from side effects such as tachycardia and sedative action.

3,644,418
2,2-BIS(p-CHLOROPHENYL)-3,3-DIMETHYLOXETANE

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

No Drawing. Filed Feb. 13, 1969, Ser. No. 799,111
Claims priority, application Australia, Feb. 20, 1968, 33,896/68
Int. Cl. C07d 3/00
U.S. Cl. 260—333 1 Claim

The invention provides a new compound 2,2-bis(p-chlorophenyl)-3,3-dimethyloxetane having insecticidal properties. It may be made by irradiating a mixture of 4,4'-dichlorobenzophenone and isobutylene with ultra-violet radiation or by reacting p-chlorobenzenemagnesium halide with β-bromopivaloyl chloride.

3,644,419
2,3,4,9 - TETRAHYDRO - 9 - PHENYL-OXAZIRINO-[2,3-d][1,4]BENZODIAZEPINES AND PREPARATION THEREOF

Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 19, 1967, Ser. No. 647,226, now Patent No. 3,498,973, dated Mar. 3, 1970, which is a division of application Ser. No. 267,908, Mar. 25, 1963. Divided and this application Dec. 5, 1969, Ser. No. 882,745
Int. Cl. C07d 53/06, 85/02
U.S. Cl. 260—333 1 Claim

Novel 2,3,4,9-tetrahydro - 9 - phenyl-oxazirino[2,3-d]-[1,4]benzodiazepines and preparation thereof prepared via oxidation of 2,3-dihydro-5-phenyl-1H-1,4-benzodiazepines, are described. These novel products are useful as intermediates in the preparation of 2,3-dihydro-5-phenyl-1H-1,4-benzodiazepine 4-oxides, useful as anti-convulsant agents.

3,644,420
XANTHENE DERIVATIVES

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Filed Aug. 23, 1967, Ser. No. 662,587
Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67
Int. Cl. C07d 7/42
U.S. Cl. 260—335 3 Claims

Xanthene derivatives having utility in the treatment of peptic ulceration.

3,644,421
4-OXA-3-KETO-Δ^1-PREGNENE DERIVATIVES

Alexander D. Cross, Mexico City, Mexico, assignor to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 411,554, Nov. 16, 1964, now Patent No. 3,417,106. This application Dec. 2, 1968, Ser. No. 780,580
Int. Cl. C07d 19/00
U.S. Cl. 260—340.5 8 Claims

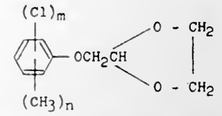
This discloses, as new compounds, 4-oxa-3-keto-Δ^1-pregnene steroids including the 19-nor derivatives and those containing optional substitutions at positions C–16 and C–17α. These compounds are progestational agents, have anti-androgenic, anti-gonadotrophic, and estrogenic properties and are useful in fertility control, in the treatment of premenstrual tensions, in lowering blood cholesterol levels, and in the treatment of acne, benign prostate hypertrophy and hirsutism. Also disclosed are methods and intermediates useful for the preparation of these compounds.

3,644,422
2-(SUBSTITUTED PHENOXYMETHYL) DIOXOLANES

Akihiko Mine, Minoo-shi, Takeo Satomi, Takarazuka-shi, Naganori Hino and Katsuzo Kamoshita, Toyonaka-shi, and Yoshitsugu Suzuki and Shinji Nakai, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Mar. 26, 1970, Ser. No. 22,996
Claims priority, application Japan, Apr. 7, 1969, 44/27,050
Int. Cl. C07d 13/04
U.S. Cl. 260—340.9 4 Claims

Phenoxyacetaldehyde ethyleneacetal derivatives represented by the formula,



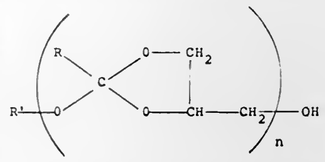
wherein *m* and *n* are 0 or an integer of 1 to 5, and the sum of *m* and *n* is 1 to 5, which may be useful as herbicidal compositions with high herbicidal activities on both broad-leaved and grass weeds and lower toxicities on fishes.

3,644,423
ORTHOESTERS DERIVED FROM GLYCEROL

David F. Roswell, Baltimore, David E. Kramm, Laurel, and Louis L. Wood, Potomac, Md., and Thomas R. Steadman, Convent Station, N.J., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 574,259, Aug. 22, 1966. This application June 10, 1969, Ser. No. 832,030
Int. Cl. C07d 13/04
U.S. Cl. 260—340.9 4 Claims

In abstract, this invention is directed to an orthoester having the formula



where R is hydrogen or lower alkyl and R' is lower alkyl and *n* is an integer from 1–20 and to a method for preparing said orthoester by reacting glycerol with an orthoester having the formula $R—C(OR')_3$ where R and R' are as defined supra, all as recited hereinafter.

3,644,424
GLYCERYL ACETYLSALICYLATE AND ITS ANALGESIC ANTI-INFLAMMATORY USE

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 629,414, Apr. 10, 1967. This application Oct. 16, 1969, Ser. No. 867,061
Int. Cl. C07d 13/04; C07c 69/84
U.S. Cl. 260—340.9 2 Claims

The invention relates to glyceryl acetylsalicylate, to its use as an analgesic anti-inflammatory agent, and to the intermediates useful in the preparation thereof. Glyceryl acetylsalicylate is prepared as follows: Heat salicylic acid and chloroacetonitrile at reflux in the presence of triethylamine and transesterify the resulting cyanomethyl salicylate with excess quantities of 2,2-dimethyl-1,3-dioxolane-4-methanol by heating in the presence of potassium carbonate to yield β,γ - isopropylidenedioxypropyl salicylate. Acetylate the sodium salt of β,γ-isopropylidenedioxypropyl salicylate and hydrolyze the resulting β,γ-isopropylidenedioxypropyl-o-acetoxybenzoate to yield β,γ-dihydroxypropyl-o-acetoxybenzoate. Alternate methods for the preparation of the desired compounds are also described.

3,644,425
10-METHYL-13-ETHYLGON-4,9(11)-DIENES

Herchel Smith and David R. Herbst, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

Original application Aug. 4, 1967, Ser. No. 658,444, now Patent No. 3,491,131, dated Jan. 20, 1970. Divided and this application Apr. 9, 1969, Ser. No. 821,546
Int. Cl. C07d 101/00
U.S. Cl. 260—343.2 S 1 Claim

10β - methyl-13β-ethylgon-4,9(11)-dienes having progestational and antiestrogenic activity are prepared from 13β-ethylgon-4-enes by a sequence of reactions, including ozonization at the 4-position unsaturation, introduction of unsaturation at the 9-position, addition of a methyl group at the 10-position, and reformation of the A-ring.

3,644,426
PREPARATION OF DELTA VALERO-LACTONES

Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 578,505, Sept. 12, 1966. This application Aug. 15, 1969, Ser. No. 850,668
Int. Cl. C07d 7/06
U.S. Cl. 260—343.5 10 Claims

Lactones may be prepared by treating mercaptans or disulfides with an oxidizing agent such as dimethyl sulfoxide in the presence of a polar solvent such as an alcohol, in an alkaline solution, such as sodium hydroxide at an elevated temperature. Thus, n-propyl mercaptan can be converted to alpha, gamma-dimethyl delta-valerolactone.

3,644,427
SYNTHESIS OF 3-HALOALKYL HYDROCARBON-CARBOXYLATES AND 4-HALOTETRAHYDRO-PYRANS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,311
Int. Cl. C07d 7/04; C07c 69/00
U.S. Cl. 260—345.1 9 Claims

A 3-haloalkyl hydrocarboncarboxylate and a 4-halotetrahydropyran are produced by reacting a 1-alkene, $(HCHO)_n$, a hydrogen halide and an acid halide at a temperature in the range of −80 to −30° C., wherein *n* is the integer 1 or greater.

3,644,428
PRINS-TYPE REACTIONS

Hugh Stewart Inglis, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 22, 1969, Ser. No. 843,827
Claims priority, application Great Britain, Aug. 29, 1968, 41,358/68
Int. Cl. C07d 7/08, 15/02
U.S. Cl. 260—345.1 16 Claims

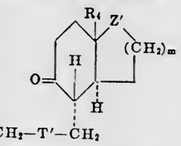
A process for reacting a conjugated diolefin, e.g. 1,3-butadiene, with formaldehyde to give a product comprising a major proportion of a dihydropyran, e.g. 5,6-dihydro-2H-pyran in which the reaction takes place in the presence of a Lewis acid catalyst and a substantially non-aqueous solvent.

3,644,429
SUBSTITUTED BENZ[e]INDENES AND PHENANTHRENES AND PROCESS

Zoltan George Hajos, Upper Montclair, and Eugene Paul Oliveto, Glen Ridge, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 687,463, Dec. 4, 1967, which is a continuation-in-part of application Ser. No. 544,677, Apr. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 495,672, Oct. 13, 1965. This application Dec. 23, 1968, Ser. No. 786,445
Int. Cl. C07d 7/04
U.S. Cl. 260—345.9 7 Claims

Methods for the preparation of 2,3,3a,4,5,7,8,9,9aβ,9bα-decahydro - 3aβ - primary lower alkyl - 7 - oxo - 1H-benz[e]indenes and 4,4aβ,4bα,5,6,7,8,8a,9,10 - decahydro-8aβ - primary lower alkyl - 3H - phenanthren - 2 - ones by cyclizing compounds of the formula



wherein R_1 is hydrogen or lower alkyl; Z' is carbonyl or $CH(OR_2')$; R_2' is hydrogen, lower alkyl, lower alkanoyl, benzoyl, nitrobenzoyl, carboxy-lower alkanoyl, carboxybenzoyl, trifluoroacetyl or camphorsulfonyl; T' is $—C(X')=CH—$, $—C(OR_3)=CH—$ or $—Q'—CH_2—$; R_3 is lower alkyl; X' is bromine, chlorine or iodine; Q' is carbonyl, lower alkylene dioxy-methylene, di-(lower alkoxy)-methylene or hydroxy-methylene, R_4 is lower primary alkyl and *m* is an integer having a value of 1 or 2.

The compounds of this series are useful as intermediates in the synthesis of known steroids which are pharmacologically active as fertility control agents.

3,644,430
UNSATURATED ALDEHYDE

Karl-Heinrich Schulte-Elte, Geneva, Switzerland, assignor to Firmenich & Cie, Geneva, Switzerland

No Drawing. Filed July 25, 1969, Ser. No. 845,101
Int. Cl. C07d 1/12
U.S. Cl. 260—348 R 3 Claims

4,5-epoxy-2-penten-1-al, which is useful as an intermediate in various organic syntheses, is disclosed together with a process for its preparation which comprises oxidizing cyclopentadiene by means of singlet oxygen.

3,644,431
DIGLYCIDYL ESTERS OF ALIPHATIC DICARBOXYLIC ACIDS

Alfred Heer, Birsfelden, and Werner Schaffner, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,578
Claims priority, application Switzerland, Sept. 30, 1968, 14,560/68
Int. Cl. C07d 1/18
U.S. Cl. 260—348 A 10 Claims

New diglycidyl esters of branched-chain paraffin-dicarboxylic acids, the carboxyl groups of which are linked by a linear C_1–C_{10}-alkylene chain which is substituted by 2 to 6 C_1–C_4-alkyl groups, above all technical trimethyladipic acid diglycidyl ester. Compared to the known adipic acid diglycidyl esters, the new diglycidyl esters inter alia possess the advantages of storage stability, of greater difficulty of saponification of the ester groups and of lesser water absorption of the cured mouldings. The relatively low curing temperatures required with the usual hot-curing agents (for example 60–70° C. with hexahydrophthalic anhydride) are surprising. Trimethyladipic acid diglycidyl ester is above all suitable for use as reactive diluent for

other epoxide resins, because in contrast to the known diluents the mechanical properties of the cured mouldings are not worsened, but on the contrary, are improved.

3,644,432

PROCESS FOR RECOVERING ETHYLENE OXIDE

Robert Hoch, Brooklyn, and Harold Gilman, Millwood, N.Y., assignors to Halcon International, Inc.

Continuation-in-part of application Ser. No. 651,012, July 3, 1967. This application Sept. 30, 1969, Ser. No. 862,341

Int. Cl. C07d *1/14*

U.S. Cl. 260—348 4 Claims

This invention relates to a process for the recovery of ethylene oxide from the rich cycle gas resulting from the vapor phase reaction of ethylene with molecular oxygen under ethylene oxide forming conditions. Recovery is effected by scrubbing the rich cycle gas with a non-aqueous liquid absorbent in a dry system at cryogenic conditions and thereafter stripping the absorbent from ethylene oxide absorbate which is then refined to the desired product. Advantages of the process reside in the elimination of the usual glycol make accompanying recovery in an aqueous system and in the abtention of high ethylene oxide concentrations in the liquid phase. The inventive process may advantageously provide an absorbent inventory for continuous process operation by condensation and recycling of overhead absorbent from the stripper. The invention is of particular value in an ethane ballasted-high purity oxygen system utilizing liquid ethane as absorbent; the high ethane partial pressures may be availed of to raise the temperature level of the refrigeration required and thereby reduce its cost.

3,644,433

INCREASING AUTOIGNITION TEMPERATURE OF CS_2

John A. Bichard, Point Edward, Ontario, and Jackson Eng, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,489

Int. Cl. C23g *5/04*

U.S. Cl. 252—364 2 Claims

A composition of matter suitable for cleaning oil and gas wells and for sulfiding a hydrotreating catalyst which comprises carbon disulfide containing 5–40 lv. percent, preferably 10–30%, of a refinery stream boiling below 250° F., chosen from the group consisting of catalytically cracked naphtha and coker naphtha.

3,644,434

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE ELASTOMER MATERIALS

Paul Hittmair, Wolfgang Kaiser, Siegfried Nitzsche, and Ernst Wohlfarth, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,771

Claims priority, application Germany, Dec. 14, 1967, W 45,346

Int. Cl. C08k *1/10*

U.S. Cl. 260—375 B 6 Claims

Non-slump room temperature vulcanizable silicone rubber formulations based on hydroxyl endblocked linear siloxane polymers and amino cross-linking agents are prepared by adding silica fillers with surface area in the range from 100 to 200 $m.^2/g.$ and alkali aluminum silicate or alkali earth metal aluminum silicate molecular sieve to the formulations.

3,644,435

6-ALKYL OR 6-ALKENYL-2,3-DIMETHOXY-5-HYDROXY-1,4-BENZOQUINONES AND HYDROQUINONES

Karl Folkers, 177 Gaya Road, Portola Valley, Calif. 94026; Joseph C. Catlin, 872 Colorado Ave., Palo Alto, Calif. 94303; and Glenn Doyle Daves, Jr., 1530 SE. Blakeney, Beaverton, Oreg. 97005

No Drawing. Filed June 20, 1968, Ser. No. 738,393

Int. Cl. C07c *49/74, 43/22*

U.S. Cl. 260—396 R 13 Claims

The disclosure describes novel 6-alkyl and 6-alkenyl derivatives of 2,3 - dimethoxy - 5-hydroxy-1,4-benzoquinones and hydroquinones which are useful as antioxidants and inhibitors of succinoxidase and DPNH-oxidase in mitochondrial systems. The compounds are prepared by reacting 2,3 - dimethoxy - 5-hydroxy-1,4-benzohydroquinone with an allylic alcohol or by decomposing a diacylperoxide in the presence of 2,3-dimethoxy-5-hydroxy-1,4-benzoquinone.

3,644,436

BIS(AMIDINOHYDRAZONES) OF STEROIDAL DIONES

Gerhard R. Wendt, Havertown, Kurt W. Ledig, Philadelphia, and Daniel M. Teller, King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 594,390, Nov. 15, 1966. This application Apr. 30, 1969, Ser. No. 820,646

Int. Cl. C07c *169/00*

U.S. Cl. 260—397 8 Claims

The disclosure is directed to bis(amidinohydrazones) of gona-3,17-diones and 18,19-dinorpregna-3,20-diones. The compounds have cardiotonic activity.

3,644,437

17α - ALKYNYL - 17β-ALKYLGON-13-ENES, PROCESSES THEREFOR AND PRODUCTS THEREFROM

Reinhardt P. Stein, Conshohocken, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,448

Int. Cl. C07c *169/08, 169/22*

U.S. Cl. 260—397.3 21 Claims

Compounds of the 17α-(lower) alkynyl-17β-(lower) alkylgon - 13 - ene series, optionally substituted at C–16 with (lower)alkyl (I) are provided by treating the corresponding 17α - (lower)alkynyl - 13β - (lower)alkylgon-17β-ols (II) with a solution of phosphorus oxychloride in dimethylformamide at elevated temperatures for relatively short reaction times. Compounds (I) of the gona-1,3,5(10)-triene series and the esters of the gona-5-en-3-ol series are useful to prepare progestationally and anti-androgenically active compounds by known methods.

3,644,438

6-HYDROXYMETHYL-15β,16β-METHYLENE PREGNENES AND PROCESS

Andor Furst, Basel, Dieter Kagi, Allschwil, Marcel Muller, Frenkendorf, and Peter Muller, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,737

Claims priority, application Switzerland, Apr. 23, 1969, 6,142/69

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.4 6 Claims

Medicinally valuable 6-methyl-15β,16β-methylene pregnenes are obtained from novel correspondingly substituted 6-hydroxymethyl-15β,16β-methylene pregnenes by a two step procedure. The 6-hydroxymethyl-15β,16β-methylene pregnenes are obtained by treatment of a 6-unsubstituted-15β,16β-methylene pregnene with formaldehyde.

3,644,439

3-HYDROXY- AND 3-ETHER-1,3,5(10),7-DEHYDROSTEROIDS

Gordon Hanley Phillipps, Greenford, Middlesex, England, assignor to Glaxo Laboratories, Limited, Greenford, England

No Drawing. Continuation-in-part of application Ser. No. 559,066, June 21, 1966. This application Mar. 4, 1969, Ser. No. 804,280

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 19 Claims

The process comprises the general steps of reacting a 2,5(10),7-dehydrosteroid-3-ether with a halogenating agent and subsequently dehydrohalogenating the reaction product to yield a 3-hydroxy- or 3-ether-1,3,5(10),7-dehydrosteroid. Conveniently the initial reaction is carried out in a basic medium. The compounds according to the invention comprise 17α-ethynyl-3-methoxyoestra-2,5(10),7 - trien-17-β-ol 17α-ethynyl-3-methoxyoestra-1,3,5(10),7-tetraen-17β-ol and its 17-acetate, 17α-chloroethynyl-3-methoxyoestra-1,3,5(10),7-tetraen-17β-ol and 3 - cyclopentyloxy-17α-ethynyloestra-1,3,5(10),7-tetraen-17β-ol.

3,644,440

6-SUBSTITUTED-13-POLYCARBON-ALKYL-18,19-DINORPREGN-4-EN-3-ONES

George H. Douglas, Paoli, Daniel M. Teller, King of Prussia, and Herchel Smith, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 748,606, July 30, 1968. This application May 19, 1969, Ser. No. 825,974

Int. Cl. C07c *169/32, 169/34*

U.S. Cl. 260—397.4 2 Claims

New steroids of the 13 - polycarbonalkyl-18,19-dinorpregn-4-en-3-one series and Δ^6-dehydro analogs thereof, substituted at C_6 by methyl, chloro, bromo or fluoro; at C_{17} by hydrogen, hydroxy or acyloxy, and wherein C_{20} is carbonyl, hydroxymethylene or acyloxymethylene (I) have hormonal activity, especially as progestational and anti-estrogenic agents. Means to obtain them are provided comprising (a) hydrogenating the corresponding 6-methylene compound (II) to form the 6α-methyl-4-en-3-one (Id); (b) rearranging (II) with a weak base+Pd/C to form the 6-methyl-4,6-dien-3-one (Ie); (c) chlorinating or brominating the corresponding 3-enol ester (III) to form the 6-chloro or -bromo-4-en-3-one (If); and (d) either (1) dehydrogenating (If) with chloranil to form the 6-chloro or -bromo-4,6-dien-3-one (Ig), or preferably, (2) reacting the corresponding 6α,7α-epoxide (IV) with HCl, HBr or HF to form the corresponding 6-chloro, -bromo or -fluoro-4,6-dien-3-one (Ih).

3,644,441

METHOD FOR THE PRODUCTION OF 21-FLUORO-4,6-PREGNADIENES

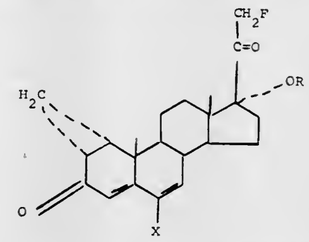
Rudolf Wiechert, Friedmund Neumann, and Henry Laurent, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Continuation of application Ser. No. 659,000, Aug. 8, 1967. This application Nov. 17, 1969, Ser. No. 871,613

Int. Cl. C07c *167/28*

U.S. Cl. 260—397.47 2 Claims

1. The method for the production of 21-fluoro-delta^{4,6}-pregnadienes of the general formula:



wherein X is selected from the group consisting of fluorine and chlorine and R is acyl radical of a physiologically tolerable aliphatic carboxylic acid having up to 16 carbon atoms, comprising:

(a) reacting an ester of a 21-fluoro-6,7-oxido-1,2α-methylene-delta^4-pregnene - 17α - ol - 3,20 - dione in an organic acid with hydrochloric acid forming the 6 - chloro-delta^6 group and opening the 1,2-methylene linkage forming the 1-chloro-methyl group;

(b) removing the resultant water formed in step (a) by means of a strong acid, thereby creating a 6x-delta^6 configuration and forming a 4,6-double bond;

(c) effecting reclosure of the 1,2α-methylene ring opened in steps (a) and (b) by the action of a reagent selected from the group consisting of an organic base and aluminum oxide, to form a 6-halo-21-fluoro-1,2α-methylene-delta^{4,6}-pregnadiene - 17α-ol - 3,20-dione ester.

3,644,442

SUBSTITUTED BIS ORGANO SULFONES AND SULFOXIDES AND METHOD FOR THE PREPARATION THEREOF

Robert A. Grimm, Lakeville, Minn., and Robert C. Slagel, Pittsburgh, Pa., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 544,391, Apr. 22, 1966, which is a continuation-in-part of abandoned application Ser. No. 458,375, May 24, 1965. This application Nov. 6, 1969, Ser. No. 874,368

Int. Cl. C07c *143/90*

U.S. Cl. 260—400 21 Claims

A class of bis organo sulfone and sulfoxide derivatives are provided by the reaction of an ethylenically unsaturated compound with sulfur dichloride to form the corresponding dichloride diadduct of which the chloro substituents are converted to a variety of other functional groups and thereupon the thioether is oxidized to either the corresponding sulfone or sulfoxide.

3,644,443

PREPARATION OF CARBOXYLIC ACIDS

Ronald L. Shubkin, Oak Park, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,307

Int. Cl. C07c *51/14*

U.S. Cl. 260—413 14 Claims

An integral process for preparing carboxylic acids from olefins having about 10 or more carbon atoms containing

water and carbon monoxide using a cobalt catalyst and a ketone or ether solvent combined with a cobalt recovery step which permits direct recycle of the catalyst so recovered for use in the carboxylation process.

3,644,444

PRODUCTION OF METAL CHELATES

Felix B. Popper and Albert H. Levesque, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 740,488, June 27, 1968. This application Oct. 15, 1970, Ser. No. 81,177

Int. Cl. C07f *3/06, 15/04, 3/00*

U.S. Cl. 260—429 J **8 Claims**

An alkali metal salt of a polyvalent metal chelate of a chelating aminoacetic acid is formed by:

(1) Boiling a mixture of: (a) water; (b) an amine precursor of the said acid; (c) formaldehyde; (d) a cyanide of the polyvalent metal: (e) an alkali metal hydroxide; and (f) an alkali metal cyanide, and adding thereto the chelating aminoacetic acid in its free form to react with unreacted polyvalent metal cyanide.

(2) Boiling a mixture of; (a) water; (b) an amine precursor of the said acid; (c) formaldehyde; (d) a polyvalent metal hydroxide or oxide; (e) an alkali metal hydroxide; and (f) hydrogen cyanide and adding thereto the chelating aminoacetic acid in its free form to react with unreacted polyvalent metal hydroxide or oxide.

3,644,445

CYCLOMATIC METAL CARBONYLS CONTAINING METAL-METAL BOND

Wolfram R. Kroll, Linden, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 600,032, Dec. 8, 1966. This application Mar. 17, 1969, Ser. No. 807,998

Int. Cl. C07f *5/06*

U.S. Cl. 260—429 **10 Claims**

A catalyst formed by the reaction of a transition metal carbonyl hydride, particularly a Group VI transition metal, and an organoaluminum compound has unusual activity, especially as a catalyst for hydrogenation, polymerization, dimerization and oxo type reactions.

3,644,446

PREPARATION OF RHODIUM AND IRIDIUM HYDRIDE CARBONYL COMPLEXES

Frank B. Booth, Placentia, Donald M. Fenton, Anaheim, and Kenneth L. Olivier, Placentia, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed July 1, 1969, Ser. No. 838,356

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R **10 Claims**

Hydride carbonyl complexes of rhodium and iridium with biphyllic ligands are prepared by treatment of rhodium or iridium, complexes or salts thereof with an alkali metal hydroxide, alkoxide or aryloxide and a biphyllic ligand and a mild reducing agent. In a typical synthesis a rhodium carbonyl salt is contacted with an alkali metal alkoxide in the presence of the ligand and the hydride is formed by subsequent or simultaneous contacting with a reducing agent such as hydrogen, carbon monoxide or an oxidizable alcohol. The compounds have utility as hydroformylation catalysts.

3,644,447

TRANSITION METAL COMPOUNDS

Kamalakant Krishnarao Joshi, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 2, 1969, Ser. No. 829,801

Claims priority, application Great Britain, June 18, 1968, 29,016/68

Int. Cl. C07f *7/28, 15/00*

U.S. Cl. 260—429 R **4 Claims**

Bridged dinuclear transition metal compounds are prepared by the reaction of a first transition metal compound having two non-chelating ligands containing electron-donating groups, in cis positions relative to each other, with a second transition metal compound containing two displaceable ligands also in cis positions relative to each other, so that a bridged dinuclear product is formed with the elimination of the displaceable ligands.

3,644,448

CRYSTALLINE HYDRATES OF ALKALI METAL SALTS OF ZINC TRANS-1,2-DIAMINOCYCLOHEXANE-N,N,N',N'-TETRAACETATE

Robert C. O'Neill, Newark, N.J., assignor to Cooper, Tinsley Laboratories, Inc., Mystic, Conn.

No Drawing. Original application Jan. 3, 1967, Ser. No. 606,576, now Patent No. 3,501,576, dated Mar. 17, 1970. Divided and this application Nov. 13, 1969, Ser. No. 871,289

Int. Cl. C08f *3/06*

U.S. Cl. 260—429.9 **3 Claims**

The crystalline hydrates of the sodium and potassium salts of the zinc chelate of trans-1,2-diaminocyclohexane-N,N,N',N'-tetraacetic acid ($Na_2ZnCDTA$ and

$K_2ZnCDTA$)

3,644,449

BIS(PERFLUOROALKYL) NITROXIDE MERCURIDE

Russell R. Reinhard, Hopewell Junction, N.Y., and William D. Blackley, Lake Elmo, Minn., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,199

Int. Cl. C08f *3/10*

U.S. Cl. 260—431 **4 Claims**

Bis(perfluoroalkyl) nitroxide mercuride and method of preparation comprising contacting bis(perfluoroalkyl)-nitroxide with mercury at a temperature of between about —10 and 35° C., under conditions of agitation, said mercuride being readily reconvertible at temperatures between about 50 and 100° C. into said nitroxide and mercury reactants.

3,644,450

METHOD OF MAKING ALKYL LEAD COMPOUNDS

Shirl E. Cook and Kenneth C. Williams, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,358

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **16 Claims**

A method of making alkyl lead compounds and derivatives thereof, wherein an organoleadmagnesium halide is prepared from a Grignard reagent (RMgX, wherein R is an organic radical and X a halogen) and a lead halide or lead carboxylate and then reacted with an organic polyhalide to form the alkyl lead compound.

3,644,451

ORGANOLEAD MAGNESIUM COMPOUNDS

Kenneth C. Williams and Shirl E. Cook, East Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 848,358, Aug. 7, 1969. This application Oct. 17, 1969, Ser. No. 867,351

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **11 Claims**

Stabilized trialkylleadmagnesium halides as new compositions of matter and method of making same wherein a Grignard reagent (RMgX, wherein R is an organic radical and X a halogen) is reacted with a lead halide or lead carboxylate in the presence of an ether more basic than diethyl ether.

3,644,452

METHOD OF MAKING ORGANOLEAD-SILICON COMPOUNDS

Kenneth C. Williams, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,877

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **17 Claims**

A method of making organolead-silicon compounds wherein an organosilicon Grignard reagent is reacted with a lead halide to form an intermediate organolead-silicon-magnesium halide and said complex halide is then reacted with a hydrocarbon or organohalide to form an organolead-silicon compound.

3,644,453

CUPROUS HALIDE AND ADIPONITRILE COMPLEXES

Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,379

Int. Cl. C07f *1/08*

U.S. Cl. 260—438.1 **2 Claims**

The present invention is directed to novel chemical complexes of cuprous bromide, cuprous chloride and adiponitrile. The complexes are useful, for example, as catalysts, as promoters, as a source of adiponitrile, as paint dryers and the like.

3,644,454

CHROMIUM COMPLEXES OF FLUOROCARBON ACIDS

Louis G. Anello, Basking Ridge, and Richard F. Sweeney, Randolph Township, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,832

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 C **9 Claims**

Chromium complexes of propionic and butyric acids substituted in the 3- or 4-position, respectively, with a fluorinated alkoxy group, said alkoxy group terminated with a highly fluorinated branched chain or cyclic fluoroalkoxy group. These chromium complexes are useful as treating agents to impart oil and water resistance to various substrates, including paper, leather, and the like.

3,644,455

FERROUS HALIDE ADIPONITRILE COMPLEXES

Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,380

Int. Cl. C07c *121/26;* **C07f** *15/02*

U.S. Cl. 260—439 R **2 Claims**

The present invention is directed to novel chemical complexes of ferrous bromide or ferrous chloride and adiponitrile. The complexes are useful, for example, as catalysts, as promoters, as a source of adiponitrile, as paint dryers and the like.

3,644,456

DI[(ISOCYANATOBENZYL)-PHENYL] CARBODIIMIDES AND PREPARATION OF ORGANIC CARBODIIMIDES

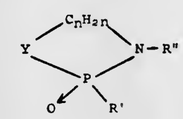
Henri Ulrich, Northford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Aug. 12, 1964, Ser. No. 389,193, now Patent No. 3,522,303, dated July 28, 1970. Divided and this application Mar. 20, 1970, Ser. No. 21,477

Int. Cl. C07c *119/04;* **C07f** *9/22*

U.S. Cl. 260—453 AR **10 Claims**

Organic isocyanates (mono- and poly-isocyanates) are converted to the corresponding carbodiimides using as catalyst a heterocyclic phosphorus compound of the formula:



wherein C_nH_{2n} is alkylene having 1 to 12 carbon atoms from 1 to 3 of which form a chain separating Y from N, R' is hydrocarbyl (1 to 18 carbon atoms) which can be substituted by halo, nitro, alkoxy, alkylmercapto and cyano, R'' is hydrogen, hydrocarbyl (1 to 18 carbon atoms) or —CONHR''' where R''' is hydrocarbyl (1 to 18 carbon atoms) and Y is O or —NR'' where R'' is as above.

3,644,457

PREPARATION OF STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES

Klaus König and Erwin Müller, Leverkusen, and Hans Holtschmidt, Leverkusen-Steinbuchel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 28, 1968, Ser. No. 708,787

Claims priority, application Germany, Mar. 8, 1967, F 51,751

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **1 Claim**

Solid 4,4'- and/or 2,4'-diphenylmethane diisocyanate are reacted with a branched aliphatic dihydroxy compound in the molar ratio of 0.1 to 0.3 mol of dihydroxy compound per mol of diisocyanate to prepare a product which is liquid at room temperature.

3,644,458

β-HALOGENOALKYL ISOCYANATES

Klaus-Dieter Kampe, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

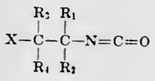
No Drawing. Filed May 7, 1968, Ser. No. 727,347

Claims priority, application Germany, May 9, 1967, F 52,364

Int. Cl. C07c *119/04*

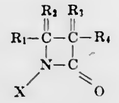
U.S. Cl. 260—453 AL **1 Claim**

β-Halogenoalkyl isocyanates of the formula



in which X represents a chlorine or bromine atom, R_1, R_2, R_3 and R_4 represent hydrogen atoms or saturated or unsaturated aliphatic, cycloaliphatic, araliphatic, aromatic

or heterocyclic radicals are prepared by reacting a lactam of the formula



in which X, R_1, R_2, R_3 and R_4 are defined above, in the presence of an olefine and/or an acetylene with a radical-forming catalyst. The reaction products are intermediates for the manufacture of compounds used in the field of plant protection, synthetic materials and textile finishing.

3,644,459
ISOMERIC MIXTURES OF METHYLCYCLOHEXYLENE DIISOCYANATE
James M. Cross, New Martinsville, W. Va., assignor to Mobay Chemical Company, Pittsburgh, Pa.
No Drawing. Application June 12, 1967, Ser. No. 645,476, now Patent No. 3,424,792, which is a continuation-in-part of applications Ser. No. 523,569, Jan. 28, 1966, and Ser. No. 614,395, Feb. 2, 1967. This application May 15, 1968, Ser. No. 729,458
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 A **2 Claims**

Methylcyclohexylene diisocyanates are prepared by phosgenating the hydrogenolysis product of tolylene diamine. Methylcyclohexylene diisocyanates are provided wherein from about 85 to about 95 percent of the isomers have a diequatorial or ee conformation and about 5 to about 15 percent of the isomers have an axial-equatorial or ae conformation.

3,644,460
PREPARATION OF AROMATIC ISOCYANATES
Eric Smith, Madison, Conn., assignor to Olin Mathieson Chemical Corporation
No Drawing. Filed Nov. 21, 1968, Ser. No. 777,866
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **19 Claims**

The process for preparing an organic iscyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprising (a) a halide of a noble metal and (b) an aryl halo compound of a metal selected from Groups IIb, IIIb and IVb of the Periodic Table or a complex of (a) and (b). Preferred aryl halo compounds include diaryl lead dihalides, diaryl germanium dihalides, aryl boron dihalides and aryl mercuric halides. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum, and mixtures thereof. The catalyst system may also include molybdenum trioxide or another metal oxide.

3,644,461
PREPARATION OF ALKYL ISOCYANATES
Kenneth C. Rennells, Whitehall, Mich., assignor to The Ott Chemical Company
No Drawing. Filed Feb. 19, 1969, Ser. No. 800,778
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **6 Claims**

A method of dehydrochlorinating an alkyl carbamyl chloride to provide the corresponding alkyl isocyanate derivative by heating said alkali carbamyl chlorine in the presence of a tetraalkylurea which acts as an acid acceptor, thereby promoting said dehydrochlorination. The alkyl isocyanate is then separated from the tetraalkylurea which is now in the hydrochloric acid salt form. Use of tetraalkylurea as an acid acceptor, compared to prior art basic amines results in lesser contamination of the alkyl isocyanate due to a substantial reduction in formation of color bodies.

3,644,462
PREPARATION OF AROMATIC ISOCYANATES BY CATALYTIC CARBONYLATION OF NITRO COMPOUNDS
Eric Smith, Madison, and Ehrenfried H. Kober, Hamden, Conn., assignors to Olin Mathieson Chemical Corporation
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,727
Int. Cl. C07c *119/04;* **C07f** *15/00*
U.S. Cl. 260—453 P **27 Claims**

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprising a halide of a noble metal and an amine composition. Useful amine compositions include compounds of the formula:

RR'R''N

wherein R, R', and R'' are each selected from the group consisting of hydrogen, alkyl, cycloalkyl, aralkyl, and



and wherein not more than two of the R, R' and R'' substituents are hydrogen. Preferred amines include tri-n-butyl amine, aniline, aniline-2-sulfonic acid, o-phenylene diamine, anthranilic acid, N-phenyl anthranilic acid, anthranilamide, o-aminophenol, o-aminobenzene thiol, benzyl amine, diphenyl amine, and triphenyl amine. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum, and mixtures thereof. The catalyst system may also include molybdenum trioxide or another metal oxide.

3,644,463
PRODUCTION OF ALIPHATIC 1,2-BISTHIOCYANATES
Richard Parke Welcher, Old Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 15, 1968, Ser. No. 729,375
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 **5 Claims**

Aliphatic 1,2-bisthiocyanates are produced by first preparing a solution of thiocyanogen in a water-insoluble liquid organic solvent such as toluene having an aqueous solution of an inorganic halide admixed therewith, drawing off the aqueous phase, adding an alpha-olefin or acetylene and reacting at a temperature below about 20° C. and preferably about 0°–10° C.

3,644,464
BIS(ALKENYL)[ETHYLENEBIS(OXYTRIMETHYLENE)]BIS(DITHIOCARBAMATE)
John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,290
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A **1 Claim**

Compounds of the formula

$$\begin{array}{l} CH_2O(CH_2)_3NHCSSR \\ | \\ CH_2O(CH_2)_3NHCSSR \end{array}$$

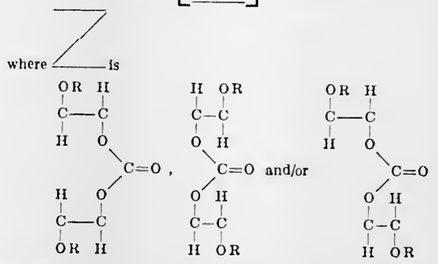
where R is allyl, 2-chloroallyl, or cis- and trans-2,3-dichloroallyl for controlling foliage fungi.

3,644,465
ETHER CARBONATE DIISOCYANATES
Marwan R. Kamal, Dhahran, Saudi Arabia, and Robert C. Kuder, Excelsior, Minn., assignors to General Mills, Inc.
No Drawing. Filed Apr. 25, 1969, Ser. No. 819,443
Int. Cl. C07c *119/04;* **C08g** *22/20*
U.S. Cl. 260—463 **10 Claims**

Ether carbonate diisocyanates of the formula



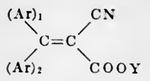
where



where *n* is 4 to 19, *m* is 0 to 15, the sum of *n* and *m* is 13 to 19 and R is a monovalent organic radical. Polymers prepared from such diisocyanates and organic compounds containing active hydrogens.

3,644,466
α-CYANO-β,β-DIPHENYLACRYLIC ACID ESTERS
Albert F. Strobel, Delmar, and Sigmund C. Catino, Castleton, N.Y., assignors to GAF Corporation, New York, N.Y.
No Drawing. Continuation of application Ser. No. 121,820, July 5, 1961, which is a continuation-in-part of application Ser. No. 13,706, Mar. 9, 1960. This application May 6, 1966, Ser. No. 548,334
The portion of the term of the patent subsequent to Aug. 22, 1987, has been disclaimed
Int. Cl. C07c *121/40;* **C08f** *45/60;* **C08g** *51/60*
U.S. Cl. 260—465 **9 Claims**

The ultra-violet light absorbing compound of the formula:



wherein:

(1) $(Ar)_1$ and $(Ar)_2$ are aromatic carbocyclic nuclei devoid of nitro and nuclear bonded amine groups and selected from the class consisting of mono- and bicyclic nuclei, and

(2) Y is a substituted alkyl group selected from the class consisting of hydroxy alkyl, cyanoalkyl, haloalkyl, alkoxyalkyl, hydroxy alkoxyalkyl and carbalkoxyalkyl.

3,644,467
METHOD OF REACTING HCN WITH UNSATURATED COMPOUND WITH DIMETHYL SULFOXIDE SOLVENT
Edgar Koberstein, Alzenau, and Wolfgang Nischk, Wesseling, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Continuation-in-part of application Ser. No. 613,941, Feb. 3, 1967. This application Nov. 26, 1968, Ser. No. 778,938
Claims priority, application Germany, Feb. 9, 1966, D 49,322
Int. Cl. C07c *121/04, 121/20, 121/40*
U.S. Cl. 260—465 D **9 Claims**

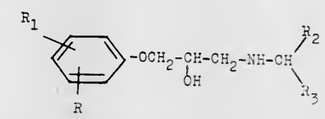
Production of nitrile group containing organic compounds is accomplished by addition of hydrogen cyanide across an unsaturated carbon to carbon double bond of an organic compound in the presence of cyanide ions and in the presence of dimethyl sulfoxide. Preferably, the dimethyl sulfoxide is employed in a molar proportion of at least 0.3:1 with reference to the unsaturated compound.

3,644,468
METHOD OF REACTING HCN WITH UNSATURATED COMPOUND WITH A PYRROLIDONE SOLVENT
Edgar Koberstein, Alzenau, and Wolfgang Nischk, Wesseling, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Continuation-in-part of application Ser. No. 613,941, Feb. 3, 1967. This application Nov. 26, 1968, Ser. No. 778,939
Claims priority, application Germany, Feb. 9, 1966, D 49,322
Int. Cl. C07c *121/04, 121/20, 121/40*
U.S. Cl. 260—465 D **13 claims**

Production of nitrile group containing organic compounds is accomplished by addition of hydrogen cyanide across an unsaturated carbon to carbon double bond of an organic compound in the presence of cyanide ions and in the presence of pyrrolidone or a substituted pyrrolidone, preferably methyl pyrrolidone. The pyrrolidone compound is employed in a molar proportion of at least 0.3:1 with reference to the unsaturated compound.

3,644,469
1-(CYANOPHENOXY)-2-HYDROXY-3-SEC.-ALKYLAMINO-PROPANES
Herbert Köppe, Werner Kummer, Helmut Stähle, and Karl Zeile, Ingelheim am Rhein, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,874
Claims priority, application Germany, Dec. 18, 1967, B 95,902; Dec. 22, 1967, P 16 43 266.9
The portion of the term of the patent subsequent to Aug. 5, 1986, has been disclaimed
Int. Cl. C07c *121/52, 121/66*
U.S. Cl. 260—465 E **11 Claims**

Racemic mixtures and optically active isomers of 1-phenoxy - 2 - hydroxy - 3 - sec. - alkylamino - propanes of the formula



wherein R is selected from the group consisting of

$$-(CH_2)_x-CN$$

$-(CH_2)_x-NH_2$ and $-(CH_2)_{x+1}-OH$ where *x* is 0, 1, 2 or 3, carboxyl, alkoxycarbonyl of 1 to 5 carbon atoms of the alkoxy part and alkenyloxy and alkynyloxy of 2 to 5 carbon atoms, R_1 is selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy of 1 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms, cyano and nitro and R and R_1 taken together may be methylenedioxy, R_2 is an alkyl of 1 to 5 carbon atoms and R_3 is alkyl of 2 to 6 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts having β-adrenolytic and blood pressure reducing properties.

3,644,470
PROCESS FOR PRODUCING NITRILES
Stanley D. Turk and Ralph P. Williams, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 14, 1969, Ser. No. 791,153
Int. Cl. C07c *121/02, 121/10, 121/12*
U.S. Cl. 260—465 B **7 Claims**

Tetrahydrothiophene-1,1-dioxides (sulfolanes) are employed as reaction media for conversion of ammonium aromatic carboxylates to aromatic nitriles.

3,644,471
PRODUCTION OF 2,5-DICHLOROBENZONITRILE
Eugene P. Di Bella, Rochelle Park, N.J., assignor to Tenneco Chemicals, Inc.
No Drawing. Filed Jan. 15, 1969, Ser. No. 791,485
Int. Cl. C07c *63/12, 121/52*
U.S. Cl. 260—465 G **3 Claims**

2,5-dichlorobenzoic acid is prepared by heating a reaction mixture comprising 1,2,4-trichlorobenzene, cuprous cyanide, and a high-boiling tertiary amine such as quinoline at about 200°–240° C. to form a cyanation product comprising 2,5-dichlorobenzonitrile and hydrolyzing the cyanation product to obtain substantially pure 2,5-dichlorobenzoic acid.

3,644,472
PREPARATION OF UNSATURATED ALIPHATIC NITRILES
Teo Paleologo, Cesare Reni, and Luigi Lugo, Milan, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy
Filed July 25, 1968, Ser. No. 747,733
Claims priority, application Italy, Aug. 1, 1967, 19,063/67
Int. Cl. C07c *121/02, 121/32*
U.S. Cl. 260—465.3 **4 Claims**

An olefin is oxidized in the presence of ammonia in a fluidized catalytic bed in a reactor having a specific structure operating in specific conditions. The structure comprises a plurality of heat-exchange tubes vertically extending through the catalytic bed, the tubes comprising external ribs or fins subdividing the bed into a plurality of vertically extending intercommunicating component beds in which a specific "real" height-to-diameter ratio is established in operation.

3,644,473
PRODUCTION OF ADIPONITRILE
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,758
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 **4 Claims**

Process for the preparation of adiponitrile through the liquid phase reaction of 3-chloropropionitrile or 3-bromopropionitrile with a reducing agent such as a complex containing a transition metal and a Lewis base or a transition metal carbonyl and a Lewis base.

3,644,474
PRODUCTION OF ADIPONITRILE
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,757
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 **20 Claims**

Process for the production of adiponitrile involving the use of a complex comprised of a transition metal and 3-chloropropionitrile or 3-bromopropionitrile to accomplish this preparation.

3,644,475
PRODUCTION OF ADIPONITRILE
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.
No Drawing. Filed Mar. 27, 1969, Ser. No. 811,241
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 **4 Claims**

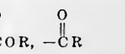
The process of the present invention provides for the preparation of adiponitrile through the liquid phase reaction of a 3-halopropionitrile with a reducing agent from the group titanium, gold, thallium, tin, lead, phosphorous, arsenic, antimony, bismuth or tellurium.

3,644,476
PREPARATION OF ADIPONITRILE
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.
No Drawing. Continuation-in-part of applications Ser. No. 801,757 and 801,758, both Feb. 24, 1969. This application June 23, 1969, Ser. No. 835,722
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 **5 Claims**

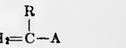
A process for the reductive coupling of a compound having the formula



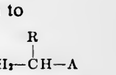
wherein X is Cl, Br, or I, R is H or lower alkyl, and A is —CN,



or —$CONR_2$, using as reducing agent zero valent iron or nickel or compounds thereof. The invention especially relates to an overall process for the production of linear dimers of compounds of the formula



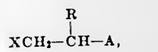
by first hydrohalogenation to



followed by the reductive coupling.

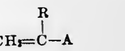
3,644,477
PRODUCTION OF ADIPONITRILE
Olav T. Onsager, Waldwick, N.J., assignor to Halcon International, Inc.
No Drawing. Continuation-in-part of applications Ser. No. 801,757, Feb. 24, 1969, Ser. No. 801,758, Feb. 24, 1969, and Ser. No. 835,722, June 23, 1969. This application Oct. 29, 1969, Ser. No. 872,395
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 **13 Claims**

A process for the reductive coupling of a compound having the formula

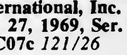


wherein X is Cl, Br, or I, R is H or lower alkyl, and A is

using as reducing agent a zero valent reducing metal or compound thereof in combination with a promoter salt. The invention especially relates to an overall process for the production of linear dimers of compounds of the formula



by first hydrohalogenation to



followed by the reductive coupling.

3,644,478
ETHYL 2,2-DIMETHYL-3-(DI-n-BUTYLAMINO)-CARBONYLCYCLOBUTANEACETATE
Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Application Oct. 12, 1967, Ser. No. 683,060, which is a division of application Ser. No. 529,652, Feb. 24, 1966, now Patent No. 3,403,126, dated Sept. 24, 1968. Divided and this application Nov. 13, 1969, Ser. No. 876,556
Int. Cl. C07c *93/18*
U.S. Cl. 260—468 R **1 Claim**

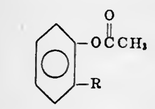
Ethyl 2,2 - dimethyl-3(di-n-butylamino)carbonylcyclobutaneacetate, useful as a plasticizer for vinyl chloride resins, is provided.

3,644,479
1-INDANCARBOXYLIC ACIDS AND DERIVATIVES
Peter Frederick Juby and Thomas William Hudyma, Dewitt, and Richard Anthony Partyka, Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,963
Int. Cl. C07c *69/76*
U.S. Cl. 260—469 **5 Claims**

5-phenyl-1-indancarboxylic acids are useful anti-inflammatory agents in the treatment of inflammatory diseases in animals, including man.

3,644,480
2-SUBSTITUTED BENZENE ACETATE MANUFACTURE
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 3, 1970, Ser. No. 94,996
Int. Cl. C07c *69/14*
U.S. Cl. 260—473 R **9 Claims**

A method of preparing 2-substituted benzene acetate of the formula:



where R is a monovalent radical of up to 20 carbons selected from the group consisting of alkyl, cycloalkyl and —$CH_2COO(CH_2)_xCH_3$ where x is an integer from 0 to 17 comprising contacting 2-substituted cyclohexanone of the formula:



where R is as heretofore defined with a mixture of acetic anhydride, acetic acid and concentrated sulfuric acid at a temperature between about 30 and 140° C. utilizing a mole ratio of sulfuric acid to cyclohexanone of at least 2:1 and a mole ratio of acetic acid to acetic anhydride of at least about 1:1 and recovering said 2-substituted benzene acetate. The 2-substituted benzene acetate product can be readily converted to the corresponding 2-substituted phenol by hydrolysis.

3,644,481
PLICATIC ACID ESTERS
John Howard and Terence D. McIntosh, Vancouver, British Columbia, Canada, assignors to ITT Rayonier Incorporated
No Drawing. Continuation-in-part of application Ser. No. 687,092, Dec. 1, 1967. This application Mar. 6, 1968, Ser. No. 710,775
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 F **6 Claims**

New compositions of matter comprising alkyl and aryl esters of plicatic acid, and the use of these esters as antioxidants for fats and oils, are disclosed.

3,644,482
(4-HYDROXY-5-ALKYLPHENYL) ALKANOIC ACID ESTERS OF POLYOLS
Martin Dexter, Briarcliff Manor, John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 359,460, Apr. 13, 1964, which is a continuation-in-part of application Ser. No. 276,192, Apr. 29, 1963, which is a continuation-in-part of application Ser. No. 164,618, Jan. 5, 1962, which in turn is a continuation-in-part of application Ser. No. 148,738, Oct. 30, 1961. This application Sept. 26, 1969, Ser. No. 861,475
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R **21 Claims**

Esters derived from (4-hydroxy-5-alkylphenyl)-alkanoic acids, optionally substituted in the 2- or 3-position of the phenyl ring by a second alkyl group, and alkane polyols are stabilizers of organic material normally subject to oxidative deterioration. They are prepared by conventional esterification techniques. Typical embodiments are ethylene glycol bis[3 - (3,5-di-t-butyl-4-hydroxyphenyl) propionate] and pentaerythritol tetrakis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate].

3,644,483
CONTINUOUS MANUFACTURE OF FIBER-FORMING POLYESTERS
Wolfgang Griehl, Chur, Grisons, Switzerland, and Wolf Dieter Hahn and Joachim Plenz, Frankfurt am Main, Germany, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland
Filed Sept. 12, 1967, Ser. No. 667,285
Claims priority, application Switzerland, Sept. 16, 1966, 13,427/66
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P **8 Claims**

A process for the continuous manufacture of fiber-forming polyesters or copolyesters from dicarboxylic acids and glycols wherein the formation of undesirable diglycols is suppressed. The materials are directly esterified by introducing them into a tubular reaction zone at 150–250° wherein a considerable portion esterifiies. This product then is introduced into a precondensate of the same ingredients having a degree of polycondensation of 2–6, at a vacuum of 25–100 torr. The water of reaction and free glycol immediately evaporate under the influence of the vacuum. As soon as this reaction product attains a degree of polycondensation of 2–6, a portion thereof continuously is withdrawn in proportion to new acid introduced. The condensate withdrawn then is polycondensed in the conventional manner to a fiber-forming polyester.

In a preferred embodiment, a part of the glycol is withheld and subjected to a glycolysis with the precondensate, prior to its entry into the reaction.

3,644,484

PRODUCTION OF BIS-HYDROXYALKYL ESTERS OF BENZENE DICARBOXYLIC ACIDS

Enrique R. Witt and Donald R. Larkin, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 2, 1968, Ser. No. 718,226
Int. Cl. C07c *69/80, 69/82*
U.S. Cl. 260—475 P 10 Claims

Process for the production of bis-hydroxyalkyl phthalates by reacting an alkylene oxide with a benzene dicarboxylic acid in the presence of a catalyst and in an alkyl-substituted dioxolane reaction medium. For example ethylene oxide is reacted with terephthalic acid in a 2-ethyl, 2-methyl dioxolane reaction medium using a tertiary amine catalyst so as to produce bis(2-hydroxyethyl) terephthalate.

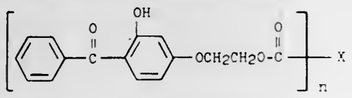
3,644,485

2-HYDROXY-4-(2 - HYDROXYETHOXY) BENZOPHENONE ESTERS AND THEIR USE AS STABILIZERS

Gerald R. Lappin and Wayne V. McConnell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,071
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 P 1 Claim

Compositions of matter of the structure



wherein

n=2, 3, or 4

X=polyvalent organic radical derived from an aliphatic, cycloaliphatic or aromatic polybasic acid

and their use as stabilizers for various polymeric materials.

3,644,486

PROCESS FOR THE MANUFACTURE OF OXACYLATION PRODUCTS AND OPTIONALLY HYDROXYLATION PRODUCTS OF CONDENSED AROMATIC COMPOUNDS

Manfred Boldt and Hans-Jurgen Arpe, Fischbach, Taunus, and Lothar Hornig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 19, 1968, Ser. No. 760,964
Claims priority, application Germany, Sept. 23, 1967, F 53,564
Int. Cl. C07c *69/14, 69/24, 69/62*
U.S. Cl. 260—479 R 6 Claims

Catalytic manufacture of oxacylation products and optionally hydroxylation products of condensed aromatic compounds from condensed aromatic compounds and saturated aliphatic or cycloaliphatic carboxylic acids and molecular oxygen in the presence of a noble metal of sub-group 8 of the Mendeleeff Periodic Table or compounds thereof, the stable valency of this noble metal in said compounds being at most 4.

3,644,487

SULFUR YLID PRODUCTION

George B. Payne, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 19, 1966, Ser. No. 551,233
Int. Cl. C07c *69/52*
U.S. Cl. 260—481 9 Claims

Method of producing sulfur ylids by contacting a sulfonium halide of the formula

wherein X⁻ is a halide ion, R and R′ independently are lower alkyl and E is a carbalkoxy group with a dehydrohalogenating solution comprising an aqueous solution of a mixture of alkali metal hydroxide and alkali metal carbonate at a temperature of from about −10° C. to about 50° C.

3,644,488

SUBSTITUTED β,β′-THIO DIETHYL SULFONES

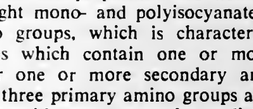
Albert C. Perrino, Cravston, and Michael G. Israel, Bristol, R.I., assignors to I.C.I. Organics Inc., Providence, R.I.

No Drawing. Original application Oct. 26, 1966, Ser. No. 589,529, now Patent No. 3,479,408. Divided and this application Apr. 10, 1969, Ser. No. 815,202
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R 6 Claims

A novel class of sulfones useful as stabilizers in polyolefin compositions and polyolefin compositions made from the same. The sulfones have the formula

$$R_2(2\text{-}n)SO_2(CR_1HCR_1HS(CH_2)_mCOOR_3)_n$$

$$R_2(2\text{-}n)SO_2(CR_1HCR_1HS(CH_2)_{m2}OCOR)_n \text{ or}$$



3,644,489

N,N-DICHLOROAMINE SALTS AND THEIR PREPARATION

Julius J. Fuchs, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 745,974, July 19, 1968, now Patent No. 3,530,162, which is a continuation-in-part of application Ser. No. 661,491, July 11, 1967, which in turn is a continuation-in-part of application Ser. No. 397,022, Sept. 16, 1964, now Patent No. 3,346,554. This application Jan. 7, 1970, Ser. No. 1,322
Int. Cl. C07c *101/10, 101/20, 101/30*
U.S. Cl. 260—482 P 2 Claims

N,N-dichloroamine compounds, such as the sodium salt of 1 - (N,N-dichloroamino)cyclohexane carboxylic acid, are prepared by chlorinating the corresponding amine in the presence of water and a water immisible inert organic solvent such as carbon tetrachloride while maintaining an approximately neutral pH, through addition of a strongly basic acid acceptor such as sodium hydroxide. The N,N-dichloroamine compounds thus prepared are useful in preparing symmetrical azo compounds such as the di-sodium salt of azo-bis(cyclohexanecarboxylic acid).

3,644,490

PREPARATION OF LOW MOLECULAR WEIGHT MONO- AND POLYISOCYANATES CONTAINING TERTIARY AMINO GROUPS

Hans-Georg Schmelzer, Cologne-Stammheim, Gunter Gertel, Cologne-Flittard, Eberhart Degener, Leverkusen, and Manfred Dahm, Bergisch-Neukirchen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,446
Claims priority, application Germany, Mar. 29, 1967, F 51,966
Int. Cl. C07c *119/04, 125/06*
U.S. Cl. 260—482 B 5 Claims

A process for the preparation of non-volatile, low molecular weight mono- and polyisocyanates containing tertiary amino groups, which is characterized in that tertiary amines which contain one or more hydroxyl groups and/or one or more secondary amino groups and/or one to three primary amino groups are reacted in known manner with an excess of an aliphatic, cycloaliphatic or araliphatic diisocyanate, at least three mols of diisocyanate being used for one of these groups which react with isocyanates, and the excess diisocyanate is

completely removed by continuous flow distillation and/or thin layer distillation under reduced pressure at temperatures of 80 to 200° C.

3,644,491

SYNTHESIS OF 2-UREIDOOXYPROPIONIC ACID ESTERS

Charles D. Adams, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 29, 1968, Ser. No. 779,914
Int. Cl. C07c *127/14*
U.S. Cl. 260—482 R 7 Claims

Esters of 2-ureidooxypropionic acid, such as the methyl ester, are prepared by the steps of

(a) forming acetohydroxamic acid by reaction of methyl acetate with an acid salt of hydroxylamine and sodium methoxide in methanol;

(b) forming methyl 2-acetamidooxypropionate by reacting the product of (a) with sodium methoxide and then methyl 2-bromopropionate;

(c) forming methyl 2-aminooxypropionate hydrochloride by reacting the product of (b) with anhydrous hydrogen chloride, filtering the reaction mixture and concentrating the filtrate;

(d) forming methyl 2-ureidooxypropionate by dissolving the concentrated filtrate in water and then reacting it with an alkali metal cyanate.

Ethyl 2-ureidooxypropionate is formed by the same four-step reaction wherein ethanol replaces methanol, sodium ethoxide replaces sodium methoxide, ethyl acetate replaces methyl acetate, and ethyl 2-bromopropionate replaces methyl 2-bromopropionate. These products are plant growth regulants as disclosed in U.S. Pat. No. 3,282,987.

3,644,492

ESTERS OF HEXAFLUOROPROPYLENE OXIDE POLYMER ACIDS AND POLYALKYLENE GLYCOLS

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1969, Ser. No. 846,238
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 11 Claims

Esters derived from hexafluoropropylene oxide polymer acids and polyalkylene glycols having the formula:

$$R_fO[CF(CF_3)CF_2O]_nCF(CF_3)$$
$$COO—R^1—O(CHR^2CHR^3O)_yR^4$$

wherein R_f is a perfluoroalkyl radical having 1 to 8 carbon atoms, n is an integer of 0 to 100, R^1 is an alkylene radical having 2 to 12 carbon atoms, R^2 is hydrogen or an alkyl radical having 1 to 4 carbon atoms, R^3 is hydrogen or an alkyl radical having 1 to 4 carbon atoms, at least one of R^2 and R^3 in each repeating unit being hydrogen, y is an integer of 1 to 60, and R^4 is hydrogen or an alkyl radical having 1 to 4 carbon atoms. These esters function efficiently as surfactants and emulsifying agents.

3,644,493

2,3-DIHALOALKYL COMPOUNDS

James C. Wygant, Creve Coeur, Richard M. Anderson, St. Louis, and Erhard J. Prill, Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Division of application Ser. No. 437,258, Mar. 4, 1965, now Patent No. 3,317,568, which is a continuation-in-part of application Ser. No. 405,819, Oct. 22, 1964, which in turn is a continuation-in-part of applications Ser. No. 248,853, Jan. 2, 1963, and Ser. No. 267,783, Mar. 25, 1963, now Patent No. 3,236,659. This application July 15, 1966, Ser. No. 620,189
Int. Cl. C07c *69/34, 69/36, 69/40*
U.S. Cl. 260—485 H 4 Claims

As new compounds, the 2,3-dibromopropyl esters of (1) alkane polycarboxylic acids having from 1 to 14 carbon atoms in the alkane and from 2 to 5 carboxy groups and (2) oxalic acid. The said esters are flame-retardants for polymer systems.

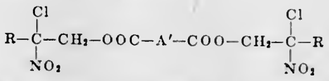
3,644,494

2-NITRO-2-CHLORO-n-ALKYL ESTERS

Milton B. Frankel, Menlo Park, Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

No Drawing. Original application July 30, 1964, Ser. No. 386,379, now Patent No. 3,440,282, dated Apr. 22, 1969. Divided and this application Aug. 19, 1968, Ser. No. 798,203
Int. Cl. C07c *79/40*
U.S. Cl. 260—485 H 2 Claims

Compounds of the formula



wherein R is a lower alkyl radical and A′ is a lower alkylene radical containing one or more nitro groups.

3,644,495

PRODUCTION OF HALOGENATED ESTERS AND UNSATURATED ESTERS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillip. Petroleum Company

No Drawing. Filed Dec. 31, 1969, Ser. No. 889,750
Int. Cl. C07c *67/00;* C07d *7/04*
U.S. Cl. 260—491 11 Claims

Alkenyl alkanoates and 3-haloalkyl alkanoates are produced by reacting 1-alkenes, hydrogen halides, paraformaldehyde, and nitriles at temperatures in the range of −80 to 0° C. Cycloalkenylmethyl alkanoates and 2-halocycloalkylmethyl alkanoates are produced by reacting cycloalkenes, hydrogen halides, paraformaldehyde, and nitriles at temperatures in the range of −80 to 0° C.

3,644,496

PRODUCTION OF ALKENYL ALKANOATES AND 3-HALOALKYL ALKANOATES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 31, 1969, Ser. No. 889,749
Int. Cl. C07c *67/00*
U.S. Cl. 260—494 8 Claims

Alkenyl alkanoates and 3-haloalkyl alkanoates are produced by reacting a hydrogen halide, an alkene, paraformaldehyde and an alkanoic anhydride at a temperature in the range of −80 to −30° C.

3,644,497

CONVERSION OF ETHYLENICALLY UNSATURATED COMPOUNDS USING HETEROPOLY-MOLYBDIC AND HETEROPOLYTUNGSTIC ACIDS AS CATALYSTS

Frank G. Mesich, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,817
Int. Cl. C07c *69/14, 31/10*
U.S. Cl. 260—497 R 17 Claims

Process for the conversion of ethylenically unsaturated compounds to esters and alcohols wherein the ethylenically unsaturated compound and a carboxylic acid are reacted in the presence of a free heteropolyacid of molybdenum or tungsten. Esters are the main product when anhydrous conditions are used while a mixture of esters and alcohols may be produced when water is present.

3,644,498
YELLOW DYE FORMING COUPLERS FOR COLOR PHOTOGRAPHY
Anthony Loria, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Application July 6, 1965, Ser. No. 469,887, now Patent No. 3,408,194, dated Oct. 29, 1968, which is a continuation-in-part of application Ser. No. 312,894, Oct. 1, 1963. Divided and this application June 26, 1967, Ser. No. 658,971
Int. Cl. C07c *143/56*
U.S. Cl. 260—507 R **8 Claims**
Open chain reactive methylene two-equivalent yellow-forming couplers in which one of the hydrogen atoms of the active methylene group is replaced with a cyclooxy group are used to advantage in color developer solutions and in light-sensitive photographic emulsion layers of forming yellow dye images in color photography.

3,644,499
PROCESS FOR PREPARING DETERGENT SULFONATES
Clarence R. Murphy, Allison Park, Anatoli Onopchenko, Pittsburgh, and John M. Piatt and Richard Seekircher, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Dec. 17, 1968, Ser. No. 784,485
Int. Cl. C07c *143/02, 143/04*
U.S. Cl. 260—513 B **7 Claims**
A process for stabilizing the pH of sulfonates obtained from the reaction of an olefinic compound with an alkali bisulfite which involves contacting an aqueous slurry of such sulfonates containing an alkaline compound with oxygen.

3,644,500
NAPHTHOIC ACID DERIVATIVES
Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,322
Int. Cl. C07c *61/36*
U.S. Cl. 260—514 R **1 Claim**
6-oxo-1-a-naphthoic acid derivatives useful as anti-inflammatory agents.

3,644,501
PROCESS FOR PRODUCING FLUORINATED ACIDS
Joseph D. Park, Boulder, Colo., and Bruce T. Nakata, East Palo Alto, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed May 28, 1968, Ser. No. 732,557
Int. Cl. C07f *1/02;* **C07c** *61/16, 51/00*
U.S. Cl. 260—514 R **2 Claims**
Fluoroaliphatic vinylic carboxyl-containing compounds are prepared by the following steps: first, reacting in gas phase hydrogen bromide with a volatile fluoroaliphatic compound containing at least one vinylic chlorine atom in which nondoubly bonded carbon atoms are substituted only by fluorine and fluoroalkyl groups containing from one to six carbon atoms, in the presence of a metal salt-active carbon catalyst, thereby effecting the replacement of at least one vinylic chlorine atom by bromine; second, reacting a brominated product c. step (1) with alkali metal iodide, the reactants being dissolved in dimethylformamide, thereby effecting a substitution of at least one vinylic bromine atom by iodine; third, reacting an iodide resulting from step (2) with a lithium alkyl to produce an organolithium intermediate compound and subsequently treating said intermediate compound with carbon dioxide to produce a lithium salt which hydrolyzes to a carboxylic acid. The carboxylic acids of the invention are much stronger acids than the corresponding saturated structures and may be converted into useful simple derivatives.

3,644,502
PROSTAGLANDIN SYNTHESIS
Robert B. Morin, Douglas O. Spry, and Kenneth L. Hauser, Indianapolis, and Richard A. Mueller, Bloomington, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,225
Int. Cl. C07c *61/36*
U.S. Cl. 260—514 R **1 Claim**
Prostaglandins are synthesized from o-methoxyphenylacetic acid by introduction of a proper acid side chain, conversion of the aromatic nucleus to the cyclopentane nucleus, and introduction of the second side chain. Novel compounds having a high level of biological activity are disclosed.

3,644,503
dl-DECAHYDRO-8β-(t-BUTOXY OR BENZYLOXY)-8aβ-LOWER ALKYL - 2-OXO-PHENANTHRENE-1-ALKANOIC ACIDS
Marinus Los, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application June 4, 1964, Ser. No. 372,690, now Patent No. 3,446,849, dated May 27, 1969. Divided and this application Jan. 6, 1969, Ser. No. 789,365
Int. Cl. C07c *61/32*
U.S. Cl. 260—514.5 **2 Claims**
This disclosure describes compounds of the class of dl-2,3,4,4aβ,4bα,5,6,7,8,8a-decahydro-8aβ - lower alkyl - 8β-(t-butoxy or benzyloxy) - 2 - oxo - 1 - substituted-phenanthrenes useful as intermediates in the synthesis of biologically active steroid moieties.

3,644,504
TRANSFORMATION OF AROMATIC CARBOXYLIC ACID SALTS
Donald G. Kuper, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,892
Int. Cl. C07c *51/00, 51/52*
U.S. Cl. 260—515 P **4 Claims**
Increase in yield of aromatic polycarboxylic acid salts is achieved by carrying the transformation process for the formation of same in an atomsphere consisting essentially of carbon monoxide and in the presence of a small amount of water and a catalyst adjuvant of the formula ROH or ROM, wherein R is alkyl, aryl, cycloalkyl radical or combination thereof having from 1 to 15 carbon atoms therein and M is an alkali metal.

3,644,505
PERFUME COMPOSITION INCLUDING TETRAHYDROPYRANYL ETHER OF 3-ENDO-METHYL-3 - EXO(4' - METHYL - 5 - HYDROXYPENTYL) NORCAMPHOR
Wayne I. Fanta, Colerain Township, Hamilton County, and William F. Erman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Original application Mar. 29, 1968, Ser. No. 717,384. Divided and this application Apr. 6, 1970, Ser. No. 26,132
Int. Cl. C11b *9/00;* **C11d** *1/00*
U.S. Cl. 252—522 **1 Claim**
The novel odorant compounds, 2-methyl-5-bromopentyl tetrahydropranyl ether and tetrahydropyranyl ether of 3 - endo - methyl-3-exo-(4'-methyl-5'-hydroxypentyl)norcamphor and a process for preparing 2-methyl-5-bromopentyl tetrahydropyranyl ether, tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl) norcamphor and 3 - endo-methyl-3-oxo(4'-methyl-5'-hydroxypentyl)norcamphor comprising the steps of: (1) esterifying 2-methyl-4-pentenol; (2) hydrobrominating the ester in the presence of a free radical catalyst; (3) reducing the hydrobrominated ester to 2-methyl-5-bromopentanol; (4) etherifying 2-methyl-5-bromopentanol with

dihydropyran to obtain the novel compound, 2-methyl-5-bromopentyl tetrahydropyranyl ether; (5) alkylating 3-methylnorcamphor with the 2 - methyl - 5-bromopentyl tetrahydropyranyl ether to obtain the novel compound, tetrahydropyranyl ether of 3 - endo - methyl - 3-oxo(4'-methyl - 5'-hydroxypentyl)norcamphor; and (6) treating tetrahydropyranyl ether of 3 - endo - methyl - 3-oxo(4'-methyl - 5' - hydroxypentyl)norcamphor with p-toluenesulfonic acid or hydrochloric acid to obtain 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor.

3,644,506
PREPARATION OF AROMATIC CARBOXYLIC ACIDS
Roger C. Williamson, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,660
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R **15 Claims**
The improvement in a process wherein a mixture containing in excess of about 13 percent by weight of an aromatic compound, in which the aromatic group carries at least one methyl substituent, is subjected to oxidation with molecular oxygen in an inert reaction medium in the presence of a cobalt, nickel, chromium or manganese catalyst to obtain the corresponding aromatic carboxylic acid, which involves controlling the amount of water in the initial reaction mixture so that it is below about 0.9 percent by weight.

3,644,507
THERMAL PURIFICATION OF TEREPHTHALIC ACID USING IODINE OR BROMINE CATALYSTS
Enrique R. Witt and Jorge A. Blay, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,265
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 **20 Claims**
A process for the purification of crude terephthalic acid (TPA) by heating the crude TPA and a liquid medium in the presence of an iodine or bromine catalyst to an elevated temperature followed by cooling of the heated mixture so as to crystallize the TPA. The heating required is to a temperature above about 275° C. and should preferably be to a temperature such that no TPA remains as a solid.

3,644,508
PROCESS FOR THE RECOVERY OF GLYOXYLIC ACID
Robert H. Callighan, Penn Hills Township, Allegheny County, and Philip X. Masciantonio, Penn Township, Westmoreland County, Pa., assignors to United States Steel Corporation
No Drawing. Filed July 23, 1969, Ser. No. 844,160
Int. Cl. C07c *51/42*
U.S. Cl. 260—526 R **5 Claims**
Glyoxylic acid is recovered from the solution resulting when the hydroperoxide is formed by reacting maleic acid with ozone in a solvent. The hydroperoxide in the solution has its free oxygen reduced with sulphur dioxide to form sulphur trioxide. The sulphur trioxide is then precipitated by reaction with an alkaline earth metal oxide or other precipitating agent and the glyoxylic acid product is then easily separated from the precipitate.

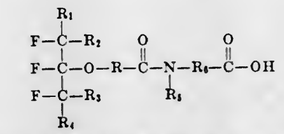
3,644,509
OXIDATION OF UNSATURATED ALDEHYDES TO THE CORRESPONDING ACIDS
George C. Allen, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,651
Int. Cl. C07c *57/04*
U.S. Cl. 260—530 N **16 Claims**
Process for the conversion of unsaturated aldehydes to the corresponding unsaturated carboxylic acids, e.g. acrolein to acrylic acid, by reacting the unsaturated aldehyde with oxygen in the presence of a catalyst of the empirical formula $Mo_aV_bW_cMn_dO_e$.

3,644,510
PROPYLENE OXIDATION IN THE PRESENCE OF IRIDIUM METAL
Noel W. Cant and William K. Hall, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Nov. 25, 1968, Ser. No. 778,805
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 R **8 Claims**
Propylene is oxidized with oxygen to acetic acid, acrolein, etc. by oxidation in the contact presence of iridium metal.

3,644,511
OXIDATION OF HIGHER OLEFINS IN THE PRESENCE OF IRIDIUM METAL
Noel W. Cant and William K. Hall, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 778,805, Nov. 25, 1968. This application Sept. 16, 1969, Ser. No. 858,514
Int. Cl. C07c *45/04, 53/08*
U.S. Cl. 260—533 R **11 Claims**
An olefin having from three to eight carbon atoms per molecule, such as propylene, is oxidized with oxygen to fatty acids and other oxygenated compounds, such as acetic acid, acrolein, etc., by oxidation of the olefin in the contact presence of iridium metal.

3,644,512
PROCESS FOR CONVERTING BUTANE TO ACETIC ACID
Anatoli Onopchenko, Monroeville, Johann G. D. Schulz, Pittsburgh, and Richard Seekircher, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Oct. 10, 1969, Ser. No. 865,495
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 R **5 Claims**
A process for converting butane to acetic acid which comprises subjecting butane to reaction with molecular oxygen in acetic acid in the presence of a cobalt compound soluble in the reaction mixture and a xylene, such as para xylene.

3,644,513
POLYFLUOROISOALKOXYALKYL AMIDO CARBOXYLIC ACIDS AND SALTS THEREOF
Richard F. Sweeney, Dover, Alson K. Price, Morristown, and Aziz U. Khan, Elizabeth, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,825
Int. Cl. C07c *101/10;* **C07f** *1/00*
U.S. Cl. 260—534 E **27 Claims**
Polyfluoroisoalkoxyalkyl amido carboxylic acids of the formula:



wherein R_1–R_4 are each independently selected from the group consisting of F, Cl, alkyl and haloalkyl groups in which the halogen atoms are Cl or F; R_1 and R_4 when taken together are alkylene or haloalkylene groups which form, with the carbon chain therebetween, a cyclic structure; R is a member selected from the group consisting of alkylene and haloalkylene; R_5 is a member selected from the group consisting of hydrogen and alkyl, and R_6 is a member selected from the group consisting of alkylene,

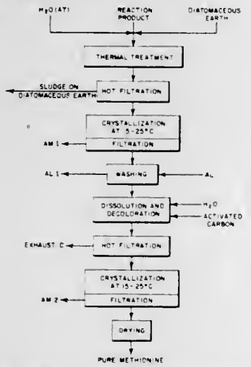
monohydroxyalkylene and carboxyalkylene radicals; and salts thereof containing a cation selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Ba, Mg, Zn, Hg, Al, Cr, Sn, Fe, Ag, Cu, Co, Zr, Pb, Mn, or a radical selected from morpholino, ammonium or an alkyl or hydroxyalkyl substituted ammonium radical. Preparation by reacting correspoinding polyfluoroisoalkoxyalkyl amido carboxylic acid fluorides or halosulfates with amino acids. The novel compounds are useful as emulsifying agents, leveling agents, oil, stain and water repellent agents, additives to dry powder fire extinguishing compositions and as intermediates to valuable oil, stain and water repellent agents.

3,644,514

PROCESS FOR SEPARATING PURE METHIONINE FROM THE HYDROLYSIS PRODUCT OF ITS NITRILE

Mario Bornengo, Novara, and Pietro Pasquino, Vercelli, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Nov. 17, 1969, Ser. No. 877,171
Claims priority, application Italy, Nov. 18, 1968, 23,877/68
Int. Cl. C07c *149/20, 149/24*
U.S. Cl. 260—534 S **4 Claims**



There is disclosed a method for separating pure methionine from mixtures comprising it, and more particularly from the crude reaction product obtained by sulphuric acid hydrolysis of 2-amino-4-methylmercapto-butyronitrile followed by neutralization of the crude hydrolysis product by means of ammonia. A sufficient quantity of water is added to the neutralized mass to completely dissolve the methionine, the solution is heated at 95° C. to 135° C. under pressure, the insoluble sludges are separated under heating, and the purified solution is cooled to effect crystallization of methionine having a titer higher than 99%.

3,644,515

BENZENESULFONYL CHLORIDE PROCESS

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 1, 1968, Ser. No. 725,949
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R **10 Claims**

Benzenesulfonyl chlorides are prepared by the reaction of benzenesulfonic acids with carbon tetrachloride in the liquid phase. Ferric chloride catalyzes the reaction.

3,644,516

TRICHLOROPHOSPHONOGUANIDINES

Fawzy G. Sherif, Cherry Hill, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 31, 1969, Ser. No. 846,581
Int. Cl. C07f *9/25*
U.S. Cl. 260--543 P **2 Claims**

Trichlorophosphonoguanidines of the general formula

$$(H_2N)_n-C-(N=PCl_3)_{2-n}$$
$$\|$$
$$NH\cdot(HCl)_n$$

in which $n=0$ or 1, which are useful for extending molecules having active hydroxyl or amine (NH) groups, as phosphorylating intermediates to prepare amidophosphoric esters and the like.

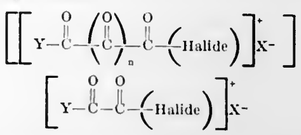
3,644,517

PHOSPHINE SUBSTITUTED OXALYL CHLORIDES

Laszlo Joseph Bollyky and Robert Henry Whitman, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Sept. 13, 1967, Ser. No. 667,371, now Patent No. 3,442,813, dated May 6, 1969. Divided and this application Nov. 27, 1968, Ser. No. 779,646
Int. Cl. C07f *9/50*
U.S. Cl. 260—544 M **3 Claims**

A chemiluminescent reactant complex formed by the reaction of a polycarbonyl halide and a Lewis base, having the following formula:



where X is a halide ion and Y is a triphenylphosphine or a trialkylphosphine group.

3,644,518

PROCESS FOR THE PRODUCTION OF NAPHTHAMIDE DERIVATIVES

Makoto Yoshida, 15 Nakajima, Kanagawa-ken, Odawara-shi, Japan, and Akio Okumura, 1247 Yoshihama, Yogawara-machi, Kanagawa-ken, Japan

No Drawing. Continuation-in-part of application Ser. No. 458,403, May 24, 1965. This application Aug. 1, 1968, Ser. No. 749,340
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 **11 Claims**

A process for preparing 1-hydroxy-2-naphthamido derivatives, from the corresponding nitrile and a 1-hydroxy-2-naphthoic acid aryl ester in the presence of a reduction catalyst, in a single step with a high yield.

3,644,519

BIS(2-FLUORO-2,2-DINITROETHYL AMIDES

Horst G. Adolph, Beltsville, and Mortimer J. Kamlet, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 2, 1969, Ser. No. 790,509
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 K **2 Claims**

Amides of 2-fluoro-2,2-dinitroethylamine formed by reacting 2-fluoro-2,2-dinitroethylamine with a mono- or bifunctional acid halide in the presence of pyridine.

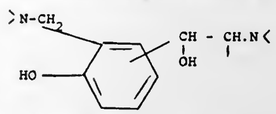
3,644,520

PHENYLETHANOLAMINES

David Hartley, Lawrence H. C. Lunts, and David Jack, London, England, assignors to Allen & Hanburys Limited, London, England

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,742
Claims priority, application Great Britain, Dec. 21, 1967, 58,012/67
Int. Cl. C07c *103/38, 103/12*
U.S. Cl. 260—562 A **8 Claims**

Compounds having the skeletal structure



and physiologically acceptable acid addition salts thereof. The disclosed compounds possess stimulant or blocking actions on adrenergic-receptors.

3,644,521

N-(ALPHA, ALPHA-DIMETHYLBENZYL)-ALPHA, ALPHA-(DIMETHYLALKYLAMIDES)

George A. Buntin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application July 1, 1968, Ser. No. 741,253, now Patent No. 3,498,781, which is a continuation-in-part of application Ser. No. 691,941, Dec. 20, 1967. Divided and this application Dec. 12, 1969, Ser. No. 889,812
Int. Cl. C07c *103/34*
U.S. Cl. 260—562 R **2 Claims**

Disclosed are the compounds N-(alpha,alpha-dimethylbenzyl) - 2,2 - dimethylpropionamide, N-(alpha,alpha-dimethylbenzyl) - 2,2 - dimethylbutyramide and N-(alpha, alpha-dimethylbenzyl) - 2,2 - dimethylvaleramide, and a general reaction by which they are made. The compounds have utility as herbicides.

3,644,522

CATALYTIC HYDROGENATION OF NITROGEN CONTAINING COMPOUNDS OVER SUPPORTED RUTHENIUM CATALYSTS

Loren D. Brake and Alvin B. Stiles, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 691,954, Dec. 20, 1967, which is a continuation-in-part of application Ser. No. 588,011, Oct. 20, 1966, which in turn is a continuation-in-part of application Ser. No. 516,108, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 588,011, Oct. 20, 1966, which is a continuation-in-part of application Ser. No. 516,108, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 691,979, Dec. 20, 1967, which is a continuation-in-part of application Ser. No. 587,982, Oct. 20, 1966, which in turn is a continuation-in-part of application Ser. No. 516,140, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 587,982, Oct. 20, 1966, which is a continuation-in-part of application Ser. No. 516,140, Dec. 23, 1965. This application Apr. 4, 1969, Ser. No. 813,752
Int. Cl. C07c *85/14*
U.S. Cl. 260—563 D **13 Claims**

Organic aromatic nitrogen containing compounds, such as p-phenylenediamine or 4,4'-methylenedianiline, can be hydrogenated by admixing the compound with hydrogen at a hydrogen partial pressure of at least 200 p.s.i., a total pressure of from 200 p.s.i. to 15,000 p.s.i., a temperature in the range of from 100° C. to 300° C., in the presence of from 0% to 200% by weight, based on the weight of the compound to be hydrogenated, of added ammonia, and in the presence of from 0.001% to 10% by weight, based on the compound to be hydrogenated and calculated as metallic ruthenium, of a ruthenium catalyst supported on an inert carrier selected from the group consisting of calcium carbonate, rare earth oxides, rare earth carbonates, mixed rare earth oxide-carbonates, and mixtures thereof.

3,644,523

METHOD OF COMBATING WEEDS

Ralph P. Neighbors, Olathe, and Lee V. Phillips, Overland Park, Kans., assignors to Gulf Research & Development Company, Pitsburgh, Pa.

No Drawing. Original application May 29, 1967, Ser. No. 642,174, now Patent No. 3,547,621, dated Dec. 15, 1970. Divided and this application July 31, 1969, Ser. No. 860,462
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 G **6 Claims**

Weeds in crops such as oats, corn (maize), wheat and grain sorghum are combated by applying to the locus of of the weeds effective amounts of certain O-substituted amidoximes, particularly O-2,3,6-trichlorobenzoyl and O-3,6-dichloro-2-methoxy-benzoyl esters of cyclopropanecarboxamidoxime and isobutyramidoxime.

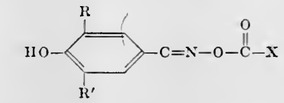
3,644,524

COMBATING WEEDS WITH O-ACYL-3,5-DIALKYL-4-HYDROXYBENZALDOXIMES

Roger P. Cahoy, Merriam, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Original application Nov. 30, 1967, Ser. No. 686,809, now Patent No. 3,503,732, dated Mar. 31, 1970. Divided and this application Aug. 19, 1969, Ser. No. 870,739
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE **2 Claims**

In a variety of crops, including broad-leaf species such as tomatoes and soybeans, as well as corn and small grains, particularly rice and wheat, control of noxious grasses, including crabgrass, wild oats, foxtail and shattercane is obtained by preemergent application of compounds having the structural formula



in which R and R' are non-primary alkyl or cycloalkyl substituents having at least 3 carbon atoms and X is an electronegative substituent, for example, dichloromethyl, or an unsaturated hydrocarbon structure such as phenyl or cyclopropyl.

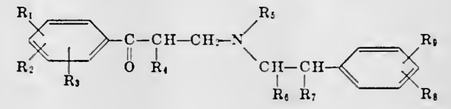
3,644,525

N-ARALKYL-AND-ARYLHYDROXYALKYL-PROPIOPHENONES AND THE SALTS THEREOF

Kurt Thiele, Beethovenstrasse 6, Frankfurt am Main, Germany

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,945
Int. Cl. C07c *91/16, 91/26*
U.S. Cl. 260—570.5 C **17 Claims**

Compounds are prepared having the formula



where R_1, R_2 and R_3 are the same or different and are hydrogen, chlorine, hydroxyl, alkoxy or nitro, R_4 is hydrogen, methyl or ethyl, R_5 is hydrogen or alkyl, R_6 is hydrogen or methyl, R_7 is hydrogen or hydroxyl, R_8 is hydrogen, alkyl, alkoxy, hydroxyl or halogen and R_9 is hydroxyl or alkyl with at least two carbon atoms. The compounds can be made in the form of their optically active isomers or diastereoisomers, salts or quaternary ammonium salts.

3,644,526

OXIDATION OF CYCLOHEXANE

Kazumi Takagi and Takaharu Ishida, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Feb. 26, 1969, Ser. No. 802,352
Claims priority, application Japan, Mar. 6, 1968, 43/14,829; Oct. 23, 1968, 43/77,604
Int. Cl. C07c *35/08, 45/02*
U.S. Cl. 260—586 B **2 Claims**

Cyclohexane is oxidized in a liquid phase in the presence of such a heterogeneous catalyst as a manganese or cobalt borate, particularly a cobalt borate having a Co/B_2 molar ratio of 0.5 to 4, whereby the excessive oxidation of cyclohexane and the formation of a borate ester of cyclohexanol can be inhibited and cyclohexanone and cyclohexanol can be produced advantageously.

3,644,527
16-METHYL AND 16-METHYLENE-B-NORTESTOSTERONES

Kenneth G. Holden, Haddonfield, N.J., and James F. Kerwin, Broomall, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 373,877, June 9, 1964, now Patent No. 3,488,738. This application Sept. 23, 1969, Ser. No. 860,404

Int. Cl. C07c *35/00, 49/00*

U.S. Cl. 260—586 H **3 Claims**

16β-methyl and 16-methylene substituted β-nordehydroepiandrosterones and 17-methyl-B-nortestosterones are prepared by using as a key reaction the degradation of a 16 - dialkylaminomethyl-B-nordehydroepiandrosterone to produce the 16-methylene derivative. This in turn is hydrogenated to the 17β-methyl-B-nor compound. These compounds have prolonged hypotensive activity.

3,644,528
CALCIUM OR MAGNESIUM-KETONE REACTION PRODUCTS AS POLYMERIZATION INITIATORS

James D. Brown and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,549

Int. Cl. C07c *49/76*

U.S. Cl. 260—591 **10 Claims**

Polymerization initiators are produced from contacting substantially pure calcium or magnesium metal with diaryl ketones, aryl-substituted cyclopentadienones, or ketones in which the carbonyl group is present in a five-membered carbocyclic ring to which is attached at least two fused aromatic rings.

3,644,529
OXO PROCESS

Edmond R. Tucci, Pittsburgh, and Helen I. Thayer and John V. Ward, Oakmont, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Aug. 23, 1966, Ser. No. 574,316

Int. Cl. C07c *45/10*

U.S. Cl. 260—604 HF **14 Claims**

An Oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a cobalt carbonyl and a dioxaphosphacyclohexane, preferably in the presence of a trialkyl amine.

3,644,530
PROCESS FOR PREPARING (2,5-DIHYDROXYPHENYL) DIPHENYL PHOSPHINE

Stanley M. Bloom, Waban, and Ronald F. Lambert, Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,018

Int. Cl. C07f *9/28*

U.S. Cl. 260—606.5 P **4 Claims**

Organic phosphines containing a dihydroxyphenyl substituent are prepared by reacting p-benzoquinone and a primary or secondary organic phosphine.

3,644,531
2-PROPYNYLSULFONIUM SALTS

Yukichi Kishida, Atsusuke Terada, Hiromu Takagi, and Toshiharu Kamioka, Tokyo, Japan, assignors to Sankyo Company Limited

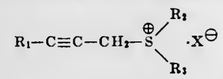
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,713

Claims priority, application Japan, Aug. 13, 1968, 43/57,559

Int. Cl. C07c *149/46*

U.S. Cl. 260—607 B **3 Claims**

2-propynylsulfonium salts having the formula



wherein R_1 represents hydrogen atom, a straight or branched lower alkyl group, phenyl group or a substituted phenyl group having as a substituent lower alkyl, lower alkoxy, nitro or halogen; R_2 and R_3 may be the same or different and each represents a straight or branched lower alkyl group; and X represents a halogen atom. The present 2-propynylsulfonium salts exhibit excellent anticoagulant action and thus they can be used in the treatment of thrombophlebitis, phlebothrombosis and other vessel thrombosis and also in the prevention of clotting in surgical procedures. Such 2-propynylsulfonium salts are prepared by reacting a compound having the formula

$$R_1—C\equiv C—CH_2—X$$

wherein R_1 and X are as defined above with a thioether compound having the formula

$$R_2—S—R_3$$

wherein R_2 and R_3 are as defined above.

3,644,532
POLYCYCLIC DIMERCAPTANS

Donald R. Arnold, Lincolndale, N.Y., David J. Trecker, South Charleston, W. Va., and Charles E. Stehr, Stamford, Conn., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 365,527, May 6, 1964, now Patent No. 3,483,102. This application Oct. 2, 1968, Ser. No. 764,657

Int. Cl. C07c *149/26*

U.S. Cl. 260—609 D **5 Claims**

Dimercaptans of cycloadded dimers of a mercaptonorbornene, mercapto-cyclohexene or mercaptobicyclo [2.2.2] octene are disclosed. They are useful in the production of polymers and as epoxy curing agents.

3,644,533
PHENOLS AND PHENOLIC RESINS

Bobby F. Dannels and Alvin F. Shepard, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application Jan. 30, 1967, Ser. No. 612,334, now Patent No. 3,539,646, dated Nov. 10, 1970, which is a continuation-in-part of application Ser. No. 276,147, Apr. 29, 1963. Divided and this application Dec. 29, 1969, Ser. No. 1,941

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 R **4 Claims**

Phenols, phenyl ethers, bisphenols, diethers, mixed phenol ethers and phenolic resins are prepared by reacting a phenol with a non-conjugated open-chain aliphatic or cycloaliphatic polyunsaturated hydrocarbon.

3,644,534
METHOD FOR THE PREPARATION OF HYDROXYALKYL ETHERS

Kenneth G. Reabe, Delmont, and Hans Dressler, Monroeville, Pa., assignors to Koppers Company, Inc.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,833

Int. Cl. C07c *43/22*

U.S. Cl. 260—613 D **7 Claims**

A process is provided for the production of phenylhydroxalkyl ethers such as phenylhydroxypropyl ether, resorcinol bis(β-hydroxyethyl)ether, catechol bis(β-hydroxyethyl)ether, hydroquinone bis(β - hydroxybutyl)ether, pyrogallol tris(β-hydroxyethyl)ether, and phloroglucinol tris(β-hydroxyethyl)ether by reacting at ambient to 110° C., a monohydric, dihydric, or polyhydric phenol such as phenol, resorcinol, or pyrogallol and an equivalent of alkylene oxide, such as ethylene oxide, propylene oxide, or butylene oxide per equivalent of phenolic hydroxyl in the presence of an aqueous medium having a pH of 8–13. The product is recovered in high yields by cooling and separating from the mother liquor. The mother liquor is then recycled to serve as the aqueous medium for a subsequent reaction.

The prepared compounds have aromaticity, an ether linkage, and a reactive hydroxyl group which make them useful as specialized components in polyester and polyurethane resin formulations.

3,644,535
ACETYLENIC ETHERS

John Woolley Batty, Eric Milton Chadwick, and James William Crook, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 24, 1969, Ser. No. 844,622

Claims priority, application Great Britain, Aug. 8, 1968, 37,954/68

Int. Cl. C07c *43/14*

U.S. Cl. 260—615 B **1 Claim**

Poly(oxypropylene) and poly(oxyethylene/oxypropylene) derivatives of certain acetylenic alcohols, a process for their manufacture and their use as corrosion-restraining compounds in acid-pickling baths for ferrous metals. The compounds are particularly suitable for use in hydrochloric acid baths and they have little tendency to foam.

3,644,536
PROCESS FOR 1,3,5-TRIS(α-HYDROXYISOPROPYL)BENZENE

Richard A. Bafford, Tonawanda, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,193

Int. Cl. C07c *29/00*

U.S. Cl. 260—618 R **11 Claims**

Preparation of 1,3,5-tris (α-hydoxyisopropyl)benzene by heating a solvent solution of methylbutynol in presence of catalytic amount of nickel tetracarbonyl and a triarylphosphite.

3,644,537
PHENOLS AND PHENOLIC RESINS

Bobby F. Dannels and Alvin F. Shepard, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application Jan. 30, 1967, Ser. No. 612,334, now Patent No. 3,539,646, dated Nov. 10, 1970, which is a continuation-in-part of application Ser. No. 276,147, Apr. 29, 1963. Divided and this application Dec. 29, 1969, Ser. No. 1,942

Int. Cl. C07c *37/00*

U.S. Cl. 260—619 B **4 Claims**

Phenols, phenyl ethers, bisphenols, diethers, mixed phenol ethers and phenolic resins are prepared by reacting a phenol with a non-conjugated open-chain aliphatic or cycloaliphatic polyunsaturated hydrocarbon.

3,644,538
HINDERED TRISPHENOLS

William H. Starnes, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Original application Nov. 16, 1964, Ser. No. 411,569. Divided and this application Aug. 22, 1967, Ser. No. 662,287

Int. Cl. C07c *37/00, 39/00*

U.S. Cl. 260—619 B **3 Claims**

New trisphenols, for example, 1,3,5 - tris(3 - alkyl - 4-hydroxyphenyl)benzene; 1,3,5 - tris(3 - aryl - 4 - hydroxyphenyl)benzene; 1,3,5 - tris(2 - hydroxyphenyl)benzene; and the lower alkyl substituted derivatives thereof, are effective stabilizers for hydrocarbon especially polyolefins due to low volatility and because the oxidation products are not highly colored.

3,644,539
SYNTHESIS OF HINDERED ALKENYL PHENOLS

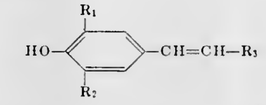
William H. Starnes, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed July 28, 1969, Ser. No. 845,539

Int. Cl. C07c *39/18*

U.S. Cl. 260—619 R **6 Claims**

The hindered alkenyl phenols having the following structure are useful as antioxidants for hydrocarbons and especially for polyolefins such as polypropylene and are produced by the reaction of a 2,6-dialkylquinone methide with an aldehyde and a phosphorus compound selected from the group consisting of a trialkylphosphine and a trialkylphosphite to produce the hindered alkenyl phenol having the following structure:



where

R_1 and R_2 are alkyls having 1 to 8 carbon atoms, and

R_3 is selected from the group consisting of alkyl and aryl.

3,644,540
5,7 - DIISOPROPYL-1,1-DIMETHYL-6-HYDROXYINDAN AND PROCESS FOR PREPARING SAME

Thomas F. Wood, Wayne, and George H. Goodwin, Rutherford, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 674,103, Oct. 10, 1967. This application July 1, 1968, Ser. No. 741,278

Int. Cl. C07c *39/12*

U.S. Cl. 260—626 R **1 Claim**

The novel compound, 5,7-diisopropyl-1,1-dimethyl-6-hydroxyindan, (I), and a process for preparing it, are disclosed. I is a colorless crystalline material, M.P. 99°–100° C., and has a strong and pleasant musk odor, I is suitable for use in perfumery. I also exhibits properties as an antioxidant. I is prepared by reacting 2,6-diisopropylphenol and isoprene, in the presence of sulfuric acid or other alkylating catalysts; at temperatures from —20° to 150° C., depending on the strength of the catalyst.

3,644,541
ISOPROPYL ALCOHOL PROCESS

Clarence D. Chang, Princeton, and Albert S. Logiudice, Bridgewater, N.J., assignors to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 635,586, May 2, 1967. This application Aug. 25, 1969, Ser. No. 857,279

Int. Cl. C07c *29/08*

U.S. Cl. 260—641 **8 Claims**

A method of achieving high conversions of water in a process for the direct hydration of propylene at elevated pressures and temperatures in the presence of an aqueous phosphoric or phosphorous acid catalyst. This is achieved by maintaining the propylene inlet partial pressure above a minimum limit, said partial pressure being a function of reaction temperature and catalyst concentration and simultaneously maintaining the propylene residence time above a minimum level, said residence time being dependent upon the reaction temperature, acid concentration and propylene inlet partial pressure. Preferably the residence time is held below an upper limit to achieve commercially acceptable yields. Preferred operating conditions include propylene inlet partial pressures below 60 atmospheres, temperatures between about 408 and 488° K. and acid concentrations ranging between about 25 and about 65 weight percent.

3,644,542
BENZENE OXYCHLORINATION
Walter H. Prahl, Karlsruhe, Germany, Jay P. Eggert, Bellefonte, Ky., and Sol J. Lederman, Kenmore, Eric H. Scremin, Niagara Falls, and Albert C. Ulrich, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Continuation-in-part of application Ser. No. 292,460, July 2, 1963, which is a continuation-in-part of applications Ser. No. 133,565, Ser. No. 133,801, and Ser. No. 133,802, all Aug. 25, 1961. This application June 17, 1969, Ser. No. 833,822
The portion of the term of the patent subsequent to June 18, 1985, has been disclaimed
Int. Cl. C07c *25/06*
U.S. Cl. 260—650 R 6 Claims

Monochlorobenzene is produced in higher yield with lower investment and operation costs by a continuous benzene oxychlorination process which comprises: (1) passing hydrogen chloride, an oxygen-containing gas and benzene, said benzene being in excess of that theoretically required to react with all of the hydrogen chloride through at least 2 packed catalytic zones in series, each of said zones being adapted to cause only a partial conversion of the reactants to monochlorobenzene and to cause an increase in temperature of the reaction gas stream, (2) substantially lowering the temperature of the reaction gas stream as it passses from one catalytic zone to the next adjacent catalytic zone by injecting coolant selected from the group consisting of benzene, water, inerts, and mixtures thereof, directly into the reaction gas stream as it passes between each of said zones in an amount sufficient to lower the temperature of the reaction gas to the desired extent, and (3) recovering the monochlorobenzene from the reaction vapors from the final catalytic zone.

3,644,543
PROCESS FOR PREPARING HALOGENATED AROMATICS
Vincent A. Notaro, Monroeville, and Charles M. Selwitz, Pitcairn, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed July 3, 1969, Ser. No. 839,094
Int. Cl. C07c *25/00, 25/04*
U.S. Cl. 260—650 R 10 Claims

A process for preparing a nuclear chloro or nuclear bromo aromatic compound which involves heating an aromatic compound in the presence of a nitrate ion, a nitrite ion, NO or NO_2, a chloride or bromide ion, water, oxygen and a fatty carboxylic acid.

3,644,544
PROCESS FOR THE PRODUCTION OF IODOPENTAFLUOROETHANE
Italo Cammarata, Bollate, Milan, and Martino Vecchio, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Continuation-in-part of application Ser. No. 675,761, Oct. 17, 1967. This application Nov. 4, 1968, Ser. No. 775,956
Claims priority, application Italy, Nov. 16, 1967, 22,759/67
The portion of the term of the patent subsequent to Aug. 4, 1987, has been disclaimed
Int. Cl. C07c *17/20, 17/02*
U.S. Cl. 260—653.7 10 Claims

A process for the production of iodopentafluoroethane (C_2F_5I) wherein tetrafluoroethylene (C_2F_4) is reacted with molecular iodine (I_2) to yield di-iodopentafluoroethane ($C_2F_4I_2$). The latter is reacted in an autoclave with lead dioxide (PbO_2) and hydrogen fluoride (HF) at a temperature of 25° to 200° C. (preferably 80° C. to 160°) at a pressure of 5 to 50 atmospheres absolute (ata.), preferably 25–36 ata. The molar ratio $HF/C_2F_4I_2$ is 2 to 50 (preferably 10 to 30). The molar ratio $PbO_2/C_2F_4I_2$ is 0.5 to 2 (preferably 0.5 to 1).

3,644,545
IMPROVED VAPOR PHASE FLUORINATION PROCEDURE IN THE PRESENCE OF CATALYST AND ALKALI METAL FLUORIDE
Walter R. Buckman, Wilmington, Del., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed June 20, 1968, Ser. No. 738,412
Int. Cl. C07c *19/08, 19/20*
U.S. Cl. 260—653.7 8 Claims

High conversions of fluorinated hydrocarbons are obtained by reacting saturated, aliphatic halocarbon starting materials containing at least one chlorine atom and no atoms other than C, H, F or Cl, with HF, in the presence of a catalyst and also in the presence of an alkali metal fluoride.

3,644,546
REACTION OF A DIALKYL ETHER WITH HCl OR HBr IN THE PRESENCE OF AN ORGANIC ACID
Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed May 27, 1969, Ser. No. 828,343
Int. Cl. C07c *17/00*
U.S. Cl. 260—657 12 Claims

Increasing the reaction rate of a dialkyl ether with HBr or HCl to produce an alkyl halide which involves carrying out the reaction in the presence of an organic acid having from three to seven carbon atoms.

3,644,547
ISOMERIZATION OF ALKYL HALIDES
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Aug. 28, 1968, Ser. No. 755,789
Int. Cl. C07c *17/24*
U.S. Cl. 260—658 R 10 Claims

Alkyl halides are isomerized by treating a particular alkyl halide with an aqueous hydrohalic acid at elevated temperatures above about 200° C. whereby the halogen substituent is transferred to a carbon atom different from that of the original compound.

3,644,548
PROCESS FOR PREPARING CYCLODODECATRIENE-1,5,9
Hirosi Takahasi, Kadomi-shi, Osaka, Masanori Tanabe, Asaka-shi, Muneaki Yamaguchi, Ikeda-shi, Osaka, and Isao Shiihara, Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,417
Claims priority, application Japan, Mar. 24, 1969, 44/22,224
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 B 2 Claims

Process for preparing cyclododecatriene-1,5,9 which comprising trimerizing butadiene-1,3 by the use of a ternary catalyst consisting of a titanium compound represented by the general formula

$$TiXn(OCH_2R)_{4-n} \text{ or } TiXn(OAr)_{4-n}$$

wherein X is a member selected from the group consisting of chlorine, bromine and iodine atom, R is a member selected from the group consisting of hydrogen atom and alkyl radical containing from 1 to 5 carbon atoms. Ar is aryl radical and n is 0 or an integer from 1 to 3, an organic aluminum halide and a member selected from the group consisting of acid amides, sulfoxides, aminoxides and nitrons.

3,644,549
DEHYDROGENATION OF ETHYLBENZENE TO STYRENE USING SO_2 AND FERRITE CATALYSTS IN THE FORM OF SPINELS OR PEROVSKITES
Robert A. Innes, Wilkins Township, Allegheny County, and Raymond J. Rennard, Jr., O'Hara Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Sept. 9, 1970, Ser. No. 70,904
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 15 Claims

Styrene is produced by the dehydrogenation of ethylbenzene using SO_2 and certain ferrite catalysts. The ferrite catalysts in the form of spinels can have the formula: $A_aA'_bFe_cO_4$ where A can be Co, Ni, Zn or Mg (preferably Zn or Mg) and A' can be Cr or La. The sum of $a+b+c$ is 3 and only b can be zero. The ferrite catalysts in the form of perovskites can have the formula: $B_dCr_eFe_fO_3$ where B can be La or Y (preferably La) and $d+e+f=2$ and each individually can be 0.5 to 1.5. These ferrites give very high yields of styrene and are unusually stable to continuous SO_2 dehydrogenation-oxidative regeneration cycles.

3,644,550
SINGLE STAGE CYCLODIMERIZATION OF PARAFFINS TO AROMATIC COMPOUNDS
Harold Beuther, Gibsonia, John A. Ondrey, Springdale, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,067
Int. Cl. C07c *5/26*
U.S. Cl. 260—673 11 Claims

A method for the single stage dimerization of paraffins and mixtures of paraffins with olefins to aromatic compounds using a mixture of chromia-alumina and bismuth oxide. Isobutane and isobutane-isobutene mixtures are converted to p-xylene.

3,644,551
SINGLE STAGE CYCLODIMERIZATION OF OLEFINS
John A. Ondrey, Springdale, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,068
Int. Cl. C07c *5/26*
U.S. Cl. 260—673 10 Claims

A method for the single stage dimerization of olefins to aromatic compounds using a mixture of chromia-alumina and bismuth oxide. Isobutene is converted to p-xylene.

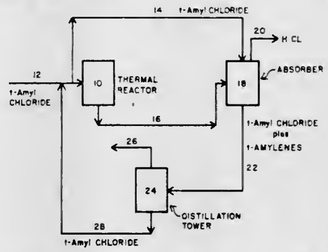
3,644,552
PROCESS FOR SEPARATING META XYLENE FROM PARA XYLENE
Vincent A. Notaro, Monroeville, Charles M. Selwitz, Pitcairn, and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,066
Int. Cl. C07c *7/02, 25/02*
U.S. Cl. 260—674 A 15 Claims

A process for separating para xylene from a mixture containing para xylene and meta xylene by selectively halogenating the meta xylene which involves heating the mixture in the presence of copper, manganese, cerium, cobalt, vanadium, chromium, iron, nickel, cadmium, tin, antimony, mercury, bismuth, a noble metal or compounds of these metals; nitrate ions, NO, NO_2 or NO_2Cl; a chloride ion or a bromide ion; oxygen; and an inert organic solvent containing less than about 28 percent by weight of water.

3,644,553
PROCESS FOR THE DECOMPOSITION OF A SOLUTION OF HYDROGEN FLUORIDE-BORON TRIFLUORIDE-XYLENES COMPLEX
Susumu Fujiyama and Fumisada Kosuge, Niigata-shi, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan
Filed Dec. 8, 1969, Ser. No. 883,132
Claims priority, application Japan, Dec. 17, 1968, 43/92,022
Int. Cl. C07c *7/10*
U.S. Cl. 260—674 A 10 Claims

An improved process for decomposing a complex solution at the time of separating xylenes by the formation of a complex of xylenes, hydrogen fluoride and boron trifluoride is disclosed. Inasmuch as only boron trifluoride and a part of hydrogen fluoride is recovered in vapor phase the use of utilities is minimized. The process is characterized by heating a solution of hydrogen fluoride-boron trifluoride-xylenes complex for a liquid residence time of 1–120 minutes at 2–30 kg./cm.² (absolute pressure) with the use of a multistage counter-counter gas-liquid contactor as a decomposer; withdrawing from the top of the decomposer a gas which contains boron trifluoride in higher concentration than in said complex solution; and also withdrawing from the bottom of the decomposer, together with xylenes, liquid hydrogen fluoride which contains substantially no boron trifluoride. A hydrocarbon diluent, when allowed to be co-present in the decomposition reaction, helps obtain still better results. Also, xylenes may be isomerized at the same time with the decomposition of said complex.

3,644,554
THERMAL RECOVERY OF ISOAMYLENES FROM TERTIARY AMYL CHLORIDE
Earl F. Harper, Oakmont, Clarence R. Murphy, Allison Park, and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sept. 8, 1969, Ser. No. 856,089
Int. Cl. C07c *1/30*
U.S. Cl. 260—677 XA 6 Claims



Isoamylene is recovered from tertiary amyl chloride by thermally decomposing from 50 to 80 weight percent of the tertiary amyl chloride and selectively absorbing the unreacted tertiary amyl chloride and isoamylene in a liquid tertiary amyl chloride solvent.

3,644,555
PROCESS FOR THE PRODUCTION OF ACETYLENE, OR ACETYLENE AND ETHYLENE BY PYROLYSIS OF HYDROCARBONS
Zoltan Nagy and Laszlo Szepesy, Budapest, and Attila Kovacs and Zsigmond Sebestyen, Veszprem, Hungary, assignors to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet, Veszprem, Hungary
Filed Aug. 26, 1969, Ser. No. 853,107
Claims priority, application Hungary, Aug. 28, 1968, MA–1,884
Int. Cl. C07c *11/24, 3/00*
U.S. Cl. 260—679 10 Claims

This invention relates to a process for producing acetylene or a mixture of acetylene and ethylene from hydro-

carbons, by pyrolysis, carried out by means of the heat quantity produced by a nearly stoichiometric burning of a mixture of combustible gases or vapours and an oxidizing gas, preferably oxygen of technical purity or air enriched in oxygen.

3,644,556
PRODUCTION OF HEXADIENES
Toshio Hori, Akira Yamamoto, and Masao Shiraishi, Mie-ken, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,231
Claims priority, application Japan, Feb. 8, 1968, 43/7,872
Int. Cl. C07c *3/10, 11/12*
U.S. Cl. 260—680 B **9 Claims**

Ethylene and a 1,3-butadiene equivalent substance are codimerized through the use of a relatively inexpensive catalyst which is a combination of a copper compound (1), a compound (2) of an element of group V–A of the Periodic Table, and a compound (3) which is an alkyl compound or an alkyl halogen compound of an element of Group I, II, or III. Higher activity and higher selectivity for producing 1,4-hexadiene are attainable by the use of a catalyst produced by compounds (1) and (2) are precombined and the resulting combination is purified with an aromatic hydrocarbon or is prepared in the presence of ethylene.

3,644,557
CATALYST COMPOSITIONS FOR PREPARING ETHYLENE
Michel Senes, Saint Nazaire, Pierre Lhonore, Doual, and Jacques Quibel, Maisons-Laffitte, France, assignors to Société Chimique de la Grande Paroisse, Azote et Produits Chimiques
Filed May 26, 1969, Ser. No. 827,756
Claims priority, application France, May 30, 1968, 153,371
Int. Cl. B01j *11/42;* **C07c** *3/34, 11/02*
U.S. Cl. 260—683 R **19 Claims**

Catalyst compositions can be used in the preparation of ethylene and propylene by reforming hydrocarbons with steam, the catalyst having a limited porosity and containing at least one oxide of the metals of the group formed by the rare earths and antimony, of which the content by weight, as oxide, is between 1 and 4%, in association with a mixture of refractory oxides with high magnesium oxide content of which the content by weight is between 30 and 70%, and of zirconium dioxide, of which the content is between 25 and 40%. Catalyst compositions containing a high content of magnesium from 50 to 70% by weight and a low alumina content which is at most 20% by weight and possibly CuO. Applications of these compositions.

3,644,558
PROCESS FOR ISOMERIZING OLEFINS
Günther Wilke and Borislav Bogdanović, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany
No Drawing. Filed Oct. 20, 1969, Ser. No. 867,928
Claims priority, application Germany, May 14, 1969, P 19 24 628.7
Int. Cl. C07c *5/22, 5/24*
U.S. Cl. 260—683.2 **10 Claims**

Process for isomerizing olefins by subjecting an isomeric mixture of at least one olefin to contact at low temperatures for an extended period of time with an π-allyl nickel compound, a Lewis acid and a phosphine.

3,644,559
DISPROPORTIONATION USING A CATALYST CONTAINING THALLIUM
Tadeusz P. Kobylinski, Cheswick, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Dec. 8, 1969, Ser. No. 883,277
Int. Cl. C07c *3/62, 11/12, 13/00*
U.S. Cl. 260—683 D **13 Claims**

A process for converting, by disproportionation, an olefin, particularly an alpha-olefin, to a product containing a mixture of olefins of higher and lower carbon number than at least one of the olefins in the olefin charge, which involves contacting the olefin charge with a novel composition containing molybdenum, tungsten or rhenium and thallium on a support, preferably alumina.

3,644,560
OXYDEHYDROGENATION OF ETHANE
William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed July 14, 1969, Ser. No. 841,594
Int. Cl. C07c *11/04, 17/10;* **B01j** *11/40*
U.S. Cl. 260—683.3 **9 Claims**

Process for the oxydehydrogenation of ethane to ethylene by using catalytic quantities of hydrogen halide. A preferred catalyst includes a low concentration of copper or iron halide with rare earth halide, the ratio of rare earth halide to copper or iron halide being greater than 1:1. Other preferred catalyst components include alkali metal halide and manganese halide.

3,644,561
OXYDEHYDROGENATION OF ETHANE
William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed July 14, 1969, Ser. No. 841,623
Int. Cl. C07c *11/04, 17/10;* **B01j** *11/40*
U.S. Cl. 260—683.3 **9 Claims**

Process for the oxydehydrogenation of ethane to ethylene by using excess quantities of hydrogen halide. A preferred catalyst includes a low concentration of copper or iron halide with rare earth halide, the ratio of rare earth halide to copper or iron halide being greater than 1:1. Other preferred catalyst components include alkali metal halide and manganese halide.

3,644,562
NICKEL DIMERISATION CATALYSTS
John Robert Jones, Walton-on-Thames, and Thomas J. Symes, Twickenham, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed Dec. 5, 1968, Ser. No. 781,632
Claims priority, application Great Britain, Dec. 28, 1967, 58,824/67
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **10 Claims**

Linear dimers having an internal double bond are prepared by dimerising an alpha-mono-olefin containing C_3–C_6 carbon atoms per molecule in the presence of a nickel complex of diisobutyrylmethane or dibenzoylmethane and an aluminium alkyl activating agent.

3,644,563
ETHYLENE OLIGOMERIZATION
Ronald S. Bauer, Orinda, Harold Chung, Berkeley, Peter W. Glockner, Alameda, and Wilhelm Keim, Berkeley, Calif., and Henry van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,376
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **10 Claims**

Ethylene is oligomerized to a mixture of olefinic products of high linearity in the presence of a heterogeneous

catalyst comprising (a) a nickel chelate of a bidentate ligand having a tertiary organophosphorus moiety and a carboxymethyl or carboxyethyl group attached directly to the phosphorus atom of the organophosphorus moiety and (b) an inorganic siliceous oxide support.

3,644,564
ETHYLENE OLIGOMERIZATION IN THE PRESENCE OF COMPLEX NICKEL-FLUORINE-CONTAINING CATALYSTS
Henry van Zwet, Amsterdam, Netherlands, and Ronald S. Bauer, Orinda, and Wilhelm Keim, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 19, 1969, Ser. No. 886,789
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **15 Claims**

Ethylene is oligomerized to a mixture of linear olefinic products in the presence of an organoaluminum-free catalyst which is the product of the reaction of a nickel compound which is an atom of nickel in complex with an olefinically unsaturated compound with a fluorine-containing ligand. The preferred nickel compound is bicyclooctadiene-1,5-nickel. The fluorine-containing ligands are selected from the group consisting of trifluoroacetic acid, 4,4,4-trifluoro-3-hydroxy-3-trifluoromethylbutyric acid, perfluoro-propene, hexafluoroacetylacetone and trifluoroacetylacetone.

3,644,565
ALKYLATION PROCESS
Giovanni Biale, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,724
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.43 **14 Claims**

Hydrocarbon olefins are converted to higher boiling products comprising polymers and oligomers of the olefin and alkylates of the olefin with paraffinic hydrocarbons in the presence of a Group VIII noble metal distended on a synthetic zeolite, i.e., an aluminosilicate molecular sieve, that has been pretreated with hydrogen at conditions to impart selective polymerization or alkylation activity thereto. In a specific embodiment, ethylene is polymerized to low boiling oligomers comprising dimers, trimers, tetramers, etc. by contacting the ethylene under polymerization conditions with a palladium catalyst deposited on a Y molecular sieve that has been pretreated with hydrogen at a temperature from about 200° to 900° F. or is polymerized to solid polymer when the hydrogen treatment is performed at a temperature from 0° to 100° F. The ethylene is also reacted under alkylation conditions with a paraffin hydrocarbon by contacting the olefin and paraffin under alkylation conditions with a palladium deposited on a Y molecular sieve that has been pretreated by contacting with hydrogen at a temperature of from 100° to about 200° F.

3,644,566
SILICON ACRYLIC COPOLYMERS
Richard D. Kincheloe, Kansas City, Mo., and Joseph H. Scherrer, Shawnee Mission, Kans., assignors to Cook Paint & Varnish Company, Kansas City, Mo.
No Drawing. Continuation of application Ser. No. 563,074, July 6, 1966. This application Nov. 17, 1970, Ser. No. 79,850
Int. Cl. C08f *35/02, 29/36;* **C08g** *47/10*
U.S. Cl. 260—826 **13 Claims**

A silicon-acrylic copolymer of a hydroxy functional acrylic copolymer and an alkoxy functional polyorganosiloxanes. The hydroxy functional acrylic copolymer may consist of a copolymer of hydroxy propyl methacrylate and, for example, a styrene. The silicon-acrylic copolymer may be combined with maleamine-formaldehyde resins or the like to provide coating compositions.

3,644,567
PROCESS FOR PREPARING BLOCK COPOLYMERS FROM A TETRAHYDROFURAN POLYMER
Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Original application Feb. 10, 1966, Ser. No. 527,399. Divided and this application June 23, 1970, Ser. No. 59,768
Int. Cl. C08g *39/00*
U.S. Cl. 260—829 **6 Claims**

Block copolymers are prepared by polymerizing a cationically polymerizable monomer with polycationically polymer of a tetrahydrofuran. In an example, 10 ml. of tetrahydrofuran and 0.5 ml. of trifluoromethane sulfonic anhydride were reacted at room temperature to produce a dicationically active polytetrahydrofuran. Ethylene oxide was polymerized onto the ends of the tetrahydrofuran polymer at room temperature, and the block copolymer product then was quenched in dilute aqueous sodium hydroxide for 70 hours and was washed with water containing sodium bromide.

3,644,568
POLYESTER COMPOSITIONS
Colin Tilley, Prestbury, David Harris Watson, Faversham, and Michael Campbell, Wellingborough, England, assignors to The Anchor Chemical Company Limited, Clayton, Manchester, England
No Drawing. Filed Oct. 31, 1968, Ser. No. 772,411
Int. Cl. C08g *39/10, 45/14*
U.S. Cl. 260—835 **8 Claims**

An air drying surface coating composition, comprising unsaturated polyesters, a polymer or copolymer formed by polymerising the glycidyl ether of a β-unsaturated alcohol of at least 3 carbon atoms either alone or with other oxirane compounds, and small quantities of metal salts of organic acids, such salts being soluble in the composition.

3,644,569
TWO-PART ADHESIVES COMPRISING AN ISOCYANATE TERMINATED PREPOLYMER, AN ISOCYANATE REACTIVE MONOMER AND AN UNSATURATED POLYESTER
Gerhard Joseph Pietsch and Armand Francis Lewis, Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 19, 1968, Ser. No. 777,142
Int. Cl. C08f *29/20;* **C08g** *39/10, 41/04*
U.S. Cl. 260—835 **10 Claims**

A two-part adhesive comprising (1) a saturated polyether or polyester-based. NCO terminated polyurethane resin and a peroxide catalyst and (2) an unsaturated polyester resin and a cross-linking monomer containing an NCO reactive group, is disclosed.

3,644,570
PROCESS FOR THE PREPARATION OF RUBBER MODIFIED NOVOLAK RESINS
Kerry David Jeffreys, Rhiwbina, Cardiff, Wales, assignor to BP Chemicals (U.K.) Limited, London, England
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,808
Claims priority, application Great Britain, Oct. 1, 1968, 46,440/68
Int. Cl. C08d *9/10;* **C08g** *37/20, 51/24*
U.S. Cl. 260—845 **7 Claims**

Rubber modified phenolic resole and novolak resins are prepared by reacting the phenol and aldehyde under the

appropriate reaction conditions in the presence of a latex of a polychloroprene rubber.

3,644,571
PROCESS OF HEATING CAPROLACTAM GRAFT COPOLYMERS TO INCREASE MELT STRENGTH
Raymond P. Anderson and Francis R. Galiano, Oakland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Mar. 19, 1970, Ser. No. 20,905
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 G **6 Claims**

When olefin-maleic anhydride copolymers are employed at low levels in hydrolytic polymerization of caprolactam to yield grafted caprolactam copolymers, the resulting polymers upon heating in the solid state at a temperature of at least 140° C. increase in melt strength to values considerably above the melt strength of conventional polycaprolactam of equivalent melt index. The resulting products having high melt strength may be advantageously used for the manufacture of extruded and blow molded articles.

3,644,572
POLYAMIDE-POLYESTER DISPERSIONS CONTAINING SECONDARY AND TERTIARY AMINO TERMINATING MOIETIES ON THE POLYAMIDES
Richard E. Mayer, Richmond, and Lamberto Crescentini, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,253
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 R **12 Claims**

A polyamide having a substantial proportion of primary amino end-groups bound to terminating agents containing tertiary or unreactive secondary amino groups can be spun into filaments, when said polymer is melted or melt-blended with polyester, without adverse interaction occurring between the copolymers whereby the resultant product possesses enhanced dyeability characteristics with acid dyes.

3,644,573
HEAT STABILIZATION OF POLYESTERS
Kenneth T. Barkey, C Shelburn Hunter, and Walter L. Predmore, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 2, 1969, Ser. No. 838,473
Int. Cl. C08g *51/58*
U.S. Cl. 260—860 **7 Claims**

It has been discovered that polyesters can be stabilized against the spontaneous degradation which the polyesters ordinarily undergo when they are heated to temperatures substantially above their melting points for a period of time by the incorporation thereinto of a small amount of one or more 2(5H) furanones which are compatible with the polyester, are ultraviolet absorbing, and which are, themselves, stable at said temperature.

3,644,574
SHAPED ARTICLES OF BLENDS OF POLYESTERS AND POLYVINYLS
Winston J. Jackson, Jr., Herbert F. Kuhfuss, and John R. Caldwell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 17, 1969, Ser. No. 842,714
Int. Cl. C08f *29/10;* **C08g** *39/10*
U.S. Cl. 260—873 **10 Claims**

Blends of 1,4-butanediol polyesters such as derived from 1,4-butanediol and terephthalic or napthalenedicarboxylic acid, with vinyl aromatic polymers such as polystyrene give shaped articles having an excellent balance of physical properties.

3,644,575
DYEABLE POLYPROPYLENE FIBERS HAVING IMPROVED PROPERTIES AND DYEING PROCESS FOR PRODUCING ARTICLES WHICH HAVE FASTNESSES
Kazuo Nakatsuka, Fumio Ide, and Kazuo Ito, Ohtakeshi, and Norimasa Yamamoto, Aichi-ken, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1966, Ser. No. 606,090
Claims priority, application Japan, May 23, 1966, 41/32,868
Int. Cl. C08f *29/12;* **D06p** *3/00, 5/00*
U.S. Cl. 260—876 R **16 Claims**

A polypropylene composition comprising polypropylene graft copolymerized with a vinylpyridine and an acrylate or methacrylate ester, the graft copolymer being prepared from a polypropylene which has been previously hydroperoxidized at temperatures of 70–130° C. The mixture is subjected to melt-spinning as such or after incorporation of a monomeric surface active agent and/or an organophosphorus compound to obtain fibers having excellent stability to heat, light and oxidation, dyeability and color fastness.

3,644,576
IMPACT-RESISTANT RESINOUS BLENDS CONTAINING VINYL CHLORIDE POLYMER AND METHOD OF MAKING SAME
Eugene J. Sehm, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Oct. 5, 1967, Ser. No. 673,055
Int. Cl. C08f *37/18, 29/24*
U.S. Cl. 260—897 C **17 Claims**

Resinous blends are disclosed comprising a vinyl chloride base resin and a rubbery, essentially completely gelled and finely particulate polymer of an alkyl acrylate; such blends being more or less rigid and having high impact strength, good resistance to heat distortion and broad processing latitude. A method of making such blends is shown comprising adding such acrylate to the base resin as particles of latex-like proportions preferably imbedded in or dispersed in a hard matrix of a hard vinyl chloride resin, and fusing the resulting mixture under shear at 320° to 440° F. The resultant impact-resistant blends are useful in tubing, pipe, sheets and other structural forms.

3,644,577
VINYL HALIDE POLYMERIC BLENDS
Yoon Chai Lee and Quirino A. Trementozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 11, 1968, Ser. No. 783,096
The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed
Int. Cl. C08f *29/22, 29/56, 41/12*
U.S. Cl. 260—876 R **15 Claims**

A polymeric blend is prepared from a vinyl halide polymer and an interpolymer formed from a major amount of an ethylenically unsaturated nitrile monomer and a minor amount of copolymerizable monomer from the group of monovinylidene aromatic hydrocarbons, acrylic acids, acrylic esters and vinyl esters. The blends exhibit significantly improved barrier properties in addition to heat resistance and processability, while maintaining or improving other properties including toughness.

3,644,578
CROSS-LINKABLE COMPOSITIONS BASED ON ELASTOMERS AND ON CROSS-LINKABLE COPOLYMERS OF VINYL CHLORIDE
Alexis Mathieu, Brussels, Belgium, and Claude Barberot, Paris, France, assignors to Solvay & Cie, Rue du Prince Albert, Brussels, Belgium
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,988
Claims priority, application France, Apr. 30, 1968, 150,080
Int. Cl. C08f *29/24, 37/18*
U.S. Cl. 260—876 R **19 Claims**

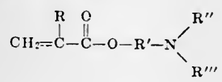
The cross-linkable composition contains from 95 to 20% by weight of one or more elastomers and 5 to 80% by weight of a cross-linkable vinyl polymer based on vinyl chloride. The cross-linkable vinyl polymer is obtained by polymerization of 3 to 50 parts by weight of a mixture of a diolefin and one or more monomers chosen from the nitriles and esters of unsaturated monocarboxylic acid and unsaturated polycarboxylic acid, in the presence of 100 parts of by weight of a copolymer of vinyl chloride and a monomer containing at least 8 carbon atoms and which is a vinyl ester of a monocarboxylic acid, an ester of an unsaturated mono- or polycarboxylic acid or an alkyl vinyl ether. The present cross-linkable compositions possess a highly useful combination of characteristics including excellent mechanical properties which are retained at high temperature, facility of application at low temperatures, resistance to abrasion, chemical agent and low temperature; nonflammability, high thermal stability and good dielectric properties.

3,644,579
TRANSPARENT THERMOPLASTIC RESIN HAVING HIGH IMPACT STRENGTH
Masaki Nakajima, Yokohama-shi, Tadayuki Hosogane, Kawasaki-shi, Shoichi Kobayashi, Tokyo, and Shigenobu Ishibara, Fujiwasa-shi, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed May 28, 1969, Ser. No. 828,700
Claims priority, application Japan, Jan. 7, 1969, 44/1,165
Int. Cl. C08f *19/10, 41/12*
U.S. Cl. 260—876 R **6 Claims**

A thermoplastic resin having high transparency and impact-strength comprising the components of chlorinated polyethylene, methylmethacrylate and styrene, and a process for producing the same.

3,644,580
COPOLYMERS OF PROPYLENE AND AN AMINO-SUBSTITUTED ACRYLIC COMONOMER
William J. Craven, Passaic, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.
No Drawing. Continuation of application Ser. No. 600,036, Dec. 8, 1966. This application Feb. 16, 1970, Ser. No. 10,098
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 **6 Claims**

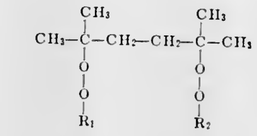
A substantially linear copolymer of propylene and an amino-substituted acrylic comonomer is disclosed which is susceptible to dyeing and printing. The copolymer comprises a first segment which is a crystalline propylene polymer and having attached to an end thereof a second segment which is a polymer of an amino-substituted acrylic monomer having the formula



wherein R is hydrogen or a methyl group, R′ is an alkylene group having 1 to 8 carbon atoms and R″ and R‴ are hydrogen or alkyl groups having 1 to 4 carbon atoms.

3,644,581
DIPERESTER FREE RADICAL INITIATOR FOR GRAFT POLYMERIZATION
Donald F. Knaack, Wilmington, Del., assignor to Avisun Corporation, Philadelphia, Pa.
No Drawing. Filed Dec. 5, 1968, Ser. No. 781,595
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 **10 Claims**

A polyolefin graft copolymer is prepared by the graft polymerization of at least one ethylenically unsaturated monomer onto a polyolefin using a diperester free radical initiator having the formula

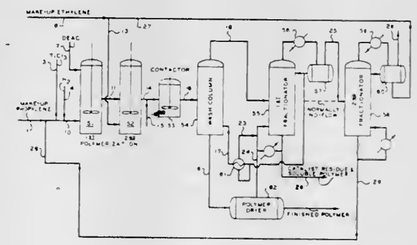


wherein R_1 and R_2 are independently selected from branched alkanoyl radicals having from 4 to 10 carbon atoms.

3,644,582
GRAFT POLYMERIZATION WITH A PERESTER INITIATOR AND A PROMOTER
Donald F. Knaack, Talleybrook, Del., assignor to Avisun Corporation, Philadelphia, Pa.
No Drawing. Filed Apr. 14, 1969, Ser. No. 816,016
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **10 Claims**

A dye-receptive copolymer is prepared by the graft polymerization of at least one ethylenically unsaturated monomer onto a polyolefin in the presence of a perester free radical initiator and a promoter. Suitable promoters are inorganic reducing agents such as a lower valent salt of a multivalent metal, a hydrosulfite, a sulfite, a bisulfite, and a thiosulfate or organic reducing agents such as a formaldehyde sulfoxylate, hydrazine hydrate and hydrazine salts.

3,644,583
PRODUCTION AND RECOVERY OF A SOLID MIXED HOMO- AND COPOLYMER
Jack S. Scoggin, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 23, 1969, Ser. No. 818,709
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 B **3 Claims**



A solid mixed homo- and copolymer product is produced by a combination of a catalyzed mass homo- and a catalyzed mass copolymerization and the solid recovered and washed with an impure fraction of the

monomers so reacted, the fraction being obtained by a fractionation of unreacted excess monomers to produce a stream containing catalyst and any soluble polymer, a stream containing a mixture of the monomers, using a portion of the stream of monomers as said impure fraction, fractionating another portion thereof to obtain one of the monomers for the homopolymerization and a mixture of the monomers for said copolymerization. In an embodiment a mixed polypropylene-propylene-ethylene copolymer is produced and recovered and washed with a stream containing propylene and ethylene, there being recovered also a stream of propylene substantially free from ethylene for use in said homopolymerization and a stream containing propylene and ethylene for use in said copolymerization.

3,644,584

GRAFT COPOLYMERS BEARING AT LEAST TWO UNLIKE TYPES OF GRAFT COMPONENTS

Michael Fryd, Broomall, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 640,486, May 23, 1967. This application Aug. 30, 1968, Ser. No. 756,359

Int. Cl. C08f *19/102, 19/16*

U.S. Cl. 260—879 **28 Claims**

Graft copolymers having polymeric backbone components and multiple unlike types of graft components, and a method for preparing them. The backbone components can be unsaturated polymers or saturated polymers which provide grafting sites; the graft components can be polymers of graft copolymerizable vinyl monomers.

The graft copolymers are useful as can coatings, as film-forming components in coating compositions and as adhesives.

3,644,585

PROCESS FOR THE PREPARATION OF POLYBUTADIENE

Motowo Takayanagi, Fukuoka-shi, and Shotaro Sugiura, Tetsuro Matsuura, Haruo Ueno, Keiichi Tsuji, Shinzi Yamamoto, and Fuminori Matumoto, Ube-shi, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,706

Claims priority, application Japan, Dec. 19, 1967, 42/80,934

Int. Cl. C08f *15/04*

U.S. Cl. 260—879 **12 Claims**

Process for the preparation of polybutadiene by polymerizing 1,3-butadiene in the presence of a cis-1,4-polymerization catalyst, characterized in that trans-1,4-polybutadiene is added to the polymerization system in advance of the polymerization reaction, and the polymerization of 1,3-butadiene is performed in the presence of so added trans-1,4-polybutadiene.

3,644,586

HIGH MODULUS, HIGH IMPACT TERPOLYMER COMPOSITION

Edward M. Hagerman, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed July 16, 1968, Ser. No. 745,128

Int. Cl. C08f *15/04*

U.S. Cl. 260—880 R **2 Claims**

A styrene-acrylonitrile grafted polyisoprene composition wherein the polyisoprene is polymerized to a high molecular weight, characterized by a limiting viscosity number of at least 1.6 in benzene at 30° C., has a tensile modulus of elasticity of at least about 500,000 p.s.i. and an Izod impact strength at about room temperature of greater than 4.0 foot pounds per inch of notch.

3,644,587

CHEMICALLY CONTROLLING GRATING AND RUBBER PARTICLE SIZE IN MANUFACTURE OF HIGH IMPACT POLYSTYRENE USING A 2-STEP PROCESS

Arne Finberg, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Apr. 3, 1969, Ser. No. 813,269

Int. Cl. C08f *15/04*

U.S. Cl. 260—880 **4 Claims**

High impact polystyrene is produced by free radical catalytic bulk prepolymerization of a solution of a rubber and styrene followed by suspension polymerization. Polymers having improved mechanical and rheological properties are produced by using in the bulk stage, an azo initiator during the phase inversion stage and adding a peroxide initiator just before the inversion is completed or thereafter.

3,644,588

BLOCK POLYMER HYDROGENATION PROCESS

Howard L. Hassell, San Leandro, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,894

Int. Cl. C08f *15/04, 27/24*

U.S. Cl. 260—879 **6 Claims**

Block copolymers of conjugated dienes and monovinyl arenes may be substantially completely hydrogenated by a two-stage process, the first stage under mild conditions to hydrogenate the diene blocks, the second stage at more strigent conditions to hydrogenate the monovinyl arene blocks, the latter stage being conducted in the presence of certain catalyst modifiers such as alcohols.

3,644,589

METHOD OF IMPARTING SELF-EXTINGUISHING FLAME PROPERTIES TO IMPACT-MODIFIED POLYVINYL CHLORIDE

Earnest Moore, Akron, and George H. Wear, Mogadore, Ohio, assignors to The General Tire & Rubber Company

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,091

Int. Cl. C08f *45/62*

U.S. Cl. 260—890 **1 Claim**

This invention concerns a method of imparting self-extinguishing flame properties to impact-modified polyvinyl chloride based resins by the step of adding to the resin a compound selected from the group consisting of organotin maleates, organotin mercaptides, stannous oxide, and mixtures thereof.

3,644,590

DIENE/NITRILE ELASTOMERIC BLENDS

Douglas Coulthard, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,961

Claims priority, application Canada, Jan. 16, 1969, 40,288

Int. Cl. C08d *9/08*

U.S. Cl. 260—894 **9 Claims**

Improved oil-resistant vulcanizate is prepared by vulcanizing a blend of (1) a rubbery copolymer of a 2-alkyl butadiene-1,3 and an acrylic nitrile with (2) a rubbery copolymer of butadiene-1,3 and acrylonitrile. The preferred copolymer (1) is isoprene/acrylonitrile copolymer. The vulcanizate is characterized by improved tear strength, compression set and oil-aging properties and is suitable for the production of thin-walled moulded articles.

3,644,591

SIZING FORMULATIONS FOR POLYMERIC MATERIALS

Harold W. Wolf and Stanley E. Ross, Clifton, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Original application Aug. 28, 1967, Ser. No. 663,490, now Patent No. 3,502,743. Divided and this application Oct. 20, 1969, Ser. No. 871,329

Int. Cl. C08f *33/08*

U.S. Cl. 260—895 **6 Claims**

This invention relates to heat and humidity resistant sizing formulations for polyolefin yarns, including polypropylene, comprising:

(a) a major amount of a resin component selected from
  (1) hydantoin formaldehyde resin.
  (2) a copolymer of vinyl pyrrolidone and water insoluble comonomer,
  (3) a copolymer of vinyl acetate and water insoluble comononer, admixed with:
(b) a minor amount of a polyvinyl, containing moiety, e.g. polyvinyl alkyl ether.

3,644,592

PROPYLENE POLYMER COMPOSITION CONTAINING SMALL AMOUNTS OF UREA, PHTHALIC ANHYDRIDE, AND PVC

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,869

Int. Cl. C08f *29/24*

U.S. Cl. 260—897 **12 Claims**

Polypropylene and block copolymers of propylene and ethylene are improved in optical properties, gas permeability properties, and other properties by adding thereto phthalic anhydride, urea, and polyvinyl chloride.

3,644,593

COMPOSITIONS OF MATTER COMPRISING OXYBENZOYL POLYESTERS AND POLYFLUORINATED ADDITION POLYMERS

Bernard E. Nowak, Lancaster, Steve G. Cottis and James Economy, Buffalo, and Paul J. Steiner, Snyder, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed May 28, 1969, Ser. No. 828,691

Int. Cl. C08f *29/22*

U.S. Cl. 260—900 **20 Claims**

A composition of matter comprising:

(A) an oxybenzoyl polyester and
(B) a polyfluorinated addition polymer which is thermally stable at at least 400° F.

3,644,594

POLYVINYL ACETAL INTERLAYERS CONTAINING COPOLYMERIC ADDITIVES

George E. Mont and Saul M. Cohen, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,403

Int. Cl. C08f *29/50*

U.S. Cl. 260—901 **8 Claims**

Disclosed herein are polyvinyl acetal interlayers having improved impact strength which contain from 0.5 to 5.0 parts per hundred parts of polyvinyl acetal resin (phr.) of an additive which is the copolymerization product of at least one vinyl ester and at least one ester of acrylic methacrylic acid.

3,644,595

REACTIONS OF ELEMENTAL PHOSPHORUS AND PHOSPHORUS ESTER REACTION PRODUCTS THEREOF

Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 527,492, Feb. 15, 1966. This application Dec. 17, 1969, Ser. No. 886,037

Int. Cl. C07f *9/02, 9/32, 9/40*

U.S. Cl. 260—920 **13 Claims**

Organophosphorus compositions are prepared by reacting elemental phosphorus with an alcohol or mercaptan and an epoxide or episulfide in the presence of a basic catalyst. The compositions are useful as intermediates for preparing many types of compositions. For instance, they can be reacted with aldehydes to produce polyols of wide utility, they can be oxidized to produce derivatives which can be reacted with alkylene oxides to produce useful polyols, and they can be reacted with activated olefins to produce useful compositions.

3,644,596

PROCESS FOR THE MANUFACTURE OF NEUTRAL POLYPHOSPHORIC ACID ESTERS BY REACTING PHOSPHORUS PENTOXIDE AND BORIC ACID ESTERS

Klaus-Dieter Kampe and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Oct. 23, 1965, Ser. No. 504,187. Divided and this application Apr. 14, 1969, Ser. No. 841,645

Int. Cl. C07f *9/06, 5/04*

U.S. Cl. 260—922 **2 Claims**

A process has been provided for producing neutral polyphosphoric acid ester derivatives which comprises reacting an acid ester with phosphorus pentoxide at a temperature within the range of −78° C. to +140° C., in the absence of moisture and in a mole ratio of ester to phosphorus pentoxide from 0.05 to 9 moles ester to 1 mole phosphorus pentoxide, said acid ester being defined by the general formula

$$(R')_m B-(OR)_n \\ \downarrow \\ (R'')_l$$

wherein $1+m+n=3$ in which formula R represents a saturated, unsaturated, oxalkylated, or halogenated aliphatic radical of 1 to 12 carbon atoms, or an aromatic radical of 1 to 12 carbon atoms, R′ and R″ each represents a hydrogen, a saturated, unsaturated, oxalkylated, or halogenated aliphatic or cycloaliphatic radical of 1 to 12 carbon atoms or an aromatic radical of 1 to 12 carbon atoms. These compounds are useful as catalysts for production of polyacetals.

3,644,597

REACTION PRODUCT OF 2,3-DIBROMOPROPANOL AND PHOSPHORUS PENTOXIDE

Abraham S. Endler, Flushing, N.Y., assignor to Apex Chemical Co., Inc., Elizabethport, N.J.

No Drawing. Filed Jan. 28, 1969, Ser. No. 794,805

Int. Cl. C07f *9/08;* **C09k** *3/28*

U.S. Cl. 260—933 **9 Claims**

The product of the reaction of 2,3-dibromopropanol, phosphorus pentoxide in an amount sufficient to provide therein from 1 to 2 atoms of phosphorus per molecule of 2,3-dibromopropanol, either additional phosphorus pentoxide, phosphoric acid or polyphosphoric acid in an amount to provide, with the first mentioned phosphorus pentoxide, a total of 3 to 25 atoms of phosphorus per molecule of 2,3-dibromopropanol and sufficient free water, if necessary, to provide, with any combined water that may be present, a water content of 0.8 molecule thereof for each phosphorus atom in the additional phosphorus

pentoxide, the phosphoric acid or the polyphosphoric acid, is dissolved in water with sufficient ammonia to adjust the pH of the resulting solution to within the range from 5 to 8, whereby to provide a water-soluble flame retardant for textile fibers or fabrics. The reaction mixture may further include a maximum of 1 molecule of urea for each 2 atoms of phosphorus in the total number of the latter. The solution for imparting flame retarding properties to textile materials may include a fire retardant salt, such as ammonium phosphate, along with the stated reaction product provided that the latter constitutes at least 10 wt. percent of the total solids content of the solution.

3,644,598

1 - ALKOXY(-ALKENYLOXY, -PHENOXY) - 1-THIONO-3-CHLORO(3-ALKYL)PHOSPHOLINES

Reinhard Schliebs, Cologne-Flittard, Hanshelmut Schlor, Wuppertal-Elberfeld, and Bernhard Homeyer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 3, 1969, Ser. No. 830,122
Claims priority, application Germany, June 14, 1968, P 17 68 662.3
Int. Cl. A01n *9/36;* **C07d** *105/04*
U.S. Cl. 260—936 **10 Claims**

1-alkoxy(-alkenyloxy, -phenoxy)-1-thiono-3-chloro(3-alkyl)phospholines, i.e. 1-(alkoxy, alkenyloxy, chloroalkoxy, alkylphenoxy, alkylmercaptophenoxy and chloro-substituted phenoxy)-3-(chloro and alkyl)-Δ^3 and Δ^2-phospholines, which possess nematocidal, arthropodicidal, especially acaricidal and insecticidal, and fungicidal properties.

3,644,599

PHOSPHONATE ESTERS OF POLYPHENYL ETHERS OF PROPANOLS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed May 14, 1968, Ser. No. 728,913
Int. Cl. C07f *9/40;* **C08** *22/44*
U.S. Cl. 260—951 **7 Claims**

Polyol adjuvants are provided which have the property of imparting flame-retardant characteristics to polyurethane foams. The adjuvants are prepared by condensing at least one mole of 3-halo-1,2-propanediol and at least one mole of 1,3-dihalo-2-propanol with a tetrahalo bisphenol A or, alternatively, with the reaction product of at least one mole of a phenol, a chlorophenol and at least one mole of the same or another phenol with at least one mole of formaldehyde. The condensation products are subsequently reacted with the salt of a saturated or unsaturated partial ester of phosphoric acid and optionally brominated in the latter case. Flame-retardant polyurethane foams are disclosed containing the novel polyol adjuvants.

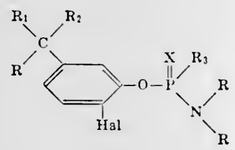
3,644,600

2-HALO-4-ALKYL-PHENYL-PHOSPHORAMIDATES

Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Feb. 26, 1969, Ser. No. 802,627
Claims priority, application Switzerland, Mar. 1, 1968, 3,083/68
Int. Cl. A01n *9/36;* **C07f** *9/12, 9/22*
U.S. Cl. 260—959 **10 Claims**

Compounds of the formula



in which R, R_1 and R_2 represent aliphatic residues, R_3 represents an alkyl group which may be linked with the phosphorus atom through oxygen or sulfur, X is O or S and Hal represents a halogen atom. The phosphoric acid ester amides are effective as selective herbicides as well as plant-growth regulators in useful plant crops.

3,644,601

CONTROL OF ISOMER RATIO IN REACTION PRODUCTS PREPARED BY PHOSPHORYLATION OF ENOLATE IONS

Bernard Miller, Amherst, Mass., and Howard Margulies, Princeton Junction, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 659,014, Aug. 8, 1967. This application May 7, 1969, Ser. No. 822,619
Int. Cl. C07f *9/08, 9/12;* **A01n** *9/36*
U.S. Cl. 260—972 **6 Claims**

Enolate ions are phosphorylated in the presence of a solvent and a strong base to yield a product mixture containing trans and cis isomers. Certain unique combinations of solvents and bases provide reaction products in which the trans isomer predominates while other combinations provide reaction products in which the cis isomer predominates. Since one isomer often exhibits superior pesticidal activity when compared to the other isomer, the processes of this invention provide a convenient route for obtaining the desired isomer.

3,644,602

PROCESS FOR PRODUCING TRIALKYL PHOSPHATES

Edward F. Orwoll, Baltimore, Md., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,971
Int. Cl. C07f *9/08;* **C07c** *31/30*
U.S. Cl. 260—974 **10 Claims**

Process for the preparation of tris(C_6 to C_{12} alkyl) phosphates from phosphoryl chloride and a corresponding alkali metal (C_6 to C_{12}) alkoxide. The alkali metal (C_6 to C_{12}) alkoxide is prepared in high yield and high purity by an alkoxide exchange reaction between an alkali metal alkoxide of a C_4 or C_5 saturated primary alcohol and a C_6 to C_{12} alcohol.

3,644,603

METHOD OF MAKING 2-AMINOETHYL PHOSPHATE

Perttu V. Laakso, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,031
Int. Cl. C07f *9/08*
U.S. Cl. 260—978 **4 Claims**

Method of making 2-aminoethyl phosphate in high yield by evaporating the water of solution from an aqueous mixture of 2-aminoethanol and orthophosphoric acid in equimolar proportions at a temperature not over 110° C., then heating gradually to a temperature of 150–210° C. at reduced pressure to remove an equimolar proportion of water of reaction.

3,644,604

NUCLEAR FUEL BODY AND PROCESS FOR MAKING SAME

James Ray Hooker, San Diego, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 14, 1969, Ser. No. 877,030
Int. Cl. G21c *21/02*
U.S. Cl. 264—.5 **8 Claims**

Porous nuclear fuel bodies are made from a mixture of a thermosetting resin, such as a phenol-aldehyde resol

resin or a furfural alcohol resin, a curing agent and fuel particles having fission product-retentive coatings. The curing agent is included in an amount at least about three times the amount normally employed to completely polymerize the resin. This substantial excess of curing agent causes curing to proceed rapidly and entraps gas bubbles in the hardening polymer matrix. After curing, carbonization is carried out which leaves the coated particles dispersed in a porous carbon matrix. Fuel particle coatings, particularly pyrocarbon coatings, can form strong bonds with such thermosetting resins. The excess of curing agent avoids the establishment of stresses in the coatings that might result ultimately in cracking.

3,644,605

METHOD FOR PRODUCING PERMANENT ELECTRET CHARGES IN DIELECTRIC MATERIALS

Gerhard M. Sessler, Summit, and James E. West, Plainfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1969, Ser. No. 798,411
Int. Cl. H04r *7/00, 19/00*
U.S. Cl. 264—22 **1 Claim**



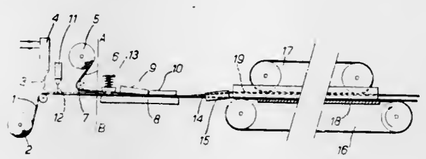
Stable thin film electrets are produced by directing an electron beam on a dielectric material in a controlled fashion. Electron absorption in the film and induced secondary emission, both from the film and from an adjacent dielectric surface, aid in producing stable electrets with superior charge characteristics and very long lifetimes.

3,644,606

PROCESS FOR THE MANUFACTURE OF FOAM SLABS

Jacques Augé, André Guillaume, and Claude Tourniaire, Lyon, France, assignors to Rhone-Poulence S.A., Paris, France

Continuation of application Ser. No. 675,169, Oct. 13, 1967. This application Aug. 20, 1970, Ser. No. 65,690
Claims priority, application France, Oct. 18, 1966, 80,424
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 **5 Claims**



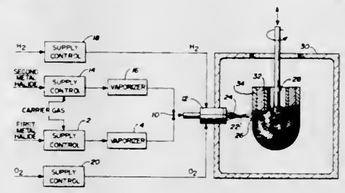
Foam slabs are made by feeding a foamable liquid polyurethane mixture between two sheets which are brought together at an angle of less than 10°, sealing the edges of the sheets together, allowing the mixture to foam, and shaping the slab so obtained.

3,644,607

USE OF VAPOR PHASE DEPOSITION TO MAKE FUSED SILICA ARTICLES HAVING TITANIUM DIOXIDE IN THE SURFACE LAYER

Rodney A. Raques and Foster L. Gray, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1969, Ser. No. 886,252
Int. Cl. C04b *41/32, 35/14;* **C23c** *11/08;* **B28b** *11/04*
U.S. Cl. 264—60 **4 Claims**



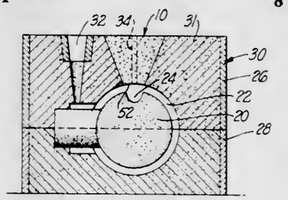
An article composed of a metal oxide having a composition of two or more metal oxides the concentration of which can preferentially or selectively be varied throughout its thickness. The method for making the article includes vapor phase hydrolysis of a metal halide deposition of the resultant metal oxide onto a deposition surface. In an exemplary mode silicon dioxide is deposited on a deposition mandrel until a predetermined thickness is laid down. Thereafter a mixture of silicon dioxide and titanium dioxide are deposited on the previously built-up silicon dioxide layer. The metal oxide article thus formed is a porous, amorphous structure. For most uses this structure is then sintered to form a fused metal oxide structure. This method of forming an article allows preferential variance of the thermal expansion of a fused silica crucible or tube throughout its wall thickness.

3,644,608

METHOD OF MAKING A NON-METALLIC CAST CHILL

John J. Valentine, 1518 McWood St., West Covina, Calif. 91790

Continuation-in-part of abandoned application Ser. No. 582,832, Sept. 29, 1966. This application Nov. 26, 1969, Ser. No. 880,074
Int. Cl. B28b *1/08;* **B29c** *1/02*
U.S. Cl. 264—71 **8 Claims**



A method of and means for producing the various elements of a metal forming mold, such as a cope, drag, core, and/or chill, by casting each element from an improved high temperature resistant casting composition and thereafter treating the metal forming surfaces of each cast element with a mixture of phosphoric acid and furfuryl alcohol resin to harden the surfaces and impregnate the latter with carbon. A method of and means for producing a cast foundry chill involving sealing the open end of a chill form to a selected surface region of a pattern, filling the form with a chill casting composition, and curing the composition to provide a finished chill for use in subsequent molding of a part in a mold cavity conforming to the pattern.

3,644,609
METHOD OF MANUFACTURING ACRYLIC COMPOSITE YARN
Kazumi Nakagawa and Keitaro Shimoda, Saidaiji, Japan, assignors to Japan Exlan Company Limited, Oska, Japan
No Drawing. Continuation of abandoned application Ser. No. 817,249, Mar. 7, 1969, which is a continuation of abandoned application Ser. No. 566,238, July 19, 1966. This application Mar. 5, 1971, Ser. No. 121,526
Claims priority, application Japan, July 25, 1965, 40/45,518
Int. Cl. D01d *5/22*
U.S. Cl. 264—168 **1 Claim**

A method of manufacturing an acrylic composite fiber which contains predominantly acrylonitrile, characterized by

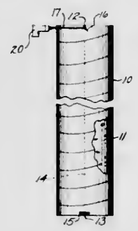
(a) spinning an acrylic composite fiber composed of two or more acrylic polymer components tending to exhibit different thermal behaviors and arranged eccentrically along the entire length of said fiber,
(b) stretching said fiber,
(c) crimping said fiber mechanically, and
(d) finally heat-treating said fiber in a relaxed state with its moisture content adjusted to be from 50 to 120% relative to the dry weight of said fiber.

The present invention also provides for fibers produced by the aforementioned method, having coil crimps of from 12.4 to 17.3 crimps per 25 mm. of fiber length, and having a degree of crimping of between 13.4 to 20.9%.

3,644,610
BIAXIALLY ORIENTING CRYSTALLIZED POLYETHYLENE - 1:2 - DIPHENOXYETHANE-4:4'-DICARBOXYLATE
Richard Harold Barclay Buteux, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation-in-part of application Ser. No. 717,960, Apr. 1, 1968. This application Mar. 24, 1970, Ser. No. 22,383
Claims priority, application Great Britain, Apr. 20, 1967, 18,285/67
Int. Cl. B29d *7/24*
U.S. Cl. 264—289 **2 Claims**

Balanced biaxially oriented sheets of polyethylene-1:2-diphenoxyethane-4:4'-dicarboxylate are made by stretching crystallized sheets 1.2 to 4× equally in each direction at a temperature in the range 70–200° C. Crystallization to an extent of 10–30% based on 100% theoretical is induced by heating at a temperature in the range 80–245° C.

3,644,611
ART OF REMOVING FIBER FORMS FROM CONCRETE COLUMNS
Howard M. Wiles, 420 Windsor Drive, Waukesha, Wis. 53186
Filed July 8, 1970, Ser. No. 53,069
Int. Cl. B28b *13/06*
U.S. Cl. 264—334 **8 Claims**



A fiber cylindrical form has a length of wire extending longitudinally along its inner surface, with one end of the wire anchored to one end of the form and with the other end of the wire accessible from the exterior at the opposite end of the form where it may be wound on an arbor to split the form longitudinally.

3,644,612
METHOD FOR HARDENING UNSATURATED POLYESTER RESINS
Heinz Meyer and Dieter Schmid, Munich, Hans Schwarzer, Krailling, and Hansjoachim Twittenhoff, Strassblach, Germany, assignors to Eleitrochemische Werke Munchen AG, Hollriegelskreuth, near Munich, Germany
No Drawing. Filed July 22, 1969, Ser. No. 843,798
Claims priority, application Germany, Aug. 2, 1968, P 17 69 898.5
Int. Cl. C08g *17/16;* **C09d** *3/64*
U.S. Cl. 260—22 CA **19 Claims**

Method for hardening unsaturated polyester resins comprising utilizing for the hardening a mixture of metal accelerator, peroxide and an aliphatic polyamine.

3,644,613
ORAL, NASAL AND LABIAL COMPOSITIONS CONTAINING MENTHYL KETO ESTERS
Alfred H. Moeller, Tenafly, Michel Demont, River Vale, and Albert G. Nickstadt, Ridgewood, N.J., assignors to Nickstadt-Moeller, Inc., Ridgefield, N.J.
No Drawing. Filed May 14, 1969, Ser. No. 824,664
Int. Cl. A61k *7/16*
U.S. Cl. 424—49 **6 Claims**

Compositions for application to the oral and nasal areas of the body are disclosed which contain alpha, beta, gamma, delta, epsilon, zeta and eta keto esters of menthol. These compositions impart a long-lasting cooling sensation to tissues of the lips and the mucous membranes of the oral cavity and nasal passages.

3,644,614
ULTRAVIOLET RADIATION PROTECTION COMPOSITION, CONTAINING A MIXTURE OF CINNAMIC ACID ESTERS
Benno Streschnak, Krefeld, and Willy Doll, Quelle, Germany, assignors to Haarmann & Reimer Gesellschaft mit beschrankter Haftung, Holzminden, Germany
No Drawing. Filed Dec. 8, 1969, Ser. No. 833,360
Claims priority, application Germany, Sept. 5, 1969, P 19 45 054.5
Int. Cl. A61l *23/00;* **A61k** *7/00*
U.S. Cl. 424—60 **2 Claims**

A composition highly useful for the protection human skin against absorption of ultraviolet radiation; the composition being a mixture of 4-methoxy cinnamic acid isopropyl ester and at least one ester from the group consisting of

4-isopropyl cinnamic acid ethyl ester;
4-isopropyl cinnamic acid methyl ester; and
2,4-diisopropyl cinnamic acid methyl ester; and
2,4-diisopropyl cinnamic acid ethyl ester.

3,644,615
WATER RESISTANT HAIR GROOMING COMPOSITIONS
Harold Karl Salzberg, Cape Coral, Fla., and Walter G. Sten, Valhalla, Westchester, N.Y., assignors to Borden Inc., New York, N.Y.
No Drawing. Filed July 1, 1968, Ser. No. 741,302
Int. Cl. A61k *7/10*
U.S. Cl. 424—70 **6 Claims**

This invention relates to novel hair grooming compositions capable of forming water resistant and alkali soluble films on hair comprising a proteinaceous substance and

selective insolubilizing agent selected from the group consisting of formaldehyde and formaldehyde-evolving compounds, and heavy metal compounds and to a method of setting hair comprising applying said composition to hair and drying it on the hair to a water-resistant film, whereby the hair resists deformation on contact with rain or water but may be easily washed free of the applied film by simple shampooing with soaps and detergents.

3,644,616
SYNERGISTIC COMPOSITION OF RIFAMPICIN AND STREPTOMYCIN
Edward Alexander Konopka, Murray Hill, and Justus Melchior Gelzer, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.
No Drawing. Filed Mar. 24, 1969, Ser. No. 809,967
Int. Cl. A61k *21/00*
U.S. Cl. 424—114 **4 Claims**

Rifamycines or their semisynthetic derivatives, in combination with other antibiotics, exhibit synergistic effects against Gram-negative bacteria.

3,644,617
MITOMALCIN AND METHOD FOR ITS PRODUCTION
Michael Axelrod, Hackensack, and William S. Marsh, Wanaque, N.J., Koppaka V. Rao, Cambridge, Mass., and Charles S. Sodano, Maywood, N.J., assignors to Pfizer Inc.
Filed May 9, 1968, Ser. No. 727,932
Int. Cl. A61k *21/00*
U.S. Cl. 424—115 **2 Claims**

Mitomalcin, an antibiotic and complexing agent, and its production by *Streptomyces malayensis*, a new species of *Streptomyces*, and variants thereof are described.

3,644,618
STABLE COMPOSITION OF SYNTHETIC SODIUM ESTRONE SULFATE
George W. Holden, Preville, Quebec, Canada, assignor to Charles E. Frosst & Co., Montreal, Quebec, Canada
No Drawing. Continuation-in-part of application Ser. No. 523,252, Jan. 27, 1966, which is a continuation-in-part of application Ser. No. 241,135, Nov. 30, 1962. This application Oct. 29, 1968, Ser. No. 771,668
Int. Cl. A61k *17/06*
U.S. Cl. 424—100 **6 Claims**

The invention disclosed herein relates to a synthetic sodium estrone sulfate preparation comprising synthetic sodium estrone sulfate in admixture with a water and alcohol soluble extract of pregnant mares' urine.

3,644,619
ANTIBIOTIC COMPLEX TAIMYCINE AND METHOD FOR THE PREPARATION THEREOF
Giuseppe Cassinelli, Rivanazzano, Pavia, and Ernesto Cotta, Arpad Grein, and Rosanna Mazzoleni, Milan, Italy, assignors to Società Farmaceutici Italia, Milan, Italy
Continuation-in-part of application Ser. No. 734,875, June 6, 1968. This application July 21, 1970, Ser. No. 56,773
Claims priority, application Italy, June 6, 1967, 16,923/67
Int. Cl. A61k *21/00*
U.S. Cl. 424—121 **11 Claims**

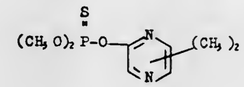
A microbiological process for the preparation of the new antibiotic substance Taimycine and its salts consisting of Taimycine A, Taimycine B, Taimycine C. The process is characterized in that the new microorganism *Streptomyces michiganensis* var. *amylolyticus* is cultivated in aerobic conditions in a liquid cultural medium containing a carbon source, nitrogen source and mineral salts at a temperature of from 24° to 37° C. over a period of time of from 72 to 160 hours at a pH of from 6 to 8 and that the antibiotic complex thus obtained is isolated from the fermentation broth by extraction with suitable solvents and successive precipitation and the antibiotic complex may be separated into the three components Taimycine A, Taimycine B and Taimycine C. A new antibotic substance called Taimycine and its salts having antihelmintic and antiprotozoal activity and its three active antibiotic components called Taimycine A, Taimycine B and Taimycine C are also described. The microorganism has been deposited among others at the Institute of Microbiology of Rutgers University receiving the index number I.M.R.U. 3932 and at the Institute of Plant Pathology at the University of Milan (Italy), receiving the index number I.P.V. 1953.

3,644,620
ANTIPHLOGISTIC
William J. Vittone, Rte. 1, Box 7, Hurley, Wis. 54534
No Drawing. Filed May 22, 1970, Ser. No. 39,884
Int. Cl. A61k *27/00*
U.S. Cl. 424—195 **2 Claims**

An antiphlogistic remedy for external use in the treatment of inflammation of joints as in arthritis, treatment of degeneration of the bone, bursitis and treatment of the sinuses, and the method of preparing the particular antiphlogistic.

3,644,621
O,O-DIMETHYL PHOSPHOROTHIOATE ESTERS OF METHYL PYRAZINOLS AS INSECTICIDES
Richard Joseph Magee, Princeton, and James Byron Lovell, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application Sept. 16, 1968, Ser. No. 762,379, now Patent No. 3,505,328, dated Apr. 7, 1970. Divided and this application Feb. 6, 1970, Ser. No. 9,394
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 **5 Claims**

Insecticidal compounds are provided having the formula:



This is a divisional application of application Ser. No. 762,379, filed Sept. 16, 1968, and now issued as U.S. Pat. No. 3,505,328.

3,644,622
NOVEL POLYMETHYLENE QUINOXALINE DIOXIDES FOR TREATING RESPIRATORY DISEASES AND AS GROWTH PROMOTANTS
James David Johnston, Old Saybrook, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Application Oct. 18, 1966, Ser. No. 587,406, now Patent No. 3,485,836, which is a continuation-in-part of application Ser. No. 463,933, June 14, 1965. Divided and this application Apr. 9, 1969, Ser. No. 833,231
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **6 Claims**

Series of 2,3-dihydro-1H-cyclopenta[b]quinoxaline-4,9-dioxides useful in the control of gram-negative infections in animals and for the promotion of weight gain and feed efficiency of animals and novel feed compositions containing said compounds.

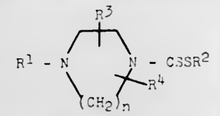
3,644,623

DIAZEPINE DERIVATIVES OF DITHIOCARBOXYLATES AS DOPAMINE - β - HYDROXYLASE INHIBITORS

Per Arvid Emil Carlsson, Goteborg, Hans Rudolf Corrodi, Molndal, and Gosta Lennart Florwall and Svante Bertil Ross, Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

No Drawing. Filed Dec. 11, 1968, Ser. No. 783,131
Claims priority, application Sweden, Dec. 14, 1967, 17,198/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—244 **10 Claims**

Piperazine and diazepine derivatives of dithiocarboxylates and disulfides having the general formula



a process for their preparation, and a method for the inhibition of the enzyme dopamine-β-hydroxylase wherein a therapeutically effective dose of a pharmaceutically acceptable preparation of a compound of the said general formula is administered orally, rectally or by means of an injection to produce a sedative effect.

3,644,624

METHOD OF CONTROLLING HELMINTHIASIS

Lloyd H. Conover, Quaker Hill, and James W. McFarland, Lyme, Conn., and William C. Austin, Deal, England, assignors to Pfizer Inc., New York, N.Y.

No Drawing. Division of application Ser. No. 661,220, Aug. 17, 1967, now Patent No. 3,549,624, which is a continuation-in-part of application Ser. No. 515,736, Dec. 22, 1965, which is a continuation-in-part of application Ser. No. 487,654, Sept. 16, 1965, which in turn is a continuation-in-part of application Ser. No. 428,859, Jan. 28, 1965. This application Nov. 5, 1969, Ser. No. 870,750
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **7 Claims**

The preparation of a series of cyclic amidines; namely, 2 - [ω-(2-thienyl)alkyl]-, 2-[2-(2-thienyl)vinyl]-Δ^2-tetrahydropyrimidines and Δ^2 - imidazolines, the N - methyl derivatives and non-toxic acid addition salts thereof, and their use as anthelmintic agents, is described.

3,644,625

ANESTHETIZATION OF FISH

Richard A. Schoettger, La Crosse, Wis., and Erwin W. Steucke, La Crescent, Minn., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,095
Int. Cl. A61d *7/00*
U.S. Cl. 424—258 **1 Claim**

A method for anesthetizing fish comprising exposing the fish to an aqueous solution of a combination of an alkyl aminobenzoate or the methanesulfonate salt thereof and quinaldine or quinaldine sulfate.

3,644,626

NOVEL PYRIDONES IN COMPOSITIONS AND METHODS FOR TREATING INFLAMMATION, PAIN AND FEVER

Bruce E. Witzel, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,925
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 **18 Claims**

The treatment of inflammation, pain and fever utilizing compositions containing alkyl substituted pyridones, thiopyridones and pyridines.

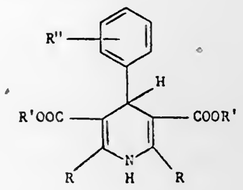
3,644,627

PHARMACEUTICAL COMPOSITIONS AND METHODS FOR PRODUCING CORONARY DILATION WITH 4 - ARYL - 1,4 - DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 829,099, May 29, 1969, which is a division of application Ser. No. 712,910, Mar. 14, 1968, now Patent No. 3,485,847, dated Dec. 23, 1969. This application Nov. 20, 1969, Ser. No. 872,442
Claims priority, application Germany, Mar. 20, 1967, F 51,881
Int. Cl. A61k *27/00*
U.S. Cl. 424—266 **51 Claims**

4-phenyl-1,4-dihydropyridines of the formula:



wherein

R is hydrogen or alkyl of 1 to 3 carbon atoms,
R' is alkyl of 1 to 4 carbon atoms, and
R'' is hydrogen, halogen, or 1 or 2 lower alkyl, lower alkoxy, nitro, lower acylamino, lower alkylamino or amino moieties are produced by reacting benzaldehydes or substituted benzaldehydes with acyl fatty acid esters of the formula R—CO—CH_2—COOR' wherein R and R' are as above defined with ammonia.

These 4-phenyl-1,4-dihydropyridines are useful in treating diseases of the circulation, especially those concerning coronaries. They are particularly useful in the treatment of angina pectoris.

3,644,628

COMPOSITIONS HAVING TESTOSTERONE ANTAGONISTIC EFFECTS AND METHOD OF USING THE SAME

George Tonelli, 15 Seneca Ave., Emerson, N.J. 07630

No Drawing. Continuation-in-part of application Ser. No. 736,982, June 14, 1968, which is a continuation-in-part of application Ser. No. 628,295, Apr. 4, 1967. This application Aug. 29, 1969, Ser. No. 854,284
Int. Cl. A61v *27/00*
U.S. Cl. 424—270 **6 Claims**

A new use for known compounds of the category 2-lower alkanoylamino-5-nitrothiazoles is described. These compounds, when administered to mammals, counteract the biological effect of testosterone on end organs.

3,644,629

METHOD FOR IMPROVING ANIMAL FEED EFFICIENCY AND COMPOSITIONS SUITABLE FOR USE THEREIN

Delbert W. Kolterman, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,779
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **7 Claims**

This invention relates to the discovery that 5-[2-(methylthio)ethyl]hydantoin can be incorporated in the diet of animals to increase feed efficiency.

Also disclosed are feed compositions and feed concentrates containing 5-[2-(methylthio)ethyl]hydantoin and a process for preparing 5-[2-(methylthio)ethyl]hydantoin from ammonium carbonate monohydrate, sodium cyanide and 3-(methylthio)propanal.

3,644,630

INDOMETHACIN SUPPOSITORIES

Donald J. Allen, Gwynedd, and Joseph V. Bondi, Collegeville, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 9, 1970, Ser. No. 44,876
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **3 Claims**

The preparation of suppositories which contain indomethacin in a base consisting substantially of polyethylene glycols is described.

3,644,631

THERAPEUTIC METHODS UTILIZING ARYL PYRROL-3-YL KETONES

Irwin J. Pachter, Woodbury, and Alan A. Rubin, Rockville Center, N.Y., assignors to Endo Laboratories Inc., Garden City, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 584,762, Oct. 6, 1966. This application May 13, 1969, Ser. No. 824,284
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **8 Claims**

Therapeutic compositions having anti-inflammatory, analgetic and antipyretic activities, and methods for relieving pain, reducing fever and alleviating inflammatory syndromes in mammals by means of such compositions, utilizing certain aryl pyrrol-3-yl ketones.

3,644,632

HALOTHIETE-1,1-DIOXIDE AS ANTI-INFLAMMATORY AGENTS

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Springfield, N.J., assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,546
Int. Cl. A61k *27/00*
U.S. Cl. 424—275 **1 Claim**

2-halo-3-amino-2H-thiete-1,1-dioxides, e.g. those of the formula



X=halogen
Am=dialkylamino or alkyleneimino
R=H or alkyl

exhibit antiinflammatory effects.

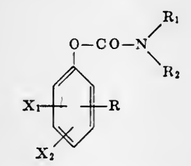
3,644,633

METHOD FOR COMBATING SOIL INSECTS AND TERMITES

Fritz Bachmann, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,906
Claims priority, application Switzerland, Nov. 24, 1967, 16,530/67
Int. Cl. A01n *9/28*
U.S. Cl. 424—278 **1 Claim**

The invention relates to a method of combating soil insects and termites with preparations containing as the active ingredient a carbamate of the general formula



in which R_1 and R_2 represent hydrogen or an aliphatic group; X_1 and X_2 represent hydrogen, halogen, an aliphatic or nitro group, and R is the ortho- or meta-position to the carbamyloxy group represents an aldehyde group which is acetalized with alcohols and/or thioalcohols, preferably to form a heterocyclic ring containing oxygen and/or sulfur atoms.

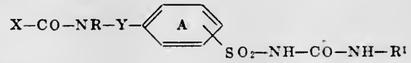
3,644,634

BENZENESULFONYL-UREAS WITH HYPOGLYCEMIC ACTIVITY

Rudi Weyer, Frankfurt am Main, Walter Aumüller, Kelkheim, Taunus, Helmut Weber, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Ruth Heerdt, Mannheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Application June 3, 1968, Ser. No. 733,759, now Patent No. 3,494,936, dated Feb. 10, 1970, which is a continuation-in-part of application Ser. No. 474,174, July 22, 1965. Divided and this application Nov. 14, 1969, Ser. No. 871,320
Claims priority, application Germany, Aug. 1, 1964, F 43,640; Aug. 14, 1964, F 43,750
Int. Cl. A61k *27/00*
U.S. Cl. 424—275 **16 Claims**

Benzenesulfonyl-ureas with hypoglycemic activity having the general formula



in which

R is hydrogen, lower alkyl or phenyl-lower alkyl, R^1 is:
(a) alkyl, alkenyl or mercaptoalkyl having 2 to 8 carbon atoms,
(b) alkoxyalkyl or alkylmercaptoalkyl having 4 to 8 carbon atoms of which at least 2 belong to the alkylene part of the alkoxyalkyl- or alkylmercaptoalkyl,
(c) phenyl-lower alkyl,
(d) cycloalkyl-lower alkyl having 7 to 9 carbon atoms of which 6 to 8 belong to the cycloalkyl part,
(e) endoalkylene-cyclohexyl, endoalkylene-cyclohexenyl, endoalkylene-cyclohexylmethyl or endoalkylene-cyclohexenylmethyl having 1 to 2 endoalkylene-carbon atoms,
(f) lower alkylcyclohexyl, lower alkoxycyclohexyl,
(g) cycloalkyl having 5 to 8 carbon atoms,
(h) cyclohexenyl, cyclohexenylmethyl,
(i) a heterocyclic ring with 4 to 5 carbon atoms and 1 oxygen atom or 1 sulfur atom as well as up to 2 ethylenic double linkages, or
(k) a heterocyclic ring linked to the nitrogen atom by means of a methylene group and containing 4 to 5 carbon atoms and 1 oxygen atom or 1 sulfur atom as well as up to 2 ethylene double linkages,

X is:

(a) thienyl or thienoxy which may contain 1 to 2 substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower alkenoxy, lower alkoxy lower alkoxy, lower phenalkoxy and aryl and a polymethylene chain of 3 to 4 carbon atoms linked by both ends to the thienyl nucleus,
(b) furyl which may contain 1 to 2 substituents selected from the group consisting of halogen and methyl,

and the thienyl, thienoxy or furyl groups may be linked either directly or by means of a hydrocarbon chain having 1 to 2 carbon atoms to the adjacent carbonyl group, and

Y is a saturated hydrocarbon chain having 1 to 3 carbon atoms

and salts thereof.

3,644,635

METHOD AND COMPOSITIONS FOR INHIBITING MICROBIAL GROWTH

Bryce E. Tate, Ninantic, and Robert P. Allingham, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 310,141, Sept. 19, 1963. Division of application Ser. No. 591,126, Nov. 1, 1966. This application Apr. 10, 1969, Ser. No. 834,922

Int. Cl. A01n *9/28*

U.S. Cl. 424—283 5 Claims

Inhibiting the growth of bacteria and fungi by applying to their locus certain 2-alkenylpyromeconic acids.

3,644,636

METHOD OF INDUCING BRADYCARDIA AND SUPPRESSING TACHYCARDIAC EFFECTS OF N-ISOPROPYL-NORADRENALINE

Herbert Koppe, Ingelheim, Albrecht Engelhardt, Mainz, Gerhard Ludwig, Lippramsdorf, and Karl Zeile, Ingelheim, Germany, assignors to Boehringer Ingelheim, G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 619,141, Feb. 28, 1967. This application May 1, 1969, Ser. No. 821,137

Claims priority, application Germany, Aug. 26, 1963, B 73,262; June 24, 1966, B 87,707; Dec. 30, 1966, B 90,543; Feb. 6, 1967, B 91,070

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 3 Claims

Bradycardia compositions having N-isopropyl-noradrenaline antagonistic activity and method of inducing said activity in warm-blooded animals using as the active ingredient at least one 1-substituted phenoxy-2-hydroxy-3-N-isopropylamino propane or its nontoxic, pharmaceutically acceptable acid addition salt.

3,644,637

FUNGICIDAL MUCONONITRILES

Dennis Ernest Burton, Saffron Walden, Essex, England, assignor to Fisons Limited, Suffolk, England

No Drawing. Continuation-in-part of application Ser. No. 669,305, Jan. 22, 1968. This application July 17, 1969, Ser. No. 842,707

Claims priority, application Great Britain, July 18, 1968, 34,188/68

Int. Cl. C07c *121/30*

U.S. Cl. 424—304 11 Claims

Fungicidal and pesticidal compositions contain as an active ingredient a muconitrile of the formula:

$$NC—CR^1=CR^2—CR^3=CR^4—CN$$

wherein R^1, R^2, R^3 and R^4 may be the same or different and are selected from the group consisting of hydrogen, halogen, alkyl, substituted alkyl or alkoxy. In a particular aspect of the invention compositions are adapted to release the muconitrile in vapour form.

3,644,638

COMPOSITIONS AND METHODS FOR RELIEVING BRONCHIAL SPASM WITH PROSTANOIC ACIDS AND ESTERS

Marvin E. Rosenthale, Havertown, and Milton Lapidus, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 749,606, Aug. 2, 1968, and Ser. No. 870,990, Oct. 28, 1969. Said application Ser. No. 749,606 being a continuation-in-part of application Ser. No. 617.072, Feb. 20, 1967, and said application Ser. No. 870,990, being a division of application Ser. No. 749,606, Aug. 2, 1968. This application Aug. 24, 1970, Ser. No. 66,659

Int. Cl. A61k *27/00*

U.S. Cl. 424—305 28 Claims

Compositions comprising compounds selected from the family of prostanoic acids and esters or salts thereof and a pharmacological carrier are useful to treat bronchial spasm in warm-blooded animals and to promote free breathing, especially when administered by the inhalation of an aerosol mist.

3,644,639

FUNGICIDAL COMPOSITION AND METHOD CONTAINING α-SUBSTITUTED SULFONIUM YLIDS

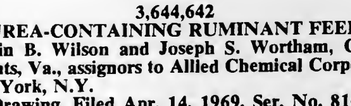
Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 11, 1966, Ser. No. 549,160. Divided and this application Aug. 8, 1968, Ser. No. 765,734

Int. Cl. A01n *9/24*

U.S. Cl. 424—308 2 Claims

Fungicidal compositions comprising an inert fungicidal adjuvant and a fungicidally effective amount of the compound of the formula



This invention relates to α-substituted sulfonium ylids and to processes for their preparation. This invention further relates to fungicidal compositions and to methods for the control of fungal organisms.

3,644,640

S-SUBSTITUTED MERCAPTO-2,4-DINITROPHENYL ACETATE ACARICIDES

Arnold D. Gutman, Pinole, and Thomas B. Williamson, Santa Clara, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Oct. 6, 1965, Ser. No. 493,569. Divided and this application Sept. 29, 1969, Ser. No. 870,836

Int. Cl. A01n *9/12*

U.S. Cl. 424—311 6 Claims

A method of killing acarids by the application of S-substituted mercapto-2,4-dinitrophenyl acetates.

3,644,641

2-(3-ANILINOPHENYL)ALKANOIC ACIDS AND DERIVATIVES THEREOF IN ANALGESIC COMPOSITIONS AND METHODS

Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application Dec. 26, 1968, Ser. No. 787,192. Divided and this application Dec. 24, 1969, Ser. No. 888,075

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 4 Claims

Novel alkanoic acids substituted in the 2 position by a 3-anilinophenyl group, their pharmaceutically acceptable salts, and the corresponding ester and amide derivatives. The compounds of this invention are useful as anti-inflammatory agents, and as potentiating agents useful in obtaining enhanced analgesia when combined with α-*d*-propoxyphene.

3,644,642

UREA-CONTAINING RUMINANT FEED

Benjamin B. Wilson and Joseph S. Wortham, Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,107

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 6 Claims

Combination of a hydroxamic acid and ethylenediaminetetraacetic acid (EDTA) in a urea-containing ruminant feed inhibits urease enzymes in the rumen from converting the urea to ammonia. The effectiveness of the hydroxamic acid in inhibiting and controlling the action of the enzymes is enhanced by incorporation therewith of the EDTA.

3,644,643

METHOD OF REDUCING INTRAOCULAR PRESSURE USING GLYCINE

John C. Krantz, Jr., Gibson Island, Md., assignor to Unimed, Inc., Morristown, N.J.

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,946

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 3 Claims

Intraocular pressure or intraocular tension is reduced in patients, for example those suffering from glaucoma or preoperatively to reduce intraocular tension prior to cataract surgery, e.g. intracapsular cataract extraction so as to facilitate the operative procedure, is reduced according to the invention by the administration to the patient of an effective amount of glycine. The glycine can be administered orally or by injection, oral administration being preferred.

3,644,644

METHODS OF ANESTHETIZING MAMMALS WITH N-(TERTIARY AMINO-ALKYL)-BENZAMIDES

Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France

No Drawing. Original application June 19, 1968, Ser. No. 738,123. Divided and this application Jan. 12, 1971, Ser. No. 105,940

Claims priority, application France, June 20, 1967, 111,225; Sept. 5, 1967, 120,026

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 5 Claims

The methods of this invention utilize certain N-(tertiary amino-alkyl)-benzamides. Such benzamides are significantly more potent than cocaine, xylocaine and procaine in anesthetizing mammals. They may be administered in the form of tablets, ampoules or aerosols.

3,644,645

INSECT CONTROLLING COMPOSITIONS AND METHODS OF USE

Carl Bordence, Ponte Vedra Beach, and John M. Derfer, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Original application Jan. 9, 1967, Ser. No. 607,876, now Patent No. 3,446,843, which is a continuation-in-part of application Ser. No. 479,009, Aug. 11, 1965. Divided and this application July 26, 1968, Ser. No. 753,031

Int. Cl. A01n *9/20*

U.S. Cl. 424—325 49 Claims

Novel insectiphobic compositions comprising beta-dialkylaminoalkyl ethers and thio-ethers of defined non-terpenoid organic alcohols and mercaptans are described. The compositions comprise the compounds which are used in conjunction with conventional insectiphobic carriers. The compositions have been found to be effective insecticides and insect repellents and in certain instances have been found to be synergizers for conventional insecticides such as the pyrethrins and allerthrin.

3,644,646

NON-AQUEOUS LIQUID FORMULATIONS WITH BIOLOGICALLY ACTIVE INGREDIENTS

Bruno Sander and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,749

Claims priority, application Germany, Aug. 24, 1967, P 16 42 229.0

Int. Cl. A01n *9/00, 9/20, 9/32*

U.S. Cl. 424—325 9 Claims

New non-aqueous liquid compositions containing biologically active ingredients and cyclic di- or triethers, and their use for controlling pests.

3,644,647

TREATMENT OF GLAUCOMA EMPLOYING 5-(3-METHYLAMINOPROPYL - 5H - DIBENZO[a,b] CYCLOHEPTENE

Maurice Edward Langham, Towson, Md., assignor to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

No Drawing. Filed Dec. 13, 1967, Ser. No. 690,080

Int. Cl. A61f *9/00*; A61k *27/00*

U.S. Cl. 424—330 14 Claims

Ophthalmic compositions containing 5-(3-methylaminopropyl)-5H-dibenzo[a,d]cycloheptene (or the non-toxic acid addition salts thereof), hereinafter referred to as protriptyline, either singly or in combination with a sympathomimetic amine, as well as methods of treatment of disorders such as glaucoma.

3,644,648

ANTIADRENAL COMPOSITIONS COMPRISING TRIPHENYLPROPYL AMINES

Benjamin Blank, Trevose, and William A. Zuccarello, Philadelphia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Original application Apr. 27, 1967, Ser. No. 634,122, now Patent No. 3,507,919, dated Apr. 21, 1970. Divided and this application Dec. 3, 1969, Ser. No. 879,959

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 10 Claims

Pharmaceutical compositions having antiadrenal activity comprise a triphenylpropyl amine wherein one or two of the phenyl moieties is substituted. The method of producing antiadrenal activity in animals comprises the internal administration of said compositions.

3,644,649

METHOD OF REPELLING RODENTS USING 2,2'-THIOBIS(4,6-DI-TERT.-BUTYLRESORCINOL)

Charles H. Fuchsman, Cleveland Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,559

Int. Cl. A01n *9/00, 9/12*

U.S. Cl. 424—337 1 Claim

Rodent repellents 2,2' - methylenebis(4,6-di-tert.-butylresorcinol) and 2,2' - thiobis(4,6-di-tert.-butylresorcinol), of which the latter is a novel compound are taught.

3,644,650
SOLUTIONS OF GERMICIDAL IODINE COMPLEXES
Philip M. Sabatelli, Cincinnati, Ohio, Carmen R. Sarge, Fort Thomas, Ky., Edwin R. Loder, Cincinnati, Ohio, and Charles A. Brungs, Covington, Ky., assignors to Chemed Corporation, Cincinnati, Ohio
No Drawing. Filed June 26, 1969, Ser. No. 836,967
Int. Cl. A61k *27/00*
U.S. Cl. 424—341 **3 Claims**

Iodine complexes having germicidal properties are disclosed. The iodine complexes may be prepared by combining elemental iodine with a polyoxyalkylene iodine carrier which may include mixed polyethylene-polypropylene glycols and their monoethers. The iodine complexes so formed are useful in formulating iodophor compositions which, upon dilution, produce effective sanitizing solutions.

3,644,651
ALIPHATIC DIOLS AS ANALGESIC AGENTS
John W. Frankenfeld, Atlantic Highlands, and Horace W. Gerarde, Tenafly, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed Sept. 26, 1968, Ser. No. 762,972
Int. Cl. A61k *27/00*
U.S. Cl. 424—343 **5 Claims**

The present invention is concerned with the use of a number of aliphatic diols which have been tested and found to be central nervous system depressants. These compounds are readily synthesized and are useful pharmacological agents. These compounds are polyalcohols such as various aliphatic diols which are excellent analgesic and/or anesthetic agents for animals and humans.

3,644,652
METHODS OF COMBATING NEMATODES USING HEXACHLOROBUTADIENE
Daniel Demozay, Villeurbanne, France, assignor to Ets Pechiney-Progil, Lyon, France
No Drawing. Filed May 13, 1969, Ser. No. 824,299
Claims priority, application France, May 14, 1968, 50,012
Int. Cl. A01n *9/30*
U.S. Cl. 424—351 **1 Claim**

The disclosure concerns a parasiticidal composition intended chiefly for the killing of nematodes containing as an active material hexachlorobutadiene

$$CCl_2{=}CCl{-}CCl{=}CCl_2$$

A method for destroying nematodes consisting of applying a lethal amount of nematode-killing hexachlorobutadiene to the nematodes.

3,644,653
FLAVOURED AND SCENTED PRODUCTS
Serge Tcheiltcheff, Vitry-sur-Seine, France, assignor to Rhone-Poulence S.A., Paris, France
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,743
Claims priority, application France, Apr. 5, 1968, 147,207
Int. Cl. A23l *1/22;* **A61k** *7/00, 27/00*
U.S. Cl. 424—358 **3 Claims**

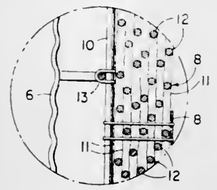
N,N-dimethyl-2-ethyl-butyramide has a minty flavour and scent which renders it useful in foods, drinks, medicines, and toilet preparations.

ELECTRICAL

3,644,654
GIANT ELECTRODE
Dieter Zollner, Erlangen, and Bernhard Reichelt, Nurnberg-Laufamholz, both of Germany, assignors to C. Conradty, Nurnberg, Germany
Filed June 11, 1970, Ser. No. 45,426
Claims priority, application Germany, June 13, 1969, P 19 30 052.8
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **2 Claims**

A giant electrode of graphite for high-output operation of electric arc furnaces in which the electrode is provided with an electric arc stabilizing wick.

3,644,655
RADIATION PROTECTIVE JACKET FOR A VACUUM FURNACE
Helmut Vollmer, Balzers-Mals, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Liechtenstein
Filed July 7, 1970, Ser. No. 52,794
Claims priority, application Germany, July 10, 1969, P 19 34 965.6
Int. Cl. H05b *3/02*
U.S. Cl. 13—31 **7 Claims**



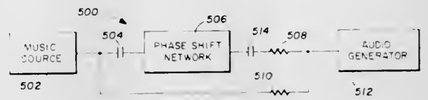
A radiation protective jacket comprises a multiple number of layers of metal foil which are spaced apart by metal wires such as molybdenum wires. The jacket is arranged around the goods to be treated within a vacuum furnace to enclose the workspace and it is supported in the furnace on supporting elements which are held from a holder, for example, which is mounted adjacent the top of the interior of the furnace. An electrical heating coil is stretched to extend around the materials to be treated within the center of the radiation jacket.

3,644,656
TONE GENERATOR WITH VIBRATORY BARS
Clarence L. Fender, Fullerton, and Harold B. Rhodes, Anaheim, both of Calif., assignors to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Aug. 4, 1970, Ser. No. 60,867
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.04 **17 Claims**



A tone generator for an electrical piano is formed of a circular cross section vibratory tine of relatively low mass and a high mass twisted inertia bar of oblong cross section, both cantilevered from a common base. When the tine is struck by the hammer of a piano action, its vibration is amplified by the resonant high mass inertia bar. A transducer associated with the tine produces an electrical signal representing a particular piano tone that is simulated by the individual tine. A number of advantages accrue from making the main body portion of the twisted high mass inertia bar of a cross section that is elongated in the plane of vibration of the tine of the tuning fork. Primarily, vibrations of the high mass inertia bar at overtones of the fundamental of the tine are substantially reduced.

3,644,657
ELECTRONIC AUDIOFREQUENCY MODULATION SYSTEM AND METHOD
Francis A. Miller, 6600 N.W. 39th Expressway, Bethany, Okla.
Continuation-in-part of application Ser. No. 771,900, Oct. 30, 1968, now abandoned. This application Oct. 20, 1969, Ser. No. 868,294
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 **37 Claims**

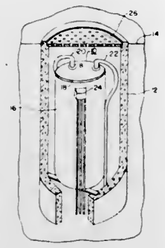


The invention is directed to modulation of the amplitude and frequency of an audiofrequency signal by passing the signal through at least two parallel channels, with phase-shifting circuitry in the channels providing signals of opposed phases. A low-frequency band is filtered from the signal in one of the channels and a high-frequency band is filtered from the signal in another of the channels and the signals shifted back into phase. The filtered signals are then combined into an output signal. The high- and low-frequency bands filtered from the signals are selectively varied to induce vibrato, tremolo, and other tonal effects into the output signal. In a preferred form of the invention, the high- and low-pass filters are matched so as to form substantially a 180° phase shift stage with a flat frequency response. Four stages are coupled to provide 720° of phase shift. The original audiofrequency signal is then summed with the phase-shifted signal in approximately equal proportions to produce a coordinated effect substantially duplicating that produced by a rotating speaker. The phase shift is started and stopped in a manner to duplicate the dynamic effects of starting and stopping a rotating speaker. A dual channel system is described for duplicating a multiple speaker system.

3,644,658
ENCASED FLUID FILLED TRANSFORMER
Albert J. Kuti, 1009 Woodview Pl., and Thomas C. Junk, 3802 Morefield Road, both of Sharon, Pa.
Filed June 4, 1970, Ser. No. 43,532
Int. Cl. H05k *7/00*
U.S. Cl. 174—17 LF **7 Claims**

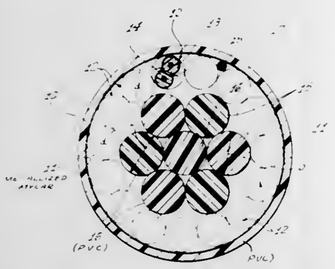
Fluid filled electrical apparatus, such as transformers, and methods of constructing same, suitable for underground or

vault mounting. The electrical apparatus includes a metallic tank or casing formed of mild or plain carbon steel, which



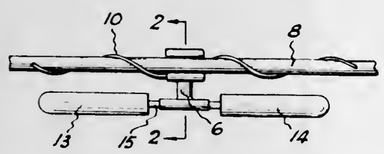
has a sprayed metallic coating of corrosion-resistant material disposed on the external surfaces thereof.

3,644,659
CABLE CONSTRUCTION
Frank A. Campbell, Culver City, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 21, 1969, Ser. No. 878,868
Int. Cl. H01b *11/04*
U.S. Cl. 174—27 **3 Claims**



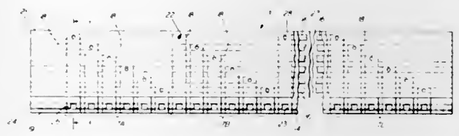
A cable construction is disclosed comprising a flexible shield, conductor pairs arranged along the inner surface of the shield and filler strings in the interior thereof resiliently urging the conductor pairs into engagement with the shield.

3,644,660
OVERHEAD TRANSMISSION LINE AND ATTACHED VIBRATION DAMPER
Philip W. Dulhunty, Sefton, New South Wales, Australia, assignor to Dulmison (Australia) Pty. Limited, Sefton, New South Wales, Australia
Filed July 9, 1970, Ser. No. 53,619
Claims priority, application Australia, July 14, 1969, 57,930/69
Int. Cl. H02g *7/14*
U.S. Cl. 174—42 **4 Claims**



A vibration damper for an overhead cable having a C-shaped cushioned elastomer lined suspender engaging the cable and a vibration damper suspended below it. Helical rods are wrapped around the cable and suspender to hold the suspender in place.

3,644,661
DOUBLE-SIDED CIRCUIT HAVING TERMINAL-RECEIVING PORTIONS
Madhu P. Asar, Columbus, Ohio; John E. Bolin, Greensboro, N.C., and Harry L. Maddox, Columbus, Ohio, assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,809
Int. Cl. H05k *1/18*
U.S. Cl. 174—68.5 **17 Claims**

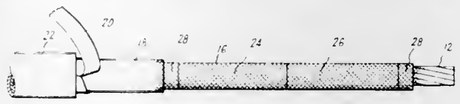


A flexible, semirigid substrate, composed of a nonconducting material, supports a plurality of spaced, longitudinal conductors on one side thereof and a plurality of parallel, spaced, transverse conductors on the other side thereof. Through-hole connections are made through the substrate between selected longitudinal conductors and selected transverse conductors. The transverse conductors extend to a common edge of the substrate, which is formed with a longitudinal fold. The portion of each of the transverse conductors which extends over the longitudinal fold in the substrate is formed with an elongated opening which is disposed symmetrically about the axis of the transverse conductor. The longitudinal opening provides a saddle for receiving a portion of a terminal which rests in the saddle and can be subsequently soldered with the transverse conductor associated with the saddle.

ERRATUM

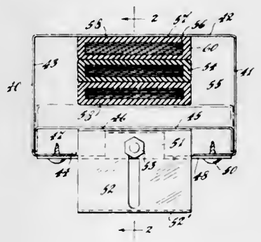
For Class 178—5 see:
Patent No. 3,643,294

3,644,662
STRESS CASCADE-GRADED CABLE TERMINATION
Hooshang Salahshourian, Fairfield, Conn., assignor to General Electric Company
Filed Jan. 11, 1971, Ser. No. 105,198
Int. Cl. H02g *15/02*; **G01r** *31/12*
U.S. Cl. 174—73 R **10 Claims**



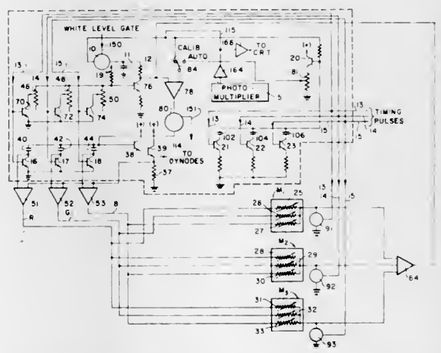
Electric cable terminating means for substantially inhibiting ionization at the termini in which semiconductive coatings each having a nonlinear current characteristic are applied in a cascade arrangement, relative to resistance per square, onto the insulation layer for a predetermined length between the high-voltage output end and to the ground shielding means. Each semiconductive coating has a predetermined resistance per square different in value from an adjacent coating, or coatings, and cascaded progressively upward in value from the ground shielding means so that the semiconductive coating adjacent the shielding means has the lowermost value. A conductive coating is applied at opposite ends of the cascade onto the insulation layer to and in contact with the high-voltage output end and in contact with the ground shielding means to establish electrical contact. The cascaded semiconductive coatings have sufficient resistivity so that upon application of voltage the electrical stress at the surface for said length does not exceed the ionization start level of the cable.

3,644,663
ELECTRICAL CONDUIT SYSTEM
Elmer T. Carlson, West Granby, Conn., assignor to Broadhill Development Corporation, Granby, Conn.
Original application Aug. 8, 1969, Ser. No. 848,541. Continuation-in-part of application Ser. No. 769,485, Oct. 22, 1968, now Patent No. 3,504,097. Divided and this **application Oct. 14, 1970, Ser. No. 80,609**
Int. Cl. H01b *7/36*
U.S. Cl. 174—88 B **5 Claims**



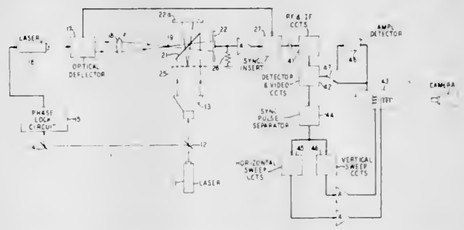
A stack of insulated electrical conductors of rectangular external contour, each conductor preferably consisting of strip laminations, extends through a conduit which has an open position and a closed position in heat transfer relation with the insulation. Conduit envelopes are joined at the ends and conduits are suspended by hangers.

3,644,664
CORRECTION LEVEL ADJUSTMENT FOR VIDEO NEGATIVE ANALYZER
Robert W. Huboi, Webster; Edward M. Waz, Hilton, and Thomas G. Seckel, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 741,008, June 28, 1968, now abandoned. This application Mar. 16, 1970, Ser. No. 19,719
Int. Cl. H04n *9/04*
U.S. Cl. 178—5.2 A **4 Claims**



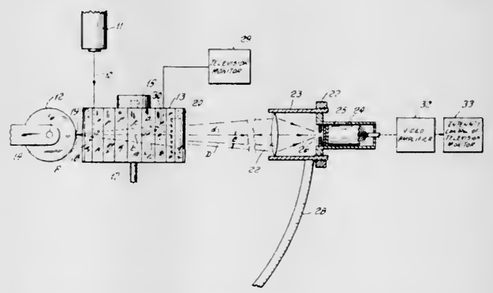
Photographic color negatives are scanned to produce red, green and blue color signals representative of the respective red, green and blue transmission densities of the negative to control the electronic reproduction of the negative as a visual image. The visual image is created by the sequential reconstruction of the red, green and blue components of the negative scene over a predetermined time period. A logic circuit receives the red, green and blue color signals during sequential time periods and stores the red, green and blue color signals over the total time period. A color correction circuit including at least three matrixes of impedance elements receives each of the color signals to provide a sequential color correction signal for each color signal dependent upon the response of the other color signals over the total time period. The impedance elements of the matrixes may be adjusted to provide color correction signals dependent upon the various characteristics of the printer on which the negative is to be printed.

3,644,665
HOLOGRAPHIC FLYING-SPOT SCANNER
Louis H. Enloe, and Arthur B. Larsen, both of Colts Neck, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 11, 1969, Ser. No. 806,136
Int. Cl. H04n *9/56*
U.S. Cl. 178—6.5 **10 Claims**



This disclosure relates to a holographic flying-spot scanner wherein a stationary collimated beam illuminates the subject and is then optically relayed via a beamsplitter to a photodetector. A scanning spot is focused an appropriate distance in front of the beamsplitter such that the locus of the virtual image thereof lies in a plane which is in front of, at, or behind, the subject or subject plane, as desired. The detected interference between the rays of the scanning spot and the beam passing through the subject is used to reconstruct a hologram of the subject. The plane of the hologram is the locus of the virtual image of the scanning spot.

3,644,666
OPTICAL RANGE DISCRIMINATOR FOR LASER TV CAMERA
Milton Green, 980 Flanders Road, Mystic, Conn.
Filed July 7, 1970, Ser. No. 52,874
Int. Cl. G01c *3/08*; **H04n** *7/18*
U.S. Cl. 178—6.8 **2 Claims**



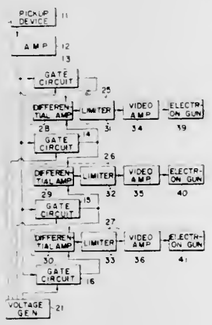
An optical beam scanner having a pair of polygonal cylinders with exterior mirror faces to sweep a continuous in-

cident laser beam between particular angular limits in one direction and between particular angular limits in the transverse direction, simulating line-by-line and frame-by-frame scanning. Reflections scattered back from objects in the path of the swept beam and incident to the line-by-line scanner are redirected by the line-by-line scanner toward a photomultiplier assembly which is angularly adjustable about the line-by-line scanner for range discrimination. A television monitor, synchronized with the scanners and intensity modulated by the photomultiplier output, images any reflecting object at the selected range and within the angular sweep limits of the beam.

3,644,667
APPARATUS FOR DISPLAYING A TEMPERATURE DISTRIBUTION PATTERN

Teruo Shimotsuma; Toshihiro Mori; Kazuo Sano, all of Yokohama-shi, and Seigo Ando, Kawasaki-shi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,219
Claims priority, application Japan, June 15, 1968, 43/41009
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **2 Claims**



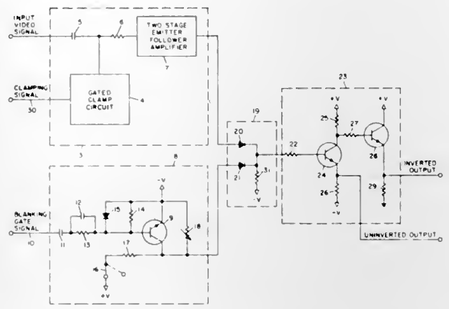
An apparatus for displaying a temperature distribution pattern which comprises means for obtaining from a television camera device signals having amplitudes corresponding to the respective temperature zones involved in the temperature distribution pattern of a foreground subject, means for dividing these signals into several groups according to said temperature zones and means for displaying on the color television image receiving tube a hue distribution pattern corresponding to the respective groups of divided signals.

3,644,668
GATED VIDEO INVERTER

Nicholas J. Reeber, Hauppauge, N.Y., assignor to Haseltine Corporation

Filed Sept. 25, 1969, Ser. No. 860,896
Int. Cl. H04n *5/22*
U.S. Cl. 178—7.1 **5 Claims**

Disclosed is a gated video inverter which inverts only the image polarity of an image representative video signal consisting of alternating video and blanking components occurring during respective video and blanking intervals. The inverter utilizes a diode combining circuit for combining a supplied video signal and a gate signal to develop a composite video signal having the character of the supplied video signal during the video interval and the character of the gate signal during the blanking interval. The composite video signal is then inverted to produce an output video signal having the

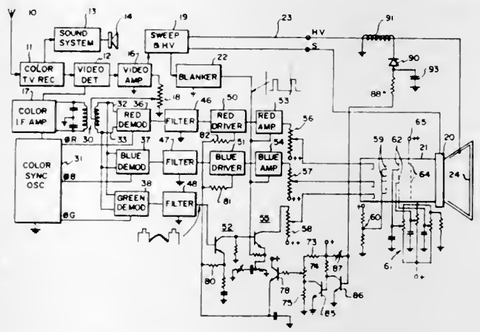


desired inverted image polarity and an uninverted blanking component.

3,644,669
AUTOMATIC BEAM INTENSITY LIMITER WITH A CURRENT TRANSFORMER COUPLED TO THE ULTOR LEAD

William H. Slavik, Oak Lawn, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 15, 1970, Ser. No. 37,507
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 R **3 Claims**



An automatic beam intensity limiter circuit for a television receiver having a "zero" focus cathode-ray tube arrangement employs a current transformer to sense the pulsating DC current in the lead from the high-voltage rectifier to the cathode-ray tube final anode to produce a control voltage indicative of the beam current intensity since the current in the high-voltage lead is proportional to the beam intensity. This control voltage then is utilized to reduce the direct current voltage in the signal path applying the video signal to the cathode-ray tube to limit the beam intensity to a predetermined level.

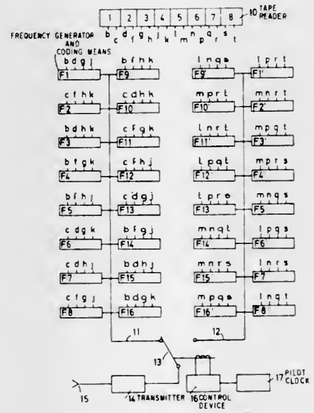
3,644,670
TELEGRAPHIC TRANSMISSION SYSTEM

Lucien Dessy, Jumet, Belgium, assignor to Acec Ateliers De Constructions Electriques De Charleroi, Charleroi, Belgium

Filed Jan. 29, 1970, Ser. No. 6,723
Claims priority, application Belgium, Jan. 30, 1969, 69382
Int. Cl. H04l *17/08*
U.S. Cl. 178—17 B **3 Claims**

A telegraphic transmission system for the transmission of series of bits of the same number in which each series of bits

to be transmitted is divided into two groups. The transmitter of the system comprises coding devices assigning to each even combination of bits of the first group of each series of bits a frequency chosen in a first group of frequencies for transmitting such frequency during a first moment, and assigning to each even combination of bits of the second group of each series of bits a frequency chosen in a second group of frequencies for transmitting such frequency during a second moment following the first moment and of the same duration. The coding devices assign to each odd combination of bits of the first group of each series of bits a frequency chosen in the

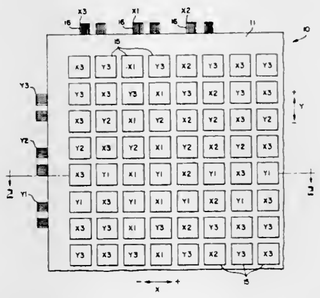


second group of frequencies for transmitting such frequency during the first moment, and assign to each odd combination of bits of the second group of each series of bits a frequency chosen in the first group of frequencies for transmitting such frequency during the second moment. The receiver comprises a switching device operated by a pilot clock at the rate of the moments of transmission, two identical frequency selectors to which the switching device alternatively applies the signals received by a detector associated with each selector, and a decoding device connected to both selectors for regrouping the two groups of the series of bits.

3,644,671
GRAPHIC DATA ENTRY SYSTEM

Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Oct. 21, 1968, Ser. No. 769,251
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **10 Claims**

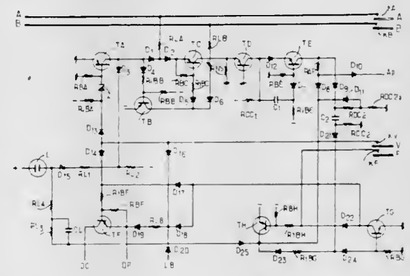


A graphic data entry system using a stylus adapted for cooperation with a data entry tablet. The tablet comprises a matrix of elements interconnected to each other and to appropriate logic circuitry so as to provide for the determination of relative stylus movement in response to the element sequences traversed by the stylus.

3,644,672
LINE EQUIPMENT DEVICE FOR TELEGRAPH LINES

Roger Teurnier, Rueil-Malmaison, and Claude Rousseau, Joinville-le-Pont, both of France, assignors to C. I. T.-Compagnie Industrielle Des Telecommunications, Paris, France

Filed Mar. 19, 1969, Ser. No. 808,409
Claims priority, application France, Mar. 19, 1968, 144398
Int. Cl. H04l *25/02*
U.S. Cl. 178—69 G **10 Claims**

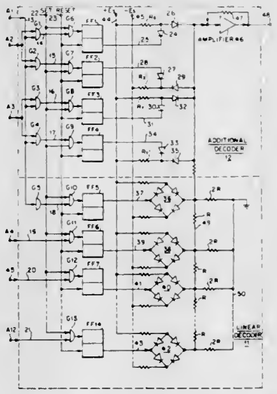


The line equipment device comprises a first transistor circuit connected in parallel with the said line, controlling the currents flowing along line wires A and B, a second transistor circuit detecting the polarity of the said line wire, a third transistor circuit connected to the second circuit, causing a delay in the transmission of the state of a line wire, a fourth transistor circuit connected to the first circuit indicating to selecting devices the state of readiness for operation or occupancy of the line equipment, and a fifth transistor circuit connected to the fourth circuit for use in case of line outings.

3,644,673
PCM TRANSMISSION SYSTEM UTILIZING TWO LINEAR DECODERS

Shunroku Sasaki, Yokohama-shi, and Shizuo Takebayashi, Kawasaki-shi, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

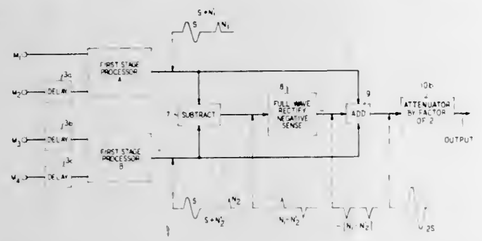
Filed Aug. 8, 1969, Ser. No. 848,655
Claims priority, application Japan, Aug. 13, 1968, 43/57755
Int. Cl. H04l *15/24*
U.S. Cl. 178—88 **1 Claim**



A dynamic range of decoding PAM signals is divided into a plurality of ranges by decoding the range of the plurality of

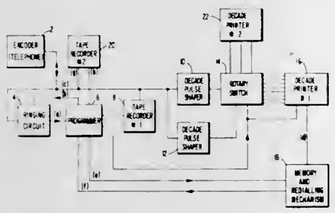
ranges which is required to have the highest precision with a number of bits less than the number of bits of PCM input signals to provide an output signal. Bias voltage is applied to the output signal to decode the other ranges of the plurality of ranges.

3,644,674
AMBIENT NOISE SUPPRESSOR
Olga M. M. Mitchell, Summit; Carolyn Ross, Berkeley Heights, and Robert L. Wallace, Jr., Warren Township, Somerset County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 30, 1969, Ser. No. 837,699
Int. Cl. H04b *15/00*
U.S. Cl. 179—1 P **7 Claims**



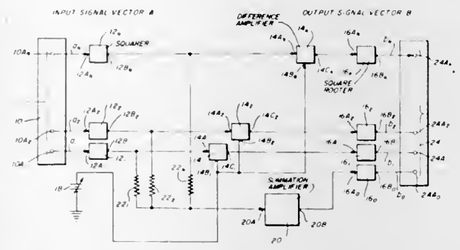
Signals from a desired source, such as a person speaking, are enhanced relative to unwanted ambient sound by a speech processor that includes an array of microphones arranged at equal distances from the desired source. The unwanted sound, being "off-center," arrives nonconcurrently at the individual microphones. The processor continuously arranges the instantaneous microphone outputs in order of their relative energy contained, and selects as its output some one of the microphone outputs that is intermediate in the instantaneous ranking.

3,644,675
POLLING METHOD UTILIZING TELEPHONE TRANSMISSION AND RECORDING SYSTEM
Frank W. Watlington, "Coralita", Pembroke, Bermuda
Continuation-in-part of application Ser. No. 816,260, Apr. 15, 1969, now abandoned. This application June 4, 1970, Ser. No. 43,487
Int. Cl. H04m *11/10*
U.S. Cl. 179—2 AS **8 Claims**



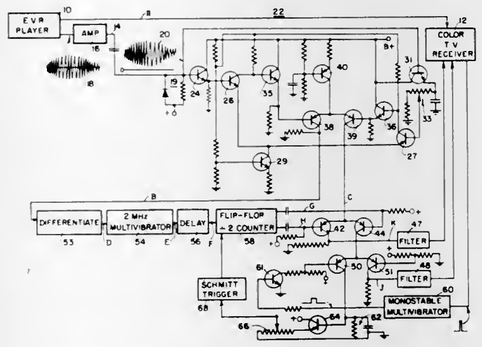
A calling party identification system utilizing the normal public telephone equipment and a special electronic package at the receiving terminal. This system may have numerous usages among them the taking of polls. Identification of the calling party is achieved using previously assigned digital information which may include his own telephone number and which the calling party dials in the normal manner into the electronic package which processes this digital information and may either dial back the calling party who has previously been instructed to "hang up," to ensure that the call is originating from the telephone number dialed, or other assigned numerals (or the telephone subscriber's own telephone number) are correlated with those recorded in a memory bank. If any one or all of these checks pass, the calling party is instructed to dial his voting numerals; if they do not, the call is rejected.

3,644,676
MULTICHANNEL SIGNAL NORMALIZER
Victor W. Bolie, Stillwater, Okla., assignor to Oklahoma State University, Stillwater, Okla.
Filed Jan. 9, 1970, Ser. No. 1,810
Int. Cl. G10l *1/00*
U.S. Cl. 179—15 A **1 Claim**



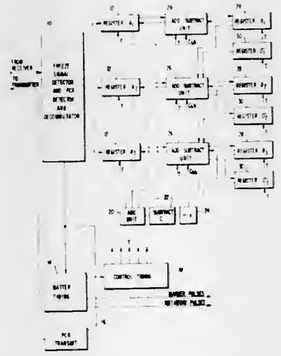
An electronic network is comprised of voltage squaring circuits, differential amplifiers, square root circuits, a summing amplifier with input isolation resistors and an adjustable voltage source, interconnected so as to receive at an input terminal strip a set of n parallel and time-varying input signals, collectively identifiable as an input signal vector, and to convert said input signal vector into a set of $n+1$ parallel and time-varying output signals collectively identifiable as an output signal vector, said output signal vector having the property of being of fixed length in its hyperspace of $n+1$ dimensions and also the property of containing all of the information carried in the input signal vector.

3,644,677
SIGNAL DEMODULATING SYSTEM
Gildo Cecchin, Niles, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 9, 1970, Ser. No. 17,429
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 AW **8 Claims**



In an electronic video recording (EVR) system, the color information is encoded in the form of pulse width modulated rectangular pulses derived from the EVR scanning pattern, with the two color signals required being provided in an interleaved pattern by time division multiplex. The leading edge of each of the pulses conveys the necessary synchronizing information and the trailing edge is modulated to represent the saturation of the particular hue to which the pulse corresponds. A demodulator for recovering the color information reconstructs and inverts the color information signal which then is applied to a demodulator gate in the form of a differential amplifier controlled by delayed switching pulses synchronized with the information signal to alternately enable one or the other of the outputs of this gate. A circuit is provided for resetting the phase of the flip-flop controlling the switching of the demodulator gate at the beginning of each line if the phase of the input signal is not proper.

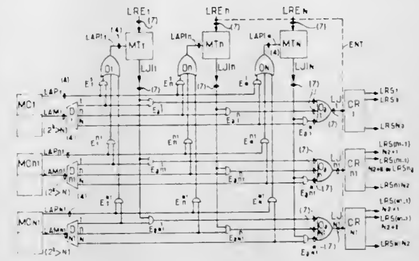
3,644,678
CHANNEL REALLOCATION SYSTEM AND METHOD
William G. Schmidt, Rockville, Md., assignor to Communications Satellite Corporation
Filed Mar. 21, 1969, Ser. No. 809,340
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **5 Claims**



In a time division multiple access communications system having multiple ground stations and a satellite for communicating signals between ground stations, the channels are periodically reallocated among the several ground stations based upon the traffic load at the time of reallocation. At the reallocation time, a slack group of channels, representing presently available channels, are distributed among the ground stations. The time of the periodic transmission (hereinafter referred to as transmission burst) from each ground station is shifted in time with respect to the time of the transmission burst from a reference station to accommodate the reallocation of channels. The transmission burst times of all stations are not shifted simultaneously but are shifted in accordance with a set of rules which prevents overlapping between transmission bursts from adjacent stations.

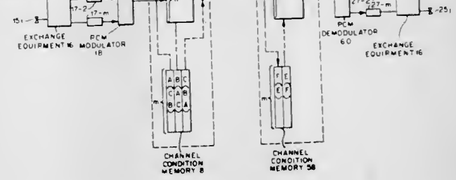
3,644,679
HIGH-CAPACITY CONNECTING NETWORK HAVING BLOCKING CHARACTERISTICS FOR TIME-DIVISION SWITCHING
Francois Tallegas, Perros-Guirec, France, assignor to C.I.T.-Compagnie Industrielle Des Tele-Communications, Paris and Societe Lannionnaise D'Electronique, Lannion, France
Filed July 7, 1969, Ser. No. 839,551
Claims priority, application France, July 5, 1968, 158143
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **4 Claims**

A connection network having blocking which is formed like a perfect linked system including a first switching stage consisting of a certain number of buffer storages with their addressing and reading systems, as well as a second switching stage consisting of gates associated with a certain number of distributors, the two switching stages being connected



together by links and each distributor being accessible by only one link connecting it to the first switching stage, whereas a certain number of links are reserved for reciprocal overthrow.

3,644,680
TIME-ASSIGNMENT SPEECH-INTERPOLATION CONTROL SYSTEM
Kitsutaro Amano, Yokohama-shi; Chuichi Ota, Tokyo; Masao Hashimoto, Kanagawa-ken; Hisao Kanzaki, Tokyo; Yasuhiko Sakamoto, Kawasaki-shi, and Nobuyuki Yasoshima, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sept. 19, 1969, Ser. No. 859,285
Claims priority, application Japan, Sept. 25, 1968, 43/69607
Int. Cl. H04j *5/00*
U.S. Cl. 179—15 AS **7 Claims**

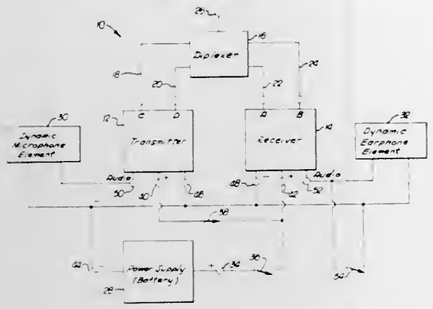


A TASI system for satellite use is disclosed in which voice signals from the individual trunks are stored prior to being transmitted and in which TASI control data are transmitted in a frame preceding the frame in which associated speech data are transmitted.

3,644,681
CORDLESS TELEPHONE SYSTEM
Dale E. Rice, Panorama City, Calif., assignor to Cardwell Oil Corporation Ltd. (N.P.L.), Vancouver, B.C., Canada
Filed Feb. 10, 1969, Ser. No. 798,090
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A **5 Claims**

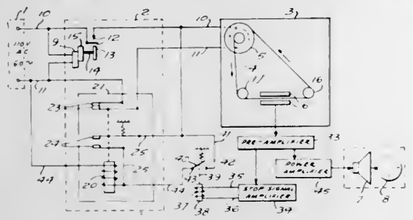
A telephone system wherein the portable unit appears and functions the same as a conventional telephone, but is cordless, with no direct electrical or mechanical connection to the telephone lines, and is accordingly fully mobile, as for example to any desired place within a home or office. A telephone line termination or base unit forming a part of the system connects to the telephone line, being fully compatible

with existing telephone line and central office equipment, and is coupled to the portable unit through a duplex radio system. The radio transmitter of the portable unit is keyed on by the hook-switch, and relay means in the base unit is actu-



ated in response to this carrier frequency to connect the base unit to the telephone line and key on the base unit transmitter, thereby establishing a complete DC path for signalling and a complete audio path for conversation.

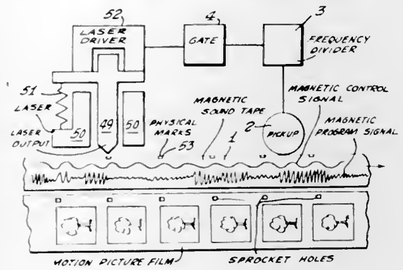
3,644,682
TALKING CLOCK APPARATUS
Arthur R. Parilla, P.O. Box 127, Mountain Lakes, N.J.
Filed Aug. 5, 1968, Ser. No. 750,030
Int. Cl. G11b *15/18, 27/22*
U.S. Cl. 179—100.1 C **1 Claim**



Talking clock apparatus for indicating the passage of the hour and for also announcing the hour by reproduction of the human voice, the apparatus having a clock, a timer and a tape player including a loudspeaker, which timer produces periodic signals at selected time intervals to start the tape player, the tape being preprogrammed to announce the time sequentially by reproduction of the human voice through the loudspeaker and being synchronized with the actual local standard time so as to repeat itself with appropriate time announcements throughout the desired operating cycle. Displacement of the tape itself through the tape player is used to stop the tape player at the end of each announcement and before the next announcement is due to start, so that the time announcement will always remain in phase with the local standard time indefinitely. If desired, the tape player may be concurrently used for entertainment, or other purposes, instead of as a talking clock, at the choice of the owner.

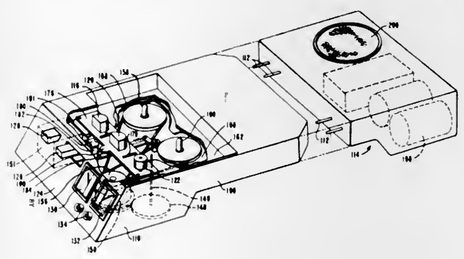
3,644,683
PROCESS AND APPARATUS FOR MARKING AND EDITING OF ELONGATED RECORD CARRIERS
Edward H. Braun, 6603 Old Stage Road, Rockville, Md.
Filed May 7, 1969, Ser. No. 822,487
Int. Cl. G11b *23/42, 31/00*
U.S. Cl. 179—100.2 B **12 Claims**

A method and apparatus for marking a first elongated record carrier to facilitate its editing in conjunction with the editing of a second record carrier, the two record carriers bearing information that is to be synchronously reproduced. The first record carrier has both a program signal and a control signal recorded thereon. The control signal is conventionally used to control the rate of information reproduction from the second carrier during playback. The first record carrier is physically marked in a humanly sensible form at



precise intervals of length bearing a predetermined relationship to the control signals recorded thereon thus correlating predetermined marked lengths of the first record carrier with predetermined lengths of the second record carrier to facilitate editing of both without the possible serious loss of synchronization that could otherwise easily occur due to cumulative phase shift errors, etc. caused by indiscriminate splicing of the control signal.

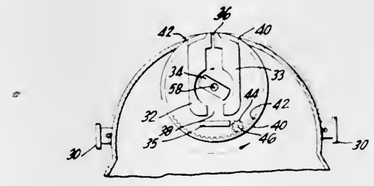
3,644,684
CASSETTE TO CARTRIDGE TAPE PLAYER ADAPTER UNIT WITH SELF-CONTAINED DRIVE MECHANISM
Tom T. Tsuji, Monterey Park, Calif., assignor to California Auto Radio, Inc.
Filed July 25, 1969, Ser. No. 844,770
Int. Cl. G11b *23/04*
U.S. Cl. 179—100.2 Z **8 Claims**



For a preexisting player system having a recess for receiving a magnetic tape cartridge, an adapter unit for playing and recording on magnetic tape cassettes is arranged to cooperate with both the mechanical drive and the electrical playback parts of the preexisting system. A housing having a portion configured to register within the cartridge-receiving recess includes an upper cassette insert position, for top-loading of a cassette tape in operative relation to a takeup drive spindle and a tape drive capstan. When the unit is inserted into the recess of the preexisting system, both the adapter capstan and takeup reel are rotated. Rotational power may be derived through a belt drive system connected with an internal roller in engagement with the capstan of the preexisting system. To record, signals from a microphone are amplified within the unit. During playback, signals derived from the playback head are preamplified within the adapter unit and energize the existing playback system through a transducer magnetically coupled to the cartridge playback head. Electrical power may be derived from the preexisting system.

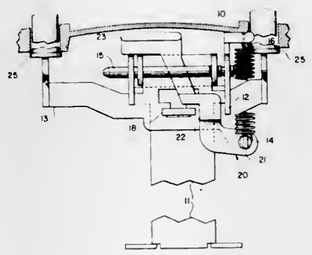
The unit may alternatively contain its own drive motor, powered from the preexisting system in compact configurations having a portion registrable within the cartridge receptacle and a compact protruding portion permitting cassette top loading. Adapter units may be equipped with their own battery pack, amplifiers and loudspeakers to function as a cassette tape record and playback system outside of the preexisting tape cartridge playback system.

3,644,685
MANUAL MAGNETIC RECORDER
Oliver Moussette, New York, N.Y., assignor to M.G. Dynamics, Inc., New York, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,846
Int. Cl. G11b *5/12, 5/36, 27/02*
U.S. Cl. 179—100.2 B **4 Claims**



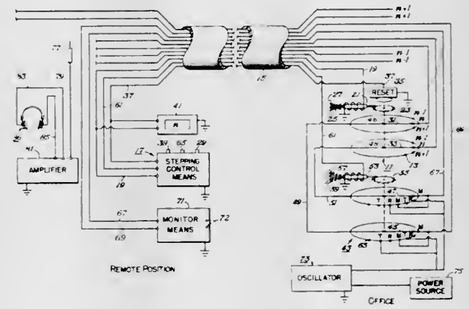
A handheld device for recording magnetic cueing and starting signal information on a magnetizable surface such as used on motion-picture film. A recording head is passed over the film and across the gap head an alternating mmf. is generated by a rotated magnet or an electromagnetic coil synchronized to the movement of the gap.

3,644,686
TELEPHONE SET SWITCH-HOOK STOP
James McKinnon Kilpatrick, and Gerd Kuhfus, both of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Nov. 5, 1970, Ser. No. 87,149
Int. Cl. H04m *1/08*
U.S. Cl. 179—161 **2 Claims**



A switch-hook stop for use in a telephone set switch-hook assembly which is operated by means of a force applied from the weight of a handset. When the housing is removed the switch-hook stop can be pivoted to place the switch-hook assembly in an onhook position. Replacing the housing automatically pivots the switch-hook stop out of the way and allows the switch-hook assembly to return to the off-hook position and to function normally thereafter.

3,644,687
CONDUCTOR IDENTIFICATION IN MULTICONDUCTOR MEANS
Samuel E. Richards, Jr., Kansas City, Mo., assignor to Communications Research Company, Mineral Wells, Tex.
Filed May 12, 1969, Ser. No. 823,750
Int. Cl. H04m *3/00*
U.S. Cl. 179—175.3 **17 Claims**

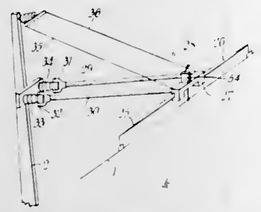


This specification discloses an improvement in method and apparatus for identifying at a remote position conductors in a multiconductor means having the conductors identified at one end. The improvement is characterized by sequentially stepping by control signals from the remote position a sequential stepping switch onto contacts to which the identified conductors at the one end are connected, until a specifically identified conductor is connected with the sequential stepping switch. Thereafter, an identifiable signal is put on the specifically identified conductor and the conductor carrying the signal at the remote position is identified. The invention is particularly described with respect to repairing a telephone cable, or reconnecting groups of wire pairs from one cable to another in a telephone line system. In such telephonic work, ordinarily, it is advantageous to employ a second sequential switching device in conjunction with the sequential stepping switch to be able to monitor a pair of conductors, or wires, and to thereafter check out each individual wire of the pair. Also, disclosed is a field monitor unit to assist the repairman in maintaining a record of the particular conductor onto which the sequential stepping switch has been actuated. Other aspects are also described; such as, a flip-flop mode of operation in which correlated pairs of wires in a multiwire cable are identified for immediate changing of wires in a group with consequent lessening of chance of error.

3,644,688
OVERHEAD ELECTRIC SUPPLY SYSTEMS FOR VEHICLES
Arnold Tustin, Tring, and Richard Geoffrey Sell, Rugby, both of England, assignors to British Railways Board, London, England
Filed Jan. 12, 1970, Ser. No. 2,164
Claims priority, application Great Britain, Jan. 15, 1969, 2,414/69
Int. Cl. B60m *1/234*
U.S. Cl. 191—40 **10 Claims**

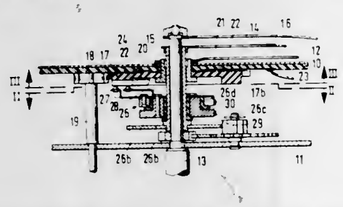
A trolley wire overhead electric supply system, for supplying power for the propulsion of electric vehicles, comprises a contact wire which is directly supported by each supporting

mast. At points remote from the masts the contact wire is additionally supported by soft elastic support members to pro-



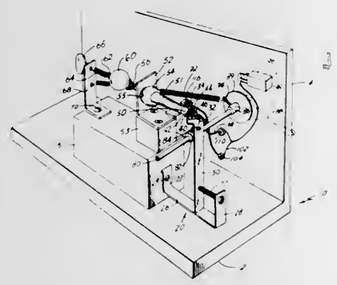
vide a lifting force on the contact wire partially compensating for the weight of the contact wire.

3,644,689
ELECTRIC SIGNALING DEVICE FOR ALARM CLOCKS
Friedrich Assmus, Schramberg, Wurttemberg; Hans Flaig, Schramberg-Sulgen, Wurttemberg; Dieter Dietrich, Lauterbach, Wurttemberg, and Leo Hartner, Aichhalden, Wurttemberg, all of Germany, assignors to Gebruder Junghans G.m.b.H., Schramberg, Wurttemberg, Germany
Original application Oct. 4, 1967, Ser. No. 672,819, now Patent No. 3,534,543. Divided and this application Sept. 22, 1970, Ser. No. 74,313
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—11 J **5 Claims**



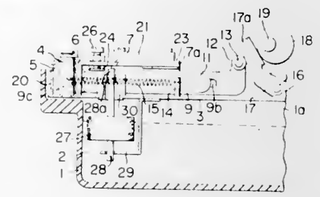
An electric signaling device for battery alarm clocks having a switching device with a double contact and a common contact element and two separate contact elements cooperating with the common contact element. The separate contact elements are arranged in stepped relation and the contacts being operable by the clock movement.

3,644,690
SAFETY SWITCH TO INTERRUPT AN ELECTRICAL CIRCUIT IN CASE OF COLLISION
Pietro Panettieri, 4 East Britannia Street, Taunton, Mass.
Filed May 14, 1970, Ser. No. 37,221
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.5 **8 Claims**



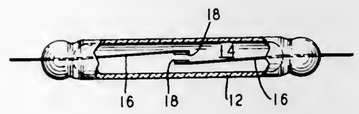
Safety switch apparatus connected to motor vehicle ignition which is automatically disconnected by force of an impact resulting from a vehicle collision, the disconnection being effected by movement of a weight connected to one contact member. Mounts support two contact members and permit movements of the latter to and from each other. Reset apparatus restores contact of said two members by a simple movement.

3,644,691
LIQUID LEVEL INDICATOR INSTRUMENT
Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1970, Ser. No. 31,628
Claims priority, application Japan, Apr. 25, 1969, 44/32509
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 R **10 Claims**



The invention provides an improved float-type liquid level instrument wherein when a liquid level is higher than or at a predetermined level, a rod extending from a float moves into the path of a continuously driven switch-actuating means so that the latter is retained in inoperative position, but when the liquid level falls below the predetermined level, the rod moves away from the path so that the switch-actuating means continuously moves between a switch-actuating position and the inoperative position, whereby the switch is intermittently closed and opened, thereby generating electrical signals. As a result, a more rigid and larger switch having a longer life may be advantageously employed and the operation becomes more reliable and precise than with prior instruments since a stronger force may be applied through switch-actuating means to the switch.

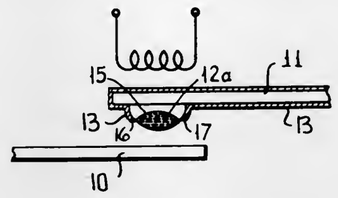
3,644,692
OSMIUM PLATED CONTACTS
Lawrence Greenspan, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation
Filed Oct. 9, 1970, Ser. No. 79,662
Int. Cl. H01h *1/66, 1/02*
U.S. Cl. 200—166 C **4 Claims**



Contacts for use in nonoxidizing atmospheres are electroplated with a thin coating of osmium to provide longer life and more reliable performance.

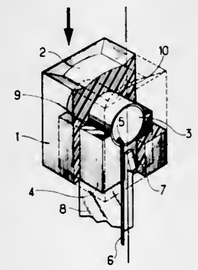
3,644,693
NONSTICKING RELAY CONTACTS
Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension, Inc., Princeton, N.J.
Filed Nov. 26, 1969, Ser. No. 880,128
Int. Cl. H01h *1/08*
U.S. Cl. 200—166 C **8 Claims**

A mercury relay having nonsticking mercury wettable surfaces, one of the surfaces carrying a button of mercury wettable material surrounded by a rim of nonmercury wettable material, preferably tantalum, which extends beyond the but-



ton and forms a physical barrier against physical impact between the mercury wettable surfaces.

3,644,694
PUSHBUTTON CONTROLLING DEVICE
Jean Morin, and Gerard Desperrier, both of Saint-Marcellin, France, assignors to Societe d'Appareillage Electrique Saparel, Saint-Marcellin, France
Filed Apr. 24, 1970, Ser. No. 31,636
Claims priority, application France, Apr. 30, 1969, 6913937
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 R **4 Claims**

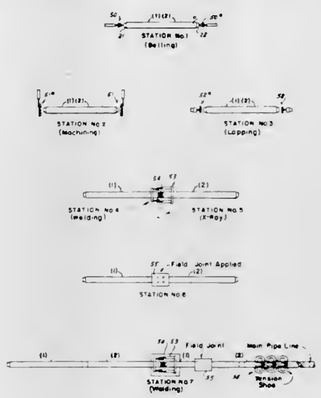


A pushbutton controlling device having two states obtained by manipulation of the single pushbutton comprises, at its end, a transparent window and has a hollow part closed at its base by an inner part and carries an indicating part comprising two zoned reference marks corresponding to the starting and stopping of the device. The pushbutton is used for controlling electrical cutout devices, and also for controlling mechanical, pneumatic or hydraulic elements.

3,644,695
METHOD AND APPARATUS FOR JOINING PIPE SECTIONS AND FORMING A PIPELINE
Robert A. Shuey, Jr., 4405 Highland Drive, Dallas, Tex., and John E. Bartley, 666 Bay View Drive, Aptos, Calif.
Filed June 18, 1970, Ser. No. 47,341
Int. Cl. H05b *5/00;* **B23k** *31/06*
U.S. Cl. 219—8.5 **11 Claims**

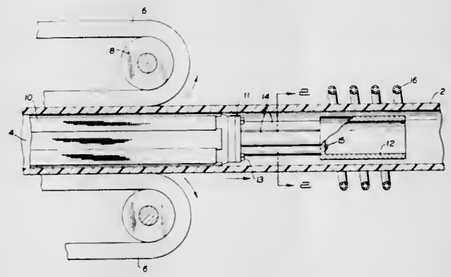
A method and apparatus for forming a pipeline to be layed from a vessel below the surface of a body of water, the apparatus having means for causing outer opposite end portions of each pipe section to be of circular form and of larger interior diameter than the intermediate portions of the pipe sections, means for machining and finishing the opposite circular end surfaces of the pipe sections so that the end surfaces of two sections which are to be welded will have the proper close fit, welding the two end portions of the two pipe sections by inducing electric currents therein while holding the two end portions together under pressure in the absence of air.

A method of forming a long-length pipeline from individual pipe sections which includes forming the end portions of each pipe into true circular configuration and of larger internal diameter than the intermediate portion of the pipe section, finishing the circular end surfaces of each pipe section, bringing the two circular end surfaces of two pipe sections into contacting and concentrically aligned relationship, excluding air from the contacting end surfaces of the two pipe sections while heating the adjacent end portions of the two pipe sections and holding the end surfaces of the two



pipe sections together under pressure to cause the end portions to be welded to one another, the welded portions of the pipe providing an internal annular upset which is not of smaller internal diameter than the normal internal diameter of the pipeline. The method may also include the step of welding a pair of sections of pipe to one another and then connecting the pair of joined sections to an end of a pipeline extending from the vessel into a body of water by apparatus which is movable with the pipeline relative to the vessel.

3,644,696
MEANS FOR SMOOTHING THE INSIDE SURFACE OF PLASTIC HOSE
Philip G. Magner, Jr., and Robert W. Mitten, both of Wabash, Ind., assignors to The General Tire & Rubber Company
Filed Aug. 28, 1970, Ser. No. 68,060
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.57 **11 Claims**



The interior surface of thermoplastic hose may contain small crevices, patterns and undercuts which serve to increase the frictional resistance to flow of material through the hose, and which provide sites for the accumulation of material transported therethrough. This is particularly true of plastic hose that is sized and calibrated on a mandrel covered

with thin moving tapes which leave tape impressions and ridges on the inside of the hose. This problem is solved by the present invention which utilizes a radiation body which is supported inside of an axially moving hose and which is heated by electrical induction. The heat radiated from the body softens the inside of the hose and allows the surface tension of the plastic to smooth the interior of the hose. Various means are described for anchoring or supporting the radiation body within the hose.

3,644,697

PROTECTIVE GAS FOR ARC WELDING

Alfred Krahl, Messer Griesheim GmbH, Landstr. 300, Frankfurt am Main, Hanauer, Germany

Filed Apr. 21, 1969, Ser. No. 818,150
Claims priority, application Germany, Apr. 27, 1968, P 17 65 306.4
Int. Cl. B23k *9/16*
U.S. Cl. 219—74 **9 Claims**

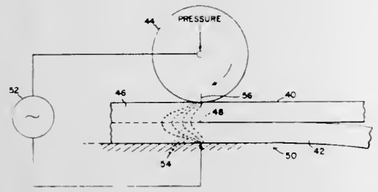
A protective gas for the arc welding of materials such as high-alloyed ferritic chrome steel, austenitic chrome-nickel steel and chrome-nickel-molybdenum steel includes a mixture of argon and nitrogen with the nitrogen content being 1 to 20 percent and preferably 5 to 10 percent by volume. An addition of more than trace amounts and up to 10 percent by volume of oxygen is also proposed. An advantageous form of the gas contains 5 percent by volume of nitrogen and 3 percent by volume of oxygen.

3,644,698

METALLURGICAL BONDING AND FORMING PROCESSES AND APPARATUS

Arthur G. Metcalfe, San Diego, and Fred K. Rose, Chula Vista, both of Calif., assignors to International Harvester Company, San Diego, Calif.

Filed Sept. 8, 1969, Ser. No. 856,526
Int. Cl. B23k *11/06*
U.S. Cl. 219—83 **17 Claims**



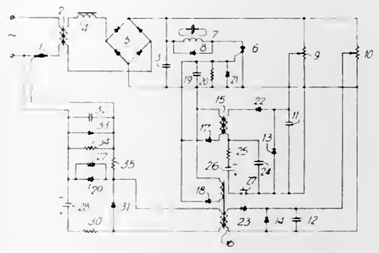
Methods of and apparatus for forming a continuous solid-state diffusion bond between metallic members in which the members to be joined are locally and progressively subjected to heat and pressure. Heating is achieved by workpiece resistance to controlled electrical current, and pressure is applied by rotatable electrodes that: generate contact between the members being joined and produce the deformation necessary to achieve a specified joint configuration therebetween; supply the controlled electric current to heat the workpiece locally and progressively; and are maintained at a temperature which results in essentially isothermal local conditions in the workpiece. Preferably, controls capable of regulating the bonding temperature are provided to insure that a uniform joint is produced. Methods of and apparatus for forming metallic members with and without bond formation by the techniques just described.

3,644,699

CONDENSER SPOT-WELDING MACHINE

Sergei Nikolaevich Mescheryak, ulitsa Yanvarskogo Vosstania, 17a, kv. 6; Evgeny Petrovich Stemkovsky, ulitsa Brigadirskaya, 27, kv. 1; Igor Vladimirovich Pentegov, Zadorzhny pereulok, 13, kv. 14; David Semenovich Vorona, ulitsa Scherbakova, 51, kv. 21, and Vladislav Eduardovich Moravsky, bulvar Lesi Ukrainki, 2, kv. 50, all of Kiev, U.S.S.R.

Filed Sept. 12, 1969, Ser. No. 857,339
Int. Cl. B23k *11/26*
U.S. Cl. 219—113 **3 Claims**



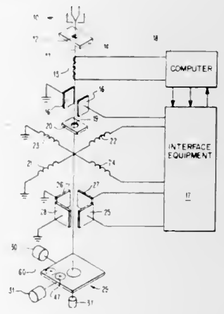
A condenser spot-welding machine, comprising: a rectifier unit to charge an operating capacitor bank; two gates one of which ensures the discharge of the capacitor bank, the other one connecting the capacitor bank for charging; a control unit wherein serving as the input is a voltage level setter connected in parallel with the operating capacitor bank, the output being an actuating unit acting on said gates, while said voltage level setter in the control unit consists of at least two voltage dividers to whose outputs there are coupled shaping capacitors alternately connected to the control unit circuits shaping the control pulses.

3,644,700

METHOD AND APPARATUS FOR CONTROLLING AN ELECTRON BEAM

Robert W. Kruppa, Hopewell Junction; Edward V. Weber, and Ollie C. Woodard, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,900
Int. Cl. B23k *9/08*
U.S. Cl. 219—121 EB **51 Claims**



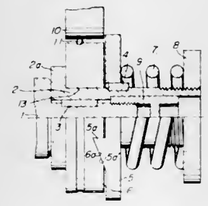
A square-shaped electron beam is stepped from one predetermined position to another to form a desired pattern on each chip of a semiconductor wafer to which the beam is applied. For each chip to which the beam is applied, the position of the chip relative to a predetermined position is determined and the distance in these positions is utilized to control the position of the electron beam to insure that the desired pattern is formed on each of the chips separately. Furthermore, the position of the beam is periodically checked against a calibration grid to ascertain any deviations in the beam from its initial position. These differences are applied to properly position the beam.

3,644,701

CONSUMABLE ELECTRODE FEEDING DEVICE FOR ARC WELDERS

Makoto Kobayashi, Nishinomiya, and Haruo Miyahara, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 19, 1970, Ser. No. 38,843
Claims priority, application Japan, May 26, 1969, 44/42362
Int. Cl. B65h *17/20*
U.S. Cl. 219—130 **2 Claims**



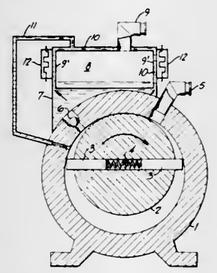
A friction clutch is provided to mechanically engage or disengage a feed roller for feeding a consumable electrode and a torque-transmitting means for transmitting the torque of a feed roller driving motor to said feed roller therethrough, with or from each other. The friction clutch is normally being held in an engaged position but is brought into a disengaged position when the travel resistance to said consumable electrode has increased and reached a predetermined value, whereby feeding of the electrode is stopped and buckling of the electrode is prevented.

3,644,702

VACUUM PUMP DESIGNED AS DISPLACEMENT PUMP

Marcel Kohler, Balzers, Liechtenstein, assignor to Balzers Patent-und Beteiligungs Aktiengesellschaft, Balzers, Liechtenstein

Filed Mar. 27, 1970, Ser. No. 22,580
Claims priority, application Germany, Mar. 31, 1969, P 19 16 394.1
Int. Cl. H05b *1/00*
U.S. Cl. 219—201 **5 Claims**



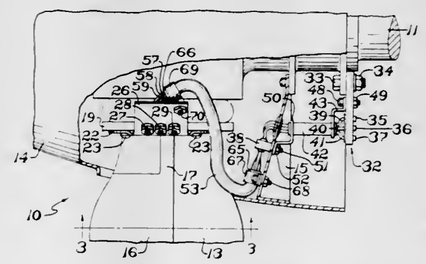
In a vacuum pump designed as a displacement pump for drawing off vapor-containing gases and having a discharge point communicating with a storage vessel having an outlet aperture for the pumped gases and containing a supply of sealing fluid covering a discharge valve, heating means are provided to heat at least that portion of the wall of the storage vessel located above the level of the sealing fluid therein. The heating means may include a double jacket heated by a through-flowing heating medium, or may be an electric heating jacket surrounding the upper portion of the storage vessel. A line may be provided to return sealing fluid from the storage vessel into the pump, this line being in heat-conducting relation with that portion of the vessel wall located above the fluid level.

3,644,703

LEAD FOR AIRCRAFT PROPELLER ELECTRICAL DEICER SYSTEM

Grover O. Nelson, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,519
Int. Cl. H05b *1/00*
U.S. Cl. 219—201 **9 Claims**



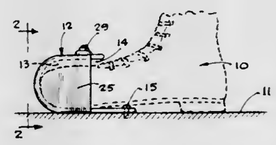
A flexible, compact lead containing current-conducting wires extends within the spinner housing from the propeller assembly to a propeller blade unit which is relatively rotatable to adjust the pitch of the blade. The wires are encased in a sleeve having enlarged ends for secure clamping to the propeller assembly and to a clamping member on the propeller blade unit. The wear in this part of the system which receives the greatest stress and twisting is reduced by the lead construction and when replacement is necessary this can be done quickly without requiring replacement of the propeller deicer boot.

3,644,704

SNOWMOBILE TOE WARMER

Jack J. Polly, Sr., 2524 Silver Creek Drive, Franklin Park, Ill.

Filed Mar. 31, 1971, Ser. No. 129,792
Int. Cl. B60l *1/02*
U.S. Cl. 219—202 **2 Claims**

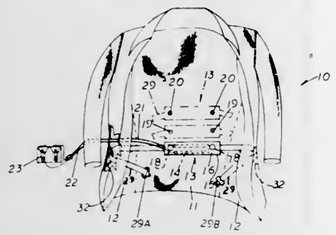


A housing is formed of sheet metal encapsulated in plastic. This housing has an inner chamber with a rearwardly facing opening to the chamber. The housing is attached to the footboards of a snowmobile. Between the metal walls is an electric heater. The opening and chamber are of a size to receive the toe portion of a person's footwear. Insulation is provided between the heating element and the adjacent exterior of the housing.

3,644,705
LOW-VOLTAGE, ELECTRICALLY HEATED SHIRT

Richard L. Johnson, Easton, Conn., assignor to Timely Products Corporation

Filed Sept. 23, 1970, Ser. No. 74,790
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 10 Claims



A low-voltage electrically heated shirt adapted to operate on less than six volts. The low-voltage heater assembly for the shirt is constructed so that it can be readily detached from a shirt permitting the shirt to be optionally worn either as a heated shirt or an unheated shirt. The heater assembly may be also detachably fastened to the shirt in any of several adjusted positions. Stretchable bands are operatively connected to the heater assembly to draw the heater assembly close to the body of the wearer when worn as a heated shirt to provide for maximum transmission of heat to the body in any of the adjusted positions.

3,644,706
METHOD FOR SUPPLYING HEATED FLUID TO A DIVER'S CLOTHING

Leroy N. Larenzo, Houston, Tex., and Mark P. Banjavich, New Orleans, La., assignors to Taylor Diving & Salvage Co., Inc., New Orleans, La.

Original application June 20, 1968, Ser. No. 738,458, now Patent No. 3,558,852. Divided and this application Nov. 10, 1970, Ser. No. 88,265
Int. Cl. H05b *3/00*
U.S. Cl. 219—211 1 Claim



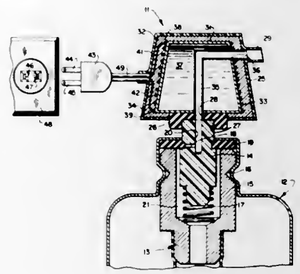
A method which is intended to supply heated fluid to divers' clothing of the type including a fluid inlet connection communicating with internal fluid circulation passages in the clothing. The method includes the steps of pumping fluid from a source thereof into an enclosed chamber and directing the fluid in a flow path through the chamber to an outlet communicating with the inlet to the diver's clothing. Heat is supplied to the fluid in the flow path to raise the temperature of the fluid. The temperature of the fluid in the flow path subsequent to heating is sensed and the supply of heat to the fluid is reduced whenever the sensed temperature exceeds a predetermined value.

A heating unit which is intended to supply heated fluid to divers' clothing of the type provided with a fluid inlet connection communicating with internal fluid circulation passages in the clothing. The unit includes a housing having an enclosed main chamber. Pump means connected with the housing includes a pump inlet communicating with a source of the fluid and a pump outlet communicating with the main chamber for pumping the fluid therethrough. Chamber outlet means in the housing communicates with the main chamber and is adapted to be connected to the inlet connection of the diver's clothing. The pump outlet and the chamber outlet means are positioned at opposite ends of a fluid flow path through the main chamber. Heating means connected with the housing extends into the flow path for supplying heat to the fluid therein. Temperature-responsive means connected with the housing extends into the flow path at a point downstream of the heating means. The temperature-responsive means is operatively connected with the heating means to reduce the heat supplied thereby when the temperature of the fluid exceeds a predetermined value.

3,644,707
SAFETY HEATER FOR PRESSURE DISPENSED PRODUCT

Christopher Hollet Costello, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of application Ser. No. 686,576, Nov. 29, 1967. This application Sept. 21, 1970, Ser. No. 74,112
Int. Cl. H05b *1/00*; B67d *5/62*
U.S. Cl. 219—302 7 Claims



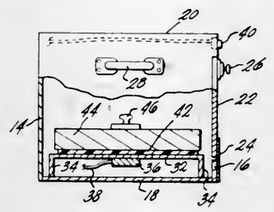
An attachment for heating shaving cream or the like material being dispensed from an aerosol-type container having a depressible hollow valve stem through which the material is discharged includes a casing of heat and electrical insulation material having a base at its lower end provided with a downwardly open bore adapted to fit upon the valve stem. A flow passage having highly heat conductive walls extends from the bore to a lateral opening in the casing. A confined body of heat storage material, such as water, alcohol, powdered metal or the like, is sealed within the casing in surrounding relation to the flow passage. The body of heat storage material is heated by an electrical resistance heating element arranged within the casing in surrounding relation thereto. The heating element has such a short connection to the usual electrical wall outlet that normally the connection must be broken to enable the user to conveniently dispense heated material.

3,644,708
PORTABLE HEATING OVEN FOR PREHEATING RIGID VINYL SHEETS

Dare E. Edwards, 5450 Conway Road, Chelsea, Mich.

Filed July 1, 1970, Ser. No. 51,625
Int. Cl. F27d *11/02*
U.S. Cl. 219—386 1 Claim

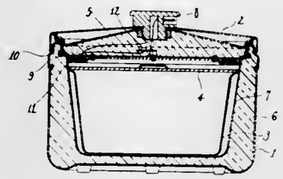
A portable heating oven for preheating rigid vinyl sheets for on-the-job fabrication consisting of an elongated sheet metal housing, a flat heat transmitting plate disposed in a horizontal position in the housing and having depending legs supported on the bottom wall of the housing, an electric heating element on the bottom side of the heat-transmitting plate for imparting heat thereto, and a door hingedly mounted on the front side of the housing to enable the positioning of vinyl sheets to be heated on top of the heat-transmitting plate. The heat-transmitting plate and its leg supports are of a configuration to allow for expansion of the plate and the legs when heated.



3,644,709
AUTOMATIC WARMER

Mitsuo Hojo, 3-134, 7-chome Kamikakihana-machi, Higashisumiyoshi-ku, Osaka, Japan

Filed Apr. 30, 1970, Ser. No. 33,354
Int. Cl. F27d *11/02*
U.S. Cl. 219—439 1 Claim

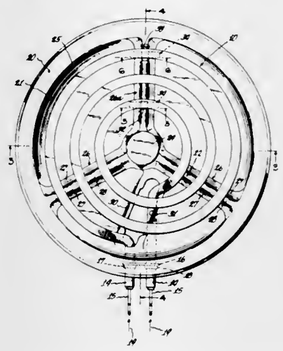


Warming pan comprising heating elements positioned to heat contents by radiation in addition to heating pan itself by conduction.

3,644,710
ELECTRIC SURFACE HEATER ASSEMBLY

Lester D. Drugmand, and Donald M. Cunningham, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed June 5, 1970, Ser. No. 43,828
Int. Cl. H05b *3/68*, *3/06*
U.S. Cl. 219—463 9 Claims

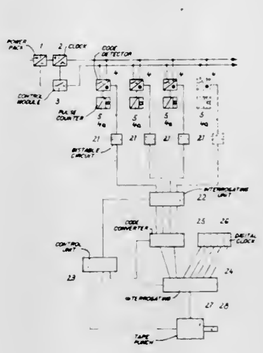


A support for a surface-type electric heating element for a stove top, including an adapter ring, a drip bowl and a spider, formed as a one-piece sheet-metal stamping, the surface element being adapted for plug-in connection with a terminal block, and having connection with the spider portion of the support to resist shifting of the surface element that otherwise might be effected by the thrusting force of the plug-in operation, and also to resist separation of the surface heater from its support.

3,644,711
DATA-RECORDING APPARATUS

Willi Haller, Aldingen, Germany, assignor to J. Hengstler K.G., Aldingen, Germany

Filed June 26, 1970, Ser. No. 50,142
Claims priority, application Germany, Oct. 18, 1969, P 19 52 659.1
Int. Cl. G06k *7/04*, *9/16*
U.S. Cl. 235—61.1 31 Claims



A clock operable to produce clock pulses and a plurality of counters are provided, also a plurality of pulse lines, each of which extends from said clock to one of said counters and is adapted to transmit clock pulses from said clock to said counter. A plurality of code carriers are provided, each of which is associated with one of said counters. The code carriers are provided with different codes. A plurality of code detectors are provided, each of which is associated with one of said code carriers and one of said counters and adapted to removably receive the associated code carrier in a control position and arranged to reject code carriers other than the associated one. At least one of said code carriers is in said control position in the associated code detector. Each of said code detectors comprises contacts included in the pulse line leading from the clock to the associated counter. Said contacts are operable to control the transmission of pulses in said lines in response to a movement of the associated code carrier to said control position.

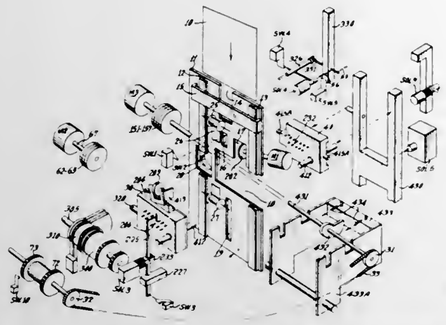
3,644,712
ELAPSED TIME COMPUTER

Albert S. Goodrich, Jr., R. I, Boggs Hill Road, Newtown, Conn.

Filed Oct. 15, 1968, Ser. No. 767,618
Int. Cl. G06k *15/00*
U.S. Cl. 235—61.8 R 36 Claims

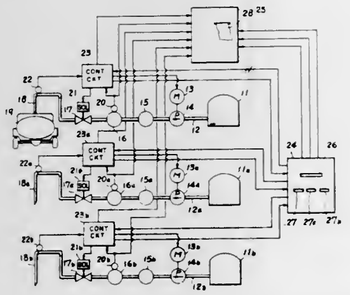
Apparatus automatically and repetitively operative upon insertions of a card, to print the time of insertion and the

time between the insertion and the subsequent insertion; data



for the necessary elapsed time computation being registered in a restricted field associated with each printline.

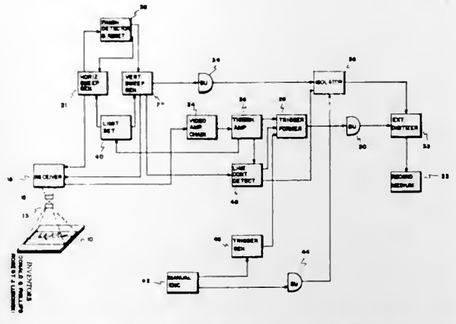
3,644,713
LIQUID-SUPPLYING APPARATUS
Ken Hayakawa, Yokohama, and Mitsuaki Tamada, Sagamihara, both of Japan, assignors to Tokico Ltd., Kawasaki-City, Kanagawa-ken, Japan
Filed Mar. 10, 1970, Ser. No. 18,191
Claims priority, application Japan, Mar. 11, 1969, 44/18456; Mar. 18, 1969, 44/20643; Apr. 14, 1969, 44/28818
Int. Cl. G06k *1/12, 19/04;* **G07f** *1/06;* **H01h** *43/08*
U.S. Cl. 235—61.9 R **5 Claims**



A liquid-supplying apparatus having a single card reader connected to each of a plurality of liquid-supplying systems for supplying different sorts of liquid. The card reader controls the respective liquid supplying system by cooperating with a discrimination card which consists of a main card and a subcard disengageably connected in a set.

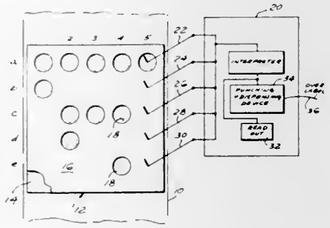
3,644,714
SYSTEM FOR TRANSLATING DATA FROM A DISPLAY INTO ELECTRICAL SIGNALS SUITABLE FOR STORAGE
Donald G. Phillips, 904 Stokes Avenue, Collingswood, N.J., and Robert J. Lubonski, 430 W. Browning Road, Am-8, Bellmawr, N.J.
Filed May 21, 1969, Ser. No. 826,402
Int. Cl. G06k *11/00*
U.S. Cl. 235—61.11 E **4 Claims**

A system for translating data from a chart into electrical signals includes means for focusing the chart on to a storage tube. The tube is electrically scanned by horizontal and vertical sweep signals. When line crossings on the chart displayed during said scanning operation are encountered output signals are produced. The output signals are compared with one of the sweep signals to obtain analog voltage signals



representative of the line crossings. The analog signals may be suitably converted to digital signals for storage in a suitable storage medium.

3,644,715
MACHINE READABLE LABEL AND SAMPLE IDENTIFICATION SYSTEM UTILIZING THE SAME
William J. Holderith, Wyckoff, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Filed Sept. 22, 1969, Ser. No. 859,919
Int. Cl. G01n *31/00;* **G06k** *19/02*
U.S. Cl. 235—61.11 A **2 Claims**

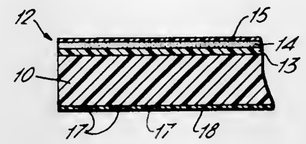


An improved label for containers and the like is provided. The label includes an undersheet having a surface of electrically conductive material and an oversheet of insulating material adapted to overlie the undersheet. The oversheet includes a plurality of holes punched therein in a pattern indicative, in a prearranged code, of the contents of the container. A method of identifying specimens is also provided wherein the hole pattern in the oversheet of one container is reproduced on a sheet of insulating material which is then used as an oversheet for the label of subsequent containers which are to be filled from the sample container.

3,644,716
INFORMATION CARD
Masanori Nagata, and Kiyotaka Fukushima, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Dec. 11, 1969, Ser. No. 884,132
Claims priority, application Japan, Dec. 25, 1968, 43/113323
Int. Cl. G06k *19/02*
U.S. Cl. 235—61.12 M **6 Claims**

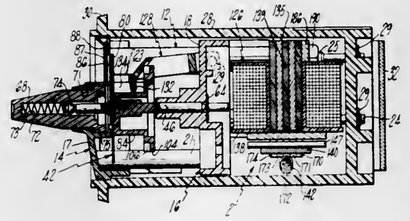
An information card of the magnetic-type in which card information is magnetically recorded. The card comprises a base sheet made of a thermoplastic material having a desired rectangular shape and a thickness enough to give the card

required mechanical strength, and a magnetic sheet consisting of a support layer of the same thermoplastic material as the material of the card base and a magnetizable layer formed on one surface of the support layer. The magnetizable layer may be covered with a protective coating. The magnetic sheet and the card base are put together with the other surface of the support layer being in contact with one surface



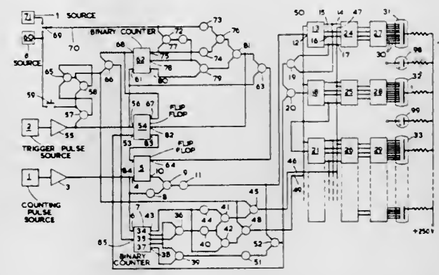
of the card base. The card base and the magnetic sheet are then heated and compressed so that the contacting portions of the material of the card base and the support layer of the magnetic sheet are fused together to produce a card of unitary construction. The exposed surface of the card base may be provided with symbols printed thereon expressing necessary information, and this surface may be covered by a transparent coating for protection of the printed information.

3,644,717
COUNTER RESET MECHANISM
Howard J. Voegelin, Cheshire; Ernest G. Hoffman, Middlefield, and Lloyd J. Lapointe, West Hartford, all of Conn., assignors to Veeder Industries Inc., Hartford, Conn.
Filed May 7, 1970, Ser. No. 35,406
Int. Cl. G06m *1/28*
U.S. Cl. 235—92 C **6 Claims**



An electromagnetically operated counter comprising a pair of radially spaced number wheels and a pair of resetting knobs mounted coaxially therewith each adapted to be individually axially depressed for resetting the respective number wheel. The number wheels are interconnected through an intermediate pinion such that when each wheel is depressed, the pinion and therefore the other wheel is locked against rotation. The knobs have teeth for positively clutching the respective wheel to the knob and a stationary tooth is adapted to cooperate with the knob teeth for ensuring the wheel is located in a full count position when the knob is released. A core and clapper subassembly of an electromagnetic operator is mounted on rearwardly extending posts of a two-piece frame for being pivotally adjusted about the axis of one of the posts to set the air gap of the clapper. A star wheel of a verge drive is mounted on a shaft supporting the lowest order counter wheel, and a verge is reciprocably mounted on the free end of the clapper for reciprocable movement along an axis transverse to the axis of the star wheel shaft and has a slot receiving the star wheel shaft for orienting the verge with respect to the star wheel.

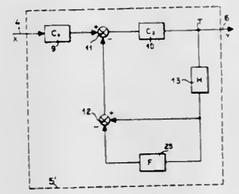
3,644,718
PULSE-COUNTING ARRANGEMENTS
Colin Terry Osborne, and Michael Keith Burdett, both of Bradford, Yorkshire, England, assignors to The English Electric Company Limited, London, England
Filed May 20, 1969, Ser. No. 826,250
Claims priority, application Great Britain, May 20, 1968, 23,888/68
Int. Cl. H03k *21/18*
U.S. Cl. 235—92 EA **7 Claims**



In a counting circuit, pulses from a counting pulse source are counted during a counting period and the count is transferred into a display at the start of the next counting period where it remains until the end of that period. The circuit includes a primary counter having a number of successive stages arranged to count the pulses, but during the transfer operation the pulses are counted by a secondary counter instead of by the lowest order primary counter stage and a carry is entered into the second primary counter stage when the count in the secondary counter reaches the capacity of the lowest order primary counter stage. Thereafter the primary counter stages again count the pulses in the normal manner.

In one application of the counter, the number of pulses generated during a counting period gives a measure of the diameter of a workpiece, and the display provides a direct indication of the diameter. The start of each counting period is determined by a trigger pulse generated by rotation of the workpiece.

3,644,719
TIME DELAY COMPENSATION IN A CLOSED-LOOP PROCESS CONTROL SYSTEM
Roland Rouxel, Seyssinet, and Gabriel Chevalier, Grenoble, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques, Paris, France
Filed Mar. 3, 1970, Ser. No. 16,212
Claims priority, application France, Mar. 3, 1969, 6905752
Int. Cl. G05f *11/01*
U.S. Cl. 235—150.1 **11 Claims**



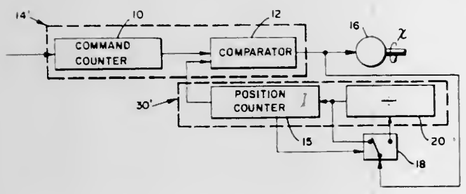
The deleterious effect of time lag in an industrial process on the operation of a closed-loop feedback control system in which such process is regulated may be substantially eliminated without sacrificing static accuracy of the system

by a specially designed process controller. The controller includes an input and an output network connected in tandem in the main path of the feedback loop through one input of a first subtracter. The controller output is coupled to one input of a second subtracter through an additional network whose transfer function is equal to the product of the input network transfer function and the equivalent unretarded transfer function of the controlled process. The output of the additional network is also coupled to the other input of the second subtracter through a retardation circuit having the same delay characteristics as that of the process. The output of the second subtracter is connected to the second input of the first subtracter to provide the required process control signal from the output network.

3,644,720
GAIN MULTIPLIER

Ronald E. Falk, Bristol, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Oct. 6, 1969, Ser. No. 863,977
Int. Cl. G05b *11/26*
U.S. Cl. 235—150.1 **6 Claims**

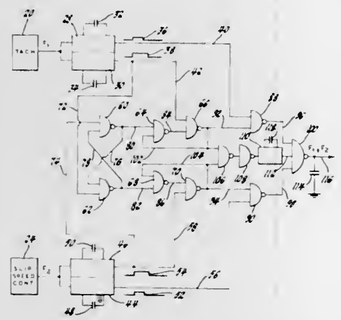


Circuitry for digitally implementing gain variation as a function of input signal magnitude. Gain variation, in stepwise fashion, in either a feedback or forward loop is achieved by varying the weight given signals applied to a counter. In the feed forward embodiment, the output of the counter comprises the circuit output signal while in the feedback loop embodiment the output of the counter is compared with a stored count commensurate with the circuit input signal.

3,644,721
APPARATUS AND METHOD FOR DIGITAL FREQUENCY ADDITION AND SUBTRACTION

Mark E. Preiser, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 88,064
Int. Cl. G06f *15/20*; **H03b** *3/04*
U.S. Cl. 235—150.3 **4 Claims**

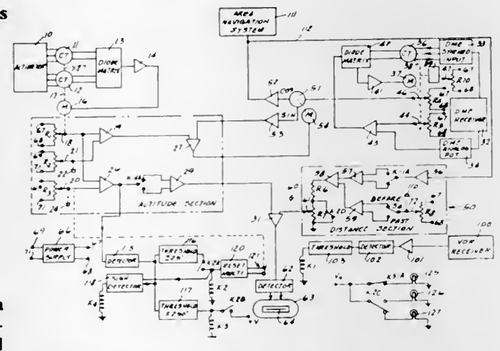


The digital frequency system of this invention provides an output signal comprised of pulses which have a frequency equal to the sum or difference of the frequencies of two input signals. Each of the input signals is used to generate a first pulse train for summation or subtraction at the output of the system and a second pulse train for controlling the counting of the pulses of the first pulse train to ensure against error due to pulse overlap. If there is a possibility of error due to pulse overlap, one of the pulses to be counted is inhibited while the other is passed to the output. Each inhibited pulse is replaced by an auxiliary pulse which is then processed in the same manner as the original pulses.

3,644,722
VERTICAL CONTROL SYSTEM

James Hobbs, and John B. Carocari, both of Overland Park, Kans., assignors to Butler National Corporation, Oak Brook, Ill.

Filed Aug. 18, 1969, Ser. No. 850,770
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.23 **10 Claims**

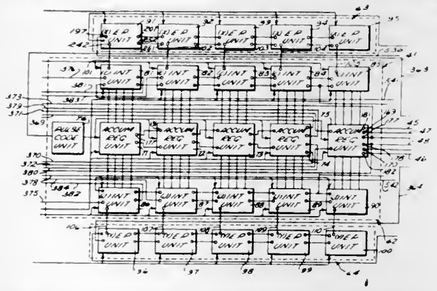


A vertical control system which allows pilots of aircraft to control their ascent and descent based on distance and altitude information so as to reach a point over the ground at a desired altitude. The set point at which the desired altitude is to be reached may be offset from a radio transmitting station either before or after the station and the desired angle of descent or ascent may be set into the system so as to control the aircraft in the desired profile.

3,644,723
CIRCULAR INTERPOLATION SYSTEM

Harvey J. Rosener, Dayton, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Original application Feb. 3, 1964, Ser. No. 341,958, now Patent No. 3,506,812. Divided and this application Aug. 5, 1969, Ser. No. 854,013
Int. Cl. G06f *7/38, 15/34*; **G06j** *1/20*
U.S. Cl. 235—156 **10 Claims**



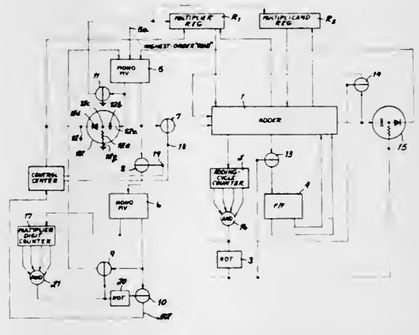
An operational integrator comprising an integrand register and an accumulator register, a pulse code unit for supplying

four series of pulses and a carry pulse to transfer the numbers stored in respective integrand decades to respective associated accumulator decades in parallel, with provision for carry between successive accumulator decades in response to the carry pulse. The number in the integrand register can be selectively changed in a positive or negative direction to provide for circular interpolation, for example.

3,644,724
CODED DECIMAL MULTIPLICATION BY SUCCESSIVE ADDITIONS

Stefan Hristov Angelov, and Snejanka Vladimirova Hristova, both of Sofia, Bulgaria, assignors to Zentralen Institut po Istchislitelna Technika, Sofia, Bulgaria

Continuation-in-part of application Ser. No. 672,501, Oct. 3, 1967, now abandoned. This application Mar. 27, 1970, Ser. No. 23,405
Claims priority, application Bulgaria, Oct. 4, 1969, I-1174
Int. Cl. G06f *7/52*
U.S. Cl. 235—159 **10 Claims**



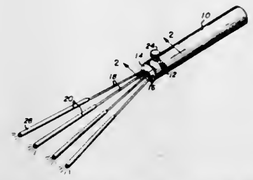
A circuit and system for performing multiplication operations in a desk-top calculator having two registers designed to receive the multiplier and the multiplicand; the multiplier register has a number of order positions corresponding to the multiplication capacity or maximum product while the multiplicand register has a number of orders corresponding to at least one more than the maximum number of orders of the multiplicand to be handled. The value stored in the highest order position of the multiplier register is read and as long as it is "0," the contents of the multiplier register is shifted toward the highest order position. When a nonzero value arrives at the highest order position of the multiplier register, a "9" is formed in the highest order position of the multiplicand register and the contents of the multiplier and multiplicand registers are added, the result being stored in the multiplier register. The highest order positions of both registers are similarly summed and the tens value of the highest order addition is dropped, thereby diminishing the number in the highest order position of the multiplier register by "1" with each addition. The cycle is repeated until the entire multiplier has been reduced to zero. The product is found in the lower order portion of the multiplier register.

3,644,725
LIGHT DISPLAY APPARATUS

Robert L. Lochridge, Jr., 460 California Avenue, Palo Alto, Calif.

Filed Sept. 11, 1969, Ser. No. 857,008
Int. Cl. F21l *11/00*
U.S. Cl. 240—1 **3 Claims**

Light display apparatus including a plurality of flexible elongated members joined at one end to a handle means and having at their other ends means for creating brilliant spots of light so that by imparting motion to the handle means the light spots are caused to move more or less randomly in space as the elongated members flex. Such apparatus may be

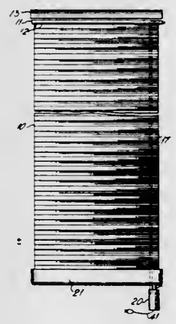


used to produce an interesting light effect as the illuminated ends variously oscillate in space in a darkened environment.

3,644,726
LIQUID CASCADE APPARATUS

Anton Pfeuffer, New York, N.Y., assignor to Patent Service Corporation of America, New York, N.Y., a part interest

Filed Oct. 29, 1969, Ser. No. 872,249
Int. Cl. F21p *7/00, 1/02*
U.S. Cl. 240—10 R **9 Claims**

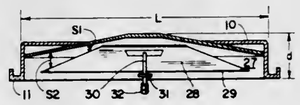


A liquid cascade apparatus for use as an interior decoration consisting of a flat or circular corrugated surface which may be constructed from plastic panels or cylinders in which a supply of liquid such as water is evenly disposed from the top of the corrugated member and permitted to travel across its corrugated surface while the surface is illuminated with natural or artificial light. The movement of the liquid across the corrugated surface provides an ornamental decoration and produces pleasant and relaxing sounds.

3,644,727
AIR HANDLING LIGHTING FIXTURE

Robert E. Garrett, and Leon D. Dame, both of 1544 West 8th Street, Los Angeles, Calif.

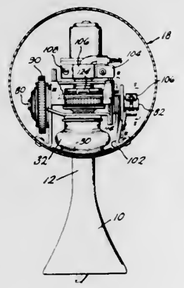
Filed Feb. 24, 1970, Ser. No. 13,645
Int. Cl. F24f *13/18*
U.S. Cl. 240—47 **7 Claims**



An encased lighting fixture structure incorporates fluorescent light tubes and also defines air passage means on opposite sides having first ends terminating in opposite side openings and their other ends opening out in elongated bot-

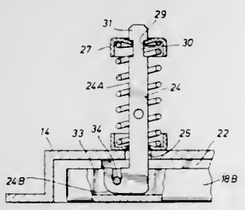
tom slots adjacent to the opposite sides and substantially coextensive therewith. Each of the air passage means includes an elongated damper member of tapered configuration to define with the passage an air passage of increasing cross-sectional area towards the end of the member so that air passing through is distributed from the slot with a substantially uniform air velocity profile. The physical dimensioning of the casing structure, air passage means, and damper members is such as to provide sufficient air volume flow with a minimum height dimension.

3,644,728
MOTOR-CONTROLLED LAMP
Lawrence E. Hessemer; Richard P. Manning; Harry G. Sparks, and Walter H. Powers, all of Jackson, Mich., assignors to Sparcraft, Inc., Jackson, Mich.
Filed Aug. 11, 1969, Ser. No. 848,895
Int. Cl. B60q *1/06*
U.S. Cl. 240—61.9 **10 Claims**



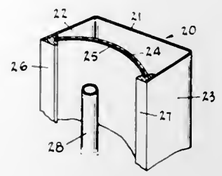
An electric motor-controlled lamp capable of being controlled from a location remote from the lamp utilizing a pair of reversible electric motors mounted wholly within the lamp housing wherein the lamp may be pivoted by the motors about both horizontal and vertical axes by energizing the electric motors. The lamp includes flood and spotlight filaments, the spotlight filament switch including resistor means connected in series with the electric drive motors to automatically reduce the rate of lamp adjustment when the spotlight filament is utilized.

3,644,729
CLOSURE FOR A LIGHT FIXTURE OR THE LIKE
Ralph M. McFarlin, Pasadena, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed June 15, 1970, Ser. No. 45,957
Int. Cl. F21v *17/00*
U.S. Cl. 240—73 BC **11 Claims**



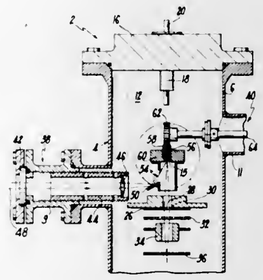
A closure for a light fixture or the like comprising a wall having an access opening therethrough and a window connected to the wall for swinging between a closed position in which it is over the opening and an open position to one side of the opening to provide access to the interior of the fixture.

3,644,730
SELECTIVE REFLECTORS
James C. Ogle, Jr., Toledo, Ohio; Dwight W. Barkley, New Kensington, Pa., and Arthur I. Bodkins, Winthrop, Mass., assignors to Libbey-Owens-Ford Glass Company, Toledo, Ohio
Filed Aug. 29, 1967, Ser. No. 664,111
Int. Cl. F21v *7/12, 7/22, 29/00*
U.S. Cl. 240—103 **1 Claim**



A selective reflector, for a source of visible and invisible rays of light, made up of a shaped backing member and a flexible member that carries a light modifying optical coating and is held in conformity to the shaped backing member; and in which the carrying member and optical coating are both capable of transmitting selected rays of light.

3,644,731
APPARATUS FOR PRODUCING AN ION BEAM BY REMOVING ELECTRONS FROM A PLASMA
Jean-Francois Eloy, Grenoble, France, assignor to Commissariat A. L'Energie Atomique, Paris, France
Filed Apr. 29, 1969, Ser. No. 820,078
Claims priority, application France, May 15, 1968, 151943
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 **9 Claims**

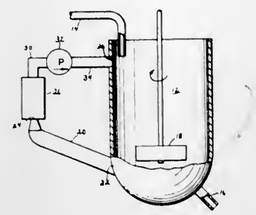


The present invention relates to a method of production of ions wherein a plasma is generated from a target and then subjected to a number of successive electric fields to sort the particles which form the plasma by providing the successive electric fields with increasing amplitudes to slow down the electrons, collecting said electrons on electrodes and then causing the ion-enriched beam to converge towards the exit aperture by means of a final electric field.

3,644,732
CRYSTALLIZERS
Reuel Shinnar, 110 Ash Drive, Great Neck Estates, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,205
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 D **16 Claims**

The invention relates to improvements in crystallizers and more particularly, to the elutriation of the mix in a crystal-

lization vessel, and measurement of the particle size distribution in the elutriated sample to obtain a control signal for



controlling the parameters associated with the crystallization process.

3,644,733
ELECTRON MICROSCOPE DEFLECTION SYSTEM FOR DIRECTING THE BEAM AT A PREDETERMINED ANGLE AND DIRECTION AT THE OBJECT
Otto Wolff, and Dieter Krahl, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 8, 1967, Ser. No. 644,650
Claims priority, application Germany, June 10, 1966, S 104241
Int. Cl. H01j *37/26;* **G01n** *23/22*
U.S. Cl. 250—49.5 A **1 Claim**

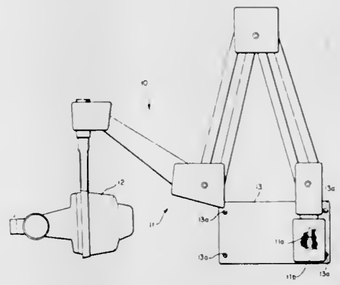


A particle beam device such as an electron microscope has a predetermined optical axis and means for directing a particle beam at a predetermined angle to an object. The beam-directing means has a first pair of electrical deflecting coils situated at a first plane for deflecting the beam away from the optical axis toward a second plane, the first and second planes each being normal to the optical axis and the second plane being disposed intermediate the first plane and the object. A second pair of electrical deflecting coils are situated at the second plane for deflecting the beam in a direction opposite to the direction of deflection provided by the first pair of deflecting coils so as to direct the beam to the object at the predetermined angle. The first and second deflecting coil pairs deflect the beam in a third plane which is perpendicular to the first and second planes and which contains the optical axis. An additional pair of electrical deflecting coils are situated at least at one of the first and second planes. An electrical supply is connected to the additional pair of coils for supplying the latter with an excitation proportional to the excitation of the first and second pairs of deflecting coils thereby enabling the additional deflecting pair of coils to compensate for undesired deflections of the beam out of the third plane caused by the first and second pairs of deflecting coils.

3,644,734
THIN LAYER CHROMATOGRAPHIC ANALYSIS UTILIZING MIXTURES OF FLUORESCENT SUBSTANCES AND ULTRAVIOLET RADIATION
Masao Inoue, Kawasaki, and Zenzo Tamura, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Original application Aug. 28, 1968, Ser. No. 755,984. Divided and this application Mar. 6, 1970, Ser. No. 17,155
Int. Cl. G01n *21/22*
U.S. Cl. 250—71 R **8 Claims**

A method of qualitative analysis of sampled materials by thin layer chromatography or paper chromatography using an adsorbent mingled with a mixture of two or more kinds of fluorescent substances, which exhibit different excitation and emission spectra from each other, and applying an ultraviolet radiation to said adsorbent.

3,644,735
LEVELING MECHANISM FOR X-RAY MACHINES
Cornelius Keith Vandervelden, Kansas City, Mo., assignor to Litton Medical Products, Inc., Des Plaines, Ill.
Filed Dec. 31, 1969, Ser. No. 889,492
Int. Cl. H05g *1/00*
U.S. Cl. 250—91 **2 Claims**



A leveling mechanism comprising two eccentrics rotatably mounted around the mounting shaft of a suspension system that supports an X-ray head. Respective wrenches for such eccentrics are mounted to the suspension system and may cooperatively engage their respective eccentrics to facilitate leveling of the suspension system in order to prevent drifting of the X-ray head.

3,644,736
BACK-SCATTERING ABSORBER MATERIALS FOR GAMMA-RAYS
Masao Kato; Goro Tanaka, and Seigoro Yamamoto, all of Tokyo, Japan, assignors to Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 5, 1968, Ser. No. 773,419
Int. Cl. G21f *1/08*
U.S. Cl. 250—108 R **5 Claims**

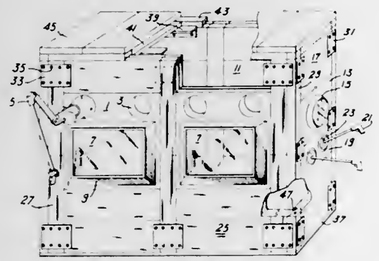
Back-scattering absorber materials for γ-rays comprising a mixture consisting of 70 to 90 percent by weight of lead compound, 10 to 20 percent by weight of barium compound and 3 to 10 percent by weight of iron compound, and a vehicle. In one type of embodiment, polyvinyl alcohol in 25 percent aqueous solution of 28 to 39 percent by weight of said mixture is used as the vehicle. In another type of embodiment, the vehicle is a mixture comprising 30 parts of vinyl acetate as a film-forming agent, 0.2 part of methyl cellulose dissolved in 10 parts of water as a thickening agent, and 4 parts of ammonium salt of vinyl acetate copolymers in 25 percent solution as a dispersing and wetting agent, and said vehicle mixture being 25 to 67 percent by weight of the first principal mixture. Regardless of the type of vehicle, the back-scatter-

ing absorption characteristics of the absorber materials are substantially invariant, so far as the composition of the first said principal mixture is kept constant.

3,644,737
DEMOUNTABLE CELLS FOR SHIELDING RADIOACTIVE ELEMENTS

Letto Fedi, 29 Avenue de Petit Parc, L'Etang-la-Ville, and Charles Glachet, Rue Jean Mermoz-Batiment S., Taverny, both of France

Filed Dec. 27, 1968, Ser. No. 787,323
Claims priority, application France, Dec. 28, 1967, 134171
Int. Cl. G21f *7/02, 7/06*
U.S. Cl. 250—108 WS **10 Claims**



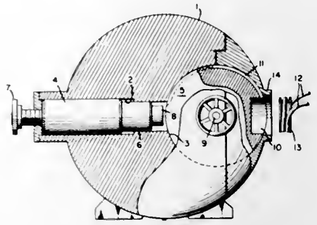
A shielded cell for the safe manipulation of objects or materials which present hazards arising from radioactive radiation or other causes and which are to be isolated from the environment. The construction of the cell entails the use of a small number of different types of standard reversible elements of maximum size which are designed for reuse and are provided in particular with penetrations located in accordance with operating requirements. The elements to be interassembled by known means for ensuring compliance with shielding requirements are essentially endowed with shapes related to a square unit of which one side is a suitable multiple of the common thickness of said elements, to rectangular elements each having a length corresponding to one side of said square unit of a width corresponding to simple submultiples thereof, a cornerpost provided with means for assembly and fastening at right angles, and rectangular elements adapted to carry overlap slabs for covering said cells.

3,644,738
DEVICE AFFORDING TOTAL BIOLOGICAL PROTECTION FOR IRRADIATION OF A FLUID CIRCULATING WITHIN A TUBE

Jose Bost, 2 Rue Marcel Porte, 38-Grenoble; Daniel Hollard, 37 Route de Chartreux, 38-La Tronche; Michel Peccoud, Rue des Martyrs, 38-Claix, and Michel Suscillon, 35 Avenue Jean Jaures, 38-Grenoble, all of France

Filed Mar. 25, 1969, Ser. No. 810,157
Claims priority, application France, Apr. 5, 1968, 147251
Int. Cl. G21f *3/00*
U.S. Cl. 250—108 R **1 Claim**

A device affording total biological protection for the irradiation of a fluid circulating within a tube, said device being characterized in that it comprises a lead body having two communicating cavities and two lead elements, one element being adapted to carry a radioactive source at one end thereof and being accurately and removably fitted within one of said cavities in order to permit of sliding displacement therein, the second element being accurately fitted within the other cavity in order to permit of pivotal displacement therein and provided with a peripheral recess for accommodating a ring on which is wound a portion of the fluid circulation tube and with curved grooves having a caliber which

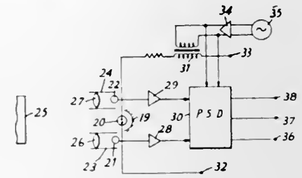


corresponds to that of said fluid circulation tube and terminating in said peripheral recess.

3,644,739
APPARATUS FOR DETECTING POSITIONAL ERRORS UTILIZING HIGH-FREQUENCY MODULATION OF LIGHT SOURCE AND PHASE-SENSITIVE DETECTOR

Alan Wilkinson, Egham; Stewart Charles Hine, Harrow, and David Robert Bosher, Hayes, all of England, assignors to Electric & Musical Industries Limited, Middlesex, England

Filed Nov. 28, 1969, Ser. No. 880,615
Claims priority, application Great Britain, Sept. 9, 1969, 44,390/69
Int. Cl. G01n *21/30;* **G02f** *1/28;* **H01j** *39/12*
U.S. Cl. 250—209 **3 Claims**



Apparatus is disclosed for detecting error in the positioning of a member to which the apparatus is attached in relation to a reference surface having a different reflectivity from the surrounding area. An extended light source modulated at a frequency high relative to mains frequency is adapted to produce dispersive illumination for floodlighting the reference surface and at least two photoelectrically sensitive devices are arranged for viewing substantially only light reflected from respective discrete areas on the reference surface spaced in one direction and for producing in cooperation with the reference surface output electrical signals representative of the illumination received by the devices. Means are provided for deriving a position error signal depending on the differences between the output signals.

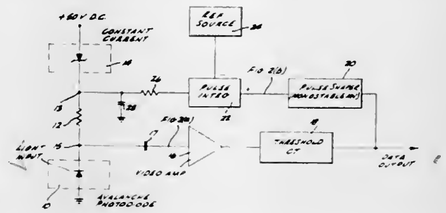
3,644,740
CONTROL CIRCUIT FOR BIASING A PHOTODETECTOR SO AS TO MAINTAIN A SELECTED FALSE ALARM RATE

Burton E. Dobratz, Manhattan Beach, and Robert P. Farnsworth, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed July 22, 1969, Ser. No. 846,300
Int. Cl. G01c *3/08;* **H01j** *39/12;* **H03k** *3/42*
U.S. Cl. 250—211 J **14 Claims**

A circuit for controlling the bias supplied to an avalanche photodetector so as to maintain a "false alarm" rate within acceptable limits, while maximizing the photodetector sensitivity for those limits. The circuit is particularly useful in

conjunction with laser-ranging (distance-measuring) equipment in which a timing interval is normally initiated coincident with the transmission of a light pulse and terminated coincident with the receipt of the reflected light pulse. The timed interval is, of course, indicative of the distance of the reflector from the transmitter and receiver. If the detector sensitivity is too high, various forms of noise can produce false alarms, i.e., signals indistinguishable from that attributable to the reflected light pulse. The subject circuit controls the bias on the photodetector to maintain a constant false

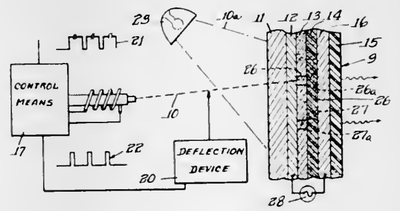


alarm rate, e.g., 1 percent, during the timing intervals of interest, while permitting the detector sensitivity to be maximized for that rate. The circuit utilizes a pulse shaper which continually responds to input signal excursions exceeding a certain threshold level to control an integrator. If such excursions occur at a rate greater than the desired false alarm rate, the integrator will modify the detector bias to lower its sensitivity. On the other hand, if such excursions occur at a rate lower than the desired rate, the bias is modified to increase the detector sensitivity.

3,644,741
DISPLAY SCREEN USING VARIABLE RESISTANCE MEMORY SEMICONDUCTOR

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 16, 1969, Ser. No. 825,289
Int. Cl. H01l *17/00*
U.S. Cl. 250—213 R **18 Claims**

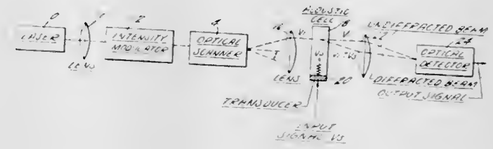


An electrically operated display screen including a support surface on which active layers, preferably of electroluminescent phosphor having a nonlinear voltage-brightness characteristic and variable resistance memory semiconductor materials, are deposited one adjacent the other with transparent conductive layers disposed on either side thereof to provide electrode surfaces for connection to an alternating current voltage source which substantially excites the electroluminescent layer to generate relatively high-intensity visible light in those areas thereof where the variable resistance memory semiconductor material is in the low-resistance condition. The layer of memory semiconductor material has discrete portions which are individually alterable between stable high- and low-resistance conditions by application of predetermined amounts of energy to form the desired visible light patterns on the display screen.

3,644,742
LASER-ACOUSTIC PROCESSOR FOR ACCOMPLISHING TIME REVERSAL OF AN ELECTRIC SIGNAL

Michael J. Brienza, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Original application Oct. 4, 1967, Ser. No. 672,924, now Patent No. 3,539,245. Divided and this application Aug. 6, 1970, Ser. No. 61,793
Int. Cl. G02f *1/28;* **H01j** *3/14;* **H04b** *9/00*
U.S. Cl. 250—216 **6 Claims**

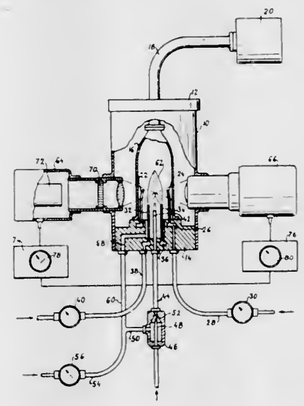


An acoustic signal is generated in an acoustic cell such as a quartz bar, and a laser beam is scanned through the cell intersecting the acoustic signal. An undiffracted beam and a frequency shifted beam are produced, and both beams are optically heterodyned at a photodetector to reproduce the acoustic signal. Depending on the rate and direction of laser beam scanning, a time compressed, time expanded or time inverted output signal may be produced. The laser beam may also be intensity modulated to further vary the output signal.

3,644,743
METHOD AND APPARATUS FOR ANALYSING LOW-THERMAL EXCITABLE DISPERSIVE SYSTEMS

Bedrich Binek, Prague, Czechoslovakia; Sieglinde Przyborowski, and Werner Ullmann, both of Berlin, Germany assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

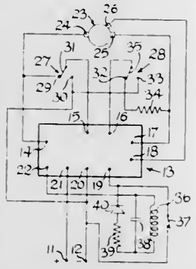
Continuation of Ser. No. 592,604, Nov. 7, 1966
Filed Oct. 22, 1969, Ser. No. 868,503
Claims priority, application Czechoslovakia, Nov. 6, 1965, 6629/65
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **8 Claims**



An analyzer for aerosols has a transparent heating chamber in which a mixture of the aerosol to be analyzed

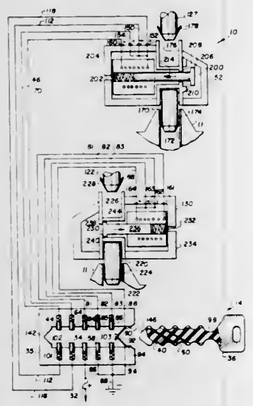
and of a dilutent is heated to the emission temperature of the dispersee particles in the aerosol, the dilution being sufficient to produce sequential light pulses from the emitting particles. The pulses of a desired wavelength are transmitted through a filter to a photomultiplier whose output pulses are analyzed in a known manner to obtain data on concentration, size distribution and composition of the dispersed particles.

3,644,744
WINDSCREEN WIPING SYSTEMS FOR ROAD VEHICLES
William David Holt, Colne, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Mar. 23, 1970, Ser. No. 21,749
Claims priority, application Great Britain, May 27, 1969, 26,637/69
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 **1 Claim**



A windshield wiping system has a wiper motor and a control switch for the motor, the control switch having an on position and an off position in serving when moved to its off position to reverse the flow of current to the wiper motor to cause the wiper motor to move the wipers clear of the windshield at which point a limit switch is tripped to stop the motor. In such a system, means is provided for effecting a delay between wipes so that the system operates more satisfactorily in light rain, and in addition a further limit switch is incorporated to ensure that the wipers park on the windshield when they are operating with the delay.

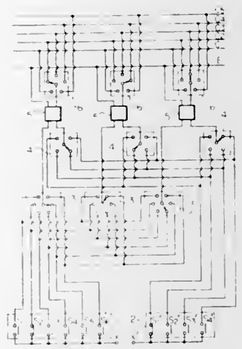
3,644,745
ELECTRICAL LOCK FOR IGNITION SYSTEMS
George Bell, 30-21 Edwin Avenue, Fort Lee, N.J.
Filed Nov. 10, 1969, Ser. No. 875,334
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 **7 Claims**



An electrical lock for vehicular ignition systems having adapters that are irremovably interposed between a predetermined number of spark plug cable receptacles and their distributor contacts. The adapters being of two types, a normally open contact type and a normally closed contact type, the normally open contact-type adapter having a spring-loaded solenoid which is activated by an electric key closing an electric circuit to direct current to the solenoid to overcome the spring and close the adapter permitting current to flow from the ignition system battery through the distributor contacts through the spark plug cable to the individual spark plug of the vehicular engine for its operation. The normally closed contact-type adapter has a spring-loaded solenoid which permits electric current to flow from the battery, through the distributor contacts, through the spark plug cable, to the individual spark plug of the vehicular engine. The normally closed contact-type adapter is not effected by the electric key.

In the event the electric circuit of the normally closed adapter is tampered with, to cause current to flow to its solenoid, it will activate it to overcome the spring and open the adapter thus preventing current from flowing to the spark plug.

3,644,746
CIRCUIT-CONTROLLED PROGRAM SWITCH HAVING SELECTIVE SIGNAL-TRANSFER CIRCUITS
Shunsei Kratomi, 456 Maegawa, Tachibana-machi, Japan
Filed July 7, 1970, Ser. No. 52,969
Claims priority, application Japan, July 29, 1969, 44/59375
Int. Cl. H02j *3/00*
U.S. Cl. 307—41 **15 Claims**

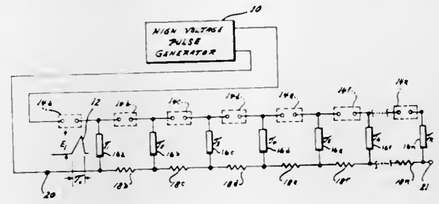


A two-dimensional-timer-controlled program switch wherein timing signals are transmitted to utilization circuits through selective signal-transfer circuits, each of which includes timing selectors, at least a channel selector and a signal transfer device coupling the selectors to an output utilization means. The signal transfer device, which has its input terminals and output terminals electrically isolated from each other but also provides a signal transfer path therebetween, couples timing signals generated by a pair of cyclically operable switches which preferably take the form of stepping switches, to an output utilization device in accordance with the settings of the various selectors of the selective signal-transfer circuits.

3,644,747
SPARK GAP NANOSECOND PULSE GENERATOR
Bobby R. Gray, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Aug. 7, 1970, Ser. No. 61,889
Int. Cl. H03k *5/04*
U.S. Cl. 307—106 **2 Claims**

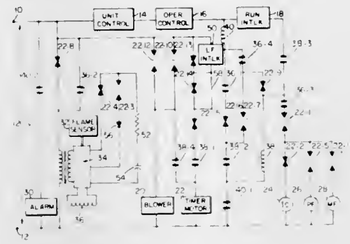
An apparatus for generating a short duration higher peak voltage pulse from a basic lower pulse voltage of longer duration. A series of spark gaps are arranged such that the total

voltage from the basic long duration pulse is applied to each gap in succession. A delay line with a fixed delay which is



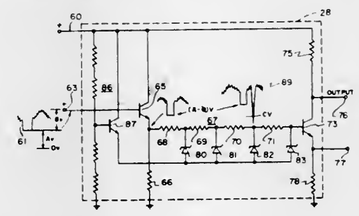
equal to the total breakdown time of all the other gaps is connected across each spark gap.

3,644,748
COMBUSTION SUPERVISION APPARATUS
Philip E. Lord, Woburn, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.
Filed Aug. 3, 1970, Ser. No. 60,229
Int. Cl. H01h *35/00*
U.S. Cl. 307—117 **14 Claims**



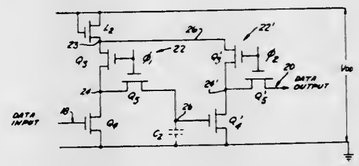
Combustion supervision apparatus includes a flame relay responsive to a flame detector for providing an indication of flame in the supervised combustion chamber, a control relay, a magnetically operated lockout device, and a circuit for checking the continuity of the magnetically operated lockout device prior to energization of the control relay including in series with coil of the magnetically operated lockout device and the coil of the control relay.

3,644,749
DIODE DELAY LINE
Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 5, 1970, Ser. No. 61,337
Int. Cl. H03k *17/28*
U.S. Cl. 307—208 **6 Claims**



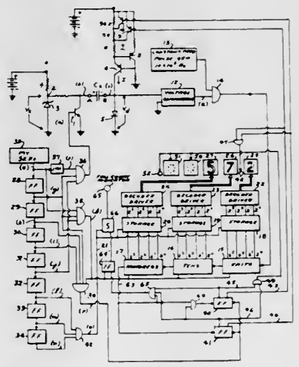
A delay line adapted for fabrication in integrated circuit form and suitable for use in a television receiver or the like is in the form of an RC circuit in which the capacitors are zener diodes, slightly reverse-biased with respect to desired input signals applied to the delay line.

3,644,750
TWO-PHASE LOGIC CIRCUIT
David Campbell, Glenrothes, Scotland, assignor to General Instrument Microelectronics Ltd., Glenrothes, Scotland
Filed Sept. 9, 1970, Ser. No. 70,764
Claims priority, application Great Britain, June 17, 1970, 29,469/70
Int. Cl. H03k *17/60*
U.S. Cl. 307—208 **8 Claims**



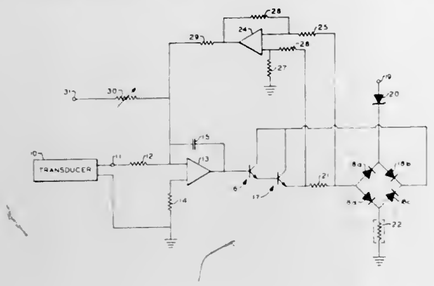
A two-phase logic circuit comprises a double inverter having a series of insulated gate field-effect transistors for conditionally charging or discharging the operative node capacitances. The load FET is in series with a low-impedance switching FET which is clocked to provide a charging path during the operative clock intervals.

3,644,751
DIGITAL CAPACITANCE METER
William L. Spaid, RR 1, South River Road, Cedarville, Ohio
Original application Oct. 28, 1968, Ser. No. 771,026. Divided and this application July 10, 1970, Ser. No. 53,728
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **1 Claim**



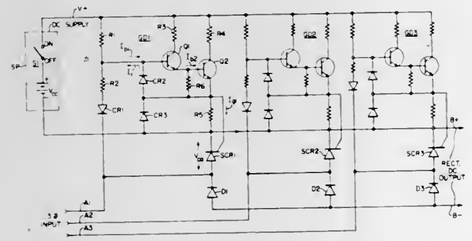
A fully automatic capacitance meter with decimal readout. The meter operates cyclically at a relatively high frequency, acting in an initial small fraction of each cycle to charge the unknown capacitor to a predetermined voltage, discharge the capacitor at a constant rate to zero voltage, measure the time interval required for discharge to produce a time analog of the capacitance, and convert the time analog to a decimal number. The remaining large fraction of each cycle is used to display the decimal number. Automatic range switching is accomplished by changing the discharge rate.

3,644,752
ANALOG OUTPUT CIRCUIT
Vernon R. Clark, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 8, 1971, Ser. No. 104,985
Int. Cl. H03k *17/00*
U.S. Cl. 307—229 **4 Claims**



A circuit to establish an output current proportional to an input signal comprises an input summing amplifier, having the output signal therefrom applied to a current amplifier. A resistor and a bridge rectifier assembly are connected in the output circuit of the current amplifier. A differential feedback amplifier applies an amplified signal, representative of the potential drop across the resistor, to the input of the summing amplifier.

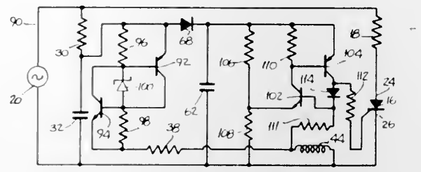
3,644,753
BIAS SENSING GATE DRIVER CIRCUITRY
Howard S. Ginsberg, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 22, 1970, Ser. No. 48,056
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 Q **2 Claims**



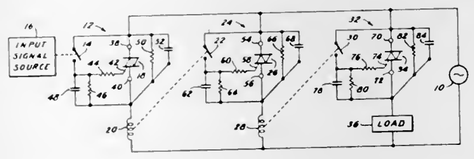
Driver circuitry for sensing the direction of bias across controlled switching devices such as silicon controlled rectifiers and providing sufficient gate drive therethrough when the device is forward biased and removing the gate drive when reverse biased.

3,644,754
CIRCUIT FOR THE CONTACTLESS CONTROL OF THYRISTORS
Peter Dosch, Rankstrasse 15, and Emil Benz, Larchenstrasse 10, both of Canton of St. Gall, Switzerland
Filed Sept. 18, 1968, Ser. No. 760,528
Claims priority, application Switzerland, Sept. 27, 1967, 13136/67
Int. Cl. H01h *36/00*; **H03k** *17/70*, *17/72*
U.S. Cl. 307—252 N **13 Claims**

Circuit for contactless control of thyristor is response to approachment of predetermined electromagnetic field influencing means; input means are provided for supplying input pulses to said circuit and control means are coupled to thyristor for operating same in response to input pulse in predetermined amplitude range; translating means are coupled to the input means and control means for applying the input pulses to control means, the translating means includes circuit electromagnetic means operable in response to approachment of said influencing means to establish said input pulse in said predetermined amplitude range.

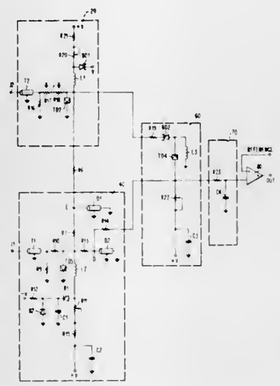


3,644,755
POWER CONTROL SYSTEM
Richard F. Shaw, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 21, 1969, Ser. No. 817,757
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **6 Claims**



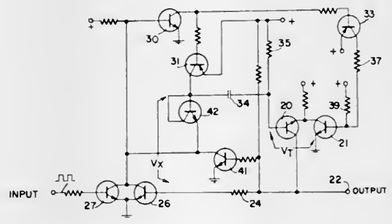
A relatively low power level electrical signal is utilized for controlling the switching action of a plurality of relay networks in a power control system so as to control the AC power being supplied to a load. A plurality of switch branches are provided each including an AC power switch having a pair of power terminals and a control electrode arranged to carry a relatively high power level signal through its power terminals. Energization of the power switch is effected by the application of a relatively low power level signal to its control electrode through a switch such as a pair of relay contacts which need have only a relatively low power-handling capacity in comparison with the power level to be supplied across the power terminals of the AC power switch. A selectively energizable relay coil is serially connected to the power terminals and is operatively coupled to a pair of relay contacts in a succeeding switch brand, which in turn, are coupled to the control electrode of another similar AC power switch, and, upon closure energize this another power control switch so that the AC power signal flows through its power terminals in order to energize a load coupled thereto. The relay contacts coupled to the control electrode need only be sufficient to carry a relatively low power level signal in order to energize the another AC power switch, while the load power signal flowing through the power terminals may be at least an order of magnitude greater than that supplied to the control electrode for rendering the another power switch conductive.

3,644,756
TIME ANALOG CONVERTER CIRCUIT FOR JITTER-FREE OPERATION
Philippe C. Furois, Fishkill, and Garland H. Latta, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,211
Int. Cl. H03k *17/00*
U.S. Cl. 307—269 **6 Claims**



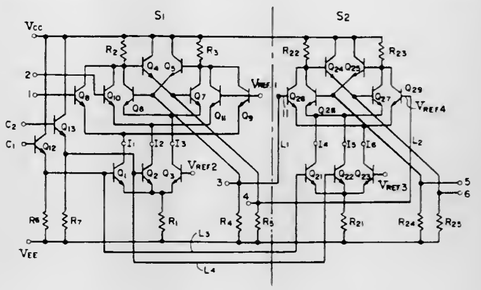
A time analog converter circuit for providing time stable circuit operation. The time analog converter is connected to an overall circuit between two points requiring a time stable relationship. By using a suitable fixed delay circuit, the time analog converter receives a signal from each of the two points at approximately the same time, the time analog converter determines the difference in the time of occurrence of the two signals and provides a corresponding correcting signal.

3,644,757
VOLTAGE AND TEMPERATURE STABILIZED MULTIVIBRATOR CIRCUIT
John R. Rezek, Addison, Ill., and Thomas M. Yackish, Hammond, Ind., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 17, 1969, Ser. No. 858,830
Int. Cl. H03k *3/284*
U.S. Cl. 307—273 **16 Claims**



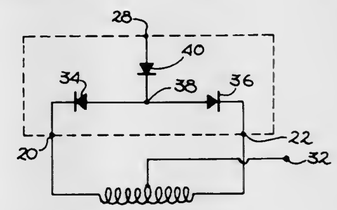
An integrated circuit monostable multivibrator is provided with an extremely stable time constant at nominal supply voltages of 1.2 volts by commutating the timing capacitor of the multivibrator between boundary conditions which vary together to compensate for variations in supply voltage and temperature.

3,644,758
FLIP-FLOP CIRCUIT
Shigeki Matsue, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan
Filed July 11, 1969, Ser. No. 841,064
Claims priority, application Japan, July 15, 1968, 43/50128
Int. Cl. H03k *3/12*
U.S. Cl. 307—291 **1 Claim**



A flip-flop circuit having a plurality of input signal terminals and a plurality of current terminals corresponding to the input signal terminals on a one-to-one basis (corresponding on a "one-to-one basis" is defined in this application to mean they are equal in number and the relationship being described exists between the [n]th terminal of one and the [n]th terminal of the other; the [n−1]th the terminal of one and the [n−1]th terminal of the other; and so on), and a further current terminal. The output is responsive to the input signal applied to the input signal terminal corresponding to that one of the current terminals having current flow; the output being the same as that generated just previously when the current flow is to said further current terminal. A plurality of synchronizing signal terminals corresponding to the plurality of current terminals supplies a current to an associated one of the plurality of current terminals during the time when the synchronizing signal at that synchronizing signal terminal is at a first value, and supplying a current to said further current terminal when all the synchronizing signals are at a second value.

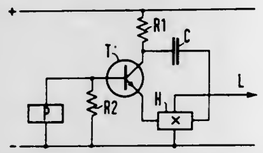
3,644,759
SEMICONDUCTOR REPLACEMENTS FOR HOT CATHODE VACUUM AND GAS-FILLED ELECTRON TUBE DEVICES
Frederick E. Hanby, Garden Grove, Calif., assignor to Electronic Resources, Inc., Los Angeles, Calif.
Filed Dec. 2, 1970, Ser. No. 94,411
Int. Cl. H03k *17/00*
U.S. Cl. 307—305 **9 Claims**



Semiconductor replacements for hot cathode vacuum and gas-filled electron tube devices such as diodes and thyratrons wherein an appropriate semiconductor device is coupled through a diode to each terminal of the terminal pair representing the heated cathode connections of the electron tube device. For electron tube diode replacements, the coupling device is one or more high-voltage semiconductor diodes. A resistor may be placed in parallel with each of the

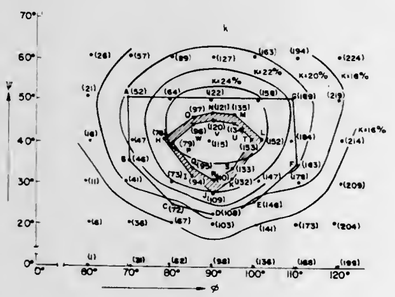
diodes connected to the cathode terminals so as to provide a leakage path for the reverse bias leakage current of the high-voltage diode. For thyratron replacement, the coupling device is a silicon-controlled rectifier, coupled to the grid terminal through a suitable coupling means.

3,644,760
SWITCHING CIRCUIT FOR PULSING THE CONTROL-CURRENT OF A HALL GENERATOR
Dieter Flachsbarth, Ruckersdorf Bei, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Apr. 7, 1970, Ser. No. 26,222
Claims priority, application Germany, Apr. 17, 1969, P 19 19 440.2
Int. Cl. H01r *5/00*
U.S. Cl. 307—309 **5 Claims**



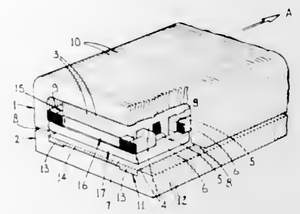
A switching circuit for pulsing the control-current of a Hall generator has a switching component with two current electrodes and a control electrode as well as a Hall generator with two control-current electrodes and two voltage electrodes. One of the control-current electrodes is connected to one of the current electrodes of the switching component. A capacitor is connected between the other of the control-current electrodes and the other of the current electrodes of said switching components, whereby the capacitor discharges through the Hall generator via the two control-current electrodes and through the switching means via the two current electrodes when the switching means is turned on. A resistor has two terminals and one of the terminals is connected to the other of the current electrodes of the switching component. One of the voltage electrodes of the Hall generator and the other of the terminals of the resistor are adapted for connection to an energy source, whereby the capacitor is charged through the resistor and the impedance of the Hall generator between the other control-current electrode and the one voltage electrode.

3,644,761
$LiTaO_3$ PIEZOELECTRIC VIBRATORS
Kikuo Doi; Masao Takahashi; Satoshi Nanamatsu, and Yoshio Fujino, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan
Filed Sept. 2, 1970, Ser. No. 68,915
Claims priority, application Japan, Sept. 3, 1969, 44/70201
Int. Cl. H01v *7/02*
U.S. Cl. 310—9.5 **8 Claims**



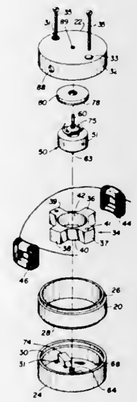
Piezoelectric lithium tantalate ($LiTaO_3$) single-crystal vibrator plates employ a range of crystal orientations which coincidentally give rise to good piezoelectric activity and a temperature stable resonant frequency.

3,644,762
LINEAR INDUCTION MOTOR STATOR
John Frederick Eastham, Long Ditton, England, assignor to Tracked Hovercraft Limited, London, England
Filed Feb. 22, 1971, Ser. No. 117,461
Int. Cl. H02k *41/04*
U.S. Cl. 310—13 **21 Claims**



A linear induction motor has a polyphase energizing winding formed of groups of generally flat bobbin-type windings arranged in two or more winding layers, the windings in each winding layer being generally coplanar with one another. Each winding group is formed of two or more of the windings one within the other. In each group the innermost winding encompasses one or more teeth of the primary member magnetic material, the next winding encompasses that tooth together with at least one of the adjacent teeth, and so on.

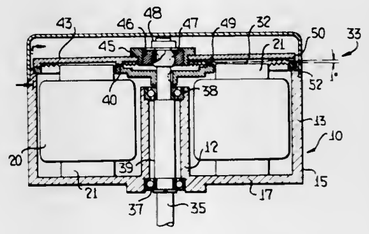
3,644,763
LIMITED ANGLE DC TORQUE MOTOR
Alfred Skrobisch, Huntington, N.Y., assignor to Allard Instrument Corporation, Westbury, N.Y.
Filed Dec. 8, 1970, Ser. No. 96,134
Int. Cl. H02k *33/02*
U.S. Cl. 310—36 **10 Claims**



A torque motor has a stator including a ringlike magnetic casing containing four circumferentially spaced radial magnetic poles. The casing is closed by a base and cover. Wire coils connected in series are wound on two poles or on all four poles. Thin magnetic webs connect the poles and define

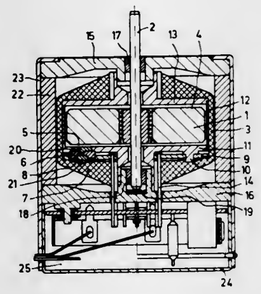
a ring in which rotates a permanent magnet rotor. The magnetic ring constitutes a magnetic bridge which permits the rotor to float freely when the coils are deenergized. A spring or auxiliary magnetic means is provided to return the rotor to a predetermined angular position.

3,644,764
HARMONIC DRIVE FOR DIGITAL STEP MOTOR
Harold R. Newell, Bradford, N.H., assignor to Mesur-Matic Electronics Corporation, Warner, N.H.
Continuation-in-part of application Ser. No. 627,410, Mar. 31, 1967. This application Aug. 30, 1967, Ser. No. 664,331
Int. Cl. H02k *7/06*
U.S. Cl. 310—49 R **12 Claims**



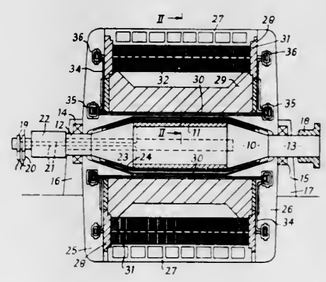
A digital step motor having a wobble plate which rotates about a shaft, to produce mating contact between two sets of associated gear teeth, under the influence of a stepping electromagnetic drive. The wobble plate is coupled to the shaft about which it rotates by a universal joint free to move axially but restrained radially of the shaft.

3,644,765
COMMUTATORLESS DIRECT CURRENT MOTOR
Jan Janson, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,412
Claims priority, application Netherlands, Mar. 25, 1969, 6904617
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **3 Claims**



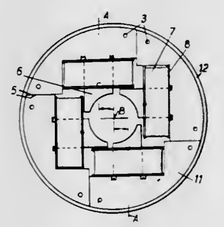
Commutatorless direct current motor preferably for use in apparatus for the reproduction of music and having a magnetic rotor enclosed by stationary coils. Magnetic field sensitive electronic circuit elements to control the supply of electric current to the stationary coils are located near an axial boundary surface of the rotor between the rotor and diametrically projecting parts of the coils. A magnetic conducting plate supports the magnetic field sensitive element so as to concentrate the field.

3,644,766
SYNCHRONOUS ALTERNATING CURRENT ELECTRICAL MACHINES
Austin Hughes, Fossway, Newcastle upon Tyne, England, assignor to International Research & Development Company Limited, Newcastle upon Tyne, England
Filed Aug. 7, 1970, Ser. No. 61,898
Claims priority, application Great Britain, Aug. 20, 1969, 41,630/69
Int. Cl. H02k *19/26*
U.S. Cl. 310—165 **7 Claims**



A synchronous AC generator has a DC excited superconducting field winding on the rotor and a nonsuperconducting armature winding on the stator. The armature winding is composed of active conductors and of reactance conductors connected in series with the active conductors and disposed in a magnetic shield surrounding the active conductors whereby the magnetic shield required to prevent large fields outside the machine due to the superconducting field winding also serves to provide the reactance necessary in the reactance conductors to limit short circuit currents.

3,644,767
SEGMENTED STATOR
Sadanand Vithal Kasargod, and Shreeniwas Shankar Abhyankar, both of c/o Electronics Corporation of India Ltd., Hyderabad, India
Filed Mar. 23, 1970, Ser. No. 21,862
Int. Cl. H02k *1/12*
U.S. Cl. 310—254 **7 Claims**



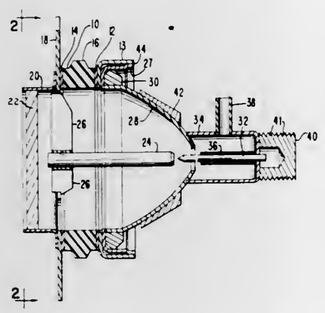
In the segmented stator assembly disclosed, four teeth extend inwardly, and rectangularly relative to each other, from surrounding segments. The teeth form a bore at the center of

the assembled segments. Each tooth has two parallel edges one of which extends along a line passing through the center of the bore. The centerline of each tooth is offset from the bore center. Coil-carrying bobbins are mounted on respective teeth so their axes coincide with the centerlines of the teeth on which they are mounted. The offset of each bobbin leaves space for intrusion of an edge of the transversely directed adjacent bobbin.

3,644,768
HOUSING FOR A SEALED BEAM ARC LAMP

Russell C. McRae, Cupertino, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 740,345, June 26, 1968, now abandoned. This application July 13, 1970, Ser. No. 54,180
Int. Cl. H01j *61/30, 61/52*
U.S. Cl. 313—44 **7 Claims**

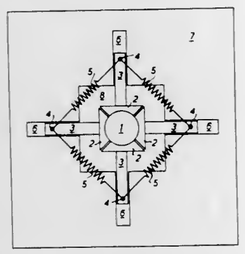


Improved housing for a sealed beam arc lamp comprising an arcuate reflector having radial symmetry with respect to a beam axis, an optical window disposed substantially normal to the axis, a mounting ring having a truncated right-circular conical exterior surface disposed coaxially to the axis, and externally accessible helical screw threads disposed coaxially to the axis.

3,644,769
COOLING ARRANGEMENTS FOR VALVES

Matthew Campbell Kennedy, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,136
Claims priority, application Great Britain, Sept. 12, 1969, 45,047/69
Int. Cl. H01j *25/00*
U.S. Cl. 313—46 **4 Claims**

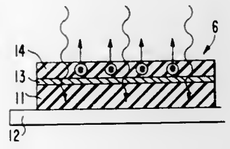


An arrangement for cooling the collector of a travelling wave tube includes a heat sink which is connected via good thermally conductive collets to the collector. The collet comprises a collet jaw, which is in close contact with the collector, and an adjustable collet shoe which is slidably situated between the collet jaw and the heat sink. The arrangement allows lateral and angular displacement of the collector relative to the heat sink without degradation of the heat transfer properties.

3,644,770
PHOTOEMITTER HAVING A P-TYPE SEMICONDUCTIVE SUBSTRATE OVERLAID WITH CESIUM AND N-TYPE CESIUM OXIDE LAYERS

Ronald L. Bell, Woodside, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 660,722, Aug. 15, 1967, now abandoned. This application Jan. 18, 1968, Ser. No. 698,941
Int. Cl. H01j *39/06, 31/50*
U.S. Cl. 313—94 **14 Claims**



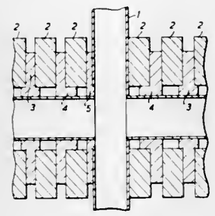
A junction-type photoemitter is disclosed. The photoemitter includes a heavily doped P-type semiconductive substrate for absorbing photons of radiation to be converted into electrons to be emitted. An alkali metal layer such as cesium metal is formed over the substrate member for filling the surface energy states of the P-semiconductive substrate. Finally, a layer of cesium oxide is formed over the alkali metal layer to provide a low-work function surface facing the vacuum into which the electrons are emitted from the photoemitter. The substrate member may be made of a III–V compound semiconductor or an alloy of two different III–V compound semiconductors (each compound semiconductor including one element from the third group of Periodic Table and another element of the fifth group of the Periodic Table) to provide a semiconductive band-gap energy which is equal to or slightly more than the work function of the cesium oxide layer. The P-type semiconductive substrate member is heavily doped with a concentration of acceptor dopant greater than 3×10^{18} acceptors per cubic centimeter. Likewise, the cesium oxide layer is heavily doped with donor atoms of cesium to provide the relatively low-work function characteristic of such material. In a preferred embodiment, the P-semiconductive substrate is formed of InP or an alloy of InP and InAs. The photoemitter has improved conversion efficiency in the wavelength range from 0.5 microns to 1.37 microns wavelength.

3,644,771
ELECTRON DISCHARGE TUBES

Matthew Campbell Kennedy, and Peter Tourle, both of Essex, England, assignors to English Electric Valve Company Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,135
Int. Cl. H01f *7/00;* **H01j** *3/04*
U.S. Cl. 313—153 **7 Claims**

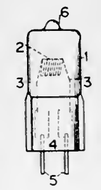
An electron discharge tube, for example a travelling wave tube, which employs a periodic magnetic field, is provided with at least one pair of adjacent magnets with larger spacing in the axial direction than is employed between the magnets of other adjacent pairs. The perturbation of the field due to the larger spacing is reduced by providing only one pole piece interposed between the two magnets on each side of the larger spacing. The remaining pairs of magnets may have normally spaced pole pieces. The larger spacing may be occupied by a waveguide connection.



3,644,772
HALOGEN LAMP

Yooji Yuge, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 16, 1970, Ser. No. 29,229
Claims priority, application Japan, Apr. 16, 1969, 44/29248
Int. Cl. H01k *1/50*
U.S. Cl. 313—174 **1 Claim**



A lamp having a bulb in which a halide substance and a nitrogen or inert gas are sealed. The halide substance to be sealed is in the form of chloroform which amounts to 0.01 to 0.10 micromol per cubic centimeter of the volume of the bulb.

3,644,773
A HYDROGEN-HALOGEN, FILAMENT LAMP WITH A HYDROGEN GETTER FLAG

James Richard Coaton, and John Michael Rees, both of London, England, assignors to Thorn Lighting Limited, London, England

Filed Apr. 24, 1970, Ser. No. 31,480
Int. Cl. H01k *1/50, 1/56*
U.S. Cl. 313—174 **3 Claims**

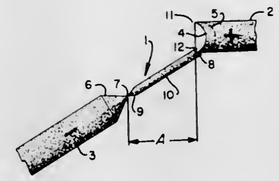


Alkyl iodides and other hydrogen and halogen containing compounds are employed in the fill of tungsten-halogen cycle electric incandescent lamps, means being provided in the lamp envelope for combining with hydrogen to reduce the hydrogen content of the reactive system of the fill whereby recombination of the hydrogen and halogen can be minimized, thus providing a maximum content of halogen in the fill for supporting the regenerative tungsten-halogen cycle. Where an alkyl iodide constitutes the hydrogen and halogen containing component of the fill the hydrogen-combining means may be dispensed with.

3,644,774
IGNITOR FOR AUTOMATICALLY STARTING ARC LAMPS

Floyd Melvin Hunsaker, Amherst, N.H., and Allan Joseph Quiring, Middleburg Heights, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,677
Int. Cl. H05b *31/30*
U.S. Cl. 313—198 **13 Claims**

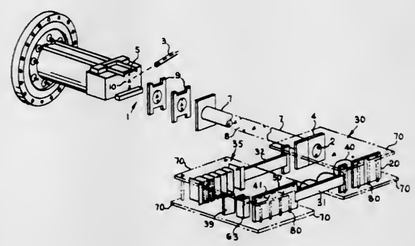


A solid elongated refractory ignitor, having a pointed projection on one end and a bifurcated slot at the opposite end, is positioned between, and in contact with, electrode rods of an arc lamp to improve arc striking therebetween. The ejectable ignitor provides an initial short circuit between the electrodes so that during application of a power supply between the electrodes, an arc will be automatically struck therebetween without the need for manual manipulation of either or both electrodes by an operator.

3,644,775
ELECTRICAL INTERFERENCE REDUCER FOR GATING APPARATUS OF AN ELECTRON MULTIPLIER

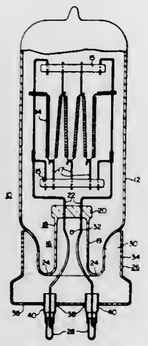
Donald C. Damoth, Rochester, N.Y., and William H. Shriner, Blanchester, Ohio, assignors to The Bendix Corporation

Filed Nov. 7, 1969, Ser. No. 874,838
Int. Cl. H01j *1/00*
U.S. Cl. 313—237 **3 Claims**



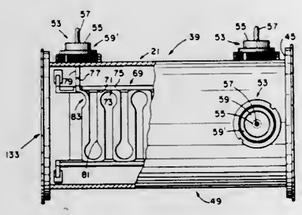
An apparatus for eliminating noise at the oscilloscope output of a magnetic electron multiplier by arranging the output anodes of the gating section so that the oscilloscope output anode is located on a different axis than the other output anodes and is protected from electromagnetic interference by a shield located between the oscilloscope anode and the other output anodes. The oscilloscope anode is preferably cup-shaped to prevent the escape of electrons impinging the anode.

3,644,776
BROMINE FILLED BIPOST LAMP WITH A HIGH-TEMPERATURE RESISTANT GLASS ENVELOPE
Aristide R. DeCaro, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 24, 1970, Ser. No. 74,991
Int. Cl. H01k 1/42
U.S. Cl. 313—318 8 Claims



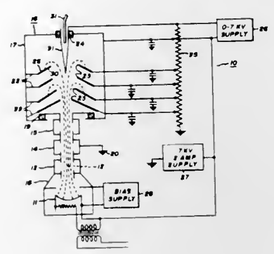
A relatively low-cost, high-maintenance incandescible bipost lamp is described. The lamp has a vitreous, high-temperature-resistant glass envelope, an operative atmosphere containing bromine, with the bipost base secured to a flared mount structure which comprises a portion of the envelope of the lamp. The filament is tungsten, and the metallic support elements within the envelope are also made of tungsten.

3,644,777
CATHODE-RAY TUBE WITH SERPENTINE-SHAPED TRANSMISSION LINE DEFLECTION MEANS
James B. Thomas, Needham, and Vincent J. George, Winchester, both of Mass., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed June 2, 1970, Ser. No. 42,631
Int. Cl. H01j 23/16, 29/46, 29/70
U.S. Cl. 315—3 5 Claims



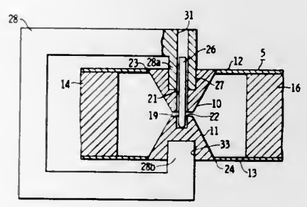
Improved high-frequency response, cathode-ray tube for tracking, determining, and recording high frequency, unknown input signals. To this end, the invention provides a sectionalized, round and square cross section CRT having ceramic, vacuumtight lead-ins; impedance matched, insulated, serpentine traveling wave deflection structures; and an electron gun incorporating an anode aperture formed with a protrusion for providing high-electron beam density.

3,644,778
REFLEX DEPRESSED COLLECTOR
Theodore G. Mihran, Schenectady, and Wendell Neugebauer, Ballston Spa, both of N.Y., assignors to General Electric Company
Filed Oct. 23, 1969, Ser. No. 868,724
Int. Cl. H01j 23/02
U.S. Cl. 315—5.38 14 Claims



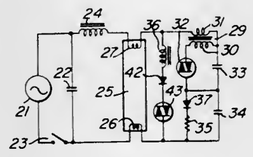
A reflex depressed collector is disclosed which facilitates electron collection on plural electron collecting surfaces in row form without adverse effects of electron reflection or back streaming. An electron beam passes by the collectors and then is radially dispersed by an electrostatic field so that electrons are given curving trajectories wherein they are first slowed to an essentially zero forward velocity and then slightly reaccelerated in a different direction before being collected on surfaces of the electrodes exposed to the beam after the beam passes thereby. The electrodes operate at a voltage lower than that which originally accelerated the stream, therefore the waste heat delivered to the collector is reduced and the power conversion efficiency of the device to which the collector is attached is increased.

3,644,779
CAPILLARY STAGE FOR MICROWAVE TR DEVICES USING STATIC MAGNETIC FIELDS
Harry Goldie, Randallstown, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,601
Int. Cl. H01j 7/46, 19/80
U.S. Cl. 315—39 6 Claims



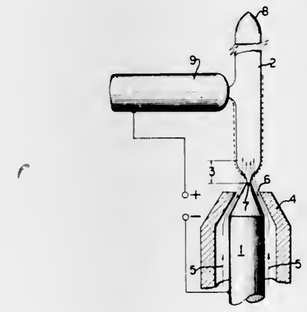
Gaseous discharge TR switch in which two truncated cone electrodes extend inwardly from the broad sidewalls of a waveguide with the truncated ends in juxtaposition to form a discharge gap, the electrodes having a central bore with a capillary tube extending across the gap and including an ionizable gas and a magnetic field being disposed with its flux lines extending parallel to the axis of the tube and to the electric vectors of the microwave in the waveguide.

3,644,780
STARTING DEVICE FOR DISCHARGE LAMP INCLUDING SEMICONDUCTORS PREHEATING AND STARTING CIRCUITS
Shigeo Koyama, Neyagawa-shi; Motohiro Ohtsuki, Nara-shi; Kenji Shimatani, Hirakata-shi; Masao Yasuda, Higashiosaka-shi; Toru Takei, Osaka; Yasutaka Kawai, Higashiosaka-shi, and Takeshi Matsushima, Nara-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 22, 1969, Ser. No. 887,053
Claims priority, application Japan, Dec. 27, 1968, 44/742; Feb. 6, 1969, 44/11130; 44/11131; 44/11135
U.S. Cl. 315—100 U 10 Claims



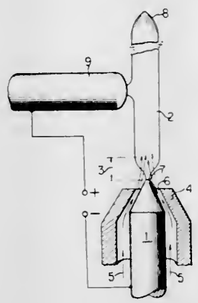
A discharge lamp starter device which comprises a serial circuit constituted by a reverse blocking diode thyristor or a bilateral diode thyristor and a diode, the breakdown voltage V_{BO} of the thyristor being lower than the rated source voltage but higher than the terminal voltage of a fluorescent discharge tube while the blocking voltage V_R of the thyristor having a sufficiently great value with respect to the breakdown voltage V_{BO}, and a pulse generator circuit constituted by a pulse transformer, a capacitor and a bilateral diode thyristor, the two circuits being connected in parallel with the fluorescent discharge tube to thereby instantaneously start the fluorescent discharge tube.

3,644,781
METHOD OF ENERGY TRANSFER TO A HETEROGENEOUS FLUID MEDIUM UTILIZING A FLUID CONVECTION PLASMA JET
Charles Sheer, Teaneck, N.J., and Samuel Korman, Hewlett, N.Y., assignors to Sheer-Korman Associates, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 805,574, Mar. 10, 1969, now abandoned. This application Jan. 8, 1970, Ser. No. 1,390
Int. Cl. H05b 31/26; H05h 1/00
U.S. Cl. 315—111 6 Claims



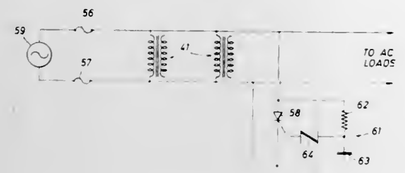
A process for energizing a fluid medium containing an entrained condensed phase by means of an arc discharge between an anode and a cathode having a conical tip, said arc discharge forming a contraction of the current-carrying area in the transition region in the vicinity of said cathode, the points of inflection of said contraction of the current-carrying area forming, when extended, an angle α which comprises forcefully projecting a fluid medium along said conical tip of said cathode into and through said contraction of the current-carrying area in the transition region in the vicinity of said cathode at a mass flow density at substantially constant convection rate which is at least sufficient to effect a rise in the temperature of said arc column at a constant current level and below a total fluid medium convection rate at substantially constant mass flow density which is sufficient to reduce the angle α below 40° at a constant current level, and adding a finely dispersed nongaseous medium capable of causing an enlargement in the angle α to said fluid medium forcefully projected along said conical tip at a total fluid medium convection rate at substantially constant total mass flow density which is below that sufficient to reduce said enlarged angle α below 40° at a constant current level.

3,644,782
METHOD OF ENERGY TRANSFER UTILIZING A FLUID CONVECTION CATHODE PLASMA JET
Charles Sheer, Teaneck, N.J., and Samuel Korman, Hewlett, N.Y., assignors to Sheet-Korman Associates, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 805,574, Mar. 10, 1969, now abandoned. This application Jan. 8, 1970, Ser. No. 1,388
Claims priority, application Canada, Dec. 24, 1969, 70,859
Int. Cl. H01j 7/24; H05b 31/26
U.S. Cl. 315—111 13 Claims



A process of energizing a fluid medium by means of an arc discharge between an anode and a cathode having a conical tip, said arc discharge forming a contraction of the current-carrying area in the transition region in the vicinity of said cathode, the points of inflection of said contraction of the current-carrying area forming, when extended, an angle α which comprises forcefully projecting a fluid medium along said conical tip of said cathode into and through said contraction of the current-carrying area in the transition region in the vicinity of said cathode at a mass flow density at substantially constant convection rate which is at least sufficient to effect a rise in the temperature of said arc column at a constant current level, and below a total fluid medium convection rate at substantially constant mass flow density which is sufficient to reduce the angle α below 40° at a constant current level.

3,644,783
DC DETECTION CIRCUIT
Carl R. Snyder, Alief, Tex., assignor to Esquire, Inc.
Filed Aug. 18, 1969, Ser. No. 850,833
Int. Cl. H02h *3/20*
U.S. Cl. 315—127 **4 Claims**



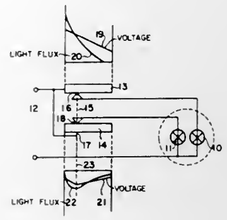
A DC detection circuit in an AC power circuit for detecting DC and for protecting AC loads from the deleterious application of a DC current. The DC detection circuit is particularly applicable to an emergency lighting system having both AC and DC power sources and AC and DC lighting facilities for detecting the application of DC and for disconnecting the AC lighting facilities to prevent their damage and for lighting the DC lighting facilities.

3,644,784
SOLID-STATE INDICATOR DISPLAYS
Marcus P. Dickey, Minneapolis, and Donald C. McIntyre, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 16, 1970, Ser. No. 29,093
Int. Cl. H05b *33/00*
U.S. Cl. 315—169 **5 Claims**



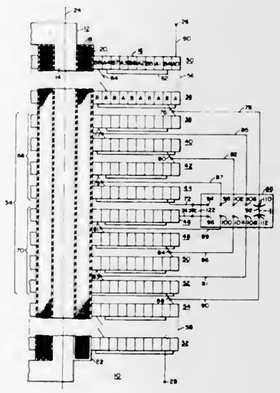
A display having blocks of display contrasting elements and individual elements electrically connected in a matrix such that two input signals to the matrix energize a number of elements in the form of a pointer which moves in accordance with the input signals.

3,644,785
ILLUMINATION ARRANGEMENT FOR RECORDING AND/OR REPRODUCTION IN COLOR
Sven O. Jarmar, Huddinge, Sweden, assignor to Sveriges Radio Aktiebolag, Stockholm, Sweden
Filed Oct. 3, 1969, Ser. No. 863,553
Claims priority, application Sweden, Oct. 9, 1968, 13595/68
Int. Cl. H05b *41/39*
U.S. Cl. 315—298 **18 Claims**



An illumination arrangement for use in connection with picture recording or reproduction in color. The device automatically compensates for changes in the spectral composition of the light at various light intensities. In one embodiment, the device includes a first lamp and a second, smaller, lamp, the lamps being coupled such that a change in the color temperature in one direction of a first lamp is compensated for by a change in the color temperature of a second lamp, the change in the color temperature of the second lamp being such in its direction and amount, to compensate for the change in color temperature of the first lamp.

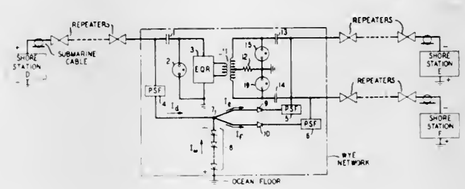
3,644,786
ELECTRICAL WINDINGS
Dean A. Yannucci, Niles, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 26, 1970, Ser. No. 67,179
Int. Cl. H02h *7/04*
U.S. Cl. 317—15 **3 Claims**



An electrical winding structure having first and second tapped winding portions, and a switching device which selects and interconnects taps on the two winding portions. A capacitor is electrically connected between the two winding

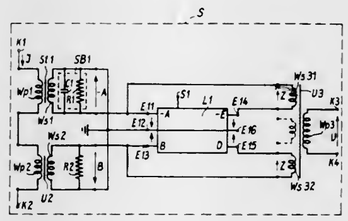
portions at the coil break, i.e., between the ends of the two winding sections which are "floating" when the switching device is not in the maximum turn position, to reduce the magnitude of surge stresses across the coil break.

3,644,787
UNDERSEA WYE CONNECTION FOR A SUBMARINE CABLE SYSTEM
Billy Harold Hamilton, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 14, 1970, Ser. No. 97,814
Int. Cl. H02h *3/24*
U.S. Cl. 317—16 **5 Claims**



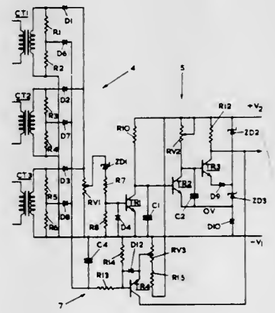
A simple and reliable diode and avalanche diode network for use at the undersea branch point of a submarine cable system having a main section and two branch sections which permit powering of the repeaters in all three sections under normal conditions. In the event of a trouble condition in a branch, power is continuously and automatically supplied to the main section and the remaining branch.

3,644,788
REMOTE PROTECTION APPARATUS HAVING A POLYGONAL TRIPPING REGION
Eckart Maenicke, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 11, 1970, Ser. No. 71,589
Claims priority, application Germany, Sept. 12, 1969, P 19 47 037.2
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **16 Claims**



A remote protection apparatus has a polygonal tripping region for fault monitoring a measuring voltage and a measuring current proportional to the voltage and current of a high-voltage line. Reference impedances provide respective auxiliary sequential voltages and a difference voltage forming circuit arrangement is connected to the measuring voltage and the reference impedances for providing difference voltages corresponding to the respective differences of the auxiliary voltages and the measuring voltage. The logic circuit is connected to the auxiliary voltages and the difference voltages and furnishes a tripping signal within a period of time, when, in a given time interval, the difference voltages have zero passages and a given sign, the time interval being equal to the time difference between respective zero passages of the auxiliary voltages.

3,644,789
OVERCURRENT RELAYS
Michael Charles Stephen Simpson, Stafford, England, assignor to The English Electric Company Limited, London, England
Filed Aug. 5, 1968, Ser. No. 750,064
Claims priority, application Great Britain, Aug. 3, 1967, 35,634/67
Int. Cl. H01h *47/18*
U.S. Cl. 317—36 TD **11 Claims**



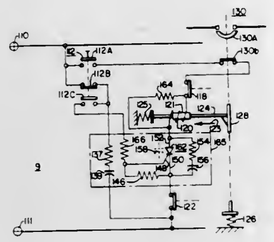
This invention relates to an overcurrent relay in which a voltage is developed proportional to the current in an AC circuit, a two-state switch is responsive to an overcurrent condition in which the monitored voltage periodically exceeds a reference level whereby to assume one state for the duration of these periods during which this level is exceeded, a storage circuit progressively accumulates a voltage from a datum level during each period for which the switch is in its other state, and a timer is operable whenever the switch assumes its one state to actuate an output device after a predetermined delay, the timer being reset by the storage circuit each time its voltage attains a predetermined magnitude.

The maximum "overshoot" of the relay, i.e., the effect which could cause the output device to operate and effect protective action even with an unsustained overcurrent, may be contained within a period just in excess of one cycle, or even less, and the pickup/dropoff ratio of the output device can practically approach the optimum value of 100 percent.

3,644,790
STATIC ANTIPUMP CIRCUIT BREAKER CLOSING SYSTEM
John M. Kozlovic, Greensburg, and William H. South, McKeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 25, 1970, Ser. No. 22,522
Int. Cl. H02h *1/00*
U.S. Cl. 317—54 **4 Claims**

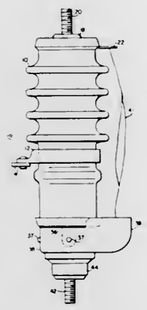
The use of a charged capacitor in conjunction with the closing switch associated with a circuit breaker such that when the closing switch is closed, the capacitor discharges through the switch and the primary of a pulse transformer creating a pulse in the secondary of the transformer which, in turn, is used to gate a solid-state control device such as a triac or silicon controlled rectifier. The cathode and anode of the solid-state control device is in electrical series with the

closing switch and the spring release coil of the circuit breaker, such that when the previously mentioned pulse is applied it causes the solid-state device to turn on and conduct current through the spring release coil thus actuating the closing of the circuit breaker. In the event the circuit



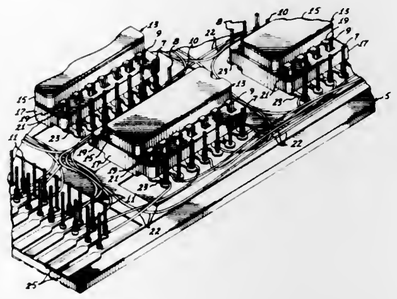
breaker immediately reopens because of a fault in the protected circuit or a similar circumstance, the circuit breaker will not reclose again until the depressed closing switch is opened, thus allowing the aforementioned capacitor to recharge.

3,644,791
LIGHTNING ARRESTER WITH PRESSURE RELIEF MEANS
Charles H. Carothers, and Philip W. Bogner, both of Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 29, 1970, Ser. No. 59,177
Int. Cl. H02h *1/04*
U.S. Cl. 317—66 **6 Claims**



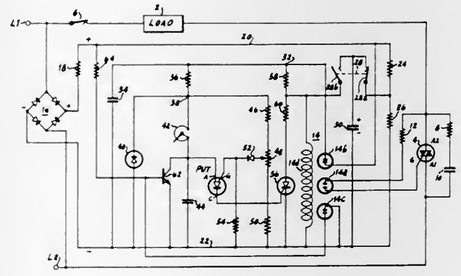
Electrical surge protection apparatus, such as lightning arresters, in a fracturable housing are provided with a flexible diaphragm closing an opening of the housing and resting in a support means that has one or more projections extending substantially parallel with the diaphragm when it is unstressed. Pressure buildup within the housing causes the diaphragm to be distended and to rupture due to cutting by the projections. Such pressure relief means can be implemented in arresters that have provision for creation of an external arc upon failure so that within a structure that is simple and relatively easy to fabricate there can be provided both pressure venting and arc transfer means.

3,644,792
REUSABLE CIRCUIT BOARD FOR CONSTRUCTING LOGIC CIRCUITS USING INTEGRATED CIRCUIT ELEMENTS
John H. Fields, Phoenix, Ark., assignor to Honeywell Information Systems Inc., Ariz.
Filed July 2, 1970, Ser. No. 51,873
Int. Cl. H05k *1/18, 3/32*
U.S. Cl. 317—101 CC **6 Claims**



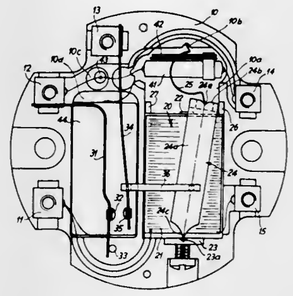
The device disclosed utilizes a circuit board having pin connectors mounted thereon for use in combination with an integrated circuit package and a demountable solderless connector for mounting the package on the board. The combination, depending upon the electrical connections to the pin connectors, allows various types of logic structures to be designed and laid out many times over without degrading or damaging the circuit board or the electronic elements.

3,644,793
TIMED "ON" CYCLE ELECTRONIC TIMING SYSTEM
Ronald J. Ilk, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed May 1, 1970, Ser. No. 33,714
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S **8 Claims**



An AC interval timer for controlling any AC load such as the lamp of an infrared heating device, motor, solenoid valve or the like. The timing system is supplied through a rectifier from the same AC source that supplies the load and provides a timed "on" cycle after momentary operation of an activating switch. Features include a pulse input that causes latching of the load "on" and prevents false triggering, a timing circuit that incorporates temperature compensation and good power supply stability characteristics, and a reset clamp to insure accurate repeatability and recycling.

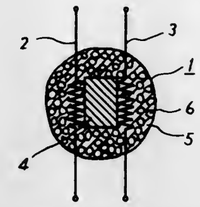
3,644,794
ELECTRICAL REMOTE-CONTROL SWITCH
Rene Develay, 44, Rue des Tilleuls, Boulogne, France
Filed Feb. 8, 1971, Ser. No. 113,583
Claims priority, application France, Feb. 12, 1970, 7005059
Int. Cl. H01h *47/00*
U.S. Cl. 317—151 **6 Claims**



An electrical remote-control switch assembly, comprising electromagnet means embodying a coil, a fixed core and a movable armature, and an electrical contact mechanism incorporating a movable blade, said armature being operatively connected with said movable blade. A control current circuit serves for pulse excitation of the armature, the coil being arranged in said control current circuit. According to the invention the core of the electromagnet possesses a substantially T-shaped configuration including a central leg portion which carries said coil and a transverse leg member, while the movable armature possesses a substantially U-shaped configuration embodying a pair of legs interconnected by a transverse web, said pair of legs extending externally of said coil at opposite sides thereof. The free ends of these legs are pivotably connected with opposite end portions of the transverse leg member of said T-shaped core, and stop means limit the pivotal movement of the armature between two stable terminal positions symmetrically situated relative to the central leg portion of said core. The contact mechanism is open when the movable armature assumes its one terminal position and closed when the armature assumes its other terminal position. A pivotable spring is mounted between the armature and a support point which is fixed relative to the core, this spring striving to displace the armature into each one of its two stable terminal positions and ensuring for an unstable condition of the armature in its central position intermediate such two stable terminal positions where the transverse web of the armature is located in front of the free end of the central leg portion of the core.

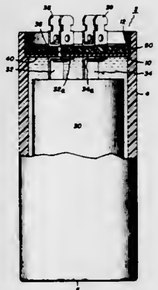
3,644,795
GAS DETECTING ELEMENT AND METHOD OF MAKING IT
Naoyoshi Taguchi, 6-8, 2-chome, Hyuga, Torum-ku, Kobe, Japan
Filed Nov. 17, 1970, Ser. No. 90,271
Claims priority, application Japan, Dec. 19, 1969, 44/102827
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **5 Claims**

A gas detecting element which is formed of a semiconductor material having electrodes embedded therein and wherein at least one substance is added to the material which



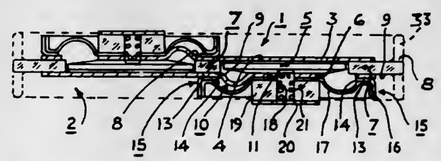
produces silica or silica gel when oxidized, heated or hydrolyzed.

3,644,796
ELECTROLYTIC CAPACITOR HAVING INTEGRAL BLEEDER RESISTOR
John W. Carino, Columbia, S.C., assignor to General Electric Company
Filed Jan. 4, 1971, Ser. No. 103,527
Int. Cl. H01g *1/02, 9/00*
U.S. Cl. 317—230 **5 Claims**



An electrolytic capacitor is provided having an integral bleed resistor therein to eliminate the need for an external resistor. The internal bleed resistor is provided by constructing the cover of the capacitor from which the leads protrude of a material which is slightly conductive. Carbon-filled plastics can be used to form the slightly conductive cover.

3,644,797
SEMICONDUCTOR ASSEMBLY INCLUDING APERTURE-MOUNTED, DIAPHRAGM-SUPPORTED WAFER
Victor J. Carter, London, England, assignor to Westinghouse Brake English Electric Semi-Conductors Limited, London, England
Filed Apr. 21, 1970, Ser. No. 30,556
Claims priority, application Great Britain, Apr. 30, 1969, 22,050/69
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **10 Claims**



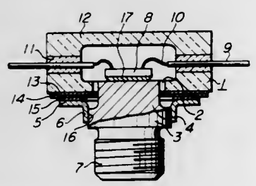
A semiconductor assembly including a insulating planar body having a semiconductor wafer mounted in aperture ex-

tending between the major faces thereof. A pair of electrically and heat-conducting diaphragms hermetically sealed to the body close off the ends of aperture and support the wafer therewithin, the body itself extending beyond the peripheries of the diaphragms to prevent surface tracking. A conductor, including a first, tongue portion which extends into the aperture and a second portion, provides electrical contact with an inner region of the wafer. A pair of such assemblies is formed by mounting a second wafer in a second aperture in the body, and utilizing the second portion of the conductor of each assembly as one of the diaphragms of the other assembly.

3,644,798
HIGH-POWER INTEGRATED CIRCUIT CERAMIC PACKAGE WITH METALLIC HEAT-CONDUCTING BODY

Takahiko Ihochi, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 5, 1970, Ser. No. 43,787
Claims priority, application Japan, June 16, 1969, 44/55882
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **10 Claims**

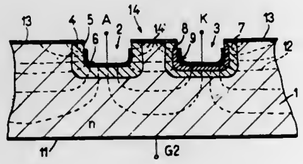


An enclosure for a semiconductor device provided with a ceramic case having an aperture in the bottom; a heat-radiating portion loosely inserted into the aperture and having a cylindrical protrusion; a metallic sleeve with a flat portion connected with the bottom of the ceramic case and a hollow cylindrical protrusion connected with the radiating portion, the thermal expansion coefficient of the metallic sleeve being substantially equal to that of the ceramic case; and a cover for forming a space for accommodating a semiconductor substrate and the ceramic case; whereby the thermal distortion generated between the radiating portion and the metallic sleeve can be absorbed by said hollow cylindrical protrusion.

3,644,799
SEMICONDUCTOR ELEMENT HAVING AT LEAST ONE CONTROL ELECTRODE

Erich Weisshaar, Aargau, Switzerland, assignor to Transistor AG, Zurich, Switzerland

Filed Mar. 19, 1970, Ser. No. 21,067
Claims priority, application Switzerland, Mar. 21, 1969, 4315/69
Int. Cl. H01l 11/00
U.S. Cl. 317—235 R **6 Claims**

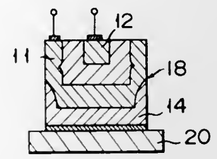


A semiconductor element, particularly a disconnectable thyristor comprises at least one control electrode and a semiconductor body having a surface region of a determined conductivity-type. One or more zones of another conductivity-type are diffused into said surface region and are surrounded by regions of said determined conductivity-type. Said zones of another conductivity-type are each contained in a pit and the wall regions of the pit exhibit the conductivity-type of the respective zones. Said pits preferably are comb-shaped and arranged with interengaging comb teeth.

3,644,800
SEMICONDUCTOR-CONTROLLED RECTIFYING DEVICE

Yukio Igarashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 30, 1970, Ser. No. 59,567
Claims priority, application Japan, Aug. 4, 1969, 44/61044
Int. Cl. H01l 11/10
U.S. Cl. 317—235 AB **2 Claims**

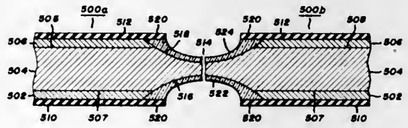


A controlled rectifying device comprising a four-layer wafer, wherein a first layer of N-type, second layer of P-type and fourth layer of P-type respectively include cathode, gate and anode electrodes. To one side of the wafer is attached the cathode electrode, and to the opposite side are the anode and gate electrodes.

3,644,801
SEMICONDUCTOR PASSIVATING PROCESS AND PRODUCT

Gary S. Sheldon, 14 Seminary St., Union Springs, N.Y.

Continuation of application Ser. No. 782,093, Dec. 9, 1968, now abandoned. This application Jan. 21, 1971, Ser. No. 108,569
Int. Cl. H01l 1/10, 5/00, 7/66
U.S. Cl. 317—235 R **2 Claims**



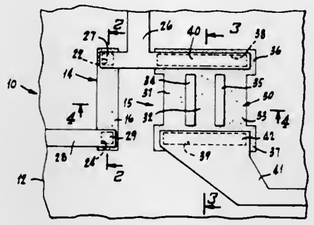
A semiconductive wafer is selectively protected and etched so that a grid of intersecting grooves is formed on one or both major surfaces. The grooves extend below junction depth. Oxide lip portions overhanging the grooves may be removed and the grooves may be treated to enhance wettability. A passivant is then selectively electrophoretically deposited into the grooves. Where glass is employed the passivant it is fired after deposition. The wafer may be subdivided into pellets before or after contacts are applied. A pliant supplemental passivant encapsulates the semiconductive pellet, and a casement is molded thereabout to complete

the device. One semiconductive element that may be obtained by the passivation process is characterized by a passivant coating on a beveled periphery that progressively increases in thickness as it approaches a major surface intersecting the beveled periphery.

3,644,802
RATIO-COMPENSATED RESISTORS FOR INTEGRATED CIRCUIT

Andrew G. F. Dingwall, Somerville, N.J., assignor to RCA Corporation

Filed May 31, 1968, Ser. No. 733,374
Int. Cl. H01l 11/00
U.S. Cl. 317—235 R **10 Claims**

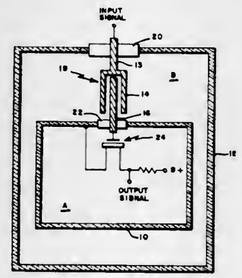


The ratio of the resistances of two diffused integrated circuit resistors of dissimilar geometries is made relatively insensitive to processing variations in the structure of the resistors in different devices. Wider resistors in a given device are made more sensitive to width variations to match the greater sensitivity of narrower resistors in that device, and longer resistors are made more sensitive to length variations to match the greater sensitivity of shorter resistors. Lower value resistors are made less sensitive to metallurgical phenomena that affect contact resistance so that proportionally less contact resistance change is produced by a given processing variation in the lower value resistors than in the higher value resistors.

3,644,803
ELECTRICAL CONNECTIONS TO LOW TEMPERATURES

Mark W. Levi, Utica, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed Mar. 18, 1969, Ser. No. 808,123
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **1 Claim**

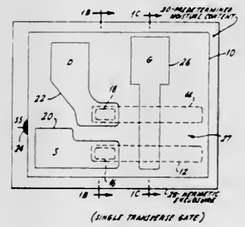


An electrical lead-in conductor is effected from ambient to a cryogenic receptacle by means of a vacuum capacitor located in a vacuum surrounding the cryogenic receptacle. One plate of the capacitor leads from ambient to the vacuum area, the other from the vacuum area through the inner wall to the cold area. Heat leak along the conducting element is prevented by the break in the conducting element which the capacitance form of the lead affords.

3,644,804
TIME DELAY IGFETS

Earl S. Schlegel, and George L. Schnable, both of Lansdale, Pa., assignors to General Instrument Corporation, Newark, N.J.

Filed Nov. 28, 1969, Ser. No. 880,644
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **1 Claim**



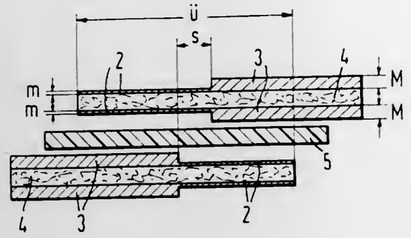
Time delay devices, each an enhancement-type Insulated Gate Field Effect Transistor (IGFET) which comprises (1) a substrate entirely of one conductivity type having at the surface thereof source and drain regions of the opposite conductivity type, and (2) a conductive gate or gates, overlying but insulated from said substrate. If the device includes one gate, it may overlie either (a) part of the controlled region of the substrate between the source and drain regions, or (b) portions of the substrate remote from said controlled region. If the device includes plural gates, one gate has a floating potential and overlies the controlled region of the substrate, and the other biased gate overlies a portion of the substrate remote from said controlled region. When the source-drain circuit is biased conventionally, the application of a potential of the proper polarity to the gate will cause a charge to migrate slowly from the gate over the surface of the IGFET. As the charge covers the controlled region, it induces a change in conductivity type in the surface of the portion of the controlled region which it covers, thereby causing the source-drain circuit to become fully conductive after a predetermined delay. The delay is dependent upon ambient moisture and temperature, gate configuration, and resistivity of the IGFET's surface oxide layer. In one type of such devices, where generally a single gate bridges the controlled region of the substrate, a source-drain current appears immediately when a potential is applied to the gate; this current rises gradually to a saturation value. In another type of such devices, where generally a single gate does not bridge the controlled region, or where plural gates (with one floating) are used, the source-drain current begins only a given time after the application of a potential to the gate but then increases relatively rapidly to saturation value.

3,644,805

REGENERATABLE ELECTRIC CONDENSER

Hermann Heywang, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 17, 1970, Ser. No. 55,779
Claims priority, application Germany, July 28, 1970, P 19 38 319.8
Int. Cl. H01g 1/14, 3/15
U.S. Cl. 317—258 7 Claims



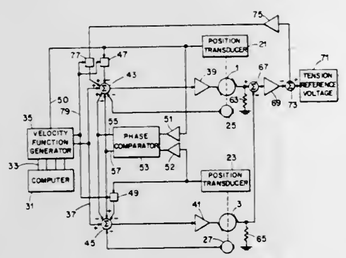
A regenerating condenser employs metal layers in a step-shaped cross section having thick and thin portions, the thin portions having low-heat capacity and the electrical conductivity of the thick to the thin portions being a preferred ratio of at least 1.5:1.

3,644,806

HIGH-SPEED PRINTER-PAPER FEED ENGINE

Ross A. Belson, Natick, and Gaston A. Palombo, Chelmsford, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 24, 1970, Ser. No. 22,235
Int. Cl. H02p 5/52
U.S. Cl. 318—7 14 Claims



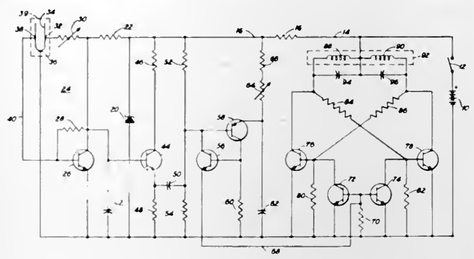
A high-speed incremental web transport system especially suited for a high-speed printer application includes two motors with velocity feedback driven from a common controller in accordance with a computer originated movement request. Incremental position transducers allow precise repetitive spacing and positional stability of the motor shafts. Differential tension to be created during printing periods is obtained by controlling motor current. Synchronization control for skip-type movements prevents a buildup of positional error.

3,644,807

FREQUENCY REGULATED INVERTER CIRCUIT FOR A SYNCHRONOUS MOTOR

Chester J. Zajac, Thomaston, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 28, 1970, Ser. No. 32,639
Int. Cl. H02k 29/00
U.S. Cl. 318—138 23 Claims



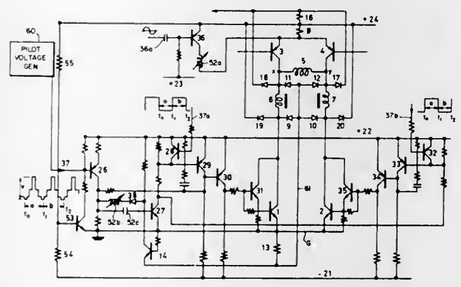
A frequency regulated inverter circuit for a synchronous motor for driving a clock, elapsed time indicator and the like, includes an oscillator circuit having a piezoelectric tuning fork filter in a feedback path thereof for generating a stable alternating current output signal having a frequency substantially equal to the resonant frequency of the tuning fork; the alternating current signal from the oscillator is wave-shaped, differentiated, and fed to the input of a frequency divider producing an output pulse upon the receipt of every sixth differentiated alternating current signal. The output pulse from the frequency divider is, in turn, fed through a steering network to a pair of switching transistors for alternately energizing a synchronous motor which can be used for driving a clock mechanism, elapsed time indicator or similar timing mechanisms.

3,644,808

MEANS FOR PROTECTING ELECTRONIC COMMUTATION MOTOR FROM ACCIDENTAL OVERLOAD

Robert Favre, 36 Rue de Servan 1000, Lausanne, Switzerland

Continuation-in-part of application Ser. No. 641,566, May 26, 1967, now abandoned. This application Oct. 26, 1970, Ser. No. 83,754
Claims priority, application Switzerland, May 27, 1966, 7710/66; 7711/66
Int. Cl. H02k 29/00
U.S. Cl. 318—138 17 Claims



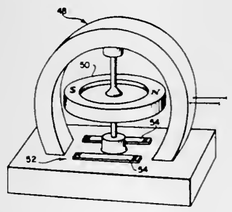
An induction motor fed from a DC source is commutated by a transistor bridge controlled by a pilot voltage. A voltage proportional to motor current is fed back to the control circuit to cut off the respective commutation elements when the motor current becomes excessive. Auxiliary transistorized circuits protect the commutating elements against overload by induced reaction current and provide a braking current for the motor when the supply current is abruptly cut off. Diodes associated with induction coils protect the commutation circuit against reversal of the nominal polarity of the commutating transistors. The effective number of ampere-turns in the motor winding is increased during starting and when running at low speed to protect the commutating elements from overload while providing high torque.

3,644,809

SELF-STARTING FOR DC MOTORS

Reinhard N. Lahde, Los Altos, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 14, 1969, Ser. No. 876,757
Int. Cl. H02k 29/00
U.S. Cl. 318—138 9 Claims



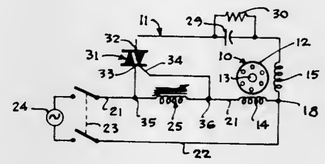
A noncommutating self-starting direct current motor having a magnetic rotor which turns through a position in which the motor field produces no driving torque on the rotor and a position in which the field produces maximum driving torque on the rotor, and positioning means for arresting the rotor in its maximum torque position when the motor field is turned off so as to condition the motor for automatic restarting when the field is restored.

3,644,810

SENSING AND CONTROL DEVICE FOR ELECTRIC MOTOR-STARTING CIRCUITS

Alexander J. Lewus, 9844 North 11th Ave., Phoenix, Ariz.

Filed Jan. 20, 1971, Ser. No. 108,029
Int. Cl. H02p 1/42; H01f 21/06
U.S. Cl. 318—221 E 6 Claims



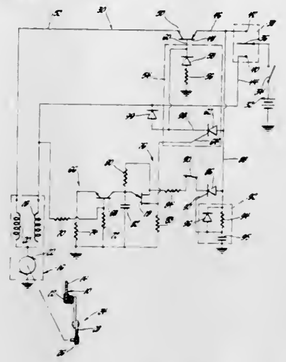
A versatile sensing transformer for actuating a semiconductor gate in the starting circuit of an electric motor, comprising a U-shaped magnetic base, inductive coupled primary and secondary windings mounted on the base in coaxial relation to each other and electrically connected to the motor and the semiconductor gate, an adjustable and removable magnetic core threaded into the base and projecting axially of the cores, and a magnetic cap bridging the open end of the base to form a complete magnetic shell, the cap being adjustable toward and away from the coils and core to vary the overall reluctance of the magnetic circuit.

3,644,811

POWER WINDOW PULLDOWN CIRCUIT

Samuel B. Robbins, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1970, Ser. No. 66,478
Int. Cl. H02h 7/097
U.S. Cl. 318—266 6 Claims



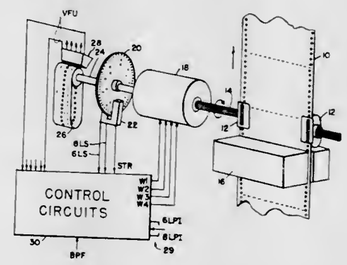
Power window apparatus for opening and closing a window in accordance with the setting of a selectively operable switch. Upon placement of the switch in a window opening setting a window drive motor connected to the window is placed in a first energized condition so as to open the window. Upon placement of the switch in a window-closing setting power is supplied through a transistor to the motor so as to place the motor in a second energized condition and close the window. Should the motor be stalled by the window being closed on an obstacle the window travel is reversed by the resultant decrease in the voltage across the motor armature causing a bias network to both turn off the transistor and place the motor in the first energized condition. A limit switch that is responsive to the window position is provided to prevent the armature voltage from effecting reversal of the window when the window is substantially closed so as to allow the motor to seal the window. A time delay network is provided for preventing voltage transients generated upon starting the motor from effecting reversal of the window travel during a predetermined time.

3,644,812

WEB FEED APPARATUS WITH STEPPING MOTOR DRIVE

Joseph R. Bitto, Peabody, and Clifford M. Hammel, Winchester, both of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,355
Int. Cl. H02k 29/00
U.S. Cl. 318—254 3 Claims



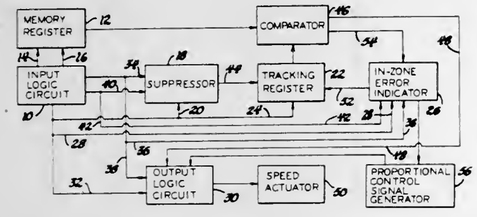
A web feed device of the type such as may be used to step-feed a print form line-by-line through a printer employs a 48-

pole, four-phase, 192-increment/rev. stepping motor for feeding a web in either sixth or eighth inch steps. In the eight step per inch mode of operation the motor rotor is driven to advance through six angular increments for each feed step. During the first three increments of excursion pulses generated by a strobe disk fixed to the motor shaft are supplied to the motor in a sequence phased to accelerate the rotor. During the final three increments of rotor excursion pulses are supplied by a time-delay network in a sequence phased to decelerate the rotor to a stop. In the six step per inch mode of operation the rotor is driven through an eight increment excursion cycle, accelerating during the first four increments and decelerating during the last four. The motor input leads are energized in proper sequence by an encoding matrix which is switched under control of a timing ring or shift register. Slewing is effected by driving the shift register with a train of phase-delayed shifting pulses interposed between the acceleration and deceleration pulses.

3,644,813
PROPORTIONAL CONTROL DIGITAL SPEED CONTROL SYSTEM

Arthur J. Schoendorff, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 22, 1970, Ser. No. 48,073
Int. Cl. H02p *5/06*; **G05b** *19/26*
U.S. Cl. 318—318 **5 Claims**

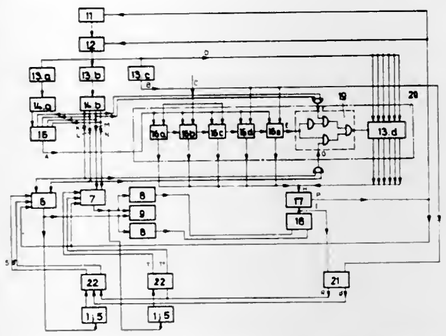


A proportional control digital speed control system for a controlled apparatus having an input logic circuit which supplies a number of pulses to a memory register to generate and store therein a binary number representing a desired speed of the controlled apparatus. The input logic circuit supplies a clock pulse and a series of pulses having a frequency corresponding to the speed of the controlled apparatus to a suppressor such that the number of pulses which occur during the clock pulse represents the actual speed of the controlled apparatus. The suppressor suppresses a predetermined number of the pulses occurring at the beginning of the clock pulse and supplies the remaining number of pulses which occur during the clock pulse to a tracking register to generate therein a binary number which is equal to the number which represents the actual speed of the controlled apparatus less the number of pulses suppressed by the suppressor. When the speed of the controlled apparatus is within a predetermined magnitude, an in-zone error indicator, in conjunction with the tracking register and a comparator which compares the binary numbers within the memory register and the tracking register, determines the magnitude of the speed error. A proportional control signal generator is responsive to the in-zone error indicator to supply a signal having a duty cycle corresponding to the speed error determined. An output logic circuit in conjunction with the input logic circuit, the comparator, and the proportional control signal generator controls a speed actuator to provide for maximum acceleration or maximum deceleration when the magnitude of the error in the speed of the controlled apparatus exceeds the predetermined magnitude and to provide for varying degrees of acceleration or deceleration when the magnitude of the error in the speed of the controlled apparatus is within the predetermined magnitude.

3,644,814
FINE POSITIONING SYSTEM

Gunter Firkert, Dresden, Germany, assignor to Veb Elektromat, Dresden, Germany

Continuation-in-part of application Ser. No. 811,144, Mar. 27, 1969. This application Feb. 16, 1970, Ser. No. 11,571
Int. Cl. G05b *11/18*
U.S. Cl. 318—592 **10 Claims**

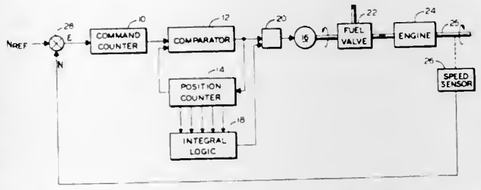


The drive system positioning a drum at a selected point on a raster has a disc mounted on it. The disc has slots spaced at different radial distances from the center in different sectors. A light is placed on one side of the disc, photoelectric transducing means on the other. The photoelectric transducers are each spaced radially from the center at a distance to correspond to one of the slots. The starting position of the disc is coordinated to one point. A complete rotation of the disc corresponds to the distance between points. Light on a specific photoelectric transducer thus signifies the deviation of the drum from the selected point.

3,644,815
DIGITAL P.I. SERVOCONTROL SYSTEM

Ronald E. Falk, Bristol, Conn., assignor to Chandler Evans, Inc., West Hartford, Conn.

Filed Nov. 10, 1969, Ser. No. 875,463
Int. Cl. G05b *11/36*
U.S. Cl. 318—609 **8 Claims**



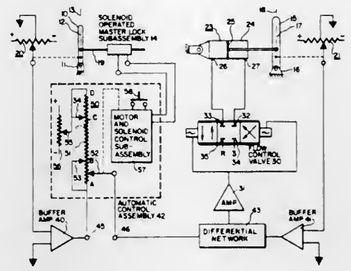
A digital servosystem having an integral path. The integral path includes a portion of the proportional step motor control circuitry and includes means for providing low-frequency control pulses to the motor at a rate which is a function of the proportional position of the actuator being controlled.

3,644,816
MANUAL AND AUTOMATIC MASTER-SLAVE CONTROL SYSTEM

Kendall E. Gilbert, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 21, 1970, Ser. No. 99,787
Int. Cl. G05b *1/06*
U.S. Cl. 318—663 **4 Claims**

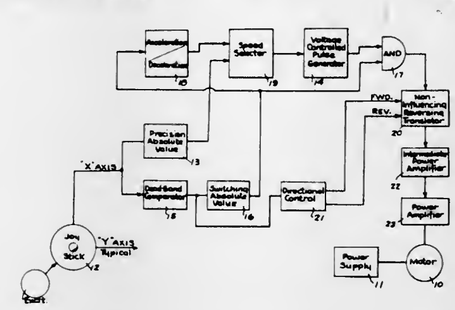
A control system including a slave member and a master member for maintaining the slave member in alignment with the master member in response to the movements thereof. Means are provided for moving the slave member through a cycle of automatic operation starting from a position of alignment with the master member and returning to a position of alignment with the master member thereby facilitating transferring of the system from manual to automatic control and return.



3,644,817
PLURAL SUPPLY STEPPER MOTOR CONTROL SYSTEM

Philip J. Rosen, Oak Park, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed June 19, 1969, Ser. No. 834,750
Int. Cl. H02v *37/00*
U.S. Cl. 318—696 **3 Claims**



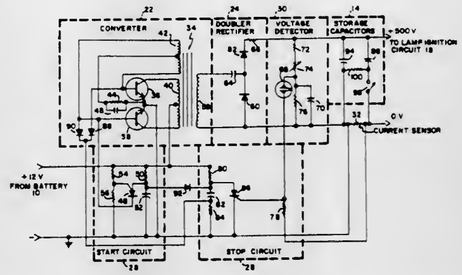
A stepper motor control system comprising a constant current motor supply for exciting the various phases of the motor and means for converting a bipolar control signal into a unipolar signal which in turn controls the rate of pulses for successively energizing various phases of the motor. The system further includes means responsive to the bipolar signal for controlling the direction of movement of the motor. The constant current supply is responsive to the speed of the motor independently of the pulse rate to change the excitation of the motor from the constant current supply to a low-voltage constant voltage supply when the speed of the motor is reduced below a predetermined value.

3,644,818
ELECTRONIC FLASHLAMP POWER SUPPLY

Fredrick W. Paget, Hamilton, Mass., assignor to GTE Sylvania Incorporated

Filed Mar. 10, 1971, Ser. No. 122,793
Int. Cl. H02m *1/08*
U.S. Cl. 321—18 **12 Claims**

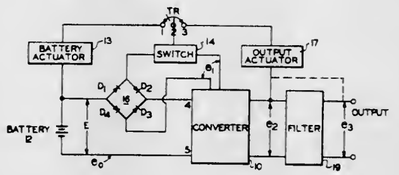
A flash system power supply for charging a storage capacitor employed in operating a flashlamp. A battery-powered multivibrator-type converter is coupled to the storage capacitor through a transformer-rectifier circuit, with the multivibrator being triggered into oscillation by a start circuit comprising a relaxation oscillator. Multivibrator operation is squelched by a negative voltage pulse from a stop circuit controlled by a relaxation oscillator-type voltage detector which senses a predetermined charge on the storage capacitor. The stop circuit is also controlled by a current-sensing resistor which detects discharge of the storage capacitor. Operation of the start circuit is clamped to the stop circuit through a diode, with the stop circuit having a time constant sufficient to delay restarting of the multivibrator beyond the deionization period of the flashlamp.



3,644,819
CONVERTER CIRCUIT FOR AC TO DC WITH FEEDBACK MEANS

Stuart P. Jackson, 1723 Grace Lane, Columbus, Ohio

Filed July 14, 1969, Ser. No. 841,235
Int. Cl. H02m *3/32*
U.S. Cl. 321—20 **7 Claims**



This invention relates to a circuit for converting direct current electric power into alternating current electric power. Specifically, the invention relates to a converter utilizing a combination of simple modulation by means of feedback to produce an output containing reduced voltage variation and maintaining commutating circuit capability.

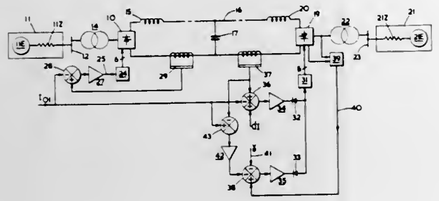
3,644,820
CONTROL CIRCUITS FOR INVERTERS

John Desmond Ainsworth, Stafford, England, assignor to The English Electric Company, Limited, London, England

Filed May 11, 1970, Ser. No. 36,155
Claims priority, application Great Britain, May 9, 1969, 23,662/69
Int. Cl. H02m *5/14*
U.S. Cl. 321—52 **6 Claims**

In the transmission of direct current from a rectifier to an inverter one method of control has been to provide a constant current at the rectifier and a constant extinction angle at the inverter controlled by a fixed extinction angle order signal. Instability results with this form of control under certain operating conditions. In the present invention the tendency to instability is reduced by controlling the extinction

angle of the inverter in accordance with the fixed order signal when the inverter output current is at least equal to a required level, but increasing the extinction angle when the inverter current is less than the required level. The extinction angle is increased under the control of an auxiliary order



signal generated by a summing unit which sums a signal from a control circuit representing the actual extinction angle, the fixed order signal, and a signal from an amplifier dependent on the difference between the actual and required current levels.

ERRATUM

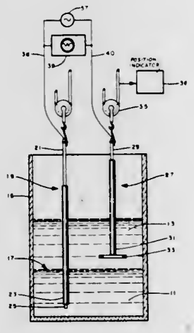
For Class 323—93 see:
Patent No. 3,644,822

3,644,821

CAPACITANCE METHOD AND APPARATUS FOR DETECTING AN INTERFACE BETWEEN ELECTRICALLY CONDUCTIVE IMMISCIBLE LIQUIDS

Jack L. Long, Arvada, Colo., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 14, 1969, Ser. No. 791,036
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **6 Claims**



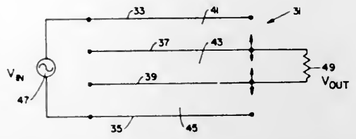
An interface level detector comprising a pair of electrodes each positionable in electrical contact with contiguous immiscible liquids wherein at least one of said liquids is electrically conductive, a source of alternating current in electrical series with the electrodes, means for moving one of said electrodes to the interface of said liquids and a voltage indicator electrically connected to said source of alternating current for sensing a change in electrical charge when said moving electrode reaches the interface between the liquids.

3,644,822

VARIABLE POSITION MULTIELEMENT CAPACITOR VOLTAGE TRANSFORMER DEVICE

Orestes M. Baycura, 2238 Central Park Drive, Campbell, Calif.

Filed Dec. 23, 1970, Ser. No. 100,946
Int. Cl. G05f *3/04*; **H03c** *3/20*
U.S. Cl. 323—93 **4 Claims**



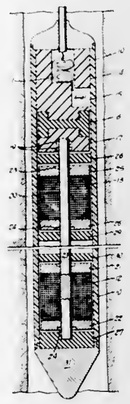
A multielement capacitor circuit for providing frequency mixing and voltage stepdown functions. One embodiment comprises a three element capacitor circuit where a first AC input signal is applied to the two outer capacitor plates and a second AC input signal is applied to the center capacitor plate and to one of the outer capacitor plates. Also, load resistors may be placed in series with the two input signals or in parallel with the second AC input signal. A variable voltage stepdown function is obtained across only one of the load resistors by physically changing the spacing of the center capacitor plate with respect to the two outer capacitor plates. The mixed frequency signal is obtained across any one of the load resistors. Another embodiment comprises a four element capacitor circuit.

3,644,823

NULLING COIL APPARATUS FOR MAGNETIC SUSCEPTIBILITY LOGGING

Donald J. Dowling, and George R. Atwood, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 329
Int. Cl. G01v *3/10, 3/18*
U.S. Cl. 324—6 **5 Claims**



Disclosed is an improved logging apparatus having sufficient sensitivity and environmental stability suitable for magnetic susceptibility logging which includes a transmitter search coil, a receiver search coil, a power supply for providing alternating current power to the transmitter coil and an improved nulling coil including a primary winding wired in series opposition with the receiver coil. The nulling coil includes construction and mounting features uniquely suitable to render detectable the small quadrature phase signal

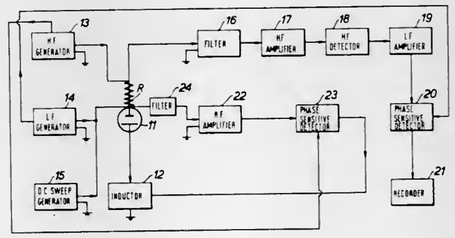
representing the magnetic susceptibility of borehole formations.

3,644,824

POLAROGRAPH APPARATUS

Geoffrey Cecil Barker, Abingdon; Arthur William Gardner, Didcot, and Anthony Gerald Pope, Reading, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 9, 1970, Ser. No. 9,908
Int. Cl. G01n *27/42*
U.S. Cl. 324—31 **7 Claims**



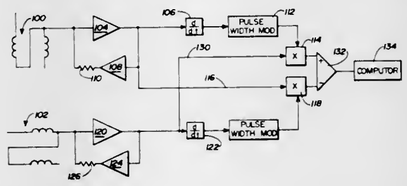
Polarographic cell impedance components which are potential dependent are detected by applying a high-frequency and a low-frequency voltage simultaneously across the cell. The variation in impedance produced by the low-frequency voltage results in amplitude modulation of the high-frequency current through the cell. The amplitude modulation is detected. The impedance components thus indicated comprise principally the faradaic impedance and the double-layer electrode capacity. The double-layer electrode capacity is compensated by inserting an inductor, preferably variable, in series with the cell so as to resonate at the high frequency with the double-layer electrode capacity.

3,644,825

MAGNETIC DETECTION SYSTEM FOR DETECTING MOVEMENT OF AN OBJECT UTILIZING SIGNALS DERIVED FROM TWO ORTHOGONAL PICKUP COILS

Paul D. Davis, Jr., Garland, and Thomas E. McCullough, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1969, Ser. No. 889,574
Int. Cl. G01r *33/00*
U.S. Cl. 324—41 **15 Claims**



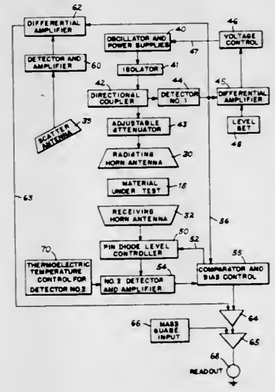
A pair of magnetic field sensors are disposed perpendicular to one another for sensing, at a single location, different directional components of a magnetic field. The output signals from the magnetic field sensors are vectorally combined to provide vector representations of the varying magnetic field. The direction of movement of the vector representations is then determined in order to indicate either the direction of movement of the object creating the variations in the magnetic field or the relative position of the object with respect to the sensors.

3,644,826

MOISTURE-MEASURING SYSTEM USING MICROWAVE AND NUCLEONIC MEASUREMENTS

Wendell H. Cornetet, Jr., Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Apr. 3, 1967, Ser. No. 628,066
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 **9 Claims**



A system for the measurement of the percentage of moisture content of flowable bulk material online using microwave and nucleonic measurements, in which a microwave system has transmitting and receiving antennas and a readout system connected to the receiving antenna to measure the attenuation of the microwave signal including a third antenna to pick up scattered microwave energy to apply to the microwave readout a correction in accordance with the level of the scattered energy, the accuracy of readout being maintained by a PIN diode modulator in the output of the receiving antenna with a bias control loop for maintaining a constant output with the bias signal applied to the PIN diode representing moisture content of the material following correction in accordance with the scattered energy, and in which variations in mass are corrected by a nucleonic mass measuring gauge with its rays being aligned in intersecting relation with the microwave energy at the material being measured.

3,644,827

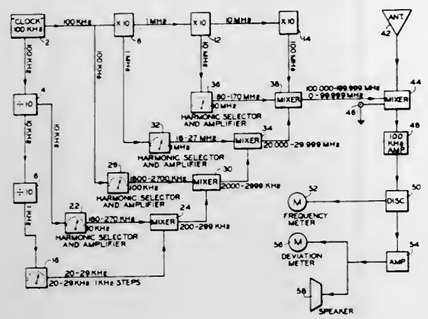
FREQUENCY SYNTHESIZER METHOD FOR ADDING MIXED HARMONICS WHICH CORRESPOND TO SIGNIFICANT DIGITS OF THE SYNTHESIZED FREQUENCY

Edgar E. Landefeld, 1135 Durham Cir., Massillon, Ohio

Filed May 27, 1969, Ser. No. 828,241
Int. Cl. G01r *23/14*; **H03b** *21/00*
U.S. Cl. 324—79 R **4 Claims**

A method of synthesizing a series of frequencies from a single source utilizing the process of moving the individual

frequencies upward in the frequency spectrum before they are mixed. Specifically, a standard crystal controlled frequency and its harmonics are used to provide frequency and deviation measurement means for a frequency modulated (FM) signal.

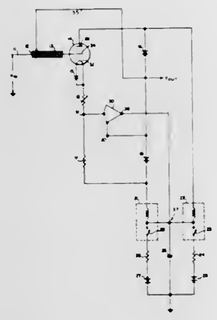


3,644,828

DC HIGH-VOLTAGE FOLLOWER ELECTROMETER

Stuart G. Gathman, Cheverly, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 19, 1970, Ser. No. 38,675
Int. Cl. G01r *1/30, 31/02, 29/22*
U.S. Cl. 324—123 R **3 Claims**



A high-input impedance electrometer tube for measuring high-atmospheric electric potentials where the high-input impedance is provided by a guard voltage (equal to the atmospheric voltage measured) supplied by a charged capacitor capable of large positive and negative excursions.

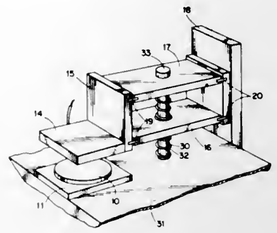
3,644,829

APPARATUS FOR MEASURING ELECTRICAL CHARACTERISTICS OF A SPECIMEN IN WHICH TESTING ELECTRODES ARE AUTOMATICALLY LOWERED RAPIDLY AND THEN SLOWLY INTO CONTACT WITH THE SPECIMEN

Joseph Y. Chan, Chelmsford, and Dinesh C. Gupta, Cambridge, both of Mass., assignors to GTE Laboratories Incorporated

Filed Dec. 22, 1969, Ser. No. 886,908
Int. Cl. G01r *31/26*
U.S. Cl. 324—158 P **7 Claims**

Apparatus for bringing testing electrodes into contact with a specimen with a uniform, consistent, reproducible force of impact. The apparatus lowers the electrodes rapidly during a first portion of their downward movement and then, when the electrodes have reached a predetermined position, at a slow speed. The change of speed occurs at the same precisely controlled predetermined position each time the electrodes are lowered. After the electrodes have come into contact with the specimen and have reached a predetermined lowered position, the downward motion is stopped abruptly. Stopping of the downward movement occurs at the same precisely controlled predetermined lowered position each time the electrodes are lowered.

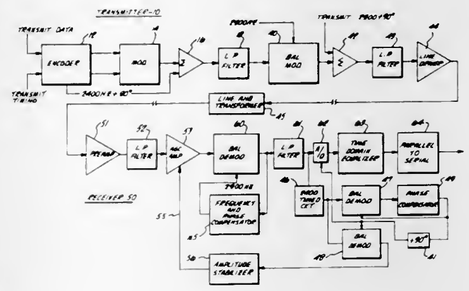


3,644,830

DATA MODEM HAVING PHASE, FREQUENCY AND AMPLITUDE DISTORTION COMPENSATING MEANS

Robert Gordon Ragsdale, Hollywood, Fla., assignor to Milgo Electronic Corporation, Miami, Fla.

Filed Nov. 18, 1969, Ser. No. 877,813
Int. Cl. H04b *1/12*
U.S. Cl. 325—42 **11 Claims**



A high-speed data modem utilizing a two-level, two-polarity data format is disclosed. Digital data is grouped into bit pairs, one bit of each pair is assigned one of two polarities and the other bit is assigned one of two amplitude levels. The bit pairs are modulated with a pair of pilot tones for transmission over a telephone line utilizing a 2,400-cycle-per-second bandwidth.

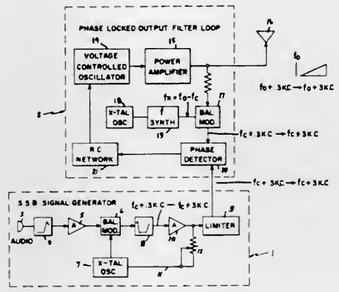
DC noise factors introduced by the telephone line and circuitry are compensated for by deriving from the received signal DC noise associated with frequency and phase variations between the transmitted and received pilot tones. The DC noise from these tones is converted into digital signals. The digital signals are applied to add and subtract circuitry of a divider chain such that phase and frequency translation of the derived tones, due to telephone line disturbances, are compensated for by emitting pilot tones from the divider which cancel out the DC noise.

3,644,831

MODULATION SYSTEM

Alex Latker, and Johannes J. Vandegraaf, both of Lynchburg, Va., assignors to General Electric Company

Continuation of application Ser. No. 423,093, Jan. 4, 1965, now abandoned. This application Oct. 9, 1967, Ser. No. 685,222
Int. Cl. H04b *1/68, 1/04*
U.S. Cl. 325—137 **4 Claims**



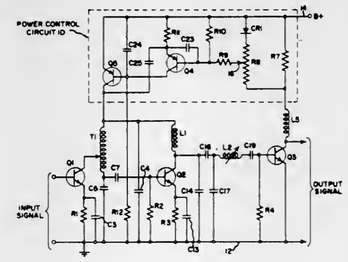
A narrow band transmitter utilizing a modulation technique in which a variable frequency oscillator is constrained to follow the frequency variations of a heavily limited single sideband signal to produce a constant-amplitude, narrow band output signal. The audio intelligence is applied to a single sideband modulator to produce a single sideband signal, which is then heavily limited to remove the amplitude information, with the intelligence being retained in the zero crossings of the limited signal. The limited S.S.B. signal controls a phase-locked oscillator loop, which varies the frequency of a variable frequency oscillator, forcing it to follow the frequency variation of the limited single sideband signal. The output from the phase-locked loop is a constant-amplitude, narrow band signal, the frequency excursion of which is substantially the same as the frequency excursion of the audio intelligence. The phase-locked loop may include frequency multiplication stages and Class-C amplifiers for processing the output signal from the oscillator to permit maximum efficiency in operation, since no amplitude information is being transmitted.

3,644,832

POWER CONTROL CIRCUIT

Ralph R. Sherman, Jr., Forest, Va., assignor to General Electric Company

Filed Sept. 28, 1970, Ser. No. 76,374
Int. Cl. H04b *1/04;* **H02h** *7/20;* **H03g** *3/30*
U.S. Cl. 325—186 **3 Claims**



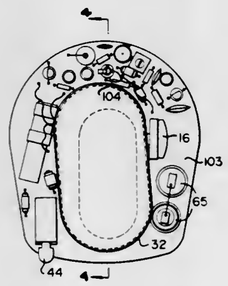
The output power produced by a radio transmitter is maintained at a more nearly constant level by a control circuit that senses the current supplied to the output stage of the transmitter, and that supplies current to a preceding driver stage of the transmitter as an inverse function of the output current.

3,644,833

EAR-SUPPORTED RADIO RECEIVER

Frank H. McIntosh, Chevy Chase, Md., assignor to Lectour Communications Corporation, New York, N.Y.

Filed July 12, 1966, Ser. No. 564,666
Int. Cl. H04b *1/08*
U.S. Cl. 325—361 **1 Claim**



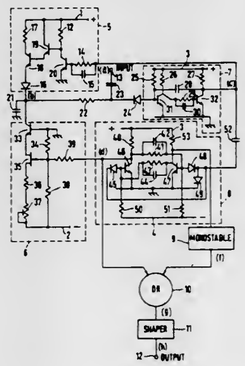
A radio receiver including a printed circuit board having an oval cutout which fits over the human ear and is supported by the ear in listening position.

3,644,834

FREQUENCY DIVIDER CIRCUITS

John Harry Taylor, Cheddar, Somerset, and Roger Stephen Harris, Wells, Somerset, both of England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England

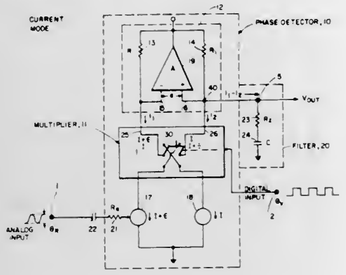
Filed Mar. 27, 1970, Ser. No. 23,341
Claims priority, application Great Britain, Mar. 29, 1969, 16,577/69
Int. Cl. H03k *25/06*
U.S. Cl. 328—46 **7 Claims**



A frequency divider circuit for producing an output signal from an input signal of periodicity t is provided, including means for deriving an intermediate signal which defines alternate intervals $N \cdot t$ and $M \cdot t$., where N and M are integers, means for extending the ends of alternate intervals by $P \cdot t/2$., where P is an odd integer, so as to produce a further inter-

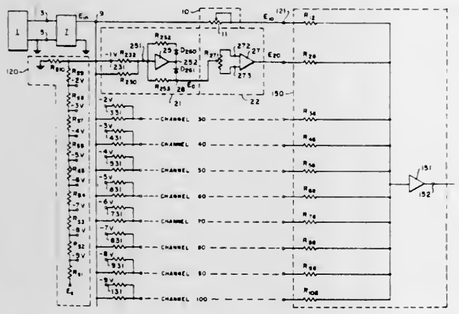
mediate signal, and means for generating said output signal in response to said further intermediate signal. Such a frequency divider circuit is disclosed which is adapted for providing field synchronizing pulses from line frequency pulses.

3,644,835
PHASE DETECTOR AND DIGITAL PHASE-LOCKED LOOP
James E. Thompson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 21, 1970, Ser. No. 99,764
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 **13 Claims**



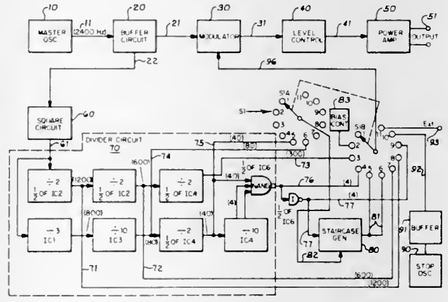
There is disclosed a phase detector which operates in a current mode to detect the phase difference between an analog input signal and a digital input signal. The phase difference between these two signals is provided as a current generated from combined chopping and gain block circuits. Current-mode operation increases the gain obtainable from prior art voltage-mode phase detectors and enables convenient filter circuit design for integration of the output signals from the phase detector. The current-mode phase detector may be used in combination with a voltage-controlled multivibrator circuit to provide a digital phase-locked loop having a high-loop gain and having improved pull-in and hold-in ranges. The combined chopping and gain block circuits enables IC implementation with a minimum number of external connections.

3,644,836
NONLINEAR COMPENSATION NETWORK
Roy D. Johnson, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 2, 1970, Ser. No. 69,085
Int. Cl. G06g *7/12*; **H03k** *5/00*; **H03b** *1/00*
U.S. Cl. 328—143 **10 Claims**



A compensation network having as an input a nonlinear transducer generated signal, which produces a linear signal by balancing out the nonlinearities in the transduced signal. Compensation is achieved by a plurality of individually operated slope circuits. Each slope circuit is actuated at a particular break point or voltage level of the sensor signal. When actuated the slope circuit produces a signal which compensates for the nonlinearity. The compensator includes break point circuits actuating each slope circuit at the predetermined break point voltage and the break point circuits are closed-loop design minimizing amplifier instability and temperature shift.

3,644,837
SYNCHRONOUS FACSIMILE GENERATOR
Ronald L. Clark, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 29, 1971, Ser. No. 110,916
Int. Cl. G06g *7/28*
U.S. Cl. 328—188 **7 Claims**

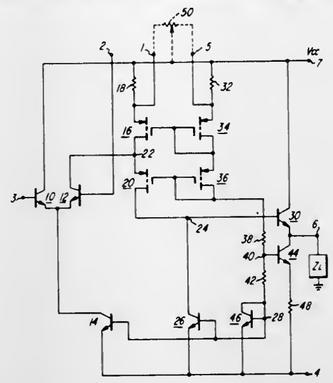


A synchronous facsimile generator having a master tuning fork oscillator coupled through a squaring circuit to produce square wave oscillations that are applied to integrated division and NAND circuits to produce a plurality of different combinations of frequency and wave patterns to provide a plurality of different functions applicable to test a facsimile recorder of carrier, start, phase, gray scale, and stop, with an additional tap input for other desired test signals, each frequency and wave pattern function being applied through a selector switch to a modulator to modulate the carrier produced by the master oscillator thereby producing double sideband, amplitude modulated, phase synchronous with the carrier signals for test of a facsimile recorder.

3,644,838
AMPLIFIER USING BIPOLAR AND FIELD-EFFECT TRANSISTORS
Stefano Graf, New York, N.Y., assignor to RCA Corporation
Filed June 11, 1970, Ser. No. 45,509
Int. Cl. H02f *5/00*; **H03f** *3/16*
U.S. Cl. 330—3 **12 Claims**

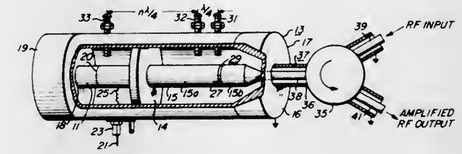
A high-speed, high slew rate operational amplifier comprised of bipolar and insulated-gate field-effect transistors (IGFET's). The amplifier includes a bipolar differential input stage whose active load is the source-drain path of a first IGFET. The source-drain path of a second IGFET is connected between the output node of the differential input stage and

the input of the emitter follower output stage. The second IGFET operated in the common-gate configuration level



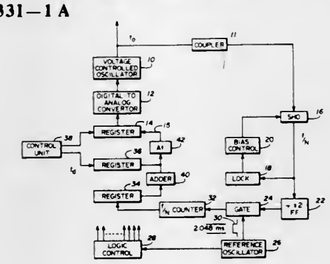
shifts the DC level and translates the signal current from the input stage to the output stage providing voltage gain.

3,644,839
TRANSFERRED ELECTRON AMPLIFIER
Barry Stuart Perlman, Hightstown, and Thomas Edward Walsh, Kearny, both of N.J., assignors to RCA Corporation
Filed Dec. 29, 1969, Ser. No. 888,477
Int. Cl. H03f *3/04*
U.S. Cl. 330—5 **9 Claims**



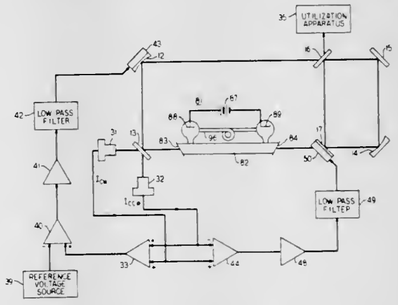
A transferred electron amplifier characterized by the uncompensated bulk-type material in the active region having an nL product larger than about 5×10^{11} cm.$^{-2}$ is described where n is the carrier density and L is the length of the material between terminals. The amplifier provides high power, signal amplification at microwave frequencies near the transit-time frequency.

3,644,840
VARIABLE FREQUENCY CONTROL
David C. Conner, Dallas, Tex., assignor to LTV Electrosystems, Inc., Greenville, Tex.
Filed May 28, 1970, Ser. No. 41,246
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **21 Claims**



A variable frequency oscillator is digitally commanded to any one of a large number of frequencies by a system that involves closing a sample data frequency servomechanism loop around a voltage (or current) controlled oscillator. In the sample data frequency loop, a phase-locked subharmonic oscillator produces a sampled frequency at a fraction of the oscillator output. This sampled frequency is applied to a logic system that produces a frequency error signal by an arithmetic operation of subtraction and addition. This frequency error signal is then utilized to adjust the controllable oscillator.

3,644,841
FREQUENCY-STABILIZED SINGLE MODE RING LASERS
Peter William Smith, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 656,519, July 27, 1967, now Patent No. 3,537,027. This application May 4, 1970, Ser. No. 34,440. The portion of the term of this patent subsequent to Oct. 27, 1987, has been disclaimed.
Int. Cl. H01s *3/00*; **G01b** *9/02*
U.S. Cl. 331—94.5 **6 Claims**

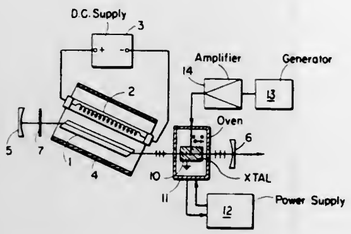


A sensitive frequency discriminant based on the gain profile of the active medium can be obtained in an ion ring laser having a Doppler-broadened emission line by promoting stable competition between oppositely propagating traveling-wave components of a single transverse mode and by tuning an auxiliary ring resonator that determines the frequency of the primary ring resonator to maintain substantially equal intensities of the oppositely propagating waves. The discriminant is then used to stabilize the auxiliary ring resonator. The primary ring resonator is stabilized by locking one of its resonant frequencies to a resonance of the auxiliary ring resonator with a feedback circuit. Stable competition is achieved by providing a selected gain anisotropy of the ion laser active medium. The anisotropy is selected to be sufficiently large to inhibit the quenching of one of the oppositely propagating waves by the other, even though they have the same frequency. In the typical case of a gas ion laser, a substantial ion drift rate provides the gain anisotropy.

3,644,842
OPTICAL HIGHER HARMONIC GENERATOR WITH TEMPERATURE EFFECTING PHASE MATCHING
Teiji Uchida; Shogo Yoshikawa, and Atsufumi Ueki, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed July 22, 1969, Ser. No. 843,564
Claims priority, application Japan, July 23, 1968, 43/52375
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **2 Claims**

An optical higher harmonic generator includes a laser material, an excitation source for producing the population inversion in the laser material, and two reflectors constituting an optical resonator sandwiching the laser material

therebetween. A crystal piece having the electro-optical effect and nonlinear optical effect is disposed within the



resonator and a signal source applies to the crystal piece a signal having the modulation frequency and voltage necessary for locking the oscillation modes of the laser.

3,644,843

TEMPERATURE STABLE NEGATIVE RESISTANCE DIODE COAXIAL CAVITY ENERGY CONVERTER OPERATING IN AN ANTIRESONANT MODE

Bernard E. Sigmon, Tampa, Fla., assignor to Sperry Rand Corporation

Filed June 22, 1970, Ser. No. 49,437
Int. Cl. H03b 7/14; H03f 3/10
U.S. Cl. 331—101 **4 Claims**

A semiconductor diode coaxial line energy converter operable as a single port, high-frequency amplifier or oscillator has enhanced temperature stability and operating power output level through employment of a coaxial cavity resonator structure working in an antiresonant mode and having means for increasing the effective junction capacitance of the active diode.

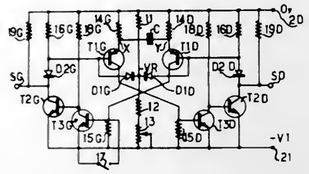
3,644,844

MULTIVIBRATOR CIRCUITS

Atanasije Bankovic, Belfort, France, assignor to Societe Industrielle Honeywell Bull, Paris, France

Filed Jan. 29, 1970, Ser. No. 6,682
Claims priority, application France, Jan. 31, 1969, 6902.009
Int. Cl. H03k 3/282
U.S. Cl. 331—113 R **10 Claims**

A transistorized multivibrator for furnishing output pulses having steep edges which are independent of the duration of the pulses, wherein each of a pair of branches comprises two interconnected transistors of opposite conductivity type and a resistor, and wherein a single capacitor is coupled between



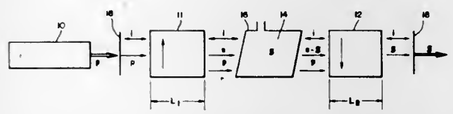
the two branches to function with each of the resistors as a common element in two time-constant circuits.

3,644,845

FREQUENCY STABILIZATION METHOD AND APPARATUS FOR PARAMETRIC AMPLIFIERS AND OSCILLATORS

Stephen E. Harris, 880 Richardson Court, Palo Alto, Calif.

Filed June 6, 1969, Ser. No. 831,114
Int. Cl. H03f 7/00
U.S. Cl. 331—175 **8 Claims**



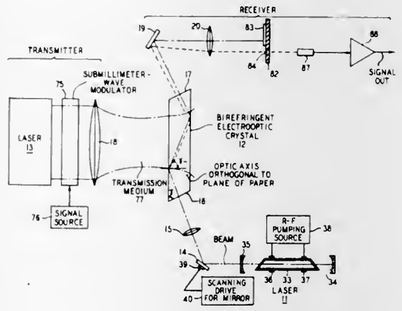
A coherent radiation beam passes in series through a pair of nonlinear elements separated by a modifying element, the nonlinear elements are reversed with respect to each other so that the effect of the beam in passing through the first is cancelled or nullified by the second. The modifying element serves to absorb and shift the phase of a selected frequency band such that cancellation of that band by the second element is prevented and selective amplification of the modified frequency band is achieved.

3,644,846

OPTICAL MODULATION BY SUBMILLIMETER-WAVE SIGNALS AND APPLICATIONS THEREOF

Thomas James Bridges, Holmdel; Ivan Paul Kaminow, New Shrewsbury, and Martin Alan Pollack, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 4, 1970, Ser. No. 34,198
Int. Cl. H01s 3/10
U.S. Cl. 332—7.51 **6 Claims**



A continuous-wave cyanide (HCN) laser has been employed to drive a continuous, traveling-wave lithium niobate ($LiNbO_3$) electro-optic modulator at signal frequencies of

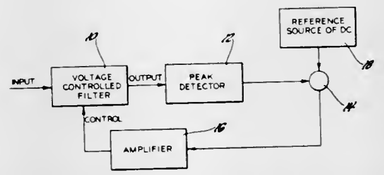
964 gHz. (311 μm.) and at 891 gHz. (337 μm.). Part of the power of a visible 0.633-μm. carrier beam is converted into two visible sidebands, one of which is favored by the choice of phase-matching angle. In a submillimeter communication system and in power metering of submillimeter radiation, angular separation of the beams makes attractive the up-conversion to the visible region, followed by detection. The large frequency separation of the visible carrier and the sidebands facilitates precision spectroscopic and metrological applications.

3,644,847

FREQUENCY-FOLLOWING VOLTAGE-CONTROLLED FILTER PROVIDING SUBSTANTIALLY CONSTANT OUTPUT AMPLITUDE

John G. Neuman, Gross Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,583
Int. Cl. H03h 7/10
U.S. Cl. 333—17 **4 Claims**



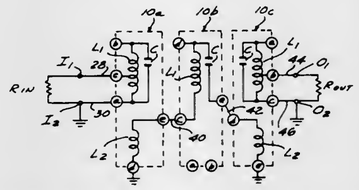
A filter arrangement for extracting the fundamental frequency from an input periodic electrical signal controlled to follow changes in frequency by the input electrical signal to provide an output sinusoidal signal whose frequency continuously follows the frequency of the input signal. This filter arrangement includes a voltage-controlled filter in combination with a feedback loop comprising an amplitude sensing circuit, a voltage comparator and an amplifier to provide an error signal related to the difference between the instantaneous output voltage of the voltage-controlled filter and a reference voltage. This error signal is applied to the voltage-controlled filter to modify its characteristic response and, accordingly, to enable the voltage-controlled filter to extract a fundamental frequency sinusoid which follows frequency changes by the input signal. Additionally, the instant filter arrangement inherently adjusts for variations in the amplitude of the input signal to effect automatic gain control providing a substantially constant amplitude output voltage.

3,644,848

FREQUENCY SELECTING MODULAR COMPONENT AND ASSEMBLY FORMED THEREFROM

Chester R. Kruczek, Riverdale, N.J., assignor to General Instrument Corporation, Newark, N.J.

Filed Aug. 26, 1969, Ser. No. 853,132
Int. Cl. H03h 7/10
U.S. Cl. 333—70 S **20 Claims**



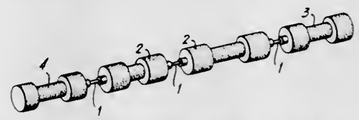
A frequency-selecting assembly is formed from a plurality of substantially similar tunable modular components mounted on an insulating support plate having an input and an output terminal. Each component comprises an L.C. resonant circuit and a plurality of terminals extending therefrom. Means are provided on the support plate to electrically connect selected terminals of a first module to the assembly input terminal and to a selected terminal on a second module, to connect selected terminals on succeeding modules to one another, and to connect a selected terminal of the last module to the assembly output terminal. The assembly input and output terminals extend from the support plate in a direction different from that of the tunable modules.

3,644,849

MULTISECTION ELECTROMECHANICAL BANDPASS FILTER

Alla Nikolaevna Kalyaeva, prosp. Toreza, 102, korp. 5, kv. 177, and Dmitry Vasilievich Pletnev, ul. Komsomola, 10, kv. 26, both of Lenningrad, U.S.S.R.

Filed June 26, 1969, Ser. No. 836,850
Int. Cl. H03h 9/26, 9/28
U.S. Cl. 333—71 **1 Claim**



The present invention relates generally to the techniques of filtering electric oscillations and more particularly to electromechanical filters effective preferably within the frequency bandwidth of from a few to 10's of kilocycles per second.

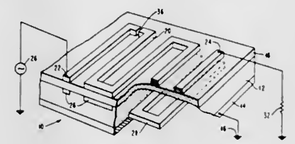
The essence of the invention resides in the fact that in the herein-disclosed electromechanical filters, the bonds interconnecting the mechanical resonators with one another and with the magnetostrictive converters, are built up of elements dumbbell-like in shape. Such an engineering solution allows the provision of highly reliable, small-sized narrow-band electromechanical filters suitable for operation within the frequency range of from a few to hundreds of kilocycles per second.

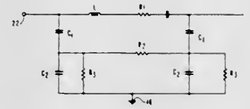
3,644,850

INTEGRATED CIRCUIT BAND PASS FILTER

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 11, 1969, Ser. No. 832,303
Int. Cl. H01p 3/08; H01s 19/00
U.S. Cl. 333—73 **2 Claims**

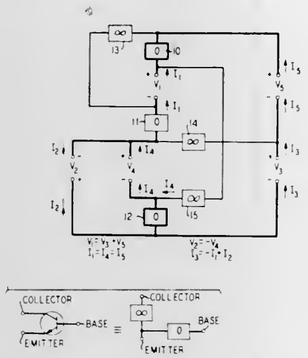




A semiconductor band pass filter is disclosed. The filter is an integrated circuit device having a semiconductor layer with a ground plane on one face and an insulating layer and an overlying conductive line on the other face. The semicon-

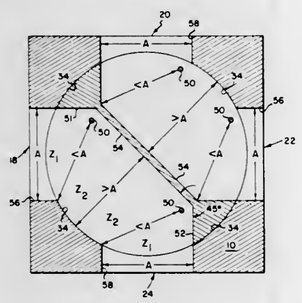
ductor layer includes near the insulating layer a highly doped region which may have substantially the same pattern as the conductive line. The passed band can be selected by varying the doping level of the doped region.

3,644,851
FIVE-PORT GYRATOR CIRCUIT WHEREIN GYRATOR ACTION IS PRODUCED BETWEEN TWO NONTERMINATED PORTS
Richard W. Daniels, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 2, 1969, Ser. No. 821,359
Int. Cl. H03h 7/44
U.S. Cl. 333—80 R **10 Claims**



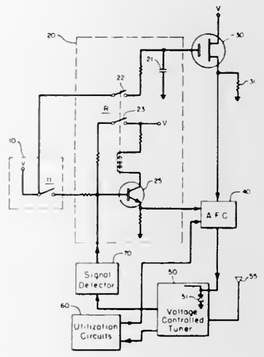
A class of gyrator circuits is disclosed which is defined by a set of four matrix equations through the use of a five-port network analysis. The identifying characteristics of this class are that each circuit contains three resistors which form terminations of three of the ports in the five-port network and that gyrator action is produced between the remaining two ports only when the resistances of two of the resistors are tuned to be substantially equal. Because of this tuning ability high-quality gyrator networks may be simulated.

3,644,852
IMPEDANCE COMPENSATED SWITCH FOR A RECTANGULAR WAVEGUIDE
Thomas K. Albee, Western Springs, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Apr. 25, 1969, Ser. No. 836,680
Int. Cl. H01p 1/02, 1/10, 5/02
U.S. Cl. 333—98 S **14 Claims**



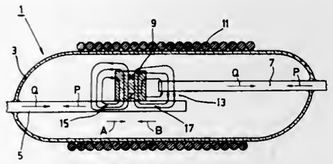
Apparatus for selectively switching electromagnetic wave energy from one hollow pipe waveguide to one of two similar waveguides disposed at an angle thereto, the apparatus providing a double-mitered, H plane compensated waveguide bend in which the effective width of the waveguide in the plane of the bend is narrowed at the mitered corners and increased on a line bisecting the angle of the bend to provide a low VSWR over a wide bandwidth for both signal paths.

3,644,853
VOLTAGE-CONTROLLED SIGNAL-SEEKING TUNING SYSTEM
John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Nov. 23, 1970, Ser. No. 91,894
Int. Cl. H03j 3/18; H04b 1/32
U.S. Cl. 334—15 **3 Claims**



A signal-seeking tuning system for a receiver having a voltage-controlled tuner wherein a switching circuit, a low-leakage storage capacitor, and a metal oxide field-effect transistor are provided for applying a DC control voltage to the tuner and maintaining the applied voltage at the value corresponding to the selected signal so that the receiver remains tuned to the selected frequency irrespective of temporary loss of signal or receiver deenergization.

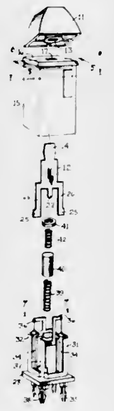
3,644,854
REED SWITCH
Jan Paul Steenmeijer, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 20, 1970, Ser. No. 29,888
Claims priority, application Netherlands, May 9, 1969, 6907099
Int. Cl. H01h 1/66
U.S. Cl. 335—153 **4 Claims**



A reed-type switch having two contact tongues, at least one of which is provided with a permanent magnet polarized transversely of the longitudinal direction of the contact tongues and parallel to the direction of movement thereof. By said permanent magnet the adjoining part of the contact tongue concerned is magnetically saturated by a flux passing

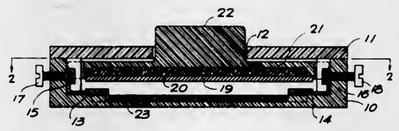
consecutively through the contact tongues and produced by external means. The direction of said flux at the contact area is opposite that of the flux of the permanent magnet. The value of said flux is such that the difference between the two fluxes is capable of moving the contact tongues from the open state into the closed state. When the contact tongues are closed, the magnet will maintain the closed condition.

3,644,855
KEYBOARD REED SWITCH
Walter L. Cherry, and Raymond G. Castle, both of Highland Park, Ill., assignors to Cherry Electrical Products Corporation, Highland Park, Ill.
Filed July 10, 1970, Ser. No. 53,887
Int. Cl. H01h 5/02, 1/66, 3/12
U.S. Cl. 335—205 **8 Claims**



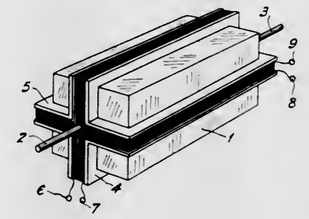
A pushbutton keyboard switch embodying an enclosed reed contact element mounted on a base portion of a switch in close proximity to a permanent magnet that is movably supported between a pair of opposing spring members, a slidable actuator being in contact with one of the spring members so as to compress the same against the magnet to increase its kinetic force until it overcomes the resistance of the opposing spring to effect longitudinal switching movement of the magnet relative to the reed contact element and to create a tactile feel in the movement of the actuator.

3,644,856
ELECTRICAL SWITCH
John M. Scott, 77 Rutledge Drive, Youngstown, Ohio
Filed Mar. 8, 1971, Ser. No. 121,725
Int. Cl. H01h 5/02
U.S. Cl. 335—207 **4 Claims**



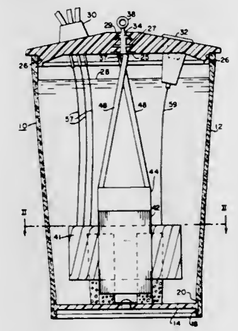
An electrical switch incorporating circuit terminals and a switch member movable thereagainst to close an electrical circuit therebetween in which the switch member is mounted on a permanent magnet positioned in the electrical switch in opposed polarity with respect to a second permanent magnet whereby the repelling action of the permanent magnets will normally hold the switch member in spaced relation to the circuit terminals.

3,644,857
PROCESS AND APPARATUS FOR THE ORIENTATION OF THE STABLE DIRECTION OF MAGNETIZATION OF A MAGNETIC LAYER CARRIED BY A CYLINDRICAL SUPPORT
Rene Fernand Victor Girard, Grenobel, and Jacques Le Guillerm, Avrille, both of France, assignors to Societe Industrielle Honeywell Bull, Paris, France
Filed Apr. 21, 1970, Ser. No. 30,479
Claims priority, application France, Apr. 25, 1969, 6913136
Int. Cl. H01f 1/00
U.S. Cl. 335—209 **9 Claims**



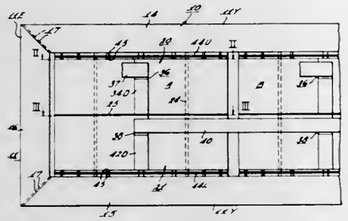
A process and corresponding apparatus providing for obtaining circumferential orientation of the stable axis of magnetization in a magnetic layer during deposition of the layer on a cylindrical support. This arrangement includes flat windings positioned in parallel to the support and being traversed by polyphase currents and furnishing magnetic field orthozonal to the axis of the support and rotating around the same.

3,644,858
TRANSFORMER HAVING A NONMETALLIC CASING
Dudley L. Galloway, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 28, 1970, Ser. No. 75,915
Int. Cl. H01f 27/02
U.S. Cl. 336—92 **8 Claims**



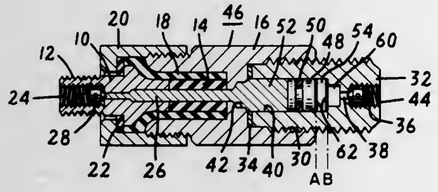
An electrical transformer having a core-winding assembly, with the core-winding assembly and all other metallic parts of the transformer totally enclosed within a nonmetallic casing. The core-winding assembly is supported in the nonmetallic casing from the top cover of the casing. The nonmetallic casing comprises a nonmetallic bottom which is keyed into the sidewalls of the nonmetallic casing to provide a fluidtight joint.

3,644,859
ELECTRICAL WINDING OF SHEET CONDUCTOR
Michael W. Waterman, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 17, 1970, Ser. No. 64,472
Int. Cl. H01f 27/28
U.S. Cl. 336—187 2 Claims



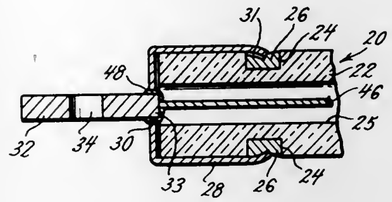
A high-current capacity winding of sheet conductor for stationary induction apparatus which substantially reduces eddy current and circulating current losses has a plurality of coaxial coils each of which is spirally wound from a plurality of conductor sheets in parallel that extend the entire coil height with insulation between paralleled sheets and between spiral turns. Crossover connector strips extending parallel to the winding axis connect paralleled conductor sheets in the plurality of coils in series relation and so that the innermost and outermost of the paralleled conductor sheets of different coils are transposed and the net flux linkages of the plurality of flux paths are approximately equal.

3,644,860
SELF-RESTORING CURRENT LIMITER
Kiyoshi Yamagata; Kiyoshi Matsuura, both of Fukuyama; Toshio Ito; Toshio Miyamoto, and Yuichi Wada, all of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha. Tokyo, Japan
Filed Apr. 23, 1970, Ser. No. 31,301
Claims priority, application Japan, Apr. 24, 1969, 44/31641; 44/31642; 44/31643; 44/31644
U.S. Cl. 337—21 6 Claims



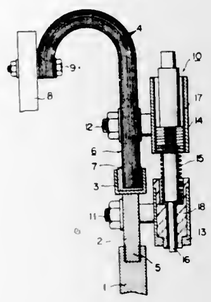
The disclosed current limiters include self-restoring current-limiting material filling one portion of a central hole and a buffer fluid filling the other portion of the hole with a piston slidably fitted filled in the hole to isolate the material from the fluid. Upon the occurrence of short-circuiting current the material evaporates to perform the current limiting operation while a very high pressure due to the evaporated material moves the piston to compress the fluid. Therefore, the pressure is buffed.

3,644,861
PROTECTOR FOR ELECTRIC CIRCUITS
Aloysius J. Fister, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 29, 1970, Ser. No. 59,101
Int. Cl. H01h 85/16
U.S. Cl. 337—252 16 Claims



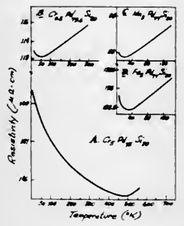
An electric fuse has a ceramic housing with annular grooves adjacent the opposite ends of the outer surface thereof, and has yieldable annuli disposed within those annular grooves. Those yieldable annuli make it possible to "cold-form" the confronting edges, of the cuplike terminals of that electric fuse, into those annular grooves without cracking, pulverizing or fragmenting the endmost edges of those annular grooves. Also, those yieldable annuli coact with those confronting edges to limit the rate at which gases and vapors can escape from that electric fuse.

3,644,862
PROTECTIVE CONNECTION DEVICE IN ELECTRODE WIRING OF ELECTROLYTIC CELLS
Naokichi Otake; Yutaka Yamanobe, both of Iwaki; Katumi Siina, Takahagi, and Kunikatsu Usuba, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Apr. 8, 1970, Ser. No. 26,567
Claims priority, application Japan, Apr. 16, 1969, 44/28961
Int. Cl. H01h 37/76
U.S. Cl. 337—408 1 Claim



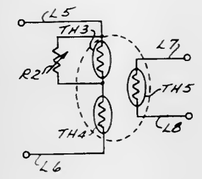
The anode of an electrolytic cell is connected to a bus bar through a connection device in which a lead wire connected at one end to the bus bar is connected at the other end to the anode through a solder joint, on which a continuous separating force is exerted by a spring-separating mechanism. When an excess current due to a short circuit in the electrolytic circuit flows through the lead wire, the solder melts and the joint is broken by the separating mechanism to break the circuit, whereby the electrolytic circuit parts are protected.

3,644,863
METALLIC RESISTANCE THERMOMETER
Chang-Chyi Tsuei, Pasadena, Calif., assignor to California Institute Research Foundation, Pasadena, Calif.
Filed Apr. 10, 1969, Ser. No. 815,162
Int. Cl. G01k 7/22
U.S. Cl. 338—25 7 Claims



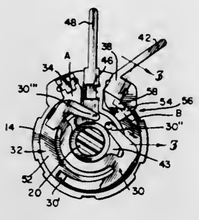
A class of alloys, when converted to amorphous form by quenching from the molten state, is useful for sensing temperature by virtue of a temperature coefficient of electrical resistivity that is negative over a usefully wide range, including the neighborhood of absolute zero. Such alloys comprise three components: a metal of the platinum series, silicon or germanium, and an inner member of the first series of transition metals. A preferred type of composition is $Pd_{80-x}Si_{20}Cr_x$, where x may have any value up to about 8.

3,644,864
COMPOSITE THERMISTOR TEMPERATURE SENSOR HAVING STEP-FUNCTION RESPONSE
Hans G. Hirsbrunner, Attleboro, and Lyle E. McBride, Jr., Norton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 5, 1969, Ser. No. 882,567
Int. Cl. H01c 7/02
U.S. Cl. 338—25 3 Claims



A temperature sensor including first and second PTC thermistor elements each having a well-defined transition temperature above which the resistance of the element rises relatively abruptly and below which it changes relatively little, the transition temperature of the second element being substantially greater than that of the first element. The thermistor elements are adapted to be substantially identically thermally responsive to a body whose temperature is sensed by the sensor. The elements are connected in series-circuit relationship to cause the sensor resistance to be a series-equivalent resistance which varies as a function of the resistance of the elements and changes relatively abruptly at temperatures determined by the transition temperatures of the elements thereby providing the sensor with a step-function R vs. T characteristic.

3,644,865
COMBINATION VARIABLE RESISTOR AND SWITCHING MEANS
Joseph L. Kirby, Thorntown, and George O. Puerner, Frankfort, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Nov. 4, 1970, Ser. No. 86,753
Int. Cl. H01c 9/08
U.S. Cl. 338—173 7 Claims



A variable resistor-switch combination comprising an electrical resistance path, electrical switch means integral with the electrical resistance path, and movable electrical contact means cooperating with the electrical resistance path and the electrical switch means.

3,644,866
TIGHTLY BOUND BUNDLE OF FILAMENTS AND METHOD OF PRODUCING SAME
Lawrence R. Deardurff, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Jan. 11, 1971, Ser. No. 105,175
Int. Cl. H01c 3/00
U.S. Cl. 338—214 10 Claims

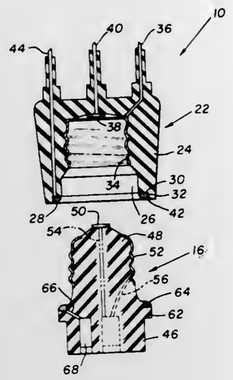


This invention relates to a tightly bound textile strand product suitable for use as a core element in a jacketed composite product in which coated filaments are held together by helically wrapping two separate strands of filaments around the bundle in opposite directions. More particularly, it relates to an improved high-resistance automotive ignition conductor and a method of producing the conductor wherein the overwrapping strands are glass filaments and the ignition conductor is a bundle of glass filaments coated with electrically conductive material.

3,644,867
GROUNDED FEMALE SOCKET AND PLUG
Edward F. Krause, 105 Birs Ave., Lindenhurst, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,673
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 1 Claim

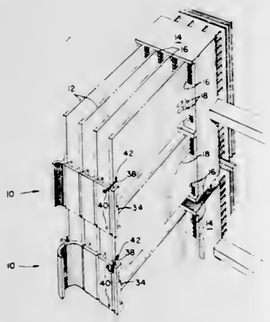
A female socket having a plug-receiving or similar body-receiving opening which terminates in a plug-accommodating seat, and wherein the necessary positive and negative electrical contacts of the same are located about the socket opening while a ground electrical contact is advantageously

located in the plug-accommodating seat. Accordingly, threaded engagement of the plug, lightbulb, or the like within



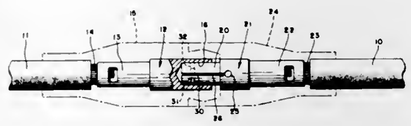
the socket automatically results in operation of the same with the attendant safety factor of a connection to ground.

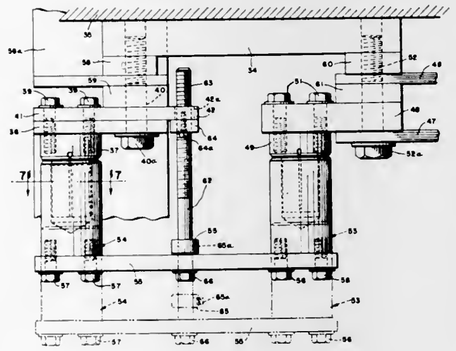
3,644,868
MODULE HOLDER
David Nevala, Hudson, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 27, 1970, Ser. No. 31,926
Int. Cl. H02b *1/02*; **H05k** *1/02*
U.S. Cl. 339—17 LM **7 Claims**



A holder for retaining plug-in printed circuit cards arranged side-by-side in rows or tiers comprises a stiff but resilient strip having spaced-apart grippers projecting out from one face thereof. The grippers are spaced apart a distance equal to the spacing between the cards and each gripper is arranged to grip the edge of a card. Each gripper consists of a pair of spaced-apart fingers which resiliently engage opposite faces of the card. The strip is hinged between the fingers of each gripper so that when the holder is pulled away from the cards, the strip bends backwards, spreading apart the fingers of each gripper so as to release the intervening card.

3,644,869
ELECTRICAL COUPLING DEVICE AND ELECTRICAL CONNECTOR
Albert P. Newman, Springfield Township, Hamilton County, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio
Filed Nov. 3, 1969, Ser. No. 873,248
Int. Cl. H01r *31/08, 11/22*
U.S. Cl. 339—19 **9 Claims**



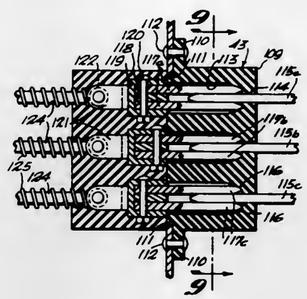


An electrical coupling device is provided for bringing various electrical members into electrical connection and also for disconnecting them, the device utilizing electrical connector components in which the manner of connection and disconnection is push-pull, good electrical contact being obtained in the connector components by means of an outward force exerted by a Belleville washer, manipulatable means being provided to bring electrical connector components into and out of engagement.

3,644,870
INTERCONNECTION DEVICE FOR MULTIPLE CONDUCTORS
Richard D. Jones, 4724 Fairlee Drive, Little Rock, Ark.
Original application Oct. 9, 1967, Ser. No. 673,886. Divided and this application Sept. 29, 1969, Ser. No. 870,335
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 M **1 Claim**

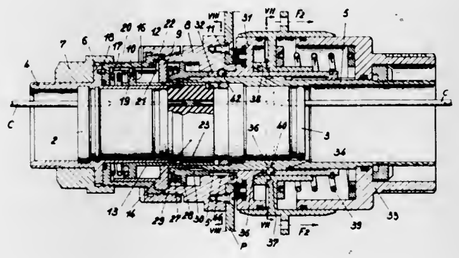
Auxiliary distribution bypass apparatus for use in association with a main electrical power distribution panel, including an auxiliary panel located in spaced relation with respect to the main panel and having distributor circuit plug-in connectors and transfer switches and associated wiring for transferring distributor circuits extending from the main panel to the distributor circuit plug-in connectors, and a portable distribution panel having a main power input and distribution circuits terminating in plug-in-type connector members, and

further including a plurality of patch cable assemblies adapted for selective interconnection between the plug-in



connector members of the portable distribution panel and the auxiliary panel plug-in connectors.

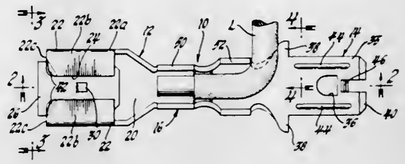
3,644,871
ELECTRIC CONNECTOR
Maurice Louis Lafont, Paris, France, assignor to Societe Anonyme dite Francelco, Paris, France
Filed Feb. 15, 1968, Ser. No. 705,824
Claims priority, application France, Apr. 14, 1967, 102783
Int. Cl. H01r *13/62*
U.S. Cl. 339—46 **2 Claims**



The electrical connections between the two sections of the connector are obtained through the use of coupling elements carried by an insulating disk disposed in front of the ends of the cables of the fixed section, locked inside the body of the fixed section, displaceable axially inside of said fixed section and having no electrical contact with said ends of the cables when the two sections of the connector are disconnected.

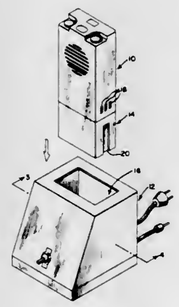
3,644,872
HERMAPHRODITIC TERMINAL
Andrew Russo, Jr., Fowler, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 22, 1970, Ser. No. 82,894
Int. Cl. H01r *13/28*
U.S. Cl. 339—47 R **3 Claims**

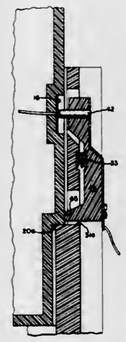
In a preferred form, this disclosure relates to a hermaphroditic electrical connector comprising a one-piece member made from thin gauge sheet stock having a female terminal at one end portion, a male terminal at its other end portion and an intermediate portion which is adapted to be connected to an electrical lead. The female terminal has a base, a pair of upwardly extending wings at the sides of the base and with the wings having sections which are bent over toward each other to define a slot therebetween and a deflectable tongue integral with the base and which is self-biased into engagement with the bent over sections of the wings. The male terminal comprises a flat blade having upstanding ribs for strengthening same and an upstanding tang. The male terminal is adapted to be connected to a mating female terminal of another connector by inserting the same



between the deflectable tongue and the wings and with the tang being received within the slot. The tang insures that the male terminal is inserted right side up so that the ribs are on the side opposite the tongue and so that a nib on the tongue will be received within an opening in the male terminal to lock the two terminals together.

3,644,873
ELECTRICAL CONNECTOR FOR A RADIO RECEPTACLE
Wayne D. Dalton; Stanley C. Mackzum; Friedrich H. Mann, and Paul F. Sensabaugh, all of Lynchburg, Va., assignors to General Electric Company
Filed Oct. 22, 1970, Ser. No. 83,064
Int. Cl. H01r *13/54*
U.S. Cl. 339—79 **4 Claims**

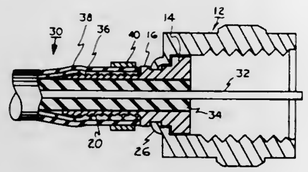




An electrical device is provided with a receptacle for receiving a radio. A lever carrying one or more contacts is

pivotally positioned on one wall of the receptacle so that when the radio is inserted in the receptacle, the lever is pivoted and its contacts brought into engagement with contacts on the radio.

3,644,874
CONNECTOR ELEMENT AND METHOD FOR ELEMENT ASSEMBLY
Harold G. Hutter, Brookfield, Conn., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Oct. 7, 1970, Ser. No. 78,718
Int. Cl. H01r *13/54, 17/04*
U.S. Cl. 339—89 C **8 Claims**

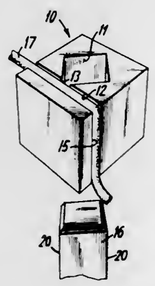


A connector element and method for its assembly. A ferrule body having an enlarged forward section, a center section of reduced diameter having a circumferential groove formed in it, and an elongated rear section has a coupling nut mounted for rotation on it. The nut has an opening formed in its rear of diameter greater than that of the center section but less than that of the forward section in which the center section of the body is partially positioned. The coupling nut also has a circumferential ridge extending from the opening to the rear of the nut, which ridge is bent over by a suitable tool into the groove to lock the body and nut against lateral movement.

ERRATUM

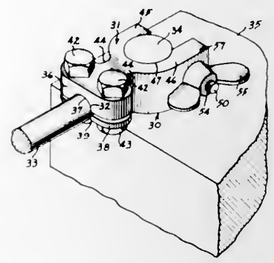
For Class 339—91 see:
Patent No. 3,644,938

3,644,875
ELECTRICAL CONNECTOR
Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Jan. 20, 1970, Ser. No. 4,388
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **11 Claims**



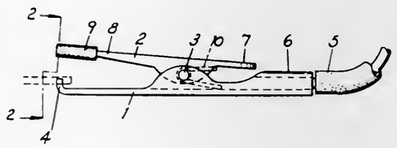
The connector is formed with a longitudinal bore to receive the rectangular-shaped post as well as with a recess which extends either longitudinally or transversely of the bore. In either embodiment, the bore is in communication with the recess so that at least one of the sharp corners of the post projects into the recess and thus into an insulation coated wire disposed within the recess to form an electrical connection with the wire.

3,644,876
CONNECTOR FOR BATTERY TERMINALS
Orrin H. Thomas, 2120 West Fourth St., Williamsport, Pa.
Filed Oct. 8, 1969, Ser. No. 864,745
Int. Cl. H01r *11/26*
U.S. Cl. 339—114 **1 Claim**



A connector for battery terminals having the means for preventing corrosion, locking or freezing to a battery post, and wherein there is provided a means for permitting the battery terminal connector to be installed or removed by the hand with no tools required.

3,644,877
TEST CLIP FOR ELECTRICAL CONDUCTOR
Gordon S. Carbonneau, Grand Rapids, Mich., assignor to Carbonneau Industries, Inc., Grand Rapids, Mich.
Filed July 10, 1970, Ser. No. 53,781
Int. Cl. H01r *11/24*
U.S. Cl. 339—108 TP **6 Claims**

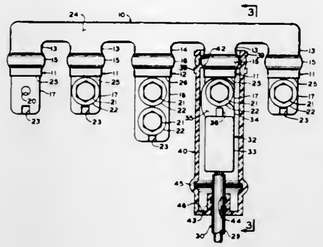


A test clip having opposed spring closed jaws has one electrically conducting jaw and an opposed jaw with a yieldable and deformable surface capable of conforming to the shape of a wire or terminal to which the clip is attached. The yieldable surface has a high coefficient of friction.

3,644,878
ELECTRICAL CONNECTOR
John A. Toedtman, Warson Woods, Mo., assignor to ITT Blackburn Corporation, St. Louis, Mo.
Original application Aug. 17, 1967, Ser. No. 661,318, now Patent No. 3,480,905, dated Nov. 25, 1969. Divided and this application Sept. 11, 1969, Ser. No. 857,136
Int. Cl. H01r *13/50*
U.S. Cl. 339—213 R **10 Claims**

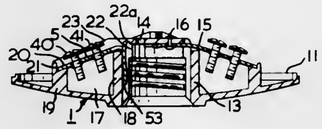
The connector includes a terminal having an outer insulating cover and an inner conducting portion and a conductor having an outer insulating cover and a conductor lug detachably connected to the inner conducting portion of the terminal. A resilient waterproof sheath extends between and is in sealing engagement with the insulating covers of both

the terminal and the conductor. Each sheath end includes internal, annular ribs having a smaller diameter than the diameter of the engaged insulating cover material, thus deforming the insulating material into indentations. The resulting pressure from the sheath combined with the heat



environment within the sheath provides a bonded seal between the sheath and the insulation material. The terminal outer insulating cover is formed into a retaining boss which is engageable by one of the internal, annular ribs at the terminal end of the sheath.

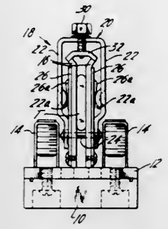
3,644,879
SNAP-IN CONTACT TERMINAL
Joseph Frederick Duffield, Georgetown, Ontario, and Zdzislaw R. Godziemba-Dambski, Bolton, Ontario, both of Canada, assignors to Smith & Stone Limited, Toronto, Ontario, Canada, by said Duffield
Continuation of application Ser. No. 716,165, Mar. 26, 1968, now abandoned. This application Apr. 6, 1970, Ser. No. 23,094
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **11 Claims**



The invention is directed to a one-piece snap-detent mounted terminal for use in electrical fixtures. A predominant feature of the invention resides in the fact that the disposition of the snap-detent within the fixture augments detent action so that the contact is virtually held substantially irremovable during use. Further, the terminal can be manually assembled into the fixture with the utmost ease. Removal of the terminal, however, requires considerable effort.

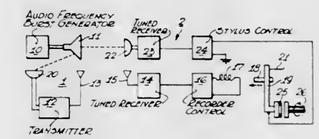
3,644,880
FUSE TERMINAL CONNECTOR
Arthur J. Worth, Newark, N.J., assignor to Federal Pacific Electric Company, Newark, N.J.
Filed Nov. 28, 1969, Ser. No. 880,605
Int. Cl. H01r *9/10*
U.S. Cl. 339—270 F **9 Claims**

An electrical connector for the blade-type terminal of a fuse has confronting contact plates to receive the blade-type fuse terminal, an inverted U-shaped clamping member pivoted to swing about an axis transverse to the contact plates, cooperating camming parts arranged to squeeze the contact plates against the fuse terminal, and a screw at the



top of the inverted "U" and arranged to bear against the top edges of the contact plates, to operate the camming parts.

3,644,881
RECORDER FOR ACOUSTIC RANGING SYSTEM
Walter Wyslouzil, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Feb. 9, 1970, Ser. No. 9,702
Int. Cl. H04b *11/00*
U.S. Cl. 340—6 R **5 Claims**

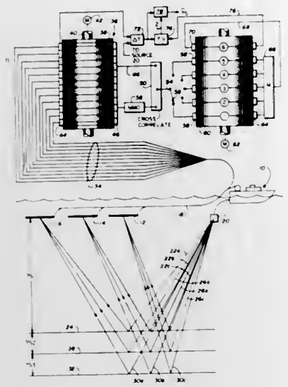


A sound ranging system in which coincident sound and radio pulses are emitted from a transmitting station. A receiving station is provided with a recorder having a stylus arm released for movement on reception of the radio pulse. A marking pulse is fed to the stylus on reception of the sound pulse, thereby providing an indication of the distance between the transmitting and receiving stations.

3,644,882
MARINE ACOUSTIC VELOCITY PROFILING
Kenneth E. Burg, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 28, 1969, Ser. No. 853,646
Int. Cl. G01v *1/28*
U.S. Cl. 340—7 **6 Claims**

A marine vessel streams a plurality of hydrophones while sequentially generating acoustic waves along a marine traverse at spaced-apart intervals to provide common depth point coverage of reflecting horizons within the water layer. The hydrophones receive reflections from the water layer to generate signals which are then recorded. Cross-correlations are taken of selected gates of the signals, the gates being related to one another in dependence upon the horizontal spacing between ones of the hydrophones. Acoustic velocity is the variable in the cross-correlations. The cross-correlation products are summed to produce a composite velocity correlation function, the peak point of which provides an indication of the acoustic velocity of the underwater section through which the reflections of the acoustic waves travel.

Arithmetic operations are performed on the acoustic velocities to provide a substantially real-time profile of the acoustic



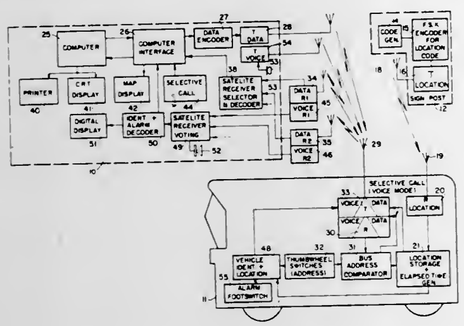
velocity of the intervals between the underwater reflecting horizons.

3,644,883

AUTOMATIC VEHICLE MONITORING, IDENTIFICATION, LOCATION, ALARM AND VOICE COMMUNICATIONS SYSTEM

William M. Borman, Niles, and Donald L. Walker, Addison, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 29, 1969, Ser. No. 888,519
Int. Cl. G08g *1/12*
U.S. Cl. 340—23 **19 Claims**



In a computer-controlled bus-monitoring system, each of the buses in the system is provided with a two-way radio for communication with the control center on either a voice channel or a data channel. In addition, each bus includes a second receiver for receiving signals from signpost transmitters located along the route, with the signpost information being stored in a temporary storage unit in the bus. The computer continually controls interrogation of all of the buses in the system on a data channel, with the buses automatically replying with the stored signpost location plus the time elapsed since that signpost location was stored in the bus. Deviations from schedule are displayed on a control console at the control center. The bus may be alerted to reply on a voice channel by a special code sent over the data channel with selective calling of the particular bus being provided, and a provision also is made for alerting the control center of an emergency on the bus by automatic data transmission from the bus over the voice channel.

3,644,884

MODULAR TIMER FOR USE IN TRAFFIC CONTROL SYSTEMS

John J. Matysek, Crozet, Va., assignor to Remote Controls Corporation

Filed May 20, 1969, Ser. No. 826,212
Int. Cl. G08g *1/07*
U.S. Cl. 340—40 **15 Claims**



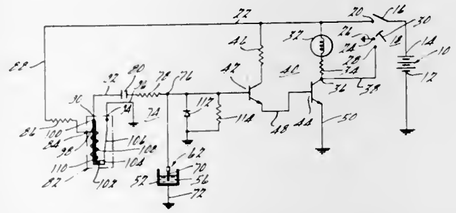
A cyclic timer and a traffic controller incorporating that timer, and an intersection traffic control system. The timer includes a plurality of timing modules interconnected so that when one module completes the timing of its interval, it turns on the next timing module which, in turn, turns off the module that just completed its interval. The traffic controller further includes a switching unit which accepts inputs from the cyclic timer and in response thereto provides excitation for an intersection right-of-way indicator such as a traffic light. The intersection right-of-way control system permits drivers in preferred directions to continuously receive right-of-way as they traverse the system and provides preferred streets for every direction of travel.

3,644,885

LOW LIQUID LEVEL INDICATOR

Bernard G. Radin, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1970, Ser. No. 48,064
Int. Cl. G01f *23/00*
U.S. Cl. 340—59 **3 Claims**



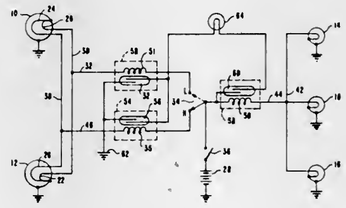
A low liquid level indicator particularly adapted for use in an automotive vehicle which includes a probe adapted to complete an electrical circuit to the container of the liquid when the liquid is at a satisfactory operating level. A bimetallic pulse-producing means is connected to the source of electrical energy for the vehicle thereby cyclically coupling the source of electrical energy to the probe through an AC coupling means. A voltage divider is formed by means of a resistor and the impedance of the probe and the container. A solid-state switching network, which controls a warning means, is connected to the junction of the resistance and this impedance. When the liquid is above or equal to the satisfactory operating level, the impedance between the probe and the container is sufficiently low that the switching network will not energize the warning means. When the liquid level, however, falls below this satisfactory operating level, this impedance rises sufficiently to switch the switching network into a conducting state thereby energizing the warning means.

3,644,886

MONITORING SYSTEM FOR VEHICLE LIGHTING CIRCUITS

Samuel Sabaroff, 5921 McDonie Avenue, Woodland Hills, Calif.

Filed Dec. 17, 1969, Ser. No. 885,842
Int. Cl. G08b *21/00*
U.S. Cl. 340—80 **8 Claims**



A failsafe, low-power-monitoring system for vehicle lighting circuits is disclosed which utilizes a characteristic high initial current transient surge to close a sensitive reed relay switch coupled to energize an instrument panel light which indicates when current is flowing through all of the lamp filaments of the lighting circuit being monitored. The energizing coil of the reed relay switch is provided with a predetermined number of turns so that the dropout current is a predetermined amount less than the steady state current of the lighting circuit with all lamps functioning, the failure of one or more of the lamps reducing the current flow to a level below dropout.

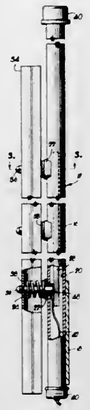
3,644,887

FENDER WARNING DEVICE

Edward J. Phillips, 1321 Union Avenue, Kansas City, Mo.

Filed Nov. 26, 1969, Ser. No. 879,989
Int. Cl. B60q *5/00*
U.S. Cl. 340—102 **4 Claims**

A warning device for a moving vehicle has an upright, electrically conductive tube connected in a series energizing circuit with an alarm, a battery, and a conductive bar shiftably mounted within the tube for movement into and out of engagement with the inner surface thereof. Three studs projecting outwardly from the bar through respective openings in the tube extend outwardly beyond a vulnerable exterior portion of the vehicle and support a shield in spaced relationship to the tube. Engagement of the shield with an obstruction causes the shield and bar to shift in unison with the bar contacting the inner surface of the tube, thereby completing the circuit and actuating the alarm. Resilient mounts within the tube openings support the studs and permit shifting of the bar toward the inner surface in a number of directions.

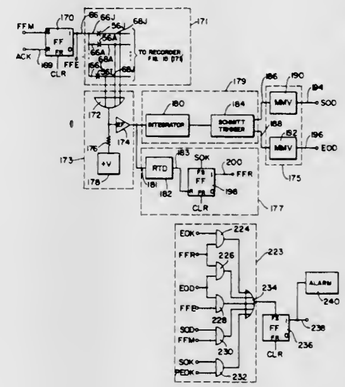


3,644,888

ERROR-DETECTING APPARATUS FOR A KEYSTROKE-OPERATED BUSINESS MACHINE

Francis C. Marino, Huntington, N.Y., assignor to Digitronics Corporation, Albertson, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,689
Int. Cl. G08c *25/00*; G06f *11/00*
U.S. Cl. 340—146.1 **19 Claims**



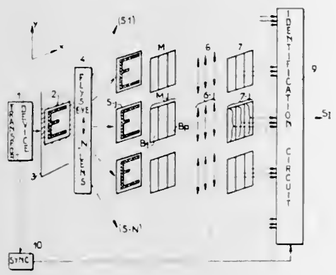
An apparatus which detects errors between the entry of data in a business machine of the type having a plurality of selectively and individually operable information keys movable between a rest and a first commitment level to enter information into the machine and a record of such information. Sensing means senses for discrepancies between machine-entered information and the record and an error-indicating means is energized when a discrepancy is sensed to indicate such error.

3,644,889

SYMBOL RECOGNITION SYSTEM, PARTICULARLY FOR ALPHA-NUMERIC CHARACTERS UTILIZING ELECTRO-OPTICAL TECHNIQUES WITH NONCOHERENT LIGHT

Claude Skenderoff, and Jean-Pierre Bourdin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 23, 1970, Ser. No. 31,276
Claims priority, application France, May 6, 1969, 14453
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3 G **5 Claims**



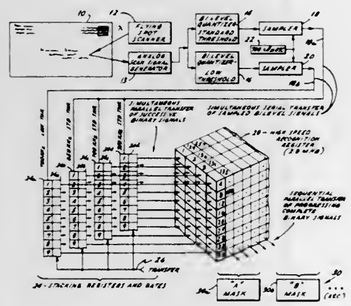
An optical multiplier, such as a fly's eye lens projects a symbol to be recognized on a plurality of masks, which are subdivided into strips, each strip of the mask having predetermined transparencies and transmitting elementary sections of the image to associated photoelectric transducers which are connected to logic circuits identifying those of the transducers associated with any one strip which, conjointly, have an extreme (e.g., maximum) output signal. Preferably, optical or electrical weighting elements are interposed to optimize the outputs of the transducers associated with the various masks.

3,644,890

OPTICAL CHARACTER RECOGNITION SYSTEM USING PARALLEL DIFFERENT SCAN SIGNAL PROCESSORS TO FEED HIGHER SPEED ASYNCHRONOUS RECOGNITION REGISTER

William J. Matthews, Glenside, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Dec. 29, 1969, Ser. No. 888,455
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 H **5 Claims**



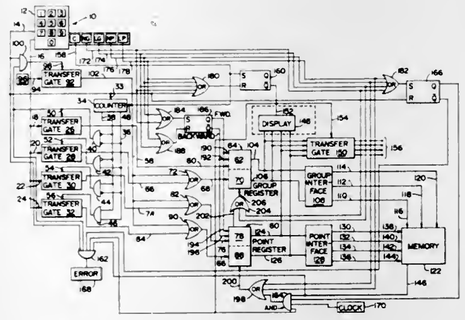
An Optical Character Recognition (OCR) system which scans a character to be recognized to produce a scanner output signal which feeds parallel different processors, the outputs of which are inspected sequentially in real time at a rate higher than the scan signal frequency by a recognition mask system. The parallel different processors derive from the scanner output signal a plurality of different though related output signals which in effect represent a plurality of scans of the character in different modes, thereby reducing the need to rescan nonstandard characters in such different modes. The parallel different processors utilize (1) bilevel quantizers with different threshold levels, thereby to provide a normalized binary signal for characters of nonstandard contrast, and (2) stacking shift registers, operating at different speeds, for receiving the outputs of the bilevel quantizers, thereby to provide a normalized binary signal for characters of nonstandard height. The information in the stacking registers, which store at any instant a part only of the scanner output signal, is periodically supplied, by parallel transmission, to respective groups of nonadjacent initial stages of a high-speed recognition register which operates asynchronously with the scanner and at a much higher speed than the scanner. A set of recognition masks, each designed to provide a maximum output in response to a signal representative of a particular character, is coupled to nonadjacent subsequent stages of the recognition register such that complete binary signals from the stacking register, representing differently processed versions of the scanner output signal, are inspected sequentially. In the course of this operation each mask inspects every binary signal. Identity of the scanned character is indicated by the mask which produces the highest output.

3,644,891

FIELD POINT ADDRESSING SYSTEM AND METHOD

Alan F. McCrea, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 21, 1970, Ser. No. 4,578
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 **13 Claims**



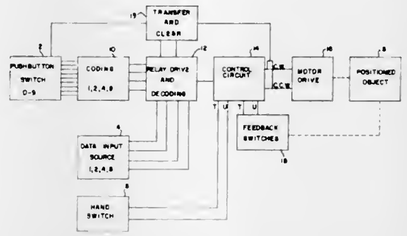
A system and method for addressing a plurality of field points having a group address and a point address including a group register for storing the group address of a selected field point and having counting means included therein for changing the stored group address, a point register for storing the point address of the selected field point and having counting means included therein for changing the stored point address, a field point selection input for entering the group and point addresses for the selected field point, and address changing inputs including an input for changing the stored group address in either a forward or backward manner without changing the stored point address, and an input for changing the stored point address in either a forward or backward manner without changing the stored group address.

3,644,892

RANDOM SELECTION POSITIONING CONTROL SYSTEM HAVING MULTIDIGIT CONTROL SIGNALS

Oleg Szymber, Elk Grove, Ill., and Frank P. Bennett, Northbrook, both of Ill., assignors to GAF Corporation, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,855
Int. Cl. H04q *3/00, 5/00*
U.S. Cl. 340—149 **28 Claims**



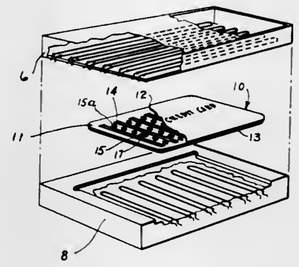
A random selection positioning control is shown in which discrete positions for an object such as a photographic slide carrier may be commanded in a random manner from any one of several input sources such as a pushbutton switch, a rotary switch or a remote data source such as a computer or a telephone transmission system. The position of the object to be controlled may be randomly selected while the control circuit includes means whereby the object will travel the shortest distance to the selected position in order to minimize time required for the completion of an operating cycle.

3,644,893

CREDIT CARD FOR INFORMATION VERIFICATION SYSTEMS

William J. Harwood, 3 Yon Road, Huntington, N.Y.

Filed Aug. 22, 1967, Ser. No. 662,392
Int. Cl. H04q *3/00, 5/00*
U.S. Cl. 340—149 **2 Claims**



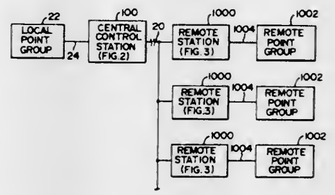
A memory unit comprising a pair of printed circuit boards, each board containing a plurality of loop circuits. The circuits on one board are formed parallel with a given X-axis and the circuits on the other board are parallel with a given Y-axis. The two boards are disposed in close proximity to each other so that their respective circuits effectively intersect and are adapted to receive between them a metallic plate having formed therein rows of holes some of which are connected to apertures by means of slots in the plate according to the encoded information desired. The holes not so connected relative to the slotted holes inhibit voltage induction at the intersections of the X- and Y-loop circuits where the unslotted holes are located.

3,644,894

SUPERVISORY CONTROL SYSTEM HAVING ALTERNATE SCANNING

Alan F. McCrea, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 24, 1969, Ser. No. 879,403
Int. Cl. H04q *5/00*
U.S. Cl. 340—163 **20 Claims**



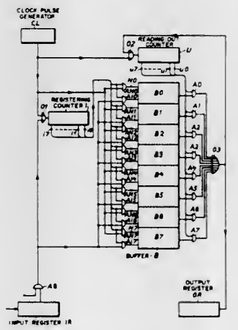
A supervisory control system including a plurality of remote stations each having a hundreds address, a group of field points associated with each remote station, each field point having a units address, and a central control station communicating simultaneously with all of the remote stations and generating alarm-scanning signals and control signals in sequential alternation with each signal including a two digit binary coded decimal address such that two alarm scanning or control signals are required to address an individual field point at a remote station whereby alarm scanning and control function operation may be continuously carried out without interference therebetween. The system detects off-normal conditions at the field points by scanning groups until a group having an off-normal condition is detected at which time the individual field points of the group are scanned to locate the field point having the off-normal condition.

3,644,895

BUFFER STORE ARRANGEMENT FOR OBTAINING DELAYED ADDRESSING

Goran Anders Henrik Hemdal, Tyreso, and Nils Bertil Lennmarker, Handen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

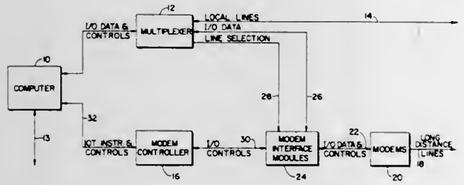
Filed Feb. 5, 1970, Ser. No. 8,937
Claims priority, application Sweden, Feb. 18, 1969, 2240/69
Int. Cl. G06f *13/00;* **H04q** *3/54*
U.S. Cl. 340—172.5 **1 Claim**



A buffer store arrangement in a data controlled telecommunication system for delaying by a predetermined number of periods of a clock frequency the addressing of addresses separated by a restoration value. The arrangement comprises

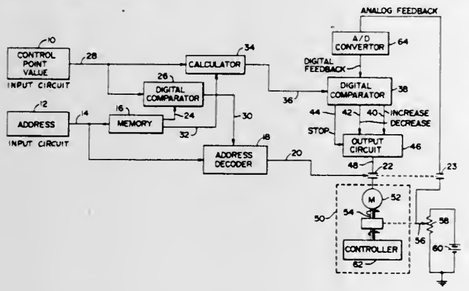
store cells with registering circuits and restoration circuits in the input side and reading circuits on the output side, a registering counter, a reading counter and a clock pulse generator. Each restoration circuit is connected to the clock pulse generator so that the restoration value is registered before the registering counter is activated. A data processor has an input register, which on its output is connectable to the registering circuits for registering data in a certain cell and to the registering counter for stepping at registering, and an output register. By setting the registering and reading counters so that they point out cells separated by a certain number of cells containing the restoration value, the desired delay is obtained which corresponds to the product of the clock pulse period and the said predetermined number of cells.

3,644,896
MODEM CONTROLLER
Ashwani K. Chaddha, 83 Brattle Street, Arlington, Mass.
Filed Mar. 30, 1970, Ser. No. 23,924
Int. Cl. G06f *3/00*; **H04j** *3/00*
U.S. Cl. 340—172.5 **14 Claims**



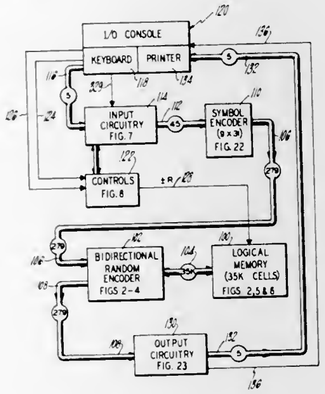
A data system for handling selectively controlling modems for the transfer of data to and from a plurality of remote, asynchronous data station by way of a serial line multiplexer interfacing with a small-scale data processor or computer. The system responds to the presence of a ring on any one of plural input lines to control the associated modem for the assembly of data characters. The system also operates to control a selected modem for the transmission of data characters over an associated output line to a remote data station.

3,644,897
AUTOMATIC CONTROL POINT ADJUSTMENT SYSTEM AND METHOD
Alan F. McCrea, and Hugh V. Snively, both of Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 15, 1970, Ser. No. 3,005
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **8 Claims**



A system and method for automatically adjusting a control point including input circuits receiving arbitrarily selected control point values in engineering units and addresses of controllers to be adjusted, a memory storing conversion data for the controllers corresponding to a reset range and a curve of positioning of the controllers versus control point values, a calculator receiving the conversion data and the selected control point value for a controller and calculating a required position for the controller to provide the selected control point value, and a comparator receiving the required position and the actual position of the controller and providing output signals to move the controller to the required position.

3,644,898
INFORMATION ASSOCIATION THROUGH LOGICAL FUNCTIONS DERIVED FROM LANGUAGE
Paul B. Post, South Norwalk, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 30, 1970, Ser. No. 33,807
Int. Cl. G06f *7/30*, *15/40*
U.S. Cl. 340—172.5 **16 Claims**

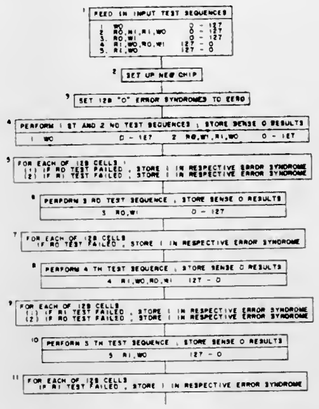


In a data-processing apparatus of a new type, information consists of a plurality of triplets, each of which is a group of three words in ordinary language, selected on the basis of their mutual semantic relevance. The apparatus does not store the words themselves, but stores, for each triplet, a logical function of the internally encoded representations of the words. For any triplet, the three words are entered into the processor where each word is randomly encoded into a plurality of distinct bits, each associated with a distinct memory cell in a large collection of cells. A count is made by logical apparatus associated with each cell, and where a count of three is achieved by the successive entrance into the processor of the three words in a triplet, that cell is set into a logical 1 state and becomes a permanent part of the memory of the apparatus. Inquiry into the apparatus is based on providing two words, the apparatus in turn supplying the third word in the case where the two words have previously been entered as part of a triplet, as described above. Exemplary data handling and control apparatus is also disclosed.

3,644,899
METHOD FOR DETERMINING PARTIAL MEMORY CHIP CATEGORIES
Conrad J. Boisvert, Jr., Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.
Filed July 29, 1970, Ser. No. 59,109
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **19 Claims**

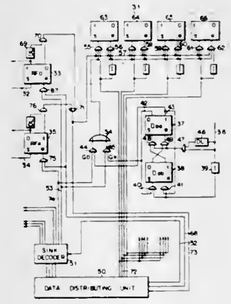
A machine-practiced method for determining partial memory chip categories. In the case of 128-cell chips having seven address bits, there are fourteen partial memory chip

categories; permanently addressing any one of the seven address lines with a 1 or a 0 produces an effective 64-cell chip, any cell of which can be selected depending upon the address bits extended to the other six address lines. Each address bit of each bad cell on the chip is examined. Depending on its



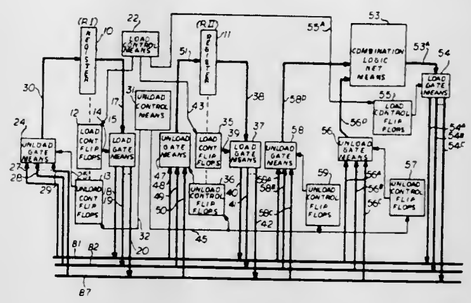
value, one of two respective partial chip categories is eliminated. After all cells have been processed in this manner, the partial chip categories which have not been eliminated are those applicable to the chip.

3,644,900
DATA-PROCESSING DEVICE
Tetsuya Mizoguchi, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 1, 1969, Ser. No. 881,141
Claims priority, application Japan, Nov. 30, 1968, 43/87729
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **7 Claims**



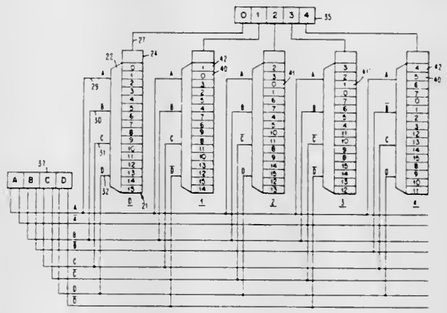
In a data-processing device controlled by a high-speed control arithmetic unit the average access time is decreased by preventing the entry into a receiving register of a memory word which has been found unnecessary during the memory access period. In case an advance command is being issued designating one sink code out of a plurality of sink codes assigned to a certain receiving register, when the necessity arises for controlling transfer to another register due to the detection of a branch, interruption, etc., then another sink code is designated, in place of the originally designated sink code, out of the remaining codes within said receiving register without awaiting the termination of the original information readout, and that addressed register to which the control is transferred is read out.

3,644,901
DIGITAL SYSTEM FOR CONTROLLING SIGNAL TRANSFERS BETWEEN REGISTERS AND DATA BUSES
Roy J. Zingg, Ames, Iowa, assignor to Iowa State University, Ames, Iowa
Filed July 24, 1969, Ser. No. 844,319
Int. Cl. G06f *15/00*, *15/56*
U.S. Cl. 340—172.5 **5 Claims**



The selective transfer of data signals from selected ones of a plurality of storage registers to selected ones of a separate number of data buses is achieved by storing control signals in control registers associated with each of the storage registers. The control signals indicate the data bus to which the signal contents of the storage register associated with that control register are to be transmitted; and gating circuitry responsive to the control register signals couple the signal contents of the registers to the proper data buses. The communication between registers and buses is maintained until the contents of one of the control registers is changed. Thus, a number of registers may communicate with a number of buses simultaneously; and the contents of a bus may be operated on directly. Circuitry is also disclosed for simultaneously coupling the signal contents of data buses to selected registers.

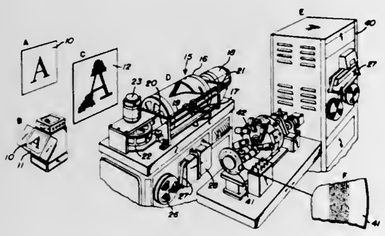
3,644,902
MEMORY WITH RECONFIGURATION TO AVOID UNCORRECTABLE ERRORS
William F. Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 18, 1970, Ser. No. 38,220
Int. Cl. G06f *13/00*
U.S. Cl. 340—173 R **10 Claims**



A memory having circuits for correcting single errors in a word read from the memory is provided with means to reconfigure the memory so that a configuration having a double,

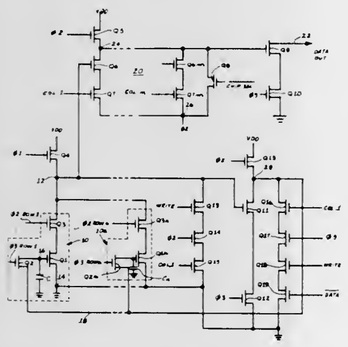
uncorrectable, error is changed to a configuration having two single, correctable errors. In one embodiment, interchanging plug-in components for two or more bit positions produces a new configuration; in another embodiment, the wiring to the plug-in components is easily changeable.

3,644,903
CODED RECORD METHOD AND APPARATUS
Edwin R. Kolb; John F. Blaha, both of Cleveland, and Webster C. Roberts, South Euclid, all of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Original application Nov. 3, 1966, Ser. No. 591,734, now Patent No. 3,588,870. Divided and this application June 17, 1970, Ser. No. 46,900
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 R **6 Claims**



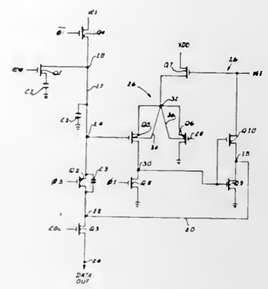
Coded record manufacture and apparatus suitable for storing digital representations of graphical images, such as characters, are disclosed herein for use in subsequent reproduction of the images, as on the face of a cathode-ray tube. Images or characters are scanned to obtain electrical signals indicative of the features thereof and the signals are recorded as digital representations.

3,644,904
CHIP SELECT CIRCUIT FOR MULTICHIP RANDOM ACCESS MEMORY
Lamar T. Baker, Hauppage, N.Y., assignor to General Instrument Corporation, Newark, N.J.
Filed Nov. 12, 1969, Ser. No. 875,925
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **9 Claims**



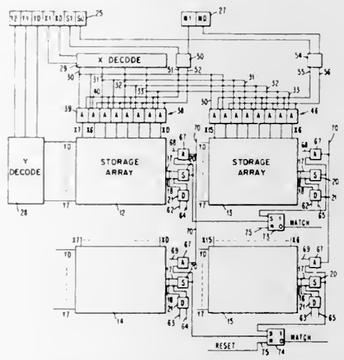
A random access read-write memory comprises memory sections formed on a plurality of chips. The decoding of the chip select signal inhibits the write command signal from all but the selected chip, thereby permitting new data to be written only at the selected chip.

3,644,905
SINGLE DEVICE STORAGE CELL FOR READ-WRITE MEMORY UTILIZING COMPLEMENTARY FIELD-EFFECT TRANSISTORS
Lamar T. Baker, West Islip, L.I., N.Y., assignor to General Instrument Corporation, Newark, N.J.
Filed Nov. 12, 1969, Ser. No. 875,968
Int. Cl. G11c *11/40*; H03k *3/286*
U.S. Cl. 340—173 FF **13 Claims**



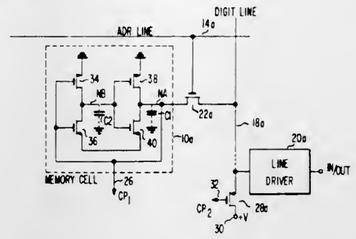
A memory cell for a random-access memory comprises a data storage element at which data is stored at one of two discrete levels. When the memory cell is addressed, a signal corresponding to the stored data signal is developed and is compared to a reference signal at a comparator, thereby to produce an output data signal. The comparator may be formed of two field-effect transistors respectively receiving the data and reference signals at their gates. The sources of these transistors may be connected to the substrate to ensure minimum threshold voltages for these devices.

3,644,906
HYBRID ASSOCIATIVE MEMORY
Arnold Weinberger, Newburgh, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,834
Int. Cl. G11c *15/00, 5/02*
U.S. Cl. 340—173 AM **7 Claims**



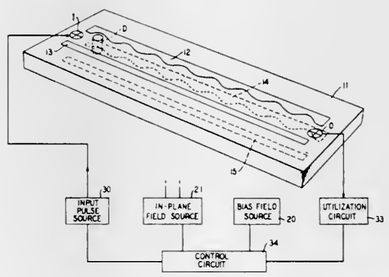
A memory is disclosed in which words are located by both associative and nonassociative addressing. The nonassociative portion of the address defines a general category for the word being searched and a corresponding portion of the memory. The associative portion of the address is searched within the addressed portion of the memory without regard to the actual memory location. Conventional nonassociative storage cell arrays are arranged to be addressed as an associative memory of three-state storage cells.

3,644,907
COMPLEMENTARY MOSFET MEMORY CELL
James R. Gricchi, Catonsville, and James R. Hudson, Perryville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,603
Int. Cl. G11c *11/40, 7/00, 5/02*
U.S. Cl. 340—173 FF **13 Claims**



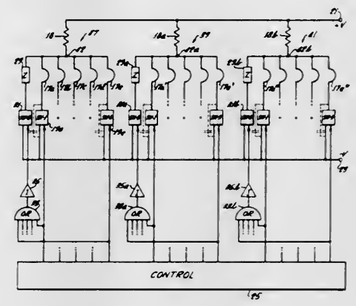
A semiconductor read/write memory array and memory cell therefore including complementary metal oxide semiconductor field-effect transistors (MOSFETs) coupled together as a first and a second inverter circuit with direct cross-coupled connections therebetween for providing a flip-flop circuit. Each bit of the memory array is comprised of at least five MOSFET devices operated from a single clocked power supply source wherein four of the MOSFET devices are operated as complementary pairs to comprise the first and second inverters. The flip-flop circuit is clocked or pulsed for turning the MOSFET devices "off" of one of the inverters referred to as the output inverter to trap an electrical charge at one of the circuit nodes in order to obtain a high input impedance so that the state of the cell can be changed when addressed or alternatively to preset the logic output state of the memory cell. The memory cell is coupled to a common input/output digit data line and an address line of the memory array by means of a selection switch MOSFET so that data is written into and read out of the memory cell on the same digit data line through the selection switch MOSFET when turned "on" by means of a signal applied to the address line. Furthermore, nondestructive readout of the state of the memory cell when addressed is achieved by precharging the digit data line to a predetermined potential prior to the energization of the selection switch MOSFET during the read mode.

3,644,908
DOMAIN-PROPAGATION ARRANGEMENT
Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 29, 1970, Ser. No. 50,778
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **11 Claims**



An arrangement for moving single-wall domains is described which employs an in-plane magnetic field to incline a domain from alignment with an axis of preferred magnetization of the material in which it is moved. As the in-plane field reorients, the orientation of the inclination changes. The changing domain inclination is converted to domain translation along an axis defined by a magnetic overlay in which a permanent magnetic pattern is printed.

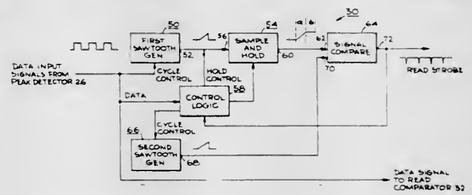
3,644,909
DRIVE ARRANGEMENT FOR READ-ONLY MEMORY
Jozef Furst, Mission Viejo, Calif., assignor to Datapac, Incorporated, Santa Ana, Calif.
Filed Aug. 10, 1970, Ser. No. 62,519
Int. Cl. G11c *17/00*
U.S. Cl. 340—174 SP **12 Claims**



A linear transformer read-only memory of the type having an array of magnetic cores linked in different combinations by a large number of drive lines. Each core is also linked by an individual sense winding. Whenever a particular drive line is pulsed, the resultant current produces an output across the sense windings of those cores which that drive line links.

Several of the drive lines are pulsed through a common current-limiting resistor. Leakage currents in nonpulsed drive lines are reduced by an auxiliary load which is controlled to draw current through the common current-limiting resistor when none of the drive lines connected to that resistor is pulsed.

3,644,910
READOUT CIRCUITRY WITH COMPENSATION FOR SPEED VARIATIONS
Gerald L. Smith, Garden Grove, Calif., assignor to Computer Mate, Inc., San Clemente, Calif.
Filed Sept. 16, 1970, Ser. No. 72,784
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H **17 Claims**



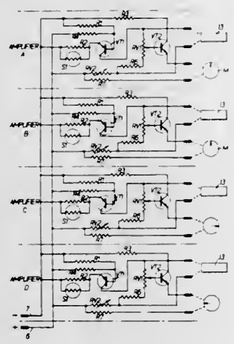
An improved read control arrangement for reading the binary memory information content in a binary memory information signal independent of the memory medium or receiving device speed variations during the transmission of the binary information signal. A magnetic tape, for example, may have a binary type signal thereon and the tape may be driven by means that imparts variable speed and consequentially, a variable rate of binary signal information transmission from the tape. It will be appreciated that the variations in speed are those that will normally occur due to type of tape drive utilized, variations of tape speed during information write in, and/or the lack of costly devices to ensure a substantially constant speed tape drive. A binary data signal is generated from the binary information on the tape and

the binary data signal is applied to a read control means. The read control means receives the binary data signal and is provided with a first sawtooth generator, a sample and hold means, a second sawtooth generator, a signal compare means and a logic control means. The first sawtooth generator commences generating a linearly rising first ramp voltage signal when the binary signal goes from its low value magnitude state condition to its high value magnitude state condition and continues increasing in value throughout the entire high magnitude data signal pulse until it is terminated by the binary data signal going from the high value condition to the low value condition. The magnitude of the first ramp voltage signal from the first sawtooth generator that is achieved at the end of its duty cycle, or ramp rate, when it cuts off, is held by a sample and hold means for a predetermined time period. A second sawtooth generator has a duty cycle, or ramp rate, approximately 150 percent longer than the duty cycle of the first sawtooth generator and is controlled to provide a linearly increasing second ramp voltage output signal commencing at the termination of the first ramp voltage output signal and continuing until the second ramp voltage outlet signal reaches a magnitude that is equivalent to the voltage in the sample and hold means. Both the output signal from the sample and hold means, comprising the peak voltage for the first sawtooth generator and the output signal from the second sawtooth generator are applied to a signal compare means which, for example, may be an operational amplifier. When the second sawtooth generator output signal reaches the voltage value of the sample and hold means output signal the operational amplifier generates a read strobe pulse. The read strobe pulse may be utilized by a computer as a clock pulse reference signal to indicate the precise point of time when the binary information in the binary data signal may be read to obtain a correct reading of the information thereon. Appropriate controls are provided to recycle the two sawtooth generators and the sample and hold means after each cycle of operation.

3,644,911
REMOTE POSITION INDICATOR

David John Wiles, Churchdown, Gloucester, and John Milford Wright, Tewkesbury, both of England, assignors to Dowty Hydraulic Units Limited

Filed Apr. 8, 1969, Ser. No. 814,257
Int. Cl. G08c *15/00*
U.S. Cl. 340—177 VA **5 Claims**

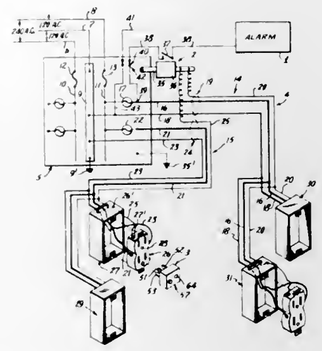


A remote position indicator for a movable member located in an inflammable atmosphere which comprises a variable resistor mechanically connected for adjustment by the movable member, an intrinsically safe power supply arranged to pass current through the variable resistor, an amplifier comprised entirely by one or more transistors and one or more resistors connected to receive the voltage signal delivered by the variable resistor, and a meter connected to receive the amplified signal delivered by the amplifier whereby to indicate the position of the movable member.

3,644,912
ALARM SYSTEM

Therron J. Allen, Jr., 7432 Westwood Park Lane, Falls Church, Va.

Filed Dec. 19, 1969, Ser. No. 886,669
Int. Cl. H04m *11/04*
U.S. Cl. 340—213 **26 Claims**



An alarm system in which the ground conductor of the building is used to transmit a current from a detecting unit to a sensing unit which is at the fuse box or service entrance of the electrical system for the building. The detecting unit includes a switch which connects the hot wire of the wiring system to the ground conductor via a high-impedance load so that some current flows through the ground wire. The sensing unit operates an alarm when it detects current flow through the ground wire. The system eliminates the need for separate wiring from each detector unit to the central sensing unit and any room in the building or dwelling can be provided with a detecting unit simply by plugging the detecting unit into an electrical outlet. An indicator on each detecting unit provides a visual indication of the correct ground wiring and the proper connection of the detecting unit to the wiring.

3,644,913
THERMAL CHANGE DETECTOR OF THE LINEAR THERMOPILE TYPE

Masatoshi Matsui, Tokyo-to, Japan, assignor to Asano Bosai Kogyo Kabushiki Kaisha, Mitaka-shi, Tokyo-to, Japan

Filed Dec. 16, 1969, Ser. No. 885,505
Int. Cl. G01k *7/02*; **H01v** *1/32*
U.S. Cl. 340—228 R **10 Claims**

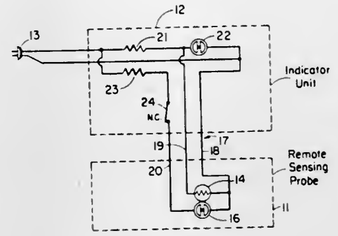


An improved thermal change detector of the linear thermopile type is disclosed. A transient temperature differential between adjacent thermopile junctions is obtained by shaping each link in the linear thermopile asymmetrically and joining them so that the thermal capacity of the "hot" junctions is smaller than that of the "cool" junctions. When a rapid rise occurs in the temperature of the environment, as for example when a fire breaks out, the "hot" junctions, having less thermal capacity, heat up more quickly than the "cool" junctions. This produces an electric potential across the thermopile which may be used to trigger alarm circuitry.

3,644,914
SLUDGE INDICATOR FOR SEPTIC TANKS

James J. Veasaw, Middle Settlement Road, New Hartford, N.Y., and John P. Magyar, 1218 Kellog Avenue, Utica, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,833
Int. Cl. G08b *21/00*
U.S. Cl. 340—236 **1 Claim**

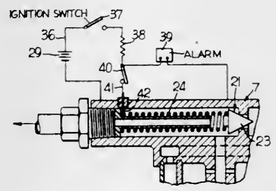


An opaque sensing device having a light-dependent resistor and a light source spaced apart so that material to be analyzed can be passed between them. The light-dependent resistor is connected to an impedance, such as a series resistor, across a voltage source to cause a fraction of the voltage to be present across the light-dependent resistor. A light source, such as a neon bulb, provides the only illumination to the resistor, and the impedance of the latter is therefore a measure of the opacity of the light path. When this sensing system is immersed in a septic tank, the buildup of sludge in the tank eventually reaches a level at which the light is interrupted, and the resistance of the light-dependent resistor changes, resulting in a change in voltage across it. This voltage is measured by an indicator outside of the septic system to determine when the sludge level has reached the immersed unit. The indicator may consist of a second neon bulb electrically connected across the light-dependent resistor. A normally closed switch may also be connected in series with the light source to interrupt current to the latter in order to create the effect of opaque matter to determine whether the indicator light will properly show a condition of opacity.

3,644,915
FILTER BYPASS INDICATOR

James R. McBurnett, Stillwater, Okla., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 27, 1969, Ser. No. 853,463
Int. Cl. G08b *21/00*
U.S. Cl. 340—239 F **6 Claims**

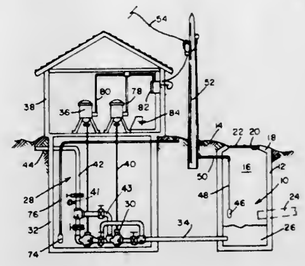


An oil filter bypass indicator in which the bypass valve is used as a switch to open and close an electrical circuit. The indicator may be a light bulb, a buzzer, or any suitable means to indicate the filter is not filtering and the oil is being bypassed around the filter through the bypass valve.

3,644,916
SEWER LIFT ALARM SYSTEM

Clarence Oval Payne, Sr., 1813 N. Kichapoo, Shawnee, Okla.

Filed July 3, 1969, Ser. No. 838,838
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 **4 Claims**

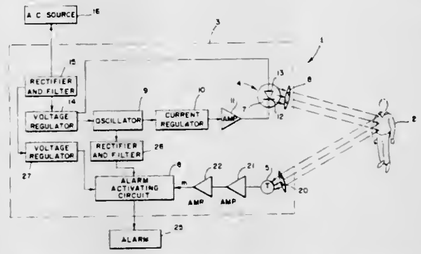


An alarm system for sanitary sewers, and the like, to provide an alert indicating the approach of a potentially dangerous situation which might result in damage or backup of sewage in a particular location in the sewage system. The signal system indicates excessive buildup of sewage in any sewer lift in the sewage system in such a manner that the location of the defective lift may be readily ascertained. In addition, the system is adapted for monitoring the overall situation at the sewer lift in order to determine the exact trouble, such as a power failure outside the system, power failure inside the system, inadequate operation of the pumping equipment, and the like. A repair of maintenance crew may be dispatched to the particular malfunctioning lift for correction of the difficulty prior to sufficient buildup of the sewage in the lift as to inflict damage in the surrounding area.

3,644,917
SINGLE TERMINAL ELECTRO-OPTICAL INTRUDER DETECTION DEVICE

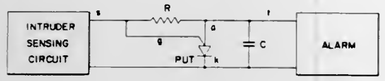
David E. Periman, Rochester, N.Y., assignor to Detection Systems, Inc., East Rochester, N.Y.

Filed Sept. 18, 1969, Ser. No. 858,927
Int. Cl. G08b *17/10*
U.S. Cl. 340—258 B **8 Claims**



An improved single terminal electric eye including a modulated luminous diode as a source of radiant energy and an alarm-activating circuit for detecting any variation, above or below a steady-state level, in reflected energy incident upon the transducing element of the electric eye. The alarm-activating circuit comprises a pair of averaging circuits connected in series and a comparator, connected to the outputs of the averaging circuits, which transmits an alarm-activating signal whenever the outputs of the averaging circuits differ. When the transducer is subjected to constant modulated illumination, the outputs of the averaging circuits are at the same steady-state level. When, however, the illumination increases or decreases, the outputs of the averaging circuits tend to follow at different rates, thereby providing an unbalanced input to the comparator whereby an alarm signal may be transmitted.

3,644,918
INTEGRATING CIRCUIT USING A PROGRAMMABLE UNIJUNCTION TRANSISTOR
David E. Perlman, Rochester, N.Y., assignor to Detection Systems Inc., Rochester, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,567
Int. Cl. H03k *17/28, 5/159*
U.S. Cl. 340—276 2 Claims



A unique integrating circuit adapted for use in condition-responsive systems for preventing false alarming due to a series of rapidly occurring transient signals. A programmable unijunction transistor is used to rapidly discharge the capacitive element of the integrator in response to a slight decrease in input signal.

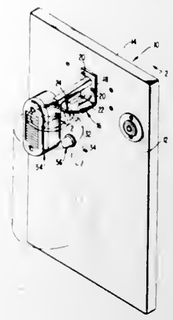
3,644,919
SIGNALLING DEVICE FOR INDICATING IMPROPER POSITION OF A SKIER
William R. Mathauser, P.O. Box 5, Sun Valley, Idaho
Filed Dec. 18, 1970, Ser. No. 99,632
Int. Cl. G08b *21/00*; A63b *69/18*
U.S. Cl. 340—279 32 Claims



A signalling device for indicating improper position of a skier or the like comprising means attachable to the body of the skier and including means responsive to the position of the skier operatively connected with indicating means for causing a signal to indicate when the skier is not in the proper position.

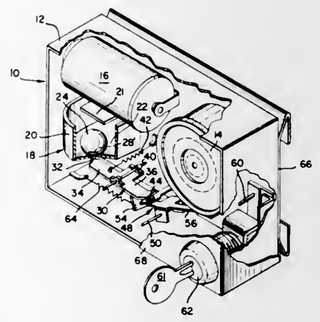
3,644,920
COMBINATION SUPPORT AND ALARM SYSTEM
Melvyn T. Cartledge, 57 Mobile Avenue, N.E., Atlanta, Ga.
Filed Jan. 27, 1969, Ser. No. 794,305
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 1 Claim

A panel mounts a hook having an upturned end and which is adapted to support an article and an actuator bar is pivoted to the panel and overlies the hook so that if the article is removed from the hook, the bar is displaced. An alarm circuit is actuated by displacement of the bar and includes a normally open switch adapted to be closed by the bar when displaced, a signalling device and a holding relay for maintaining energization of the alarm circuit when once tripped.



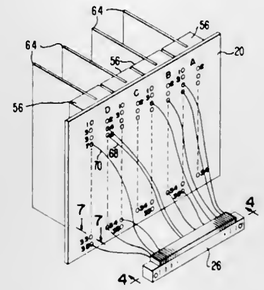
A key control switch is utilized to interrupt the effect of the holding relay.

3,644,921
ALARM WITH TRUNDLE SWITCH
Richard E. Duggan, Glastonbury, Conn.; Bernard L. Sandberg, Kings Point; Manfred Reisner, Woodmere, and Allan J. Gascoigne, New York, all of N.Y., assignors to Cat Products, Inc., Melville, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,256
Int. Cl. G08b *13/02*
U.S. Cl. 340—283 17 Claims



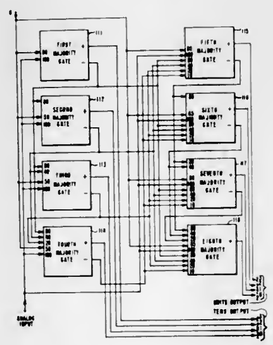
The invention relates to a burglar alarm system which may be connectable to portable office equipment of varying types. The invention provides a noise-generating element such as a horn which is connectable to a battery to permit the sounding of the horn when the office equipment is either tilted or lifted. An angular displacement arrangement permits the connection of the battery to the noise-generating element and comprises a cuplike member having an aperture in the center thereof. A solid of revolution is freely movable on the bottom surface of said cuplike member to either prevent or permit the projection of a pin through the aperture, when the office equipment or other portable equipment on which the burglar alarm is installed, is either tilted or moved. The pin prevents the solid of revolution from shutting off the alarm system once the solid of revolution is moved from its normal position over the aperture, so that the alarm sound continues until the alarm is reset by a key mechanism.

3,644,922
HIGH-RESOLUTION FIBER OPTIC DISPLAY AND MICROFILM PRINTER
Richard N. James; James E. Applequist, both of San Jose, and Daniel M. Roberts, Saratoga, all of Calif., assignors to Image Products Corporation, Santa Clara, Calif.
Filed July 14, 1969, Ser. No. 841,485
Int. Cl. G09f *9/34*
U.S. Cl. 340—324 R 6 Claims



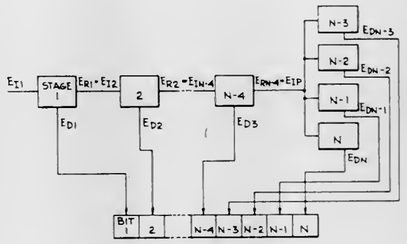
A computer output display with a plurality of light sources shining through optical fibers. A line of rectangular fiber bundles at the display end display selected characters depending on which fibers are illuminated in each bundle, and the light source ends of fibers from different bundles are connected to common light sources so that the same characters are displayed simultaneously on many bundles in the line. Scanning means for the line limits the operative area of the line at any instant to a set of fiber bundles which can all display different characters. The fibers are woven from a continuous strand while the fiber portions which end up as the light displaying and light receiving ends of individual fibers are properly supported in a line and collected into bundles respectively.

3,644,923
THRESHOLD AND MAJORITY GATE ELEMENTS AND LOGICAL ARRANGEMENTS THEREOF
Roy P. Foerster, Thousands Oaks, Calif., assignor to The Bunker-Ramo Corporation, Stamford, Conn.
Original application Aug. 24, 1966, Ser. No. 574,790, now Patent No. 3,522,445, dated Aug. 4, 1970. Divided and this application Jan. 22, 1970, Ser. No. 10,682
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 AD 10 Claims



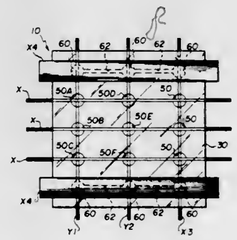
This invention relates to threshold and majority logic elements and threshold logic systems, and more particularly to improved threshold and majority gate circuit elements providing high "fan-in" and "fan-out" capabilities that permit the practical realization of threshold logic systems.

3,644,924
ANALOG-TO-DIGITAL CONVERTER
Tome Kitaguchi, Silver Spring, Md., and Herman L. Renger, Calabasas, Calif., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Dec. 17, 1969, Ser. No. 885,836
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD 6 Claims



A converter responsive to analog input signals for providing "reflected binary" or Gray code output signals. The converter is comprised of a plurality of stages of essentially two types; i.e., serial-type stages and parallel-type stages. Each serial-type stage responds to an input signal applied thereto to yield both a bit output signal and a residual analog output signal. Two or more serial-type stages are connected in cascade with the residual analog output signal developed by each stage being applied as the analog input signal to a succeeding stage. The last cascaded stage provides its residual analog output signal in parallel to a plurality of parallel-type stages. Each parallel-type stage provides a bit output signal and is comprised of one or more differential comparators, each of which compares the level of the analog input signal applied thereto with a different decision level.

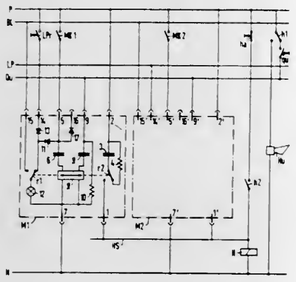
3,644,925
GASEOUS DISCHARGE DISPLAY PANEL WITH AUXILIARY EXCITATION CELLS
George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed Jan. 7, 1969, Ser. No. 791,208
Int. Cl. H01j *17/30*
U.S. Cl. 340—378 R 11 Claims



A display panel comprising a plurality of gas-filled cells, each having a pair of energizing electrodes and adapted to be energized in groups to display characters. The panel also includes a plurality of cells which are adapted to be energized so that they glow continuously and facilitate the turning on of the groups of cells which are used to display a character. These auxiliary energizing cells are hidden from view so that

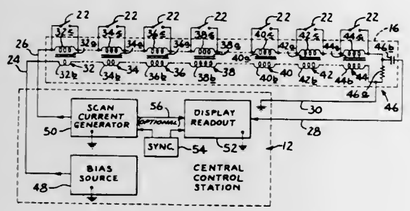
they perform their function without being seen and without interfering with viewing of the primary characters.

3,644,926
CHECKBACK SYSTEM FOR VISUAL AND AUDIBLE INDICATION OF DETECTED PROCESSES
Otto Wildgruber, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Nov. 3, 1969, Ser. No. 873,456
Claims priority, application Germany, Nov. 14, 1968, P 18 08 773.5
Int. Cl. G08b *23/00*
U.S. Cl. 340—412 **4 Claims**



A checkback system for visual and audible indication of detected processes comprises a mosaic switchboard assembly having a plurality of identical modules. Each of the modules provides a continuous visual signal when it is in inoperative condition and an intermittent visual signal when it is in operative condition.

3,644,927
EVENT MONITOR SYSTEM
James Green, Los Angeles, Calif., assignor to Gulton Industries, Metuchen, N.J.
Filed May 27, 1969, Ser. No. 828,124
Int. Cl. G08b *26/00, 23/00*
U.S. Cl. 340—413 **15 Claims**



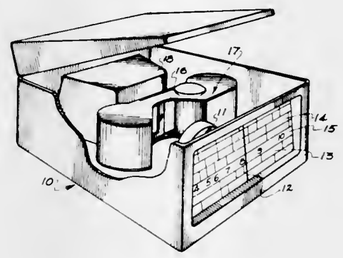
An event monitoring system for displaying information of the condition of a plurality of condition responsive means which may be electronic switches or relay contacts which have circuit opening and circuit closing conditions indicating two possible conditions (i.e., normal and abnormal) of the condition or variable being monitored. The event monitoring system includes saturable core devices having respective separate saturable cores most desirably each carrying a biasing winding and a scanning winding, the biasing windings being connected in series and the scanning windings being connected in series. The biasing windings have different numbers of turns with respect to one another so a predetermined magnitude of biasing current passing through the series connected biasing windings will saturate the cores to provide progressively increasing degrees of saturation in the cores. The series connected scanning windings have the same or similar numbers of winding turns as each other scanning winding and a scanning current of progressively increasing value is delivered to the scanning windings to develop an oppositely directed progressively increasing electromagnetic field sequentially to unsaturate the cores at predetermined current values to cause sequential electrical output signals to be generated thereby. Associated condition responsive means are connected to each saturable core device, such as across each scanning windings, and the condition responsive means is a normally open switch so closure of the switch will prevent the unsaturation of the core by the scanning current. The absence of an electrical output signal at the current value assigned to the core device involved indicates that the variable involved is normal or abnormal whichever the case may be.

3,644,928
HORIZONTAL SITUATION INDICATOR
Jerauld George Wright, Ottawa, Ontario, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence
Filed Mar. 21, 1969, Ser. No. 809,358
Claims priority, application Canada, Mar. 29, 1968, 16,257
Int. Cl. G01s *1/46*
U.S. Cl. 343—106 R **38 Claims**



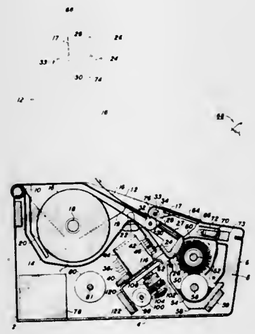
A horizontal situation display instrument, primarily for an aircraft, having a compass card servo driven from a gyrocompass system, a track bar adjustable relative to the compass card and movable therewith and a meter bar arranged to repeat radio bearing information of both geographical bearing and relative bearing.

3,644,929
TELEVISION MONITORING AND PROGRAM INFORMATION DISPLAY DEVICE AND METHOD
Ethor S. Chavez, 7631 Pomelo Drive, Canoga Park, Calif.
Filed Sept. 21, 1970, Ser. No. 73,747
Int. Cl. H04h *9/00*
U.S. Cl. 346—1 **4 Claims**



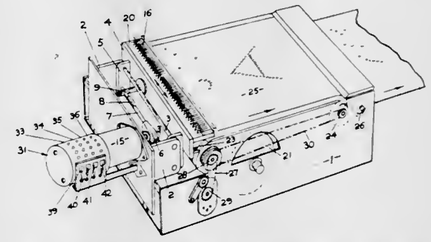
A continuous real time method for storing information as to which, if any, channel a particular television or radio set is tuned to, and the composition of the audience.

3,644,930
MULTISTYLUS RECORDER
Klaus K. Stange, Pittsford, and Thomas K. Robinson, Jr., Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 2, 1969, Ser. No. 829,638
Int. Cl. G03g *15/22*
U.S. Cl. 346—74 ES **10 Claims**



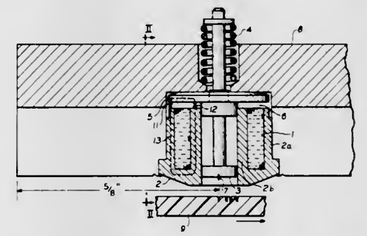
A multistylus electrographic recorder including a housing with a hinged top panel which supports the recording medium path defining structures and a viewing window as well as the medium supply and the manual/automatic driving assembly therefor. This latter assembly operates automatically with the top panel closed and is manually operable with the top panel in a loading position. Recording, developing and fusing apparatus are also disclosed.

3,644,931
MULTISTYLI RECORDERS WITH STYLI CYCLICALLY MOVED THROUGH INTERSTYLUS SPACING
Philip Roland Stringer, and Eric Charles Gatland, both of Devonport, Auckland, New Zealand, assignors to The New Zealand Inventions Development Authority, Wellington, New Zealand
Filed Sept. 10, 1969, Ser. No. 856,605
Claims priority, application New Zealand, Sept. 10, 1968, 153710
Int. Cl. G01d *15/06;* **H04n** *1/12, 1/18*
U.S. Cl. 346—74 E **5 Claims**



A multichannel recorder has a series of styli, movable cyclically transversely relative to a sheet of electrosensitive material movable longitudinally, the styli being connected individually to a source of voltage through individual trigger means, triggering of any trigger means causing the voltage to make a dot on the electrosensitive material at the position of the appropriate stylus, the combination of the motion and of the dot resulting in a readable trace appearing on the surface of the electrosensitive material.

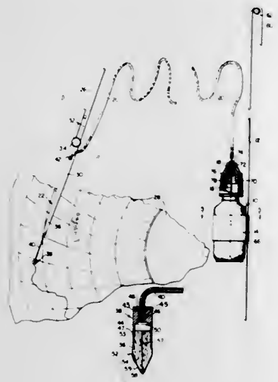
3,644,932
HIGH-SPEED INDENTING RECORDER
John G. Wallace, Ashland, and Edmund Schreiner, Newtonville, both of Mass., assignors to Synergistics, Inc.
Filed Oct. 8, 1969, Ser. No. 864,846
Int. Cl. G01d *15/02*
U.S. Cl. 346—77 **8 Claims**



An electromechanical indenting recorder consists of a solenoid coil, a ferromagnetic housing about the coil, and a nonferromagnetic plunger that moves inside the core. The plunger has a ferromagnetic cover attached thereto which cover extends at least in part over the core and the housing forming an annular airgap therebetween. The cover serves to stop the movement of the plunger by contacting said housing, and the core cover, core and housing form a magnetic circuit with the airgap. An indenting knife is carried by one end of the plunger opposite from the cover and in operation serves to make a series of indentations, usually in a binary code form, in a suitable receptor sheet such as a pocket credit card. The plunger and cover are very light such that they can move rapidly under the influence of the magnetic field created when the solenoid is energized. The solenoid is ini-

tially energized and midway through the stroke of the plunger the driver current is cut off and the solenoid circuit remains closed through a diode such that the plunger continues accelerating towards the stop position under the influence of the decaying field of the magnetic circuit. The efficiency of the device is high and the excess heat generated is at a minimum.

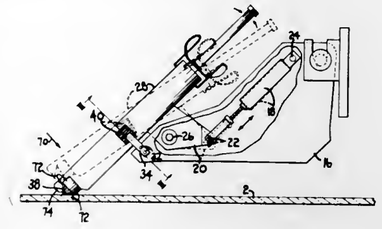
3,644,933
RESERVOIR-TYPE INKING PEN SYSTEM
Aubrey R. Tullos, and Leslie H. Creed, both of P.O. Box 2373, Odessa, Tex.
Filed May 26, 1969, Ser. No. 827,758
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **21 Claims**



An inking pen system with an ink container reservoir being a small resilient plastic bottle held by an encircling metal slide clip which, with the container, entraps a wire rod or bar serving as a reservoir mounting unit. A capillary metal stinger passing down through the container top projects to near the container bottom. A clear plastic capillary tube connects to the stinger and leads to the pen assembly. The pen has a capillary metal tube secured to a small metal sleeve which holds a fiber pen tip and provides a secondary ink reservoir. The pen unit metal tube is secured to a thin spring leaf metal pen arm which can be fastened to an operating arm of, for example, a chart recorder. All metal parts are stainless steel.

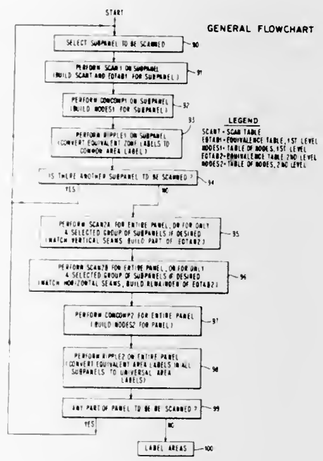
3,644,934
DEFECT-MARKING DEVICE
Charles T. Hawkins, Verona, and Laverne O. Parkhill, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 8, 1970, Ser. No. 79,244
Int. Cl. G01d *15/16*
U.S. Cl. 346—141 **6 Claims**

Particularly for use in the inspection of flat glass ribbon or sheets traveling at over 200 inches a minute, there is disclosed apparatus actuated by an automatic defect-detecting system and comprising a plurality of chalk marker means. The chalk marker means include a sleeve grasping a piece of chalk, with toothlike serrations on the exterior of the sleeve. When air cylinder means operate to move the chalk to or from a marking position, a stationary leaf spring member engages the serrations and causes the chalk to be rotated, ensuring against its developing a flattened portion and failing to



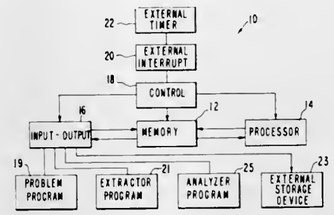
mark. Spring load means urge the chalk and its sleeve toward the glass or other object to be marked.

3,644,935
METHOD OF IDENTIFYING CONNECTED REGIONS IN A LARGE SEGMENTED PATTERN
Janice Richmond Lourie, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 14, 1970, Ser. No. 37,282
Int. Cl. G06f *3/14*
U.S. Cl. 444—1 **23 Claims**



Man-computer interactive method of graphically analyzing an outline pattern containing many arbitrarily bounded regions or pattern components, when the pattern is too large to be scanned in one piece and therefore must be broken up into segments or subpanels, the respective borders of which may extend across some of the regional boundary lines. In each subpanel, the row zones in the respective regions or regional segments contained therein are scanned and labeled with identifying symbols. Each subpanel is then matched with its bordering subpanels to determine the equivalency of differently labeled subregions belonging to the same regional entity among the respective subpanels, and tables of connected "nodes" (zone labels, in this case) are set up on the basis of these equivalences. Each set of connected nodes then serves as a reference table for converting the different labels of its region (which may be in several subpanels) into a common or universal label for such region throughout the entire panel.

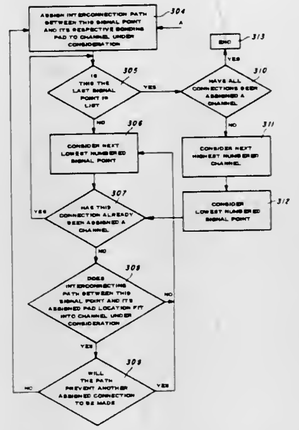
3,644,936
METHOD FOR MEASURING PERFORMANCE OF A GENERAL PURPOSE DIGITAL COMPUTER
Gary M. Holtwick, Menlo Park, and Kenneth W. Kolence, Palo Alto, both of Calif., assignors to Boole & Babbage, Inc., Palo Alto, Calif.
Filed Jan. 23, 1970, Ser. No. 5,443
Int. Cl. G06f *9/19, 11/06, 7/02*; **G05b** *23/02*
U.S. Cl. 444—1 **9 Claims**



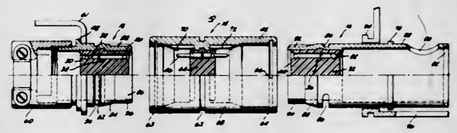
Apparatus and method for determining how a computer program is performing by sampling the operative conditions of a number of operating elements of a computer, such as the elements of the processing unit and the memory thereof. The information obtained from such sampling can be used to establish whether the program is "waiting," "executing" or "actively computing." Thus, a review of this information can be used to determine if the computer is being adequately utilized by the program and, if not, how it can be more efficiently utilized. The information is extracted randomly during the execution of the program following which the information is categorized and read out so as to be in an observable form.

3,644,937
CHANNEL-STACKING INPUT/OUTPUT INTERCONNECTIONS
Donald D. Isett, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 15, 1969, Ser. No. 841,859
Int. Cl. G06f *15/20*
U.S. Cl. 444—1 **13 Claims**

Active components, such as logic gates or flip-flops formed in a semiconductor substrate are interconnected to input/output bonding pads and other active components in a circuit array in four separate operations. First, after arranging the active components in rows, signal points of all components in one row are interconnected by considering the longest interconnection and proceeding to the shortest. Next, component signal points between rows are interconnected again by considering the longest interconnecting path and proceeding to the shortest path. Third, input/output component signal points are assigned to input/output conductive pads. Finally, interconnecting paths are completed between the input/output component signal points and an assigned pad in a numbered order. Each operation uses a distinct algorithm to complete the necessary steps.



3,644,938
UMBILICAL CONNECTOR
Claude C. Slate, Glendale, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Nov. 3, 1969, Ser. No. 873,556
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **4 Claims**

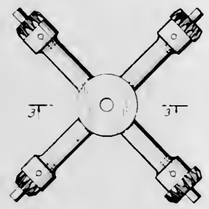


An electrical umbilical connector provided with detent structure for deadfacing the connector during use thereof. Salient features include a throwaway connector part utilized for circuit breaking and for protecting another connector part from flame and weather damage, simplicity of construction, facility of assemblage and disassemblage and cooperable detents for locking and unlocking respective connector parts. The connector may find use in missile launching applications as in the launching of a missile from an airplane.

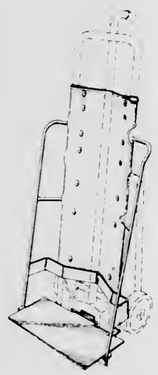
DESIGNS

FEBRUARY 22, 1972

222,985
CHUCK KEY
Josh Harry Ellis, 93 Hastings Parade, North Bondi, New South Wales, Australia
Filed Mar. 13, 1970, Ser. No. 21,898
Claims priority, application Australia Dec. 24, 1969
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



222,986
CURRENCY HAND TRUCK
Robert M. MacTarnahan, 11416 SW. Lynnridge, Portland, Oreg. 97225
Filed Nov. 20, 1970, Ser. No. 26,100
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



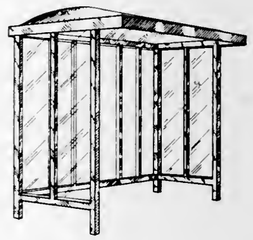
222,987
LIFT GATE LATCH BOLT
Merritt A. Osborn, Cleveland Heights, Ohio, assignor to Esco Manufacturing, Inc., Chagrin Falls, Ohio
Filed Aug. 21, 1970, Ser. No. 24,636
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—131



222,988
BOTTLE
Robert H. Knies, Fullerton, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.
Filed Aug. 5, 1970, Ser. No. 24,316
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72



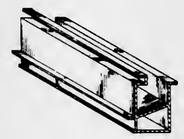
222,989
BUS SHELTER
Arthur Merrill Cohen, 100—11 67th Road, Forest Hills, N.Y. 11375
Filed Mar. 3. 1970, Ser. No. 21,717
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



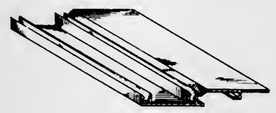
222,990
TELEPHONE MOUNTING SHELF
Richard Dale Gibson, Indianapolis, Ind., John Neil McGarvey, Drexel, Pa., and Kenneth Burton Woodard, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 21 ,1970, Ser. No. 25,590
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



222,991
EXTRUDED PLASTIC WINDOW STRIP
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,970
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



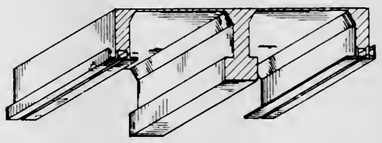
222,992
FLAT TRIM STRIP
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,971
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



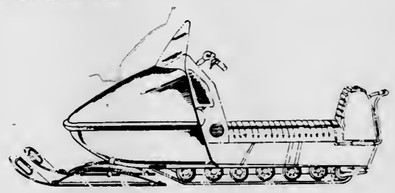
222,993
EXTRUDED PLASTIC WINDOW TRIM STRIP
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,972
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



222,994
HEADER BOX FOR WINDOW
Raymond M. Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed May 14, 1970, Ser. No. 22,975
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



222,995
SNOWMOBILE COWL
Yves Anselme Lapointe, Quebec City, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Jan. 6, 1969, Ser. No. 15,208
Claims priority, application Canada Oct. 22, 1968
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



222,996
PORTABLE LOUNGE SEAT
Bruce S. Martin, 2224 N. Puget Sound, Tacoma, Wash. 98406
Filed Jan. 19, 1970, Ser. No. 20,978
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—8



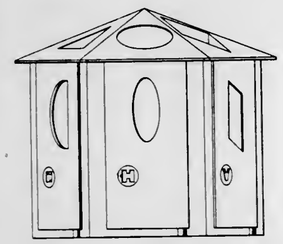
222,997
CHAIR
Howard M. Edgar, Torrance, and Reese Lewis, San Francisco, Calif., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 13, 1970, Ser. No. 22,376
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



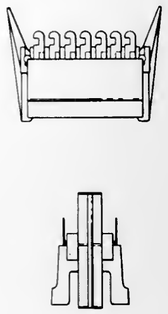
222,998
FISH LURES
Ewell J. Harris, Rte. 3, Box 35–A, Adrian, Mich. 49221
Filed June 9, 1970, Ser. No. 23,404
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



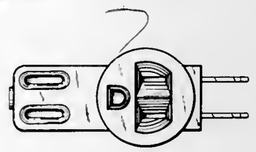
222,999
EDUCATIONAL TOY
Ichiro Tachi, Fujisawa, Japan, assignor to Kabushiki Kaisha Asakusa Gangu, Tokyo, Japan
Filed Aug. 26, 1970, Ser. No. 24,709
Claims priority, application Japan Feb. 26, 1970
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



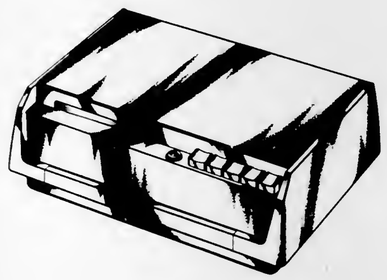
223,000
ELECTRICAL CONNECTOR PRIMARILY INTENDED FOR CONNECTION TO A DUAL-IN-LINE INTEGRATED CIRCUIT
Ronald Henry Trickey, Hoddesdon, Hertfordshire, England, assignor to Electrosil Limited, Sunderland, England
Filed May 23, 1969, Ser. No. 17,307
Claims priority, application Great Britain Nov. 29, 1968
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



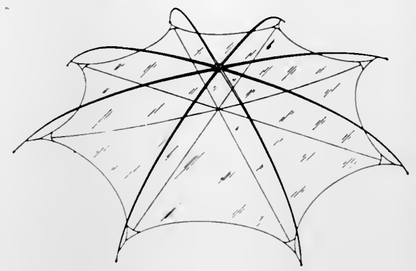
223,001
ELECTRICAL TESTER
Joseph L. Bonanno, South Orange, N.J., assignor to Rapid Tool and Manufacturing Co., Inc.
Filed Jan. 25, 1971, Ser. No. 109,735
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1



223,002
DATA COLLECTION COMPONENT
James W. Kelso, Los Angeles County, Calif., assignor to MSI Data Corporation, Montclair, Calif.
Filed Dec. 2, 1970, Ser. No. 26,250
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



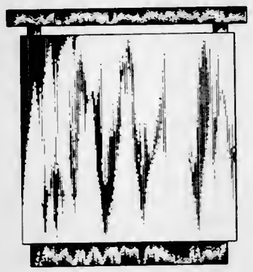
223,003
ENERGY REFLECTOR
Frederick R. Ruble, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Nov. 21, 1969, Ser. No. 20,227
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



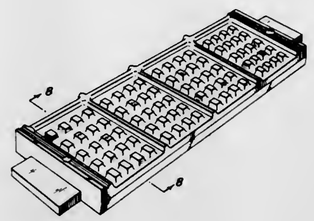
223,004
CHRISTMAS ORNAMENT
Katherine B. Vandewater, P.O. Box 184, Sherwood, Oreg. 97140
Filed May 6, 1970, Ser. No. 22,845
Term of patent 14 years
Int. Cl. D11—*04*
U.S. Cl. D29—1



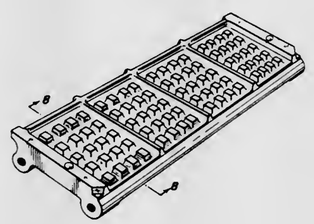
223,005
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Donald Michael Genaro, Haworth, and Rembert Ryan Stokes, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 15, 1970, Ser. No. 23,495
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



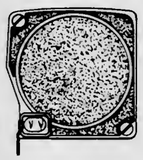
223,006
WAFFLE COOKING PLATE
Alfred M. Price, Crystal Lake, Ill., assignor to The Quaker Oats Company
Filed June 4, 1970, Ser. No. 23,308
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



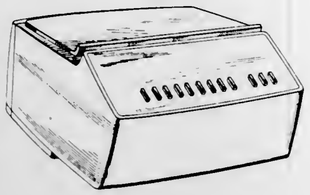
223,007
WAFFLE COOKING PLATE
Alfred M. Price, Crystal Lake, Ill., assignor to The Quaker Oats Company
Filed June 4, 1970, Ser. No. 23,312
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



223,008
LOCKING TAPE MEASURE OR SIMILAR ARTICLE
Robert J. Gould, Fairfield, Conn., assignor to Evans-Aristocrat Industries, Inc., Elizabeth, N.J.
Filed Oct. 12, 1970, Ser. No. 25,430
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—1



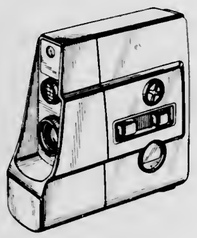
223,009
POSTAL SCALE
Marvin E. Garfinkle, Stamford, Robert E. Schmeck, Old Greenwich, and Einar W. Tangard, Norwalk, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Aug. 27, 1970, Ser. No. 24,725
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10



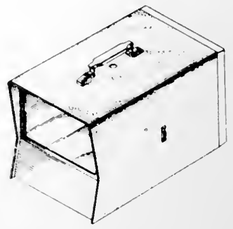
223,010
CONTACT LENS CASE
Frederic M. Kirchner and Allan A. Isen, Buffalo, N.Y., assignors to Griffin Laboratories Incorporated, Buffalo, N.Y.
Filed Sept. 25, 1970, Ser. No. 25,189
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



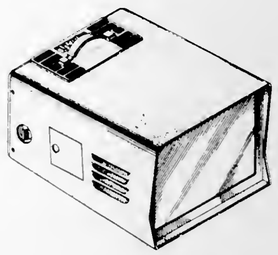
223,011
MOTION MOVIE CAMERA
Masahiro Fukuda, Tokyo, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan
Filed June 4, 1970, Ser. No. 23,318
Claims priority, application Japan Dec. 11, 1969
Term of patent 14 years
Int. Cl. D16—
U.S. Cl. D61—1



223,012
REAR PROJECTION VIEWER
Carl S. Shirley, 6049 Woodmont Road, Alexandria, Va. 22307
Continuation-in-part of abandoned design application Ser. No. 21,137, Jan. 29, 1970. This application Oct. 23, 1970, Ser. No. 25,623
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



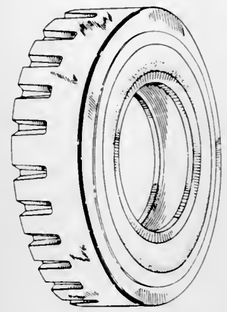
223,013
REAR PROJECTION VIEWER
Carl S. Shirley, Alexandria, Va., assignor to General Educational Technology Corporation, Alexandria, Va.
Continuation-in-part of abandoned design application Ser. No. 21,137, Jan. 29, 1970. This application Oct. 23, 1970, Ser. No. 25,624
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



223,014
COMBINED WRITING IMPLEMENT AND HOLDER
Roland Longarzo, 218 Hollywood Ave., Valley Stream, N.Y. 11581
Filed Aug. 14, 1970, Ser. No. 24,497
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17



223,015
TIRE DESIGN FOR LOADER TIRE
Marvin E. Beyers, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 27, 1970, Ser. No. 23,174
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



223,016
TIRE
Raymond P. Hawkinson, 4800 Bywood W., Minneapolis, Minn. 55436
Continuation-in-part of design application Ser. No. 14,088, Oct. 21, 1968. This application Feb. 20, 1970, Ser. No. 21,547
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



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TO WHOM

PATENTS WERE ISSUED ON THE 22D DAY OF FEBRUARY, 1972

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Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Pure Drug Company Limited. Xanthene derivatives. 3,644,420, Cl. 260-335.
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Bushman, Ronald C.; Rickard, Donn J.; Webb, John D.; Alexander, L. Bruce; and Church, Cleveland B.,3,643,716.
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Bottum, Edward W. Refrigeration suction accumulator. 3,643,466, Cl. 62-503.
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Zajac, Chester J., to Robertshaw Controls Company. Frequency regulated inverter circuit for a synchronous motor. 3,644,807, Cl. 318-138.
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Folino, Arthur S. Process of printing numbers on forms. Re. 27,298, 2–22–72, Cl. 270—1.
Fowler, Roland V., to Amerock Corp. Latching device. Re. 27,291, 2–22–72, Cl. 292—113.
Fredd, John V., to Otis Engineering Corp. Operator devices. Re. 27,294, 2–22–72, Cl. 91—41.
Grolet, Pierre, P. Moulin, and J. Parola, to Institut Francais du Petrol des Carburants et Lubrifiants. Apparatus for submarine core drilling. Re. 27,292, 2–22–72, Cl. 175—6.
Hamilton Watch Co.: *See*—
Rogers, Donald J., and Van Horn. Re. 27,290.
Ichikawa, Yataro, to Teijin Ltd. Process for the preparation of aromatic carboxylic acids. Re. 27,296, 2–22–72. Cl. 260—524.
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Johnson, Howard W., G. C. D'Ercoll, E. J. Knize, to Solo Cup Co. Dispenser with cup supporting bristles. Re. 27,297, 2–22–72, Cl. 221—308.
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Pechacek, Joseph H. Applicator apparatus attachable to a wheeled agricultural implement. Re. 27,295, 2–22–72, Cl. 222—176.
Rogers, Donald J., and J. A. Van Horn, to Hamilton Watch Co. Watch calendar setting mechanism. Re. 27,290, 2–22–72, Cl. 58—58.
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Garfinkle, Marvin E., R. E. Schmeck, and E. W. Tangard, to Pitney-Bowes, Inc. Postal scale. 223,009, 2–22–72, Cl. D52—10.
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Trickey, Ronald H., to Electrosil Ltd. Electrical connector primarily intended for connection to a dual-in-line integrated circuit. 223,000, 2–22–72, Cl. D26—1.
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353 3,643,664
403 3,643,665

CLASS 130

27JT 3,643,666

CLASS 131

2 3,643,667
3,643,668
84C 3,643,669

CLASS 134

117 3,643,670
118 3,643,671
143 3,643,672

CLASS 135

20 3,643,673
25 3,643,674

CLASS 136

6 3,644,145
76 3,644,146
86D 3,644,147
86E 3,644,148
135S 3,644,149
137 3,644,150

CLASS 137

13 3,643,675
15.2 3,643,676
113 3,643,677
209 3,643,678
241 3,643,679
331 3,643,680
429 3,643,681
484.8 3,643,683
489 3,643,682
493.7 3,643,684
501 3,643,685
512 3,643,686
3,643,687
556 3,643,688
561 3,643,689
587 3,643,690
590 3,643,691
599.1 3,643,692
608 3,643,693
3,643,694
614.04 3,643,695
625.17 3,643,697
625.23 3,643,698
625.6 3,643,696
625.64 3,643,699
625.68 3,643,700

CLASS 138

97 3,643,701
121 3,643,702

CLASS 141

1 3,643,703
106 3,643,704
141 3,643,705
160 3,643,706
286 3,643,707

CLASS 144

2Z 3,643,708
3,643,711
3D 3,643,709
3R 3,643,710
34E 3,643,712
86 3,643,713
176 3,643,714
209A 3,643,715

CLASS 146

3N 3,643,716
28A 3,643,717
94 3,643,718
98 3,643,719
120 3,643,720
241 3,643,721

CLASS 148

1.6 3,644,151
6.15R 3,644,152
31.5 3,644,153
187 3,644,154

CLASS 151

22 3,643,722

CLASS 152

361 3,643,723

CLASS 156

20 3,644,155
90 3,644,156
160 3,644,157
197 3,644,158
210 3,644,159
250 3,644,160
272 3,644,161
415 3,644,162
583 3,644,163

CLASS 161

25 3,644,164
58 3,644,165
89 3,644,166
125 3,644,167
160 3,644,168

CLASS 162

21 3,644,170
70 3,644,171

CLASS 164

4 3,643,724
44 3,643,725
52 3,643,726
76 3,643,727
132 3,643,728
170 3,643,729
235 3,643,730
274 3,643,731
309 3,643,732

CLASS 165

81 3,643,733
96 3,643,734
172 3,643,735

CLASS 166

.5 3,643,736
216 3,643,737
241 3,643,739
252 3,643,738
265 3,643,740
295 3,643,741

CLASS 172

316 3,643,742
320 3,643,743
372 3,643,744
413 3,643,745
445 3,643,746
657 3,643,747
704 3,643,748

CLASS 173

12 3,643,749
170 3,643,750

CLASS 174

17LF 3,644,658
27 3,644,659
42 3,644,660
68.5 3,644,661
73R 3,644,662
88B 3,644,663

CLASS 175

6 Re.27,292
7 3,643,751

CLASS 176

19LD 3,644,172
42 3,644,173
68 3,644,174

CLASS 177

122 3,643,752
185 3,643,753

CLASS 178

5.2A 3,644,664
5.4R 3,643,294
6.5 3,644,665
6.8 3,644,666
3,644,667
7.1 3,644,668
7.5R 3,644,669
17B 3,644,670
18 3,644,671
69G 3,644,672
88 3,644,673

CLASS 179

1P 3,644,674
2AS 3,644,675
15AQ 3,644,679
15AS 3,644,680
15AW 3,644,677
15BA 3,644,678
15A 3,644,676
41A 3,644,681
100.1C 3,644,682
100.2B 3,644,683
3,644,685
100.2Z 3,644,684
161 3,644,686
175.3 3,644,687

CLASS 180

69C 3,643,755
103 3,643,756
127 3,643,757
128 3,643,758

CLASS 181

40 3,643,759
48 3,643,760

CLASS 182

19 3,643,761

CLASS 187

29R 3,643,762

CLASS 188

71.8 3,643,763
3,643,764
170 3,643,765
190 3,643,766

CLASS 191

40 3,644,688

CLASS 192

21 3,643,767
41A 3,643,768
51 3,643,769
56R 3,643,770

CLASS 195

28R 3,644,175
51R 3,644,176
103.5R 3,644,177

CLASS 197

6.7 3,643,771
14 3,643,772
16 3,643,773
18 3,643,774
66 3,643,775
114R 3,643,776
151 3,643,777
3,643,778
3,643,779

CLASS 198

25 3,643,780
28 3,643,781
30 3,643,782
33AA 3,643,783
38 3,643,784
75 3,643,785
127R 3,643,788
127 3,643,789
131 3,643,787
173 3,643,786
177R 3,643,790
184 3,643,791
189 3,643,792
192R 3,643,793

CLASS 200

11J 3,644,689
61.5 3,644,690
84R 3,644,691
166C 3,644,692
3,644,693
167R 3,644,694

CLASS 203

29 3,644,178
72 3,644,179

CLASS 204

15 3,644,180
3,644,181
26 3,644,182
38B 3,644,183
46 3,644,184
140.5 3,644,185
159.2 3,644,186
186 3,644,187
192 3,644,188
209 3,644,189
228 3,644,190
298 3,644,191

CLASS 206

16B 3,643,794
45.14 3,643,795
65E 3,643,796

CLASS 208

8 3,644,192
11 3,644,193
3,644,194
33 3,644,195
62 3,644,196
89 3,644,197
111 3,644,198
120 3,644,199
3,644,200
308 3,644,201

CLASS 209

2 3,643,797
73 3,643,799
74 3,643,798
144 3,643,800

CLASS 210

23 3,644,202
169 3,643,801
172 3,643,802
232 3,643,803
242 3,643,804
321 3,643,805
327 3,643,806

CLASS 211

10 3,643,807
49D 3,643,808
49 3,643,809
60SK 3,643,810
64 3,643,811
74 3,643,812
75 3,643,813
177 3,643,814

CLASS 212

1 3,643,815

CLASS 214

6BA 3,643,817
6G 3,643,818
6H 3,643,816
17CB 3,643,819
17D 3,643,820
140 3,643,821
152 3,643,822
310 3,643,823
510 3,643,824
512 3,643,825
519 3,643,826
653 3,643,827
762 3,643,828

CLASS 215

1C 3,643,829

CLASS 219

8.5 3,644,695
10.57 3,644,696
74 3,644,697
83 3,644,698
113 3,644,699
121EB 3,644,700
130 3,644,701
201 3,644,702
3,644,703
202 3,644,704
211 3,644,705
3,644,706
302 3,644,707
386 3,644,708
439 3,644,709
463 3,644,710

CLASS 220

42B 3,643,831
44R 3,643,830
54 3,643,832
3,643,833

CLASS 221

308 Re.27,297

CLASS 222

54 3,643,834
56 3,643,835
70 3,643,836
101 3,643,837
161 3,643,838
176 Re.27,295
177 3,643,839

CLASS 223

42 3,643,840
95 3,643,841

CLASS 226

71 3,643,842
97 3,643,843
111 3,643,844
145 3,643,845
181 3,643,846
186 3,643,847
3,643,848
199 3,643,849

CLASS 227

8 3,643,850
19 3,643,851
149 3,643,852

CLASS 228

41 3,643,853

CLASS 229

2.5 3,643,855
14B 3,643,854
37R 3,643,856
44R 3,643,857
72 3,643,858

CLASS 235

61.1 3,644,711
61.11A 3,644,715
61.11E 3,644,714
61.12M 3,644,716
61.8R 3,644,712
61.9R 3,644,713
88 3,643,859
92EA 3,644,718
92C 3,644,717
95 3,643,860
150.1 3,644,719
3,644,720
150.23 3,644,722
150.3 3,644,721
156 3,644,723
159 3,644,724
201 3,643,861

CLASS 236

1 3,643,862
80 3,643,863

CLASS 238

8 3,643,864
10F 3,643,865

CLASS 239

101 3,643,866
183 3,643,867
265.39 3,643,868
289 3,643,869
403 3,643,870
419.3 3,643,871
655 3,643,872

CLASS 240

1 3,644,725
10R 3,644,726
47 3,644,727
61.9 3,644,728
73BC 3,644,729
103 3,644,730

CLASS 241

3 3,643,873
3,643,874
5 3,643,875
34 3,643,876
46.02 3,643,877
48 3,643,878
55 3,643,879
100 3,643,880

CLASS 242

4B 3,643,881
36 3,643,882
3,643,883
55 3,643,885
55.2 3,643,884
86.5A 3,643,886
107.3 3,643,887
118.32 3,643,888
182 3,643,889
3,643,890
189 3,643,891
192 3,643,892
195 3,643,893
201 3,643,894
3,643,895
205 3,643,896

CLASS 244

1 3,643,897
50 3,643,898
118P 3,643,899
123 3,643,900
130 3,643,901

CLASS 248

40 3,643,902
146 3,643,903
289 3,643,904
345.1 3,643,905
361 3,643,906
439 3,643,907

CLASS 249

27 3,643,908
41 3,643,909
65 3,643,910
170 3,643,911

CLASS 250

41.9 3,644,731
43.5D 3,644,732
49.5A 3,644,733
71R 3,644,734
91 3,644,735
108WS 3,644,737
108R 3,644,736
3,644,738
209 3,644,739
211J 3,644,740
213R 3,644,741
216 3,644,742
218 3,644,743

CLASS 251

5 3,643,912
11 3,643,913
124 3,643,914
148 3,643,915
151 3,643,916
215 3,643,917

CLASS 252

8.55B 3,644,205
8.75 3,644,203
8.8 3,644,204
46.7 3,644,206
62.59 3,644,207
72 3,644,208
78 3,644,209
301.2 3,644,211
301.6F 3,644,212
313S 3,644,213
320 3,644,214
364 3,644,433
400 3,644,217
404 3,644,215
431C 3,644,218
442 3,644,219
3,644,220
455R 3,644,216
503 3,644,221
522 3,644,505
548 3,644,210

CLASS 254

19 3,643,918
98 3,643,919
124 3,643,920
138 3,643,921
172 3,643,922

CLASS 256

13.1 3,643,924
25 3,643,923

CLASS 259

1R 3,643,925
2 3,643,926
4 3,643,927
6 3,643,928
9 3,643,929

CLASS 260

2EA 3,644,222
2A 3,644,224
2 3,644,223
2.1E 3,644,225
3,644,226
2.3 3,644,227
2.5AD 3,644,229
2.5AJ 3,644,228
2.5AK 3,644,238
2.5AM 3,644,235
3,644,237
2.5AW 3,644,232
2.5AY 3,644,233
2.5E 3,644,230
2.5F 3,644,231
2.5 3,644,234
3,644,236
3,644,239
4R 3,644,240
17.4CL 3,644,242
17.4ST 3,644,241
18R 3,644,243
22CA 3,644,612
23XA 3,644,246
23R 3,644,244
23 3,644,245
23.7H 3,644,247
23.7M 3,644,248
23.7R 3,644,249
3,644,250
26 3,644,251
27R 3,644,252
28 3,644,253
28.5AV 3,644,254
29.1R 3,644,255
29.3 3,644,256
29.6MH 3,644,259
29.6WB 3,644,257
29.6F 3,644,260
3,644,261
29.6H 3,644,258
29.6R 3,644,262
29.7EM 3,644,263
30.2R 3,644,264
32.6N 3,644,265
32.8R 3,644,266
33.6R 3,644,267
38 3,644,268
3,644,269

40R 3,644,270
41A 3,644,273
3,644,274
41 3,644,271
3,644,272
45.7R 3,644,275
45.8A 3,644,276
45.8N 3,644,277
3,644,278
3,644,279
45.85R 3,644,284
45.85 3,644,281
3,644,282
45.9R 3,644,280
47CB 3,644,289
47CP 3,644,286
3,644,287
3,644,288
47CZ 3,644,283
47R 3,644,285
67TN 3,644,290
75M 3,644,294
75R 3,644,291
3,644,292
3,644,293
75S 3,644,295
78TF 3,644,299
78L 3,644,296
78R 3,644,297
3,644,298
78.4N 3,644,300
78.5R 3,644,301
79R 3,644,302
79.3R 3,644,303
79.5B 3,644,304
80.3N 3,644,305
80.71 3,644,306
80.73 3,644,307
80.75 3,644,308
80.78 3,644,309
3,644,310
3,644,311
83.7R 3,644,312
3,644,313
84.7 3,644,314
85.3 3,644,315
85.5R 3,644,316
85.5 3,644,317
88.2 3,644,318
92.1 3,644,319
93.7 3,644,320
3,644,321
94.2 3,644,322
94.7R 3,644,324
94.9C 3,644,325
94.9D 3,644,323
122 3,644,326
143 3,644,327
156 3,644,405
169 3,644,328
192 3,644,406
207.1 3,644,329
210.5 3,644,330
211.5R 3,644,331
233.3 3,644,332
234R 3,644,333
239BD 3,644,334
3,644,335
3,644,336
239.3B 3,644,338
239.3D 3,644,339
239.3P 3,644,337
239.55C 3,644,407
239.55D 3,644,340
239.55 3,644,341
3,644,342
240CA 3,644,345
240A 3,644,344
240G 3,644,346
240R 3,644,343
243C 3,644,347
243D 3,644,348
243R 3,644,349
244R 3,644,350
3,644,351
246B 3,644,408
247.2A 3,644,352
247.2 3,644,409
247.5R 3,644,353
3,644,354
248AS 3,644,358
248CS 3,644,410
248A 3,644,359
250A 3,644,355
3,644,362
250R 3,644,360
250 3,644,361
3,644,363
251A 3,644,356
256.4C 3,644,365
256.4H 3,644,364
256.5R 3,644,357
286R 3,644,366
287R 3,644,367
3,644,368
289R 3,644,369
289 3,644,370
290H 3,644,371
293.54 3,644,373
293.56 3,644,372
293.62 3,644,375
293.82 3,644,376
293.88 3,644,374
294.8B 3,644,379
294.8F 3,644,378
294.8G 3,644,377
294.9 3,644,380
295AM 3,644,383
295CA 3,644,381
295C 3,644,384
295F 3,644,382
295.5R 3,644,385
296R 3,644,386
3,644,387
297R 3,644,388
299 3,644,389
307B 3,644,390
3,644,412
309 3,644,391
3,644,392
309.6 3,644,393
310R 3,644,394
311 3,644,395
326.11 3,644,403
326.3 3,644,396
3,644,397
3,644,398
3,644,399
3,644,400
3,644,414
326.5FN 3,644,402
326.5 3,644,401
327TH 3,644,415
3,644,416
327B 3,644,417
327 3,644,404
333 3,644,418
3,644,419
335 3,644,420
340.5 3,644,421
340.9 3,644,422
3,644,423
3,644,424
343.2R 3,644,413
343.2S 3,644,425
343.5 3,644,426
345.1 3,644,427
345.9 3,644,429
348A 3,644,431
348R 3,644,430
348 3,644,432
375B 3,644,434
396R 3,644,435
397 3,644,436
397.3 3,644,437
397.4 3,644,438
3,644,439
3,644,440
397.47 3,644,441
400 3,644,442
413 3,644,443
429CY 3,644,445
429J 3,644,444
429R 3,644,446
3,644,447
429.9 3,644,448
431 3,644,449
437R 3,644,450
3,644,451
3,644,452
438.1 3,644,453
438.5C 3,644,454
439R 3,644,455
453AL 3,644,458
453AR 3,644,456
453SP 3,644,457
453A 3,644,459
453P 3,644,460
3,644,461
3,644,462
454 3,644,463
455A 3,644,464
463 3,644,465
465B 3,644,470
465D 3,644,466
3,644,467
3,644,468
465E 3,644,469
465G 3,644,471
465.3 3,644,472
465.8D 3,644,475
465.8 3,644,473
3,644,474
3,644,476
3,644,477
468R 3,644,478
469 3,644,479
473F 3,644,481
473R 3,644,480
3,644,482
475P 3,644,483
3,644,484
479R 3,644,486
481R 3,644,487
3,644,488
482B 3,644,490
482P 3,644,489
482R 3,644,491
484R 3,644,492
485H 3,644,493
3,644,494
491 3,644,495
494 3,644,496
497R 3,644,497
507R 3,644,498
513B 3,644,499
514R 3,644,500
3,644,501
3,644,502
514.5 3,644,503
515P 3,644,504
524R Re.27,296
3,644,506
525 3,644,507
526R 3,644,508
530N 3,644,509
533R 3,644,510
3,644,511
3,644,512
534E 3,644,513
534S 3,644,514
543P 3,644,516
543R 3,644,515
544M 3,644,517
559S 3,644,518
561K 3,644,519
562A 3,644,520
562R 3,644,521
563D 3,644,522
564G 3,644,523
566AE 3,644,524
570.5C 3,644,525
586B 3,644,526
586H 3,644,527
591 3,644,528
604HF 3,644,529
606.5P 3,644,530
607B 3,644,531
609D 3,644,532
612R 3,644,533
613D 3,644,534
615B 3,644,535
618R 3,644,536
619B 3,644,537
3,644,538
619R 3,644,539
626R 3,644,540
641 3,644,541
650R 3,644,542
3,644,543
653.7 3,644,544
3,644,545
657 3,644,546
658R 3,644,547
666B 3,644,548
669 3,644,549
673 3,644,550
3,644,551
674A 3,644,552
677XA 3,644,554
679R 3,644,555
680B 3,644,556
683D 3,644,559
683R 3,644,557
683.15D 3,644,562
3,644,563
3,644,564
683.2 3,644,558
683.3 3,644,560
3,644,561
683.43 3,644,565
826 3,644,566
829 3,644,567
835 3,644,568
3,644,569
845 3,644,570
857G 3,644,571
857R 3,644,572
860 3,644,573
873 3,644,574
876R 3,644,575
3,644,577
3,644,578
3,644,579
878B 3,644,583
878R 3,644,582
878 3,644,580
3,644,581
879R 3,644,588
879 3,644,584
3,644,585
880R 3,644,586
880 3,644,587
890 3,644,589
894 3,644,590
895 3,644,591
897C 3,644,576
897 3,644,592
900 3,644,593
901 3,644,594
920 3,644,595
922 3,644,596
933 3,644,597
936 3,644,598
951 3,644,599
959 3,644,600
972 3,644,601
974 3,644,602
978 3,644,603

CLASS 261

97 3,643,930
111 3,643,931

CLASS 263

21C 3,643,932
32 3,643,933

CLASS 264

.5 3,644,604
22 3,644,605
47 3,644,606
60 3,644,607
71 3,644,608
168 3,644,609
289 3,644,610
334 3,644,611

CLASS 267

155 3,643,934

CLASS 269

16 3,643,935
190 3,643,936
251 3,643,937
328 3,643,938

CLASS 270

1 Re.27,298

CLASS 271

62 3,643,939
76 3,643,940

CLASS 272

2 3,643,941
60 3,643,942
69 3,643,943

CLASS 273

34R 3,643,944
54C 3,643,945
85R 3,643,946
86E 3,643,947
97 3,643,948
101 3,643,949
105R 3,643,950
108 3,643,951
110 3,643,952
119A 3,643,954
119B 3,643,953
119R 3,643,955
130R 3,643,956
134AD 3,643,957
3,643,958
176FA 3,643,959
183B 3,643,960
197R 3,643,961

CLASS 274

4F 3,643,962
4J 3,643,963

CLASS 277

24 3,643,964
75 3,643,965
80 3,643,966
92 3,643,967
166 3,643,968

CLASS 279

4 3,643,969

CLASS 280

11.35T 3,643,977
28 3,643,978
3,643,979
41A 3,643,980
87R 3,643,981
124F 3,643,970
150AB 3,643,971
150B 3,643,972
179R 3,643,973
278 3,643,974
475 3,643,975
478R 3,643,976

CLASS 285

9 3,643,982
31 3,643,983
94 3,643,984
189 3,643,985
197 3,643,986
205 3,643,987

CLASS 287

53.5 3,643,988
189.36H 3,643,989

CLASS 289

1.5 3,643,990

CLASS 292

113 Re.27,291

CLASS 294

19 3,643,991
65 3,643,992
73 3,643,993

CLASS 296

28C 3,643,994

CLASS 297

209 3,643,995
410 3,643,996
441 3,643,997

CLASS 299

31 3,643,998
3,643,999
86 3,644,000

CLASS 301

38S 3,644,001
41W 3,644,002

CLASS 302

53 3,644,003

CLASS 307

10 3,644,744
3,644,745
41 3,644,746
106 3,644,747
117 3,644,748
208 3,644,749
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252B 3,644,755
252N 3,644,754
252Q 3,644,753
269 3,644,756
273 3,644,757
291 3,644,758
305 3,644,759
309 3,644,760

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36.3 3,644,004
37 3,644,005
213 3,644,006
235 3,644,007

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9.5 3,644,761
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49R 3,644,764
68 3,644,765
165 3,644,766
254 3,644,767

CLASS 312

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117 3,644,009
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258 3,644,011

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46 3,644,769
94 3,644,770
153 3,644,771
174 3,644,772
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198 3,644,774
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318 3,644,776

CLASS 315

3 3,644,777
5.38 3,644,778
39 3,644,779
100U 3,644,780
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127 3,644,783
169 3,644,784
298 3,644,785

CLASS 317

15 3,644,786
16 3,644,787
27R 3,644,788
36TD 3,644,789
54 3,644,790
66 3,644,791
101CC 3,644,792
141S 3,644,793
151 3,644,794
230 3,644,795
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234R 3,644,797
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235AB 3,644,800
235R 3,644,799
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696 3,644,817

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CLASS 323

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CLASS 324

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61R 3,644,821
79R 3,644,827
123R 3,644,828
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361 3,644,833

CLASS 328

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CLASS 330

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CLASS 331

1A 3,644,840
94.5 3,644,841
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101 3,644,843
107A Re.27,293
113R 3,644,844
175 3,644,845

CLASS 332

7.51 3,644,846

CLASS 333

8 Re.27,299
17 3,644,847
70S 3,644,848
71 3,644,849
73S 3,644,850
80R 3,644,851
98S 3,644,852

CLASS 334

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CLASS 335

153 3,644,854
205 3,644,855
207 3,644,856
209 3,644,857

CLASS 336

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187 3,644,859

CLASS 337

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214 3,644,866

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17LM 3,644,868
19 3,644,869
45M 3,644,870
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47R 3,644,872
79 3,644,873
89C 3,644,874
91R 3,644,938
97R 3,644,875
108TP 3,644,877
114 3,644,876
213R 3,644,878
217S 3,644,879
270F 3,644,880

CLASS 340

6R 3,644,881
7 3,644,882
23 3,644,883
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80 3,644,886
102 3,644,887
146.1 3,644,888
146.3G 3,644,889

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146.3H	3,644,890	280	3,644,920	**CLASS 351**		106	3,644,046	370	3,644,067	278	3,644,633
147	3,644,891	283	3,644,921	113	3,644,023	109	3,644,047	477	3,644,068	283	3,644,635
149	3,644,892	324R	3,644,922	**CLASS 352**		229	3,644,048	**CLASS 418**		286	3,644,411
	3,644,893	347AD	3,644,923	130	3,644,024	**CLASS 408**		33	3,644,069	304	3,644,636
163	3,644,894		3,644,924	217	3,644,025	10	3,644,049	61	3,644,070		3,644,637
172.5	3,644,895	378R	3,644,925	219	3,644,026	197	3,644,050	83	3,644,071	305	3,644,638
	3,644,896	412	3,644,926	**CLASS 353**		**CLASS 415**		206	3,644,072	308	3,644,639
	3,644,897	413	3,644,927	25	3,644,027	7	3,644,052	**CLASS 424**		311	3,644,640
	3,644,898	**CLASS 343**		98	3,644,030	90	3,644,051	49	3,644,613		3,644,641
	3,644,899	106R	3,644,928	103	3,644,028	173	3,644,053	60	3,644,614	319	3,644,642
	3,644,900	**CLASS 346**			3,644,029	179	3,644,054	70	3,644,615	324	3,644,643
	3,644,901	1	3,644,929	117	3,644,031	211	3,644,055	100	3,644,618	325	3,644,644
173AM	3,644,906	74ES	3,644,930	120	3,644,032	215	3,644,056	114	3,644,616		3,644,645
173FF	3,644,905	74E	3,644,931		3,644,033	218	3,644,057	115	3,644,617	330	3,644,646
	3,644,907	77	3,644,932	**CLASS 355**		**CLASS 416**		121	3,644,619		3,644,647
173R	3,644,902	140	3,644,933	3	3,644,034	95	3,644,058	195	3,644,620	337	3,644,648
	3,644,903	141	3,644,934		3,644,035	97	3,644,059	200	3,644,621	341	3,644,649
	3,644,904	**CLASS 350**		44	3,644,036		3,644,060	244	3,644,623	343	3,644,650
174SP	3,644,909	3.5	3,644,012	52	3,644,037	**CLASS 417**		250	3,644,622	351	3,644,651
174TF	3,644,908		3,644,013	75	3,644,038	203	3,644,061	251	3,644,624	358	3,644,652
174.1C	3,644,910		3,644,014	85	3,644,039	211	3,644,062	258	3,644,625		3,644,653
177VA	3,644,911	149	3,644,015	103	3,644,040	213	3,644,063	263	3,644,626	**CLASS 425**	
213	3,644,912	150	3,644,016	122	3,644,041	293	3,644,064	266	3,644,627	83	3,644,078
228R	3,644,913		3,644,017	**CLASS 356**		300	3,644,065	270	3,644,628	**CLASS 431**	
236	3,644,914	157	3,644,018	5	3,644,042	354	3,644,066	273	3,644,629	2	3,644,073
239F	3,644,915	162SF	3,644,019		3,644,043			274	3,644,630	26	3,644,074
244	3,644,916	295	3,644,020	85	3,644,044				3,644,631	66	3,644,075
258B	3,644,917	304	3,644,021		3,644,045			275	3,644,632	284	3,644,076
276	3,644,918	310	3,644,022						3,644,634	351	3,644,077
279	3,644,919									**CLASS 444**	
										1	3,644,935
											3,644,936
											3,644,937

CLASSIFICATION OF DESIGNS

D 8— 14	222,985		222,992	11	222,996	5	223,002		223,007		223,012
131	222,987		222,993	D22— 27	222,998	14	223,003	D52—	223,008		223,013
D 9— 72	222,988		222,994	D25— 1	222,999	D29— 1	223,004	10	223,009	D74— 17	223,014
D13— 1	222,989	D14— 3	222,986	D26—	223,000	D33— 14	223,005	D57— 1	223,010	D90— 20	223,015
	222,990	24	222,995		223,001	D44— 1	223,006	D61—	223,011		223,016
6	222,991	D15— 1	222,997								

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PATENTS

1 : 3,644,004	3,643,791	3,644,209	3,644,094	10 : 3,643,491	3,643,542
3,644,410	3,643,795	3,644,211	3,644,194	3,643,855	3,643,602
4 : 3,643,974	3,643,798	3,644,240	3,644,821	3,644,214	3,643,610
3,644,055	3,643,806	3,644,243	9 : 3,643,265	3,644,230	3,643,628
3,644,749	3,643,817	3,644,301	3,643,285	3,644,379	3,643,631
3,644,792	3,643,822	3,644,307	3,643,376	3,644,489	3,643,645
3,644,810	3,643,823	3,644,340	3,643,420	3,644,491	3,643,649
3,644,835	3,643,837	3,644,341	3,643,430	3,644,492	3,643,655
5 : 3,643,266	3,643,838	3,644,392	3,643,449	3,644,521	3,643,666
6 : 3,643,264	3,643,862	3,644,411	3,643,513	3,644,522	3,643,678
3,643,267	3,643,863	3,644,435	3,643,620	3,644,545	3,643,685
3,643,278	3,643,866	3,644,446	3,643,728	3,644,581	3,643,691
3,643,306	3,643,869	3,644,487	3,643,840	3,644,582	3,643,698
3,643,319	3,643,875	3,644,494	3,643,851	3,644,599	3,643,719
3,643,332	3,643,884	3,644,501	3,643,916	12 : 3,643,371	3,643,748
3,643,333	3,643,885	3,644,515	3,643,924	3,643,373	3,643,766
3,643,334	3,643,889	3,644,563	3,643,969	3,643,470	3,643,786
3,643,347	3,643,891	3,644,565	3,644,007	3,643,616	3,643,796
3,643,366	3,643,892	3,644,588	3,644,080	3,643,841	3,643,803
3,643,368	3,643,893	3,644,604	3,644,136	3,643,921	3,643,820
3,643,372	3,643,897	3,644,608	3,644,142	3,644,014	3,643,826
3,643,374	3,643,902	3,644,640	3,644,145	3,644,263	3,643,832
3,643,419	3,643,913	3,644,656	3,644,168	3,644,283	3,643,835
3,643,463	3,643,935	3,644,659	3,644,234	3,644,615	3,643,876
3,643,480	3,643,949	3,644,671	3,644,246	3,644,645	3,643,951
3,643,570	3,643,950	3,644,681	3,644,289	3,644,830	3,643,954
3,643,583	3,643,977	3,644,684	3,644,327	3,644,843	3,643,955
3,643,584	3,643,986	3,644,698	3,644,360	3,644,870	3,643,972
3,643,595	3,643,993	3,644,725	3,644,408	13 : 3,643,939	3,644,027
3,643,603	3,643,998	3,644,727	3,644,413	3,644,238	3,644,031
3,643,619	3,644,008	3,644,740	3,644,456	3,644,920	3,644,033
3,643,625	3,644,012	3,644,759	3,644,460	15 : 3,643,541	3,644,073
3,643,641	3,644,015	3,644,763	3,644,462	16 : 3,643,659	3,644,084
3,643,650	3,644,016	3,644,768	3,644,463	3,643,715	3,644,087
3,643,652	3,644,037	3,644,770	3,644,517	3,643,811	3,644,098
3,643,660	3,644,039	3,644,809	3,644,569	3,644,919	3,644,113
3,643,665	3,644,040	3,644,822	3,644,622	17 : Re.27,297	3,644,153
3,643,667	3,644,042	3,644,845	3,644,635	3,643,272	3,644,198
3,643,668	3,644,043	3,644,863	3,644,662	3,643,275	3,644,213
3,643,672	3,644,068	3,644,886	3,644,663	3,643,294	3,644,217
3,643,692	3,644,069	3,644,909	3,644,666	3,643,303	3,644,219
3,643,699	3,644,071	3,644,910	3,644,705	3,643,323	3,644,252
3,643,703	3,644,077	3,644,922	3,644,712	3,643,354	3,644,274
3,643,705	3,644,130	3,644,923	3,644,717	3,643,357	3,644,285
3,643,707	3,644,133	3,644,927	3,644,720	3,643,379	3,644,305
3,643,716	3,644,160	3,644,929	3,644,742	3,643,397	3,644,332
3,643,717	3,644,164	3,644,936	3,644,807	3,643,487	3,644,342
3,643,733	3,644,197	3,644,938	3,644,815	3,643,500	3,644,346
3,643,741	3,644,200	7 : 3,643,700	3,644,874	3,643,530	3,644,387
3,643,743	3,644,202	8 : 3,643,738	3,644,898	3,643,535	3,644,390
3,643,759	3,644,207	3,644,052	3,644,921	3,643,539	3,644,426

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Trademark Office Actions

Effective Apr. 1, 1972, trademark applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Feb. 7, 1972.

Formula and Table Format

[37 CFR Part 1]

Proposed Submission Requirements

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 1.52 and by adding a new § 1.58.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231, before April 30, 1972. No oral hearing will be held. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

These proposed rule changes are intended to facilitate the examination, microfilming, and printing of patent applications and patents.

When patents are printed, all complex chemical and mathematical formulas and tables appearing in the text must be specially hand set and then inserted into a space left on the composed page. The hand setting is expensive and results in many errors which must later be corrected by Certificates of Correction. The use of submitted camera copy for printing would be inexpensive and error free. Members of both the legal and scientific communities have indicated that errors in printing formulas and tables are a problem.

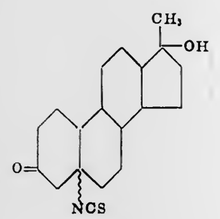
Under the proposed rules the applicant would furnish a copy of all tables and complex formulas, each having an identifying number, on bristolboard sheets or the like in a form suitable for use as camera copy for printing. The submitted specification would contain at the appropriate location either a copy of the insert plus its identifying number or the identifying number and a blank space. Although the applications would be submitted with the formulas and tables on sheets separate from the specification texts, the patents would continue to be printed with the formulas in the text.

The formulas and tables could be corrected and amended in the same manner as drawings.

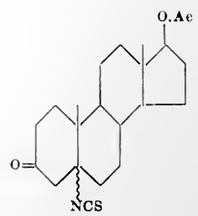
The following is an example of how a sheet of inserts might appear.

Chemical Composition
John Doe
Docket #123
1 sheet

Insert (1):



Insert (2):



Insert (3):

Imide of example	10/E speed	Gamma	Fog	Density	Printing rate
1	1.45	2.10	0.01	3.71	−38
3	2.7	2.46	.01	3.41	−6
4	1.8	2.02	.01	3.55	−20
5	3.15	2.38	.22	3.67	−6
6	2.10	2.00	.01	3.92	−18
7	1.95	2.22	.01	3.63	−26
9	2.2	2.10	.01	3.63	−18
10	1.85	1.78	.01	3.25	−38
11	1.85	2.06	.01	3.57	−29
12	2.95	2.36	.01	3.57	−6

Insert (4):

$$\frac{d}{dx}(\text{arc vers } v)=\frac{\frac{dv}{dv}}{2v-v^2}$$

Section 1.52, if amended as proposed, would require application papers in a form that would permit readily legible reproductions to be made and certified for use in foreign priority filings, court proceedings and 37 CFR 1.60 continuing applications.

The proposed changes are as follows:

1. Section 1.52 is revised to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language. All papers which are to become a part of the permanent records of the Patent Office must be legibly written or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form which has sufficient contrast between paper and ink and of sufficient clarity to permit the production of readily legible copies in any number by photography, electrostatic processes, photo offset, and microfilming. Substitute typewritten or printed papers and inserts (see § 1.58) may be required if the papers and inserts originally filed are not of the required quality.

(b) The application papers (specification and claims, oath, declaration, papers as provided for in §§ 1.42, 1.43, 1.47, etc.) and also papers subsequently filed, must be plainly written on but one side of the paper. A wide margin must be reserved on the left-hand side and on the top of each page and the lines must not be crowded too closely together. The size of the sheets of paper should be 8 to 8½ by 12½ to 13 inches (20.3 to 21.6 cm. by 31.8 to 33.0 cm.), or international A4 (21 cm. x 29.7 cm.). Use of typewritten and double spaced lines with margins of 1½ inches on the left-hand side and top is deemed preferable. The pages of the specification, including those containing claims, should be numbered consecutively, starting with 1, the numbers being placed in the center of the bottom margins.

(c) Any interlineation, erasure, or cancellation or other alteration must have been made before the application was signed and sworn to or declaration made, and should be clearly referred to in a marginal note or footnote on the same sheet of paper, dated and initialed or signed by the applicant to indicate such fact. No such alterations are permissible after execution of the application papers. (See § 1.56)

2. A new § 1.58 is added to read as follows:

§ 1.58 *Chemical and mathematical formulas and tables.*

(a) The specification, including the claims, and the abstract may contain chemical and mathematical formulas, but shall not contain drawings or flow diagrams. The description portion of the specification and the abstract may contain tables; a claim may contain tables only if necessary to conform to 35 U.S.C. 112.

(b) In the application specification, one-line formulas composed of normal sized Roman and Greek letters and Arabic numerals with one level of superiors and inferiors may appear in the text. All other tables and chemical and mathematical formulas must be presented separately from the specification on pure white paper as defined in § 1.84(a), for use as camera copy for insertion in the specification when printing any patent which may issue.

(c) The size of the separate insert sheets must be 8½ inches wide (21.6 cm.) by not more than 14 inches (35.6 cm.) or less than 10 inches (25.4 cm.) high. A space of at least 1 inch (2.54 cm.) in height must be left at the top of the sheet (the narrow dimension) for marking and fastening. The sheets may contain holes as defined in § 1.84(b) and identifying indicia as defined in § 1.84(1). Amendments may be made as provided for in § 1.123.

(d) All formulas and tables on the separate insert sheets should be consecutively numbered in the order in which they appear in the specification, and labeled at their upper lefthand corners with the word "Insert" before the number within parentheses (for example, "Insert (3)"). Formulas or tables which are to appear consecutively in a patent may be grouped and designated as a single insert. The location in the originally submitted specification where an insert is to appear in the printed patent should be indicated by a wide space and the appropriate insert designation.

(e) The width of such formulas and tables on the separate insert sheets should be limited normally to 5 inches (12.7 cm.). If it is not possible to limit the width of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10¾ inches (27.3 cm.) and to place it sideways on the insert sheet, if necessary, in which case the insert will appear printed across both columns of the page in the printed patent. The characters used in such formulas and tables must be from a type font having capital letters which are at least 0.086 inches (2.2 mm.) high (elite type). On the separate insert sheets a space at least three-eighths inch (9.5 mm.) high should be provided between the numbered inserts.

(f) In addition to the separate insert sheets, reproduction copies of the formulas and tables may be placed in the specification at the locations where they are to be printed. Such copies should, however, be labeled with an insert designation as provided in paragraph (d) of this section.

§ 1.75 [*Amended*]

3. Section 1.75 is amended by adding at the end of paragraph (d)(1) the expression, "(See § 1.58(a).)"

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved: January 19, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-1394; Filed 2-1-72; 8:45 a.m.]

Published in 37 FR 2520; Feb. 2, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,637,893, G. Shaw, ARTIFICIAL FILAMENT, **filed** Mar. 23, 1965, D.C. Vt. (Burlington), Doc. 4223, *Gilbert Shaw and Polymers, Inc. v. E. B. & A. C. Whiting Company.* Stipulated final order on mandate was filed and shall terminate the above action for all times, Dec. 2, 1970.

2,727,069, J. P. M. Van Waes, PREPARATION OF UREA, **filed** July 25, 1968, D.C. Del. (Wilmington), Doc. 3586, *Stamicarbon, N.V. v. Carolina Nitrogen Corporation et al.* Consent judgment, defendants have infringed, Sept. 20, 1971. **Same, filed** July 26, 1968, D.C. Del. (Wilmington), Doc. 3590, *Stamicarbon, N.V. v. Chemical Construction Corporation.* Consent judgment, patent valid and defendant has infringed and is permanently enjoined, Oct. 1, 1971. **Same, filed** Mar. 25, 1969, D.C. Del. (Wilmington), Doc. 3690, *Stamicarbon, N.V. v. Arkla Chemical Corporation.* Consent judgment, patent valid and infringed, Sept. 2, 1971.

2,761,178, Van Doorn and Pease III, OPERATING MECHANISM FOR GIN BREASTS AND MULTIPLE GIN SYSTEM, **filed** June 18, 1971, D.C., M.D. Ala. (Montgomery), Doc. 3355-N, *Lummus Industries, Inc. v. Continental/Moss-Gordin, Inc.* Case dismissed without prejudice, Sept. 13, 1971.

2,868,272, Poole and Poole, BABY SUPPORTER AND EXERCISER, **filed** June 14, 1971, D.C. Md. (Baltimore), Doc. 71-629-N, *Jolly Jumper Products of America, Limited v. Hutzler Brothers Company.*

2,918,420, R. C. Sabins, ELECTROLYTIC SYSTEM; **3,108,939,** same, PLATINUM PLUG-VALVE METAL ANODE FOR CATHODIC PROTECTION; **2,982,714,** same, ELECTROLYTIC SYSTEM; **3,362,900,** same, SYSTEM FOR CATHODICALLY PROTECTING A STRUCTURE; **2,998,371,** same, CONTROL SYSTEM; **2,934,485,** same, DEVICE AND ITS USE FOR PROTECTING ELEMENTS AGAINST GALVANIC DISSOLUTION; **3,054,743,** same, ELECTROLYTIC SYSTEM; **Reg. No. 673,493** (CATHANODE), Sabins-Dohrmann Co., **filed** Sept. 1, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2098-JWC, *Selectro-Chem Company v. Lockheed Aircraft Corporation.*

2,934,485. (See 2,918,420.)

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE, **filed** Sept. 13, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2187-FW, *Tile Council of America v. Continental Chemical Products of Los Angeles and John S. Schirm.*

2,942,429, Van Dolah and Patterson, POULTRY CHILLING; **3,092,975,** R. S. Zebarth, ARTICLE CHILLING METHOD AND APPARATUS; **3,240,026,** Van Dolah and Patterson, POULTRY CHILLING, **filed** Sept. 21, 1971, D.C., S.D. Ill. (Peoria), Doc. P-3286, *Swift & Company v. Archer Daniels Midland Company and Ralston Purina Company.*

2,944,639, W. T. Blake, SHOCK ABSORBER WITH VACUUM COMPENSATOR; **2,944,681,** same, RAILWAY DRAFT APPLIANCE, **filed** Dec. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3153, *Halliburton Company and William T. Blake v. Keystone Industries, Inc., formerly Keystone Railway Equipment Company, Inc.* Case ordered transferred to the Middle District of Pennsylvania, June 9, 1971.

2,944,681. (See 2,944,639.)

2,982,714. (See 2,918,420.)

2,998,371. (See 2,918,420.)

3,031,725, R. E. Omholt, FLOORING SYSTEMS, **filed** Sept. 24, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71-C-486, *Powerlock Systems, Inc. v. Duo-Lok, Inc. and Baseman Bros., Inc.*

3,054,743. (See 2,918,420.)

3,092,975. (See 2,942,429.)

3,096,148, W. Walker, Jr., ARTICLE STERILIZING, DEODORIZING AND ACCOUNTING PROCESS AND APPARATUS, **filed** Feb. 22, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-196, *Willis Walker, Jr., M.D. v. C. R. Bard, Inc. and W. H. Andersen Products, Inc.* Stipulation of dismissal, Sept. 17, 1971.

3,108,939. (See 2,918,420.)

3,153,976, L. E. Linder, AMMUNITION RELOADING APPARATUS, **filed** Sept. 23, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2286-CC, *Western Automatic Reloading Equipment, Inc. et al. v. Jose Rosan, Sr. et al.*

3,168,130, E. W. Turpin, WHEEL SUPPORTING AND TIRE DISMOUNTING APPARATUS; **3,267,977,** same, SUPPORT DEVICE FOR VEHICLE WHEELS, **filed** Sept. 11, 1971, D.C., S.D. Ohio (Cincinnati), Doc. 8126, *Big Four Automotive Equipment Corp. v. Harry J. Miller et al.*

3,210,767, D. W. Isbell, FREQUENCY INDEPENDENT UNI DIRECTIONAL ANTENNAS; **Re. 25,740,** Mayes and Carrel, LOG PERIODIC BACKWARD WAVE ANTENNA ARRAY; **3,259,904,** Blonder and Schenfeld, ANTENNA HAVING COMBINED SUPPORT AND LEAD-IN, **remanded** June 17, 1971, D.C., N.D. Ill. (Chicago), Doc. 66c567, *The University of Illinois Foundation v. Blonder-Tongue Laboratories, Inc. v. JFD*

Electronics Corporation. Judgment order entered on June 27, 1968 is vacated. Judgment order on remand, plaintiff is estopped to assert the validity of Pat. No. 3,210,767; Re. 25,740 is invalid; judgment on the amended complaint is entered for defendant, with prejudice; defendant is owner of 3,259,904, claim 5 is invalid, Sept. 27, 1971.

3,230,675, Frommelt and Frommelt, DOCK PADS WITH ADJUSTABLE HEAD PAD; **3,403,489,** same, LOADING DOCK SHELTERS, **filed** July 31, 1969, D.C., N.D.N.Y. (Utica), Doc. 69–CV–265, *Dubuque Awning & Tent Company v. W. B. McGuire Co., Inc.* Complaint dismissed with prejudice in respect of all claims, defendant recover from plaintiff its full costs incurred in defendant against said claims, judgment shall be final except that matters of defendant's rights to damages, to an injunction and to attorney fees, based on allegations in its answer and its counterclaims are reserved for future disposition by this court, Sept. 16, 1971.

3,234,123, J. N. Hinde, METHOD OF AND MEANS FOR TREATING BODIES OF WATER, **filed** Sept. 17, 1971, D.C., E.D. Ill. (Chicago), Doc. 71c2281, *Schramm, Inc. v. James Nelson Hinde and Hinde Engineering Co.*

3,240,026. (See 2,942,429.)

3,259,904. (See 3,210,767.)

3,267,507, P. E. Cox, CONDUCTOR WIRE CLEANING DEVICE, **filed** Sept. 7, 1971, D.C., M.D.N.C. (Greensboro), Doc. C–208–WS–71, *Paul E. Cox v. Graybar Electric Company, Inc.*

3,267,977. (See 3,168,130.)

3,296,636, B. Markwitz, BUOYANCY RING, **filed** Sept. 16, 1971, D.C. Colo. (Denver), Doc. C–3403, *Bernard Markwitz v. Ute Mountain Corporation.*

3,362,900. (See 2,918,420.)

3,399,833, A. C. W. Johnson, LOW INTENSITY RADIANT HEATER SYSTEM AND BURNER THEREFOR, **filed** June 8, 1971, D.C., E.D. Mich. (Detroit), Doc. 36609, *Combustion Research Corp. v. Charles L. Green, doing business as G & G Radiant Pro.*

3,403,489. (See 3,230,675.)

3,404,494, H. D. Wolfe, THEATRE AND STAGE CONSTRUCTION; **D. 201,618,** same, BUILDING, **filed** Aug. 21, 1971, D.C., S.D. W. Va. (Charleston), Doc. 71–182–CH, *First Barn Dinner Theatre, Inc. v. Walter H. Lewis, Jr.*

3,408,306, F. J. Boylan, METHOD OF CONTROLLING FOAMING, **filed** Oct. 29, 1968, D.C., N.D. Ga. (Atlanta), Doc. 12188, *Hercules Incorporated v. NOPCO Chemical Co., Inc.* Case dismissed and settled by parties, Mar. 18, 1971.

3,458,783, M. A. Rosenberg, HERMETICALLY SEALED CAPACITOR, **filed** Sept. 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2176–AAH, *San Fernando Electric Manufacturing Co., Inc. v. Erie Technological Products, Inc.*

3,506,326, A. V. Tantillo, HINGE MEANS, **filed** July 7, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1629, *General Bathroom Products Corp. v. Monarch Metal Products Corp.* Judgment for defendant; defendant's motion for summary judgment is denied. The court concludes that the patent issued to plaintiff is invalid by virtue of anticipation. 35 U.S.C. § 102(a) and (b).

3,533,407, G. I. Smith, STRAP TYPE WRIST SUPPORT, **filed** Sept. 17, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–911, *King Louis International, Inc. v. House of Champions Research Laboratories, Inc.*

3,594,255, W. D. Budinger, HICKEY ROLLER AND METHOD, **filed** Sept. 20, 1971, D.C. Del. (Wilmington), Doc. 4227, *Rodel, Inc. and William D. Budinger v. National Plate Grainers, Inc.*

3,598,088, Bowman, Bowman and Moeller, LIVESTOCK DIP APPARATUS, **filed** Sept. 27, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71–621–C, *Jim H. Bowman et al. v. Lloyd Lanier et al.*

Re. 25,740. (See 3,210,767.)

Re. 25,899, A. J. Waibel, HIGH PRESSURE VALVE ASSEMBLY, **filed** Sept. 27, 1971, D.C. W.D.N.Y. (Buffalo), Doc. C–1971–426, *Ingersoll-Rand Company v. Dresser Industries, Inc.*

D. 199,291, F. J. Jahn, DISPLAY STAND FOR PHOTOGRAPHS AND THE LIKE, **filed** Oct. 1, 1971, D.C. Conn. (Bridgeport), Doc. B–374, *Textron, Inc., Eaton Paper Company, Div. v. Zell Company and Charles Zell.*

D. 201,618. (See 3,404,494.)

D. 209,499, C. L. Leavitt, BOBBIN HOLDER, **filed** Aug. 26, 1969, D.C., S.D.N.Y., Doc. 69–3718, *Reynolds Industries Inc. v. W. H. Collins Inc.* Stipulation of dismissal pursuant to Rule 41(a), Sept. 14, 1971.

D. 220,728, J. G. Cox, Jr., BOW-MOUNTED STEERING CONSOLE FOR BOATS, **filed** Aug. 30, 1971, D.C., E.D. Tex. (Tyler), Doc. 5351, *Joseph G. Cox, Jr. v. Arrowglass Boat & Manufacturing Corporation and Black Boat & Motor Company, Inc.*

D. 221,219, T. Winrow, SOFA, **filed** Aug. 20, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2049, *Futorian Corporation v. David Fitchmun & Associates, Inc.*

Reg. No. 673,493. (See 2,918,420.)

Certificates of Correction for the Week of Feb. 29, 1972

Re. 27,171	3,583,428	3,598,204	3,603,615
D. 222,013	3,583,969	3,598,335	3,603,653
3,317,369	3,584,037	3,598,336	3,603,937
3,328,349	3,587,314	3,598,918	3,603,969
3,328,961	3,587,902	3,599,154	3,604,015
3,484,484	3,587,936	3,599,505	3,604,254
3,493,857	3,588,321	3,599,617	3,604,257
3,514,293	3,588,420	3,599,722	3,604,397
3,526,918	3,588,442	3,599,871	3,604,646
3,533,876	3,589,007	3,600,015	3,604,812
3,533,942	3,591,002	3,600,509	3,605,186
3,542,230	3,591,563	3,600,620	3,605,455
3,542,963	3,591,593	3,600,640	3,605,705
3,545,719	3,591,927	3,600,669	3,607,398
3,552,350	3,592,109	3,600,773	3,607,528
3,555,082	3,592,637	3,600,852	3,607,597
3,557,762	3,592,685	3,600,864	3,607,653
3,558,367	3,592,856	3,601,074	3,607,790
3,559,901	3,593,384	3,601,283	3,607,914
3,562,064	3,594,371	3,601,367	3,607,978
3,562,281	3,594,603	3,601,674	3,608,028
3,563,970	3,594,743	3,602,018	3,609,056
3,563,981	3,594,747	3,602,135	3,609,360
3,563,988	3,594,766	3,602,205	3,610,666
3,572,058	3,594,865	3,602,234	3,610,776
3,573,527	3,595,010	3,602,317	3,611,751
3,574,555	3,595,070	3,602,700	3,613,211
3,576,737	3,596,174	3,602,890	3,613,465
3,577,314	3,596,221	3,603,136	3,615,025
3,578,594	3,597,250	3,603,440	3,615,082
3,578,904	3,597,661	3,603,486	
3,579,532	3,598,102	3,603,605	

Dedications

2,963,398.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Dec. 6, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,600,319.—*Burton H. Gedge III,* Wyoming, and *Charles H. Brain,* Mount Healthy, Ohio. PROCESS FOR APPLICATION OF ENZYMES TO SPRAY-DRIED DETERGENT GRANULES. Patent dated Aug. 17, 1971. Dedication filed Nov. 5, 1971, by the assignee, *The Procter & Gamble Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

2,990,318.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,990,319.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and *Berton C. Dickinson,* Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

2,995,487.—*Howard A. Jones* and *John A. Garman,* Baltimore, Md., and Berton C. Dickinson, Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated Aug. 8, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

Patents Available for Licensing or Sale

3,578,566. PROCESS OF TREATING OIL CONTAINING FERMENTATION DISCHARGES. Deutsche Akademie der Wissenschaften zu Berlin, East Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,584,437. IMPROVED DEVICE FOR CONTROLLING HORSES. Raymond N. Boyington, Star Route, Milford, Maine, 04461.

3,604,993. SPEED CONTROL SYSTEM FOR CONVEYING MACHINE ENERGIZED BY THREE-PHASE CURRENT. Erich Volkert et al., Efurt, Germany. Correspondence to: Elton Industries, Inc., 420 Jericho Turnpike, Jericho, N.Y., 11753.

3,609,890. ELECTRIC STEAM IRON. Carlos S. Abraham, Mexico City 1, Mexico. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,619,557. DEVICE FOR FACILITATING REMOVAL OF ASPHALT TILE. Lawrence D. McClure, 140 Zartop St., Oakley, Calif., 94561.

3,623,749. PORTABLE BICYCLE. Falle R. Jensen, 44 W. Del Amo Blvd., Long Beach, Calif., 90805.

The Department of Health, Education, and Welfare is offering the following 5 patents for licensing as provided by Title 45 C.F.R. Section 6.3.

Inquiries should be addressed to: Norman J. Latker, Chief, Patent Branch, % National Institutes of Health, Room 5A03, Westwood Bldg., Bethesda, Md., 20014.

3,617,344. NONTHROMBOGENIC PLASTIC SURFACES AND PREPARATION THEREOF.

3,635,889. ADHESION PROMOTING DENTAL MATERIALS.

3,637,677. NITROSOAMINES.

3,637,695. SYNTHESIS OF HOMOPTERAIC AND HOMOFOLIC ACID.

3,304,990. EXPLOSION PROOF CENTRIFUGAL EVAPORATOR WITH MAGNETIC DRIVE.

General Electric Company is prepared to grant non-exclusive licenses under the following 44 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: General Electric Company, Control and Drives Automation Business Division, 3001 East Lake Road, Erie, Pa., 16501. Attention: Patent Counsel.

2,896,100. ELECTRODYNAMIC MACHINE.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,560,847. APPARATUS AND PROCESS FOR DETECTING LIVE BACTERIA.

Applications for license under the following patent may be addressed to: Patent Counsel, Communication Systems Business Division, General Electric Company, Waynesboro, Va., 22980.

3,609,219. SYSTEM FOR REGULATION OF COLOR TELEVISION CAMERA SIZE AND CENTERING CURRENTS.

Applications for license under the following 2 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,614,693. LIQUID COOLING OF ELECTRICAL APPARATUS.

3,617,606. SHIELDED BUSHING CONSTRUCTION.

Applications for license under the following 4 patents may be addressed to: Patent Counsel, Data Communication Products Department, General Electric Company, Waynesboro, Va., 22980.

3,569,944. METHOD OF OPTICAL RECORDING OF BINARY CODES.

3,615,325. METHOD OF MAKING A SLEEVE-TYPE METAL TO GLASS TO METAL TO METAL SEAL.

3,621,112. HOUSING FOR ELECTRICAL COMPONENTS.

3,621,174. LUBRICATIVE ATMOSPHERE FOR SEALED SWITCHES.

Applications for license under the following 9 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,467,458. REFRIGERATION INNER DOOR CONSTRUCTION.

3,592,771. TUBULAR HEATING ELEMENTS AND MAGNESIA INSULATION THEREFOR AND METHOD OF PRODUCTION.

3,593,544. AUTOMATIC CLOTHES DRYER TO HEAT SHRINK TRANSFER AGENT USED TO CLEAN FABRICS.

3,595,036. DISPENSER FOR TREATING CHEMICAL.

3,603,631. PUSH TO RELEASE LATCH FRICTION TYPE.

3,612,827. FLAT PLATE SURFACE HEATING UNIT.

3,613,636. PYROLYTIC CLEANING OF DOUBLE OVENS.

3,618,335. AUTOMATIC ICEMAKER.

3,622,478. CONTINUOUS REGENERATION OF FERRIC SULFATE PICKLING BATH.

Applications for license under the following 13 patents may be addressed to: Patent Counsel, Lamp Business Division, General Electric Company, Nela Park, Cleveland, Ohio, 44112.

3,275,358. GLASS-TO-METAL AND GLASS-TO-CERAMIC SEALS.

3,275,359. GLASS COMPOSITION FOR HERMETIC SEALS.

3,314,893. GROUP II METAL-THORIUM PHOSPHATE PHOSPHORS.

3,335,084. METHOD FOR PRODUCING HOMOGENEOUS CRYSTALS OF MIXED SEMICONDUCTIVE MATERIALS.

3,351,486. PREPARATION OF THORIUM PYROPHOSPHATE.

3,361,678. SILICON CARBIDE LUMINESCENT MATERIAL.

3,374,179. GREEN EL ZINC SULFIDE PHOSPHOR.

3,379,502. SINGLE CRYSTAL PHOSPHIDE PRODUCTION.

3,389,089. BLUE ELECTROLUMINESCENT PHOSPHOR AND METHOD FOR ITS PRODUCTION.

3,396,307. TRANSISTOR INVERTER LAMP BALLASTING CIRCUIT.

3,470,107. SILICON CARBIDE PHOSPHORS.

3,541,018. INFRARED-EXCITABLE YTTERBIUM SENSITIZED ERBIUM OR THULIUM ACTIVATED RARE EARTH FLUORIDE LUMINESCENT MATERIAL.

3,541,022. INFRARED EXCITABLE YTTERBIUM SENSITIZED ERBIUM ACTIVATED RARE EARTH OXYSULFIDE LUMINESCENT MATERIAL.

Applications for license under the following 13 patents may be addressed to: Patent Counsel Contractor Equipment Business Division, General Electric Company, 1285 Boston Ave., Bldg. 21 ES, Bridgeport, Conn., 06602.

2,942,223. ELECTRICAL RESISTANCE HEATER.

2,958,121. METHOD OF FORMING INTEGRAL FINNED SHEATHED HEATERS.

2,964,307. SEALING MEANS.

3,045,095. PRINTED WIRING BOARD REPAIR APPARATUS.

3,066,210. POWER OSCILLATOR.

3,066,264. POWER AMPLIFIER.

3,154,669. ELECTRIC HEATER AND SUPPORT ASSEMBLY.

3,259,993. APPARATUS AND METHOD FOR TREATING STRIP.

3,304,408. ELECTRIC HEATING DEVICES.

3,348,021. ELECTRIC HEATER ASSEMBLY FOR A SAUNA ROOM.

3,351,329. WIRE COATING OVEN APPARATUS.

3,509,835. COMBINED FILTER-INCINERATOR DEVICE FOR WASTE DISPOSAL SYSTEM.

Disclaimers

Re. 26,910.—*Martin L. Klein*, San Clemente, *Harry C. Morgan*, Anaheim, and *Richard B. Rush*, Granada Hills, Calif. HIGH SPEED DATA CONVERSION AND HANDLING. Patent dated June 23, 1970. Disclaimer filed Nov. 19, 1971, by the assignee, *North American Rockwell Corporation*.

Hereby enters this disclaimer to claims 6, 8, 18, 19 and 22 of said patent.

3,336,707.—*William J. Horgan, Jr.*, Pittsburgh, Pa. STRUCTURAL GASKET CURTAIN WALL. Patent dated Aug. 22, 1967. Disclaimer filed Nov. 26, 1971, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,402,007.—*Erwin Gerlach*, Stockholm, Sweden. FILM FEEDING MECHANISM. Patent dated Sept. 17, 1968. Disclaimer filed Nov. 8, 1971, by the assignee, *Eastman Kodak Company*.

Hereby enters this disclaimer to claims 16 and 21 of said patent.

3,406,526.—*Dudley T. Lusk*, Westmont, Ill. DOUBLE WALLED CRYOGENIC VESSEL. Patent dated Oct. 22, 1968. Disclaimer filed Nov. 12, 1971, by the assignee, *Chicago Bridge & Iron Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 6 and 7 of said patent.

3,552,470.—*Frederick S. Metcalfe*, Columbus, Ohio. ROOM AIR CONDITIONER MOUNTING ARRANGEMENT. Patent dated Jan. 5, 1971. Disclaimer filed Nov. 10, 1971, by the assignee, *Westinghouse Electric Corporation*.

Hereby enters this disclaimer to all of the claims of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 8, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-06-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-23-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-25-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-10-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-08-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-20-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-04-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-04-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-04-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-06-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-08-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-11-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during February 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

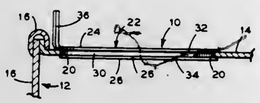
Patents..... Numbers 2,700,764 to 2,702,900, inclusive
Plant Patents..... Numbers 1,345 to 1,354, inclusive

REISSUES

FEBRUARY 29, 1972

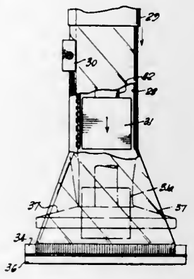
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,301
CAN CLOSURE PLUG
Robert S. Lutzker, Scarsdale, N.Y., assignor of thirty-three and one-third percent to Lawrence D. Lutzker, Scarsdale, N.Y.
Original No. 3,445,030, dated May 20, 1969, Ser. No. 711,557, Mar. 8, 1968. Application for reissue Feb. 6, 1970, Ser. No. 9,141
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 **11 Claims**



A closure for sealing a can opening defined in the top end wall of the can comprising a substantially resilient member which is provided with a peripheral groove of decreasing depth from front to rear. The front portion is slid into place with the edge walls of the opening received in the groove. The decreasing depth of the groove facilitates snapping the remainder of the member into place to seal the opening.

27,302
METHOD OF MAKING DISPENSING CONTAINERS
William S. Schneider, Glendale, and Arthur P. Corella, Hollywood, Calif., assignors of eleven and one-quarter percent to Wayne V. Rodgers, South Pasadena, Calif., and ten percent to Carl Schneider, Peninsula, Calif.
Original No. 3,552,087, dated Jan. 5, 1971, Ser. No. 650,077, June 29, 1964, which is a division of Ser. No. 391,130, Aug. 21, 1964. Application for reissue July 15, 1971, Ser. No. 159,146
Int. Cl. B65b *9/06*
U.S. Cl. 53—28 **34 Claims**



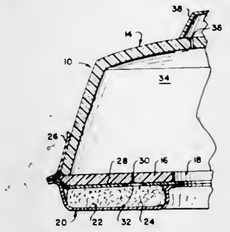
The method involves making a "stand-up" package from flexible film of the heat sealable variety, by crushing and flattening one end of a tube and then thermally molding or setting the film to form stiffened, self-sustaining folds.

PATENTS

GRANTED FEBRUARY 29, 1972

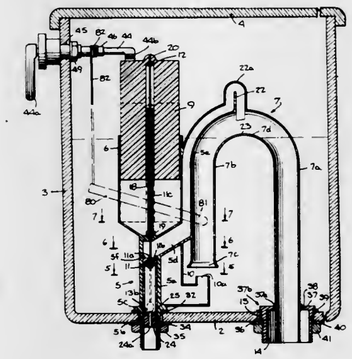
GENERAL AND MECHANICAL

3,644,939
AIR DAMPED HEARING PROTECTOR EARSEAL
Fred P. Beguin, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 12, 1970, Ser. No. 80,064
Int. Cl. A41d *1/06*
U.S. Cl. 2—209 **5 Claims**

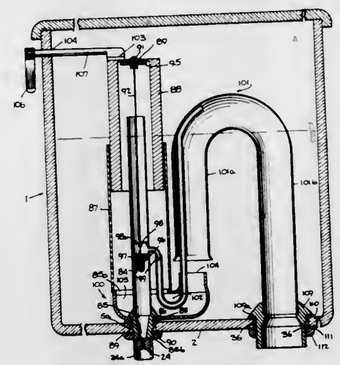


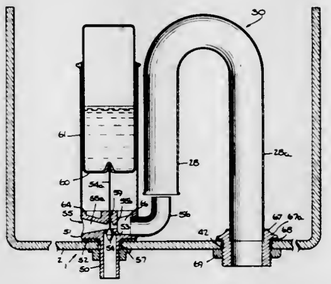
A hearing protector earcup having an earseal in the form of an annular envelope of highly flexible plastic sheet material held tightly against a rigid inwardly directed flange of the earcup. Capillary holes are provided through the rigid earcup flange in communication with larger openings in the envelope of the earseal wherewith airflow through the capillary orifices, into and from the earseal envelope, is exploited to achieve greater wearing comfort and strong damping of vibrations of the earcup resulting from excitation by ambient low-frequency sound waves. An additional small opening through an outer wall of the cup vents its interior.

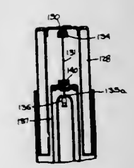
3,644,940
FLUSHING DEVICE
Vernon D. Roosa, 184 Wood Pond Road, West Hartford, Conn.
Filed July 8, 1970, Ser. No. 53,170
Int. Cl. E03d *1/10*
U.S. Cl. 4—47 **26 Claims**



A flushing device for toilets having a float directly connected to the movable part of an inlet valve to form a unitary moving element. A siphon empties the flush tank and becomes inactive until a full tank is flushed again. When the float, which is slidably mounted in a chamber, is forced down for flushing, it forces water from the float chamber into the siphon either alone or with water from the inlet valve, to start a siphoning action to empty the flush tank. At the same time the float opens the inlet valve to supply additional water to start the siphon and to keep the valve open until the flush tank is refilled at which time the float has been raised to its





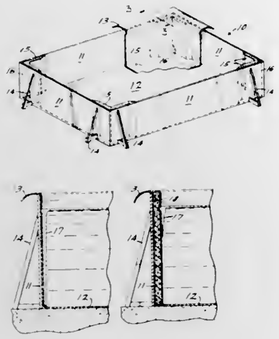


normal position. Provisions are made for preventing a reverse flow from the tank into the inlet pipe during failure of the water supply and for filling the toilet bowl to the desired level at the end of the flushing operation. Provision is also made for conserving water by flushing a predetermined quantity of water for solids and considerably less water for liquids and by providing means for regulating the amount of water to be flushed by the flushing unit.

3,644,941
SWIMMING POOL LINER
Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio
Filed Dec. 3, 1970, Ser. No. 94,871
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 **11 Claims**

An aboveground swimming pool having rigid sidewalls, vertical corners, and a flexible plastic liner. Each corner of

the liner has a thermal barrier interjacent the liner and the sidewalls, extending the vertical height of the pool. The thermal barrier retards ice formation in the corners of the pool to prevent damage to the liner.



3,644,942

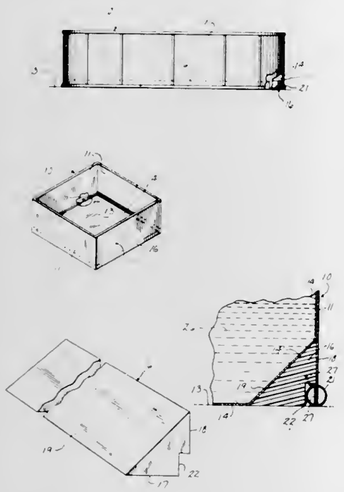
SWIMMING POOL LINER SUPPORT MEANS

Donald C. Haight, 174 West Allerton Ave., Milwaukee, Wis.

Filed June 10, 1970, Ser. No. 44,947

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **17 Claims**



A preformed liner support or so-called filler device of triangular cross section which is designed for fast and easy installation in an above-the-ground swimming pool or other pool utilizing a flexible plastic water-retaining liner. Said triangular filler device is positioned on the ground along the bottom of the pool sidewalls, within the pool interior, and is designed to provide support means for the lower portion of said plastic liner to prevent the same from being ruptured by the weight of the water in the pool, as well as eliminating the possibility of water pressure forcing said liner beneath the bottom edge of said pool sidewalls.

3,644,943

DEVICE FOR CLEARING BLOCKAGES IN THE OUTLETS OF SINKS, BATHS OR THE LIKE

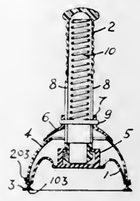
Giuseppe Parodi fu Leonardo, and Giuseppe Perodi di Francesco, both of 5/2 Via Benedetto da Cesino, Genoa, Italy

Filed Dec. 31, 1968, Ser. No. 788,301

Claims priority, application Italy, Jan. 4, 1968, 829,420

Int. Cl. E03d *5/09*

U.S. Cl. 4—255 **2 Claims**



A device for clearing blockages in the outlets of sinks, baths or the like comprises an elastomeric cup to the base of which is fixed a reciprocable handle. An annular pressing member engages the cup adjacent the rim and acts between the rim and the base of the cup or between the rim and the handle to bias the cup to its expanded condition so that in use the rim is held in engagement with the bottom of the bath or the like as the handle is reciprocated.

3,644,944

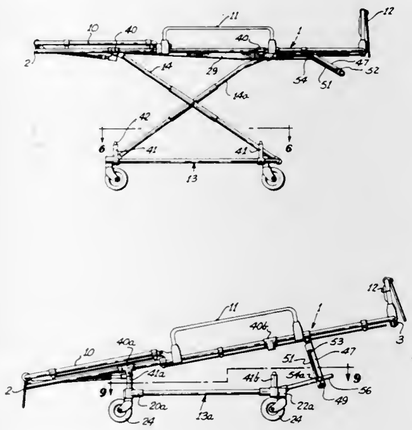
AMBULANCE COT CONSTRUCTION

Elroy E. Bourgraf, Cincinnati, and Kenneth R. Self, Washington, both of Ohio, assignors to Ferno-Washington, Inc., Greenfield, Ohio

Filed May 20, 1970, Ser. No. 39,044

Int. Cl. A61g *1/02, 7/10*

U.S. Cl. 5—62 **9 Claims**



An adjustable ambulance cot construction wherein the patient-supporting frame of the cot is adjustable to effect the Trendelenburg position in which the patient's feet are elevated relative to the head, the cot frame being pivotally movable relative to one end of the undercarriage or other support on which the cot frame is mounted, the cot frame being releasably held in the elevated position by means of spring-biased slotted arms interconnecting the cot frame and a portion of the undercarriage, the arms being movable from an extended to a retracted position, thereby raising and

lowering the foot end of the cot. The invention is applicable to elevating and nonelevating types of cots, and in the former case contemplates an improved undercarriage which enables the entire cot frame to be raised or lowered irrespective of whether the cot frame is in a horizontal position or in the Trendelenburg position.

3,644,945

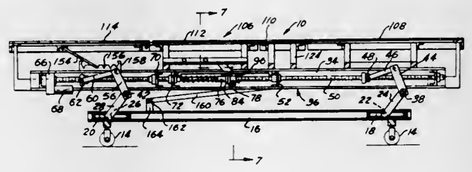
ADJUSTABLE HOSPITAL BEDS

Robert Goodman, Philadelphia, and David G. Kilpatrick, Bala Cynwyd, both of Pa., assignors to Goodman Brothers Manufacturing Company, Philadelphia, Pa.

Filed Dec. 31, 1969, Ser. No. 889,545

Int. Cl. A61g *7/00, 7/10*

U.S. Cl. 5—63 **9 Claims**



An adjustable bed of the so-called "hospital type" which may optionally be vertically or angularly adjusted as a unit and which is provided with a bedspring having articulated sections which are relatively angularly adjustable. The bed is provided with electrical control means for all the adjustments which may selectively be operated either by the nurse or other attendant or by the patient occupying the bed. This control means is provided with an electrical network, which is so constructed that it eliminates any possibility of electrical discharge which may cause a shock to the operator or which may cause a flammable spark.

3,644,946

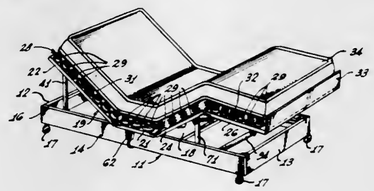
ADJUSTABLE BED

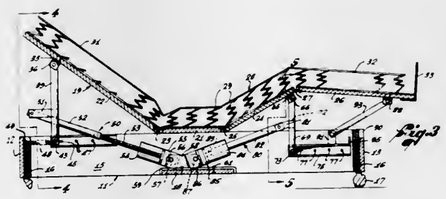
Leonard W. Swatt, Los Angeles, Calif., assignor to Acme Spring Company, Los Angeles, Calif.

Filed May 15, 1970, Ser. No. 37,722

Int. Cl. A61g *7/00, 7/10*

U.S. Cl. 5—68 **12 Claims**





An adjustable bed comprising a rectangular frame on which are mounted rigid bedboard sections supporting a coil spring directly thereon. The bedboard comprises a stationary seat section mounted on the frame, and head and thigh sections pivoted at fixed points relative to the frame and seat section and tiltable relative thereto. A foot section is pivoted to the thigh section for relative rotative movement therebetween. The foot section is connected to the frame by pivoted levers and the head and thigh sections have lever arms pivotally mounted thereon at one end and carrying rollers at their opposite ends mounted on trackways on the frame. Separate motor actuators individually rotate the arms pivotally mounted on the head and thigh bedboard sections to tilt them as the rollers ride on the trackways on the frame. The actuators are individually operated in opposite directions to adjust the bed by manual control.

3,644,947

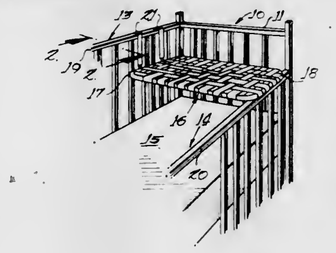
INFANT-SUPPORTING DEVICE FOR A CRIB

Robert F. Padera, 4725 North Sayre Ave., Harwood Heights, Ill.

Filed July 24, 1970, Ser. No. 58,086

Int. Cl. A63g *23/04; A47d 9/00*

U.S. Cl. 5—92 **1 Claim**



A device for safely supporting an infant upon a crib for use while changing its diaper or clothing, the device spanning the sides of the crib at one end below and protected at two sides by a side and end railing of the crib.

3,644,948

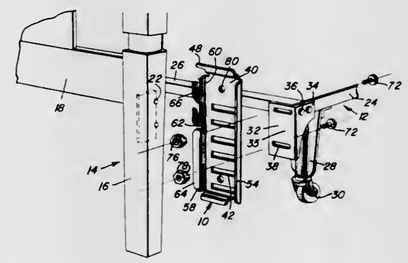
ADAPTER UNIT FOR INTERCONNECTING BEDFRAMES AND HEAD AND FOOTBOARDS

Harry Fredman, 908 South Washington St., Peoria, Ill.

Filed Jan. 15, 1969, Ser. No. 791,241

Int. Cl. A47c *19/02*

U.S. Cl. 5—296 **4 Claims**



An adapter unit in the form of a slotted bracket for attachment to a bedframe in a horizontally and vertically adjusted position with upwardly projecting hooks thereon for engagement under the conventionally provided pins on a headboard and with cooperating bearing surfaces to stabilize and rigidify the engagement. The adapter unit is constructed

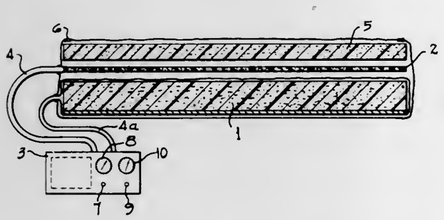
for mounting selectively at either side of the bedframe for various-size bedding and is capable of adapting to the varying widths of headboards.

3,644,949
MULTIPLE INFLATABLE PILLOW
Jack Diamond, 5135 Wissioming Road, Washington, D.C.
Filed June 17, 1970, Ser. No. 47,090
Int. Cl. A47g 9/00; A47c 27/08
U.S. Cl. 5—338 **1 Claim**



An air cushion having plural superposed independently inflatable cushioning pads.

3,644,950
PATIENT SUPPORT SYSTEM
Edward R. Lindsay, Jr., Clearwater, Fla., assignor to Milton Roy Company, St. Petersburg, Fla.
Filed Aug. 1, 1969, Ser. No. 846,719
Int. Cl. A47c 27/08
U.S. Cl. 5—347 **5 Claims**



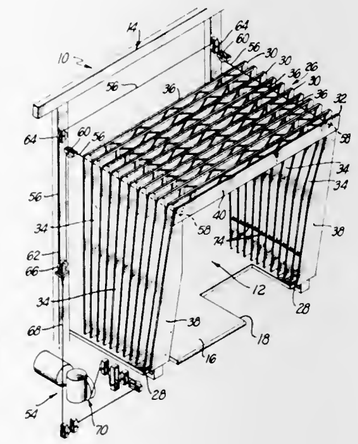
In a bed for supporting and treating a hospital patient, a lamination of low and medium density plastic foam is enclosed in a pressurized container. An open pore foam layer on top of the container produces a flow of air from the top of the foam layer for patient ventilation. Control of the volume of air varies the degree of ventilation. The container is divided into airtight zones which can be independently pressurized to control the relative firmness of the support in different zones. The pressurizing air for the container is controlled to vary the relative firmness of support.

3,644,951
COMBINATION TRUCK WHEEL UNLATCHING HOOK AND PETCOCK RELEASE DEVICE
Donald A. Colburn, 13 State St., Manchester, N.Y.
Filed Feb. 26, 1970, Ser. No. 885,625
Int. Cl. B25f 1/04
U.S. Cl. 7—1 G **2 Claims**



An extension rod device for unlatching and pulling the lever on a trailer truck's fifth wheel without getting the user's clothes dirty. This device also includes a slotted end for engaging the air tank petcock in order to release therefrom.

3,644,952
CANOPY FRAME ASSEMBLY FOR CAB OF AIRPLANE LOADING AND UNLOADING RAMP
Gerald S. Hatch, South Ogden, Utah, assignor to Stanray Corporation, Chicago, Ill.
Filed July 29, 1970, Ser. No. 59,130
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **9 Claims**



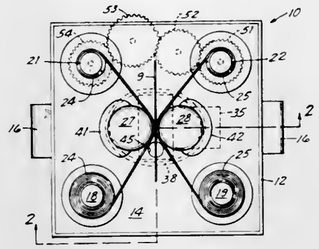
A passenger loading and unloading ramp, bridge, tunnel, gangway or conveyance for airplanes provided at its outer end with a cab having a flexible canopy structure providing a weathertight seal between the cab and the fuselage of the airplane around a doorway with which the passageway through the cab registers. The canopy structure includes a canopy frame assembly which includes a series of canopy frames spaced-apart longitudinally of and enclosing the passageway through the cab, each frame having the general configuration of an inverted U and including laterally spaced, generally upright arms located on opposite sides of the passageway and connected at their lower ends to the supporting structure of the cab. The canopy frames are rigid transversely of the passageway through the cab, but the arms of the frames are flexible longitudinally of the passageway. With this construction, the canopy frame assembly may flex as required to permit the canopy structure to achieve weathertight seals with a wide variety of airplane fuselage configurations.

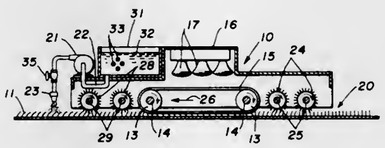
3,644,953
SHEET-CLEANING APPARATUS
Robert W. Christiansen, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 8, 1970, Ser. No. 44,317
Int. Cl. B08b 11/00
U.S. Cl. 15—1.5 **7 Claims**

An inexpensive manually operated device for thoroughly cleaning photographic film negatives. The device includes two pneumatically inflated cylinders that press two lengths of wiping cloth into even and intimate contact with opposite

surfaces of a negative passed between the lengths of cloth. The device blows ionized air across the negative after it is wiped clean to neutralize any static electrical charges present on the negative.

3,644,954
APPARATUS FOR TREATING SYNTHETIC TURF
Richard D. LeGrand, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 24, 1970, Ser. No. 75,052
Int. Cl. A47l 11/18
U.S. Cl. 15—50 C **8 Claims**

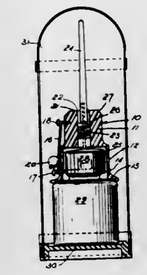




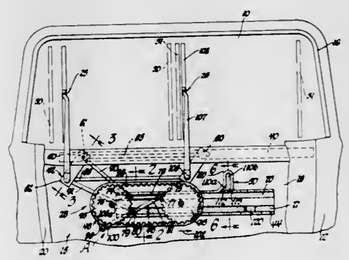
Apparatus is provided for rejuvenating artificial turf surfaces in which the pile lay has become unacceptable. Briefly, the apparatus comprises means to spray liquid on the surface followed by a moving belt, which contacts the surface and moves in a direction opposite the pile lay and which is heated to a temperature at least as high as the boiling point of the liquid. The belt is followed by rotatable brushes which buff the turf surface. As an additional feature, if the surface requires cleaning, the liquid employed is a detergent solution and an additional set of brushes are provided between applications of detergent and the belt. The machine is passed over the surface manually by having an operator push it in the desired direction, or it may be power driven.

3,644,955
FALSE EYELASH CURLING AND CLEANING DEVICE
Kathleen Mackiernan, Canton, Mass., assignor to Stephen T. Goode, Chicago, Ill., a part interest
Filed Mar. 22, 1971, Ser. No. 126,401
Int. Cl. B08b 11/02; A45d 2/48, 44/18
U.S. Cl. 15—104.92 **6 Claims**

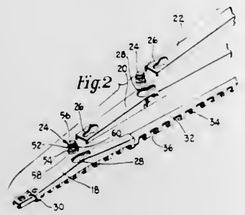
A false eyelash curling and cleaning device having a unitary body member providing a rounded surface for curving the base thread portion of a pair of false eyelashes, with a curved rim for curling the lashes proper, a cord for holding the eyelashes during storage and cleaning, said body member having means for removably housing a brush and for positioning a bottle containing cleaning fluid, and a base cup for holding the cleaning fluid into which the eyelashes on the body member may be lowered for cleaning and brushing without the user's fingers being immersed in the liquid.



3,644,956
TRANSVERSE WINDSHIELD-WIPING APPARATUS
Eric C. Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1970, Ser. No. 67,363
Int. Cl. B60s 1/32, 1/44
U.S. Cl. 15—250.16 **3 Claims**

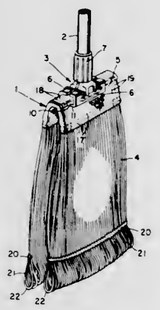


3,644,957
WINDSHIELD WIPER BLADE
Raymond A. Deibel, West Falls, and William C. Riester, Williamsville, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed May 20, 1970, Ser. No. 39,010
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.42 **3 Claims**



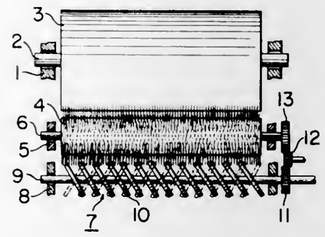
A windshield wiper blade includes a pressure-distributing frame having a series of levers arranged in partially overlapping relationship flexibly connected together; a lower articulating frame member retained by claws disposed at the free ends of adjacent lever members retains a rubber flexible blade interlocked with a blade-receiving seat in the lower frame member. Primarily for cold weather use the frame is enclosed by a rubber weather-protecting hood interlocked with the lower frame member and the rubber blade. An arm-attaching element is secured to the upper side. The lever members are connected together with a plastic or other non-metallic substantially cylindrically shaped connector; the connector includes annular grooves adjacent each end which form a head at each end and a spacing flange intermediate the ends. The annular groove at one end of the connector is received in a keyhole slot adjacent an end of the lever. The annular groove at the other end is slidably received in a keyhole slot formed intermediate the ends of an adjacent lever, the levers thus being spaced apart at their points of connection by the intermediate flange of the connector element.

3,644,958
MOP AND METHOD OF MAKING SAME
Theron V. Moss, 3175 Falmouth, Shaker Heights, Ohio
Filed Oct. 19, 1970, Ser. No. 81,965
Int. Cl. A47l *13/24*
U.S. Cl. 15—229 A **14 Claims**



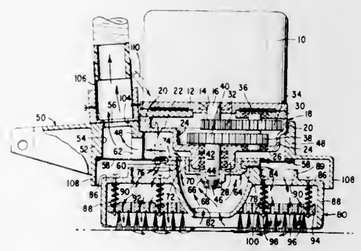
A mop having a relatively long fabric headband, and a pair of transverse members, preferably pieces of twine, disposed underneath the outer layer of headband material equally spaced on opposite sides of the transverse centerline of the headband which aid in securing the headband to a mop handle.

3,644,959
DEVICE FOR CLEANING PHOTOSENSITIVE MEMBER IN ELECTROPHOTOGRAPHY
Wasaburo Ohta, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed June 17, 1970, Ser. No. 47,098
Claims priority, application Japan, June 24, 1969, 44/60108
Int. Cl. G03g *15/16*
U.S. Cl. 15—256.52 **9 Claims**



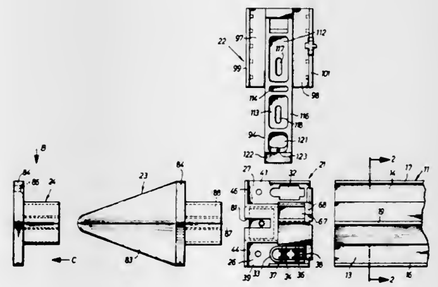
A device for cleaning or removing the toner particles which cling to photosensitive cylinders used in electrophotographic processing, comprising a rotating cleaning brush for removing the clinging toner particles from the photosensitive cylinder and means for in turn, cleaning the toner from the brush comprising a rotating shaft having a plurality of disks arranged thereon at angles to the rotational axis of the shaft in such a manner that the peripheral portions of the disks enter into the bristles of the brush, and the clinging toner is removed from the brush by the combined rotational and axial movement of the peripheries of the disks. The gradual oscillating motion of the disk peripheries with respect to the bristles avoids sudden bending and springback of the bristles so that the toner is effectively prevented from being scattered or dispersed.

3,644,960
FLOOR-CLEANING AND RUG-SHAMPOOING APPARATUS
Stanley Danzig, 4 Center St., Cresskill, N.J.
Filed May 21, 1970, Ser. No. 39,429
Int. Cl. A47l *11/30*
U.S. Cl. 15—322 **7 Claims**



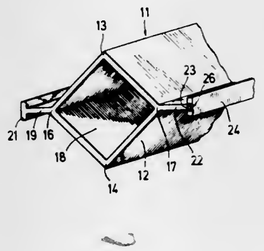
A surface-cleaning and rug-shampooing apparatus of the type wherein rotating cleaning and shampooing brushes are spaced by spiral wipers that direct the brushed-off material to the inlet of an air suction conduit at the center of the rotating brushes wherein the conduit consists of an open-ended chamber at the center of a rotating brush housing that communicates with a stationary housing formed with an outlet for connection to a suction pump. The stationary housing supports a motor and encloses a gear casing connecting a motor shaft to a driven shaft on which the brush housing is secured, and provides a passage between the chamber and the suction outlet therein.

3,644,961
SELF-SUPPORTING CURTAIN TRACK ARRANGEMENT
Wilhelm Hachtel, 6994 Niederstetten, West Germany
Filed Jan. 28, 1970, Ser. No. 6,411
Claims priority, application Germany, Mar. 3, 1969, P 19 10 680.0
Int. Cl. A47h *1/10*
U.S. Cl. 16—94 D **29 Claims**



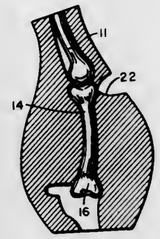
A track for curtain slides or rollers is made extremely rigid by vertical ribs extending from its top and bottom. It supports the slides or rollers by horizontal wings extending from its sides. Supporting arms extend from a wall and have downward directed dovetail ends which engage in complementing dovetail grooves in an intermediate member secured at the end of the track. A closing member is secured to the other end of the intermediate member for carrying a decorative end portion or for attaching the track to a wall.

3,644,962
CURTAIN ROD
Wilhelm Hachtel, 6994 Niederstetten, Germany
Filed Oct. 23, 1969, Ser. No. 868,752
Claims priority, application Germany, Dec. 7, 1968, P 18 13 338.5
Int. Cl. A47h *1/04*
U.S. Cl. 16—96 **6 Claims**



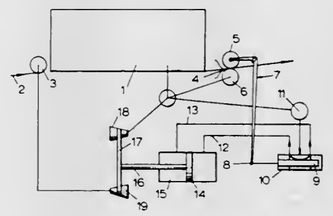
A curtain rod which is rigid in the vertical plane has supporting wings and guide means for curtain suspension members extending from both sides.

3,644,963
PROCEDURE FOR THE REMOVAL OF THE BONES FROM HAMS AND SIMILAR CUTS OF MEAT
Federico Terranova, 45 Parkview Drive N.E., Grand Rapids, Mich.
Filed July 24, 1969, Ser. No. 844,575
Int. Cl. A22c *17/04*
U.S. Cl. 17—46 **3 Claims**



A ham or a structurally similar cut of meat is conditioned for a coaxial rotary meat-stripping operation by removal of the kneecap and pinbone. The pinbone is removed by a tool surrounding the pinbone, and moved axially to a sufficient depth to isolate it from the adjacent leg bone, and preferably to a sufficient degree to sever it from its connection thereto at the upper extremity of the pinbone. The kneecap is removed by a nipping operation from the side.

3,644,964
APPARATUS FOR CONTROLLING THE VARIATION OF SLIVER DELIVERED FROM A CARDING MACHINE
John Maximilian Jules Varga, Toronto, Ontario, Canada, assignor to Carding Specialists (Canada) Limited, Toronto, Canada
Filed Aug. 29, 1969, Ser. No. 854,170
Claims priority, application Great Britain, Sept. 3, 1968, 41,750/68
Int. Cl. D01h *5/38*
U.S. Cl. 19—240 **10 Claims**

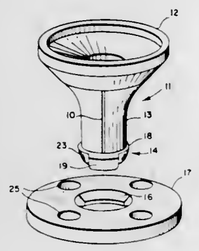


The invention comprises a method of and means for controlling the count of a sliver while being fed from a carding machine to ensure a substantially uniform sliver, the sectional size of the sliver being related to a valve setting and passed through sensing means so that any slight variation in the sliver size is sensed and magnified to operate the valve which operates a fluid motor which in turn operates variator control means capable of causing correction of the sliver size.

3,644,965
SNAP FASTENER

Edward Joel Kahn, Baltimore, Md., assignor to Togs, Inc., Baltimore, Md.

Continuation-in-part of application Ser. No. 819,144, Apr. 25, 1969, which is a continuation-in-part of application Ser. No. 781,296, Oct. 14, 1968, now abandoned. This application Oct. 2, 1969, Ser. No. 863,060
Int. Cl. A44b *1/32*
U.S. Cl. 24—90 R **5 Claims**

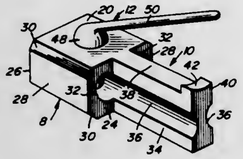


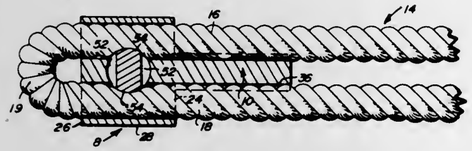
The invention disclosed is for a two-part snap-on fastening device which includes a button member having a stud projecting therefrom, and a foundation member securable to a garment. The projecting stud mates with the foundation member in a semipermanent fashion so that disengagement does not result during normal wearing conditions. In a preferred embodiment, the button portion is made of relatively hard material having a stud integral therewith, the free end of which is bulbous and adapted to be inserted into the somewhat resilient foundation member and form a semipermanent connection therewith.

3,644,966
LINE CLAMP

Edward Ted Higgins, Saginaw, Mich., assignor to Line and Rope Clamp, Inc., St. Charles, Mich.

Continuation-in-part of application Ser. No. 819,754, Apr. 28, 1969, now abandoned. This application Mar. 19, 1970, Ser. No. 21,064
Int. Cl. F16g *11/00*
U.S. Cl. 24—134 QA **10 Claims**



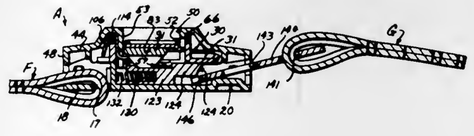


A line clamp for use when called upon to manually bend and form an adjustable nooselike eye at an end portion of a bendable boat tying line, a tent staking or stay rope, a tarpaulin holddown rope, clothesline or the like. It comprises a blocklike body provided with open-ended spaced parallel first and second holes for passage of first and second loop-forming portions of the associated line. A median portion of the body has a third hole providing a passage for a clamping pin for oriented space parallel portions of the line. This pin has readily accessible manually actuatable handling and latching means.

3,644,967
SAFETY BELT BUCKLE

Louis Romanzi, Jr., Brighton Township, Mich., and Robert C. Pfeiffer, Lexington, Ky., assignors to Irvin Industries Inc., Lexington, Ky.

Filed Dec. 4, 1968, Ser. No. 781,016
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 AK **14 Claims**

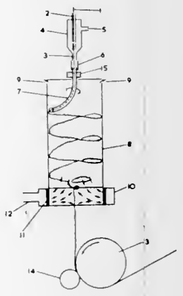


A pushbutton-type safety belt buckle having a movable latch member for releasable retention of a tongue connector plate in operable engagement with a catch dog member, and cam means for relative translatory linear movement of the latch member to enable release of the tongue connector plate from the catch dog member on movement of the pushbutton by depression thereof.

3,644,968
APPARATUS FOR RELAXING YARNS

David Robert Elliott, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 31, 1969, Ser. No. 889,518
Claims priority, application Great Britain, Dec. 31, 1968, 61,962/68
Int. Cl. D02g *1/00*
U.S. Cl. 28—1.2 **8 Claims**

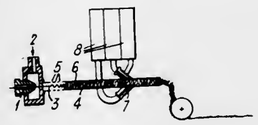


Apparatus for relaxing yarns comprising a fluid device for tensioning and forwarding the yarn to a hot relaxation zone wherein tension is caused to fall.

3,644,969
PROCESS FOR PRODUCING YARNS SHOWING NOVEL VARYING COLOR EFFECTS

Rene Guillermin, Bron, and Jean Joly, Brindas, both of France, assignors to Societa Rhodiaceta, Paris, France

Continuation-in-part of application Ser. No. 649,089, June 16, 1967. This application Nov. 25, 1969, Ser. No. 879,880
Claims priority, application France, June 28, 1966, 67290
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **2 Claims**

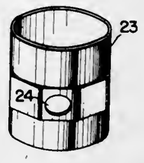


Yarns showing novel color effects varying along their length are made by feeding a thermoplastic yarn into a confined space, so forming a long stack of uniform cross section of folded yarn in the said space, by means of a jet of fluid at a temperature sufficient to set the resulting crimp in the yarn, and feeding a dye solution, preferably two or more dye solutions at different locations to the same cross section of the stack, under conditions such that the resulting intensity of color of the yarn due to each dye falls off across the stack from the point or points of application.

3,644,970
METHOD OF MANUFACTURING AN ANODE MEMBER FOR AN X-RAY TUBE

Yoshitaka Seki, and Kaname Tanabe, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of application Ser. No. 723,399, Apr. 23, 1968, now abandoned. This application July 7, 1970, Ser. No. 52,824
Claims priority, application Japan, Apr. 28, 1967, 42/27129
Int. Cl. H01j *9/16, 9/44*
U.S. Cl. 29—25.18 **3 Claims**



A method of manufacturing an anode member for an X-ray tube comprising the steps of preparing a cylindrical metal body with uniform thin thickness, inserting said metal body into a press mold in which at least one portion of its die hole is formed into a cylindrical shape and the other portion of said die hole assumes a polygonal cross section, inserting a cylindrical filler into the metal body, and applying pressure to the metal body through said filler to form part of the body into a polygonal shape in cross section.

3,644,971
METHOD FOR MANUFACTURING ROLLING BEARING COMPONENTS AND COMPONENT MANUFACTURED ACCORDING TO THE METHOD

Gunnar Bertil Axbard, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Co. N.V.

Filed May 15, 1970, Ser. No. 37,689
Claims priority, application Sweden, May 16, 1969, 6935/69
Int. Cl. B21d *53/12*
U.S. Cl. 29—148.4 C **3 Claims**

The method for manufacturing rolling bearing components such as cages and cage portions for deep groove ball bearings or angular contact ball bearings and loose guiding rings for spheric roller bearings by forming the material, which may be sheet metal or wire, to a spring formed unit, cutting a coil of

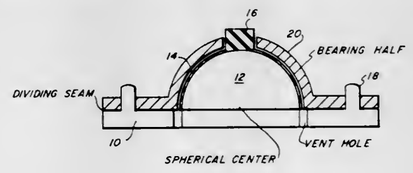


the unit, joining the overlapping ends of the coil by welding, whereupon the joint is pressed to such an extent that the thickness of the material is uniform all around the unit and thereupon giving the unit the final shape in a press.

3,644,972
METHOD FOR PRODUCING BEARING HEMISPHERICAL CAVITIES

John L. Evans, Oakland, and Anthony G. Rubino, Nutley, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed June 24, 1969, Ser. No. 836,025
Int. Cl. B21d *53/10;* **B23p** *11/00*
U.S. Cl. 29—149.5 **2 Claims**

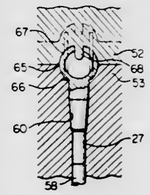


Method of manufacturing high-accuracy bearing for gas gyro using casting techniques. The bearing cavity is formed using a die or tool in the form of an accurately machined half sphere fastened to a flat baseplate. The baseplate is fitted with locating pins that locate the outer diameter of the housing half. The die used in said method is an aluminum alloy coated with a thin film of a silicone rubber coating.

3,644,973
METHOD OF MAKING BALL STUDS FROM METAL RODS

Michio Abe, Kasugai, Japan, assignor to Tokai Cold Forming Co. Ltd.

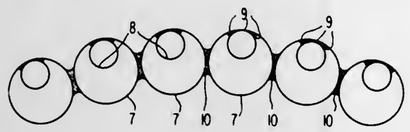
Continuation-in-part of application Ser. No. 715,207, Mar. 22, 1968, now Patent No. 3,553,826, dated Jan. 12, 1971. This application Apr. 7, 1970, Ser. No. 26,202
Int. Cl. B21d *53/10;* **B23p** *11/00, 17/00*
U.S. Cl. 29—149.5 B **4 Claims**



A method of making a ball stud from a metal rod, comprising the steps of cutting from the metal rod, a blank having

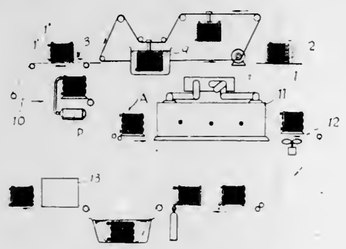
generally the same volume and outer diameter as that of a finished ball stud, forwardly extruding one end of the blank positioned within a die cavity to form a taper, stem and shank portions, forming a preliminary cylindrical shape with a shallow cavity on the other end of the blank, the diameter of said preliminary cylindrical portion being smaller than the outer diameter of a finished spherical head, backwardly extruding the other end to form a preliminary cylindrical shape having a wall of generally the same thickness as that of a finished spherical head portion, and upsetting the preliminary cylindrical shape to form a spherical hollow head portion in the die cavity, whereby the upsetting operation is achieved with an application of a mixture of oil and air to pressurize the inner space of the spherical hollow head portion.

3,644,974
PROCESS FOR MANUFACTURING COMBUSTION CHAMBER AND/OR NOZZLE OF A ROCKET
Michael Simon, Hamburg-Othmarschen, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft
Filed Mar. 17, 1969, Ser. No. 807,703
Claims priority, application Austria, Mar. 15, 1968, A 2619/68
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 **3 Claims**



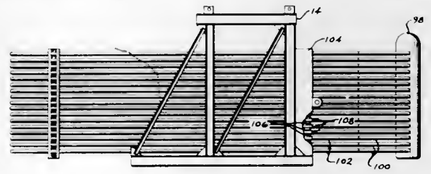
Process for manufacture of a combustion chamber and/or nozzle of a rocket engine wherein a plurality of straight pipes are first longitudinally disposed and bonded together to form a cylindrical chamber and then the chamber is shaped to form a nozzle configuration, the pipes possibly additionally including cooling pipes and inserts disposed therein.

3,644,975
METHOD OF MANUFACTURING A HEAT EXCHANGER
Keiichi Kimura, 2-304, Osakabe, Yao, Japan
Continuation-in-part of application Ser. No. 649,325, June 27, 1967, now abandoned. This application Dec. 24, 1969, Ser. No. 887,826
Int. Cl. B21d *53/02*
U.S. Cl. 29—157.3 V **9 Claims**



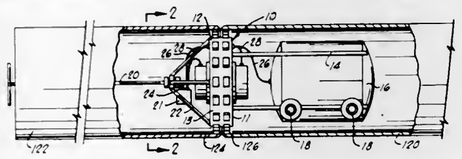
Method and apparatus for mounting fins unto pipes for a heat exchanger comprising the steps of placing a predetermined number of pipes into the orifices of one or more fins, the outer diameter of the pipes being less than the orifices, sealing liquid in said pipes, and heating said liquid to a superheated vapor to expand said pipes so as to expand the outer diameter of the pipes to tightly fit within the orifices.

3,644,976
METHOD FOR CONSTRUCTING SUPERHEATER AND/OR REHEATER MODULES
James C. Roberts, Jr., Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Apr. 21, 1970, Ser. No. 30,370
Int. Cl. B21d *53/02*; **B23p** *15/26*
U.S. Cl. 29—157.4 **5 Claims**



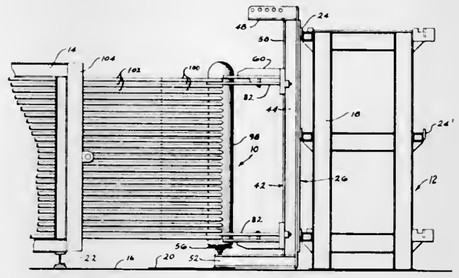
A method for shop assembly of superheater and/or reheater modules wherein a segment of a superheater or reheater header, as it is formed in the shop, is accurately positioned in a vertical orientation with respect to a fixed reference base. A lifting and shipping frame is particularly positioned on the reference base with respect to the header segment. Individual tube panels are placed in the frame and joined to the header until a complete module is built up. The module may then be conveniently shipped in its frame to the erection site where it may be positioned and joined to similar modules to form the unitary superheater or reheater structure.

3,644,977
APPARATUS FOR ALIGNING THE ENDS OF ADJOINING LENGTHS OF PIPE
L. Travis Valentine, 1303 Davon Ln., Houston, Tex.
Filed Dec. 3, 1969, Ser. No. 881,839
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **6 Claims**



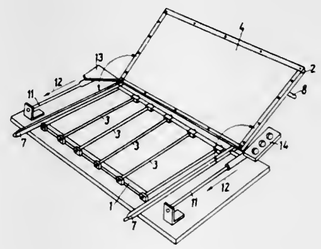
The present disclosure relates to apparatus for aligning the ends of adjoining lengths of pipe so that they may be conveniently welded together, such as in the construction of pipelines and the like. A cylindrical housing having a pair of drive wheels rotatably journaled therein is movably supported inside the pipe lengths to be welded together. A plurality of elongated shaft members are pivotally attached to each of the drive wheels in spaced relation around the peripheries thereof, said shaft members each having one end extending outwardly from the sides of the housing and being slidably secured therein so that rotation of the drive wheels causes the shaft members to be moved inwardly or outwardly with respect to the housing. Means are attached to the housing for selectively rotating the drive wheels, and a shoe for contacting the inside surfaces of the pipe without causing damage thereto is attached to each of the shaft members. The apparatus of the present disclosure is positioned with the shoes inside adjoining ends of the lengths of pipe and the drive wheels are rotated so that the shoes are extended outwardly against the inside surfaces thereof, thereby securing the ends of the lengths of pipe in an aligned position.

3,644,978
ASSEMBLY FIXTURE FOR CONSTRUCTING SUPERHEATER AND/OR REHEATER MODULES
Robert P. Sullivan, Chattanooga, and John N. McClain, Signal Mountain, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Apr. 28, 1970, Ser. No. 32,573
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 R **9 Claims**



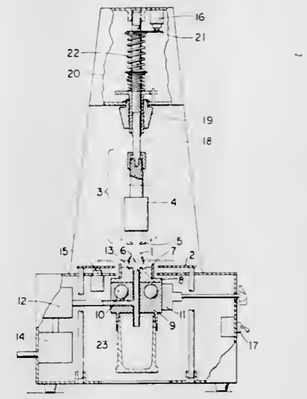
A fixture for shop assembly of superheater and/or reheater modules including a structural frame having accurately machined surfaces to enable exact positioning of a segment of a superheater or reheater header in a particular orientation with respect to a lifting and shipping frame mounted on a fixed reference base. The module may then be completed by placing individual superheater or reheater tube panels in the frame and joining them to the header.

3,644,979
DEVICE FOR FITTING CONDUCTOR PLATES
Ernst Bura, Bickenbach, Germany, assignor to Fernseh GmbH, Am Alten Bahnhof, Germany
Filed Mar. 27, 1970, Ser. No. 23,325
Claims priority, application Germany, Apr. 3, 1969, G 69 13 559
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **5 Claims**



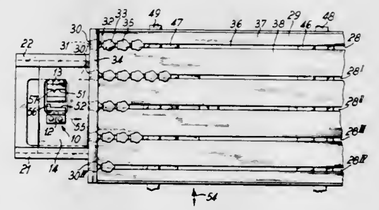
A device for fitting electrical components upon conductor plates comprising a frame for accommodating the plates and a cover capable of being closed upon the frame, the inner side of the cover being provided with a layer of foam material which with a membrane also on the cover forms an adjustable air cushion which can be varied by pumping air into it to accommodate electrical components of varying height.

3,644,980
COMPONENT REMOVAL DEVICE
Charles A. Class, Jr., Oreland; Robert M. Van Zyl, Lafayette Hill, and Donald C. Sedberry, Oreland, all of Pa., assignors to Pace, Inc., Silver Spring, Md.
Filed June 25, 1969, Ser. No. 836,391
Int. Cl. H01r *3/00*
U.S. Cl. 29—203 B **3 Claims**



An apparatus to permit the removal of soldered components from a mounting surface. A molten solder bath is employed to heat the securing solder to its melting point. A spring loaded gripper device holds the component during the heating operation. When the securing solder becomes liquid the component is lifted from the mounting surface by the gripper device. During this removal process a vacuum is applied to the mounting area to remove the liquid solder from the mounting holes and the surrounding surface.

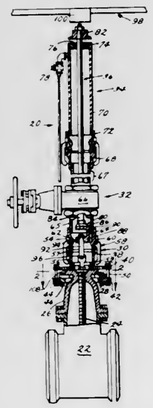
3,644,981
DEVICE FOR FACILITATING PULLUP OR SLIDERS ON SLIDE FASTENER CHAINS
Pertti O. Gustavsson, Bogesundsgatan 6, Boras, Sweden
Filed Mar. 18, 1970, Ser. No. 20,556
Claims priority, application Germany, Mar. 19, 1969, P 19 13 873.9
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL **11 Claims**



Device for facilitating pullup of sliders on slide fastener chains, in which storage means containing rows of sliders, which may differ in color or style from each other, are movable in a direction transverse to the rows to align a selected

row of sliders with gripping means which are movable from a rest position distant from the storage means to an advanced position for gripping in the advanced position a slider at the end of the selected row and for withdrawing the gripped slider from the storage means during return of said gripping means to the rest position while holding in said rest position the slider in a position facilitating pull up of the latter with a slide fastener chain.

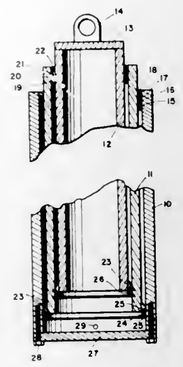
3,644,982
VALVE STEM EXTRACTOR-INSERTER
Jimmy J. Anderson, 3032 Karla Circle, Shreveport, La.
Filed July 31, 1969, Ser. No. 846,406
Int. Cl. B23p *19/04*
U.S. Cl. 29—213 **5 Claims**



A tool for removing stems from and inserting stems into nonrising stem, valve assemblies while the valve assembly is under fluid pressure is provided which comprises an adjustable attachment assembly for clamping the tool to a valve bonnet, a hollow cylindrical tool housing made up of readily separable sections and an extractor-inserter shaft equipped with a stem carrying workhead. The extractor-inserter shaft is carried within the tool housing and is both axially slidable relative to the housing and rotatably mounted within the housing, about its longitudinal axis, to effect the insertion or removal of a valve, stem from a valve assembly. A lower section of the cylindrical tool housing is provided with a valve for sealing off the upper portion of the housing to permit the removal of an extractor stem with the damaged valve stem from the workhead of the extractor-inserter shaft and the mounting of another valve stem on the workhead of extractor-inserter shaft even when the valve is under pressure.

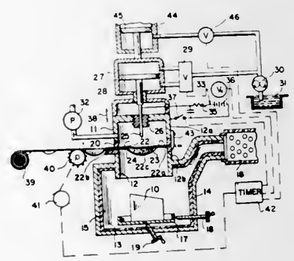
3,644,983
EASILY SERVICED TELESCOPING CYLINDER
Charles E. Margala, 2610 Hubbard Road, Youngstown, Ohio
Filed Nov. 6, 1969, Ser. No. 874,438
Int. Cl. B22d *19/10*; **B23p** *7/00*
U.S. Cl. 29—401 **4 Claims**

A telescoping cylinder in which the annular stops which, in cooperation with the collars on the lower ends of the inner sleeves, limit the upward travel of the inner sleeves are permanently welded to the inner walls of the sleeves. The bottom wall of the cylinder assembly is removable to permit rapid assembly and disassembly of the cylinder, even after



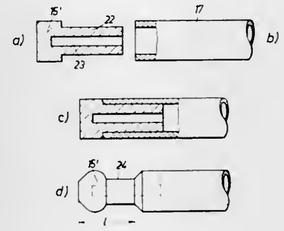
the cylinder has been subjected to prolonged and/or extremely heavy service.

3,644,984
KINETIC DEPOSITION OF PARTICULATE MATERIALS
Kiyoshi Inoue, No. 182, 3-Chome, Tamagawayoga-machi, Setagaya-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 574,056, Aug. 22, 1966, now Patent No. 3,416,617, and a continuation-in-part of 629,633, Apr. 10, 1967, now Patent No. 3,461,268, and a continuation-in-part of 696,757, Jan. 10, 1968, now Patent No. 3,552,653. This application Mar. 4, 1969, Ser. No. 805,117
Int. Cl. B21d *26/12*
U.S. Cl. 29—421 **6 Claims**



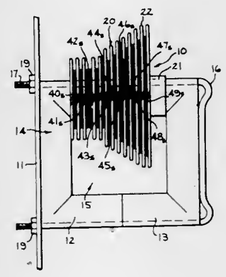
Method of high-energy-rate deposition of particulate materials upon a receiving surface whereby the particles are propelled against the receiving surface with sufficiently high kinetic energy to effect bonding between the particles and the surface. The high-kinetic-energy propulsion of the particles is effected by impulsive spark discharge. Apparatus for the repeated propulsion of unit masses of such particles whereby a belt having a series of encapsulated particle masses is passed intermittently between the discharge source and surface, the belt forming one of the discharge electrodes.

3,644,985
PROCESS FOR PRODUCING PROBE HEADS, AND PROBE HEAD FOR INTERNAL COMPARISON MEASUREMENTS
Hermann Koltgen, Martin-Buber-Strasse 50, Darmstadt, Germany
Filed Aug. 21, 1969, Ser. No. 851,863
Claims priority, application Switzerland, Aug. 24, 1968, 12852/68
Int. Cl. B23k *31/02*
U.S. Cl. 29—481 **8 Claims**



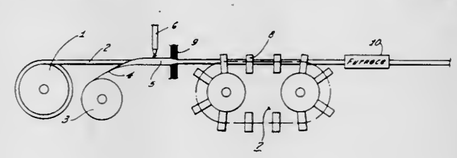
Process for producing probe heads for accurate instruments intended to be used for internal measurements and for gauging bores or other passages or cavities. The process comprises applying a closure member to the end of a tube, securing them together, forming a central longitudinal slit extending axially inwardly from the outer extremity of the closure member into the end of the tube adjacent the closure member, and forming the opposite end of the tube for attachment to a holder.

3,644,986
METHOD OF TUNING HIGH-VOLTAGE TRANSFORMER FOR TELEVISION RECEIVER
Jugal K. Verma, Portsmouth, Va., assignor to General Electric Company
Filed Nov. 26, 1969, Ser. No. 880,221
Int. Cl. G01r ; G05f
U.S. Cl. 29—593 **6 Claims**



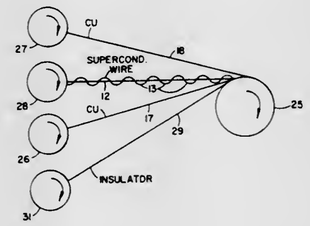
A method of tuning a high-voltage transformer for television receivers and the like wherein the primary and high-voltage windings are wound around and axially spaced from one another in a plurality of axially spaced circumferential slots provided on the exterior of hollow, electrically insulative coil form means, the interior of which surrounds a portion of the transformer core means. The axial spacing of the primary and high-voltage windings that is provided by the unique construction of the novel slotted coil form means permits the coefficient of coupling between the primary and high-voltage windings novel to be made both ideal and constant. This, in turn, allows tuning of the transformer in accordance with the novel method of the present invention which represents considerable simplification over the complex method previously required to tune the prior art, layer-wound transformers.

3,644,987
METHOD FOR MANUFACTURING SUPERCONDUCTORS
Ernst Scheffler, Langenhagen, and Gerhard Ziemek, Hannover, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Mar. 2, 1970, Ser. No. 16,335
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **8 Claims**



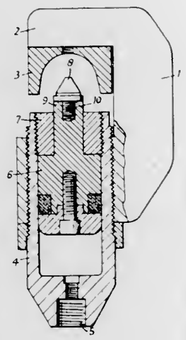
A tin-plated copper wire is lined with a tape containing niobium to form a closed sleeve around the wire. The sleeve is drawn onto the wire and heat-treated to obtain diffusion of tin into the niobium.

3,644,988
METHOD OF FABRICATING COMPOSITE SUPERCONDUCTIVE CONDUCTOR
Glenn A. Anderson, Nashua, N.H., assignor to Avco Corporation, Cincinnati, Ohio
Original application Feb. 20, 1968, Ser. No. 706,840, now Patent No. 3,504,314. Divided and this application Nov. 12, 1969, Ser. No. 871,278
Int. Cl. H01c *11/00*
U.S. Cl. 29—599 **2 Claims**



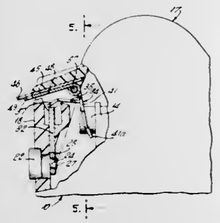
A ribbon-type multilayer composite superconductive conductor having a large surface area including internal surfaces exposed to the coolant. The internal passages are formed by winding a superconductive conductor on a first ribbon of conductive material disposed between and separating two outer ribbons of conductive material whereby in combination with said ribbons the space between adjacent turns of the superconductive conductor defines passages on both sides of said inner ribbon, the passages on one side preferably being disposed at an angle to the passages on the other side of the inner ribbon and the normal material intermediate the turns of the superconductive conductor providing a low-resistance shunt path in the event one or more turns are driven into the normal state.

3,644,989
METHOD OF JOINTING ELECTRICAL CABLES AND TOOL THEREFOR
John Edward Morby, Banbury, England, assignor to Alcan Research and Development Limited, Quebec, Canada
Filed Jan. 6, 1970, Ser. No. 947
Claims priority, application Great Britain, Jan. 8, 1969, 1,255/69
Int. Cl. H01r *43/00*; H05k
U.S. Cl. 29—628 6 Claims



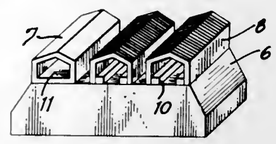
For forming an electrical connection between a cable, which may be coated with a nondraining insulating material, and a ductile metal ferrule into which the cable is inserted a special compression tool is employed. The compression tool consists of a support and a punch, which tapers stepwise and is also tapered between adjacent steps so that the punch may progressively pull more metal into the depression formed by the punch and yet may be withdrawn easily from the depression.

3,644,990
CLUTCH MECHANISM
Le Roy W. Crookes, East Brunswick, N.J., assignor to Ronson Corporation, Woodbridge, N.J.
Filed Apr. 13, 1970, Ser. No. 27,665
Int. Cl. B26b *19/10*
U.S. Cl. 30—34.1 8 Claims



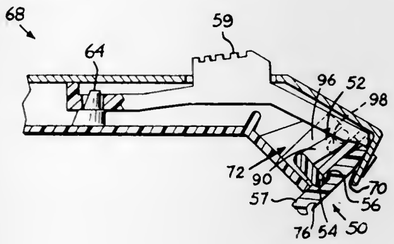
A mechanism is provided for selectively engaging and disengaging the auxiliary long hair trimmer of an electric dry shaver to the shaver drive means. The long hair trimmer, which is driven by the same source as is the main shaving head of the shaver, may be engaged or disengaged at any time whether or not the shaver is energized.

3,644,991
SHEARED ASSEMBLY FOR MECHANICAL SHAVER
Paul Kobler, 81 Fenimore St., Lynbrook, N.Y.
Filed Feb. 3, 1969, Ser. No. 795,889
Int. Cl. B26b *19/42*
U.S. Cl. 30—34.2 7 Claims



On a mechanical shaver with a shaving head comprising a plurality of removable shearheads, skin-stretching means and selective interengaging mounting means of said shaving head, said shearheads to present a prestretched skin to an adjoining shearhead.

3,644,992
RAZOR ASSEMBLY
John E. Bennett, Jamestown, N.Y., and Richard Craig Briggs, Warren, Pa., assignors to Sylvania Electric Products Inc.
Filed Apr. 7, 1970, Ser. No. 26,327
Int. Cl. B26b *21/16*, *21/54*
U.S. Cl. 30—64 7 Claims

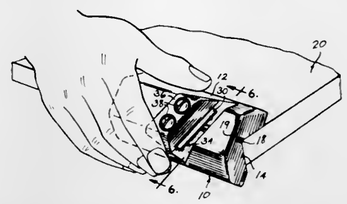


A razor blade holder for a razor blade having at least one cutting edge mounted in a protective casing comprising a combination housing, handle, and head adapted for receiving the blade, the combination comprises a first member having an aperture therein and a second member adapted to join to the first member to form the combination, a blade latching means mounted in said lower member and adapted for engaging the protective casing of the blade, and a one-piece blade releasing means housed in the combination and comprising a button extending through the aperture in the first member and an end for contact with the protective casing when the blade is inserted into the casing and on the opposite end. When the blade is in the holder pressure exerted on the button provides movement to the portion of the blade releasing means that is in contact with the protective casing thereby ejecting the blade from the holder.

3,644,993
EDGE-TRIMMING DEVICE
Leland Chupp, 210 South 23rd St., Goshen, Ind.
Filed Feb. 9, 1970, Ser. No. 9,551
Int. Cl. B26b *29/00*
U.S. Cl. 30—280 6 Claims

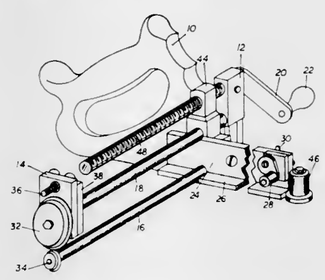
A device for trimming the edge of an object, such as an article of manufacture, including a hand-held guide member having an object-engaging part and a grip part. The object-engaging part of the guide member has a longitudinal groove formed therein which conforms in cross section generally to

the shape of the object at the edge thereof. The grip part has a transverse groove formed therein which intersects the longitudinal groove in the object-engaging part. A cutting blade is disposed within the transverse groove of the grip part and is anchored to the guide member. The cutting blade



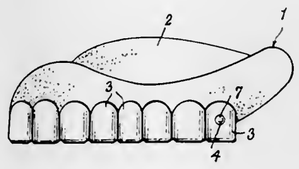
protrudes into the longitudinal groove of the object-engaging part with its cutting edge so positioned that as the object-engaging part is positioned over the edge of the object and slid therealong, the cutting edge will engage a portion of the edge and remove it.

3,644,994
WALLBOARD-CUTTING APPARATUS
Runar Lind, 199 New Jersey Ave., Bergenfield, N.J.
Filed Dec. 15, 1969, Ser. No. 885,052
Int. Cl. B26b *3/08*
U.S. Cl. 30—292 5 Claims



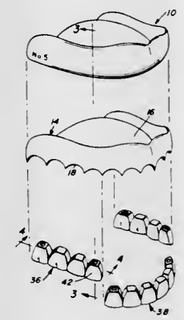
A cutter for wallboard employing two parallel rods with rotary cutters on one set of aligned ends. Means are provided for varying the separation between cutters without varying the spacing between the rods. A support for a wallboard edge can be moved back and forth in the axial direction along the rods to vary the separation between cutters and support as desired.

3,644,995
DENTURE OR A DENTAL PLATE
Bruno Olsson, 85 Oxford Pl., Staten Island, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,535
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 1 Claim



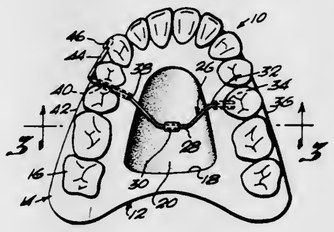
A denture or dental plate comprising a gum portion in which a plurality of teeth are mounted, with one or more of the teeth being provided with a laterally extending projection, such as the rounded head of a pin, to enable said head to be finger-engaged to facilitate the dislodgement and removal of the denture from within the mouth.

3,644,996
PREFABRICATED DENTURE CONSTRUCTION AND METHOD
Milton L. Weinkle, 420 Lincoln Road, Miami, Fla.
Filed Sept. 29, 1969, Ser. No. 861,617
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 1 Claim



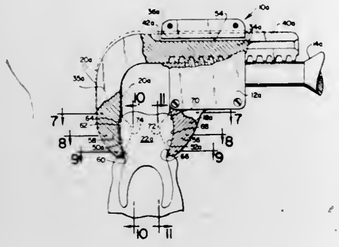
Denture bases in a plurality of standard sizes are mass produced and stocked by dentists in order to fit and tailor a set of artificial dentures to an individual patient during a single visit. The standard denture bases are made by use of reusable mold assemblies which include cavity-forming bodies made of an elastically deformable material.

3,644,997
DENTURE DEVICE WITH A SUCTION DIAPHRAGM
Jose de Jesus Fernandez, 430 N.E. 29th, Miami, Fla.
Filed Mar. 29, 1971, Ser. No. 129,029
Int. Cl. A61c *13/24*
U.S. Cl. 32—3 7 Claims



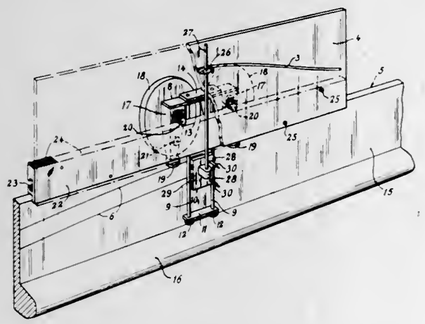
This invention pertains to a dental plate providing an enlarged aperture through the molded structural material thereof and a flexible diaphragm, molded into said material, in enclosing relation to the hole. Lever means are provided which is operable, after the dental plate is properly seated in the mouth to, first, expel the air between the dental plate structure and the gingival tissues of the mouth and, second, to selectively create a comfortable degree of partial vacuum between the dental plate and the gingival tissues to hold the dental plate firmly in place. Detent means are provided to lock the lever means in any of a plurality of positions.

3,644,998
DENTAL INSTRUMENT
Victor H. Rubino, 1088 N. Main St., West Hartford, Conn.
Continuation-in-part of application Ser. No. 829,187, June 2, 1969, now abandoned. This application Nov. 16, 1970, Ser. No. 89,835
Int. Cl. A61c *3/10*
U.S. Cl. 32—61 **14 Claims**



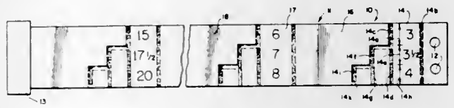
A tooth-extracting instrument having a housing and including a pair of jaws having opposing beaks defining a plurality of spaced-apart tooth-engaging surfaces for complementary clamping engagement with opposite faces of a tooth to be extracted. One of the jaws is fixedly mounted on the housing. The other of the jaws is supported in generally parallel relation to the fixed jaw by the housing for movement generally toward and away from the fixed jaw in response to rotation of an axially elongated handle journaled by the housing. The movable jaw is further arranged for slight angular movement relative to the fixed jaw to permit the various tooth-engaging surfaces to be brought into positive clamping engagement with a tooth to be extracted in response to axial rotation of the handle.

3,644,999
APPARATUS FOR MARKING ONE OR MORE LINES ON A FRAME SECTION OR THE LIKE
Borre Bengt Ulrichsen, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway
Filed June 9, 1969, Ser. No. 831,366
Claims priority, application Norway, June 10, 1968, 2258
Int. Cl. B43l *13/10*
U.S. Cl. 33—23 C **11 Claims**



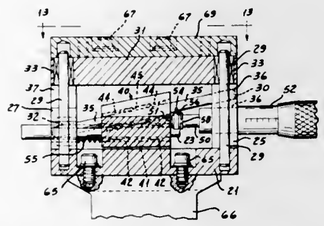
The invention comprises a simple and reliable mechanical marking device for marking on a frame section for the shipbuilding industry a line that becomes straight when the section is bent to the desired curvature of the frame. The device operates with a physical curve representing the inverted form of the desired curvature and having a reduced scale in the longitudinal direction. The device comprises a frame structure carrying a marking means and a curve follower means that are rigidly interconnected. The frame structure is movable along the frame section in engagement with a longitudinal edge thereof, and the curve is mounted on the frame structure for movement therewith in the transverse direction and for movement relatively thereto in the longitudinal direction of the section with a speed, the ratio of which to the relative speed between the frame structure and the section is the same as the scale of the curve in the longitudinal direction.

3,645,000
DRAPERY-MEASURING DEVICE
Sadie Gass, 1119 Lincoln St., Hollywood, Fla.
Filed June 4, 1969, Ser. No. 830,353
Int. Cl. G01b *3/10*
U.S. Cl. 33—137 **3 Claims**



A drapery-measuring device comprising an elongated member having alternate elastic and inelastic sections, each of which is respectively equal in length to the other similar sections in the device: in the preferred form, each inelastic section begins at a line extending transversely of the elongated member where one end of an inelastic section is stitched to a continuous elastic web, the piece comprising three portions across the width of the elongated member, the portions having their ends opposite the common portion terminating in stair-step fashion. Suitable markings may be provided.

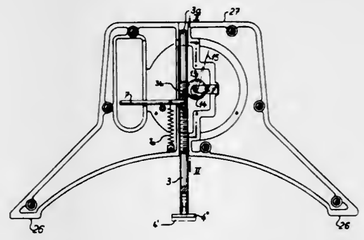
3,645,001
CARRIAGE AND RAIL ASSEMBLY FOR A HIGH-RESOLUTION MECHANICAL POSITIONER
Robert H. Bosworth, Convent Station, and Burton W. Roney, Wayne, both of N.J., assignors to The Bendix Corporation
Filed Jan. 28, 1970, Ser. No. 6,627
Int. Cl. G01b *5/14*
U.S. Cl. 33—162 **6 Claims**



A carriage and rail assembly for a high-resolution mechanical positioner suitable for application to apparatus such as optical benches, inspection fixtures, machine tools and photography fixtures for effecting extreme position accuracy and resolution with low friction. The mechanical positioner may include an adjustable top plate or slide block mounted in parallel relation with respect to a baseplate or carriage block by means of mounting rods. Carriage rods or tracks extend perpendicular to the mounting rods and are fixed at opposite ends in flanges which project at right angles to opposite end portions of the baseplate or carriage block, while additional positioning rods or tracks are fixed at opposite ends in flanges which project at right angles to opposite end portions of the adjustable slide block. An actuating member

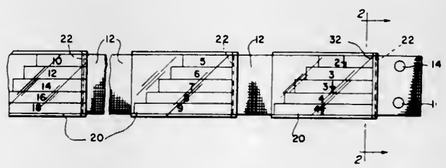
by means of bushings or antifriction bearings is slidably mounted on the respective carriage and positioning rods in an arrangement in which the actuating member is mechanically coupled to the slide block through the positioning rods which are inclined in a predetermined angular relation to the carriage rods so that a horizontal positioning of the actuating member effects a vertical adjustment of the position of the slide block relative to the carriage block. The ratio of the horizontal adjustment of the actuating member relative to the vertical adjustment of the slide block is dependent upon the predetermined inclined angular relation of the positioning rods to the carriage rods in an arrangement such that the slide block may be adjusted with extreme position accuracy, resolution and with low friction.

3,645,002
LINEAR MEASURING INSTRUMENT
Willy Hefti, Lausanne, Switzerland, assignor to Hebor S. A., Lausanne, Switzerland
Filed Oct. 27, 1969, Ser. No. 869,626
Int. Cl. G01b *3/22, 5/00, 5/18*
U.S. Cl. 33—172 R **6 Claims**



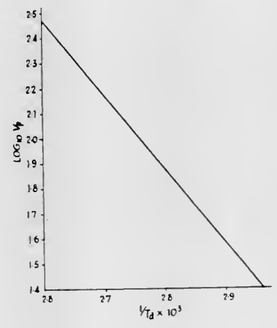
A linear measuring apparatus comprises support feet for placing on a reference plane. A rod is movable perpendicularly to the plane against the action of a return spring. An extremity of the rod has a sidewardly protruding flange with vertical play equal to its own thickness. The rod has a rack driving a pinion with a pointer which directly indicates a measurement with reference to the plane, taken from either the upper or lower surface of the flange.

3,645,003
DRAPERY-MEASURING DEVICE
Sadie Gass, 1119 Lincoln St., Hollywood, Fla.
Filed Dec. 15, 1969, Ser. No. 884,815
Int. Cl. B43l *9/08*
U.S. Cl. 33—192 **5 Claims**



A drapery-measuring device has a continuous elastic strip on which is a series of uniformly spaced indicia bearing plastic sleeve elements each connected to the elastic strip only at a single transverse line, as by a single row of stitching or grommets.

3,645,004
DRYING OF EFFLORESCENT MATERIAL
Christopher John Ogle, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited,. Cornwall, England
Filed Aug. 25, 1969, Ser. No. 852,670
Claims priority, application Great Britain, Aug. 27, 1968, 40,972/68
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **7 Claims**



A process for drying an efflorescent material which is in the form of a paste or slurry. The process comprises pressure filtering the paste or slurry to express water and to form a filter cake the solids content of which is at least 50 percent by weight. The filter cake is thereafter divided into small discrete particles which are contacted with air having a temperature, being less than 100° C., and a relative humidity, being less than 90 percent RH, which will not cause loss of water of crystallization from the efflorescent material.

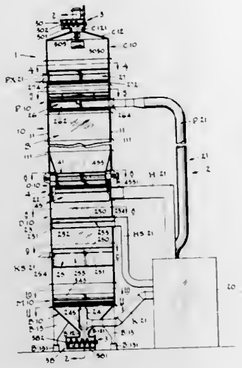
3,645,005
CALCIUM HYPOCHLORITE MANUFACTURE
George Roman Dychdala, Norristown, Pa., and Robert James Cox, Brownsville, Tex., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Apr. 14, 1970, Ser. No. 28,529
Int. Cl. F26b *3/00*
U.S. Cl. 34—22 **4 Claims**

Calcium hypochlorite compositions, containing at least about 65 percent $Ca(OCl)_2$ on a dry weight basis and which are resistant to exothermic, self-propagating decomposition, are prepared by charging the wet crystals of neutral calcium hypochlorite dihydrate from the synthesis operation to a dryer and removing the product therefrom when the water content is within the range of 6 percent to 15 percent by weight.

3,645,006
PARTICULATE MATERIAL-DRYING APPARATUS AND METHOD
Robert J. ..nderson, Toledo, Ohio, assignor to The Andersons, Maumee, Ohio
Filed Sept. 8, 1969, Ser. No. 856,009
Int. Cl. F26b *3/00*
U.S. Cl. 34—22 **7 Claims**

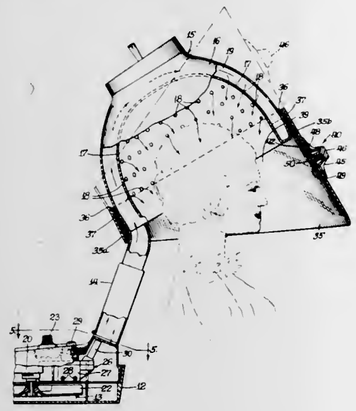
A method of drying particulate material, particularly that which, like grain, has a critical degree of heat tolerance,

while the material forms and moves through a bed of material, utilizing a heated dry gaseous medium and passing the



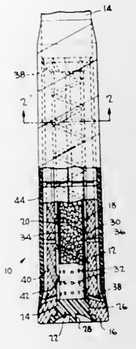
same to and in direct contact with the bed-forming and traversing material.

3,645,007
HAIR DRYER AND FACIAL SAUNA
William H. Scott, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 14, 1970, Ser. No. 2,736
Int. Cl. A45d *20/24*
U.S. Cl. 34—60 **11 Claims**



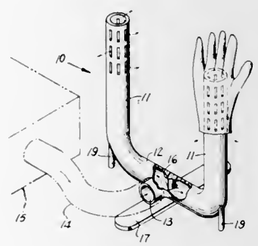
A hair dryer of the type having a rigid hood within which a person's head is positioned in order to dry the hair by means of heated air discharged through perforations on the inner wall of the hood toward the hair to be dried. Means are provided to circulate steam into the helmet and out through the perforations whereby the steam fills the volume under the hood. A detachable extension is provided on the hood to extend the lower edge of the hood downwardly to horizontal plane thereby providing an enclosure within which the entire head may be received for the purpose of treating the hair and face with steam. Control means on the enclosure permit adjustment of the level of steam enclosed within the hood and the extension.

3,645,008
ARTICLE HAVING HANDLE PORTION WITH INTERNAL DESICCANT-CONTAINING CARTRIDGE
Kurt Delsack, 8409 Westmont Terrace, Bethesda, Md.
Filed Oct. 16, 1970, Ser. No. 81,416
Int. Cl. F26b *21/06*
U.S. Cl. 34—81 **9 Claims**



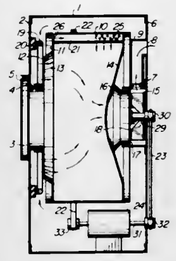
Means for drying handle portions of articles such as tennis rackets or the like subject to being wetted by perspiration in use, comprising desiccant-containing cartridge carried in chamber interiorly of handle portion and passageways communicating chamber with exterior surface of handle portion. A moistureproof container is shown for storing and/or drying the cartridges, the container preferably including a desiccant material having greater adsorptivity than the desiccant material of the cartridges.

3,645,009
GLOVE- AND BOOT-DRYING DEVICE
Calvin Eugene Ketchum, 1855 Labona Drive, Eugene, Oreg.
Filed Apr. 13, 1970, Ser. No. 27,826
Int. Cl. F26b *25/00*
U.S. Cl. 34—104 **1 Claim**



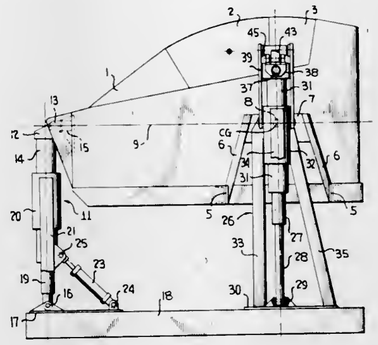
A device for attachment to hair dryers and the like which will serve to dry wet articles, such as boots and gloves. This device includes a swivel-type base upon which is supported a tubular element having a multiple number of openings for the passage of heat from the dryer in order to dry the articles, particularly from the inside.

3,645,010
CLOTHES DRIER
Takashi Korekawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 3, 1970, Ser. No. 60,508
Claims priority, application Japan, Aug. 11, 1969, 44/64941; 44/64943; 44/64944; 44/64945; 44/64946; 44/64947; 44/64948
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 **2 Claims**



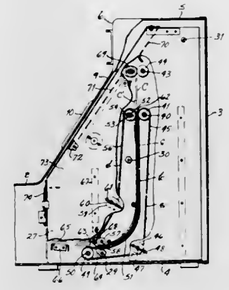
This invention relates to a drum-type clothes drier in which the wet clothes put into a rotating drum are stirred and dried in a hot blast supplied thereinto. The rotating drum is provided with a projection on the inner surface thereof for stirring the clothes put therein to accelerate the drying.

3,645,011
MOTION SYSTEM WITH THREE RECIPROCATING ACTUATORS FOR FLIGHT SIMULATION
Oliver E. Callanen, Falls Church, Va., assignor to Melpar Inc., Falls Church, Va.
Filed Feb. 17, 1969, Ser. No. 799,687
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 P **31 Claims**



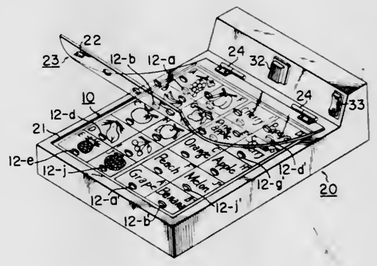
A motion system for general purpose flight simulation includes three spaced-apart hydraulic actuators for imparting translation to respectively associated reciprocable pistons or rams. One of the actuators is positioned vertically in a plane containing the longitudinal or roll axis of a grounded flight trainer and the other two actuators are equally spaced from the roll axis at vertical positions on either side of the trainer in a plane containing its transverse axis. The reciprocable rams are so pivotally connected to and support the trainer at the forward end and respective sides so to enable the trainer to undergo independent rotation about its pitch and roll axis, such that vertical translation of the forward ram produces rotation of the trainer about its pitch axis, and that unequal vertical translations of both of the other rams produces rotation of the trainer about its roll axis.

3,645,012
CARD FEEDER FOR INSTRUCTIONAL DEVICES
Raymond H. Fiehler, Kirkwood; John J. Dickman, Lemay, and Max Diamant, University City, all of Mo., assignors to Missouri Research Laboratories, Inc., St. Louis, Mo.
Continuation-in-part of application Ser. No. 699,485, Jan. 22, 1968, now abandoned. This application Mar. 23, 1970, Ser. No. 21,804
Int. Cl. G09b *3/00;* **B65h** *3/04*
U.S. Cl. 35—9 R **1 Claim**



A card feeder for instructional devices, such as teaching machines, wherein a card, the forward face of which, having inscribed question and multiple choice answers, is presented to the viewer and with the rearward face being suitably adapted for cooperating with a photoemissive source to effect requisite energization of indicators for signaling the correctness or incorrectness of the answer chosen; said feeder incorporating mutually contacting drive and driven belts for effecting separation of inadvertently mutually adhering cards moving therebetween for feeding of a single card into viewing position to assure accuracy in energizing the appropriate indicators; said drive belt having spaced-apart transversely extending ribs for defining recesses compatible with the size of the cards being accommodated.

3,645,013
TEACHING MACHINE USING ELECTRICALLY CONDUCTIVE TRAINING CARDS
Kouji Takeuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Gakushu Kenkyusha, Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,472
Claims priority, application Japan, Dec. 28, 1968, 43/114457
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 C **7 Claims**



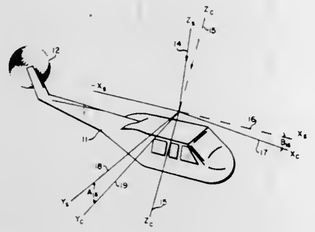
A teaching machine is provided with a plurality of normally open electric current paths each connected to an indicator. The current paths are arranged in accordance with a predetermined program and are individually closed to actuate the indicator by means of an electrically conductive train-

ing card which is positionable on the teaching machine. Each training card has various pairs of correlated indicia on one side and electrically conductive paths on the other side, the conductive paths being arranged to overlie and make electrical contact with respective ones of the current paths of the teaching machine when the training card is positioned thereon. Each training card is also provided with an aperture adjacent each indicia and a pair of plugs are provided which are insertable through individual apertures and function to close one of the current paths and thereby actuate the indicator when the user inserts the plugs through the apertures corresponding to one of the pairs of correlated indicia.

3,645,014
SIMULATOR COMPUTER

Arnold Bramson, Silver Spring, and Wilbur H. Day, Annapolis, both of Md., assignors to Singer-General Precision, Inc., Binghamton, N.Y.

Continuation-in-part of application Ser. No. 803,703, Mar. 3, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,423
Int. Cl. B64g *7/00;* **G09b** *9/08*
U.S. Cl. 35—12 F **7 Claims**

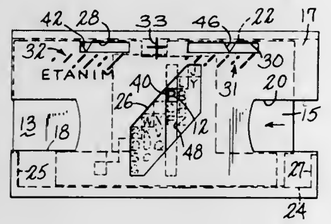


This system provides means for computing the forces and moments on and developed by the rotary wing of rotary-wing aircraft for realtime simulation purposes. The system includes a plurality of control signal generators for generating information relating to various components of rotary-wing aircraft and means to compute from these resultant signals quantities representative of the final resultant forces on the aircraft, its rotary wing, and other components. In particular, this specification describes equipment for computing the forces and moments developed by and on the rotary wing by utilizing aircraft design data and data produced in actual flight tests.

3,645,015
MORSE CODE TEACHING DEVICE

Dagobert F. Pfeiffer, 120 Hartley St., Hamden, Conn.

Filed Aug. 10, 1970, Ser. No. 62,315
Int. Cl. G09b *1/28*
U.S. Cl. 35—14 **7 Claims**

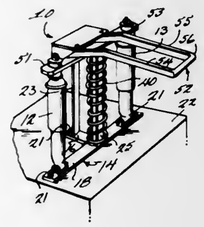


A device for teaching Morse code comprising four flat members in superposition. These four members comprise a base member imprinted with alphamerics except ETANIM, a first central member slidably mounted on the base member having a series of windows for viewing a selected group of alphamerics from among those imprinted on the base member, a second central member slidably mounted on the first central member having a window positioned at right angles to the series of windows on the first central member, and a top member mounted on the second central member and affixed to the base member. The window of the second central member permits viewing a single indicium from among the selected group of alphamerics viewed through the series of windows in the first central member. The top member has a window for viewing the single indicium observable through the window in the second central member. The top member has imprinted thereon the letters ETANIM, and the positive integers if desired, and has two sets of Morse indicia corresponding to these alphamerics. Means are provided for sliding the first and second central members relative to the top and bottom members. The alphameric indicia on the base member are positioned such that the sum of any Morse indicium selected from each of the two sets of Morse indicia by movement of indicating means associated with the central members will cause display of an alphameric corresponding to the sum in the window of the second central member.

3,645,016
SHOCK ABSORBER DEMONSTRATION STAND

John A. Wiegand, Northbrook, Ill., assignor to Maremont Corporation, Chicago, Ill.

Filed Aug. 11, 1970, Ser. No. 62,798
Int. Cl. G09b *25/00*
U.S. Cl. 35—50 **9 Claims**



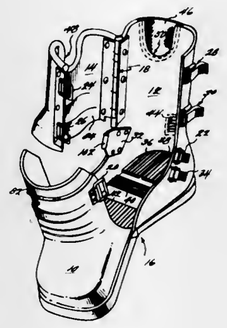
A shock absorber demonstration stand having a frame and a movable lever arm, a plurality of shock absorbers are mounted on the frame and are compressible upon actuation of the lever arm and restored to their uncompressed state by a spring, the difference in rates of decompression being represented by the angle of tilt assumed by a bar connecting the ends of the shock absorbers.

3,645,017
SKI BOOT CONSTRUCTION

Horst R. Hickmann, Cincinnati, Ohio, assignor to AMF Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 815,289, Apr. 11, 1969, now abandoned. This application Mar. 18, 1970, Ser. No. 20,694
Claims priority, application Canada, Dec. 8, 1969, 69,252
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **53 Claims**

A ski boot construction including a flexible inner boot portion separable from an outer boot portion. The outer boot comprises substantially rigid toe and heel shells hinged together and a closure member hinged to the heel shell. Buckles and clasps are provided so that the shells and the closure may be fastened in a unitary structure about the inner boot. Cooperating means are provided in the interior of the outer boot and the exterior of the inner boot to fix the inner boot with respect to the outer boot.



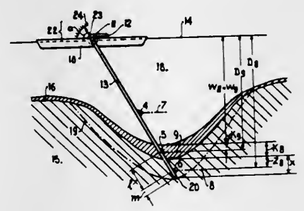
ERRATUM

For Class 36—58.5 see:
Patent No. 3,646,497

3,645,018
METHOD AND APPARATUS FOR EXCLUDING SILT FROM A DREDGING OPERATION

Jan De Koning, Soetendaal 20, Amsterdam, and Romke van der Veen, 21 Prof. Dr. Hesselaan, Jutphaas, both of Netherlands

Continuation-in-part of application Ser. No. 729,229, May 15, 1968. This application Mar. 28, 1969, Ser. No. 811,396
Int. Cl. E02f *3/88*
U.S. Cl. 37—58 **7 Claims**

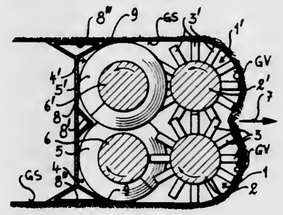


By measuring pressures in the particulate solid material surrounding a suction pipe at known points spaced along the pipe, sand of one known specific gravity which is covered by a layer of silt of another specific gravity may be dredged to the exclusion of the silt. Due to the difference in specific gravities, the approximate location of the interface between the sand and silt may be monitored and the lower end of the pipe moved so as to maintain it below such interface at all times during the dredging operation.

3,645,019
APPARATUS EQUIPPED WITH WORM MEANS FOR DIGGING A DITCH OR THE LIKE

Raphael Mengis, Muhlehofstrasse 14, 6030 Ebikon, and Hans Mengis, Kirtenhofstrasse 38, 6000 Luzern, both of Switzerland

Filed Feb. 2, 1970, Ser. No. 7,689
Claims priority, application Switzerland, Feb. 27, 1969, 2924/69
Int. Cl. E02f *5/04*
U.S. Cl. 37—82 **6 Claims**

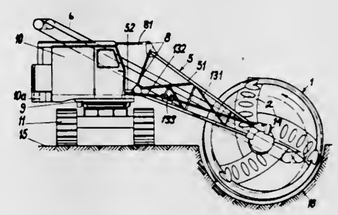


An apparatus for digging a ditch by means of worms and capable of being secured to a vehicle, which apparatus comprises a group of at least four closely situated cooperating worms each disposed in an essentially upright position. Each of these worms has worm threading, with two respective ones of said worms cooperating with one another to define a front pair of worms and the remaining two worms cooperating with one another to define a rear pair of worms. Each worm of the front pair is in tandem with respect to a given worm of the rear pair. There is also provided means for imparting rotational movement to the worms of both pairs from the inside towards the outside when viewed from the front of the apparatus with each of the respective two worms which are arranged in tandem having the same direction of rotation and with their threading engaging with one another.

3,645,020
BOOM-MOUNTED ROTARY-WHEEL TRENCH EXCAVATOR

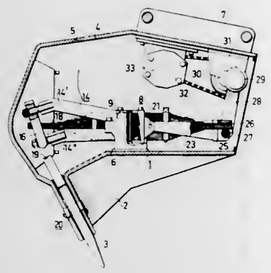
Dragoljub Beslin; Benko Beherano, both of Zemun, and Radivoj Mirkovic, Belgrade, all of Yugoslavia, assignors to Strojna Tovarna Trbovlje, Trovlje, Yugoslavia

Filed Sept. 2, 1969, Ser. No. 854,657
Int. Cl. E02f *5/08*
U.S. Cl. 37—91 **11 Claims**



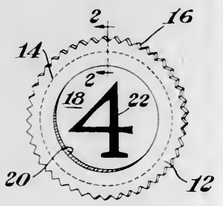
A vehicle supported by caterpillar tracks has an outrigger arm carrying a rotatable drum with its axis slightly inclined to the direction of travel so that a front face of the drum, equipped with an array of cutting blades, bites into the soil to dig a trench as the vehicle moves forward. A conveyor belt extends at an acute angle into the open rear face of the drum to carry off detached clods while a retractable stop projects inwardly from the drum periphery to entrain larger fragments toward a scraper disposed above the belt within the drum.

3,645,021
ARRANGEMENT IN LOADER BUCKETS AND THE LIKE PROVIDED WITH DIGGING BLADES
John Teodor Sonerud, Hudiksvall, Sweden, assignor to Svenska Hymas Aktiebolag, Hudiksvall, Sweden
Filed Sept. 30, 1968, Ser. No. 763,850
Claims priority, application Sweden, Sept. 28, 1967, 13364/67; May 17, 1968, 6748/68
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 **10 Claims**



An arrangement for a loader bucket provided with digging teeth which are reciprocably displaceable in their longitudinal direction to create a picking action of the teeth against the surface to be broken and penetrated. The apparatus includes a leaf-spring arrangement which is in engagement with and actuated by a drive mechanism so as to create an oscillating movement of the teeth in the direction of swing. One end of the spring is connected to hammer means adapted to actuate, by means of impact, one or more digging teeth in a direction of movement away from the loader bucket.

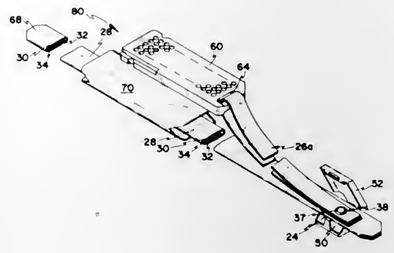
3,645,022
INDICATING MEANS FOR GOLF CLUB COVER AND THE LIKE
Robert F. Anderson, 3613 13th St., Menominee, Mich.
Filed Nov. 3, 1969, Ser. No. 873,206
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 **5 Claims**



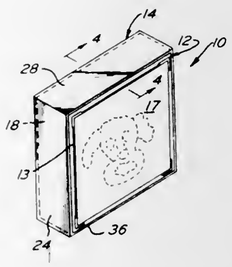
An indicating device comprising a backing, a resilient annular retaining cover having a central opening affixed thereto and a removable thin transparent panel or disk held between the cover and the backing, the disk carrying a numeral or other indicia on the side adjacent the backing.

3,645,023
PROVIDING IDENTIFICATION
Roger V. Larson, Murray, Utah, assignor to Bio-Logics, Inc., Salt Lake City, Utah
Filed Sept. 15, 1969, Ser. No. 858,039
Int. Cl. G09f *3/14*
U.S. Cl. 40—21 C **1 Claim**

An identification combination comprising a band adapted to be fitted about the wrist, leg, neck or the like of a patient or about an object and further including a tether strap attached to or adapted to be attached to an encodable identification device and to the band so that the identification device can be held away from the patient for transfer of information therefrom without removing the identification device from the patient.



3,645,024
DISPLAY DEVICES
Melvin B. Herrin, and Lenard H. Herrin, both of 15th & Huntingdon Sts., Philadelphia, Pa.
Continuation of application Ser. No. 710,184, Mar. 4, 1968, now abandoned. This application May 28, 1970, Ser. No. 41,537
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **7 Claims**

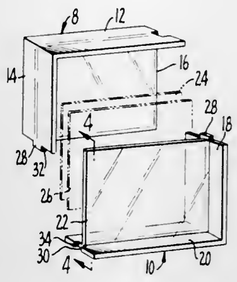


A display device having four embodiments, each of which comprises front and rear members that are telescopically interconnected. In one embodiment, the front member has a face on which material to be displayed can be mounted. The rear member is scored so that an easel stand or a hook receiving hole can be formed therein. In a second embodiment, the front face has a coin slot therein and the front and rear members are held together by top and bottom covers. In a third embodiment, the material to be displayed is on a fabric which is supported by the telescoping front and rear members, and in a further embodiment, the display device is incorporated in a dispenser housing.

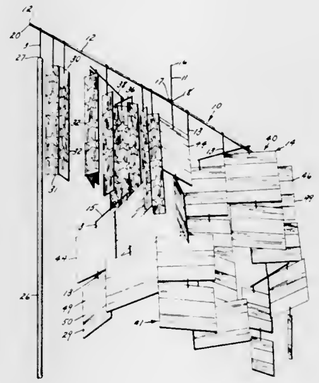
3,645,025
PICTURE FRAME
Albert S. Giesecke, 400 Montgomery St., San Francisco, Calif.
Filed Oct. 28, 1970, Ser. No. 84,637
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **3 Claims**

A picture frame or the like is provided having two complementary sections which fit together. Each section includes two side members and a transparent face member with the face members slightly offset from each other. When two

complementary sections are placed together, a small space is left between the face members so that pictures or the like can be inserted therein and will be visible from both sides of the frame.



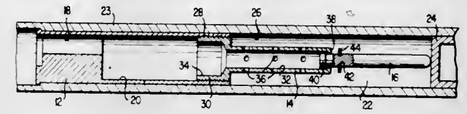
3,645,026
ARTICULATED FLAG CONSTRUCTION
Leonard G. Lorch, 115 Lafayette Pl., Woodmere, N.Y.
Filed July 20, 1970, Ser. No. 56,448
Int. Cl. G09f *17/00*
U.S. Cl. 40—218 **2 Claims**



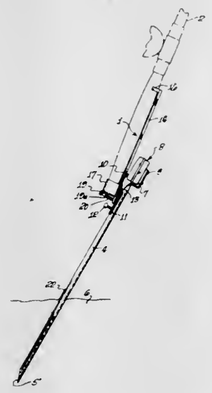
An articulated flag construction comprising a mobilelike assembly of rectangular planar members interconnected independently or through interconnection with other similar rectangular members to a horizontally positioned main support member, by means of linkages permitting relative rotational and/or orbital movement therebetween, each of said planar members including a pair of oppositely disposed surfaces having a matching portion of a flag thereon, said planar members, when in coplanar relation forming a substantially continuous display area.

3,645,027
BLANK CARTRIDGE AMMUNITION ADAPTER FOR FIREARMS
Harold C. Palmer, Palmer Village, Box 867, Douglasville, Ga.
Filed June 10, 1970, Ser. No. 44,975
Int. Cl. F41c *21/10*
U.S. Cl. 42—77 **6 Claims**

An adapter for converting a single-shot rifle to use for firing a dart-type projectile. A 0.50-caliber or any other rifle or shotgun bore is modified to receive a 0.22 or any size caliber blank cartridge which is less than that of the rifle bore by a cylindrical member having an offset, reduced-diameter bore at the base end thereof and a wiggler member at the nose end thereof for assisting in loading a dart into the rifle bore.



3,645,028
FISHING POLE HOLDER AND SIGNALING MEANS THEREFOR
Donald G. Rayburn, 427 North Reese Pl., Burbank, Calif.
Filed June 22, 1970, Ser. No. 48,133
Int. Cl. A01k *97/10, 97/12*
U.S. Cl. 43—17 **8 Claims**

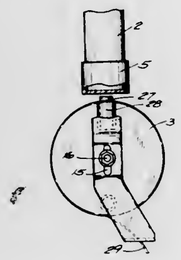


An adjustable fishing pole holder having means for signaling a strike. The holder includes an elongated support element for insertion into the ground, a signaling means mounted at the top end of the support element, a carriage slidably mounted on the support element, a first support means carried by the carriage for supporting the lower end of a fishing pole, a second support means pivotally mounted on the holder for supporting the fishing pole above its lower end, the second support means being in contact with the signaling means for actuation thereof, and means for tension-biasing the direction of the pivotal movement of the second support means.

3,645,029
ICE FISHING TIP-UP
Benjamin C. Roemer, Manitowish Waters, Wis., assignor to Trueflight Mfg. Co., Inc., Manitowish Waters, Wis.
Filed Sept. 14, 1970, Ser. No. 71,820
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **5 Claims**

An ice fishing tip-up including a tube having a sealed end and an open end and a stand for the tube to position it with the sealed end below the surface of the ice and with the open end projecting above the surface of the ice. A visual signal member is mounted inside the tube for movement between a nonsignaling position within the tube and a signaling position outside the tube. The sealed end of the tube is sealed by means of a cap member fitted over the end of the tube. A

spring is connected to the signal member to bias it for movement from the nonsignaling to the signaling position. A reel with a fishing line is mounted adjacent the sealed end of the tube. A magnetic coupling is provided between the reel and the end of the signal member which coupling includes a pair of permanent magnets, one of which is mounted on the reel and the other of which is mounted on the end of the signal member. The magnets are movable to a holding position where they will be in alignment with each other on opposite sides of the cap member on the end of the tube. The mag-



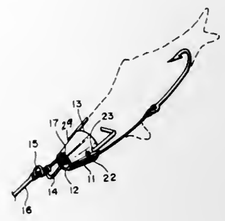
nets, when in such holding position, provide a magnetic force greater than the spring biasing force to thereby hold the signal member in its nonsignaling position. When the reel is moved in response to pull on the line by a fish, the reel will be rotated causing the magnets to separate and thereby release the signal member for movement to its signaling position. The vertical position of the reel with respect to the sealed end of the tube can be adjusted to thereby adjust the sensitivity of the magnetic coupling.

3,645,030
BAIT MOVING FISHING BOBBER
Raymond E. Milburn, Jr., Route #1, Box 128, Round Lake, Ill.
Filed Feb. 11, 1970, Ser. No. 10,571
Int. Cl. A01k *93/00*
U.S. Cl. 43—26.1 6 Claims



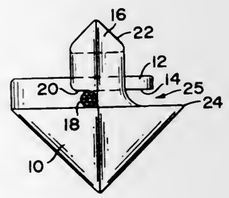
A bobber having a hollow spherical float with a spring motor mounted therein driving an actuator rod in a plurality of short, with periodic comparatively long, generally vertical reciprocal movements to impart a lifelike action to a fishing bait or lure connected to the actuator rod.

3,645,031
TROLLING RIG
Richard A. Egles, 310 East 37th St., Hialeah, Fla.
Filed Mar. 24, 1970, Ser. No. 22,244
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.2 2 Claims



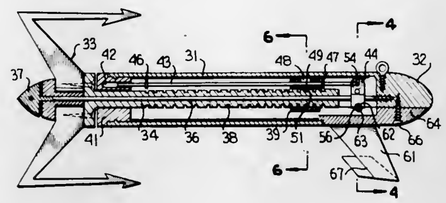
A trolling rig for bait fishing having a substantially frustoconical-shaped cap with an oval cross section adapted to receive the head of the bait fish. The smaller end portion of the cap has an opening at its upper side, and a safety-pin snap is connected to the opening. An opening is provided on each side of the cap at the larger end portion and a fish locking pin extends through the openings and the head of the fish, securing the fish to the cap. A further opening is formed in the lower side at the larger end of the cap and a flexible member is connected at one end to the further opening with a fishhook connected to its free end.

3,645,032
LINE CLAMP
Joe L. Gilliam, Tampa, Fla., assignor to Mary Melvin, Tampa, Fla.
Filed Oct. 1, 1969, Ser. No. 862,706
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.9 4 Claims



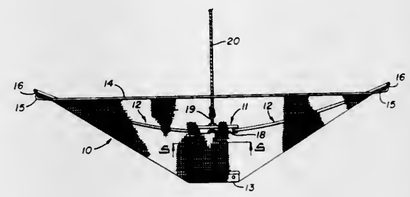
A line clamp for rapid and easy attachment to the central portion of a fishing line comprising a sinker body formed by an upper segment cantilevered to a lower segment defining a slot therebetween and a bridge integral with the lower segment and overlying the upper segment to provide an opening for passage of the line therethrough. Notches are provided in the bridge at its points of attachment to the lower segment which are aligned with the closed end of the slot. A bight of the line is passed through the opening, engaged in the closed end of the slot, and then straightened to place the line in the bridge notches. The open end of the slot is disposed inside a plane defined by the top of the bridge and a side edge of the lower segment to prevent closure of the slot when the sinker is dropped.

3,645,033
FISHING LURE HAVING A FISHHOOK IMPELLER
James H. Kress, 580 Harwood Ave., Satellite Beach, Fla.
Filed Sept. 18, 1970, Ser. No. 73,327
Int. Cl. A01k *85/06*
U.S. Cl. 43—26.2 8 Claims



A fishing lure employs an array of fishhook members as an impeller to cause a part of the lure to rotate as it is moved through the water. In one arrangement, the lure is provided with diving planes having their angle of attack altered periodically by a mechanism driven from the rotating impeller. The angle of attack of the diving planes may, in different embodiments, be maintained alternately in one or the other positions set by the drive mechanism or maintained normally in a neutral position with brief periodic intervals of alternately positive and negative angles of attack.

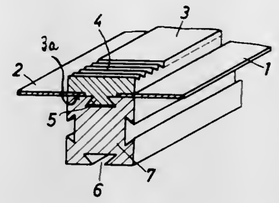
3,645,034
COLLAPSIBLE AND EXPANSIBLE MINNOW TRAPPING NET
Lloyd L. Pfahler, 1784 Glenn Ave., Columbus, Ohio
Filed Nov. 18, 1969, Ser. No. 877,711
Int. Cl. A01k *69/10*
U.S. Cl. 43—105 4 Claims



A plurality of resilient ribs are each connected at one end to each corner of a net and the other end is pivotally connected to a central supporting plate. The plate is provided with downwardly opening channels receiving a portion of the ribs when the plate is in an overcenter position for holding the net in expanded set condition and the ribs under tension. A cable is connected to the plate for forcing the same through dead center to release the tension in the ribs and to collapse the net.

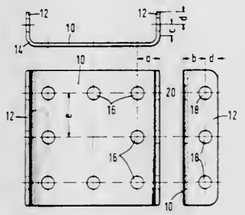
3,645,035
TOY BUILDING KIT
Artur Fischer, Altheimer Strasse 219, 7241 Tumlingen, Germany
Filed Nov. 28, 1969, Ser. No. 880,549
Claims priority, application Germany, Nov. 30, 1968, P 18 11 940.9
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 11 Claims

A toy building kit includes one or more strip-shaped track members each having an upper and a lower side. A plurality of building blocks are provided some of which have male coupling means and others of which have mating female coupling means. Connecting means is provided for connecting the track member or members with the building blocks in such a manner that some of the building blocks are located at



the upper side and others of the building blocks are located at the lower side of the track member with the male and female coupling means of the blocks located at the upper and lower sides being in coupling engagement. The track member then extends laterally of the thus connected building blocks.

3,645,036
U-SHAPED PLATELIKE COMPONENTS AND CONNECTING ELEMENTS THEREFOR
Horst Biesterfeld; Manfred Brennecke, and Sampo Widmann, all of Munich, Germany, assignors to Bertram Deininger, Munich, Germany
Filed Oct. 9, 1970, Ser. No. 79,571
Claims priority, application Germany, Oct. 10, 1969, P 19 51 313.4
Int. Cl. A63h *33/06*
U.S. Cl. 46—23 11 Claims

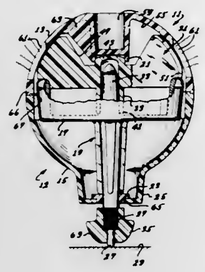


A set of toy components made of platelike material and of U-shaped form. Screws and internally screw-threaded sleeves or other fasteners are provided for connecting the elements together. The elements are provided with hole arrangements so as to allow the limbs of a U-shaped part to be connected with the web portion of another element. The fasteners may have sockets for fastening axles and wheels thereto.

3,645,037
NOISE-MAKING TOY TOP
Albert R. Baginski, Torrance; John T. Benson, Los Angeles; Jacob DeGelder, Torrance, and Gabriel Marason, Jr., Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 2, 1970, Ser. No. 86,016
Int. Cl. A63h *1/28*
U.S. Cl. 46—66 9 Claims

A toy top having a housing with a gyroscopic-type rotor mounted on a freely rotatable shaft that extends below the housing and terminates at a spinning tip which supports the top in spinning engagement with a playing surface, the top in-

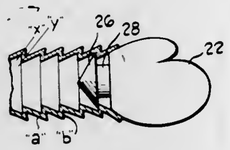
cluding impeller structure rotating with the rotor within the housing, and the latter including intake and exhaust apertures for allowing the impeller to draw air into the housing and expel the air in a flow interrupted at an audible frequency.



3,645,038
FIGURE TOYS

Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 29, 1970, Ser. No. 6,795
Int. Cl. A63h *3/00*
U.S. Cl. 46—151 **5 Claims**



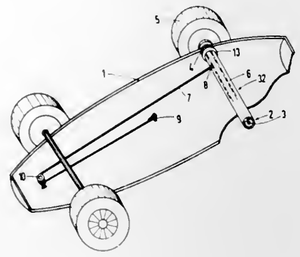
A toy including a portion formed of corrugated plastic tubing which is capable of being contracted and expanded in length and of being curved in an arc, and which will retain any length and/or curvature given to the tubing. The tubing is formed by providing a series of hinge sections along its length forming a continuous series of grooves having sides of unequal length, and by heat treating the plastic to provide a setting of the plastic at the hinges to eliminate elasticity between the hinge connected sections.

3,645,039
MOVING TOY

Helmut Bross, Biberttalstrasse 24, Altenberg, near Nuremberg, Germany

Filed Nov. 21, 1968, Ser. No. 777,805
Claims priority, application Germany, Nov. 22, 1967, P 16 03 225.0
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **20 Claims**

A toy car in which the drive is produced by an axially extendable rubber cord. This cord may be wound around a rotary member which is connected, in one direction of rotation, by means of a one-way clutch, to a drive shaft for the wheels of the car. When the rubber cord is unwound completely from the rotary member, the one-way clutch slips to permit the drive shaft to continue to rotate. A reverse gearing is provided whereby the rotary member may be turned to wind on the rubber cord by pressing downwardly on the car and pushing it forwards.



3,645,040
UNBALANCED CULTURE METHOD OF ALGAE PRODUCTION

Jay E. Ort, Lubbock, Tex., assignor to ERA Incorporated, Clovis, N. Mex.

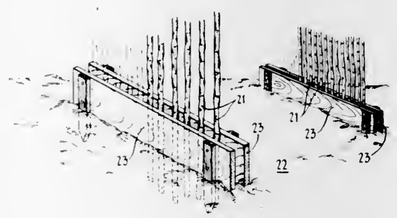
Continuation-in-part of application Ser. No. 676,195, Oct. 18, 1967, now Patent No. 3,521,400. This application July 16, 1970, Ser. No. 55,570
Int. Cl. C02c *1/00*
U.S. Cl. 47—1.4 **5 Claims**

Interruption of algal-bacterial symbiosis by high-intensity light permits increased algae production.

3,645,041
METHOD OF GROWING PEAR TREES FROM SLIPS

Leo Addin, P.O. Box 53, Los Molinos, Calif.

Filed Jan. 26, 1970, Ser. No. 5,603
Int. Cl. A01m *5/00*
U.S. Cl. 47—58 **10 Claims**

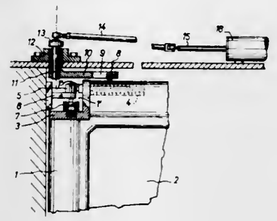


Healthy, vigorous pear trees are produced from pear tree slips by treating the bottom section of the slips with an aqueous slurry of proteins and trace quantities of amino acids and then planting the slips directly into a plant growth medium. The resulting trees are usually resistant to pear tree diseases, sustain growth rates which compare favorably with grafted trees, and have significantly lower mortality rates in advanced stages of growth.

3,645,042
APPARATUS FOR OPENING A SWING DOOR

Hans Peter Bolli, Schaffhausen, Switzerland, assignor to Carl Sigerist & Cie, Schaffhausen, Switzerland

Filed May 7, 1970, Ser. No. 35,457
Claims priority, application Switzerland, May 8, 1969, 7095/69
Int. Cl. E05f *15/04, 17/00*
U.S. Cl. 49—326 **3 Claims**

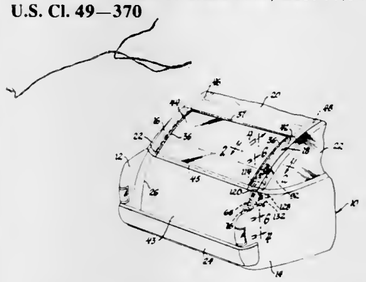


Apparatus for opening swing doors comprises a power operated driving unit for opening the wings of the door. A vertical shaft is situated above the outside upper corner of a wing and in the plane of the closed door wings. The shaft axis is displaced outwardly with respect to the pivoting axis of the wings. One end of the shaft has fixed thereto a movement transmission arm engaging the top of the wing and the other end of the shaft carrys a transmission arm which is connected by linkage means to said power operated driving unit. Owing to displacement of said vertical shaft axis outside of the pivoting axis of the door wing, an angular movement of 90° of the door wings requires an angular movement of less than 90° of said power unit operated transmission arm on the vertical shaft.

3,645,043
MOVEMENT SEQUENCING MEANS

Alfonsas Velavicius, and Bert R. Wanlass, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 16, 1970, Ser. No. 72,587
Int. Cl. E06b *3/44;* **E05f** *11/54*
U.S. Cl. 49—370 **5 Claims**

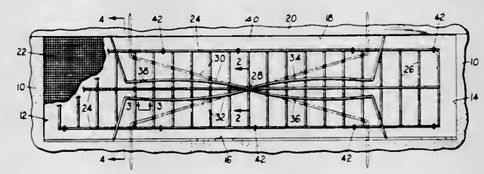


A predetermined operational sequence for a pair of closures supported on a vehicle body for independent movement relative to an opening in the vehicle body is maintained by movement sequencing means including a latchbolt engageable on a striker supported on a first of the two closures and operable in a latching position to maintain the first closure in the closed position, a detent lever movable between detenting and releasing positions and operable in the detenting position to maintain the latchbolt in the latching position, a bellcrank with stop means thereon which bellcrank is supported on the vehicle body for movement between an unblocking position and a blocking position in the path of motion of the second of the two closures to prevent movement of the second closure to the closed position, and a substantially inextensible connecting member connecting the detent lever to the bellcrank so that the bellcrank prevents movement of the detent lever from the detenting to the releasing, position when the second closure is in the closed position and the detent lever prevents movement of the bellcrank from the blocking to the unblocking position when the first closure is in the open position.

3,645,044
CLOSURE SUPPORT FOR FOUNDATION VENTS AND LIKE OPENINGS

Marvin L. Akre, 410 N.E. 20th Drive, Gresham, Oreg.

Filed May 22, 1970, Ser. No. 39,929
Int. Cl. E05c *21/02*
U.S. Cl. 49—465 **3 Claims**

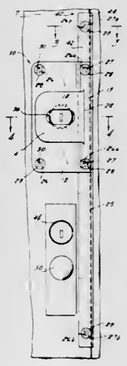


A base grill member smaller in dimensions than an opening to be closed mounts a plurality of gripping members at least one of which normally extends resiliently outward of the grill member for retractable engagement with the peripheral wall of the opening. Each resilient gripping member is retractable inwardly from said extended position to permit installation of the grill member in the opening, whereupon each resilient gripping member is allowed to extend outward into gripping engagement with the peripheral wall of the opening. The grill member may mount a closure member for closing the opening or it may cooperate with a screen across the opening to confine a closure material between them.

3,645,045
PROTECTIVE DEVICE FOR A DOOR

Melvyn A. Gervis, Haworth; Eugene Taras Wozny, Harrington Park, both of N.J., and Nicholas Giardina, Mount Vernon, N.Y., assignors to Magic Eye Associates, Inc., New York, N.Y.

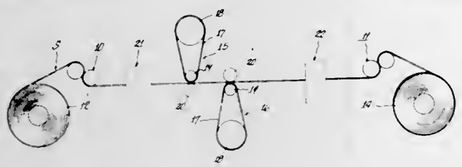
Filed May 11, 1970, Ser. No. 36,176
Int. Cl. E06b *1/04*
U.S. Cl. 49—504 **3 Claims**



A protective device for a door to prevent removal of the door lock, and to prevent access to the door and doorframe

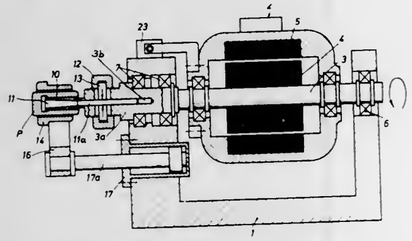
interface. A plate having first and second raised parts is secured to the door adjacent the door lock. The first raised part covers the lock. An opening in this raised part allows a key to pass therethrough but does not permit removal of the lock therethrough. The opening is elongated, whereby door locks variously spaced on the door may be protected by the plate. The second raised part partially covers a member which prevents access to the interface, which member can be moved along the interface to a preferred position prior to being secured to the plate and the door.

3,645,046
POLISHING OF STRIP METAL
Kenneth L. Bandy, Youngstown, Ohio, assignor to Wean Industries, Inc., Youngstown, Ohio
Filed Dec. 29, 1969, Ser. No. 888,274
Int. Cl. B24b *7/00*
U.S. Cl. 51—5 **8 Claims**



The metal strip to be polished is run through spaced drag and pull bridles to establish a tension on the strip portion therebetween. An abrasive device contacts a surface of the tensioned strip portion to polish such surface. The strip is run through the rolls of a leveler to continuously work the strip as it passes from the drag bridle to the abrasive device and thus relieve the strip of stresses and make more effective the tension on the strip so as to present a flat surface to said abrasive device. In so passing through the leveler, the strip is also elongated as in the usual tension leveling operation.

3,645,047
MACHINE FOR HONING BLIND-END BORES
Georges Garnier, Blois, France, assignor to Roto-Diesel, Paris, France
Filed Feb. 3, 1970, Ser. No. 8,169
Int. Cl. B24b *3/00, 5/00*
U.S. Cl. 51—92 R **6 Claims**

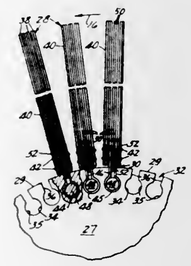


Automatic honing machine for blind-end bores having only a small annular relief groove at the bottom of the bore and comprising a frame, a motor mounted on said frame, an extensible hone actuated by said motor, an axially displaceable conical tie rod disposed along the axis of the hone and coupled to said hone so as to produce the extension thereof, wherein the motor is an electric motor having a stator pivotally mounted on the drive shaft which is supported by a stationary frame and maintained elastically in a position of equilibrium, and means for driving the conical tie rod in axial translation motion which are operated under the control of said pivotal stator in order to produce action on the extension of said hone and in order to control said extension in dependence on the resisting torque produced by the operation of said hone.

3,645,048
ERASER FOR VELLUM XEROGRAPHIC COPY PAPER
Robert H. MacClaren, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,840
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 **5 Claims**

An eraser composition for the removal of toner from translucent vellum xerographic copy paper comprising a wax binder containing a uniformly distributed abrasive. The advantage of the eraser composition is that it does not smudge the toner or abrade the surface of vellum xerographic copy paper, and therefore allows copies to be reproduced by diazo-type processes with no indications of erasures in the final copies.

3,645,049
WIDE FLAP WHEEL
Conrad T. Freerks; James C. Huppert, and Ralph E. James, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 21, 1968, Ser. No. 769,041
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 **9 Claims**

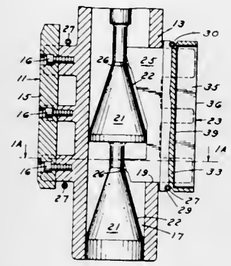


An abrasive flap-wheel comprising a plurality of abrasive packets secured about the periphery of a rotating hub wherein each packet comprises a plurality of abrasive sheets attached to a flexible securing root, the root being affixed to the rotating hub within a peripheral opening.

3,645,050
CUSHION MEANS BETWEEN ABRASIVE AND EXPANDERS
Robert D. Croll, Westland, and Gerald I. Sinclair, Livonia, both of Mich., assignors to Micromatic Hone Corporation, Detroit, Mich.
Filed June 17, 1969, Ser. No. 833,928
Int. Cl. B24b *9/02*
U.S. Cl. 51—338 **5 Claims**

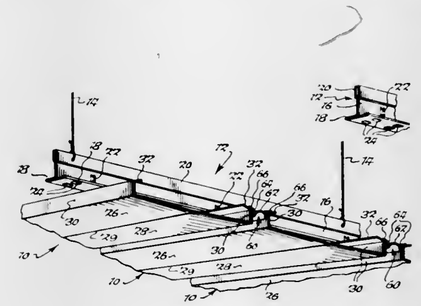
In an abrading or honing tool environment, a resilient material, such as epoxy, urethane, cement, cork, neoprene or synthetic substance is applied between the abrasive means

and the abrasive holder, or between the abrasive holder and the expander, or between the expander and the cone means,



or any combination thereof, to reduce shock and decrease chatter.

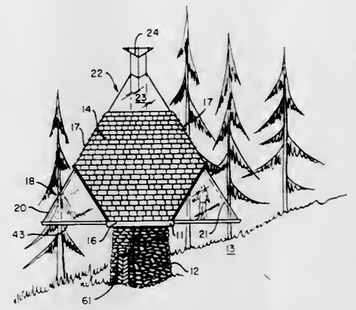
3,645,051
CEILING STRUCTURE
Frank S. Kolesar, 18 Preston Drive, St. Catharines, Ontario, Canada
Filed Oct. 24, 1969, Ser. No. 869,062
Int. Cl. E04b *5/52*
U.S. Cl. 52—28 **16 Claims**



A ceiling structure comprising a plurality of laterally spaced, elongated panel members of generally channel-shaped cross-sectional configuration having inturned flanges that are snap fitted into interlocking engagement behind tabs struck out from the flanges of laterally spaced support carriers extending generally at right angles to the panel members. Certain of the panel members between the spaced support carriers may be deleted to provide one or more openings to receive lighting, heating, ventilating fixtures and the like to form a generally continuous and integrated ceiling system.

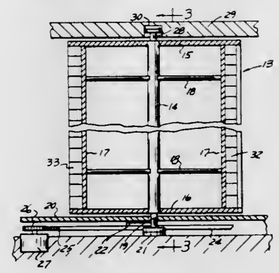
3,645,052
MODULAR BUILDING STRUCTURES AND CERTAIN MOVABLE COMPONENTS THEREFOR
Paul R. Hanna, Stanford, Calif., assignor to Vantrex, Stanford, Calif.
Filed Sept. 16, 1970, Ser. No. 72,612
Int. Cl. E04b *1/344*
U.S. Cl. 52—64 **11 Claims**

A system of modular building construction employing prefabricated wall and floor components which can be mass manufactured and assembled at a factory or at the building site to form a variety of completed building shell patterns which may be arranged to form single or multiple shell units on level or sloping terrain or stacked to form multiple story buildings. Such dwelling units or shells include mechanical means for covering the exterior window or door wall openings occurring between the assembled wall components



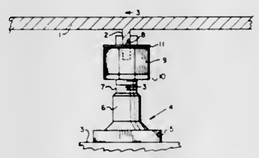
by moving parts of the exterior of the building to cover the openings in order to vandalproof the building.

3,645,053
SWIVEL-SECTIONED BUILDING WALL
George Taggart, 2233 Holcomb No. 12, Detroit, Mich.
Filed Feb. 9, 1970, Ser. No. 9,605
Int. Cl. E04b *1/346;* **E05f** *17/00*
U.S. Cl. 52—65 **1 Claim**



A building wall formed of a number of swivelably mounted sections, normally arranged end-to-end to form a solid wall of monolithic appearance, with means for simultaneously swiveling the sections transversely to the plane of the wall about vertical axes for opening the entire wall.

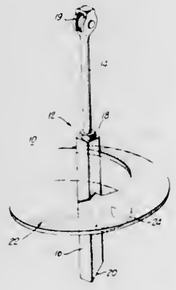
3,645,054
ADJUSTABLE LEVELING DEVICE
Paul S. Olvera, 2714 Witters St., Saginaw, Mich.
Filed Dec. 22, 1969, Ser. No. 886,942
Int. Cl. E04b *5/00*
U.S. Cl. 52—126 **7 Claims**



An adjustable device for leveling floors, bases and other structures and having a cylindrical, elongate, threaded body supported at one end in an upright position and having at least one diametral slot in its other end of such width as to

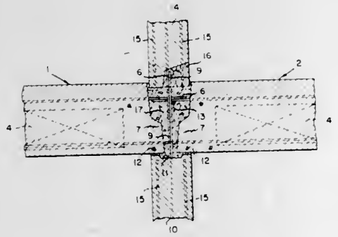
accommodate a flange formed on the structure to be leveled. An adjustable nut is threaded on the body between the ends of the latter and is adjustable toward and away from the slotted end of the body so as to vary the effective depth of the slot. Bearings preferably are supported in a retainer atop the adjusting nut to eliminate friction between the nut and the flange.

3,645,055
SCREW ANCHOR
Kenneth Ralph Roza, Chicago, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed Dec. 28, 1970, Ser. No. 101,623
Int. Cl. E02d *5/74*
U.S. Cl. 52—157 **6 Claims**



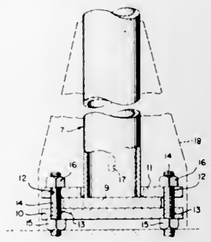
A screw anchor for use in securing a guy wire to the ground includes a shaft with a shank portion having a pointed end for insertion into the ground and a rod extending from the other end of the shank portion to which the guy wire can be attached. Affixed to the shank portion is at least one generally helical cutting blade with a spiral cutting edge so that an obstructing force exerts a constant torsional moment on the shaft of the screw anchor regardless of the position at which the force strikes the cutting edge as the screw anchor is installed into the ground.

3,645,056
CONNECTING HORIZONTAL PANELS AND VERTICAL PANELS IN PREFABRICATED BUILDINGS
Luciano Gerola, Milan, Italy, assignor to Construzioni Generali Fazsura-Cogelar S.p.A., Milan, Italy
Continuation of application Ser. No. 635,445, May 2, 1967, now abandoned. This application Mar. 26, 1969, Ser. No. 814,506
Claims priority, application Italy, May 3, 1966, 10068/66
Int. Cl. E04b *2/10, 5/02*
U.S. Cl. 52—259 **6 Claims**



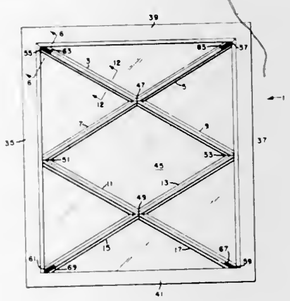
The invention concerns a structure of connected horizontal panels and vertical panels in prefabricated buildings, wherein the horizontal panels bear on protrusions on the underlying vertical panel and in the masonry filled joint all the structural irons are bound together and welded.

3,645,057
BASE FOR MOUNTING A TRAFFIC LIGHT POLE IN ROTATABLE AND VERTICALLY ADJUSTABLE RELATION
Seymour M. Kaplan, 1478 Prospect Ave., East Meadow, N.Y.
Filed Oct. 13, 1970, Ser. No. 80,408
Int. Cl. E02d *27/42*
U.S. Cl. 52—295 **2 Claims**



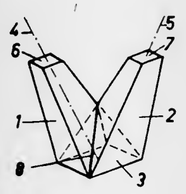
According to this invention, poles for carrying traffic control signals or the like are provided at their lower ends with outstanding flanges which are gripped between opposed clamping elements adjustable on upstanding anchor bolts on the base structure.

3,645,058
MULLION DEVICE FOR WINDOW
Allan I. Jacobson, 48-6 Woodlake Rd., North Albany, N.Y., and Philip J. M. Fisher, 81 Fairfield Ave, Albany, N.Y.
Filed Mar. 7, 1969, Ser. No. 805,164
Int. Cl. E04b *1/48, 1/58*
U.S. Cl. 52—456 **36 Claims**



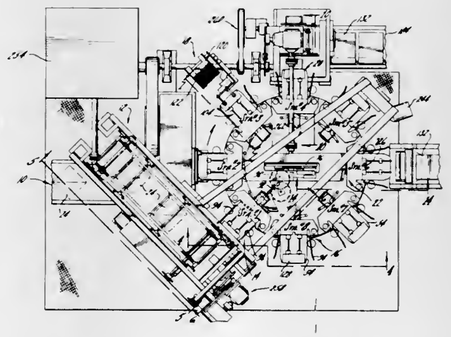
A removable mullion device or grill, for use with a single-light window to simulatively convert same to multiple light, fabricated of hollowed-out mullion tubes which can be joined together to make selectively variable patterns and sizes utilizing cross-joint connectors for the intersecting angular joints of the mullion tubes, utilizing inserting members for fastening the mullion tubes at the corners of the sash and with the cross-joint connectors, angle-joint connectors and inserting members being received and carried interiorly of the mullion tubes. Also discloses two methods of heat bonding to structurally bond and unite the connectors with the plastic mullion tubes to make permanent cross joints and angle joints. Also discloses bevel cutting of the mullion tubes for cam or wedge locking of the mullion tubes with the window sash. Also discloses an adaptation of the cross-joint connectors for use with runners of a suspension grid for ceilings to form a variety of diamond-shaped patterns. Also discloses an adaptation of the cross-joint connectors, and the use of a cross-joint connector with a T-joint connector, for geodesic structure.

3,645,059
CONSTRUCTIONAL ELEMENT
Wilhelm Grimm, Robert-Koch-Strasse 10, 608 Gross-Gerau-Dornheim, Germany
Filed Feb. 26, 1970, Ser. No. 14,512
Claims priority, application Germany, Feb. 26, 1969, P 19 09 647.0
Int. Cl. E04b *2/12*
U.S. Cl. 52—609 **10 Claims**



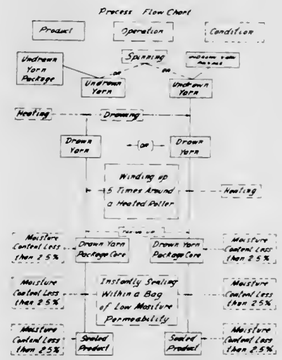
Especially shaped constructional element for the assembly of light partition walls in gardens, parks, recreation grounds, in restaurants, or terraces and other similar sites. The building stone is composed of at least two frusta of cones or pyramides having axes inclined to each other.

3,645,060
CONTAINER LOADER FOR COMPRESSIBLE PRODUCT
Philip G. Hammond, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed July 6, 1970, Ser. No. 52,509
Int. Cl. B65b *63/02, 13/20*
U.S. Cl. 53—24 **19 Claims**



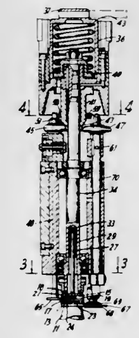
A method and apparatus for packing a stack of compressible material, such as disposable diapers, into a carton wherein the apparatus includes a rotatable turret which is serially indexed to a number of stations. The compressible stack is loaded between a pair of platens which rotate with the turret and the stack is compressed to the desired height, with the rotational movement of the turret causing the platens to move relative to each other for compression. After the stack has been compressed to the desired level, a carton is placed over the platens and the stack at one station; and, at a further station, the diapers are pushed out from between the platens so that the carton is also thereby moved and the stack is contained in the carton. Provision is also made for placing a coupon or sheet containing advertising, instructions or the like, into the carton in such a fashion that the coupon is not damaged and for pushing the carton over the platens with a straight line pushing motion to insure proper container alignment and to allow motion with a minimum applied force.

3,645,061
METHOD FOR MANUFACTURING AN IMPROVED POLYCAPROAMIDE FILAMENT YARN BY SEALING A PACKAGE IN A BAG
Shigeru Mizutani; Kunio Sumi, and Shinji Ando, all of Aichi-ken, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Jan. 30, 1969, Ser. No. 795,155
Int. Cl. B65b *31/00, 63/08, 55/04*
U.S. Cl. 53—25 **1 Claim**



A method for manufacturing an improved polycaproamide filament yarn by sealing a package thereof in a bag made of a film of a low moisture permeable thermoplastic synthetic polymer and its product. Oozing out of monomers or oligomers on the surface of the yarn due to high relative humidity during long storage can be effectively prevented.

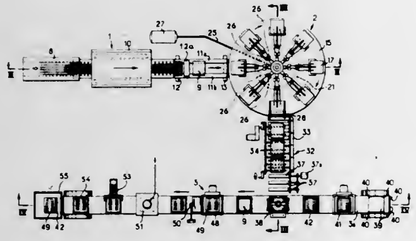
3,645,062
CONTAINER-CAPPING APPARATUS
Charles N. Hannon, 27 Sargent Road, Scarsdale Westchester, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,458
Int. Cl. B65b *7/28*
U.S. Cl. 53—42 **21 Claims**



The apparatus concerns a container-capping device. A cap section having a flattened region covering the container

mouth is provided with a downwardly depending skirt having at approximately its lower end a series of elongated openings which are joined at their ends by bridge sections. Provisions are made for both deforming the cap at its outer periphery to bring it into abutment with the container wall and also to provide for scoring the bridge sections through a suitable scoring means with the container and the scoring means adapted to be turned relative to each other so that the scoring covers all peripheral bridge regions. The containers to which this description will be primarily related for illustrative purposes can be considered as bottles with a prethreaded outer end section between the mouth and shoulder regions. Provisions are made so that the cap member may either be prethreaded to the container outer section or whereby the cap may be deformed to complement the bottle formation of threads.

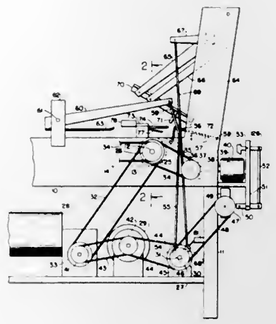
3,645,063
MACHINE FOR ASSEMBLING AN INSECTICIDAL DEVICE
Jacques Foirest, Monfermeil, France, assignor to L'Oreal, Paris, France
Filed Aug. 10, 1970, Ser. No. 62,546
Claims priority, application France, Sept. 16, 1969, 6931461
Int. Cl. B65b *57/02, 63/08*
U.S. Cl. 53—53 **17 Claims**



Machine for impregnating absorbent sheets and inserting them in receptacles comprises a conveyor passing said sheets through an oven to dry them, a rotating table carrying a plurality of presses for receiving and impregnating the dried sheets, and an assembly line comprising a conveyor belt, means for placing a receptacle half on the belt, followed by an impregnated sheet and a second receptacle half, and means for squeezing the resulting stack to produce a complete receptacle enclosing an impregnated sheet.

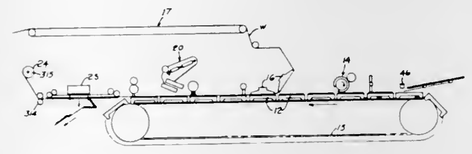
3,645,064
PACKING MACHINE FOR BAKED GOODS
Fred L. Waite, 66 Clinton Pl., Massapequa, N.Y.
Filed July 9, 1970, Ser. No. 53,489
Int. Cl. B65b *57/02, 57/10*
U.S. Cl. 53—55 **14 Claims**

Baked goods, such as muffins or donuts, are received from a belt onto a cyclically operated elevator which raises the goods to the level of a delivery slide from which the baked goods are pushed into a container. If the machine cycles twice for each container, the baked goods are stacked two high therein. To ensure that the goods are disposed flat within the container, pivotally mounted gravity biased fingers are mounted on the mechanism pushing the baked goods



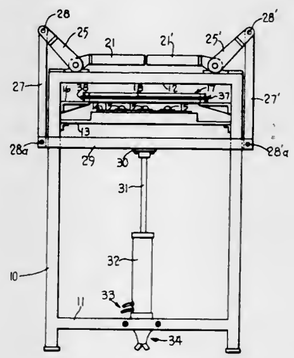
from the slide, the fingers holding down and urging downward the rear edges of the baked goods.

3,645,065
PACKAGING MACHINE
Hans A. Jensen, Madison, and Melvin M. Layman, Waunakee, both of Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.
Filed Mar. 5, 1970, Ser. No. 16,787
Int. Cl. B65b *57/02, 31/02, 61/26*
U.S. Cl. 53—73 **28 Claims**



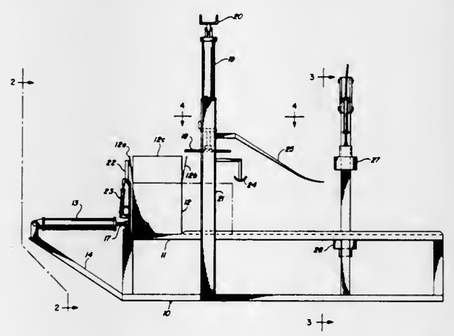
A method and apparatus for packaging products, such as assemblies of bacon slices and the like, which are advanced from a supply source in random order on backing boards having identifying indicia for controlling certain of the subsequent packaging operations and the application of the proper one of two different labels according to the indicia on the respective boards. The assemblies are advanced to the horizontal top run of a lower conveyor carrying successive package platters, past an electric eye which scans the identifying indicia and which actuates mechanism to position or set a series of cams carried on the back face of each of the packaging platters for controlling subsequent operations. An upper conveyor carrying package forming platters for mating with the platters on the lower conveyor lays down a covering web and forms vacuumized and sealed packages between pairs of mating platters. The cams control operation of mechanism for applying adhesive to the backing board prior to advance of the boards to the upper conveyor and also a label applying device beyond the upper conveyor which has a dual label supply magazine and an associated adhesive activator and applicator for applying to the packages either of two labels according to the cam setting on the bottom of the platter on the lower conveyor which carries the package. The apparatus includes a platter identification printer and a code dater preceding and following the labeling device. Upon the application of the label, the packages are transferred to the bottom run of an outfeed conveyor having package suspending pins which carry the connected packages between a vertically reciprocating trimming punch and a cooperating bottom die for severing the packages from the web so as to permit discharge of the separated packages from the apparatus with the waste resulting from the trimming operation being forced loose from the pins and wound on a reel at the end of the outfeed conveyor.

3,645,066
PLASTIC PACKAGING MACHINE WITH MULTISEGMENTED HEATER PLATE
John V. Drygulski, 51 Silver Spring Road, Short Hills, N.J.
Filed Feb. 4, 1970, Ser. No. 8,448
Int. Cl. B65b *31/00*
U.S. Cl. 53—112 A **1 Claim**



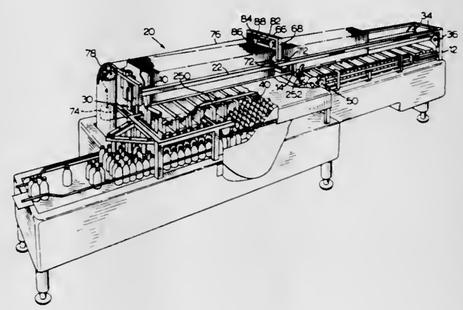
A machine for plastic skin packaging and vacuum forming is provided with a multisegmented heating plate wherein all of the heater segments are moved simultaneously. These segments are desirably hinged and arranged to be raised and lowered from the center of the heating section of the machine.

3,645,067
PACKAGING DEVICE
Phil Siegel, 11636 North Oakhurst Way, Scottsdale, Ariz.
Filed Dec. 4, 1969, Ser. No. 881,952
Int. Cl. B65b *63/00*
U.S. Cl. 53—124 B **1 Claim**



The present invention discloses a packaging machine for sequential packing and securing cartons of cloth material such as rags and waste. The invention includes a novel packing carton for holding the packaged material in the compressed state.

3,645,068
CARTON LOADING MACHINE
Marinus J. M. Langen, Weston, Ontario, Canada, assignor to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas
Filed Dec. 15, 1969, Ser. No. 885,202
Int. Cl. B65b *7/20, 43/30*
U.S. Cl. 53—186 **17 Claims**

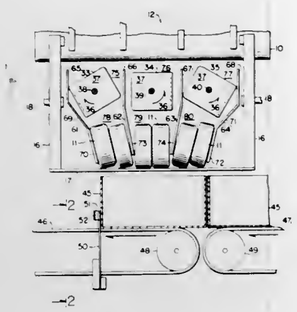


A method and apparatus for loading cartons, particularly end-loading cartons. The method includes improvements in the opening of the carton from the knockdown configuration, the transferring of the carton from the knockdown storage area to a continuously moving conveyor, the loading of the open carton and the closing of the carton. The improved method of opening the carton includes the steps of engaging adjacent sidewalls of the knockdown carton with suction cups and moving the suction cups away from one another along an arcuate path while simultaneously moving the opening carton to a position on the continuously moving belt. The apparatus includes a carton opening apparatus, a carton transfer apparatus for transferring the opening carton into a continuously moving conveyor and closure means for closing the carton after it has been loaded with bottles or the like. The opening apparatus is characterized by oppositely disposed suction cup means which engage oppositely disposed pairs of adjacent sidewalls and a control mechanism for causing the suction cups to move away from one another in an arcuate path to move the adjacent wall of the carton to an open position. The transfer mechanism includes a movable carriage which is adapted to remove a knockdown carton from a storage station and transfer it by way of a two-stage operation onto a continuously moving conveyor. The closing apparatus includes a double-bladed rotor mounted in the path of movement of the ends of the carton after loading. One blade is adapted to close a top or bottom wall and the other blade is adapted to close the trailing wall.

3,645,069
PACKING DEVICE FOR BAKED GOODS
Fred L. Waite, 66 Clinton Pl., Massapequa, N.Y.
Filed July 9, 1970, Ser. No. 53,492
Int. Cl. B65b *35/32*
U.S. Cl. 53—159 **10 Claims**

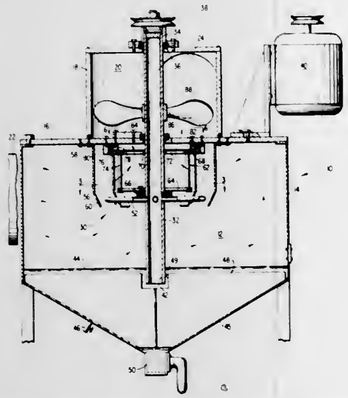
A device for packing baked goods such as donuts in a box has cups into which baked goods are slid to be stacked two

high, the cups being rotated to dump the baked goods on edge in a row on a retaining bar. The retaining bar is pivoted



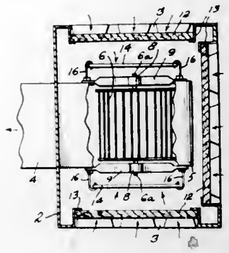
to be moved from below the baked goods to permit them to drop simultaneously into a box on edge in a longitudinal row.

3,645,070
GAS WASHER APPARATUS
Lewis P. Roe, 1342 Rosery Road, Clearwater, Fla.
Filed July 7, 1970, Ser. No. 52,867
Int. Cl. B01d *50/00*
U.S. Cl. 55—230 **12 Claims**



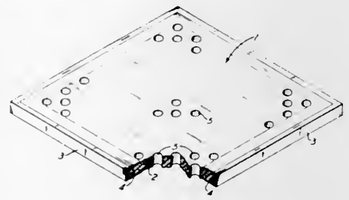
A pollution control device including a lower contaminant collection chamber and an upper plenum chamber. A gas-washing system includes a rotating vertical hollow tube extending through the chambers and having its lower end submerged in a body of liquid provided at the bottom of the collection chamber. Within the collection chamber are a plurality of aspirating spray pipettes extending laterally from the hollow tube and a rotor assembly mounted on the hollow tube just above the pipettes with part of the rotor assembly forming a seal between the upper and lower chambers which forces the gas to flow through the main rotor section in order to pass from the lower to the upper chamber. A plurality of deflectors are mounted adjacent the nozzle ends of the pipettes to diffuse the water emitter from the nozzles into an annular water shroud or spray. This water is deposited on particles deflected by the main rotor section, thereby effectively increasing the mass of the particles and causing them to collect by centrifugal action against the walls of the collection chamber. A fan mounted on the hollow tube in the upper chamber draws cleaned air from the rotor assembly and passes it out to the surrounding atmosphere.

3,645,071
BARRIER PADS FOR EVAPORATIVE COOLERS
Billy C. Gray, 765 De Baca Road, Las Cruces, N. Mex.
Filed Apr. 29, 1970, Ser. No. 32,880
Int. Cl. B01f *3/04*
U.S. Cl. 55—259 **5 Claims**



Barrier pads for use in an evaporative cooler unit consisting of a barrier pad mounted on the blower housing and spaced from its intake openings to prevent droplets of moisture and particles of dust which collect on the cooling pads of the unit from being drawn into a room or the like by the cooling unit's fan. The pad may be a ring covered with an absorbent material. The ring is mounted in front of the blower housing openings by wire supports fixed on the stud bolts which secure the fan shaft mounts.

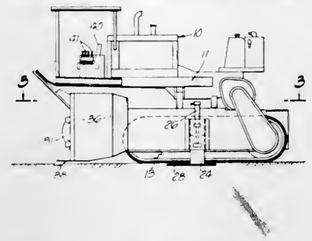
3,645,072
FILTER AND PROCESS OF MAKING SAME
Thomas Miller Clapham, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,772
Int. Cl. B01d *53/02*
U.S. Cl. 55—387 **8 Claims**



A filter is made by bonding and molding a granular activated carbon within a frame of U-shaped channels. The bonded activated carbon body may be reinforced with a wire or other network, and may contain holes or areas of reduced thickness to minimize pressure drop.

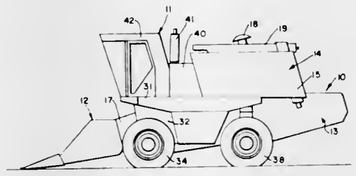
3,645,073
CANE CUTTER
Franklin P. Gomes, and Donald K. Andrews, both of Hawi, Hawaii, assignors to Kohala Sugar Co., Hawi, Hawaii
Continuation-in-part of application Ser. No. 736,792, June 13, 1968, now abandoned. This application June 2, 1970, Ser. No. 42,845
Int. Cl. A01d *45/10*
U.S. Cl. 56—13.8 **6 Claims**

A track laying crawler-type tractor has a high-clearance frame to define a throat between the crawler tracks of sufficient height and width to pass over two rows of sugarcane growing as a mat in the field and ready to harvest. Cutting means are connected to the frame to sever both rows of cane from the ground. Additional cutting means on the frame extending outward from the crawler tracks may also be provided to sever additional rows of growing cane. A power-driven upright rotary knife in front of each crawler track at the side boundaries of the throat serves to divide the mat of



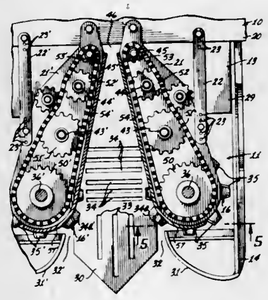
growing cane to permit the crawler tracks to pass therethrough. The cane mat is thus severed from the ground along the path of the tractor without substantially disturbing its position in the field.

3,645,074
AGRICULTURAL IMPLEMENT
Vernon Eugene Rettig, Bondurant; John Edward Maust, Jr., Des Moines, and Joseph John Shindelar, Ottumwa, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 26, 1970, Ser. No. 83,751
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.6 **35 Claims**



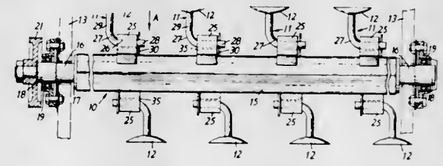
A crop-treating device composed of an elongated fore-and-aft extending crop-treating implement and an implement carrier that bridges over the implement and has sides extending alongside the implement sides. Supporting couplers connect the carrier sides to the implement sides with the rear portion of the carrier being adapted for vertical movement for coupling and uncoupling to the implement.

3,645,075
DEVICE FOR HARVESTING RANDOMLY GROWN PLANTS
Benjamin Oscar Kappelman, 1042 E. Campus, and Marion I. Vance, Route 2 Box 550 Kyrene Drive, both of Tempe, Ariz.
Filed May 22, 1970, Ser. No. 39,727
Int. Cl. A01d *45/18*
U.S. Cl. 56—28 **10 Claims**



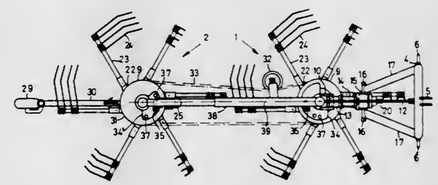
An accumulator for mounting on the front end of a harvester for harvesting randomly grown plants in strips of a predetermined width wherein the accumulator comprises a pair of plant-gathering arms adapted to astride and collect between them a given patch of plants. A platform mounted below the arms is provided with a protrusion extending forwardly of the accumulator between the arms for defining with each arm a plant passageway. A shaft having mounted on it a knife is rotated adjacent one of the passageways for cutting some of the plants as they pass through the accumulator. The remainder of the plants are uncut and support in upright position the cut plants.

3,645,076
FLAIL MOWER
Edward John Aldred, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, Suffolk, England
Filed Mar. 20, 1970, Ser. No. 21,366
Claims priority, application Great Britain, Apr. 1, 1969, 17,043/69
Int. Cl. A01d *55/20*
U.S. Cl. 56—294 **9 Claims**



A flail mower has cutting blades suspended by flail rods from a horizontal rotatable shaft. The center portion of each rod is curved through 90° to form a radial arm and a pivot arm at opposite ends of the rod. The pivot arm is a close sliding and rotational fit in an aperture in a lug on the shaft, the axis of the aperture being parallel to the axis of the shaft. The pivot arm is located in position by a detachable spring clip on the distal end of the pivot arm, so that the flail rod and blade can be removed from the shaft by detaching the clip and sliding the pivot arm end of the rod out of the aperture. The radial arm extends through an aperture in the cutting blade and is formed with an enlarged head which retains the blade on the arm when subjected to centrifugal force upon rotation of the shaft. The blade is slidable along the radial arm and then along the pivot arm for removal from the rod when the rod is removed from the shaft.

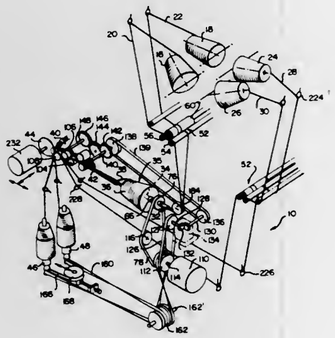
3,645,077
HAYMAKING MACHINE
Hans Ulrich Hauser-Lienhard, Watt, Zurich, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Zurich, Switzerland
Filed Aug. 14, 1969, Ser. No. 850,045
Claims priority, application Switzerland, Aug. 27, 1968, 12824/68
Int. Cl. A01d *79/02*
U.S. Cl. 56—366 **7 Claims**



A haymaking machine having two rake wheels mounted for rotation about vertical shafts at both ends of an arm pivotable in a horizontal plane, both rake wheels being supported by ground wheels. The first of said rake wheels is stationary with respect to the line of travel of the machine and the second rake wheel arranged in the rear of the first wheel, can be shifted laterally by means of said pivotable arm

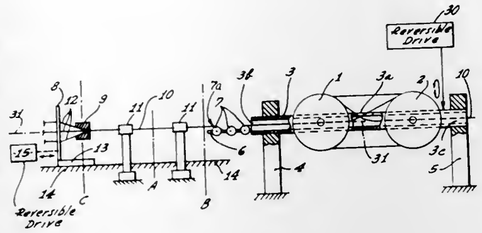
towards one or the other side of the line of travel of the machine with respect to said first wheel and can be locked in its lateral shifted position.

3,645,078
APPARATUS AND METHOD FOR THE PRODUCTION OF FANCY YARNS, SUCH AS CHENILLE
Charles E. Roberts, Union, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,675
Int. Cl. D02g *3/42*
U.S. Cl. 57—24 **20 Claims**



A device for the production of fancy or fluffy yarns, such as chenille, has a frame along the length of which a plurality of individual forming units are spacedly mounted, each unit including a spindle and forming arrangement for delivering warp threads bound by encircling weft threads to a roller arrangement which also receives binder threads from a creel on the frame and which has an associated rotary knife that severs the weft threads with the warp and binder threads, having the cut weft threads thereon, being taken up on a pair of takeup spindles of a ring-spinning frame. A main drive means is provided for each unit and is drivingly connected through separate transmission means with the spindle and forming arrangement, the associated roller arrangement and the associated pair of takeup spindles with each drive transmission means being adjustable for coordinated operation of such components. A separate drive means is provided for each knife which is adjustable relative to its associated roller arrangement. The twisted threads are conveyed from the spindle and forming arrangement to the roller arrangement by a feed roller assembly which is driven by the drive means for the spindle arrangement. A selectively actuatable control means for the feed roller assembly controls the feeding of the threads in the method of forming loop, seed and other fancy yarns.

3,645,079
STRANDING MACHINE
Rolf Stoebener, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed May 8, 1970, Ser. No. 35,857
Claims priority, application Germany, May 12, 1969, P 19 24 093.4
Int. Cl. H01b *11/04, 13/04*
U.S. Cl. 57—34 AT **4 Claims**



An accumulator stranding machine for twisting strands at a reversing twist, wherein the stranding nipple moves in unison with the strands, towards the accumulator whenever the accumulator changes speed; the stranding nipple moves in the opposite direction during regular rotation of the accumulator.

3,645,080
APPARATUS AND METHOD FOR MANUFACTURING A FLUFFY YARN
Seiichi Yamagata; Masaaki Sakai; Toshimoto Matsubara, all of Otsu-shi, and Shigeji Yamashita, Koga-gun, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Nov. 21, 1969, Ser. No. 878,835
Claims priority, application Japan, Nov. 26, 1968, 43/102555; July 5, 1969, 44/63216; Sept. 30, 1969, 44/92630
Int. Cl. D02j *3/02*
U.S. Cl. 57—34 R **23 Claims**



An apparatus for manufacturing a fluffy yarn used in combination with a yarn-advancing mechanism and having one or more fluff-raising members axially rotational in contact with a ballooning portion of the advancing yarn for partially and intermittently cutting fibrous materials composing the yarn. The fluff-raising member may be rotated positively.

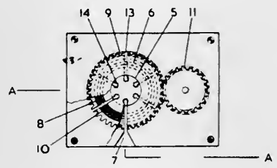
3,645,081
MACHINE FOR CRIMPING THERMOPLASTIC FILAMENT
Risto Salama, Tapiola, Finland, assignor to Spinner Osakeyhtio, Helsinki, Finland
Filed Dec. 24, 1969, Ser. No. 888,012
Claims priority, application Finland, Oct. 31, 1969, 3135/69
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **6 Claims**

The invention relates to a machine for crimping thermoplastic filament, in which the filament is conducted from a

spool over a first thread guide through a thread-drawing device, through a second thread guide, through a heating oven, then through a false twister rotating about its axis, and finally over another thread-drawing device onto a spool.



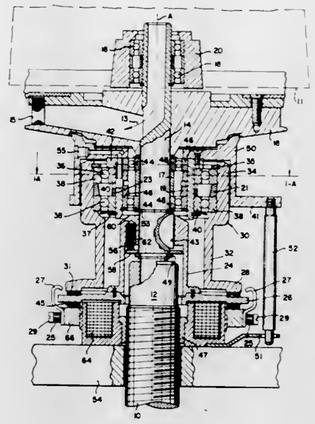
3,645,082
APPARATUS FOR FALSE TWISTING YARN
Bruce Murray McIntosh, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England
Original application Sept. 3, 1968, Ser. No. 757,077, now Patent No. 3,553,952. Divided and this application Aug. 18, 1970, Ser. No. 64,763
Int. Cl. D02g *1/02;* **D01h** *7/92*
U.S. Cl. 57—77.45 **5 Claims**



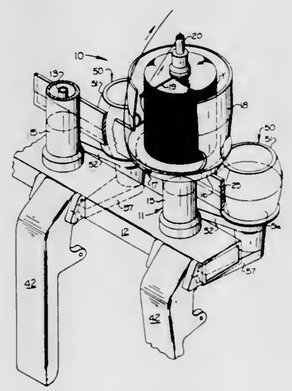
A false twist device having a plurality of guides on a guide plate rotatable about an axis and said guide plate being mounted in bearings which have a radius larger than the guide plate.

3,645,083
SPINDLE-MOUNTING ASSEMBLY FOR THREAD-SPINNING OR THREAD-TWISTING MACHINES
Theo Lohring, Bentheim; Aloys Greive; Heinrich Eckbolt, both of Munster, and Theodor Tiemann, Bosensell/Munster, all of Germany, assignors to Hamel GmbH Zwirnerei-und Spinnereimaschinen, Munster, Westf., Germany
Filed Jan. 5, 1970, Ser. No. 603
Claims priority, application Germany, Jan. 7, 1969, P 19 00 607.6
Int. Cl. D01h *7/08, 1/24, 7/22*
U.S. Cl. 57—88 **11 Claims**

A spindle-mounting assembly for thread-spinning or thread-twisting machines in which the spindle shaft is journaled about an upright axis in a bearing sleeve and is coaxially surrounded by a clutch bell. The clutch bell is spring biased to bring its transverse annular clutch face into engagement with a drive pulley coaxially surrounding the clutch bell but may be drawn downwardly by an electromagnet surrounding the bearing sleeve to engage a brake face. Between the cylindrical sleeve of the clutch bell and the drive pulley there is provided a fixed boss or sleeve to which the inner race of the outer roller or ball bearing system is affixed so that the roller elements are constantly in motion when the pulley is driven, regardless of the clutch position.



3,645,084
APPARATUS FOR CONTROLLING THE OPERATION OF INDIVIDUAL SPINDLES IN A YARN-PROCESSING MACHINE
Klaus Nimtz, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany
Filed Aug. 28, 1970, Ser. No. 67,739
Int. Cl. D01h *13/14, 7/22*
U.S. Cl. 57—88 **7 Claims**



Apparatus for controlling the operation of individual spindles in a textile yarn-processing machine, such as a twister, spinning frame or the like. The apparatus preferably includes an endless tangential drivebelt engaging whorl portions of respective spindles for rotatably driving same, individually operable brake and positioning means may be used for stopping the rotation of and for positioning desired ones of the spindles in predetermined positions, and individually movable tension rolls for guiding engagement with the drivebelt to individually assume a driving position holding the drivebelt in tight frictional engagement with the respective spindle and to be movable to a substantially nondriving position holding the drivebelt in loose friction engagement with

the respective spindle for allowing operation of the brake and positioning means. Preferably, the tension rolls include bowed peripheral surfaces for holding the drivebelt by full engagement therewith when in the driving position and for holding the drivebelt against sagging by engagement with only the outwardly extending center portion of the bowed surface when in the nondriving position.

3,645,085
HAIRY LUSTROUS YARN

Nestor Sylvain Rassart, Drummondville, Quebec, Canada, assignor to Chemcell Limited, Montreal, Quebec, Canada

Continuation of application Ser. No. 709,458, Feb. 29, 1968, now abandoned. This application Nov. 13, 1969, Ser. No. 871,648
Int. Cl. D02g *3/00*
U.S. Cl. 57—140 **1 Claim**



A hairy lustrous yarn of isotactic polypropylene which has a rectangular cross section and a luster index above 2.

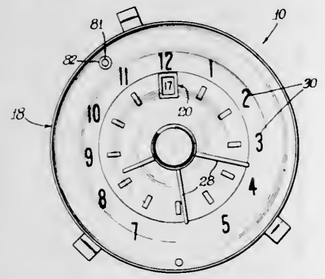
The method of making same which comprises:

a. melt extruding a melt-extrudable isotactic polypropylene blend in the form of a ribbon.
b. immediately gas quenching the ribbon to a temperature above the glass transition temperature of isotactic polypropylene.
c. attenuating the quenched ribbon at a temperature above said glass transition temperature.
d. gas fibrillating the attenuated ribbon.

3,645,086
CALENDAR CLOCK

Emil Niznik, Lake Geneva, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 16, 1970, Ser. No. 19,905
Int. Cl. G04b *19/24*
U.S. Cl. 58—4 **9 Claims**

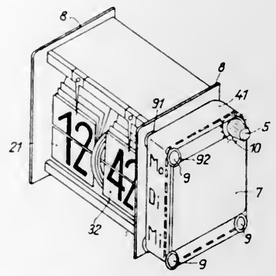


A calendar clock having a dial bearing indications of 31 days of the month, with one day indication exposed, and clockwork advancing the dial every 24 hours in an arrangement including a lever and ratchet means working on the dial, and the clock including a manual pushbutton which when depressed actuates the lever and advances the dial, independently of the clockwork and without interfering with the connection between the clockwork and the dial, to enable the dial to be advanced after the end of a short month to properly indicate the days of the next month.

3,645,087
DIGITAL CLOCK WITH ADDITIONAL DATA INDICATION

Dieter Rams, Konigstein, Taunus, and Claus Christian Cobarg, Steinbach, Taunus, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 11, 1970, Ser. No. 36,250
Claims priority, application Luxembourg, May 20, 1969, 58675
Int. Cl. G04b *19/24*
U.S. Cl. 58—6 A **12 Claims**

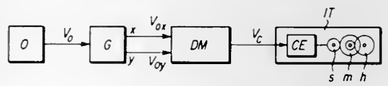


The clock comprises a combination of a time indicator in the form of a digit-bearing tilting plates system and an additional data indicator in the form of an endless belt that is disposed adjacent to the tilting plates time indicator. The belt is driven by a separate clock mechanism and manually adjustable by a control knob.

3,645,088
ELECTRONIC TIMEPIECE

Jakob Luscher, Carouge, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere S.A., Geneva, Switzerland

Filed July 17, 1970, Ser. No. 55,695
Claims priority, application Switzerland, July 18, 1969, 11006/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 A **3 Claims**



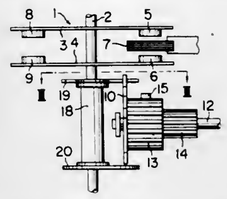
An electronic timepiece which comprises a time standard that delivers a periodic signal of predetermined frequency, an electronic divider, an electromechanical converter controlled by the divider, time display means actuated by the converter, a two-phase voltage generator controlled by the time standard and a two-phase network supplied by the generator, the various stages of the divider being associated with one or the other of the network phases.

3,645,089
INTERMITTENT DRIVING MECHANISM FOR TIMEPIECE

Asahiro Yamada, 2-3-2, Kakinokisaka, Meguro-ku, Japan

Filed May 28, 1970, Ser. No. 41,256
Claims priority, application Japan, May 28, 1969, 44/48672
Int. Cl. G04c *3/04*; G04b *27/00*
U.S. Cl. 58—28 D **5 Claims**

An intermittent driving mechanism for timepieces, comprising a balance, a driving wheel having an odd number of teeth, and two impulse plates provided on the balance and disposed in an axially spaced relation on diametrally opposite sides of the driving wheel for causing intermittent rotation of said driving wheel by alternately striking teeth on the driving

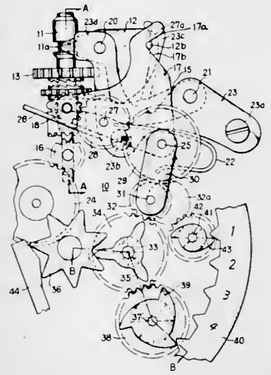


wheel, whereby each intermittent rotative motion of the driving wheel brings two adjacent teeth of the driving wheel into contact with the last striking plate, thereby obstructing the free rotation of said driving wheel, and stopping the driving wheel until a tooth is struck by the other plate.

3,645,090
DAY-DATE QUICK-ADJUSTER FOR CALENDER TIMEPIECE

Yoshifumi Mochizuki, and Akira Tsuzuki, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed June 19, 1970, Ser. No. 47,701
Claims priority, application Japan, June 19, 1969, 44/48443; 44/58167
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **9 Claims**



The calendar correction mechanism for use with a calendar timepiece having a date and a day calendar dial operable independently from each other is operable by the manually rotatable winding stem.

The correction torque transmitting arrangement is so designed that by turning said stem in one direction both calendar dials are rotated for correction in unison with each other and by turning the stem in the opposite direction only one of the dials is rotated independently from the other and in the same direction as before when the stem was rotated in said one direction.

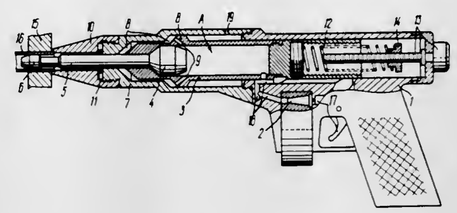
3,645,091
GUN-TYPE DEVICE FOR MECHANICAL ASSEMBLY WORK UTILIZING ENERGY OF EXPLOSION

Valery Vasilievich Ivanov, ulitsa Poltavskaya, 10, kv. 6, and Valentin Ivanovich Rumyantsev, ulitsa Sedona, 44, kv. 6, both of Leningrad, U.S.S.R.

Filed Aug. 17, 1970, Ser. No. 64,264
Int. Cl. F01b *29/08*
U.S. Cl. 60—26.1 **1 Claim**

A gun-type device for mechanical assembly work utilizing the energy of explosion.

The device comprises a second barrel secured on the body around the first barrel, the latter being installed with a provision for axial movement and has a circular projection functioning as a piston while the first barrel is moving in the second one, and has channels which intercommunicate the

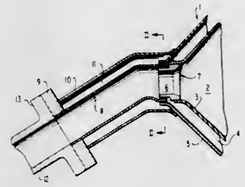


spaces of both barrels and are located at the side of the circular projection facing the rod so that at the end of the forward stroke of the piston with the working tool the compressed gases flow from the space of the first barrel into that of the second one as a result of which the first barrel moves and returns the piston with the tool to the initial position.

3,645,092
TEMPERATURE COMPENSATING CONNECTION BETWEEN EXHAUST PURIFIER AND PIPE

Yasuo Tatsutomi, and Yoshihiro Kajihara, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 1, 1970, Ser. No. 24,572
Claims priority, application Japan, Apr. 4, 1969, 44/30927; Jan. 14, 1970, 45/4735
Int. Cl. F16l *21/00*; F02b *75/10*
U.S. Cl. 60—29 **5 Claims**



A reactor outlet pipe connecting a reaction chamber and an exhaust pipe, that is of a multilayer construction comprising an inner wall and an outer wall which surrounds the outside of the inner wall and defines a heat insulation chamber therebetween. At least one end of the inner wall is slidable in the axial direction of the outlet pipe, so as to compensate for the difference in thermal expansion of the inner and outer walls.

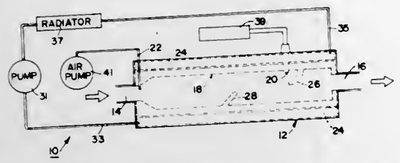
3,645,093
AIR POLLUTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

William L. Thomas, 146th & Calumet Expressway, Calumet City, Ill.

Filed Feb. 5, 1970, Ser. No. 8,774
Int. Cl. F01n *3/14*
U.S. Cl. 60—30 **10 Claims**

Pollution control system for an internal combustion engine includes a combustion chamber assembly having a combustion chamber and an igniter in the chamber to burn the exhaust gases from the engine. Air is pumped to the gases in the chamber and a cooling chamber surrounds the combustion chamber for cooling purposes. An upstanding baffle in the combustion chamber imparts an upwardly swirling mo-

tion to the exhaust gases to direct them against a depending arch having a cavity therein for receiving the swirling gases,

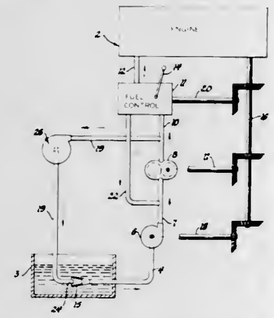


whereby a back pressure is created to facilitate combustion of the gases.

3,645,094
FUEL-PUMPING SYSTEM WITH VORTEX-TYPE FLOW RESISTOR

Alfred M. Suggs, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 4, 1970, Ser. No. 43,346
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 **5 Claims**

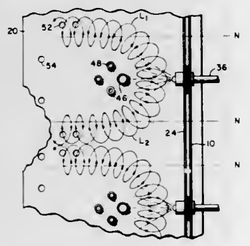


A fuel-pumping system for a gas turbine engine includes a jet pump in the fuel tank, a boost pump, a pressure pump, and a fuel control to control the fuel supply from the pressure pump to the engine. The jet pump is energized by fuel diverted from the outlet of the pressure pump through a static vortex-type flow-resisting device having a pressure drop proportional to flow raised to a power greater than two. This device reduces the amount of increase in fuel returned to the jet pump which would otherwise occur under high-pressure discharge conditions of the pressure pump.

3,645,095
ANNUALR COMBUSTOR

Jerry O. Melconian, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 25, 1970, Ser. No. 92,808
Int. Cl. F02c *3/24*
U.S. Cl. 60—39.36 **9 Claims**

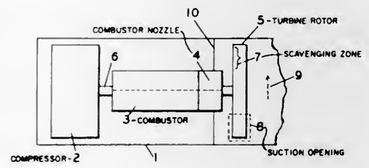


The disclosure illustrates an improved annular combustor having directional air inlets near the head end of the combustor tending to establish a vortex flow of combustion gases adjacent the combustor fuel nozzles. A series of jets downstream of the fuel nozzles reinforce the vortex flow of gases and deflects it into a horseshoe shape having legs generally parallel to the axis of the annular combustor. Cancelling jets downstream of the deflecting jets terminate the vortex flow and dilute it.

3,645,096
PERIPHERAL SUCTION OPENINGS IN GAS TURBINE ENGINES

Georg S. Mittelstaedt, 274-73 Str., Brooklyn, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,490
Int. Cl. F02c *3/06;* **F02k** *3/02*
U.S. Cl. 60—39.66 **11 Claims**

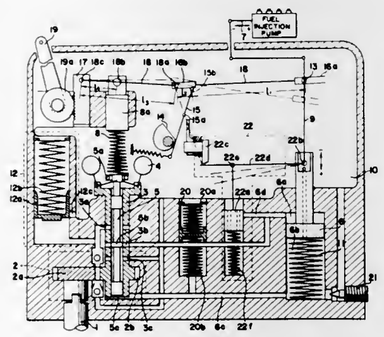


This invention relates to partial admission gas turbine engines. A gas turbine with partial admission generally comprises a compressor, a combustor, a casing, and a bladed turbine rotor disposed in the casing.

3,645,097
HYDRAULIC GOVERNOR

Noritoshi Tanaka, Higashi-Matsuyama-shi, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1969, Ser. No. 865,698
Claims priority, application Japan, Oct. 18, 1968, 43/75572
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 SR **7 Claims**

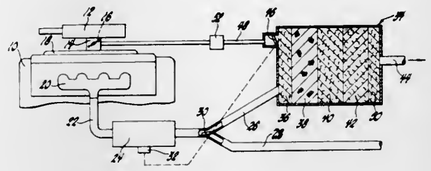


A hydraulic governor wherein a power piston is actuated only by oil pressure a gear pump in a fuel increasing direction and by a power spring in a fuel decreasing direction. A speed regulating lever is operatively connected to a speeder lever which is engaged with a floating lever which includes a mediate fulcrum and variable lever ratio. The speeder lever is interlocked to a link connected to the power piston. A load-limiting piston is adapted to open and close a path passing through the pressure side of the power piston and gear pump.

3,645,098
EXHAUST EMISSION CONTROL

Robert J. Templin, Bloomfield; Paul R. Johnson, Metamora, and Robert F. Falberg, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1970, Ser. No. 75,834
Int. Cl. F01n *3/14*
U.S. Cl. 60—30 R **14 Claims**



Internal combustion engine exhaust gases, passing unreacted through an exhaust gas catalytic or thermal reaction device during the warmup period of the device, are directed to an expansible container which retains the entire flow of exhaust gases or to a container of filter, adsorptive and absorptive material which retains undesirable constituents of the exhaust gases. After warmup of the reaction device, the retained gases or constituents are recirculated to the engine induction system or the reaction device. This approach supplements the emission control of the reaction device by preventing emission of undesirable exhaust gas constituents during starting of the engine and warmup of the reaction device.

3,645,099
BUOYANT OIL SLICK RETAINING STRUCTURE

Manuel Saavedra, San Pedro, Calif., assignor to Roberto Aldana, San Pedro, Calif., a part interest

Filed Aug. 6, 1970, Ser. No. 61,727
Int. Cl. E02b *3/04, 15/04*
U.S. Cl. 61—1 F **7 Claims**



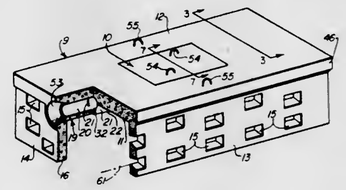
A number of elongate rectangular panel structures that may be removably connected to one another in end-to-end relationship to be extended around an oil slick floating on the surface of a body of water to confine the slick. Each of the panel structures includes an elongate rectangular pliable sheet of double thickness that has two elongate longitudinally extending buoyant members disposed on opposite sides thereof and secured thereto at positions intermediate the top and bottom thereof. The buoyant members cause a substantial section of the sheet to extend above the body of water and serve as a barrier to confine the oil slick floating thereon.

Each of the panel structures has at least one intermediately disposed section that is of accordianlike structure that has a number of vertically disposed stiffeners included as a part thereof, which stiffeners serve to maintain the section in a substantially vertically disposed position when the section is floating on a body of water. The intermediate sections due to the accordianlike structure thereof, permit sheet sections on opposite sides thereof to shift vertically when subjected to wave action. Due to the above described construction of the panel sections, the panel structures not only tend to remain in a substantially vertical position when floating, but will not tip when subjected to wave action to the extent that oil from the slick may flow thereover. Stabilization of the panel structures when in a floating position is further attained by securing weights to the lower part of the portions thereof that are of accordianlike configuration.

3,645,100
LEACHING CHAMBER UNIT FOR SOIL ABSORPTION SYSTEM

Frank La Monica, Avon, Conn., assignor to A. Rotondo & Sons, Inc., Avon, Conn.

Filed Jan. 16, 1970, Ser. No. 3,358
Int. Cl. E02b *13/00*
U.S. Cl. 61—13 **9 Claims**

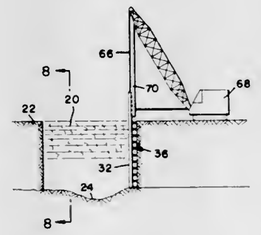


An effluent distributing leaching chamber unit adapted for arrangement with others in trench and field configurations to provide large area subsurface soil absorption systems. Each leaching chamber unit is a downwardly open rectangular precast concrete structure adapted to rest squarely on a prepared absorption bed and thereby enclose within its top, side, and end walls a volume of open space. Within the top wall there is formed an end to end extending flow conduit with complimentary shaped terminals in the end walls to permit flush serial end to end connection of units. The ceiling of the top wall is slotted at given intervals through to the flow conduit thereby to distribute and meter flow into each compartment. The side and end walls of a unit are also provided with rows of perforations above absorption bed level to allow air movement and, after row levels have been reached, fluid to pass out of and from one compartment to another.

3,645,101
METHOD AND APPARATUS FOR CONSTRUCTING IMPERVIOUS UNDERGROUND WALLS

James L. Sherard, 70 Hillcrest Road, Berkeley, Calif.

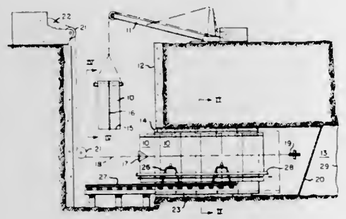
Continuation of application Ser. No. 739,805, June 25, 1968, now abandoned. This application Nov. 4, 1970, Ser. No. 86,979
Int. Cl. E02d *5/18*
U.S. Cl. 61—35 **32 Claims**



A method for constructing an impervious underground wall by continuously enlarging an excavation by dislodging

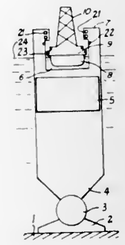
and fragmenting earth material to form a trench of long length and narrow width in the ground, adding a slurry to the excavation and mixing the fragmented earth material with the slurry in situ. The method comprises the steps of providing a movable but rigid barrier member within an initial slurry filled starter hole or trench so that fluid columns of the slurry are formed on the front and rear sides of the barrier; placing an earth-cutting tool in the front fluid column in contact with the face of the starter hole opposite the front side of the barrier member; manipulating the earth-cutting tool so as to remove progressively thin layers of material from the advancing face of the trench mixing the excavated material with the slurry of the front fluid column; adding additional fresh slurry; and causing the fluid mixture of slurry and cuttings to circulate to the rear column as the barrier-cutting tool continuously advances through the ground. The apparatus includes the barrier member which is operable to remain in a substantially vertical position, or at a constant inclination, as it moves along the trench being formed. Means are provided for preventing any substantial flow of fluid from the rear to the front column except below the bottom of the barrier. The cutting tool which may be directly connected to the movable barrier member is adapted to continuously remove relatively thin layers of earth material from the end face, which material is thoroughly mixed with slurry before it is circulated to the rear column where it gradually solidifies to form the impermeable wall. Other components of the apparatus include means to raise and lower and guide the upper end of the movable barrier member and manipulate the cutting tool, means to push the combined barrier-cutter tool forward against the advancing face of the excavation and means to add additional slurry. A wall constructed according to the method comprises a continuous narrow impermeable underground structure comprised of the solidified mixture of slurry and natural soil material having no joints, breaks, connections or overlaps. Depending on the character of the slurry used in the process the final product may be either a flexible and plastic wall of mixed soil and bentonite or a rigid and strong wall of soil-cement concrete.

3,645,102
TELESCOPING LINING AND SUPPORT STRUCTURE AND METHOD FOR LINING TUNNELS AND SHAFTS
Nicholas Chlumecky, Poland, Ohio, assignor to Commercial Shearing & Stamping Company
Filed Dec. 28, 1970, Ser. No. 101,875
Int. Cl. E01g *5/02*
U.S. Cl. 61—42 **4 Claims**



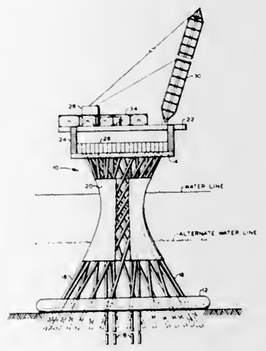
A novel telescoping lining and support structure and method for lining tunnels and shafts is provided in which a plurality of first chordal segments are drawn into a tunnel or shaft hole in a reduced diameter state of compression, expanded diametrically one after another in place in said tunnel or shaft and keyed in the expanded state by a second smaller chordal segment which completes an annular ring segment with the first chordal segment in place.

3,645,103
INDEPENDENT DRILLING RIG FOR ARTICULATED PLATFORM
Maurice Laffont, La Celle-St-Cloud, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France
Filed June 15, 1970, Ser. No. 46,202
Claims priority, application France, June 18, 1969, 6920361
Int. Cl. E02b *17/00*; **B63b** *35/44*
U.S. Cl. 61—46.5 **2 Claims**



A marine drilling system consisting of an emergent articulated platform with positive buoyancy, fixed to a base by means of a coupling with two degrees of freedom, in which the said platform contains an opening of rectangular cross section extending from the top of the platform to a line situated several meters below the surface of the sea, the articulated platform being equipped with on the inside edges of the opening with hoisting gear, which is used for the positioning in the said opening of a drilling unit, transportable by a floating pontoon, which fits into the opening, by raising the drilling unit, which is locked on to the platform when in the correct position, it being possible for the drilling device forming part of the said unit to be moved in relation to the unit in the plane of the upper surface of the platform, so that drillings can be made from different points on the platform.

3,645,104
TOWER STRUCTURE
Roy E. Hogan, Berwick, La., assignor to Phillips Petroleum Company
Filed Dec. 29, 1969, Ser. No. 888,593
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **19 Claims**



A tower structure embodying the geometric properties of a hyperboloid of one sheet. Said tower comprises a lower base, an upper platform, and a plurality of inclined legs extending between said base and said platform. Said inclined legs are so inclined and so spaced, with respect to a central axis, so that upon revolution of any one of said legs about said axis at an essentially constant angle of inclination there is described a surface of revolution which defines said hyperboloid.

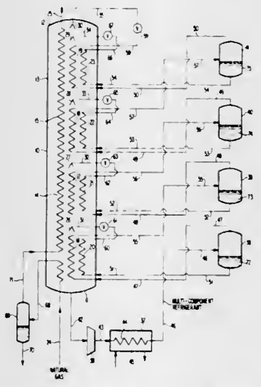
3,645,105
INTERNAL TENSIONING SYSTEM FOR LAYING PIPELINE
Clyde E. Nolan, Jr., Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed Apr. 15, 1970, Ser. No. 28,733
Int. Cl. F16l *1/00*; **B23p** *19/00*; **B23q** *3/14*
U.S. Cl. 61—72.3 **18 Claims**



A method and apparatus for laying pipeline wherein the pipeline is externally clamped so as to be substantially fixed with respect to a floating vessel prior to connection of a new section of pipeline. After this connection, the pipeline is internally engaged by internal clamp means which is paid out with the pipeline being held under tension. Then the pipeline is again clamped externally and the internal clamp means is retrieved. A new section of pipeline is added and the payout operation is repeated.

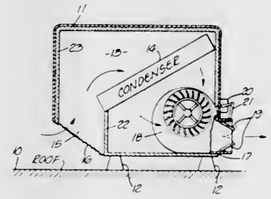
The internal clamp means may be fluid operated and may be provided with means for engaging both the existing pipeline and the new joint. The portion of the internal clamp means engaging the new joint is mounted for rotation and translation with respect to the remaining portion of the internal clamp means to permit alignment of the pipeline and the new joint. Power transfers means is carried by a mandrel of the internal clamp means for use in actuating and moving the clamp means as well as for possible use with other equipment utilized internally of the pipeline.

3,645,106
PROCESS FOR LIQUEFYING NATURAL GAS EMPLOYING A MULTICOMPONENT REFRIGERANT FOR OBTAINING LOW TEMPERATURE COOLING
Lee S. Gaumer, Jr., and Charles L. Newton, both of c/o Air Products & Chemicals, Inc., P.O. Box 538, Allentown, Pa.
Continuation-in-part of application Ser. No. 882,781, Dec. 22, 1969, and a continuation-in-part of 3,571, Jan. 9, 1970, now abandoned. This application June 25, 1970, Ser. No. 49,622
Int. Cl. F25j *1/00, 3/06*
U.S. Cl. 62—9 **8 Claims**



Refrigeration for liquefying natural gas is provided by a closed cycle refrigeration system employing a multicomponent refrigerant. A stream of multicomponent refrigerant flowing in the closed refrigeration system is compressed and then successively fractionated by partial condensation in a plurality of steps to provide condensates at progressively decreasing temperature levels. The condensates are separated and introduced under reduced pressure into a common zone in heat exchange with the natural gas and vaporization of the condensates. A stream of multicomponent refrigerant including the resulting vapor from the condensates is withdrawn from the zone for recycle. The multicomponent refrigerant includes a mixture of components consisting essentially of nitrogen and a plurality of hydrocarbons. In one presently preferred variant, the refrigerant is a mixture of nitrogen and more than three hydrocarbons having molecular weights between the molecular weight of methane and the molecular weight of hexane. Two of the hydrocarbons are methane and ethane. Ethane is the component of greatest percentage, methane is the component of second greatest percentage, and nitrogen is present in a percentage substantially less than that of methane.

3,645,107
AIR-COOLED CONDENSER ARRANGEMENT
Lester K. Quick, 868 Westview Crescent, North Vancouver, British Columbia, Canada
Filed Mar. 16, 1970, Ser. No. 19,739
Int. Cl. F25b *39/04*
U.S. Cl. 62—183 **13 Claims**

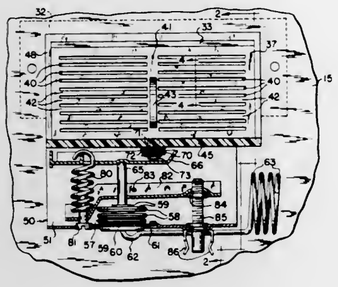


An air-cooled condenser arrangement for refrigeration systems to control the extremes of condensing temperatures wherein the condenser coil is mounted in the upper portion of an enclosed and insulated housing with the air inlet and outlet for the housing both positioned below the level of the condenser coil to inhibit undesirable air circulation through the condenser coil as a result of wind or the stack effect of heated air rising from the coil and a fan or blower at the outlet controls the air flow through the condenser.

3,645,108
AIR DAMPER CONTROL FOR REFRIGERATORS
William J. Houk, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed June 1, 1970, Ser. No. 41,851
Int. Cl. F25d *17/04*
U.S. Cl. 62—187 **4 Claims**

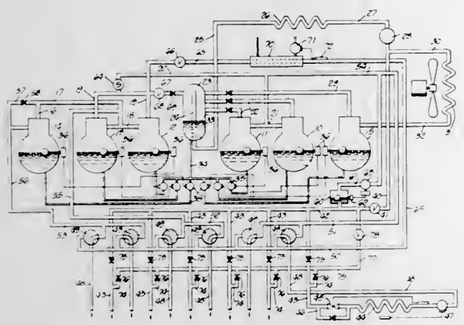
A refrigerator has a frozen food compartment maintained at subfreezing temperatures and a food-cooling compartment maintained at temperatures above freezing by circulation of chilled air through the compartments, the air being chilled by passing it over an evaporator operated at subfreezing temperatures in an air duct. A thermostatically actuated damper regulates the flow of chilled air into and through the food-cooling compartment according to the temperature in the cooling compartment. The damper comprises two face-to-face grilles each having a multiplicity of slots alignable with

the slots of the other grille and one grille is shifted by a thermostatic element relative to the other to align more or less of the slotted areas. The thermostatic element is a vapor-filled bellows located in a housing in the chilling compartment and



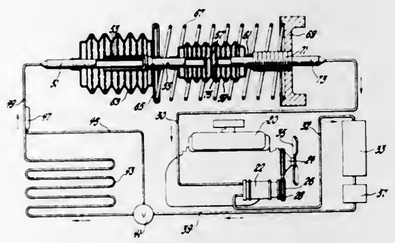
adjacent the air inlet. When the grilles are open air is aspirated from the compartment through the housing and in contact with the bellows and returned to the compartment with the chilled air.

3,645,109
REFRIGERATION SYSTEM WITH HOT GAS DEFROSTING
Lester K. Quick, 868 Westview Crescent, North Vancouver, British Columbia, Canada
Filed Mar. 16, 1970, Ser. No. 19,801
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **26 Claims**



A refrigeration system particularly adapted for supermarkets and the like employing a multiplicity of refrigerated fixtures wherein centrally located compressors operate all the evaporators and each of the evaporators may be selectively defrosted with hot gaseous refrigerant from the high-pressure side of the system. In the various embodiments a chamber of reduced pressure is provided for receiving the defrosting refrigerant after passing through the evaporator and the chamber serves to separate the gaseous and liquid refrigerant with the liquid refrigerant being returned to the normal supply of liquid refrigerant for the evaporators and the gaseous refrigerant being returned to the compressor suction in a controlled manner. In the preferred and two alternate embodiments the pressure reduction is in the liquid supply line to the evaporators with the chamber also serving to separate flash gas caused by such pressure reduction as well as the returning gaseous defrosting refrigerant while in the other embodiment the pressure reduction in the chamber does not change the liquid supply line pressure to the evaporators.

3,645,110
TURBULENCE CONTROL
Leonard J. Mann, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,191
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **2 Claims**



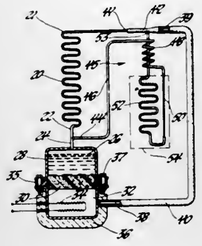
In the one preferred form, the exit and entrance ends of two portions of the suction conduit of an automobile air conditioning system are enclosed in a first flexible bellows. The portion connecting to the evaporator outlet is provided with a telescoping arrangement sealed within a second flexible bellows with the portion connecting to the evaporator being anchored. The other suction line portion is provided with a threaded adjustable spring support which supports one end of the coil spring extending to the spring retainer on the movable end of the second bellows. The expansion and contraction of the second bellows in response to the pressure applied by the telescoping connection moves the exit and entrance ends closer together or further apart to vary the turbulence of the flow between the exit and entrance to control the evaporating pressure and temperature within the evaporator.

In a second preferred form, a vane is moved by a bellows in response to either suction line or discharge line of pressure to increase the turbulence between the exit and entrance of the two portions of the suction line. The bellows may be provided with a spring adjustment for varying the pressure relationship.

3,645,111
REFRIGERATING SYSTEM WITH OSMOTIC MEMBRANE
Victor A. Williamitis, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 30, 1970, Ser. No. 85,380
Int. Cl. F25b *29/00*
U.S. Cl. 62—498 **4 Claims**

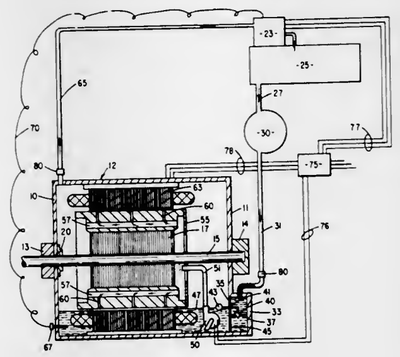
In the preferred form of this refrigerating system, the refrigerant condensing in the condenser is fed to the upper compartment of a receiver boiler in which a membrane having osmotic properties passes the liquid refrigerant into the lower compartment where it is vaporized by a heater.

This vapor passes through the primary venturi passage of an aspirator which discharges into the top of the condenser. Some refrigerant liquefied in the condenser flows successively through one heat exchanger passage and a restrictor and



an evaporator and the second passage of the heat exchanger to the low-pressure suction inlet of the aspirator.

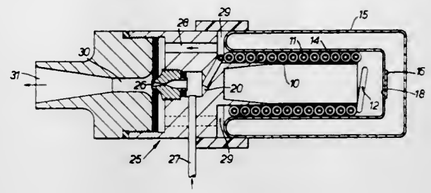
3,645,112
REFRIGERANT COOLING SYSTEM FOR ELECTRIC MOTOR
Gordon L. Mount, West Monroe, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed July 13, 1970, Ser. No. 54,137
Int. Cl. F25b *31/00*
U.S. Cl. 62—505 **2 Claims**



The low- and high-pressure sides of a refrigerant apparatus are connected to the casing of a hermetically enclosed electric motor. Refrigerant control means is provided to maintain a supply of liquid refrigerant in the casing at a predetermined level. A pump functions to dispense the liquid refrigerant from the supply in the motor casing on the components of the motor to cool the same.

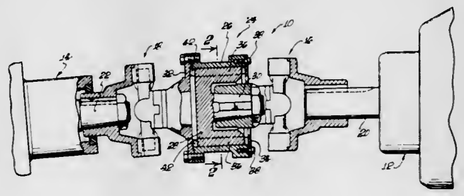
3,645,113
COOLING APPARTUS OF THE JOULE THOMSON TYPE
Kenneth E. Nicholds, Redditch, England, assignor to The Hymatic Engineerng Company limited, Redditch, England
Filed Feb. 16, 1970, Ser. No. 11,432
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **4 Claims**

In a Joule Thomson high-speed cooler, refrigerant from a supply in the form of gas under pressure flows through one path of a heat exchanger, and after expansion through a nozzle returns through the other path to a gas outlet, cooling the



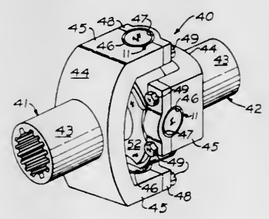
incoming gas. In addition gaseous refrigerant is bypassed from the supply to an ejector serving to induce a suction at the gas outlet.

3,645,114
FLEXIBLE ROTARY DRIVE TRAIN HAVING SPLINED COUPLING WITH ELASTOMERIC CUSHIONS
Willard W. Shepherd, Whittier, Calif., assignor to Shepherd Machinery Co., Industry, Calif.
Filed May 8, 1970, Ser. No. 35,704
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 **3 Claims**



A flexible rotary drive train comprising two axially spaced universal joints interconnected by a splined coupling having elastomeric cushions interposed between the internal and external splines on the outer and inner members of the coupling. The inner and outer members of the coupling are relatively moveable in the axial direction through a substantial distance to accommodate major variations in the length of the drive train in operation, while the elastomeric cushions serve to damp torsional vibration.

3,645,115
UNIVERSAL JOINT WITH LAMINATE BEARINGS
Daniel B. Shotwell, Washington, and Arthur J. Ritter, Metamora, both of Ill., assignors to Catermillar Tractor Co., Peoria, Ill.
Filed Oct. 5, 1970, Ser. No. 77,818
Int. Cl. F16d *3/28*
U.S. Cl. 64—17 A **13 Claims**



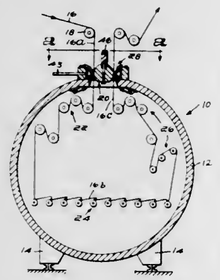
A universal joint employs a spider which is normally journaled with its input and output forks with the needle bearings

but according to this invention the needle bearings are replaced with laminated bearings formed of thin layers of metal and elastomer in which the cylindrical metal layers or shells are each formed by helically wrapping a metal band in an edge-abutting relationship on an elastomer layer to form the concentric shells.

3,645,116
SEAL

Fritz Peter, Shrewsbury, Mass., assignor to Rodney Hunt Company, Orange, Mass.

Continuation of application Ser. No. 800,963, Feb. 20, 1969, now abandoned. This application Aug. 5, 1970, Ser. No. 61,455
Int. Cl. D06f *39/00*; F26b *25/00*; B05c *11/115*
U.S. Cl. 68—5 E **13 Claims**



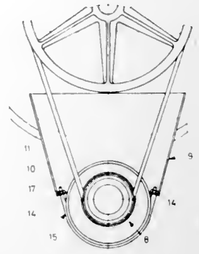
A seal for an opening in a treatment chamber through which material continuously enters and/or exits from the chamber. The seal includes an endless inflatable element which is fixed relative to the chamber wall and which extends around the periphery of the opening, and an intermediate member suspended in the opening in a stationary position completely surrounded by the inflatable element. In a typical arrangement where one opening serves as both the entrance and exit for the material being processed, the material entering the chamber passes between the inflatable element and one side of the intermediate member, and the material exiting from the chamber passes between the inflatable element and the opposite side of the intermediate member. The inflatable element is inflated to an extent such that the space between the intermediate member and the periphery of the opening is effectively sealed, with the material entering and leaving the chamber being sealingly engaged between the inflatable element and the intermediate member.

3,645,117
WASHING MACHINE

Preben Larsen, Horuphav, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed July 13, 1970, Ser. No. 54,165
Claims priority, application Germany, July 3, 1969, P 19 33 827.3
Int. Cl. D06f *23/02*
U.S. Cl. 68—140 **1 Claim**

The invention relates to a washing machine and particularly to the mounting of a motorized multispeed gear unit on the end wall of the tub of the washing machine. The tub end wall is conically shaped to provide sturdiness and a mounting bracket is provided for attaching the gear unit to the tub end wall. The gear unit has an eccentrically disposed shaft and the mounting bracket has a saddle for holding the gear unit in selected positions so that the distance of the axis of the gear unit from the main shaft of the washer may be varied in

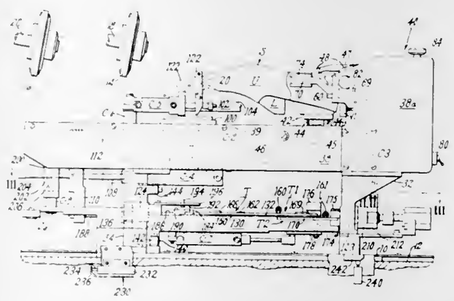


order to properly tension a drive unit to a pulley on the main shaft of the washer.

3,645,118
SHOE BOTTOM ROUGHING MACHINES

Edward S. Babson, Ipswich, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Oct. 23, 1970, Ser. No. 83,487
Int. Cl. C14b *1/44*
U.S. Cl. 69—6.5 **8 Claims**

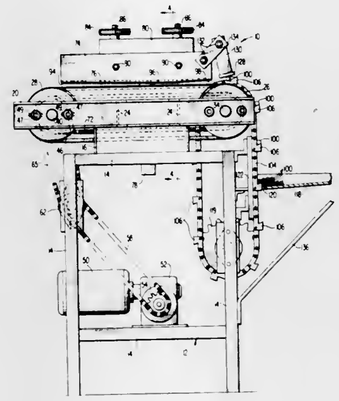


A machine for roughing the bottoms of shoes having a pair of roughing tools and a support for a shoe during relative movement between the tools and the support to cause the shoe to pass by the tools. A template assembly for positioning the tools in which the assembly includes cooperating forepart and heel portions automatically adjustable in lengthwise and widthwise directions to accommodate shoes of different sizes and is automatically reversed by rotation about its longitudinal axis, to accommodate right and left shoes in accordance with the size and character of the shoe on the support. The shoe support also embodies an abutment for determining the heightwise position of the toe end of each shoe placed thereon and a heel support including a selectively displaceable holddown means, the heel support being movable in response to the engagement of the heel end of a shoe therewith for actuating control means to initiate an automatic operating cycle of the machine.

3,645,119
METHOD AND APPARATUS FOR STRAIGHTENING ELONGATED ARTICLES

Robert A. Berg; Robert W. Decker, both of Newcomerstown; Donald R. Hart, Guernsey, and David J. Weber, Newcomerstown, all of Ohio, assignors to Wallace-Murray Corporation, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,354
Int. Cl. B21d *3/00*
U.S. Cl. 72—90 **7 Claims**

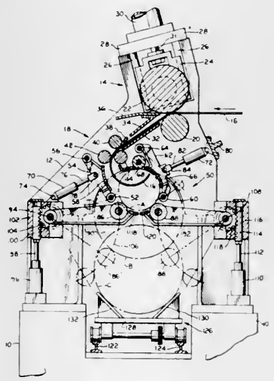


A method and apparatus for straightening an elongated article about all of the lateral axes thereof, wherein the article is continuously and progressively bent about such axes by progressively decreasing amounts.

3,645,120
COILING APPARATUS

Arthur L. Lind, and John Gross, both of Salem, Ohio, assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Feb. 19, 1970, Ser. No. 12,597
Int. Cl. B21c *47/00*; B21d *5/14*
U.S. Cl. 72—134 **5 Claims**



Apparatus particularly suited for coiling heavy metal plate and comprising a bending roll assembly including three cooperating bending rolls positioned along the path of movement of the plate. The bending rolls are arranged to coil the plate in a downward direction as it passes therethrough. A coil receiving and supporting cage assembly is positioned beneath the bending rolls. The cage assembly includes a plurality of roll members extending parallel to the axis of the formed coil and mounted for outward movement as the diameter of the coil increases during the coiling operation. The lowest of the roll members are mounted so they can be moved to permit the complete coil to be lowered to a subjacent coil-conveying or carriage assembly.

3,645,121
METHOD FOR ROLLING TUBULAR MATERIAL STOCK IN A STRETCH REDUCING MILL

Gerd Pfeiffer; Horst Biller, both of Mulheim-Ruhr; Claus Schrey, Oberhausen, and Alfred Schmitz, Mulheim-Ruhr, all of Germany, assignors to Mannesmannrohren-Werke GmbH, Dusseldorf, Germany

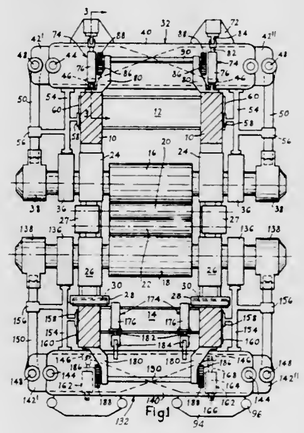
Filed July 1, 1969, Ser. No. 838,384
Claims priority, application Germany, July 5, 1968, P 17 52 713.8
Int. Cl. B21b *17/00*
U.S. Cl. 72—205 **7 Claims**

A method for rolling down tubular material in a rolling mill wherein in the vicinity of the starting sections and/or end sections of the tubular material normally having thickened portions a stepwise variation of the rotational speeds is provided at the roll stands deforming these sections, said stepwise variation of said rotational speeds required for rolling the central section of the tubular material.

3,645,122
ROLLING MILLS

Robert James Harlow, Parkstone, England, assignor to Quay Dynamics Limited, Bournemouth, England

Filed Feb. 20, 1970, Ser. No. 12,951
Claims priority, application Great Britain, Feb. 25, 1969, 10,114/69
Int. Cl. B21b *31/00*
U.S. Cl. 72—237 **8 Claims**



Roll-deflection means for rolling mills are associated with outer and inner outboard bearings on roll extensions in that way that the outer outboard bearings are subjected to bending moments through levers and links by hydraulic units, while the inner outboard bearings act as fulcra, or vice versa.

3,645,123
PROCESS FOR MAKING METALLIC WIRES AND METALLIC WIRES PREPARED THEREBY

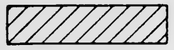
Andre Auge, 1. Avenue Edouard Droz, 25, Besancon, Doubs, France

Continuation-in-part of application Ser. No. 615,424, Feb. 13, 1967, now abandoned. This application Sept. 2, 1969, Ser. No. 857,291

Claims priority, application France, Feb. 18, 1969, 50133

Int. Cl. B21c *9/00*

U.S. Cl. 72—286 **12 Claims**



Small watch springs are manufactured from wire rod by means of a cold-drawing operation whereby the final cross-sectional, strip dimension is obtained without cold-rolling. The cold-drawing operation aligns and maintains the alignment of the crystallographic axes lengthwise along the strip and thereby optimizes the spring properties of the cold-drawn strip.

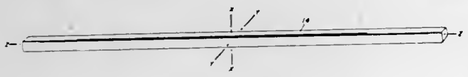
3,645,124
METHOD OF FORGING ELONGATED METAL SHAPES FROM INGOTS AND RESULTING PRODUCT

Roy E. Rohrabaugh, Youngstown, Ohio, assignor to Reactive Metals, Inc.

Filed June 25, 1970, Ser. No. 49,647

Int. Cl. B21j *1/04*

U.S. Cl. 72—377 **5 Claims**



A method of forging an elongated metal shape from an ingot. First the ingot is pressed in the direction of its central axis. Next the partially forged shape is pressed in a direction perpendicular to its central axis to elongate it in a direction at right angles both to the new direction of pressing and to the original axis. The piece then is pressed repeatedly in at least two directions both at right angles to its direction of elongation to produce a shape, the lengthwise axis of which is perpendicular to the original central axis of the ingot.

3,645,125
LOCKBOLT SWAGING APPARATUS

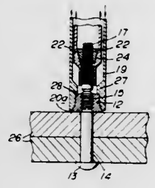
Frederick A. Summerlin, Harpenden, England, assignor to Avdel Limited

Filed June 23, 1969, Ser. No. 835,649

Claims priority, application Great Britain, July 2, 1968, 31,632/68

Int. Cl. B21d *9/05*

U.S. Cl. 72—391 **3 Claims**



The nosepiece of a tool for swaging the collars of swaged collar-type lock bolts has an anvil with a throat which is provided at its inner end with a radially inwardly projecting annular shoulder. This shoulder prevents a fully swaged collar entering completely into the throat. The annular shoulder also supports the axial thrust of the swaged collar on the nosepiece of the tool. The nosepiece can be used to place ordinary lock bolts in soft sheets which would not be strong enough to support the compression which would be developed between the swaged collar and the head of the lock bolt, when placed with a nosepiece not having the shoulder.

3,645,126
SWAGING MACHINE

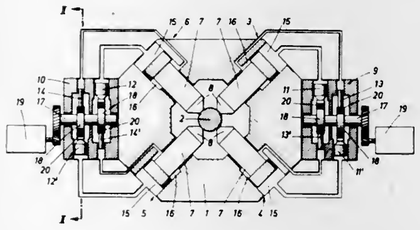
Bruno Kralowetz, St. Ulrich Bei Steyr, and Johann Braunwieser, Steyr, both of Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed June 22, 1970, Ser. No. 48,126

Claims priority, application Austria, June 27, 1969, A 6135/69

Int. Cl. B21d *41/00;* **B21j** *9/18*

U.S. Cl. 72—402 **12 Claims**



Means are provided which define a path of travel for a workpiece to be swaged through a machine housing. Four hydraulic cylinder-piston motors extend in said housing radially with respect to said path and are angularly spaced 90° apart around said path. Shaping tools are operatively connected to said cylinder-piston motors and operable to penetrate into a workpiece traveling along said path. Each of said cylinder-piston motors comprises a cylinder and a piston having a larger piston face remote from said path and a smaller piston face adjacent to said path. Each of said cylinders has an outer chamber defined by said larger piston face and an inner chamber defined by said smaller piston face. Said cylinder-piston motors are arranged to form two pairs of adjacent motors. Two pump units are provided, each of which is laterally secured to said housing and associated with one of said pairs of motors. Each of said pump units comprises two larger piston pumps having pistons relatively large in diameter and two smaller piston pumps having pistons relatively small in diameter. Each of said larger pumps is connected to said outer chamber of one of said cylinders of the associated pair of motors. Each of said smaller pumps is connected to said inner chamber of one of said cylinders of the associated pair of motors. Drive means are provided to synchronously drive said pistons of said larger pumps of both said pump units and said pistons of said smaller pumps of both said pump units to apply mutually assisting forces to said larger and smaller piston faces of each of said cylinder-piston motors.

3,645,127
REMOTE LEAK DETECTION

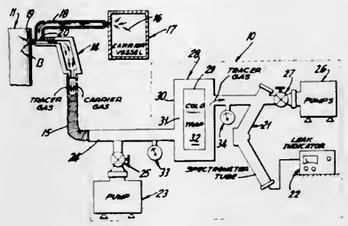
Guy E. Mongodin, Huntington, and Leon Malmed, Hicksville, both of N.Y., assignors to Veeco Instruments, Inc., Plainview, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,102

Int. Cl. G01m *3/20*

U.S. Cl. 73—40.7 **8 Claims**

In a method and apparatus for remote detection of leaks in vessels wherein the vessel to be tested is pressurized with a tracer gas and a hand probe connected via a flexible conduit to a mass spectrometer apparatus is used to selectively sample the atmosphere near the surface of the vessel, a continuous flow of a condensable carrier gas of a different molecular weight than the tracer gas is injected into the vacuum system near the probe tracer inlet to increase capillary conductance and thereby cut down on response time as well as to sweep the line clean of residual tracer gas molecules and thereby prevent background indications. The carrier gas is condensed at a cold trap in the conduit upstream of the analytical portion of the mass spectrometer apparatus and thereby pumped out of the system.



3,645,128
CONTAINERS FOR PRESSURIZED GAS

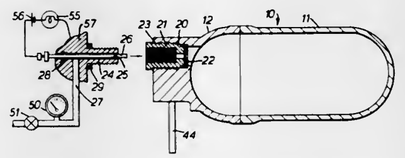
Geoffrey Brian Longbottom, Redditch, England, assignor to The Hymatic Engineering Company Limited, Redditch, England

Filed Mar. 25, 1970, Ser. No. 22,457

Claims priority, application Great Britain, Mar. 26, 1969, 15,790/69

Int. Cl. G01m *3/34*

U.S. Cl. 73—49.3 **6 Claims**



A container pressurized gas capable of retaining the pressurized gas for long periods. A diaphragm is sealed in a socket in an opening in the container. A plug received by the socket has means for admitting gas at a known pressure to the diaphragm, and a probe connected in circuit with a battery and lamp to detect whether the diaphragm moves away from its under such pressure.

The container also has a charging opening closed by an interference fit plug in a narrow passage and a screw-threaded plug soldered in place.

It also has a discharge opening sealed by a diaphragm in a socket which communicates with the load and can receive an explosive igniter to pierce the diaphragm, or a connection to an auxiliary supply of gas to test the load.

3,645,129
METHOD FOR ANALYZING THE JOINDER BETWEEN A PAIR OF ABUTTING MEMBERS

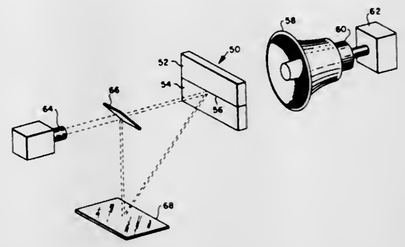
Ralph M. Grant, Ann Arbor, Mich., assignor to G. C. Optronics Inc., Ann Arbor, Mich.

Continuation-in-part of application Ser. No. 633,068, Apr. 24, 1967, now abandoned. This application Mar. 18, 1968, Ser. No. 745,054

Int. Cl. G01n *29/04*

U.S. Cl. 73—67 **8 Claims**

A transducer induces vibrations into a member including at least a pair of members joined to one another along a common surface. An exposed section of the two members, which may or may not include one line of their joinder, is illuminated with a source of coherent light while it is being vibrated and a photographic plate is exposed to both the reflected light and the direct coherent light. The plate is developed to provide a hologram which is then properly illuminated to recreate a visual image of the surface section. The visual image will contain fringe lines and/or shaded areas as a result of interference between light waves reflected from the member at the high and low points of its vibration. Anomalies in these lines and areas will reveal discontinuities in the joinder between the two members which affect the pattern of vibration of the surface section.



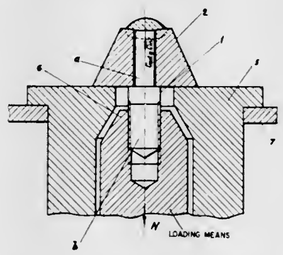
3,645,130
PROCESS TESTPIECE AND DEVICE FOR THE STATIC DETERMINATION OF THE MINIMUM DELAYED CRACKING STRESS OF WELDED STEELS

Adolf Million, str. Povernei 15-17; Carol Million, str. Belgsad 12, both of Bucharest, Romania, and Iosif Cabelka, str. Mudronova 52, Bratislava, Czechoslovakia

Filed Apr. 1, 1969, Ser. No. 843,872

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **4 Claims**



A method of and a system for determining the minimal delayed fissuring strain of welded steels in which a cylindrical steel rod is inserted through a hole in a support to a surface of the latter at the end of the hole opposite that through which the rod is inserted. The welding produces a heat-affected zone in the rod beneath the weld. The rod is loaded and placed under static traction with the specific road (load per unit cross section of the heat-affected zone) in which delayed fissuring occurs being the strain.

3,645,131
GAS DRILLING SOIL SAMPLING

James B. Turner, 4709 Tonawanda, and Harold L. Wise, 4522 Hummingbird, both of Houston, Tex.

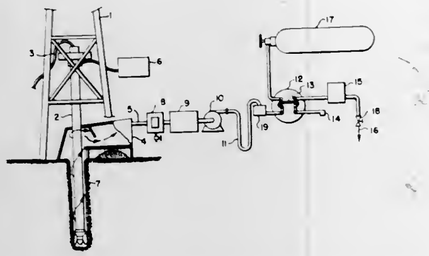
Filed May 20, 1970, Ser. No. 39,677

Int. Cl. E21b *49/00*

U.S. Cl. 73—153 **9 Claims**

The concentration with location at which a mobile reservoir fluid is contained within subsurface earth formations is

measured by gas drilling a borehole into the earth formations while circulating a gaseous drilling fluid that is initially substantially free of the mobile reservoir fluid and measuring the



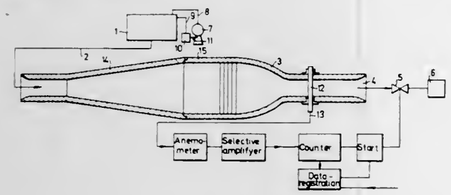
concentration of the reservoir fluid in the earth formations by measuring the difference in its concentration in equivalent portions of the drilling fluid that enters and leaves the borehole.

3,645,132

ELECTRICAL FLOW-MEASURING PROBE

Carl Georg Rasmussen, Ballerup, Denmark, assignor to Disa Elektronik A/S (Dansk Industri Syndikat A/S), Herlev, Denmark

Filed Sept. 3, 1969, Ser. No. 862,606
Claims priority, application Denmark, Sept. 23, 1968, 4569/68
Int. Cl. G01p *13/00*
U.S. Cl. 73—189 **14 Claims**



A hot-film measuring probe for measuring the shedding frequency of vortices in a medium in which a sensing member is arranged on the vortice generating body. The sensing member or members are preferably arranged to face the direction of flow. A vane on a pivotably mounted body may ascertain correct position of sensing members with changing directions of flow. Practical measurements can be carried out in the higher range of flow in which Reynolds number exceeds 300.

A measuring device with a measuring probe as described renders signals which can be converted in digital signals to be counted or stored.

A measuring device with a measuring probe comprising two sensing members increases the quality of the combined signal.

A measuring device with two probes renders a difference signal indicating the direction of flow.

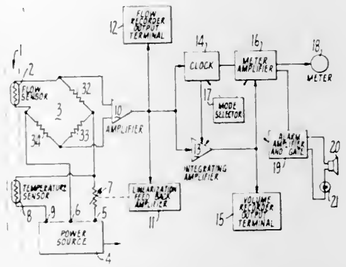
3,645,133

ELECTRONIC SPIROMETER

Peter G. Simeth, and Richard C. Seeley, both of Santa Barbara, Calif., assignors to Metrophysics, Inc.

Filed Apr. 15, 1970, Ser. No. 28,862
Int. Cl. G01f *1/00;* **G01p** *5/10*
U.S. Cl. 73—204 **2 Claims**

An electronic spirometer having an accurate indication of exhaled tidal or minute volume. In the preferred embodiment, an adapter fits on the exhalation port of the breathing circle and monitors a patient's exhaled volume when being ventilated. A heated thermistor mounted in the adapter senses the gas flow as an approximate fourth power function of the current necessary to maintain the thermistor at a constant temperature. A signal conditioner provides the current required to keep the thermistor at a constant temperature and converts the nonlinear heater current into a signal which is proportional to flow. A second thermistor in the probe corrects for temperature variations. The output of the signal



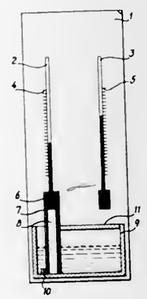
conditioner is fed into the integrator circuit which converts the flow signal to a volume signal. In the minute volume mode, a clock generates a command signal every 30 seconds. This transfers the integrator output into a readout unit and resets the integrator to zero. In the tidal volume mode, the flow is integrated on a breath by breath basis and the volume signal is read out when the exhaled flow reaches zero. Outputs are provided for recording the flow rate and the minute integrated volume. An alarm system is provided for indicating when minute volume limits are too low or too high.

3,645,134

PSYCHROMETER WICK AND PSYCHROMETER HAVING SUCH A WICK

Oskar Alfred Krelberg, Kalkovnsvej 8, 6100 Haderslev, Denmark

Filed July 30, 1969, Ser. No. 845,965
Claims priority, application Denmark, July 31, 1968, 3695/68
Int. Cl. G01n *25/62*
U.S. Cl. 73—338 **5 Claims**



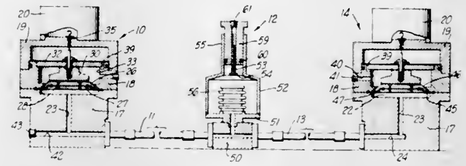
An improved psychrometer wick having a prolonged useful life, made possible by substantially filling the portion of a hose-shaped wick element intended to lie beneath the thermometer bulb with a body of suctorial material. The body of suctorial material may be in the form of a plug inserted into the hose-shaped wick element.

3,645,135

MERCURY SYSTEM

Benjamin H. Hadley, Claremont, Calif., assignor to Schwien Engineering, Inc., Pomona, Calif.

Filed Aug. 24, 1970, Ser. No. 66,224
Int. Cl. G01l *9/12*
U.S. Cl. 73—398 C **14 Claims**



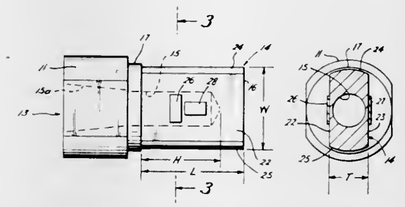
A mercury system for use as a level and as a manometer. A pair of cisterns with interconnected pools of mercury and with a float in each cistern serving as the lower plate of the cistern capacitor. A resilient sheet attached to the float and to the cistern for sealing the mercury in a lower chamber of the cistern. An alternative diaphragm consisting of a thin resilient sheet closing the mercury pool with the surface of the pool serving as a capacitor plate. A bellows unit connected in the mercury line between the cisterns for controlling the mercury level in the cisterns.

3,645,136

FLUID PRESSURE MEASURING DEVICE

Charles W. Calhoun, 1502 West 34th, Houston, Tex.

Filed Apr. 15, 1970, Ser. No. 28,802
Int. Cl. G01l *19/04, 9/04*
U.S. Cl. 73—393 **4 Claims**



A metal piece is provided with a body portion having a center passageway extending from one end thereof to a point short of the opposite end thereof, such body portion having two flat parallel sides lying parallel to the center axis of the passageway. A pair of resistance strain gages are bonded to each of the two flat sides above the passageway. One strain gage on each flat side is oriented to measure transverse strain and the other is oriented to measure axial strain. The four strain gages are connected to form a Wheatstone bridge, the transverse strain gages causing the bridge to provide an indication of fluid pressure within the passageway and the axial strain gages providing temperature compensation for the bridge.

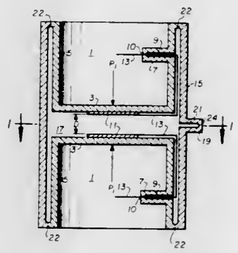
3,645,137

QUARTZ PRESSURE SENSOR

Edward J. Hazen, Woodcliff Lake, N.J., assignor to The Bendix Corporation

Filed Apr. 16, 1970, Ser. No. 29,222
Int. Cl. G01l *9/12*
U.S. Cl. 73—398 C **14 Claims**

A pair of identical quartz elements each having a end wall and a sidewall are disposed in an opening through an outer quartz member so that the end walls are opposed and spaced from each other. A portion of the sidewalls of each element are secured to the outer member to define an inner space between the elements and the outer member. Capacitor plates are formed on the opposed surfaces of the end walls to form a capacitor. Each plate has a conductor connected thereto which extends through a seal in the sidewall. The outer member has an opening extending to the inner space and a capillary tube is attached to the opening. The space



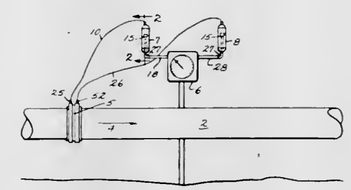
and a portion of the capillary tube are filled with a liquid having a known dielectric constant. A first pressure is applied to the opposing surfaces of the end walls through the capillary tube and a second pressure is applied to the other surface of each end wall so that the end walls flex in response to the pressures and the capacitance between the plates corresponds to the difference between the first and second pressures.

3,645,138

METER FOR MEASURING THE FLOW OF GAS

Calvin Raymond Fussell, Kermit, Tex., assignor to W. L. Jones, Jr., Odessa, Tex., a part interest

Filed July 9, 1969, Ser. No. 840,271
Int. Cl. G01l *7/18*
U.S. Cl. 73—401 **7 Claims**



A mercury trap apparatus used in connection with a differential pressure meter comprising a plurality of mercury trap receptacles, each of the mercury trap receptacles having a pipe with a T-shaped nozzle inserted therein, and extending a predetermined distance into the enclosed area of the mercury trap receptacle; each of the mercury trap receptacles are connected to a gas pipeline by a high-pressure conduit and with the trap receptacle pipe being connected to a mercury differential pressure meter by a connector conduit.

3,645,139

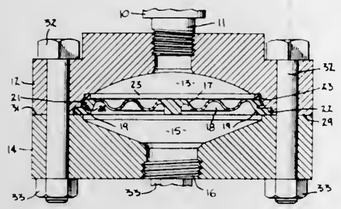
SELF-RETAINING DIAPHRAGM SEAL FOR RECORDING INSTRUMENT

John R. Zavoda, 429 State Route #303, Streetsboro, Ohio

Filed June 4, 1970, Ser. No. 43,372
Int. Cl. G01l *7/08*
U.S. Cl. 73—406 **4 Claims**

A flexible diaphragm for a pressure recording instrument or the like which is provided with an annular groove around its periphery to define a resilient shoulder. The diaphragm is

mounted in a coupling member which communicates with the instrument and is snapped into detachable securement over a projection or shoulder of the coupling member, which fits into the annular groove. The groove may carry an O-ring or similar compressible seal to effect a sealing engagement between the seat of the groove and the inserted shoulder, or the O-ring seal may be compressed against the coupling member by some peripheral portion of the diaphragm, such

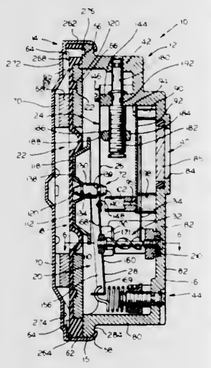


as a peripheral shoulder. Another sealing area may be provided by the abutment between the walls of the groove and the inserted shoulder of the coupling. Still another sealing area is provided by a marginal portion of the diaphragm which is compressed between the instrument coupling or flange member and another coupling or flange member is fastened thereto and which communicates with a process line.

3,645,140
PRESSURE GAUGE

James W. Phillips, Michigan City, and Richard S. Zoludow, South Bend, both of Ind., assignors to Dwyer Instruments, Inc.

Continuation-in-part of application Ser. No. 735,339, June 7, 1968, now Patent No. 3,566,060. This application June 15, 1970, Ser. No. 46,141
Int. Cl. G01l 7/08
U.S. Cl. 73—407 R **16 Claims**

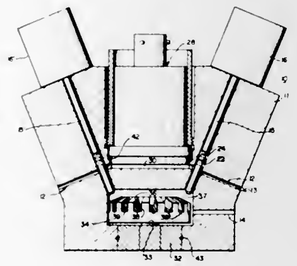


A pressure gauge in the form of two pressuretight compartments separated by a flexible diaphragm in which the gauge housing serves as the low-pressure chamber and a cover member secured to the housing over the diaphragm defines the high-pressure chamber. The gauge range spring is a leaf spring anchored to the housing at one of its ends with the other end of the spring carrying a permanent magnet that is disposed adjacent a rotatably mounted helix carrying an indicating arm which cooperates with the gauge scale. The leaf spring is connected to the diaphragm for movement by same, the spring rate of the leaf spring is adjustable externally of the housing by moving a shiftable fulcrum, and zero adjustment is provided including a threaded member actionable from outside the housing. The gauge is designed for low profile by placing both the high- and the low-pressure connections at the low-pressure side of the gauge, and providing for communication through the diaphragm to the high-pressure chamber.

3,645,141
RANDOM-ACCESS PRESSURE MULTIPLEXER VALVING ARRANGEMENT AND SYSTEM

Walter J. Moore, Suite 309, 4224 Saratoga Ave., Downers Grove, Ill.; Richard T. Cusick, 6108 Goodman Road, Laurel, Md., and Michael D. Byrne, Jr., Horizon House, Chase and Calvert Sts., Baltimore, Md.

Filed June 27, 1969, Ser. No. 837,161
Int. Cl. G01l 19/08; F17d 3/00
U.S. Cl. 73—420 **26 Claims**



The present invention relates to a unique multiple-sampling valve and system to provide a random-addressable time-division multiplex arrangement for pressure measurements which makes it more compatible with computer process control. A single pressure to electrical signal transducer forms one side of a common predetermined volume chamber and responds to pressure signals channeled to the chamber as a result of selective actuation from a plurality of sample ports wherein open connections may be established in random order or by predetermined sequence for measurements in the sample mode. A plurality of individual (energizeable linear solenoid) valve rods, disposed in proximity with the predetermined volume, minimizes the common volume and length of passageway between the valve rods and the transducer, substantially eliminating restrictions therebetween, thus decreasing the time required for the transducer to respond to one pressure signal from any given port. A second (and/or third) position of the valve rods serves to connect high-pressure fluid to all conduits sequentially (one at a time) for the diagnostic mode; and, simultaneously for the purging mode. Logical controls select the connections to be established, modes of operation, and analyze output conditions for locating any restrictions to determine sources of error.

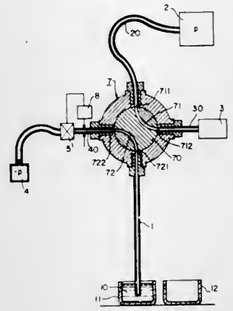
3,645,142
PIPETTE SYSTEM

Pierre Turpin, Burs S/Yvette, France, assignor to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Oct. 29, 1970, Ser. No. 85,056
Claims priority, application France, Nov. 3, 1969, 6937726
Int. Cl. G01n 1/14
U.S. Cl. 73—425.6 **13 Claims**

An apparatus for transferring a specific quantity of a liquid medium from one receptacle to another with precision. The

apparatus comprises a series of movable canals operatively disposed between the same container and the receptacle to which the same is to be transferred. In a preferred aspect, the

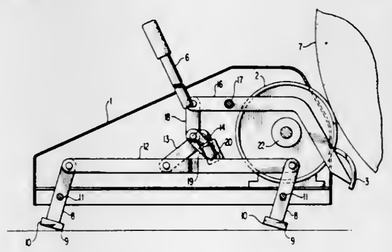


device is designed to transfer samples taken from human subjects, which samples are to be tested for diagnostically significant features.

3,645,143
WHEEL SPINNER

Aubrey E. Greene, and F. F. Layfield, both of Ellaville, Ga.

Filed Sept. 25, 1970, Ser. No. 75,340
Int. Cl. F16h 37/00, 13/02
U.S. Cl. 74—14 **5 Claims**



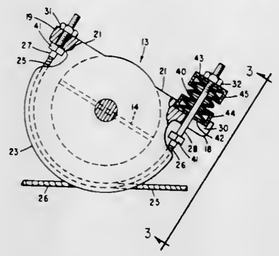
A wheel spinner for driving and braking the wheels of a vehicle for balancing the same or making measurements thereon comprising a frame with a spinning drum driven by a motor and a brakeshoe. A control lever is connected by linkages to the brake as well as to feet for mounting the spinner and has a forward position in which the brake is retracted and the spinner advanced on its pivoted feet by means of the linkages and a rear position, in which the spinner is rocked backward on its feet and the brakeshoe is advanced towards the vehicle wheel for braking. Between the two active positions, the control lever has a neutral position. The brake is operated with lost motion when the lever moves from neutral to the backward position.

3,645,144
CABLE TENSIONING STRUCTURE FOR CENTRIFUGAL COMPRESSOR CONTROL

Kenneth C. Barrows, Jr., Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 22, 1970, Ser. No. 48,226
Int. Cl. F16h 27/02
U.S. Cl. 74—89.2 **2 Claims**

An arrangement to provide proper tension on the cable for operating the capacity control mechanism of a centrifugal compressor. One end of the cable is wrapped about a pulley member and fixed thereto. The opposite end of the cable is wrapped in opposite direction about the pulley member and has a threaded terminal piece extending through a lug formed on the pulley. A compression spring means is positioned on the extending portion of the terminal between the

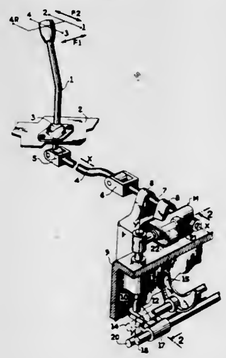


lug and a nut threaded on the terminal. As the nut is threaded on the terminal, tension is applied to the cable. The arrangement includes means indicating the extent of the applied tension and to limit the tension to a maximum amount.

3,645,145
CONTROL DEVICE FOR A TRANSMISSION

Jacques Galas, Puteaux, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Nov. 3, 1970, Ser. No. 86,492
Claims priority, application France, Dec. 26, 1969, 6945053
Int. Cl. G05g 9/18
U.S. Cl. 74—473 R **8 Claims**



Transmission control device having two orthogonal shafts to one of which a gear lever is connected. The two shafts are interconnected by a system including a tube integral with one of the shafts. The tube has oblong-shaped end portions which are orthogonal to each other and respectively guide two rollers respectively placed in an end position and in an intermediate position on a rod integral with the other shaft, whereby a longitudinal movement and a rotational movement of the shaft connected to the gear lever produce respectively a rotational movement and a longitudinal movement of the other shaft.

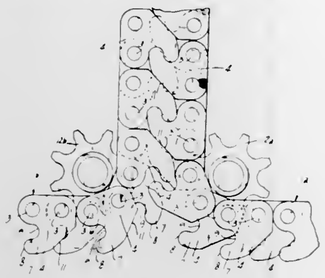
3,645,146
INTERLOCKING CHAIN STRUCTURE

Tony Nagin, 14016 South Indiana Ave., Chicago, Ill.

Filed Sept. 29, 1969, Ser. No. 861,583
Int. Cl. F16h 27/02
U.S. Cl. 74—89.21 **11 Claims**

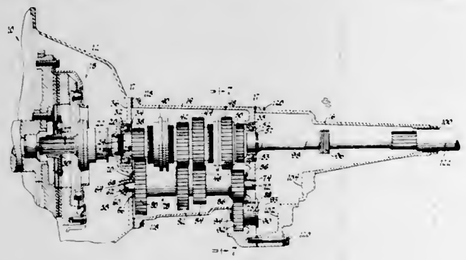
An interlocking rigid chain structure comprising a pair of roller-type chains having hooklike elements constructed to

interlock with one another as the chains pass between two sprockets to form a rigid assembly in which the chains of



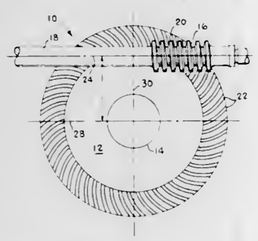
such assembly may be separated by movement of the latter in reverse direction between said sprockets.

3,645,147
TRANSMISSION
James W. Fodrea, 2783 Charter Blvd. Apt. 107, Troy, Mich.
Filed Nov. 10, 1969, Ser. No. 875,271
Int. Cl. F16h *3/08, 3/02*
U.S. Cl. 74—375 **12 Claims**



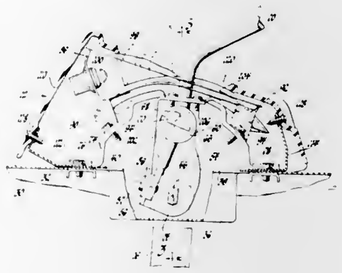
A transmission including a die cast transmission housing which is readily convertible for use with three-, four-, or five-speed, sliding gear, fully synchronized transmission assemblies, which assemblies may be accomplished on the motor vehicle, thereby eliminating the need for separate transmission assembly facilities, and, when used as a five-speed transmission, including a novel first and reverse duplex gear arrangement in the rear extension housing.

3,645,148
SKEW AXIS GEARING
Ernst Schrempp, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed June 15, 1970, Ser. No. 46,402
Int. Cl. F16h *1/14, 1/16, 1/20*
U.S. Cl. 74—423 **3 Claims**



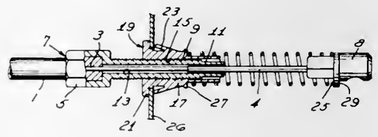
The disclosed skew axis gearing includes a face gear which is driven by a cylindrical pinion or worm gear having a constant lead throughout its axial length. The pinion teeth are of trapezoidal cross section and are symmetrical to a bisecting axis perpendicular to the pinion axis. Thus the pinion teeth have equal pressure angles.

3,645,149
CONTROL FOR AUTOMATIC TRANSMISSION
John D. Fitzpatrick, Warren; Harold L. Sharp, Farmington, and Bernard Burns, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,262
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 R **5 Claims**



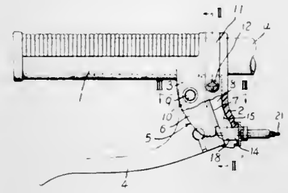
Automatic transmission control in which the manual control level is supported by a mounting assembly for limited turning movement in a longitudinal direction about an axis beneath the vehicle floor adjacent to the transmission to effect a change in transmission operation. The mounting assembly includes a lever carrier that is drivingly connected to a rotatable mounting shaft extending through the sides of a protective support bracket suspending from a floor-mounted baseplate. The lever is also pivotally mounted on the carrier for limited lateral movement to permit disengagement of the lever from positive stops corresponding to different transmission operations. A torque-transmitting lever connected directly to the control-lever-operated mounting shaft is drivingly connected by a linkage to the transmission.

3,645,150
ADJUSTABLE CABLE ASSEMBLY
Francis D. Crossland, Ilford, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed July 27, 1970, Ser. No. 58,510
Int. Cl. F16c *1/22*
U.S. Cl. 74—501 P **5 Claims**



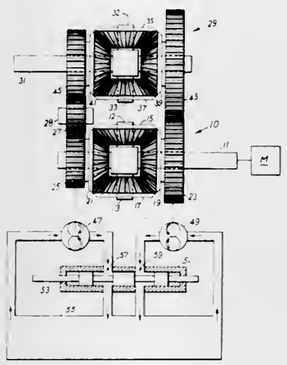
A motion transmitting cable assembly has a cap member mounted rotatably on one end of the cable sheath. The cap has an external threaded portion and the cable core member passes movably through the cap. A retaining plug having internal threads snaps into a stationary wall and receives the threaded portion of the cap member. Rotating the cap member relative to the retaining plug adjusts the position of the end of the core member.

3,645,151
HANDLEBAR GRIP FOR A TWO-WHEELED VEHICLE
Kunihiko Yoshikawa, Soka, Japan, assignor to Kabashiki Kaisha Yoshikawa Seisakusho, Tokyo, Japan
Filed Nov. 9, 1970, Ser. No. 87,911
Claims priority, application Japan, Aug. 8, 1970, 45/78519
Int. Cl. B62k *21/26*
U.S. Cl. 74—551.9 **11 Claims**



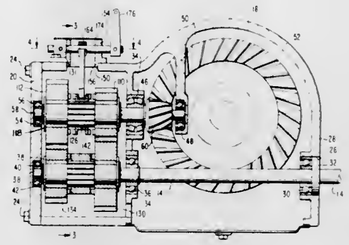
A handlebar grip comprises a cylindrical grip member adapted for being mounted on a vehicle handlebar and an attaching member integrally formed with the grip member of a plastic material. The attaching member has a groove in which a metal reinforcing member of channel shape is secured which receives the base of a pivotal operating lever. A pivot pin extends through the attaching member, reinforcing member and the base of the operating lever while a clamping band extends around the grip member and is attached thereto by a tightening fastener passing through the attaching member and the reinforcing member.

3,645,152
VARIABLE SPEED MECHANISM
Behzat Olcer, 1810 Cumberland St., Rockford, Ill.
Filed Apr. 27, 1970, Ser. No. 32,259
Int. Cl. F16h *37/06*
U.S. Cl. 74—682 **7 Claims**



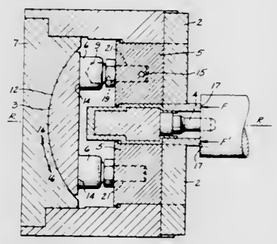
A controlled differential-gear system includes an input differential, an output differential, and an idler gear positioned between the two differentials to operate the output differential as a subtractive type when the input differential operates as an additive type. Brake means is arranged to brake one or the other side of the differentials to vary the output speed through an infinite range from maximum reverse, through zero, to maximum forward. Three arrangements of the differentials and two embodiments of the brake means are illustrated in the drawings.

3,645,153
DIFFERENTIAL DRIVE MECHANISM FOR VEHICLES
Ray V. Northcraft, 659 Cumberland Ave., Chambersburg, Pa.
Filed Apr. 7, 1970, Ser. No. 26,268
Int. Cl. F16h *37/08*
U.S. Cl. 74—700 **13 Claims**



A differential gear drive mechanism for a vehicle employing an input drive shaft and a differential pinion shaft journaled for rotation about spaced parallel axes within a differential housing and meshing gears mounted on each shaft for connecting the two. The gear may quickly be replaced to change the drive ratio of the mechanism by removing a cover plate over an access opening in the housing adjacent one end of the two shafts. A selectively operable coupling device is provided to connect and disconnect one of the shafts from the gear train, and parallel gear trains may be employed between the two shafts with the coupling device being operable to connect one or the other gear trains alternatively to the associated shaft to permit the drive ratio to be changed without opening the differential housing.

3,645,154
CHUCK FOR LATHE, GRINDING OR MILLING MACHINE
Dennis J. Anderson, Ilion, N.Y., assignor to Remington Arms Company, Inc., Remington Arms Company, Inc., Bridgeport, Conn.
Filed Feb. 24, 1970, Ser. No. 13,535
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **7 Claims**



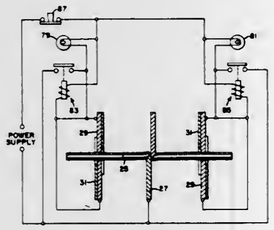
This invention relates to a mechanical chuck for a lathe, grinding machine, or milling machine which will automatically adjust the gripping jaws to provide equal support for the workpiece. The chuck is of the driving center variety, wherein the workpiece is centered and end-gripped. The chuck is designed to eliminate the disadvantages concomitant with hydraulic chucks, which tend to leak, jam, and need periodic servicing. A self-lubricating feature is also provided.

3,645,155
CUTTING AND/OR CREASING OF SHEET MATERIAL
Charles Robinson, Hawksley St., Industrial Estate off Manchester Road, Oldham, England
Filed Mar. 24, 1970, Ser. No. 22,234
Claims priority, application Great Britain, Mar. 26, 1969, 15,832/69
Int. Cl. B26d *1/32, 1/36;* **B21k** *5/12*
U.S. Cl. 83—663 **12 Claims**



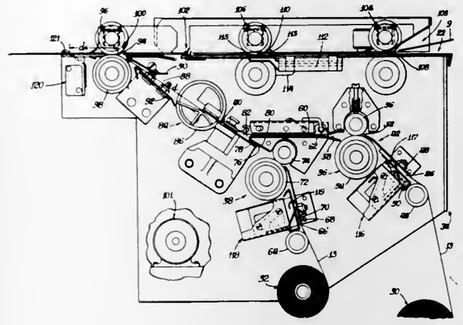
A forme member for a cutting and/or creasing machine comprise a rule and a base of ductile metal, the base engaging the marginal inner edge portions of the rule and at least partly filling notches or other openings in the rule.

3,645,156
AUTOMATIC WIRE NICK DETECTOR FOR ELECTRIC WIRE CUT AND STRIP MACHINES
Heinrich F. Meyer, Liverpool, and Edward L. Minchow, Syracuse, both of N.Y., assignors to General Electric Company
Filed June 11, 1970, Ser. No. 45,297
Int. Cl. H02g *1/12*
U.S. Cl. 83—9 **3 Claims**



An automatic wire nick detector for electrical lead wire cut and strip machines, for detecting any potentially damaging contact between the lead wire stock and one of the insulation stripping blades used for severing or scoring the insulation of the wire preparatory to its stripping. For sensing and indicating such contacts, each of the stripping blades is connected in series circuit relation with an indicating or control device, with the wire cutter blades and, through those blades, with the length of wire stock which extends between them and the insulation stripping blades, so that in the event of any stripping blades contact with the wire the sensing circuit is completed and the indicating or control device is energized thereby. In this way reliable indication of nicking or other potential stripping blade damage to electrical leads as produced by wire cut and strip machines may be afforded automatically, with only very minor changes in the machine structure and very simple associated electrical circuitry.

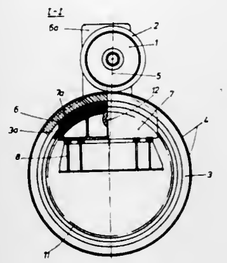
3,645,157
ROLL FEED AND CUTTING APPARATUS FOR USE IN A PHOTOCOPY MACHINE
Albert J. Di Giulio, and Frank B. Naujokas, both of Arlington Heights, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Nov. 24, 1969, Ser. No. 879,487
Int. Cl. B26d *5/20*
U.S. Cl. 83—205 **18 Claims**



Apparatus is disclosed for feeding and cutting copy material from a roll in accordance with an original document fed into a multispeed, contact-type copying machine. The original and severed copy sheet are fed in synchronism into the machine by a pair of infeed rollers. A single sensing element positioned a predetermined distance upstream of the infeed rollers initiates the feeding of copy material from a selected roll upon being actuated by the leading edge of the original and causes the cessation of the feeding of copy material and the severing thereof, from the roll upon deactuation by the trailing edge of the original. The cessation of the feeding of copy material and the severing thereof is accomplished rapidly, due to the application of a high voltage to the brake of the copy material roll and to the cutting mechanism of the copying machine. The normal position of the leading edge of the copy material is nearer the infeed rollers than the sensing element, to insure registration of the leading edges of the original and copy material at the infeed rollers at high-speed settings. A delay in feeding and cutting the copy material is incorporated into the apparatus for low-speed operation. A second sensing element upstream of and laterally spaced from the first-mentioned sensing element selects an alternate copy material roll upon actuation thereof by the leading edge of the original. An additional, switching element in the path of the copy material causes the severing of copy material from a selected roll, at least of a predetermined length upon the feeding of relatively short originals into the copying machine. A manual cut mechanism is also provided for severing copy material from a roll when desired.

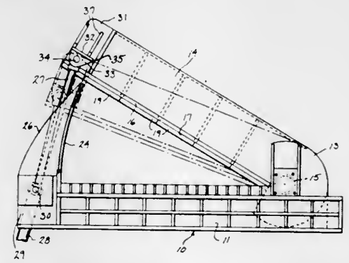
3,645,158
CIRCULAR CUTTER SHEARS FOR THICK PLATES
Karl Wilhelm Greis, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann GmbH, Ingbert am Saar, Germany
Filed Dec. 2, 1969, Ser. No. 881,419
Claims priority, application Germany, Dec. 8, 1968, P 18 13 463.9
Int. Cl. B23d *19/04*
U.S. Cl. 83—492 **5 Claims**

In shears for trimming or slitting heavy plates and in which circular cutters cooperate to effect a cut, at least one of the cutters is in the form of a ring which is internally supported on a stationary segment-shaped bearing. The cutters are



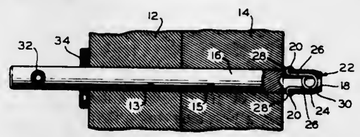
rotated by a drive which preferably engages the inner periphery of the cutter ring.

3,645,159
ALLIGATOR SHEARS
Julius L. Chazen, C/O SMC Industries, Inc., Chattanooga, Tenn.
Filed Jan. 28, 1970, Ser. No. 6,513
Int. Cl. B23d *17/06*
U.S. Cl. 83—599 **1 Claim**



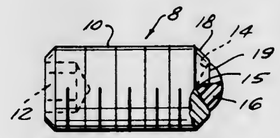
An alligator shear for large scrap which has a bed with widely spaced sets of anvil blades, a wide jaw pivoted to the bed and having shearing blades on opposite sides for coaction with the spaced sets of anvil blades on the bed to provide a double cut, fluid pressure operated cylinders arranged to pull down on the jaw, and spaced upwardly projecting protectors for the rods of the cylinders, which protectors serve as guides for the front end of the jaw, the jaw and bed being exposed and accessible on both sides.

3,645,160
QUICK RELEASE PIN
Louis J. Artioli, and Giulio V. Savioli, both of Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 7, 1969, Ser. No. 864,440
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 R **1 Claim**



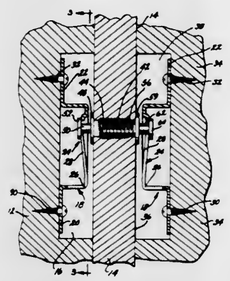
The joining of adjacent parts can be quickly and releasably accomplished by an elongated pin containing a unitary torsion member therein provided with flexible arms terminating in looped ends arranged to protrude from the opposite sides of the pin and prevent the withdrawal thereof from the adjacent parts until the pin is pulled with sufficient force to cam the looped ends back into the interior thereof. The torsion member provides a prestress action through the coil portion thereof engaging the walls of a cylindrical recess in the pin and outwardly diverging straight arms extending from the coil portion in linear contact with the wall surfaces of the recess.

3,645,161
SOLDER TIP SETSCREW
Lew Wesker, East Rockaway, N.Y., assignor to PIC Design Corp., East Rockaway, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,695
Int. Cl. F16b *35/00*
U.S. Cl. 85—1 SS **5 Claims**



A setscrew comprising a rounded soft metal tip extending from a threaded shaft. The soft metal tip is adapted to contact a member against which it is forced without damaging deformation to the member or the tip. The setscrew is constructed by melting a piece of soft metal on to a recessed portion in the end of the threaded shaft.

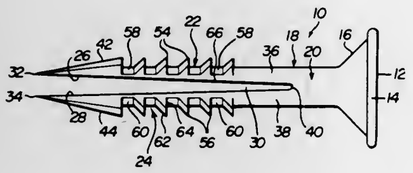
3,645,162
COUPLING MEMBER
Philip C. Welch, Grand Rapids, Mich., assignor to Modular Systems, Inc., Fruitport, Mich.
Filed Mar. 6, 1970, Ser. No. 17,241
Int. Cl. F16b *5/07, 35/04*
U.S. Cl. 85—4 **10 Claims**



This disclosure relates to a coupling member for securing the butt ends of two panels to a central panel, and to the joint structure formed therewith. The coupling member is formed from first and second elongated members, the first elongated member having a tubular portion with internal and external threads, and an opposite end having a radial shoulder to abut the sides of a panel and an expanded head

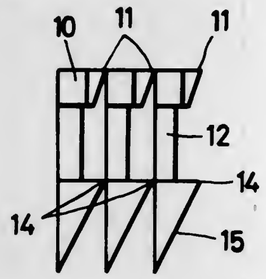
spaced therefrom. The second elongated member forming the coupling member has at one end a threaded stud to be received within the first elongated member tubular portion and at the other end a radial shoulder and an expanded head spaced therefrom. In the joint formed with the coupling member, the expanded heads engage flexible and resilient clips having slots to receive the ends of the coupling members and the clips are fixed within recesses in butt ends of two panels. The joints thus formed are flexible and hidden from view.

3,645,163
EXPANDING NAIL
Henry L. Byland, Lighthouse Point, Fla., assignor to Futuristic Building Products Inc., Northbrook, Ill.
Filed Oct. 14, 1969, Ser. No. 866,190
Int. Cl. F16b *15/04*
U.S. Cl. 85—13 **6 Claims**



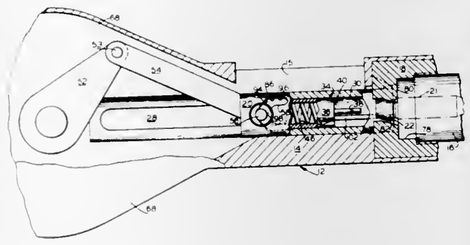
An expanding nail which is split longitudinally from the tip end thereof to form two shank halves which squeeze together when the nail is driven through a member and expand to anchor the nail to the member. In a preferred embodiment, the shank halves have inner faces which slant inwardly from the tip end to bases of the shank halves to provide sufficient thickness of material in the shank at the bases of the shank halves to withstand flexure. The tips of the shank halves have outwardly slanting surfaces which act to squeeze the tip together when the nail is driven, and the shank halves have barbs spaced along the length thereof to receive material between the barbs so that the barbs catch on the material and hold the nail firmly in place. The nail is particularly suitable for attaching wallboard such as gypsum board to metal studs in building construction.

3,645,164
RIVET STRIP FOR A DRIVING-IN DEVICE
Horst Wurth, Heutingsheim, Germany, assignor to Walter Schnabel, Im Wolfsgalgen, Germany
Filed Mar. 13, 1970, Ser. No. 19,453
Claims priority, application Germany, Mar. 13, 1969, P 19 12 695.5
Int. Cl. F16b *15/06, 15/08*
U.S. Cl. 85—17 **6 Claims**



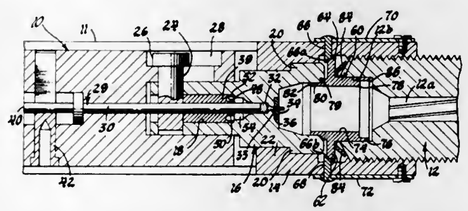
A rivet strip for driving-in or stapling device in which one-piece rivets provided with a head, a shaft and a stop element in the tip of the shaft having a shoulder facing the head. The individual rivets have their attachment side formed as planar sliding surfaces extending over the head shaft and stop elements. The individual rivets have one attachment side formed as a planar sliding surface and another attachment side in the region of the head and/or the stop elements which extend in an edge or pointed shape. The upper surface of each of the rivet heads lie in a common plane whereby the edge or point of the rivets are connected with the sliding surface of the strip.

3,645,165
FIRING MECHANISM FOR A MACHINEGUN
William P. Wohlford, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 20, 1970, Ser. No. 82,278
Int. Cl. F41d *7/02*
U.S. Cl. 89—11 **5 Claims**



A firing mechanism for a machinegun which comprises a bolt movable between a retracted and a battery position responsive to crank rotation and a firing pin slidingly disposed within the bolt. A firing pin spring is compressed by the crank-actuated drive pin during final displacement of the bolt to the battery position. Cam means rotates the bolt, when in battery position, around the firing pin into locked engagement with a barrel extension and thereby moves a recessed ramp in the firing pin into alignment with a sear fixed within the bolt bore for release of the firing pin when the locking engagement is completed.

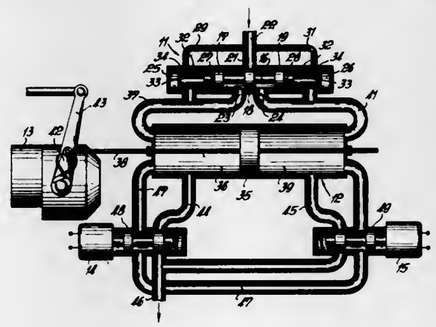
3,645,166
OBTURATOR FOR CASELESS AMMUNITION FIREARM
Roy D. Plumer, Santa Barbara, and Donald J. Irby, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.
Filed July 28, 1969, Ser. No. 845,284
Int. Cl. F41d *11/00, 11/16*
U.S. Cl. 89—26 **3 Claims**



A firearm capable of firing ammunition of the caseless-type The firearm has a bolt carrying a firing pin and an obturator which is slidably supported by the barrel of the firearm. The obturator is provided with a radial extending wall and the pressure of the gas within the chamber, when a round of caseless ammunition is fired, forces the obturator into tight

engagement with the bolt to prevent gas leakage. The obturator also has a circumferentially extending wall of relatively thin radial dimension which is forced against the barrel when the round of caseless ammunition is fired. A ratchet-and-pawl arrangement is provided connected with the obturator and as the bolt is opened and closed and rotated during these operations the obturator is rotated in one direction. The bolt has a bore containing a firing pin seal disposed about the firing pin. This seal has an end portion formed with an axially extending groove to provide inner and outer circumferentially extending lips. These lips are expanded respectively against the bore wall of the bolt and a portion of the firing pin when a cartridge is fired to prevent gas leakage. The firing pin includes a shaft of steel material having a firing tip formed of a refractory material such as a tantalum alloy.

3,645,167
CONTROL ARRANGEMENT FOR HYDRAULIC MOTORS
Helmut Espenschied, Buhlertal, and Joseph Sauer, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 19, 1969, Ser. No. 886,623
Claims priority, application Germany, Dec. 20, 1968, P 18 15 915.4
Int. Cl. F15b *13/043, 9/09*
U.S. Cl. 91—31 **10 Claims**

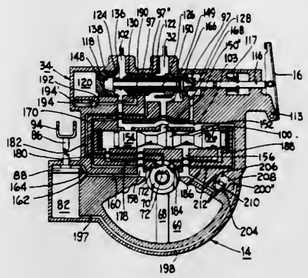


A hydraulic control arrangement for controlling the operation of a hydraulic motor equipped with a piston which may be subjected on both sides with fluid pressure. A control valve controls the flow of fluid under pressure from the motor to the return flow duct. A directional valve communicates with both sides of the piston of the motor and is actuated by the fluid flow. The control slide of the directional valve is urged, through spring action, into a neutral inoperative position, in which a fluid inflow duct to the directional valve is closed. The control slide connects two ports leading to hydraulically operated devices, with the inflow duct, when in operating positions. Flow chambers at both ends of the control slide communicate with the ports and the inflow duct through throttling passages.

3,645,168
FLUID MOTOR
Anthony R. D'Alba, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,626
Int. Cl. F01l *33/00, 25/06;* **F01c** *9/00*
U.S. Cl. 91—189 **10 Claims**

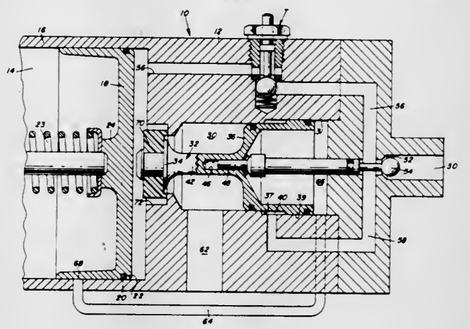
A hydraulic motor includes a primary drive piston for driving a motor shaft which oscillated within a main housing chamber. A secondary linearly reciprocating drive piston is disposed within an auxiliary housing chamber for driving a secondary drive shaft. A shuttle-type reversal valve and conduits route pressurized fluid alternately to and from opposite sides of the primary piston to cause oscillation during running of the motor and to park it in a position beyond its running range.

The controller valve and conduits also route pressurized fluid to and from opposite sides of the secondary piston through sequence valving to effect reciprocation thereof. The sequence valving is actuated when the primary piston is oscil-



lated and preferably only at the time when the primary piston is moving to or from its park position. Thus the primary drive shaft can run continuously to operate a pair of windshield wipers, for example, while the secondary drive shaft can run only when the wipers move to and from a concealed parking position beyond the normal running range to operate a cowl panel, for example, which conceals the wipers in a parked position and opens to permit operation of the wipers.

3,645,169
CYCLING VALVE
Raymond Clark, Pewaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Mar. 24, 1970, Ser. No. 22,150
Int. Cl. F01l *15/16, 25/06*
U.S. Cl. 91—268 **2 Claims**

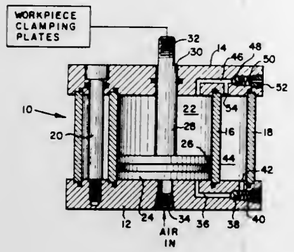


A pilot-operated pneumatic cycling valve having means to isolate the pneumatic forces from the working elements of a pneumatic motor to permit an increase in cycling speeds and a horsepower savings.

3,645,170
AIR CYLINDER WITH SELF-CONTAINED PNEUMATIC PISTON RETURN
Theodore A. Varouxis, 5375 Duke St., Alexandria, Va.
Filed Aug. 1, 1969, Ser. No. 846,859
Int. Cl. F15b *15/22, 15/17*
U.S. Cl. 91—399 **1 Claim**

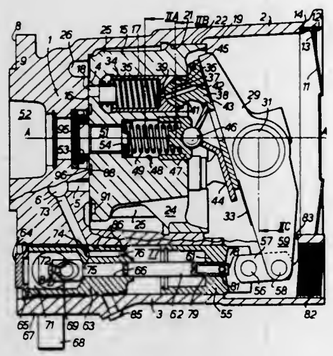
An air cylinder having an annular chamber disposed around the piston chamber, a portion of the pressure fluid

causing the working stroke of the piston is passed to and accumulated in the annular chamber during the working stroke



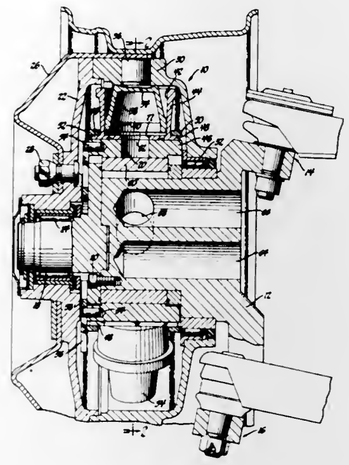
of the piston. The annular chamber thereafter supplies the accumulated pressure fluid to one end of the piston chamber to actuate the return stroke of the piston.

3,645,171
SWASH PLATE DEVICE
Donald Patterson McLeod, Cheltenham, England, assignor to Dowty Technical Developments Limited
Filed May 1, 1970, Ser. No. 33,715
Claims priority, application Great Britain, Mar. 14, 1970, 12,356/70
Int. Cl. F04b *1/02*
U.S. Cl. 91—487 **6 Claims**



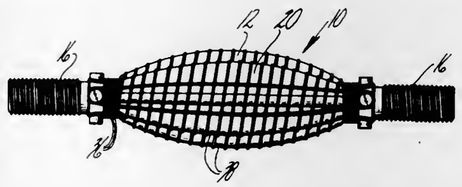
A swashplate pump or motor in which the drive shaft is arranged to extend from the cylinder block through an aperture in the valve on which the cylinder block rotates, the aperture being open outwardly to the atmosphere. A circular seal is provided in the valve means to engage a flat surface at the end of the cylinder block whereby to form a seal against escape of liquid from the valve into the aperture. A circular groove is formed in the valve or the cylinder block in between the seal and the ports in the valve means and is connected to the low-pressure port whereby liquid at low pressure in the low-pressure port provides a low-pressure zone within the groove to prevent centrifuging of air from the aperture over the surface of the seal and into the swashplate pump or motor.

3,645,172
VARIABLE DISPLACEMENT FLUID PUMP MOTOR
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 4, 1970, Ser. No. 43,334
Int. Cl. F01b *13/04*
U.S. Cl. 91—497 **3 Claims**



A fluid translating device such as a fluid pump or motor having an outer rotatable ring providing a power input or output member to which a plurality of inwardly extending pistons are secured. The pistons are slidably disposed in cylinders which are freely mounted on a stationary spindle. Fluid is ported to and from a fluid chamber formed by the pistons and cylinders through the spindle, the inner ring and the cylinders. A displacement control mechanism controls the position of the inner ring on the spindle so the inner ring is positioned eccentrically relative to the outer ring whereby the fluid chambers are expansible as the inner and outer rings rotate. The outer ring may be secured to a mechanical member which provides an output drive such as a vehicle wheel or may be driven by a mechanical input such as a motor.

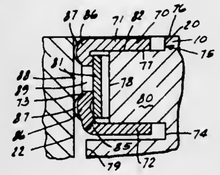
3,645,173
FLUID ACTUATOR
John M. Yarlott, Harvard, Mass., assignor to Trish Energetics, Inc., Harvard, Mass.
Filed Oct. 20, 1969, Ser. No. 867,463
Int. Cl. F01b *19/00*
U.S. Cl. 92—92 **15 Claims**



A fluid actuator comprising an axially elongated flexible thin-walled shell defining a fluid chamber and having coupling members projecting axially outwardly from opposite ends thereof for attachment to other elements in a system to be actuated. The shell is adapted for radial expansion and contraction in response to variation of fluid pressure in the

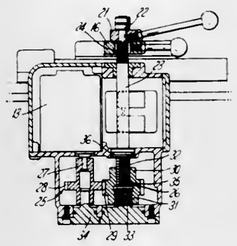
chamber to move the coupling members between axially retracted and extended positions and has a generally prolate spheroidal form in its radially expanded condition. A network of substantially nonelastic or inextensible strands embedded in the elastomeric material from which the shell is made prevents elastic expansion of the shell wall within the range of normal fluid operating pressure.

3,645,174
ANTIEMISSIONS COMPRESSION PISTON RING
Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Original application Apr. 14, 1969, Ser. No. 815,653. Divided and this application Nov. 10, 1970, Ser. No. 88,344
Int. Cl. F16j *1/00, 9/06, 9/20*
U.S. Cl. 92—193 **7 Claims**



A U-shaped cross section piston ring for use at the top of an internal combustion engine piston with one leg thereof received in a circumferential groove spaced from the top of the piston and the other leg thereof either overlying the top of the piston or coplanar therewith in a circumferential ledge at the top of the piston.

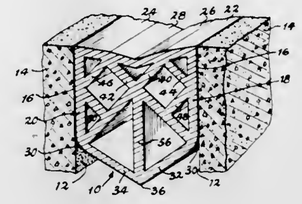
3,645,175
CONTINUOUS ROD MAKING MACHINES
Jan Antoni Rakowicz, London, England, assignor to Molins Machine Company Limited
Filed Apr. 7, 1970, Ser. No. 26,316
Claims priority, application Great Britain, Apr. 10, 1969, 18,393/69
Int. Cl. B31d
U.S. Cl. 93—1 C **6 Claims**



A cigarette filter rod making machine has a diameter control comprising a platen which moves up and down in response to signals from a diameter-sensing device. The platen is positioned by a servomotor which preferably controls the platen via a gear train and a differential screw drive.

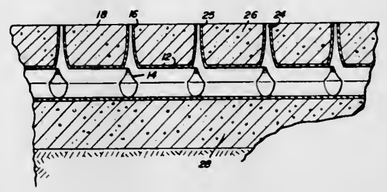
3,645,176
SEALING MEMBER
William J. Berchou, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,735
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **6 Claims**

An elongated resilient sealing member for use in an expansion joint comprising a top wall, a bottom wall and opposite sidewalls forming a tubular structure. The interior of the tubular structure is provided with a truss construction including a pair of intersecting crossbars extending from the top wall downwardly at an angle to either the intersections of the bottom wall with the sidewalls or to the bottom wall at points below such intersections. A pair of short bars extend



downwardly at an angle, from the opposite sidewalls to the intersecting crossbars. These short bars in conjunction with the intersecting crossbars urge the bottom wall portions of the sealing member against adjoining support surfaces during compression to increase the interfacial surface contact area of the sealing member with such support surfaces.

3,645,177
PAVEMENT DRAINAGE SYSTEM
Emil R. Hargett, 3801 Kelli Lane, Bryan, Tex.
Filed Mar. 24, 1970, Ser. No. 22,256
Int. Cl. E01c *11/24*
U.S. Cl. 94—33 **2 Claims**

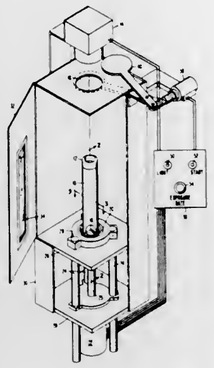


A subsurface drainage system consisting of a prefabricated lattice network of conduits mutually communicating with vertical inlets that extend upwardly through a pavement to allow entry of drainage fluid into the network. The vertical inlets are flared outwardly as they extend toward their intersection with the conduits for inhibiting clogging.

3,645,178
APPARATUS FOR EXPOSING PHOTORESIST IN CYLINDERS
Charles G. Speicher, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 27, 1969, Ser. No. 811,151
Int. Cl. G03b *37/00*
U.S. Cl. 95—1 **9 Claims**

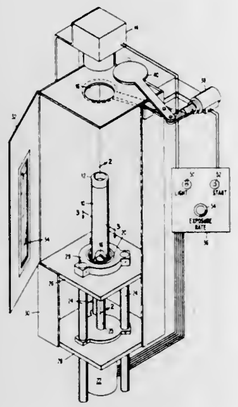
A photoresist coating on a cylinder is exposed by placing a mask loosely inside the cylinder and then shining a nondivergent beam of light down the center of the cylinder and onto a conical mirror. The conical mirror reflects the light radially outward through the mask to expose the photoresist on the inner surface of the cylinder. Photoresist on the outside of

the cylinder may also be exposed in the same manner by placing a conical mirror around the periphery of the cylinder.



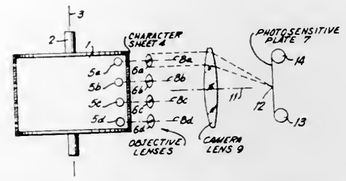
To expose the entire length of the cylinder, the conical mirror is moved gradually along the length of the cylinder.

3,645,179
APPARATUS FOR EXPOSING PHOTORESIST IN CYLINDERS
Kenneth N. Karol, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 27, 1969, Ser. No. 811,023
Int. Cl. G03 *B37/00*
U.S. Cl. 95—1 **8 Claims**



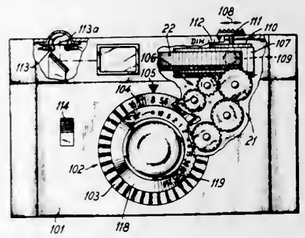
A photoresist coating on a cylinder is exposed by placing a mask loosely inside the cylinder and then shining collimated light down the center of the cylinder and onto a conical mirror. The conical mirror reflects the light radially outward through the mask to expose the photoresist on the inner surface of the cylinder. Photoresist on the outside of the cylinder may also be exposed in the same manner by placing a conical mirror around the periphery of the cylinder. To expose the entire length of the cylinder, the conical mirror is moved gradually along the length of the cylinder.

3,645,180
PHOTOGRAPHIC PRINTING APPARATUS
Tohru Nakajima; Susumu Tashiro, both of Tokyo; Kenmi Tsukatani, Mitaka-shi, and Koichi Mori, Tokyo, all of Japan, assignors to Asahi Optical Company, Ltd., Tokyo and Fujitsu Limited, Kawasaki, Japan
Filed Dec. 27, 1968, Ser. No. 787,507
Claims priority, application Japan, Dec. 28, 1967, 43/85044; 42/85045
Int. Cl. B41b *17/10*
U.S. Cl. 95—4.5 **3 Claims**



A lens system interposed between the character sheet and the photosensitive sheet directs images of selected ones of the characters on the character sheet to the photosensitive sheet. The lens system comprises a plurality of objective lenses and a camera lens having optical axes parallel to each other and perpendicular to the character sheet. The objective lenses have focal points on the character sheet and the camera lens has a focal point on the photosensitive sheet and intercepts all parallel light quanta transmitted by the objective lenses.

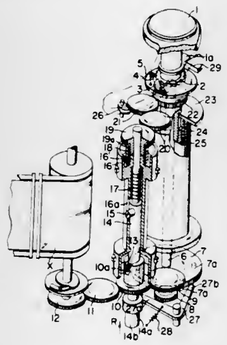
3,645,181
CAMERA WITH AUTOMATIC EXPOSURE TIME DETERMINATION
Wilhelm Reiche, Braunschweig, and Dieter Mehlitz, Stuttgart-Mohringen both of Germany, assignors to Voigtlander A.G., Braunschweig, Germany
Filed July 22, 1969, Ser. No. 843,426
Claims priority, application Germany, July 25, 1968, P 17 72 949.6
Int. Cl. G03b *37/00*
U.S. Cl. 95—10 CT **3 Claims**



A camera which enables the operator to select an exposure aperture while providing automatically an exposure time influenced at least in part by the selected aperture. An indicating element, such as a lamp, indicates when a given exposure time is reached. A scale of exposure times is available to the operator to be moved with respect to a scale of apertures so as to situate in line with the selected aperture that exposure time of the exposure time scale which corresponds to the given exposure time when the indicating lamp becomes illuminated. This will locate in line with the several apertures of the aperture scale several exposure times which form with these apertures different pairs of exposure times and apertures which may be selectively used instead of the previously selected aperture and the given exposure time which cor

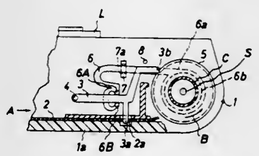
responds thereto. Thus, even though the operator is normally unaware of the particular exposure time which corresponds to the selected aperture, it becomes possible for the operator to provide a selected exposure time as well as a selected aperture, if desired.

3,645,182
FILM WINDUP DEVICE FOR CAMERAS
Shuji Kimura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Oct. 14, 1969, Ser. No. 866,189
Claims priority, application Japan, Oct. 18, 1968, 43/75624
Int. Cl. G03b *19/02, 1/06*
U.S. Cl. 95—31 AC **5 Claims**



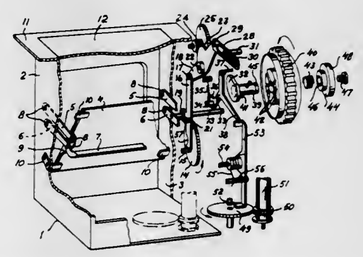
With a film windup device of this invention, rotary motion of sprocket or sprocket shaft is transmitted to spool by way of clutch mechanism; shutter windup system is separated from sprocket and spool by using the rewind mechanism to allow the shutter to be wound alone; shutter is separated in the case of rewinding by rewind mechanism; only the sprocket can be rotated backward by the action of the aforementioned clutch without transmitting the backward rotation to the spool.

3,645,183
PHOTOGRAPHIC APPARATUS
Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 1, 1969, Ser. No. 881,057
Claims priority, application Germany, Nov. 30, 1968, P 18 11 906.7
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM **10 Claims**



A still camera for use with roll film having a perforation for each film frame wherein a lever is pivotally mounted in the housing and includes a first arm which tracks the film and enters an oncoming perforation during transport of the film and a second arm which engages a gear and prevents further manipulation of the film transporting mechanism when the first arm enters a perforation. A displacing member which is turnable by the gear through the intermediary of a friction clutch disengages the first arm from the film and the second arm from the gear in response to actuation of the camera release. The film transporting mechanism is then free to advance the film whereby the gear turns the displacing member to move the first arm of the lever into engagement with the film and to cause entry of the first arm into the oncoming perforation when the transport of film by the length of a frame is completed.

3,645,184
CONTROL DEVICE FOR VIEWFINDER MIRROR MECHANISM OF SINGLE-LENS REFLEX CAMERAS
Alf Ingvar Alfredsson, Savedalen, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden
Filed Dec. 11, 1970, Ser. No. 97,189
Int. Cl. G03b *19/12*
U.S. Cl. 95—45 **6 Claims**



The viewfinder mirror mechanism of a single-lens reflex camera is provided with a control device comprising a cam disc settable to three different angular positions for controlling the viewfinder mirror mechanism at the release of the camera and at its cocking for a new exposure. The control device operates, for a first position of said disc, to fold up the viewfinder mirror upon release of the camera and folds the mirror down upon completion of said exposure; operates, for a second position of said disc, to fold up said mirror upon release of the camera and to return the mirror to its folded-down position when the camera is cocked for a new exposure; and, in the third position of said disc, does not actuate the viewfinder mirror mechanism, said mirror having been manually folded up prior to the exposure.

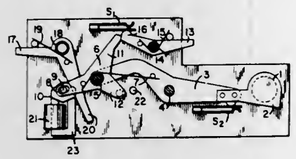
3,645,185
EXPOSURE TIME CONTROL DEVICE
Kiyoshi Kitai, 54, Tomihisa-cho, Shinjuku-ku, Tokyo, Japan
Filed Oct. 3, 1969, Ser. No. 863,571
Claims priority, application Japan, Oct. 3, 1968, 43/71734
Int. Cl. G03b *9/62*
U.S. Cl. 95—53 EB **11 Claims**



Different exposure times of a shutter-operating mechanism are obtained by variably coupling an inertia flywheel to the

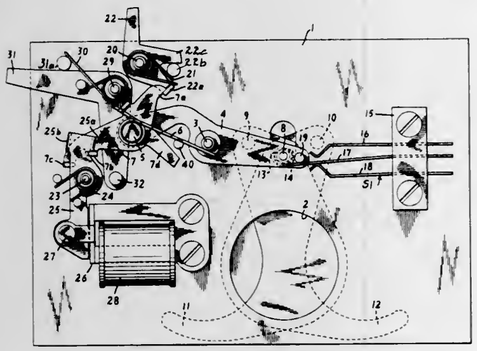
driving wheel for the shutter opening and closing to retard the driving wheel and by impeding the rotation of the flywheel by an electromagnetic abutment lever under control of a timing circuit to obtain longer exposure times.

3,645,186
SHUTTER OPENING AND CLOSING MECHANISM
Kiyoshi Kitai, 54, Tomishisa-cho, Shinjaku-ku, Tokyo, Japan
Filed Dec. 8, 1969, Ser. No. 883,173
Claims priority, application Japan, Dec. 9, 1968, 43/89715
Int. Cl. G03b *9/00, 9/62*
U.S. Cl. 95—59 **7 Claims**



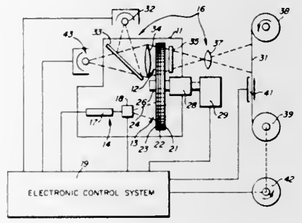
A camera shutter mechanism comprises a pivotally mounted shutter-operating member which is oscillatable to open and close the lens aperture of the camera. A driving member rotatably mounted on the operating member and spring biased to rotate in one direction has a plurality of arms. A release lever is engageable with one of the arms to hold the driving member in set position when the driving member is released, it is rotated by the spring and one arm acts against an abutment on one side of the axis of the driving member as a fulcrum to moving the operating member in a direction to open the shutter. For longer exposures, the driving member is held in shutter-open position by an electromagnetic magnet controlled by a timing circuit. Upon release by the electromagnet, the driving member rotates further in the same direction but fulcrums about an abutment engaging an arm on the opposite side of the axis of the driving member so that the operating member is pivoted in the opposite direction to close the shutter. Setting means engages an arm of the driving member to cock it while the operating member remains in shutter-closed position.

3,645,187
SHUTTER OPENING AND CLOSING DEVICE
Kiyoshi Kitai, 54, Tomishisa-Cho, Shinjaku-ku, Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,474
Claims priority, application Japan, Dec. 18, 1968, 43/92541
Int. Cl. G03b *9/14*
U.S. Cl. 95—62 **12 Claims**



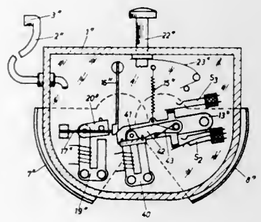
In a shutter mechanism, a driving member having a plurality of arms is rotatably mounted on a pivoted shutter operating member and is spring biased to turn relative to the operating member when released. In a first portion of its movement, the driving member engages an electronically controlled support member about which it pivots as a fulcrum so as to move the shutter-operating member in a direction to open the shutter. At the end of a selected exposure time the support member disengages from the driving member permitting it to rotate further in the same direction while engaging an abutment on the opposite side of the axis of the driving member so that the operating member is moved in the opposite direction to close the shutter.

3,645,188
PROJECTING APPARATUS AND DISPLAY SYSTEM USING SAME
Omer F. Hamann, La Jolla, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed May 18, 1970, Ser. No. 38,403
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 **4 Claims**



Apparatus is described for projecting successive images onto a light-sensitive surface. The apparatus includes an evacuated enclosure and at least two movable electron-sensitive image storage areas therein. The areas are movable in a manner which permits storing on one area while, at the same time, the image stored on the other area is being projected onto the recording surface.

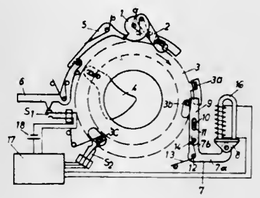
3,645,189
FLASHGUNS
Waldemar T. Rentschler, and Winfried Espig, both of Calmbach, Black Forest, Germany, assignors to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany
Filed Mar. 11, 1969, Ser. No. 806,161
Claims priority, application Germany, Mar. 14, 1968, P 16 22 941.7
Int. Cl. G03b *9/58*
U.S. Cl. 95—11.5 R **7 Claims**



A flashgun using flashbulbs is provided for taking photographs by artificial light. The ignition of the flashbulb is initiated by the flash contact of the camera and an ignition circuit is connected to a primary coil of a transformer. The secondary coil of the transformer is connected to the firing

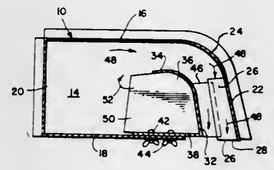
circuit of a thyristor which on conduction energizes an electromagnet of a locking device for holding a shutter in front of the flashbulb in the open position. An electronic switching device including a photosensitive resistor controls a holding magnet cooperating with the drive of the shutter for releasing the shutter at the end of a time interval formed by the electronic switching device in order to allow the shutter to close.

3,645,190
PHOTOGRAPHIC SHUTTER WITH AN ELECTRONIC TIMING DEVICE
Jorg Alfred Sohn, Wildbad, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H, Calmbach, Black Forest Germany
Filed Dec. 10, 1969, Ser. No. 883,961
Claims priority, application Germany, Dec. 12, 1968, P 18 14 120.3
Int. Cl. G03b *9/62*
U.S. Cl. 95—53 R **3 Claims**



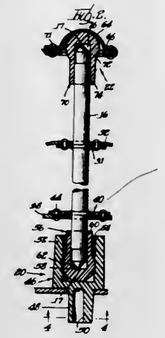
The photographic shutter has a reciprocating driving member for moving the shutter blades into open and closed positions. An electronic timing device controls a spring-biased two armed lever, one of the lever arms locks the driving member in the open position of the shutter blades and is advantageously designed to be bendable or collapsible. The bendable lever arm is located in the path of motion of a projection on the driving member so that the projection strikes against the end face of the lever arm before the reversal movement. The pin located on the shutter blade driving member is engageable with this lever arm to return the arm from a collapsing or bent position into an extended position at the end of the shutter closing action.

3,645,191
AIR SCREEN SPRAY NOZZLE
Gunnar C. Asker, and Maurice Hubscher, both of 18 Industrial Drive, Trenton, N.J.
Filed Aug. 14, 1969, Ser. No. 850,132
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **6 Claims**



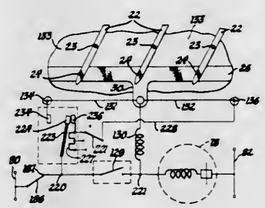
An adjustable nozzle is provided which cooperates with air ducting to deflect and remove turbulence from a stream of air and convert the same adjustably into an air screen of desired thickness and quality with homogeneous airflow.

3,645,192
WIND BRACED TURBINE
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio
Filed June 1, 1970, Ser. No. 41,975
Int. Cl. F23l *17/02*
U.S. Cl. 98—75 **8 Claims**



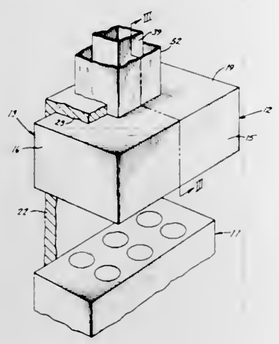
A wind braced turbine ventilator having a turbine head supported by an upwardly extending central shaft which sharply tapers to a point at each end thereof. The shaft is rotatably mounted to a stationary support structure through a pair of self-aligning bearing assemblies. The bearing assemblies comprise substantially spherical bearings having cavities therein for receiving the pointed ends of the central shaft so as to allow the latter to rotate freely therein. In addition, the bearings are mounted to the stationary support structure for movement relative thereto, which movement allows the bearings to remain in cOntinuous alignment with each other for minimizing frictional drag.

3,645,193
CONTINUOUSLY VARIABLE AIR DEFLECTOR
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 10, 1970, Ser. No. 53,815
Int. Cl. E06b *7/08*
U.S. Cl. 98—94 **4 Claims**



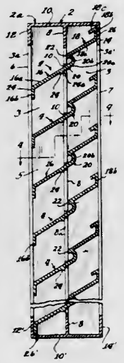
In the preferred form, a fluid discharge from an air conditioner is provided with a series of parallel pivoted vanes connected to pivot in unison by a lateral connecting bar. One or two electrically energizable thermally expansible hot resistance wires are connected between the fluid discharge and the connecting bar. These wires are periodically electrically heated by current from the supply circuit which is in series with a periodically opening timing switch.

3,645,194
BAFFLED VENTILATING HOOD
Willard K. Ahlrich, 101 North Riverview Drive, Parchment, Mich.
Continuation-in-part of application Ser. No. 739,518, June 24, 1968, now Patent No. 3,513,766. This application Mar. 16, 1970, Ser. No. 19,913
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 **10 Claims**



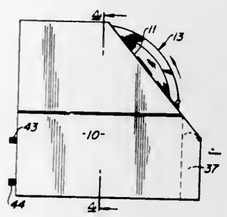
A hood structure for exhausting fumes and/or hot gases from food cooking below the hood structure, which includes an exhaust chamber connected to a gas-moving assembly for discharging the fumes. An air supply chamber is also connected to said gas-moving assembly for replacing the discharged air with relatively fresh air. The airflow and volume are carefully controlled to assure movement of the supply air and fumes in a pattern which will not adversely affect the temperature or other characteristics of the food being cooked, but will prevent the fumes from escaping into the room or space around the hood.

3,645,195
VENTILATING LOUVER UNIT
Robert J. Koval, Forest Park, Ill., assignor to Vent Products Co., Inc., Chicago, Ill.
Filed Apr. 9, 1970, Ser. No. 26,812
Int. Cl. F24f *13/08*
U.S. Cl. 98—121 **7 Claims**



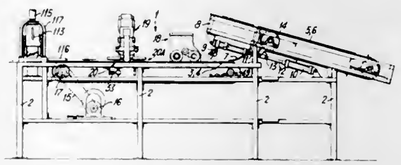
A ventilating louver unit having a peripheral frame defining and surrounding an interior space opening onto the front and rear of the unit. The peripheral frame has sidewalls having correspondingly inwardly extending outer flanges at the front and rear margins thereof and vertical ribs extending inwardly between the flanges. Louver blades pass through corresponding vertically spaced slots in said inwardly extending ribs and are wedged between the front and rear sidewall flanges. Each louver blade has a forwardly projecting rain-shield-forming portion resiliently urged against the rear surfaces of the ribs above each of the associated slots.

3,645,196
FRENCH FRYING MACHINE HAVING ROTARY FOOD-CONVEYING DRUM
William D. Johnston, and William J. Long, both of Franklin County, Ohio, assignors to White Castle System, Inc., Columbus, Ohio
Filed Mar. 9, 1970, Ser. No. 17,576
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **2 Claims**



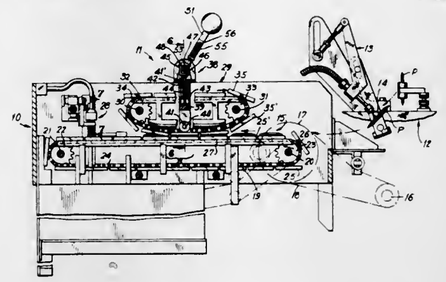
A French frying machine in which a generally horizontally disposed, axially rotatable drum is employed to convey batches of food to, through, and from a vat or well of hot cooking oil, the food-conveying drum having a plurality of circumferentially adjoining, but separate, food-receiving pockets or compartments so constructed as to automatically discharge the cooked food therefrom by gravity as it leaves the cooking oil.

3,645,197
SANDWICH-PREPARING MACHINES
James Stark McMeekin, Killearn, and James Wilson Galloway, Glasgow, both of Scotland, assignors to Sandwiches (Glasgow) Limited, Glasgow, Scotland
Filed Dec. 31, 1969, Ser. No. 889,625
Int. Cl. A23p *1/00*
U.S. Cl. 99—450.4 **27 Claims**



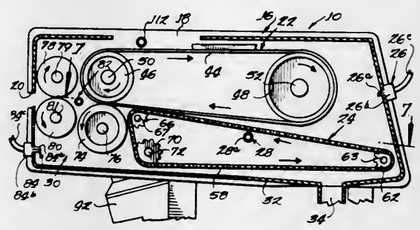
A sandwich-preparing machine includes an endless conveyor system for passing at least one line of bread slices, and means for delivering the bread slices to said conveyor system. Spreading apparatus, for example a buttering machine, is located over the path of the line of bread slices and is adapted to spread viscous edible material on the bread slices. A sandwich-filling machine, for example a meat slicing and depositing machine, is provided, and at this machine the conveyor system is comprised by two parallel conveyor lines, the filling machine passing filling material onto the bread slices of one line. A side-by-side pair of receivers for the bread slices are located at the end of the conveyor system, and one receiver is pivotal to place its bread slice on the bread slice of the other receiver to form a sandwich.

3,645,198
METHOD FOR FORMING LIQUID SATURATED TOWELETTE PACKETS
Donald G. Field, Trenton, N.J., assignor to Holland-Rantos Company, Inc., Piscataway, N.J.
Filed Mar. 24, 1970, Ser. No. 22,274
Int. Cl. B30b *13/00, 5/04*
U.S. Cl. 100—35 **3 Claims**



Method for flattening, without wrinkling, sealed packets containing liquid-saturated towels and for evenly distributing the liquid within the towel component and detecting leaks in said packets.

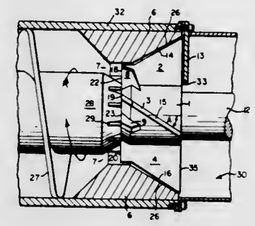
3,645,199
WASHER AND CRUSHING APPARATUS FOR DISPOSABLE TRAYS
Leslie J. Kanna, West Chicago, Ill., assignor to Mass Feeding Corporation, Elk Grove Village, Ill.
Filed Nov. 13, 1970, Ser. No. 89,246
Int. Cl. B30b *7/00*
U.S. Cl. 100—70 R **13 Claims**



The apparatus washes and crushes disposable metallic food trays. The trays are placed on a first conveyor, and they are inverted as the are dropped onto a second conveyor located below the downstream end of the first conveyor. A spray of water is directed onto the trays, both as they are falling from the first conveyor and after they have assumed an inverted position on the second conveyor. The second conveyor transports the tray into engagement with the return run of the first conveyor to squeeze the tray and initiate crushing. The tray is first crushed between a crusher roller and the upstream roller for the first conveyor and then is further crushed by a pair of supplemental crusher rollers.

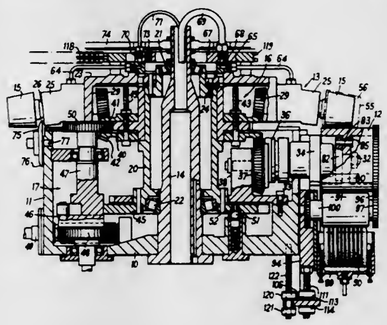
3,645,200
STOCK CUTTER FOR ELASTOMER DRYING PRESS
Wayne Edward Craddock, and Stanley George Smith, both of Beaumont, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 9, 1970, Ser. No. 9,587
Int. Cl. B30b *9/00*
U.S. Cl. 100—98 **5 Claims**

In a screw-type drying press for drying elastomeric polymers wherein the elastomer is discharged from the press into a discharge chamber, the elastomer is subdivided into pieces as it leaves the screw press by a stock cutter consisting essentially of (a) a hub rotatably mounted on the axis of the screw press in the discharge chamber immediately adjacent to the exit of the screw press; and (b) at least one blade attached to the outer periphery of the hub positioned at an angle of 1–60° to the rotational axis of the hub with the dependent portion of the blade generally shaped to conform to



the shape of the discharge chamber. During rotation the blade subdivides the elastomeric stock, wipes the inside surface of the discharge chamber, and propels the subdivided stock away from the press discharge area. Alternatively, this stock cutter is used in combination with a stationary knife positioned at the exit of the stock cutter particularly when processing elastomeric stocks which have a Mooney viscosity [*ML* 1+4 (121° C.)] of 10 to 45 when dry.

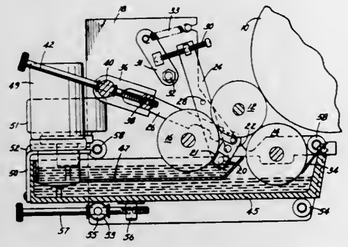
3,645,201
MULTICOLOR PRINTING MACHINE FOR CYLINDRICAL AND FRUSTOCONICAL OBJECTS
John Maxwell Jackson, Potters Bar, England, assignor to Max Jackson Developments Limited, Hertfordshire, England
Filed May 13, 1970, Ser. No. 36,889
Claims priority, application Great Britain, May 13, 1969, 24,437/69
Int. Cl. B41f *17/28*
U.S. Cl. 101—38 A **6 Claims**



A multicolor printing machine for printing on frustoconical or cylindrical articles has a turret carrying article-supporting mandrels which are indexed alternately at printing stations and drying stations. The mandrels are rotated in synchronism with printing cylinders at the printing stations by two bevel gears rotatable in unison about the rotational axis of the turret, the mandrels and cylinders being rotatable about axes substantially radial to the turret axis and the distance between the bevel gears being adjustable to accommodate different sizes of mandrels and printing cylinders. Each printing cylinder is located in position on its drive shaft by axial and radial abutments adjustable to correct any misalignment. During printing the inking mechanism is driven by the printing cylinders, but when the machine is stopped the inking

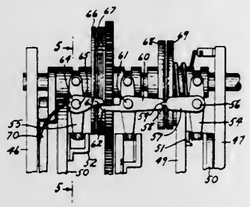
mechanism is separated from the cylinders and driven independently to prevent drying of the ink on the inking rollers. During printing each article is held onto the mandrel by vacuum. After printing is completed, the vacuum is released, the article is nudged by a roller during rotation of the turret to loosen its grip on the mandrel, and the article blown off by compressed air.

3,645,202
LITHOGRAPHIC INKING DAMPENING SYSTEM
Francis K. Lake, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Apr. 3, 1970, Ser. No. 25,507
Int. Cl. B41l *25/14*
U.S. Cl. 101—148 **4 Claims**



Ink and moisture rollers transport directly from their supply source to a form roller and metering means therefor also the arrangement of the rollers to each other and to the master cylinder.

3,645,203
PRESS FOR WEB PRINTING HAVING INTERMITTENT PAPER-FEEDING MEANS
Fred M. Slavic, 220 Fifth Ave., New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,188
Int. Cl. B41f *13/02*
U.S. Cl. 101—228 **2 Claims**

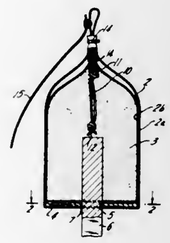


An improved press for intermittent paper web feeding including means for synchronously driving each end of the web through identical and simultaneous motion. Means is provided for improved clutching action, and the maintenance of a variable loop in the web existing between a continuously rotating paper feed supply and the incremental web-feeding means.

3,645,204
METHODS OF PREPARING AND COMPOSING RELIEF PRINTING MEMBER
Earl J. Gosnell, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sept. 15, 1967, Ser. No. 668,133
Int. Cl. B41c ; B41n
U.S. Cl. 101—401.1 **11 Claims**

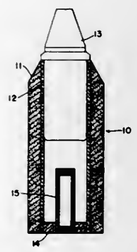
An improved latently composable printing member and methods of preparing and composing the same. A heat sensitive polymer dispersion coating on a dimensionally stable base is placed in thermal contact with infrared absorbing indicia. Selective heating of the coating through the application of near infrared radiation to the absorbing indicia causes the polymer dispersion coating to form an insoluble solid solution in a pattern corresponding to the indicia on the master. The portions of the coating which do not form a solid solution are washed off the base with a solvent to form a relief printing plate.

3,645,205
PACKAGED EXPLOSIVE
Thomas P. Dowling, Fullerton, Pa., assignor to Commercial Solvents Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 704,037, Feb. 8, 1968, now Patent No. 3,472,166, dated Oct. 14, 1969. This application May 8, 1969, Ser. No. 823,004
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 **18 Claims**



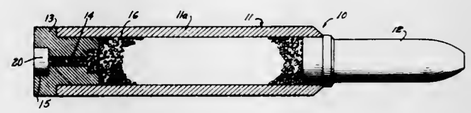
Packaged explosives of the type known as bombing charges are provided. The packaged explosive is composed of a flexible container filled with a deformable explosive. An apertured plate is positioned in the bottom end of the container for receiving and engaging a pusher pole. When the pusher pole is inserted into the container, through the aperture of the bottom plate, the plate engages the pole so as to keep the package aligned on the pole and prevent the packaged explosive from rotating on the pole while the packaged explosive is being positioned at the blast site.

3,645,206
AMMUNITION CARTRIDGE
Joseph B. Quinlan, Philadelphia, Pa., and Paul E. Williams, Elinton, Ill., assignors to The United States of America as represented by the Secretary of the Army
Filed Feb. 19, 1970, Ser. No. 12,659
Int. Cl. F42b *5/18*
U.S. Cl. 102—40 **4 Claims**



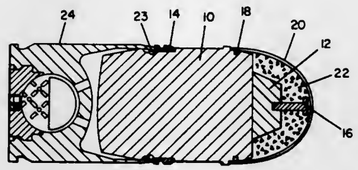
A caseless ammunition cartridge having a completely combustible ignition system for providing improved propellant surface area breakup and ignition in larger caliber ammunition. The ignition system includes a base end plug secured in the rearward end of a propellant support tube which is surrounded by a cylindrical molded charge and has a projectile secured in its forward end. A molded propellant cylinder has one end seated in the base end plug and a propellant tube bonded to its inner surface. A primer assembly has with the propellant cylinder one end, a primer cup containing a primer pellet and a combustible primer seal. A booster assembly has within the other end of the propellant cylinder a booster cup containing an explosive charge and a booster seal.

3,645,207
COMBUSTIBLE MOISTUREPROOF PERCUSSION PRIMER
Edward S. Daniels, Port Clinton, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed May 6, 1969, Ser. No. 822,238
Int. Cl. F42b *5/18, 19/08*
U.S. Cl. 102—40 **5 Claims**



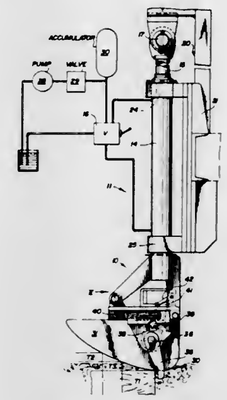
A percussion primer for initiating firing of a cartridge which is fully combustible and which is impervious to moisture vapor. The primer mix is contained in a consumable moistureproof sealed cup-shaped closed member received in a molded propellant support and backed against a molded propellant anvil which function together as a unit attachable to a cartridge.

3,645,208
FUZELESS TARGET PRACTICE CARTRIDGE
John Weinssen; James A. Carrazza; Seymour M. Kaye, all of Dover; John Hoerter, Chatham, and Garry Weingarten, Morris Plains, all of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Feb. 17, 1970, Ser. No. 11,989
Int. Cl. F42b *13/14, 13/44*
U.S. Cl. 102—66 **9 Claims**



A fuzeless target practice cartridge to produce a flash and smoke signal, upon impact of the projectile with the target. This is accomplished by the use of a controllably sensitized pyrotechnic composition, reactive on impact or abrasion, and an ogive-anvil-spike configuration designed to easily rupture upon a low-force impact. The system is made functional by a proper balancing of the sensitivity of the composition and the design of the ogive-anvil-spike configuration depending on the impact force available.

3,645,209
TIE INDEXERS
Helmuth Rolf Erich Von Beckmann, Columbia, S.C., assignor to Tamper, Inc., West Columbia, S.C.
Filed Oct. 2, 1970, Ser. No. 77,438
Int. Cl. E01b *37/00*
U.S. Cl. 104—12 **6 Claims**

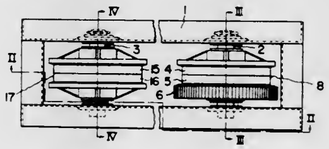


A tie-indexing device suitable for use on tamping machines, which projects beneath the machine and is biased downwardly into the ballast by hydraulic pressure so that the indexer plows through the ballast. A profiled edge is provided on a ballast-engaging shoe at the bottom of the indexer such that as the machine moves forward and the indexer plows through the ballast the profiled edge engages a tie and climbs up and over the tie against the biasing action of the hydraulic pressure. An indexing finger is pivotally mounted on the side of the shoe and projects beneath the bottom profiled edge such that on encountering the edge of a tie during forward motion of the vehicle the indexer is pivoted and trips a switch which provides a command signal to terminate the forward travel of the workhead. The fact that the profiled edge will have climbed on to the tie insures that the finger is always encountered at a uniform position from its pivot point resulting in a uniform distance of travel of the workhead prior to tripping the switch. This insures that the workhead will be stopped at a uniform distance from the edge of the tie regardless of the vertical height of that tie on the roadbed.

ERRATUM

For Class 104—149 see:
Patent No. 3,646,613

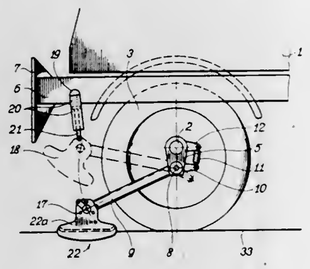
3,645,210
SPRING CENTERING CRANE TROLLEY WHEELS
Tatsumi Tanaka, 225-4 Zaimo-ku-cho, Saga, Japan
Filed Feb. 3, 1970, Ser. No. 8,384
Int. Cl. B60b *17/00;* **B66c** *9/14, 9/16*
U.S. Cl. 105—163 R **2 Claims**



Crane trolley comprising stub axle mounted wheels which are resiliently spaced from the supporting frame. The rollers

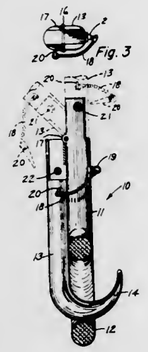
may be hollow, and contain oil boxes, bearings, and spacing springs.

3,645,211
CONVERTIBLE RAIL-HIGHWAY VEHICLE
Herbert Gretzschel, Lochham; Walter Schneider, Witzhelden, and Theodor Schmauder, Schlossberg, all of Germany, assignors to Martin Beifhack Maschinenfabrik und Hammerwerk G.m.b.H., Rosenheim, Germany
Filed Dec. 12, 1969, Ser. No. 884,622
Int. Cl. B61d *15/00*; B61f *9/00*; B62d *61/12*
U.S. Cl. 105—215 C **27 Claims**



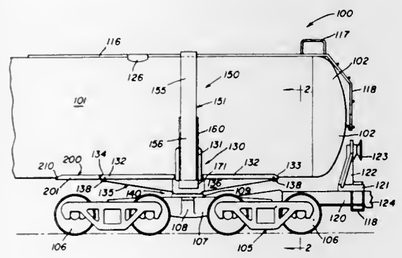
A convertible rail-highway vehicle comprises two frames which are pivoted to the front and rear axles and carry sets of rail-engaging shoes or rollers. The frames are always concealed below the body of the vehicle and are pivotable between raised positions in which the shoes or rollers are out of the way and lowered positions in which the shoes or rollers engage the rails in immediate proximity of the respective wheels to hold the wheels against movement off the top surfaces of the rails. The frames can be locked in their lowered positions and the shoes or rollers are mounted thereon with some freedom of movement about vertical and/or horizontal axes.

3,645,212
STRAPHANGERS DEVICE
Selim V. Dahlstrom, 143 Prospect St., Waldwick, N.J.
Filed Mar. 4, 1970, Ser. No. 19,149
Int. Cl. B65g *7/12*; B61d *49/00*
U.S. Cl. 105—354 **1 Claim**



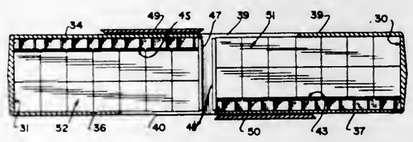
The device for use by a standing traveler in subways, buses or other vehicles. The device serves to aid a person of short stature to reach the overhead strap or support bar in vehicle. The device includes a hooked rod and a hingeable second rod and the handle grip, the hook serving to engage the overhead strap or support bar in the vehicle. The device also includes an attached chain and pin, the pin serving to lock the two bars in alignment and also serves to lock the two bars when in the folding compact position for carrying.

3,645,213
SUPPORT STRUCTURE FOR TANK CAR
William A. Taylor, Sharpsville, Pa., assignor to General American Transportation Corporation, Chicago, Ill.
Filed Jan. 23, 1970, Ser. No. 5,265
Int. Cl. B61d *5/06*
U.S. Cl. 105—362 **11 Claims**



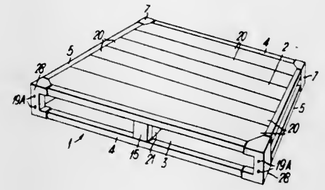
A support structure for a railway tank car including a fluid-tight tubular body shell, first and second truck saddle structures positioned adjacent to the outer ends of the body shell for supporting the same upon associated trucks each carrying draft connections, first and second external support rings respectively surrounding the body shell and first and second elongated support structures respectively positioned between the first and second support rings and the body shell, the elongated support structures being attached along the free side edges thereof at spaced-apart points therealong to distribute stress into the body shell at a corresponding plurality of points.

3,645,214
COMPARTMENT ARRANGEMENT FOR RAILWAY CARS
Gerald McLaughlin, Western Springs, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.
Filed July 5, 1966, Ser. No. 566,701
Int. Cl. B60p *7/14*; B61d *45/00*
U.S. Cl. 105—369 B **1 Claim**



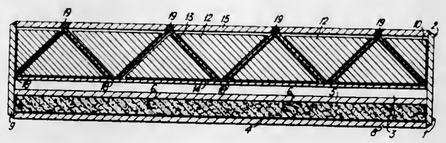
A railroad car having side doorways which are offset from one another towards different ends of the car such that each doorway is positioned opposite a fixed, immovable sidewall of the car. The interior of the car is fitted with two transverse bulkheads or "load dividers" which may be moved longitudinally within the car. A set of "side filler" bulkheads is positioned along each car sidewall.

3,645,215
BOX STRUCTURES, PARTICULARLY PALLETS
Thomas James Kirkpatrick, 14 Aberdelghy Gardens, Lambeg, Lisburn, Northern Ireland
Filed Dec. 22, 1969, Ser. No. 886,993
Claims priority, application Great Britain, Feb. 15, 1969, 8,362/69
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **16 Claims**



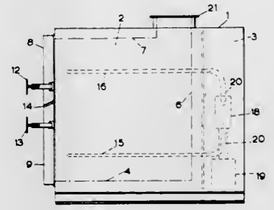
A pallet comprising top and bottom floors, a pair of side frames and a pair of end frames connectable together to form a box frame which when it is assembled is adapted to hold the top and bottom floors in position. Each of the frames has a pair of parallel longitudinal grooves, whereby when the box frame is assembled a pair of peripheral grooves are formed which serve for retaining the floors in position.

3,645,216
SAFES AND SIMILAR SECURITY STRUCTURES
Arthur S. Radford, Wolverhampton, and Ronald J. Brown, Oakengates, both of England, assignors to Chubb & Son's Lock and Safe Company Limited, Wolverhampton, Staffordshire, England
Filed Jan. 29, 1970, Ser. No. 6,758
Claims priority, application Great Britain, Feb. 3, 1969, 5,728/69
Int. Cl. E05g *1/02*
U.S. Cl. 109—82 **8 Claims**



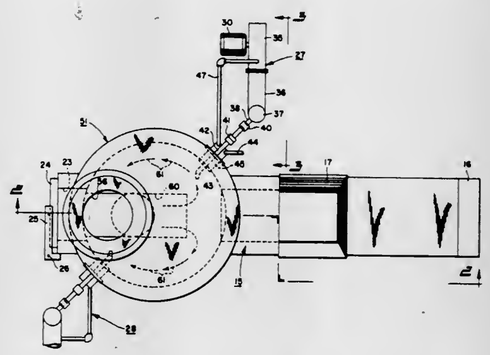
A slab or panel for use in a safe or similar structure comprises a layer of material resistant to drilling and other forms of mechanical attack backed by a layer of material, preferably graphite, which melts and vaporizes but does not substantially react exothermically with oxygen at the temperatures generated by a thermic lance, i.e., of the order of 3,000° C. The melting and vaporization involves the provision of such large amounts of latent heat thus taking several times as long to burn a hole through the slab. The material for resisting mechanical attack preferably comprises nuggets of heard material in a ductile metal matrix and a convenient form of construction there is a single layer of this material and a single layer of the vaporizable material. The vaporizable material is preferably in the form of blocks of triangular section fitted into compartments defined by metallic spacing members supported between a pair of steel plates.

3,645,217
INCINERATORS
Peter Robert Akroyd, Harrogate, England, assignor to P. R. Akroud Limited, Harrogate, Yorkshire, England
Filed Feb. 24, 1970, Ser. No. 13,655
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 A **10 Claims**



The invention comprises an incinerator for burning refuse including a refractory lined front combustion chamber closed at the front by a pair of doors located one above the other and a secondary chamber at its rear, a baffle wall between the two chambers, air ducts along the sides of the combustion chamber venting primary and secondary air through said lining, fan means for supplying said air, a flat hearth for the combustion chamber, and a smoke outlet flue preferably from the secondary chamber. The smoke can be baffled in the secondary chamber to provide a duct and debris settling region and there can be a burner for unburned gases.

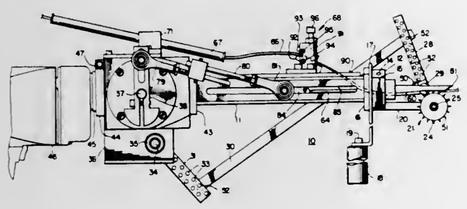
3,645,218
SOLID WASTE INCINERATOR
Leonard A. Davis, Mentor, Ohio, assignor to Garver-Davis Incorporated, Cleveland, Ohio
Filed May 12, 1970, Ser. No. 36,636
Int. Cl. F23g *5/2*
U.S. Cl. 110—8 R **19 Claims**



A method of and apparatus for incinerating a wide range of solid waste materials in a smokeless, odorless manner, Solid wastes are contained within a combustion chamber in a whirling, driving, vortical, rotating envelope of air that is present in an excess of that theoretically required to burn the waste. A combustible fuel is burned within the chamber. The particulates resulting from the combustion of the waste materials are suspended within the resulting burning cyclone of air and fuel, burned, and the effluent vented from the combustion chamber. Preferably, an afterburner is used to

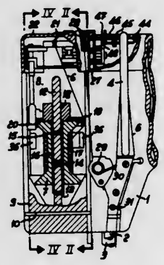
burn any lighter weight particulate matter that may escape from the combustion chamber.

3,645,219
HANDGUN FOR MAKING CUT PILE FABRICS AND THE LIKE
D. L. Jenkins, Box 44, Dalton, Ga.
Filed Nov. 6, 1970, Ser. No. 87,440
Int. Cl. D05c *15/08*
U.S. Cl. 112—80 **9 Claims**



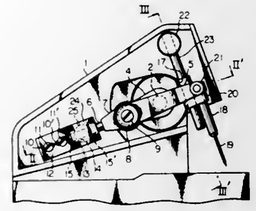
A motor-operated handgun for making designs in carpet and the like and for forming cut pile fabrics by hand including mechanical latching arrangement for locking the yarn while the yarn is cut to produce a cut pile face and an adjustable yarn feed mechanism capable of being set to control the number of stitches per inch.

3,645,220
BOBBIN MOUNT FOR SEWING MACHINE
Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Nov. 24, 1969, Ser. No. 879,418
Claims priority, application Switzerland, Dec. 6, 1968, 18239/68
Int. Cl. D05b *43/00*
U.S. Cl. 112—218 R **7 Claims**



A sewing machine wherein the upper thread spool is held fast on its spindle within the housing provided for it while the thread is wound off the spool in a direction extending substantially in alignment with the spool axis. The cover of the housing may be shifted outwardly together with the spindle which is secured to it to allow removing and replacing the spool. A cap-shaped member fitted loosely over the spool includes a broad flange guiding the thread as it passes off the spool while means are provided to lock the cover in its closed position and to lift the cap-shaped member off the spindle before releasing the cover.

3,645,221
NEEDLE OPERATION DEVICE IN HIGH-SPEED SEWING MACHINES
Tetsuro Hirayama, Tokyo, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 11, 1970, Ser. No. 71,314
Int. Cl. D05b *55/14*
U.S. Cl. 112—221 **4 Claims**



A needle operation device in high-speed sewing machines comprising a crank integrally formed with a reciprocating shaft rotatably mounted in the machine frame of said sewing machine, an actuating arm mounted on said crank for rocking movement relative to the crank, a slide pivoted to one end of said actuating arm and having a sewing needle secured thereto and a mounting member adjustably secured to said machine frame and rotatably receiving a bearing therein, said bearing slidably receiving the other end of said actuating arm.

3,645,222
SELF-THREADING SEWING MACHINE NEEDLE
Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Sept. 24, 1970, Ser. No. 75,055
Int. Cl. D05b *87/00*
U.S. Cl. 112—224 **8 Claims**

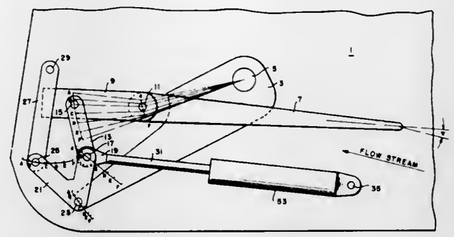


A sewing machine needle is disclosed in which a threading slot extends lengthwise along the needle blade and opens onto the needle eye. A twist is formed in the needle blade so that the portions of the needle blade which are separated by the threading slot are wrapped about each other and stabilized thereby.

3,645,223
HYDROFOIL FLAP CONTROL SYSTEM
Philip C. Whitener, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 16, 1970, Ser. No. 81,301
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H **6 Claims**

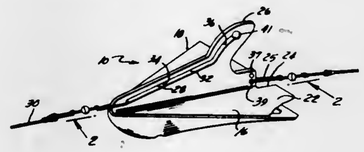
An actuator is connected to a combined hydrofoil and flap, through a bell crank-lever linkage. A change in the foil angle

of attack produces a coincident change in the flap angle. Also the bell crank-lever linkage is connected to the actuator to minimize the effect of the flow stream force on the foil



and flap by continuously matching the mechanical advantage of the actuator to the force required to move the flap and foil.

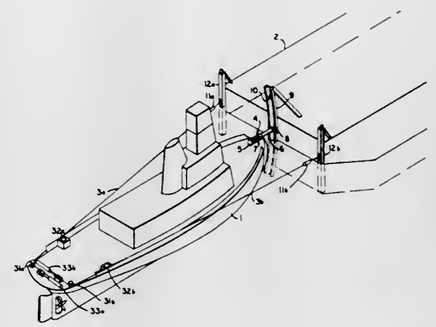
3,645,224
UNDERWATER PLANING DEVICE
Sylvester Haberman, 8515 Forest Grove, Houston, Tex.
Filed Mar. 2, 1970, Ser. No. 15,662
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **12 Claims**



A device designed to travel through water at any of a plurality of depths by means of being towed from a conventional water craft wherein the device may be utilized as a sinker to maintain fishing tackle at a desired depth or as a transporter vehicle for transporting fluids, or the like, beneath the surface of the water. A towline is connected to the device such that the point of attachment of the towline to the device may be readily adjusted. The position of the attach point determines the angular orientation of the device relative to the direction of travel and consequently the effective downward force produced by the device. Fins extend outwardly from a hollow body and provide attitude stabilization as the device travels through water. A diaphragm arranged within the body defines an internal compartment in which fluid could be transported. Pressure equalization means in the form of vents equalize the pressure between the interior and exterior of the body thereby eliminating external static pressure considerations from the structural design and consequently allowing the device to travel at the desired depth.

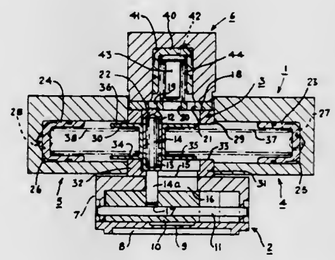
3,645,225
ROUGH-WATER TOWING SYSTEM
Thomas T. Lunde, 6 Locksley Ave., San Francisco, Calif.
Filed Sept. 17, 1969, Ser. No. 858,829
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **14 Claims**

A pusher towboat normally propels a load carrying vessel by pushing contact at the centerline of the stern of the vessel with a towboat-mounted shock absorbing pusher knee. A pair of tensioned rapidly detachable tiller lines interconnecting the vessel and the stern of the towboat lash the vessel and towboat together with a force substantially greater than the astern power of the towboat and stores energy in the pusher knee to rapidly separate towboat and vessel upon detachment of the tiller lines. A connected, but normally nonoperational, pull-towline enables pull-tow control of the vessel upon tiller line detachment. The points of connection of the tiller lines to the vessel, the point of pushing contact between towboat and vessel, and the points of connection of the tiller lines to the stern of the towboat lie in substantially



the same horizontal plane. Relative length of the two tiller lines is adjustable under load but at equal tension, so that towboat thrust is available for steering the load carrying vessel by a variation in longitudinal alignment of the towboat with respect to the vessel.

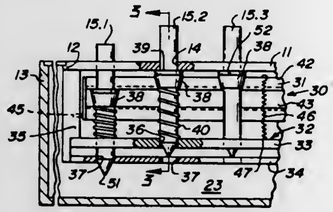
3,645,226
INDICATOR MECHANISMS
Michael Richard Mays, and Philip Norman Paginton, both of London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England
Filed Aug. 10, 1970, Ser. No. 62,552
Claims priority, application Great Britain, Sept. 19, 1969, 46,247/69
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **10 Claims**



1. An indicator mechanism having a detent element movable from either one of two positions through an intermediate third position, the element being resiliently loaded so as to detent into any one of the positions with which it becomes aligned, two resilient means each exerting a force opposing that exerted by the other resilient means, the force exerted by one of the means urging the element towards one of said two positions and the force exerted by the other of the means urging the element towards the other of said two positions, two force-increasing means one associated with each of the resilient means whereby the force exerted by the associated resilient means can be caused to increase to a value sufficient to overcome the combination of the force exerted by the other of the resilient means and the resilient loading of the element when it is detented in that one of said two positions from which the associated resilient means is urging the element towards the other of the two positions, the intermediate

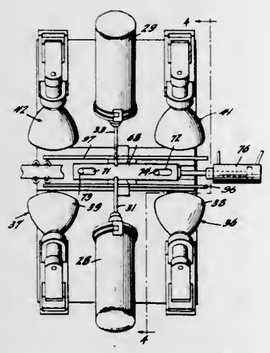
third position being so located that before the element reaches said other of the two positions it becomes aligned with and detents into the third position from which third position it can be released to continue its movement to said other of the two positions only by the application to the element of an opposing force sufficient to overcome the resilient loading on the element.

3,645,227
ILLUMINATED PEGBOARD
Arthur A. Lahmer, Suite 217, 1300 King Albert St., Coquitlam, B.C., Canada
Continuation of application Ser. No. 642,875, June 1, 1967, now abandoned. This application June 6, 1969, Ser. No. 871,778
Int. Cl. G08b *5/00*
U.S. Cl. 116—128 **4 Claims**



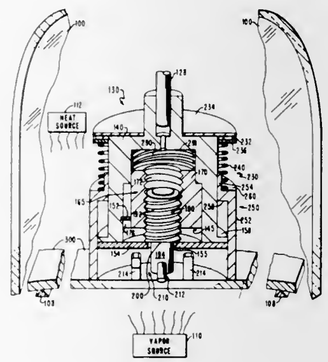
A peg or annunciator board device for offices and plants to indicate disposition of personnel. Aligned rows of pegs of light-transmitting material which glow, when pressed inwards, from light from a source within the device. Automatic latching of a single peg or group of pegs when pressed inwards and individual or multiple peg release.

3,645,228
APPARATUS FOR SEALING THE ENDS OF ELECTRICAL COMPONENTS
Wilhelm Emil Albert Schmidt, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Original application June 15, 1967, Ser. No. 646,360, now Patent No. 3,516,856, dated June 23, 1970. Divided and this application Feb. 27, 1970, Ser. No. 18,401
Int. Cl. B05c *1/02, 11/10*
U.S. Cl. 118—2 **5 Claims**



An apparatus for sealing the ends of electrical components which may be adversely affected by the heating thereof. A plurality of components are held in parallel relationship with one end facing upwardly and a bead of sealing material, such as an epoxy, is successively deposited on each end thereof. The beads of sealing material are then heated by a radiant energy source to soften and liquefy the beads so that each bead flows over the entire end surface of the component and about a terminal lead extending from the end. The radiant energy is focused so that it impinges only on the end of the component. Additionally, the body of the component is shielded from the radiant energy source so that it is not deleteriously heated during the softening of the bead of sealing material. Facilities are provided for holding a plurality of components and for successively dispensing a first and a second bead of sealing material on the ends of each component.

3,645,229
ROTATIONAL MECHANISM
Richard R. Phinney, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,351
Int. Cl. C23c *13/12*
U.S. Cl. 118—48 **14 Claims**

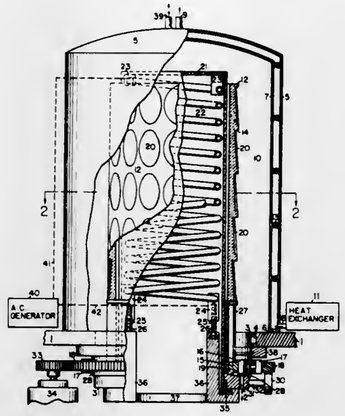


A rotational mechanism is used, e.g., in a vacuum deposition apparatus, for suspending a substrate holder above its stationary supports for rotation free of any bearings within a heated portion of a vacuum chamber. At the beginning of the vacuum deposition cycle a shaft in the rotational mechanism is rotated to enable the mechanism to engage the substrate holder and lift it above its stationary supports due to inertia of the substrate holder. The substrate holder is then rotated during the vacuum deposition, after which the direction of rotation of the shaft is reversed, and the substrate holder is lowered onto its support member, again due to inertia, thus eliminating bearing contact among the rotational mechanism, the substrate holder, and the stationary supports during the vacuum deposition.

3,645,230
CHEMICAL DEPOSITION APPARATUS
William B. Hugle, Palo Alto; Donald G. Pedrotti, Cupertino, and William F. Perrine, Sunnyvale, all of Calif., assignors to Hugle Industries, Inc., Sunnyvale, Calif.
Filed Mar. 5, 1970, Ser. No. 16,796
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.5 **5 Claims**

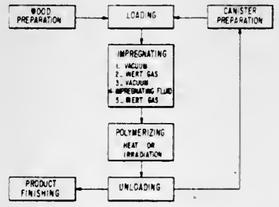
A vertical flow-type deposition apparatus, typically for growing semiconductor layers, including epitaxial layers, upon a large plurality of substrates at one time. These are carried, vertically disposed, upon the outside of a rotatable barrellike susceptor, while an induction heating coil is within

the susceptor. Vapors or gases for processing are admitted at the bottom of a water-cooled enclosure and are exhausted at



the top. The coil is separated from the processing volume by a refractory shield.

3,645,231
APPARATUS FOR PRODUCING WOOD-PLASTIC COMPOSITES
Lawrence G. Barrett, Lynchburg, Va., assignor to The American Novawood Corporation, Lynchburg, Va.
Filed Oct. 27, 1967, Ser. No. 678,584
Int. Cl. C23c *13/08*
U.S. Cl. 118—50.1 **20 Claims**

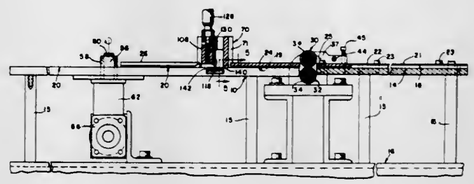


A system for converting wood to a wood-plastic composite in which the steps of pressure impregnation of the wood with a monomer and polymerization of the monomer within the wood by either heat or irradiation is accomplished in a single container.

The system includes an apparatus by which a thin walled container is able to withstand the internal pressure of monomer impregnation and a method and apparatus for handling the container in the polymerization processes.

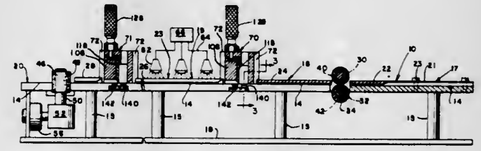
The system further includes an irradiation tank equipped with an irradiation absorbing fluid recirculation system for bacteria control and an inert gas system for displacing the irradiation absorbing fluid from between the submerged containers and the irradiation source. The irradiation source includes a plurality of line sources variable in spacing and in the intensity of irradiation. Means are provided to overcome the spatial variation in radiation produced by the discrete line sources by a time oscillation of the array of line sources with respect to the container.

3,645,232
APPARATUS FOR SIMULTANEOUSLY APPLYING A PLURALITY OF COATINGS TO A SUBSTRATE
Ralph Ephraim Mishler, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Mar. 10, 1970, Ser. No. 18,277
Int. Cl. B05c *5/02*
U.S. Cl. 118—412 **15 Claims**



An apparatus for applying continuously to the surface of a dielectric substrate, simultaneously, a plurality of microthin stripe coatings of even thickness interconnected along adjacent edges, each coating formed from a flowable plastic material having different electrical properties so that adjacent coatings form a linear junction between them having uniform and improved electrical characteristics across the junction between the different materials.

3,645,233
APPARATUS FOR SUCCESSIVELY APPLYING A PLURALITY OF COATINGS TO A SUBSTRATE
Ralph Ephraim Mishler, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Mar. 10, 1970, Ser. No. 18,276
Int. Cl. B05c *5/02*
U.S. Cl. 118—642 **17 Claims**

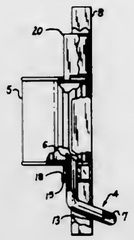


An apparatus for successively applying to the surface of a dielectric substrate, a plurality of parallel microthin coatings with the adjacent edges forming a fine edge overlap, each coating formed from a flowable viscous plastic material having dispersed therethrough particles that exhibit discrete electrical properties so that the adjacent coatings forming the thin line overlapped junction between them have uniform and improved electrical characteristics across the junction between the different plastic materials.

3,645,234
ANIMAL FEEDING DEVICE
Gary J. Schroer, Prairie Village, Kans., assignor to Schroer Manufacturing Company, Inc., Kansas City, Mo.
Filed Sept. 21, 1970, Ser. No. 73,842
Int. Cl. A01k *7/02*
U.S. Cl. 119—18 **11 Claims**

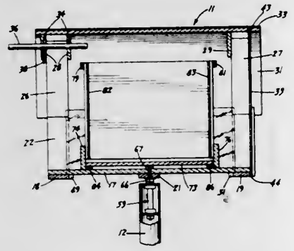
An animal feeding device for mounting on animal cages, for example, cages for primates, monkeys and the like, includes a mounting plate secured to an animal cage and having a bracket extending outwardly therefrom for removably supporting a feeding tube which has one portion extending into the animal cage and an other portion with a beveled and

sharpened end to puncture and penetrate a food container in response to operation of a container moving and holding



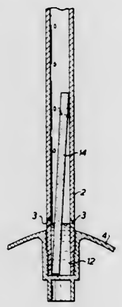
mechanism. A seal member engages the container and feeding tube preventing leakage.

3,645,235
SHELTER FEEDER
John R. Suchla, 2629 2nd St. N., Minneapolis, Minn.
Filed Apr. 13, 1970, Ser. No. 27,908
Int. Cl. A01k *05/00*
U.S. Cl. 119—51 R **10 Claims**



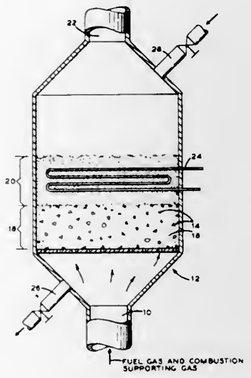
An enclosure having one open side covering a bird-feeding hopper. A bearing assembly rotatably supports the shelter on an upright post. A wind vane is secured to and extends from the open side of the shelter so that the open side of the shelter is always downwind.

3,645,236
METHOD OF AND A DEVICE FOR INTRODUCING A SOLUBLE ADDITIVE INTO A SOLVENT
Prockter T. Pulman, and Geoffrey D. S. Horsfall, both of Rainbow Valve Co. Limited, Uthorpe Road, Stanton, Bury St. Edmunds, Suffolk, England
Filed June 11, 1970, Ser. No. 45,487
Claims priority, application Great Britain, June 12, 1969, 29,732/69
Int. Cl. A01k *7/00, 39/02*
U.S. Cl. 119—81 **6 Claims**



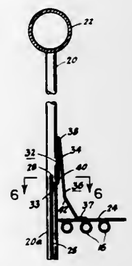
Soluble additive such as medicament in the form of a solid sticklike body is located in a pocket with an overflow arrangement such that the body is immersed at a substantially constant level in solvent which is supplied through the pocket to form a solution of substantially constant strength in a receptacle such as a drinking trough for livestock.

3,645,237
WATER HEATER HAVING FLUIDIZED BED COMBUSTION AND HEAT EXCHANGE REGION
Ram Gopal Seth, Piscataway, N.J., assignor to American Standard Inc., New York, N.Y.
Filed June 10, 1970, Ser. No. 45,084
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **12 Claims**



Water is heated to an elevated temperature or steam is produced, by passing water through heating coils which are embedded in a fluidized bed of inert particles. The heat for the system is produced by combustion of a material such as propane, methane or the like in a lower zone of the fluidized bed. The combustion is stabilized by intermixing small particles and large particles in the lower zone. The large particles are not fluidized but are merely suspended in the upflowing fluid, and the small particles are fluidized in the interstices of the large, relatively stationary particles.

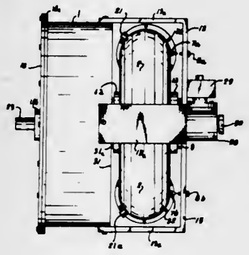
3,645,238
FLEXIBLE SEAL BETWEEN ROOF AND SIDEWALLS OF A STEAM GENERATOR FURNACE
Gerhard W. Suhs, Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Oct. 19, 1970, Ser. No. 81,771
Int. Cl. F22b *37/36*
U.S. Cl. 122—235 G **10 Claims**



A gastight flexible seal structure connecting the vertical tubular sidewalls with the tubular roof at their line of intersection, with the various parts thereof including: a skin casing

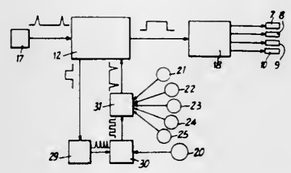
covering the upper surface of the roof tubes; a gastight vertical seal structure sealing the space between the sidewall tubes from air or gas leakage with this seal structure terminating a predetermined distance above the roof elevation; a first flexible seal plate having one edge scalloped and seal welded to the sidewall tubes and the above vertical seal structure, and having a generally upright portion freely extending along the furnace-facing side of the sidewall tubes; and a second seal plate having its upper edge seal welded to the upright portion of the first seal plate and its bottom edge seal welded to the roof skin casing, and with the upper part forming an angle with the vertical and the lower part being bent outwardly from the sidewall tubes with respect to the lower part.

3,645,239
ROTARY PISTON MACHINE
Arnulfo Q. Cena, 108 Volta St., Makati, Rizal, Philippines
Filed Oct. 24, 1969, Ser. No. 869,075
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.07 **8 Claims**



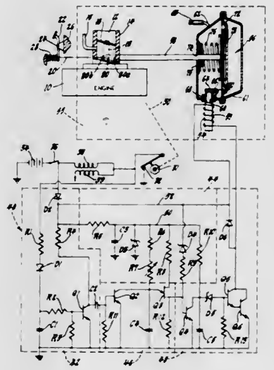
My present invention relates to rotary machines and, more particularly, to a rotary internal-combustion engine having a rotating annular cylinder block within which are housed a pair of double-faced arcuate pistons rotating relatively therewith.

3,645,240
ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE INJECTORS
Louis A. Monpetit, L'Etang-la-Vill, France, assignor to Societe des Procedes Modernes d'Injection Soproml, Les Mureau, France
Filed Feb. 11, 1970, Ser. No. 10,347
Claims priority, application France, Feb. 26, 1969, 6904907
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 EA **7 Claims**



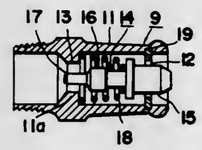
Electronically controlled injector arrangements. An arrangement for adjusting the duration of injection into the cylinders of an internal combustion engine by means of signals produced by a bistable flip-flop controlled by the rotation of the engine, said signals defining the beginning and the end of the successive injections. The adjustment of the duration of injection is provided by delay means including a relaxation oscillator, the pulses produced by which are transformed into a train of rectangular high-frequency signals the duration of which is controlled by a main parameter governing the operation of the engine. These signals are then integrated and when a predetermined amplitude is reached, as defined by other parameters governing the operation of the engine, the end-of-injection signal is generated.

3,645,241
BISTABLE THROTTLE CONTROL SYSTEM
Gerald O. Huntzinger, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 16, 1970, Ser. No. 29,111
Int. Cl. F02d *9/00*
U.S. Cl. 123—102 **3 Claims**



A throttle valve the complete closure of which is prevented by a throttle stop that is advanced by electrically activated vacuum means above a preset speed of an engine responsive to the setting of the throttle valve and retracted below this speed. Pulse generating means connected with the engine provide an input to a timing stage that is operatively connected by capacitor, Zener diode, and amplifier means to means that advance and retract the throttle stop when the speed of the engine is respectively above and below the preset speed.

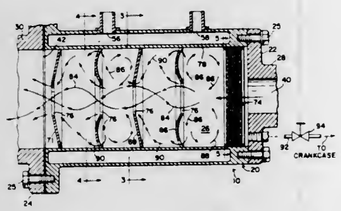
3,645,242
CRANKCASE VENTILATION VALVE
Hideo Horiuchi, Yokohama, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Continuation of application Ser. No. 826,220, May 20, 1969, now abandoned. This application Mar. 31, 1971, Ser. No. 130,025
Int. Cl. F02f *9/00;* **F02m** *25/06*
U.S. Cl. 123—119 B **4 Claims**

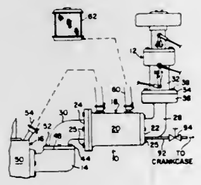


A crankcase ventilation valve located in a conduit connected between the crankcase and the intake manifold of an internal combustion engine, and including a movable rod located in the housing of said valve. The movable rod has a large diameter first metering portion operating in conjunction at all times with a first orifice for metering the flow of

gas through the valve and forming a differential pressure applying area of the rod. In addition, the rod has a second smaller diameter metering portion thereon positioned longitudinally downstream of said first metering portion and operating in conjunction with a second smaller diameter orifice. The second smaller diameter metering portion and orifice act to further reduce the flow rate of gasses through the crankcase ventilation valve at increased negative pressures above a predetermined point, nullify the flow restriction effect of the first orifice and form a smaller differential pressure applying area.

3,645,243
FUEL MIXING AND VAPORIZING DEVICE FOR INTERNAL COMBUSTION ENGINES
Nils C. Ohlsson, Route 2, Box 534, Ashland, Wis.
Filed Oct. 27, 1969, Ser. No. 869,627
Int. Cl. F02m *31/10, 29/04*
U.S. Cl. 123—122 A **29 Claims**

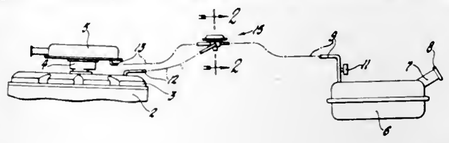




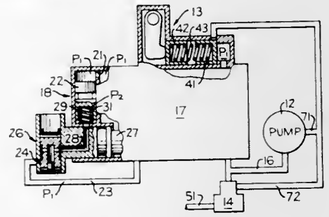
A fuel mixing and vaporizing device adapted to be connected between the carburetor and the intake manifold of an internal combustion engine and comprising a series of baffle plates spaced longitudinally apart in a heating and mixing chamber which is defined by a heat exchange jacket of tubular configuration. Fine mesh screens are disposed in the heating and mixing chamber between the baffles and the inlet end of the chamber. Hot water from the engine's coolant system is circulated through the jacket to preheat the fuel-air mixture which is drawn through the chamber by the suction created by operation of the engine. The screens provide a mechanical obstruction to create turbulence in the mixture entering the chamber, thereby mixing the fuel and air constituents. The baffle plates are configured and arranged to create more turbulence for mixing the fuel with the air, thereby causing the fuel droplets to break up into a fine mist which is deflected into intimate wiping contact with the heated interior wall surface of the jacket.

3,645,244
SYSTEM FOR MIXING AIR WITH FUEL TANK VAPOR
Robert Seyfarth, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of application Ser. No. 2,050, Jan. 12, 1970, now abandoned. This application Mar. 31, 1971, Ser. No. 129,938
Int. Cl. F02d *19/00*
U.S. Cl. 123—136 **10 Claims**

A system for mixing air with fuel tank vapor in which fuel vapor stored in a fuel tank is used to open a diaphragm operated mixing valve to meter fuel vapor and air into the intake manifold of an internal combustion engine.

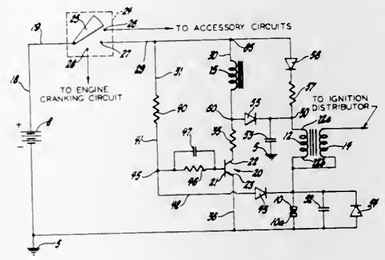


3,645,245
SPEED LIMITER FOR HYDRAULIC GOVERNOR
James T. Hammond, Tremond, and John H. Parks, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 4, 1970, Ser. No. 69,705
Int. Cl. F02d *1/12*
U.S. Cl. 123—140 FG **5 Claims**



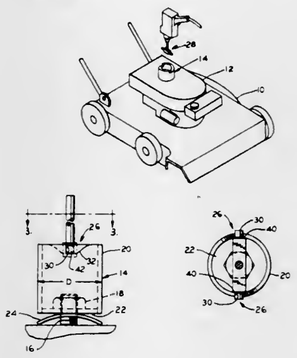
An engine speed limiting system including a hydraulic governor responsive to a reference fluid pressure in a main conduit for providing a variable rate of fuel transfer, a pump for delivering fluid into the main conduit, a regulating valve for selectively adjusting the reference fluid pressure and a limiting valve which is biased by variable fluid pressure for another source to establish a maximum value for the reference fluid pressure.

3,645,246
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM HAVING INCREASED IGNITION SPARK ENERGY
Robert E. Campbell, and Gerald O. Huntzinger, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 39,664
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **4 Claims**



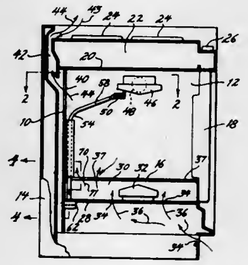
An improved internal combustion engine ignition system having increased ignition spark energy. The series combination of an inductor and the current carrying electrodes of a transistor is connected in parallel with the series combination of the ignition coil primary winding and the ignition coil primary winding switch across the battery. The transistor conducts through the current carrying electrodes with each opening of the ignition coil primary winding switch to complete an energizing circuit for the inductor and extinguishes with each closing of the ignition coil primary winding switch to interrupt the energizing circuit for the inductor. The potential induced in the inductor by the collapsing magnetic field thereof is applied across the ignition coil primary winding in series aiding relationship with the potential of the battery to increase the rate of rise of the ignition coil primary winding current.

3,645,247
MOTOR STARTING APPARATUS
Pete R. D'Ambrosio, 3126 West 46th St., Cleveland, Ohio
Filed June 12, 1970, Ser. No. 45,788
Int. Cl. F02n *11/14, 11/12, 15/10*
U.S. Cl. 123—179 SE **1 Claim**



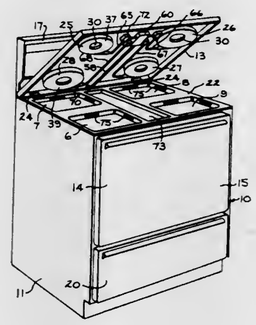
An apparatus for starting internal combustion engines of the type used on lawnmowers, snowblowers, and the like. The apparatus includes a cup-shaped driven member of tubular configuration adapted to be connected to the drive shaft of an engine. The upper edge of the driven member has diametrically opposed, inwardly extending recesses. A drive member having a shank for receipt in a power-driven chuck and a transversely extending end portion for engaging the recesses. The driven and driving members are arranged to provide smooth engagement and disengagement with no "-kick-back."

3,645,248
CONSTANT BURNING PILOT FOR DOUBLE BURNER OVEN
Wayne T. Kemp, Kutztown, Pa., assignor to Caloric Corporation
Continuation of application Ser. No. 477,477, Aug. 5, 1965, now abandoned. This application May 27, 1968, Ser. No. 739,976
Int. Cl. F24c *3/10*
U.S. Cl. 126—39 E **5 Claims**



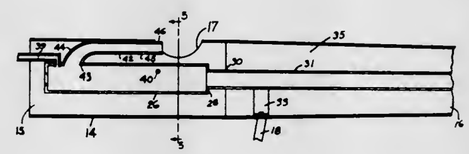
Means for preventing extinguishment of a pilot burner in the oven of a gas burning stove either by envelopment with products of combustion or due to concussion which results when the oven door is slammed shut.

3,645,249
GAS COOKTOP WITH INTEGRAL BURNERS
Wayne L. Henderson, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company
Filed May 5, 1970, Ser. No. 34,801
Int. Cl. F24c *3/00*
U.S. Cl. 126—39 H **4 Claims**



A gas cooktop that is provided with a plurality of integral burners such that the cooktop may be hinged adjacent its rear edge to an underlying support housing so that the cooktop may be raised in the front for cleaning and servicing therebeneath. Each integral burner has a burner opening in the cooktop and an annular pan sealed about its inner and outer peripheries to the underside of the cooktop to form a burner manifold. Downwardly inclined radial gas ports are formed in the manifold to create a flame pattern within the burner opening. A separate source of secondary air is furnished beneath each burner and the air comes from all sides to flow through the burner opening by using a partitioned cover plate beneath the cooktop. A utensil-supporting grid is centered over each burner and it has a central annular flame spreader and an outer flame diverter to keep the cooktop from being overheated in the area surrounding each burner.

3,645,250
ORCHARD-HEATING UNIT
Donald E. Porter, Route 2, Box 213-A, and Ray A. Paulus, Route 1, Box 9, both of Prosser, Wash.
Filed June 8, 1970, Ser. No. 43,994
Int. Cl. A01g *13/06;* **F23c** *3/02*
U.S. Cl. 126—59.5 **3 Claims**

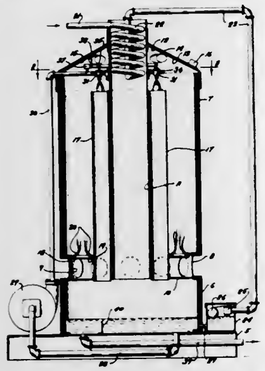


An orchard-heating unit is described having an outer tubular casing and a pulse-type jet combustion chamber and accompanying exhaust tube coaxially mounted therein. The casing has a side opening with an air intake line extending from the side opening to the combustion chamber.

3,645,251
WATER HEATER

Robert B. Black, 2925 Denver St., Corpus Christi, Tex.

Filed Mar. 31, 1970, Ser. No. 24,206
Int. Cl. F24h 1/10
U.S. Cl. 126—359 14 Claims



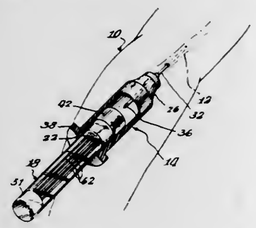
A water heater of the type in which spray particles of the water to be heated are brought into contact with the products of combustion of the fuel used for heating the water, the heater including a burner, a stack, and means providing a flow path having runs extended in different directions from the burner to the stack, and an accumulating chamber for heated water below the stack. Means are also provided for circulating water from the accumulating chamber to water spray nozzles delivering water spray into a run of the flow path extended downwardly into the water accumulating chamber, for preheating the feed water by bringing it into heat exchange relation with the products of combustion, and for passing the water through a water jacket for the combustion chamber after the water has been heated by contact with the products of combustion.

A water spraying nozzle is also provided having a chamber with two water inlets, one arranged axially of the water spray delivered from the nozzle and the other arranged tangentially, with control means for regulating the portion of water introduced axially and tangentially.

3,645,252
APPARATUS FOR SAMPLING BLOOD OR THE LIKE FLUID

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Continuation-in-part of application Ser. No. 741,024, June 28, 1968, now abandoned. This application Dec. 5, 1968, Ser. No. 781,386
Int. Cl. A61b 5/14
U.S. Cl. 128—2 F 32 Claims



An elongate vessel having a blind end and an open end has a plurality of lengths of capillary tubing mounted on its interior in a removable assembly, the lengths being parallel to one another and axially arranged relative to the vessel. One end of each length of tubing is closed off and the other end is open. All of the lengths of tubing are mounted in a header that is disposed adjacent the open end of the vessel, the open ends of the lengths of tubing being in communication with the chamber formed in the vessel between the header and the open end, the open end being provided with a closure that includes a diaphragm capable of being pierced by a cannula without leakage. On assembly and closing of the vessel, at least the end chamber is evacuated thereby also evacuating the interior of each of the lengths of capillary tubing. The interior chamber may also be evacuated to prolong storage life, in which case there is a bleed passageway between the two chambers which preferably is capable of being blocked when the apparatus is ready for use. At that time or subsequently the interior chamber may be connected to atmosphere to enable facile withdrawal of the header with the filled lengths of tubing. A valve arrangement provides for the connecting of the chambers, their being disconnected one from the other and the connecting of the interior chamber with the atmosphere.

In use, the closure end is inserted into the socket of a cylindrical receptacle that has a double-ended needle cannula in its end wall, the exterior end being pierced into the blood vessel of a patient. When the collecting vessel is pushed home into the receptacle, the interior end of the cannula pierces the diaphragm, the vacuum in the end chamber and capillary tubing lengths draws blood into said end chamber and lengths, after which the entire apparatus is removed from the patient's blood vessel. A plurality of capillary tube lengths can thus be filled at bedside quickly and conveniently and thus be ready for centrifugation and further processing. The header preferably is secured to the closure of the collecting vessel so that after the lengths of tubing are filled with the sample fluid, the separation of the closure from the remainder of the closed collecting vessel carries all of the lengths of tubing with it, thus rendering them easily handled thereafter. Where the interior chamber has been connected to atmosphere, the closure is easily removed with a minimum of effort.

3,645,253
INSTRUMENT FOR THE WITHDRAWAL OF BODY FLUIDS

Bastiaan Cornelis Goverde; Rijkent Hendrik Drost, both of Oss, and Bernardus Louwerens, Berghem, all of Netherlands, assignors to Organon Inc., West Orange, N.J.

Filed Nov. 4, 1969, Ser. No. 873,903
Claims priority, application Netherlands, Nov. 12, 1968, 6816121
Int. Cl. A61b 10/00
U.S. Cl. 128—2 F 7 Claims

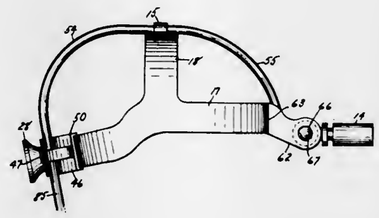


An improved syringe for the withdrawal of body fluids, especially adapted for transport and storage as well as for the centrifugation of the fluid samples, preferably blood samples, comprises a tube having a hermetically end, the closure of which, being a stopper or cap, is entirely or partly made of resilient material, through which a needle, preferably of stainless steel, extends, which ends in or is tightly pressured against a piston mounted in the tube. Said piston is preferably provided with a concave at the side where the needle ends. Thus a hermetically sealed compartment is obtained through which the needle extends. Said Compartment is suitable for aseptic storage of auxiliaries such as anticoagulants and/or antiseptics.

3,645,254
SURGICAL LIGHT

Charles Burton, 601 North Broadway, Baltimore, Md.

Filed Apr. 17, 1970, Ser. No. 29,412
Int. Cl. A61b 1/06
U.S. Cl. 128—23 1 Claim

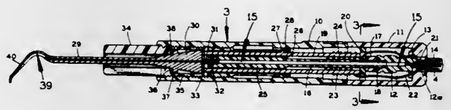


A surgical light of a type adapted to be worn on the head of a user, including a harness element, a fiber optic light carrier element, and a light projecting element carried by said harness element, said harness element having frictional retaining means thereon engaging said light carrier element at a plurality of points therealong, said light projecting element forming a socket, a free end of said light carrier element being maintained in tensionless condition within said socket in the absence of other retaining means, whereby said light carrier element may be conveniently detached for use with other equipment, or for purposes of sterilization.

3,645,255
ULTRASONIC TOOTH-CLEANING APPARATUS

Seymour Robinson, Miami, Fla., assignor to Hydrosonic Corporation, Miami, Fla.

Filed Feb. 2, 1970, Ser. No. 7,607
Int. Cl. A61h 1/00
U.S. Cl. 128—24 A 4 Claims

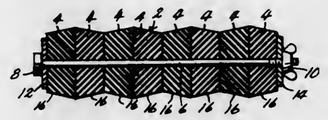


A dental hand-piece including a ceramic ultrasonic transducer energized by a cable connecting an electronic generator for oscillating each one of a plurality of interchangeable treatment tools retained in the hand-piece. Each of the tools having a bore therethrough. A coupling device for engaging a selected tool with the transducer for oscillation and conducting water therethrough. A water conducting conduit through said transducer and said coupling for conducting pressurized water to flow from the end portion of the tool secured in said hand-piece for ultrasonically cleaning teeth and massaging gums and flushing same with water.

3,645,256
MASSAGE-EXERCISER DEVICE

Robert W. Morrison, 801 North River Road, Independence, Mo.

Filed Mar. 25, 1970, Ser. No. 22,488
Int. Cl. A61h 15/00
U.S. Cl. 128—57 9 Claims

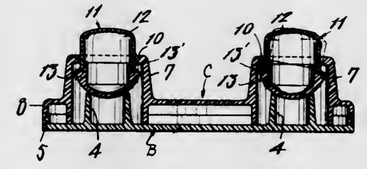


A massage-exerciser device consisting of a number of resilient discs of frustoconical shape assembled in stacked coaxial relation to form a roller having peripheral ribs and grooves, said discs being reversible whereby to vary the pattern of said ribs and grooves, hard and soft spacers adapted to be inserted selectively between said discs whereby to increase or decrease the effective hardness of the roller, and a clamp for applying a variable axial compressive load to said roller, also to vary the effective hardness thereof, and a frame for carrying a plurality of said rollers rotatably in parallel, spaced-apart relation.

3,645,257
MASSAGE TOOL

Takeo Nakayama, 11-19, 5-chome, Minami-Senji, Arakawa-ku, Tokyo, Japan

Filed Aug. 24, 1970, Ser. No. 66,308
Claims priority, application Japan, Apr. 28, 1970, 45-41641
Int. Cl. A61h 7/00
U.S. Cl. 128—60 8 Claims



A message tool is constructed entirely of molded plastic so as to be more economical, lighter in weight and more easily used than prior art devices. The construction provides a simple two-piece plastic housing which holds pivotal message members of plastic which protrude from the housing for bodily contact with a patient, the housing being manipulatable to effect a massaging action of the message members. The construction provides concentric molded collars and skirts on the housing members which effect support sockets for the message members and rigidifying means for the housing.

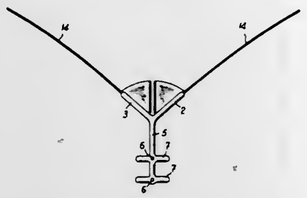
3,645,258
INTRAUTERINE DEVICE

Charis Aka Charilaos George Massouras, 93 Ilissou, Athens, Greece

Filed Mar. 17, 1970, Ser. No. 20,229
Claims priority, application Greece, Apr. 8, 1969, 37,193; Sept. 18, 1969, 38,223
U.S. Cl. 128—130 20 Claims

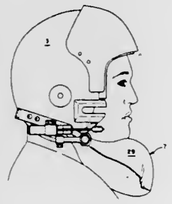
The invention concerns a gynaecologycal device for insertion in a woman's womb, i.e., an intrauterine device. This device includes a Y-shaped flexible support means, the branches of which are each provided with a fanlike, inwardly

extending membrane covering at least part of the space between the two branches. This intrauterine device has the



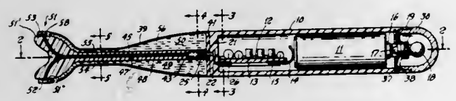
advantage of enabling its part which penetrates into the uterus to unfold after introduction therein so as to cover up practically the whole internal wall of the uterus.

3,645,259
CREWMAN'S HEAD POSITIONING AND RESTRAINING DEVICE
Marvin Schulman, Broomall, Pa., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 23, 1970, Ser. No. 83,378
Int. Cl. A42b *3/02*
U.S. Cl. 128—133 **7 Claims**



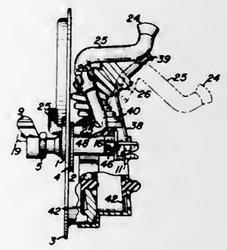
Subject invention relates to novel and improved apparatus for maintaining an individual's head in an optimum position with respect to other portions of his body during the application of high acceleration and/or deceleration forces thereon. The improved apparatus includes a normally noninflated inflatable bag which is positioned beneath the pilot's chin and which is removably secured at opposite ends to the ear lobe portions of the pilot's helmet, and means for quickly inflating the bag when a high acceleration or deceleration force occurs. The bag is designed such that in its noninflated condition, it may be folded into a compact band that is readily and comfortably attached to the chin strap of the helmet.

3,645,260
DENTAL DESENSITIZER
William R. Cinotti, Glen Ridge, N.J.; Joseph Panico, Arlington, and Robert J. Barton, Woburn, both of Mass., assignors to Health Systems, Inc., Woburn, Mass.
Filed July 17, 1970, Ser. No. 55,916
Int. Cl. A61n *35/00*
U.S. Cl. 128—172.1 **9 Claims**



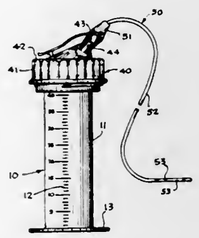
A dental desensitizer apparatus which includes a hollow dielectric housing having therein a source of electrical energy connected to a current regulating means connected to and for activating a lamp carried at one end of said housing. Said means being operative to light said lamp only when the current output of the regulating means is of a selected amperage. A translucent cover closing said housing across said lamp and an oral operating extension selectively separable from said housing attached to the other end of said housing. Said extension being of a translucent soft and flexible dielectric material and having formed therein a pair of cavities each communicating with a separate porous spongelike pad disposed on opposite sides of the tip of the extension. Electrical connection is made between each of said pads and the output of said regulating means.

3,645,261
DRINKING AND RESUSCITATION MASK
Allan L. West, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 4, 1970, Ser. No. 60,878
Int. Cl. A62b *18/00*
U.S. Cl. 128—145.5 **4 Claims**



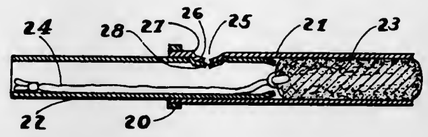
An improved protective mask having a drinking and resuscitation means and the methods of drinking and resuscitating with the mask; the improvement being a cam and a lever system for positive and quick positioning of the breathing tube and drinking mouthpieces within the mouth of the mask wearer to provide a fail-safe arrangement which obviates violation of the protective integrity of the mask.

3,645,262
VOLUMETRIC INFANT FEEDING UNIT
Robert Emmet Harrigan, Westerville, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 5, 1969, Ser. No. 874,161
Int. Cl. A61j *09/00*
U.S. Cl. 128—222 **1 Claim**



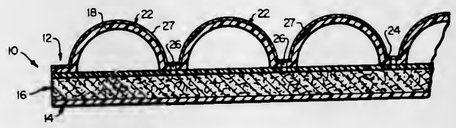
An infant feeding unit for the feeding of precise quantities of formula to an infant and which comprises a container calibrated for accurate measurement of liquid contents within the container and including a nipple and a retaining cap for retaining the nipple on the container. Included in the unit is a transfer cap engageable with both the calibrated container and a conventional infant feeding container, and including a projecting hub. The transfer cap is used to facilitate transfer of formula from the conventional container to the calibrated container, the hub being adapted for engagement with an infant feeding catheter whereby, when attached to the calibrated container, the unit can be used for feeding of an infant by the gavage method when the infant cannot be fed orally.

3,645,263
LOCKING ARRANGEMENT FOR TUBE-TYPE APPLICATORS FOR TAMPONS AND THE LIKE
John D. Bates, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Aug. 21, 1969, Ser. No. 852,032
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **9 Claims**



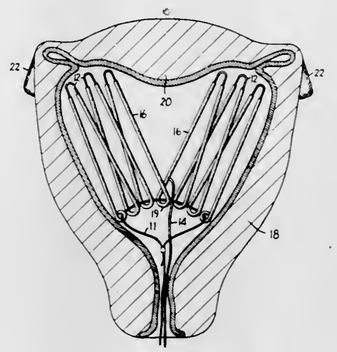
An improved locking arrangement for a tampon applicator of the type employing inner and outer tubes with a tampon seated in the outer tube and in which the inner tube is telescopically movable to eject the tampon or similar ejectable element. The improved arrangement temporarily locks together the inner and outer tubes to prevent premature separation during handling and processing. The locking arrangement is formed by punching through the wall of the outer tube, in an area where the inner and outer tubes overlap, an aperture defining at least one forward pointing, downwardly bent, triangular-shaped tab with a convex base depending from a concavely arcuate hinge line. The concavely arcuate hinge line from which the convex base the triangular-shaped tab downwardly depends, provides a stable construction which prevents the tab from losing its downward bend, due to its natural resilience until the tubes are manually pushed together by the user to eject the tampon. The aperture forming the locking arrangement may be circular and define a plurality of downwardly bent triangular segments with their convex bases and concavely arcuate hinge lines collectively forming the circumference of the aperture.

3,645,264
ABSORBENT PAD
John P. Gallagher, 1519 North Ocean Way, Palm Beach, Fla.
Filed Nov. 5, 1970, Ser. No. 87,042
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **3 Claims**



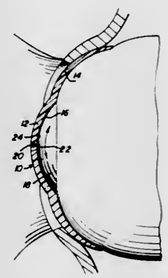
An absorbent pad comprising a plurality of layers including at least a pneumatic cellular layer, a liquid absorbent layer and a bottom liquid impervious layer, the pneumatic cellular layer comprising a pair of plastic sheets having a plurality of air cells extending between opposed surfaces thereof, portions of the opposed surfaces of the sheets being sealed to each other to form partition walls between adjacent cells and liquid permeable perforations extending through the partition walls, is provided with a fluid or elastomeric coating of a nonirritating silicone composition on the upper surface of the cellular layer to enhance patient comfort and reduce sticking of the patient's body thereto.

3,645,265
INTRAUTERINE CAUTERIZING DEVICE
Gregory Majzlin, 92 Whitman Drive, Brooklyn, N.Y.
Filed June 25, 1969, Ser. No. 836,497
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.13 **2 Claims**



The present invention relates to a spring member particularly adapted for use in cauterizing the uterus. One potentially large application of this is in cauterization of the openings of the fallopian tubes to prevent pregnancy.

3,645,266
APPARATUS FOR REMOVING FOREIGN BODIES FROM THE CORNEA OF THE EYE
Loran B. Morgan, 127 West 21st Ave., Torrington, Wyo.
Filed Dec. 29, 1969, Ser. No. 888,526
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **4 Claims**

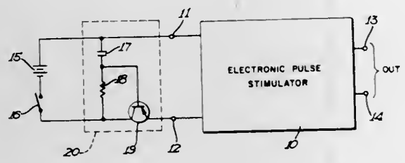


Foreign bodies are removed from the cornea of the eye by natural corneal movement relative to a special contact lens placed in contact therewith. The eye is anesthetized before the contact lens is applied. The lens is provided with one or more openings in its central portion contacting the corneal epithelium so as to form cutting edges along which the epithelium embedding the foreign bodies, is dissected.

3,645,267
MEDICAL-ELECTRONIC STIMULATOR, PARTICULARLY A CAROTID SINUS NERVE STIMULATOR WITH CONTROLLED TURN-ON AMPLITUDE RATE

Norman R. Hagfors, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 29, 1969, Ser. No. 872,150
Int. Cl. A61n 1/36
U.S. Cl. 128—421 11 Claims

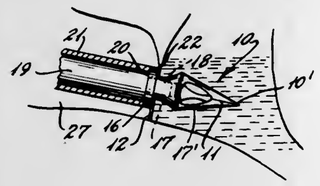


Electronic circuitry for providing electrical stimulation signals to a selected portion of the body including circuitry for automatically gradually increasing the amplitude of only the initial output stimulating signals to a predetermined level which is maintained until turnoff.

3,645,268
DISPOSABLE, PRESTERILIZED, SELF-LOCATING AND PIERCING EVACUATOR WITH EJECTOR TUBE

Dagoberto Capote, 1075 Mullins Sta. Road, Memphis, Tenn.

Filed Dec. 10, 1969, Ser. No. 883,718
Int. Cl. A61b 17/34; A61m 27/00
U.S. Cl. 128—347 3 Claims



The present invention is a simple, inexpensive and consequently disposable, self-piercing and locating combination evacuator and ejector tube which can be encased in a sheath, presterilized ready for use, and includes a spearhead-type body with spaced cutting edges diverging from a pointed top rearwardly, and with a shoulder or flange spaced beyond the rear limits of said cutting edges, with a reduced portion therebetween so that when the device is used to pierce a membrance such as an eardrum, skin or other body portion, such skin or membrane will be disposed in such reduced portion with the handle or ejector tube removed, and the device left in the incision until healing has occurred, whereupon it can be readily removed. Thus the evacuator is of a construction to have superior holding qualities, to provide minimum interference with nature's healing, and is of a composition readily recognizable as suitable for implantation in the human body.

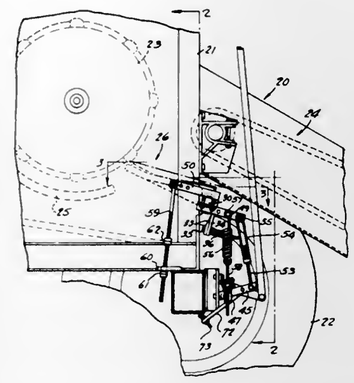
ERRATUM

For Class 130—26 see:
Patent No. 3,646,373

3,645,269
THRESHING MACHINE

Henry C. Peruski, M-19, Ubly, Mich.

Filed Apr. 7, 1970, Ser. No. 26,219
Int. Cl. A01f 12/00
U.S. Cl. 130—27 JT 8 Claims

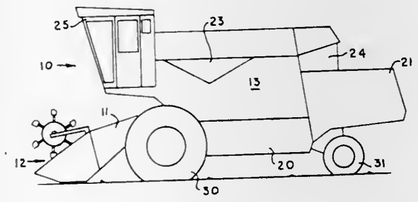


A threshing machine in which pressure vibrator fingers are positioned beneath a conventional rotatable threshing cylinder for cooperation therewith to thresh grain. The fingers are mounted so that a rock coming in contact therewith will cause the fingers to move downwardly permitting the rock to fall to a lower conveyor without damage to the threshing machine. The fingers may be restored to threshing position by the actuation of a manually controlled lever from the operator's station.

3,645,270
AXIAL FLOW THRESHING AND SEPARATING UNIT CREATING AN AIRFLOW ALONG THE GRAIN PAN

Edward William Rowland-Hill, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of application Ser. No. 790,145, Jan. 9, 1969. This application Nov. 24, 1969, Ser. No. 879,216
Int. Cl. A01f 12/20
U.S. Cl. 130—27 T 9 Claims

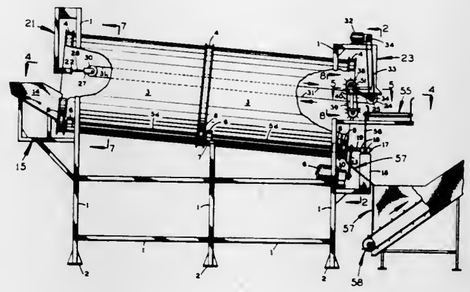


An axial-flow-type combine has threshing and separating unit or units with rotor or rotors creating an airflow through the concaves onto the grain pan to assist in the movement of the grain along the grain pan and to remove chaff and other light material from the grain. The separator rotor or rotors have control means in the form of radial discs to restrict the flow of air through the concaves.

3,645,271
MACHINE FOR CUTTING STEMS FROM LEGUME PODS

Harold R. Arve, and William T. Queen, both of 25320 S.W. 108 Ave., Goulds, Fla.

Filed Apr. 6, 1970, Ser. No. 25,652
Int. Cl. A01d 55/22; A23n 15/00
U.S. Cl. 130—30 R 1 Claim

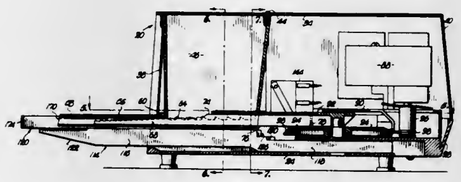


An agricultural machine for continuously cutting the stems from legumes, such as the edible immature pods of pole and bush beans. The machine includes a power-rotated tilted drum for continuously conducting field-picked stem-retained pairs of beans fed into the high end thereof. The drum has internal hooks adapted to raise and drop the bean pairs straddling a cable conveyor which conducts the beans to a power cutter in the lower end of the drum for cutting the stems from the beans and gravitating the latter onto a conveyor for transport to a packing destination.

3,645,272
AUTOMATIC CIGARETTE-MAKING MACHINE

Ray T. Jenkins, Kansas City, Kans.; Roy C. Degenfelder, Independence; Leonard Bieri, Jr., Lee's Summitt, both of Mo., and John J. Tetyak, Boca Raton, Fla., assignors to Jenkins & Ott, Inc., Kansas City, Kans.

Filed Oct. 13, 1969, Ser. No. 865,627
Int. Cl. A24c 5/02, 5/32, 5/42
U.S. Cl. 131—21 R 17 Claims

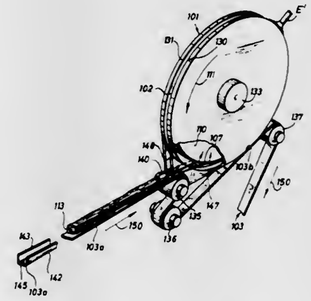


An automatic cigarette-making machine for home, office, or club use, the machine having a receptacle for receiving loose tobacco from which the cigarette is to be made, there being means carried by the machine for positioning a hollow cigarette tube with respect to the receptacle and in communication therewith; and feeder means for delivering the tobacco from the receptacle into the cigarette tube whereby to make up the finished cigarette, there being a motor coupled with the feeder means whereby the forming of individual cigarettes may be automatically accomplished upon actuation of the machine.

3,645,273
METHOD AND APPARATUS FOR MAKING FILLERS OF FIBROUS MATERIAL

Willy Richter, Hamburg-Bergedorf, Germany, assignor to Hauni Werke Korber & Co. K. G., Hamburg-Bergedorf, Germany

Continuation of application Ser. No. 594,270, Nov. 14, 1966, now abandoned, Continuation of application Ser. No. 275,164, Apr. 23, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 96,533, Mar. 17, 1961, now abandoned. This application May 12, 1969, Ser. No. 826,069
Int. Cl. A24c 05/18
U.S. Cl. 131—84 B 2 Claims



Apparatus for forming a cigarette rod or the like including a horizontally disposed relatively narrow endless belt conveyor which receives a stream of shredded tobacco and delivers the same to a suction disk conveyor rotating on a horizontal axis above the belt. The discharge end of the belt is spaced from the periphery of the disk, the space therebetween is encased in a narrow chamber forming member which contains a beating roller which drives the tobacco shreds off the belt and on to a narrow groove on the periphery of the disk. The bottom portion of the groove is foraminous so that the tobacco is held in the groove by the flow air into the interior of the disk. In a modification, the chamber is replaced by fixed parallel guides and the belt is arranged to extend around rollers which cause the belt to move away from the disk at the discharge end thereof, and then back toward and against the periphery of the disk so that the tobacco in the groove is pressed thereinto by the belt at a location downstream from the guides, after which the belt is arranged to return over rollers, to its intake end. A rotary trimmer removes excess tobacco extending radially beyond the groove at a location downstream from that where the belt pressing takes place, and a conventional stripper and belt system removes the trimmer rod stream from the disk and passes it to and through a wrapping and sealing device.

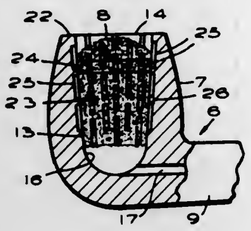
3,645,274
SMOKING PIPE

Herbert A. Lebert, 25 Windsor Drive, Hillsborough, Calif.

Continuation-in-part of application Ser. No. 788,449, Jan. 2, 1969, now abandoned. This application Apr. 13, 1970, Ser. No. 27,598
Int. Cl. A24f 5/00
U.S. Cl. 131—198 R 4 Claims

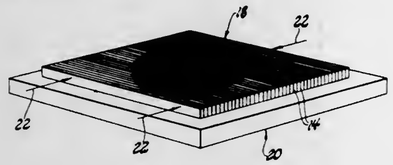
A smoking pipe having interrupted channels on the interior wall of the bowl that extend downwardly from the rim to adjacent the bottom of the bowl interior, the dimensions of the channels where they open into the bowl being such that tobacco particles exceeding a predetermined size will not crowd into the channels. Moreover, the channels provide air-entrance spaces through which air may be drawn

downwardly over and around the glowing ember of the burning tobacco and into the smoke-producing zone directly below the glowing ember. The channels are large enough so that the indrawn air is much lower in temperature than if the air were drawn through the glowing ember, thus avoiding



distillation of high-temperature smoke fractions (temperature of about 1,000° to 1,600° F). However, the channels are small enough that the indrawn air will be heated to the proper range to drive off or distill the low-temperature smoke fractions (temperature range of about 400° to 1,000° F.).

3,645,275
METHOD OF MAKING HAIRPIECES
Clara F. Nolen, 2253 Hampton Road, Pontiac, Mich.
Filed Apr. 3, 1970, Ser. No. 25,426
Int. Cl. N45g *3/00*
U.S. Cl. 132—5 **6 Claims**



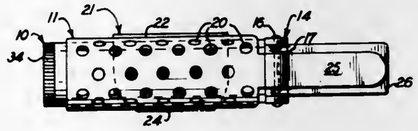
An improved method of making a hairpiece of the type worn to cover a bald spot or the like on a human head. The method includes the obtaining of the proper pattern from the wearer and the preparation of a form on which the artificial hair is laid to the shape of the bald spot to be covered. The hair is laid in a retaining and transfer means, filling the desired pattern and following which the hair and the means are transferred to a frame for manufacture of the hairpiece base. The inner ends of the hairs, which extend through the retaining and transfer means, are trimmed to a desired and relatively short length. A plurality of thin coats of a thermoplastic material are sprayed across the inner ends of the hairs to create a subbase of a depth of about one-third the length of the inner ends of the hairs. After setting for a period of time, a coating of an epoxy resin adhesive is spread over the subbase and the inner ends of the hairs to a depth of approximately another one-third of the length of exposed inner ends of the hairs. Yet another plurality of thin coats of thermoplastic material are sprayed over the layer of epoxy resin adhesive to the remaining depth of the inner ends of the hairs, which coats are allowed to set for a period of time. The hairs and base are then removed from the transfer frame and mounted on the previously marked location on the head form. The hairs are shaped to the desired lay and suitably held in place. The head form and hairpiece are then placed under heat for a period of time to cure the materials and conform the base to the head form. Upon curing and cooling, the hairpiece may be mounted on the wearer and the hair trimmed and set for compatibility with the remaining natural hair.

3,645,276
METHOD OF MANUFACTURING WIGS AND RESULTING PRODUCTS
Chaihyung Cho, Seoul, South Korea, assignor to Ideal Wig Company, Inc., New York, N.Y.
Filed Apr. 13, 1971, Ser. No. 133,539
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 **3 Claims**



To avoid stressing synthetic fibers after they are incorporated into a wig, the fibers are thermally treated before incorporation into the wig cap in such a manner that the major portion of each fiber is not passed through the knot nor otherwise subjected to any stress which might harmfully alter the characteristics thereof.

3,645,277
APPARATUS FOR CLEANING ARTIFICIAL EYELASHES AND METHOD
Kathleen McCarthy, 15581 Crescentwood, East Detroit, Mich.
Filed Jan. 5, 1970, Ser. No. 688
Int. Cl. A45d *20/00*
U.S. Cl. 132—33 G **6 Claims**

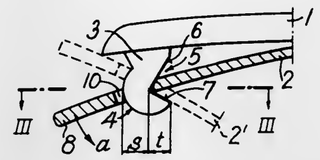


A method and means for cleaning artificial eyelashes wherein the eyelash is mounted by its root strip on a curved surface by a clamp with the lash hairs exposed and extending therefrom along said surface, the lash hairs then being cleaned by washing. Thereafter, the clamp, which is perforated and rotatably connected to the cylindrical surface, is raised, rotated over the artificial eyelash, and then closed over it to retain same in the desired contour for drying.

3,645,278
HAIR SECURING MEANS, PARTICULARLY A HAIR-CLASP OR BARRETTE, OR A HAIR-COMB WITH SUCH SECURING MEANS
Anton Abraham, Vienna, Austria, assignor to Wiener Kammfabrik Anton Abraham Komm. Ges.
Filed May 11, 1970, Ser. No. 36,361
Claims priority, application Austria, May 23, 1969, A 4928/69
Int. Cl. A45d *8/24*
U.S. Cl. 132—48 **9 Claims**

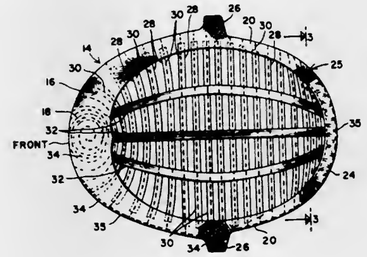
A hair securing means, such as a hair-clasp or barrette, or a hair-comb, which comprise a pivotal resilient locking lever, and a locking pin provided with a panlike recess having two

surfaces which are inclined at an angle to each other. The locking lever cooperates with the locking pin by engaging the panlike recess. The locking pin has a head in the shape of the surface of the circumference of a circular cylinder. The longitudinal axis of the latter is the apex line of the panlike



recess. The surface of the latter extends at least to one half of the circular circumference. The locking lever is provided with a rectangular opening, and the length of the opening corresponds to the width of the head and the width of the opening corresponds to the thickness of the head plus an amount less than the depth of the recess.

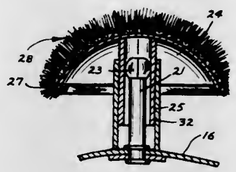
3,645,279
WIG CONSTRUCTION EMPLOYING A BASE OF ELASTIC AND INELASTIC STRIPS
Julius Imre, New York, N.Y., assignor to Imrelon, Inc., New York, N.Y.
Filed May 19, 1970, Ser. No. 38,828
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **8 Claims**



A wig base is constructed of C-shaped netting with an elastic strip joining the open tips of the netting to form an elipse with the elastic strip at one end of the major axis of the elipse. A first series of binding strips extend between opposite edges of the netting in parallel planes, each plane being perpendicular to the major axis of the elipse. A second series of binding strips also extend between opposite edges of the netting, intersecting the strips of the first series and lying in planes passing through the major axis of the elipse. Wefts of aligned strands of hair are sewn to the netting and the strips of the base to form a wig. Selected strips or portions thereof of either the first or second series of strips are formed of elastic material.

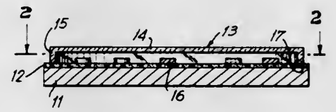
3,645,280
WIG STRUCTURE
Gary P. Cutler, and Suzanne M. Streed, 140 35 Cherry Ave. Flushing, Queens, N.Y., assignors to Gary P. Cutler and Suzanne M. Streed, part interest to each
Filed June 3, 1970, Ser. No. 42,930
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **3 Claims**

A wig structure is built up from a light, porous, relatively close fitting cap of netted material, the outer edge portion of which terminates in a binding which is flexible enough to conform to all head sizes. Flat metallic strips are attached at their ends by snaps into this binding. These strips comprise a grid network. They are of a length to define a head-shaped envelope spaced from the cap and the head of the wearer. A short post extends outwardly from each intersection of this grid network and is topped by a ball. A plate having a socket is removably supported on each ball. Miniature stretch wig sections are removably mounted over each of the plates. Hair



is also sewed into the binding. The hair covering the plates and from the binding is preshaped to comprise a desired coiffure. The metallic strips extending outwardly from each post of the grid network overlap with adjacent strips and each overlapping set is frictionally slidably mounted in a clip, so that the distance between adjacent posts can be adjusted to accommodate various head sizes and shapes.

3,645,281
PARTS HOLDER
David Seidler, 69-10 108th St., Forest Hills, N.Y.
Continuation-in-part of application Ser. No. 689,101, Dec. 8, 1967, now Patent No. 3,516,423. This application Apr. 3, 1970, Ser. No. 25,493
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **7 Claims**

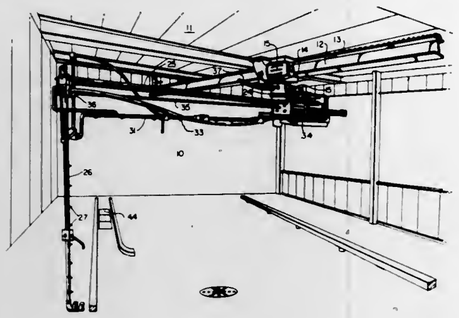


A parts holder which has a base or support element coated with a washable adhesive so that various parts can be adhered to the adhesive surface to store the parts, secure the parts during shipment or transfer between location, or to hold the parts so they may be worked on. The adhesive surface is renewable by being washable so that it may be continually reused, even if it becomes contaminated with foreign matter.

3,645,282
SONIC CARWASH SYSTEM AND APPARATUS
George K. Kurronen, Colorado Springs, Colo., assignor to Sonar International, Inc., Colorado Springs, Colo.
Filed July 22, 1970, Ser. No. 57,111
Int. Cl. B60s *3/04*
U.S. Cl. 134—45 **7 Claims**

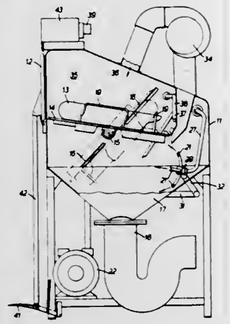
The present disclosure is directed to a carwash system in which a boom is installed centrally on the ceiling of a vehicle wash bay and a tractor unit moves a carrier back and forth on the boom. The carrier supports a vertical and horizontal wash means each of which may be moved independently toward or away from the carrier to compensate for varying sizes of vehicles. The carrier has a swivel mounting between itself and the tractor for rotating the carrier in a horizontal plane. The vertical and horizontal wash means each have sonic transducers for establishing a sonar beam between the two means which will be broken by the presence and made

by the absence of a vehicle in the wash bay beneath the boom. The sonic beam controls relay circuits for sequentially



energizing and driving the tractor unit and the swivel drive on the carrier to move the wash means about the vehicle.

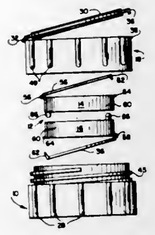
3,645,283
APPARATUS FOR CLEANING BEDPANS
Raymond John Naismith Cassells, Portsmouth, England, assignor to Castan Limited, Portsmouth, England
Filed Oct. 6, 1969, Ser. No. 864,101
Claims priority, application Great Britain, Oct. 7, 1968, 47,427/68
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—58 DL **3 Claims**



This invention is an automatic cleaning unit for emptying, cleaning and sterilizing bedpans in hospitals. The nurse puts the full bedpan straight into the cabinet and an automatic cleaning cycle is initiated by the closing of the door, which first turns the pan over so that the contents falls into a collecting chamber from which it runs to sewage. Then cold water is sprayed on to the surfaces of the pan and it is turned upright and sterilizing fluid is directed at its surfaces for sterilizing it and drying it.

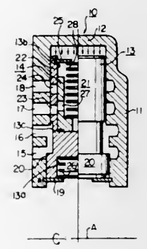
3,645,284
CONTACT LENS HOLDING DEVICE
Joseph Z. Krezanoski, and John C. Petricciani, both of Los Altos, Calif., assignors to Flow Pharmaceuticals, Inc., Mountain View, Calif.
Continuation-in-part of application Ser. No. 748,277, July 29, 1968, now Patent No. 3,519,005, dated July 7, 1970. This application Feb. 20, 1970, Ser. No. 12,921
Int. Cl. B08b *11/02*
U.S. Cl. 134—166 R **9 Claims**

A device for holding a pair of contact lenses comprises means, including a pair of substantially identically shaped elements, forming a pair of axially aligned lenses holding compartments, each of the elements including a base provided with openings to permit fluid flow through both of the lenses holding compartments, a displaceable cover for each compartment to releasably confine the lenses in the compartments, each cover having perforations to permit fluid to flow into and from the lenses holding compartments, and coupling



means for axially aligning the identically shaped elements with the bases of the elements in abutting relationship to permit fluid to flow into and through both of the lenses holding compartments. The device conveniently and safely holds the lenses during cleaning under running tapwater or during immersion in a lens treating solution.

3,645,285
FLUID PRESSURE GOVERNOR VALVE
Toshio Miyazaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed June 11, 1970, Ser. No. 45,390
Claims priority, application Japan, June 26, 1969, 44/50146; 44/50147
Int. Cl. G05d *13/38*
U.S. Cl. 137—54 **3 Claims**

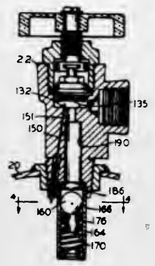


A fluid pressure governor valve assembly which essentially comprises a unitary governor body and a primary and secondary spring-loaded valve elements slidable received in the governor body, wherein a pressure delivered from a fluid pressure source is regulated by the primary and secondary valve elements which are arranged to move within the body toward and away from a shaft supporting the body under the combined effort of control fluid pressure, the action of the spring and the centrifugal force acting thereon.

3,645,286
SAFETY VALVE FOR LIQUID PRESSURE CYLINDERS
John Le Roy Follett, Richmond Ave., Fair Haven, N.Y.
Filed May 29, 1969, Ser. No. 828,982
Int. Cl. F16k *17/28*
U.S. Cl. 137—68 **9 Claims**

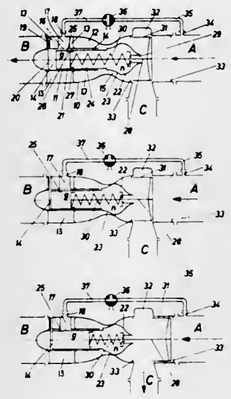
Valve for use with liquid pressure gas cylinders comprising a valve body having a shank threaded into the cylinder, and having a central bore leading to a valve seat, and a manually actuated valve movable into sealing engagement with the seat, a safety valve located on the inner end of the shank and

connecting with the bore, the safety valve being adapted to seal the bore against outflow of gas at an abnormal rate, and



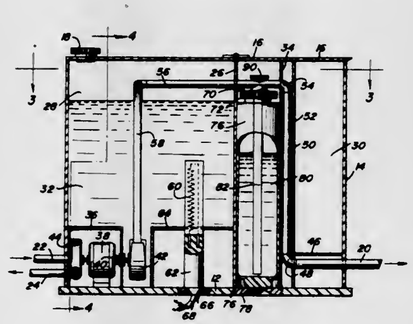
means responsive to final closing movement of the valve member for opening the safety valve seal.

3,645,287
TWO-WAY VALVE
Horst Schutze, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany
Filed Sept. 17, 1970, Ser. No. 73,020
Claims priority, application Germany, Sept. 17, 1969, P 19 47 017.8
Int. Cl. F16k *37/00*
U.S. Cl. 137—219 **10 Claims**



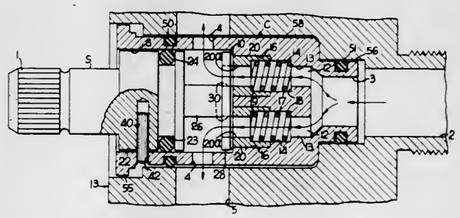
An insert assembly is mounted in a valve housing defining one incoming and two outgoing flow paths to further define the cross-sectional area of one outgoing flow path between its periphery and the inner surface of the housing. The insert assembly is made up of a hollow cylinder, a first and hollow piston arranged in the cylinder for movement with respect thereto, a second piston arranged in the hollow piston for movement with respect thereto, a third and blocking piston rigidly connected to the hollow piston for movement therewith for varying the cross-sectional area of the outgoing flow path further defined by the insert assembly, a slide valve arranged to selectively block the other of the outgoing flow paths, and a piston rod passing through the blocking piston for movement relative thereto and rigidly connecting the second piston to the valve slide so that the valve slide moves with the second piston. A control valve is operatively connected to the insert assembly to selectively move (1) the hollow piston and, thus, the blocking piston for opening and closing off the outgoing flow path associated with the blocking piston, and (2) the second piston and, thus, the valve slide for opening and closing off the other outgoing flow path. Means may be provided for closing off both flow paths simultaneously.

3,645,288
SUPPLY UNIT FOR ORAL CLEANER
Thomas C. Dawkins, 132 West Main, Anadarko, Okla.
Filed Mar. 12, 1970, Ser. No. 18,905
Int. Cl. F16k *51/00, 27/00*
U.S. Cl. 137—255 **10 Claims**



A cleanser fluid is mixed with water pressurized by a motor operated pump inducing flow of the water from a reservoir past an adjustable outlet restriction at one end of a pickup tube extending into said cleanser fluid. The water is heated within the reservoir to a temperature suitable for introduction into the oral cavity by means of a fluid pressure operated implement.

3,645,289
NONRISE VALVE FOR FAUCETS AND THE LIKE
William C. Schmitt, Brown Deer, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.
Filed Sept. 8, 1970, Ser. No. 70,096
Int. Cl. F16k *3/10*
U.S. Cl. 137—454.2 **3 Claims**

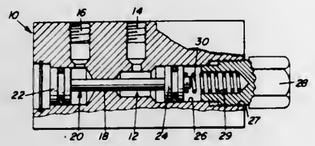


A valve for a water faucet or the like of the type which when actuated does not have a part that rises, and which valve includes a rotary sealing plate against which spring-loaded seals cooperate to seal the valve when the plate is turned to the "off" position. The valve includes a cartridge which has a stem formed as one piece along with the rotary valve and which also has a sleeve in which the stem rotates, the sleeve also being formed as one piece and providing a seat for the spring-loaded inlet seals.

3,645,290
FLUID CONTROL DEVICE

Raymond Clark, Pewaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Dec. 29, 1969, Ser. No. 888,669
Int. Cl. F16k 17/06
U.S. Cl. 137—494 5 Claims

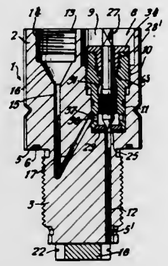


A pressure control valve having a passageway with first and second ends communicating with a pressure source and reservoir respectively. A portion of the passageway is formed with an annular portion of reduced cross section and receives an elastomeric member which is anchored to the housing at one end and which has a normal cross-sectional dimension at least equal to said cross-sectional dimension of said portion. Pressure-responsive means are provided on the other end of said member for stretching said member is reduce its cross-sectional dimension.

3,645,291
CRYOGENIC FILLING VALVE

Peter E. Finney, Knotty Green, Beaconsfield, England, assignor to Nitrochill Limited, Wembley, England

Filed May 2, 1969, Ser. No. 821,338
Claims priority, application Great Britain, May 6, 1968, 21,399/68; 21,400/68
Int. Cl. B67d 3/00
U.S. Cl. 137—588 5 Claims

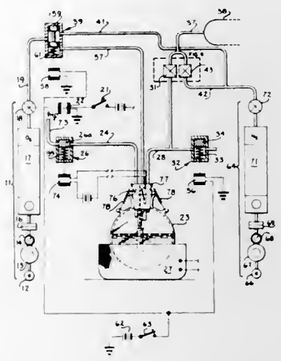


The invention relates to a valve suitable for use as a cryogenic filling valve for high-pressure gas cylinders, which valve comprises a body adapted to be connected in a gastight manner to an inlet of a gas cylinder; a first passageway extending through the body and adapted to receive a probe so as to permit liquid to pass from the probe into the cylinder to which the body is connected; first valve means for opening and closing said first passageway; a second passageway extending through the body for permitting gas to be drawn off from the cylinder; and second valve means for controlling the rate at which gas passes through the second passageway. The valve enables liquefied gas to be charged to the gas cylinder and also serves to control the delivery from the cylinder of gas produced by evaporation of the liquefied gas so charged. In a preferred embodiment, an inner vessel is provided in the gas cylinder to receive the liquefied gas charged thereto and to allow evaporated gas to pass into the remainder of the cylinder.

3,645,292
GAS SUPPLY SYSTEM

Henry L. Schoger, Sunnyvale, Calif., assignor to H. L. Schoger & Associates, Inc., Santa Clara, Calif.

Filed July 23, 1970, Ser. No. 57,482
Int. Cl. F16k 11/00
U.S. Cl. 137—599.1 8 Claims

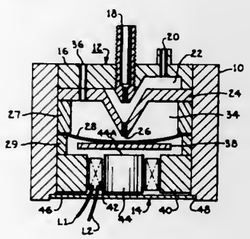


An improved gas supply system for supplying nitrogen and/or oxygen or other gases to semiconductor doping systems via liquid, such as water, boiling in a flask in a manner whereby the supply of gas remains consistent as to its characteristics, for example, moisture content, purity, etc. A double check valve arrangement, with one check valve weighted to a closed position, permits a gas, such as oxygen, to be supplied selectively wet or dry to a doping furnace as employed in semiconductor manufacture. The dual check valve arrangement further serves to permit a second source of gas to be employed. Liquid is maintained at a constant level in the boiling water flask by means of a magnetic element carried in the elongated stem of a float riding in the water. The magnetic element serves to activate a reed switch for electrically controlling a solenoid operated water supply valve.

3,645,293
ELECTRIC TO FLUIDIC TRANSDUCER

Niels E. Pedersen, Milwaukee, Wis., assignor to Johnson Service Company

Filed Apr. 2, 1970, Ser. No. 25,154
Int. Cl. F15c 3/04
U.S. Cl. 137—608 6 Claims

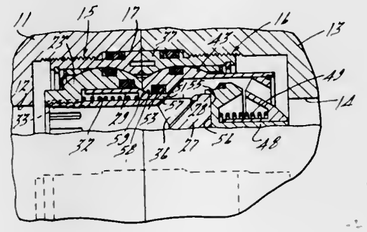


The output of a fluidic amplifier is controlled by movement of a diaphragm with respect to the amplifier control nozzle. A permanent magnet magnetically coacts with a magnetizable portion of the diaphragm to provide a predetermined flux density to such portion. An electromagnetic coil is also positioned for magnetic interaction with the magnetizable portion of the diaphragm. When alternating current is applied to the electromagnetic coil of the transducer, the generated flux field interacts with that of the permanent magnet to change the flux field effective on the magnetizable portion. This causes the diaphragm to assume a new position with respect to the control nozzle for different current values applied to the coil, providing an output signal of the fluidic amplifier in accordance with the level of the energizing alternating current to the electromagnetic coil.

3,645,294
SELF-SEALING COUPLING

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 19, 1970, Ser. No. 82,004
Int. Cl. F16l 37/22, 37/28
U.S. Cl. 137—614.03 8 Claims

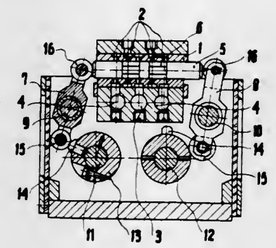


A self-sealing coupling for a manifold, so constructed as to permit slight misalignment of the manifold and accessory ports. The coupling comprises male and female cartridges which are mounted on the manifold and accessory members. Each cartridge comprises a housing mountable in the port, a ball segment body rockably carried by the housing, and a self-sealing coupling valve mounted in the body.

3,645,295
HYDRAULIC MULTISTAGE CONTROL SLIDE VALVE

Edmund Nowak, and Jerzy Korchow, both of Warsaw, Poland, assignors to Zaklad Doswiadczalny Pras Automatycznych Hydomat przy zakladach Mechanicznych Tarnow, Warsaw, Poland

Filed Apr. 8, 1970, Ser. No. 26,647
Claims priority, application Poland, Apr. 28, 1969, P.133,255
Int. Cl. F16k 11/02
U.S. Cl. 137—624.13 5 Claims

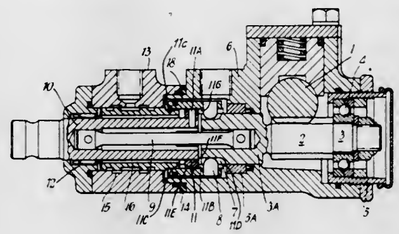


A hydraulic spool-type control valve has a slide shiftable in opposite directions to connect hydraulic devices with a source of fluid, and a drive for the slide including a pair of levers bearing on opposite ends of the slide in opposing directions and controlled by respective cams synchronously driven by a controlled-flow hydraulic motor.

3,645,296
POWER-ASSISTED STEERING AND LIKE SYSTEMS

Frederick John Adams, Campton, near Shefford, England, assignor to Cam Gears Limited, Hitchin, England

Filed Oct. 31, 1969, Ser. No. 872,919
Int. Cl. F16k 11/07; F15b 9/10
U.S. Cl. 137—625.69 2 Claims

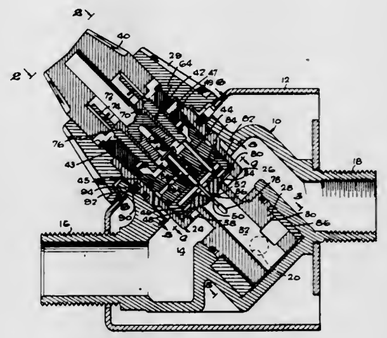


A power-assisting rack and pinion steering system including a housing, relatively rotatable torque input and output shafts mounted for rotation in the housing, a pinion mounted for joint rotation on the torque output shaft, a rack engaging the pinion and a fluid valve assembly for controlling the flow of fluid to and from the opposite ends of a double-acting servomotor also connected to the rack for assisting in the movement thereof. The valve assembly comprises a circumferentially grooved spool valve connected to one of said shafts for axial movement, such movement occurring when the shafts are rotated relative to one another. Axial movement of the spool valve establishes fluid communication between a power fluid pump and the servomotor for powered movement of the servomotor and hence the rack.

3,645,297
MULTIPLE ADJUSTMENT VALVE

A. C. Boultinghouse, 17533 Dearbourn Street, Northridge, Calif.

Filed Mar. 30, 1970, Ser. No. 23,905
Int. Cl. F16k 11/10
U.S. Cl. 137—637.3 14 Claims



A valve for sinks and other applications which allows setting of water temperature and volume, in addition to enabling on-off actuation. The valve includes a housing with hot and cold water inlets, and a cartridge which is installed in the housing and which contains all of the mechanisms for controlling temperature, volume and on-off states. The entire cartridge can be turned to regulate the relative amounts of water from the hot and cold water inlets that can flow through a main passageway in the cartridge to the valve outlet. The main passageway of the cartridge includes a valve

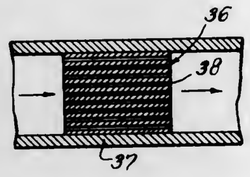
seat, and a diaphragm that can move towards and away from the seat to close and open the valve. A volume regulator controls the rate of flow when the valve is on, by limiting the distance that the diaphragm can move away from the valve seat. Every time the valve is opened or closed, a control passageway formed in the diaphragm is swabbed by a needle, so that a small control hole can be utilized without the likelihood of becoming obstructed, the use of a small hole reducing the likelihood of water hammer.

3,645,298

COLLIMATED HOLE FLOW CONTROL DEVICE

John A. Roberts, North Chelmsford, and Norman F. Surprenant, Littleton, both of Mass., assignors to Brunswick Corporation

Filed Jan. 30, 1968, Ser. No. 701,779
Int. Cl. F15d *1/02*
U.S. Cl. 138—40 **9 Claims**



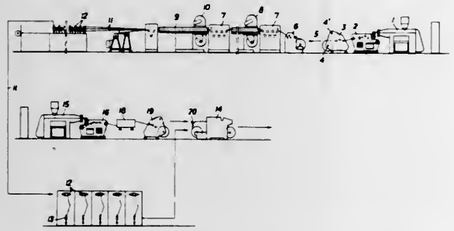
A flow control device formed of one or more collimated hole structures having a plurality of passages of preselected small cross-sectional area and having accurate configuration and arrangement. A plurality of such devices may be formed by cutting from a longer preform whereby the passages have accurate correspondence at the interface defined by the cut permitting the two elements to provide an accurate valving action as a function of lateral displacement therebetween. The collimated hole structure has in one form a preselected aspect ratio of the length to cross-sectional area to provide a preselected pressure drop for accurate control of fluid flow therethrough. The configuration of the passages may comprise a highly accurately rectilinear parallel configuration, as well as turned configurations and nonparallel configurations. Further, a portion of the device may be constricted to provide a corresponding constriction of the flow passage.

3,645,299

PROCESS FOR THE PRODUCTION OF FOIL RIBBON FABRICS AND APPARATUS FOR CARRYING OUT THIS PROCESS

Josef Alfred Eichler, Altmunster, and Alfred Plammer, Seewalchen, both of Austria, assignors to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria

Continuation-in-part of application Ser. No. 672,803, Oct. 4, 1967, now abandoned. This application Dec. 16, 1969, Ser. No. 885,440
Claims priority, application Austria, Oct. 25, 1966, 9941/66
Int. Cl. D03d *41/00, 15/00*
U.S. Cl. 139—11 **15 Claims**



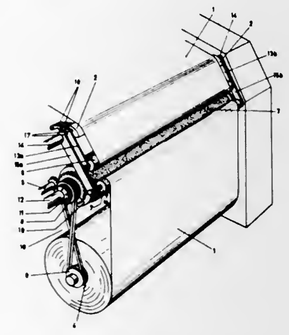
The invention comprises a process and an apparatus for the production of foil ribbon fabrics, wherein the warp ribbons and the weft ribbons are interwoven on a weaving device, at least the warp ribbons being cut from monoaxially stretched foil stock. The stretching device and the cutting device immediately precede the weaving device so that the plurality of warp ribbons cut from the monoaxially stretched foil can be directly and immediately fed to the weaving device. During stretching of the foil certain conditions are maintained, such as a small stretching gap, preferably electrostatic adherence of the foil to the stretching rolls, and specific temperature control.

3,645,300

TAKEUP MECHANISM FOR WEAVING LOOM

Pieter Theodorus Geven, Molenstraat 83, van Mullekom, and Peter Hubert, Voortseweg 11, Deurne, both of Netherlands

Filed Mar. 19, 1970, Ser. No. 21,034
Claims priority, application Netherlands, Apr. 2, 1969, 6905194
Int. Cl. D03d *49/20*
U.S. Cl. 139—308 **1 Claim**



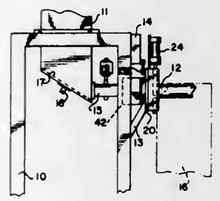
A weaving loom, in which a sand beam cooperates with at least one auxiliary beam for guiding the cloth, said auxiliary beam being movably supported in such a way, that the force exerted on said beam due to the tension in the cloth tends to press the auxiliary beam against the sand beam.

3,645,301

BAG VENTING DEVICE FOR VALVE BAG FILLING MACHINES

Erwin M. Lau, Dolton, Ill., assignor to Black Products Co., Chicago, Ill.

Filed Oct. 14, 1970, Ser. No. 80,568
Int. Cl. B65b *3/10, 3/17*
U.S. Cl. 141—68 **7 Claims**



A pair of fingers are located immediately below the spout. They are mounted on a vertically sliding yoke, which has side rails engaging in grooves formed in vertical guides. The guides are mounted on the plate which supports the spout, one guide on each side of the spout. An air cylinder pushes

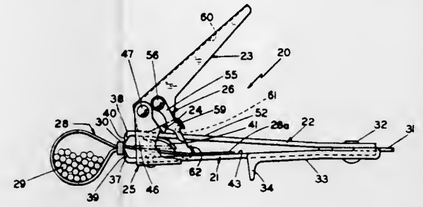
the yoke down so that the fingers will engage the valve opening of a bag suspended from the spout and stretch the opening to permit air to escape from the bag. The fingers when extended also clamp the bag to the spout.

3,645,302

STRAP INSTALLATION TOOL

Jack E. Caveney, Chicago; Roy A. Moody, Flossmoor, and Raymond F. Roberson, Tinley Park, all of Ill., assignors to Panduit, Tinley Park, Ill.

Filed Mar. 19, 1970, Ser. No. 20,927
Int. Cl. B21f *9/00*
U.S. Cl. 140—93.2 **28 Claims**



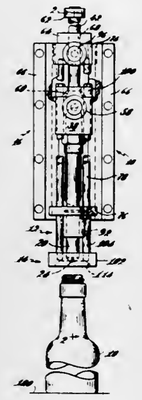
Two structural embodiments are disclosed, each has resiliently connected jaws with a cutter on each jaw cooperating with the cutter on the other jaw. A cam lever is pivotally mounted to one of the jaws and has a cam operatively engageable with the other jaw to operate and position the jaws relative to each other, and to operate a strap tensioning pawl.

3,645,303

FILLING APPARATUS

Sidney T. Carter, Schrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Filed Sept. 8, 1970, Ser. No. 70,125
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—7 **69 Claims**



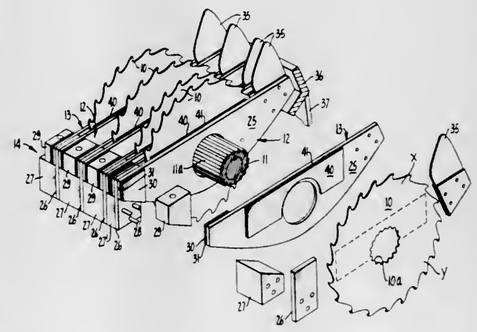
In a filling machine comprising a plurality of filling head assemblies movable along a predetermined path, each filling head assembly including a telescopically associated nozzle and sealing member adapted to be moved downwardly in unison toward a bottle supported therebelow to introduce the nozzle into the bottle and apply the seal to the top of the bottle, cam means for controlling the movement of the nozzle and sealing member to cause the nozzle of each assembly to be lowered into the bottle to an initial position such as to effect rapid filling without foaming up to the neck and then while raising the nozzle from such position to effect withdrawal from the neck but before breaking the seal effecting final filling to a predetermined final level without overfill, thereby to provide for a maximum rate of filling per filling head and means for adjusting the cam means during the operation of the machine by means of which the initial filling and final filling positions of the nozzles may be altered during operation to adjust the level of the final fill without altering the capacity of the machine for filling.

3,645,304

METHOD AND APPARATUS FOR OPERATING A ROTARY SAW

Elbridge W. Thrasher, Ukiah, Calif., assignor to Masonite Corporation

Continuation-in-part of, Ser. No. 791,930, Jan. 17, 1969, Patent No. 3,568,738. This application Nov. 2, 1970, Ser. No. 85,969
Int. Cl. B27b *5/34*
U.S. Cl. 143—160 **3 Claims**



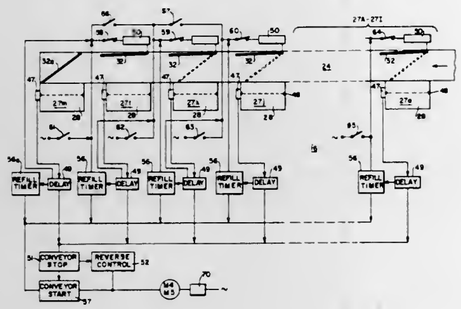
Method and apparatus for operating a rotary saw with saw guides that apply lateral surface pressure to guided saw blades mounted on a saw arbor and more particularly wherein each of a plurality of saw guides is positioned in spaced relation as to engage the sides of a saw blade with little or no pressure until after the saws have developed substantial inertia and speed of rotation, the saw guides then being moved into pressure engagement with the saw blades while simultaneously positioned to establish predetermined guide planes for each of the saw blades.

A saw guide for rotary saw machines having at least one rotary saw blade keyed to a saw arbor and axially movable thereon, the saw guide comprising a pair of substantially parallel support arms having contact surfaces for engaging opposite sides of a rotary saw blade, means for securing the support arms together in back of the trailing edge of the saw blade, and means for selectively positioning the support arms in predetermined spaced relation in front of the leading edge of the saw blade to establish a pressure contact with the guided saw blade or allow the support arms to move apart and release the pressure on the saw blade.

ERRATUM

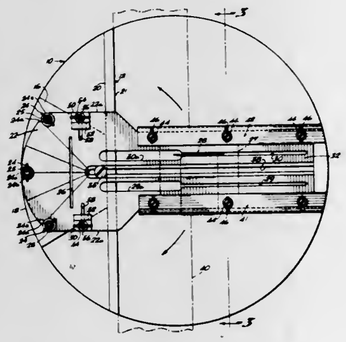
For Class 141—68 see:
Patent No. 3,645,301

3,645,305
FEEDING SYSTEM FOR WOOL-CARDING PLANTS AND THE LIKE
Gaston C. Warlop, 54 Hillview Ave., Union Villiage, Woonsocket, R.I.
Filed Dec. 4, 1969, Ser. No. 882,177
Int. Cl. D01g *23/00*
U.S. Cl. 141—198 **16 Claims**



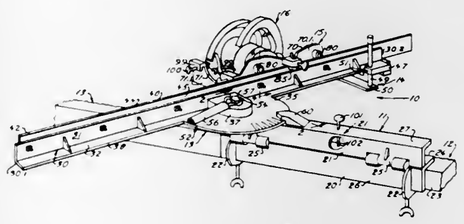
Apparatus is provided for automatically and sequentially supplying uncarded wool to a plurality of carding machines, each of said carding machines having a gate effective to divert the wool from a moving conveyor to the individual machine. A control system is provided to actuate the conveyor, and includes photocell arrangements at each machine for detecting a filled condition thereof, which photocells actuate the adjacent gate eliminating further diversion into that particular machine. The control system incorporates further provision for accommodating "leftover" wool on the conveyor by diverting it to a number of machines at the end of the conveyor, which machines accept the "leftovers" sequentially as they are filled in an upstream direction of the conveyor. Override provisions are included in the control system for manually controlling the gates of said machines for feeding selected ones as desired.

3,645,306
ANGLE GUIDE FOR ELECTRIC SAW AND ROUTER
George F. Adams, Sr., 2740 N.W. 172 Ter., Opa-Locka, Fla.
Filed July 17, 1970, Ser. No. 55,628
Int. Cl. B27b *9/04*
U.S. Cl. 143—6 G **9 Claims**



A saw guide adapted for use particularly with a portable motor-driven saw of the circular blade type or router which guide is adjustable to align the saw blade in either the rip position or crosscut position or gradients thereof in relation to the wood or material to be sawed in a manner which saves time and labor and assures the accuracy of the predetermined line along which the saw blade is to travel and worktable therefore.

3,645,307
POWER SAW GUIDE
Henry C. Stocker, Surrey, British Columbia, Canada, assignor to Protrack Industries Ltd., White Rock, British Columbia, Canada
Filed June 10, 1970, Ser. No. 44,940
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 G **6 Claims**

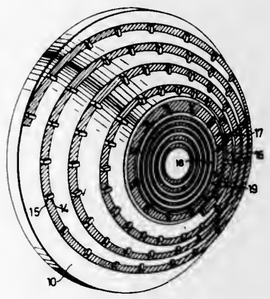


A power saw guide including a base frame adapted to be secured to a worktable, the frame having a guide rail adapted for adjustment about a vertical axis. A saw carriage is roller supported on the rail for longitudinal movement, a guide roller on the carriage being adjustable to permit the carriage to be levelled relative to the worktable.

ERRATUM

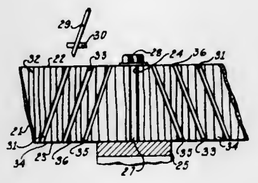
For Class 143—169 see:
Patent No. 3,645,304

3,645,308
LOG-LEVELLING MACHINES
Phillp Nilsson, Kaptensgatan 3A, Soderhamn, Sweden
Filed Dec. 19, 1969, Ser. No. 886,496
Claims priority, application Sweden, Dec. 20, 1968, 17591/68
Int. Cl. B27l *11/02*; **B27c** *1/08*
U.S. Cl. 144—176 **7 Claims**



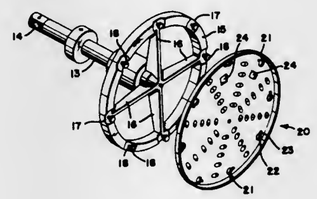
A log-levelling machine having at least one rotary cutter in the shape of a conical disc and a device for advancing logs in their longitudinal direction toward the rotary cutter or cutters. The machine operates to flatten the logs on their lateral sides by cutting the excess material into chips. According to the invention, that portion of each rotary cutter which is located next to the flattened surface of a log which is being cut is provided with a set of teeth adapted to cut chips of substantially smaller thickness than the chips cut by the remaining teeth of the cutter.

3,645,309
METHOD OF MAKING A HOLLOW WOODEN BLANK
Roger I. Canfield, 349 Fairview Ave., Cedar Grove, N.J.
Filed Jan. 6, 1970, Ser. No. 927
Int. Cl. B27m *1/00*
U.S. Cl. 144—326 **7 Claims**



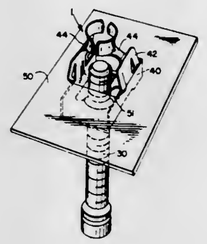
The blank is formed by first cutting an unseasoned log along two longitudinally spaced transverse planes to form a disklike slab, then cutting the slab along two concentric annular paths which are concentric to the growth rings of the wood, and thereafter seasoning the blank. One end of the hollow blank interior is usually closed by an end piece secured therein. The end piece is formed from a disk similar to the slab, but the disk is first severed along one of its diameters and seasoned, after which the end piece is cut from it. The blank may be cylindrical or frustoconical. One end of the hollow blank interior may be tapered to define a seat for accommodating a frustoconically shaped end piece.

3,645,310
FOOD MACHINE ATTACHMENT
Richard S. Hartley, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed Aug. 12, 1970, Ser. No. 63,077
Int. Cl. B26d *4/22*
U.S. Cl. 146—115 **5 Claims**



In a food machine attachment such as a grater, slicer, etc., the cutting disk of the attachment is fastened to a supporting hub by means of a series of keyhole slots formed in the disk and receiving headed studs mounted on the hub and the disk is locked onto the hub by means of resilient tabs struck from the disk and engaging spokes extending radially between the hub and a drive shaft. The number and spacing of tabs is selected such that at least one tab will be in engagement with a spoke regardless of which stud is received in which keyhole slot.

3,645,311
CONSTANT TORQUE THREADED FASTENER FORMATION
George A. Tinnerman, 3600 Stewart Ave., Miami, Fla.
Continuation-in-part of application Ser. No. 728,988, May 14, 1968, now Patent No. 3,476,163, which is a division of application Ser. No. 489,467, Sept. 20, 1965, now Patent No. 3,382,753. This application Nov. 3, 1969, Ser. No. 873,163
Int. Cl. F16b *39/30*
U.S. Cl. 151—41.75 **1 Claim**

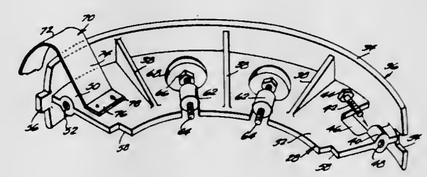


A sheet metal nut formation is provided with helical edges engaging a threaded shank. One of these helical edges has a portion deflected out of the helical curve to engage the sides of the threads of the threaded shank and provides constant torque resistance to rotation of the threaded shank.

The constant torque nut formation is used in a fastener to receive an adjustment screw, guides on the fastener maintaining the shank in engagement with the nut formation.

A U-shaped clip-type fastener uses the constant torque nut formation on one arm in cooperation with a positive stop boss on the other arm so that the arms may be clamped together against the positive stop, the constant torque formation preventing loosening of one threaded shank and the boss guiding the shank to maintain engagement with the nut formation.

3,645,312
AUTOMOBILE TIRE INNER SUPPORT
Henry W. Kolodziej, 475 Atlantic Ave., Matawan, N.J.
Filed Aug. 11, 1969, Ser. No. 848,972
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 **2 Claims**

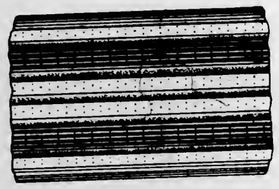


A structure of annular form, fabricated of arcuate sections fastened together, is mounted within a tire and supported with respect to the rim thereof out of engagement with the periphery of the tire a distance sufficient to allow normal deflection of the tire, the device coming into operation to prevent the breaking of a tire casing upon loss of a predetermined amount of pressure in the tire or in the event of the puncturing or blowing out of the tire, the device thus carrying the load of the vehicle until the tire can be changed or suitable repairs made thereto.

3,645,313
PNEUMATIC TIRES

Glyn B. Roberts, Four Oaks, and Thomas Holmes, Walmley, both of England, assignors to Dunlop Holdings Limited, London, England

Filed Jan. 19, 1970, Ser. No. 3,822
Claims priority, application Great Britain, Jan. 23, 1969, 3,840/69
Int. Cl. B60c 11/10, 11/12
U.S. Cl. 152—209 R 17 Claims

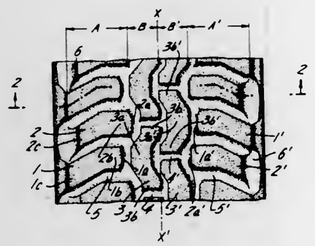


A tire having a tread portion the ground-contacting surface of which is provided with water-absorbing chambers extending into the depth of the tread rubber and closed at their inner ends. The chambers are of circular cross section at the surface of the tread and of diameter from 2.5 mm. to 0.25 mm. or have equivalent cross-sectional area at said surface and are of other cross-sectional shape. A portion at least, of the wall of each of a substantial number of the chambers is provided with asperities serving to restrict the flow of water into the chambers. The chambers are spaced apart at a distance of from 20 mm. to 0.375 mm. measured at the surface between a given reference point on the chambers and the quantity of chambers provided is such as to reduce the tread wearing surface of the tire by no more than 35 percent.

3,645,314
WIDE TREAD TIRE FOR HEAVY-DUTY VEHICLES

Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Jan. 30, 1970, Ser. No. 7,010
Claims priority, application France, Jan. 30, 1969, 6901996
Int. Cl. B60c 11/04
U.S. Cl. 152—209 8 Claims

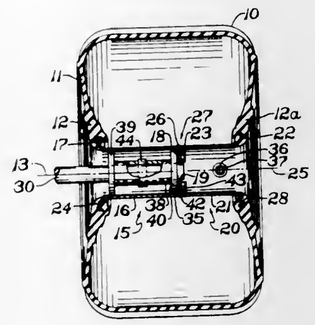


The median zone of the tread of a tire includes elements in relief directed longitudinally. Lateral zones on either side of the median zone include elements in relief directed transversely. Successive ones of the transverse elements in each of the lateral zones have inner ends alternately closer to and farther from the median plane. Different portions of the longitudinal elements are at different distances from the median plane. The longitudinal and transverse elements overlap at least partially.

3,645,315
ALL TERRAIN VEHICLE TIRES

Peter P. Spolsino, Revere; Nicholas V. Riselli, Belmont, and Kenneth C. Bushway, Waltham, all of Mass., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,924
Int. Cl. B60c 5/16
U.S. Cl. 152—383 5 Claims

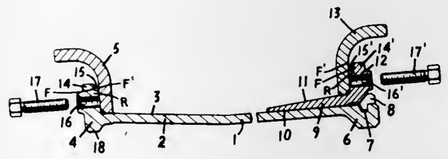


A tire hub, a method of manufacturing the hub, and the combination of the hub with an integral low-pressure tire are disclosed. The hub is formed of two coaxial, closed end, tubular sections, each having an integral base portion and a flange portion, the bases being in contact and secured to form a single hub with spaced-apart flanges on either end of the hub. The flanges portions of the hub are integrally molded into enlarged sidewall portions of an inflatable tire of elastomeric material thus forming an integral hub and tire of the low-pressure balloon-type suitable for use on all terrain vehicles.

3,645,316
WHEEL RIM FORMED WITH TOOL-RECEIVING GROOVES FACILITATING UNWEDGING OF TIRE

Henri Verdier, Puy-de-Dome, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Puy-de-Dome, France

Filed July 22, 1969, Ser. No. 843,514
Claims priority, application France, July 23, 1968, 160332
Int. Cl. B60c 7/24
U.S. Cl. 152—410 4 Claims

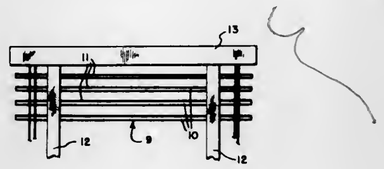


A wheel rim for engineering equipment includes a rimbase forming one bead seat and supporting a continuous ring forming the other bead seat. A flange is integral with each bead seat, and each flange supports a hoop. Each flange is formed with a ridge delimiting a groove between the ridge and the corresponding hoop.

3,645,317
VENETIAN BLIND

Charles H. Malone, New York, N.Y., assignor to Charles H. Malone & Company, Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,337
Int. Cl. E06b 9/26
U.S. Cl. 160—168 8 Claims

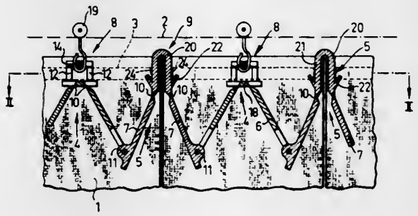


A Venetian blind is formed of strips which are provided with a thin layer of metal such that they reflect unwanted infrared radiation yet are substantially transparent to visible light except in the closed position when, by causing adjacent strips to overlap, the closed blind is substantially less transparent to visible light.

3,645,318
HOLDING AND GUIDING MEANS FOR CURTAINS, DRAPES, AND THE LIKE

Martin Holzlehner, Kirchwenderstr. 21, 3 Hannover, Germany

Filed Jan. 13, 1970, Ser. No. 2,467
Claims priority, application Germany, Jan. 14, 1969, P 19 01 489.2
Int. Cl. A47h 13/14
U.S. Cl. 160—348 7 Claims

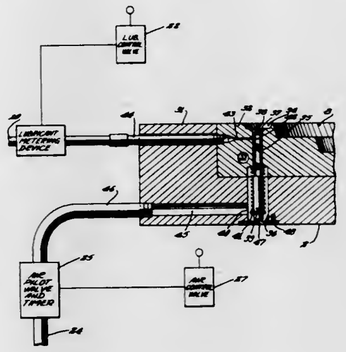


A suspending and guiding structure for web material with folds, especially drapes and curtains, according to which, of two groups of curtain carriers, the carriers of a first group are movably suspended by roller means on a rail while the curtain carriers of the second group which alternate with the carriers of the first group are carried particularly by the carriers of the first group thereby eliminating roller means from the carriers of the second group having reduced thickness hinge means therewith collectively permitting closer together folding of the folds, the carriers of each group having a head portion receiving and supporting the upper marginal portions of the drapes or the like and also having a pair of legs with the free end portions thereof pivotally connected to the free end portion of the respective immediately preceding and succeeding carrier leg, the legs of each carrier being tiltably connected to the head portion pertaining to the same carrier.

3,645,319
METHOD AND APPARATUS FOR LUBRICATING A CLOSED DIE STRUCTURE

William J. Pondelicek, Arlington Heights, and Vernon F. Schmidt, Chicago, both of Ill., assignors to Heick Die Casting Corp., Chicago, Ill.

Filed Feb. 24, 1970, Ser. No. 13,289
Int. Cl. B22d 17/20
U.S. Cl. 164—72 15 Claims

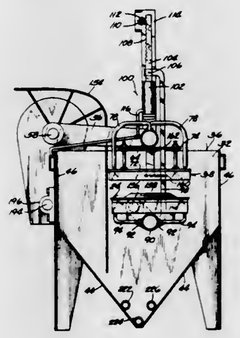


A method and apparatus for lubricating a die structure employed in diecasting operations, and die therefor, whereby a quantity of lubricant is injected under gas pressure into the die cavity, and in which the die may be provided with a chamber for receiving the die lubricant, which chamber communicates with the die cavity, the lubricant being discharged by gas under pressure into the die cavity, with the apparatus being constructed to effect discharge of lubricant into the chamber as the members of the die approach a closed position, and discharge of the lubricant into the die cavity when the die members are in a closed position.

3,645,320
APPARATUS FOR VACUUM FORMING HOT TOP BOTTOM RINGS

Anthony J. Varrati, Milwaukee, Wis., assignor to Universal Refractories Corporation, Milwaukee, Wis.

Filed July 20, 1970, Ser. No. 56,481
Int. Cl. B22c 13/00; B28b 1/26
U.S. Cl. 164—160 17 Claims



The method and apparatus for automatically forming a hot top bottom ring from a slurry containing a major portion of granular refractory material, minor portions of inorganic fibrous material and porous refractory material and a

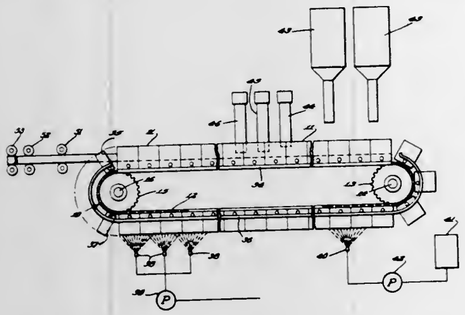
resinous binder. The apparatus includes a reservoir containing the slurry, a mold assembly, and a transfer mechanism for moving the mold assembly into and out of the slurry in the reservoir. The mold assembly includes an upper mold member and a lower mold member, the lower member being mounted for movement into engagement with and away from the upper mold member, and a vacuum system operatively connected to the mold assembly to draw the slurry from the reservoir into the mold assembly and to dewater the slurry during the movement of the mold assembly to a dryer screen. The fibrous bottom ring formed in the mold assembly is removed therefrom by the application of air under pressure to deposit the bottom ring on the dryer screen.

3,645,321

APPARATUS FOR THE CONTINUOUS PRODUCTION OF STEEL

Charles G. Robinson, Sterling, Ill., assignor to Northwestern Steel and Wire Company, Sterling, Ill.

Filed Mar. 2, 1970, Ser. No. 15,554
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **6 Claims**



Apparatus for continuously casting metal, such as steel, in which a series of interlocking molds are carried on a conveyor in end-to-end relation with respect to each other, and form scrap-receiving melting and cooling vessels for the metal. One or more hoppers for charging the molds with scrap or other meltable materials are provided at the inby end of the conveyor to discharge scrap into the molds. Melting is attained by three electrodes connected in the secondaries of a transformer in a three phase delta arrangement and progressively extending into the molds, a first of which effects the melt down of the scrap or other meltable material, a second of which has a shorter arc than the first and provides an intermediate melting stage and a third of which has a still shorter arc and provides a refining stage. The molten metal as carried past the third electrode is then cooled either by convection of air or by an external coolant. As the mold turns about the conveyor sprocket at the outby end of the conveyor, the solidified metal is carried to a series of roller stands which roll the solidified metal to form, where it may be cut in the form of ingots.

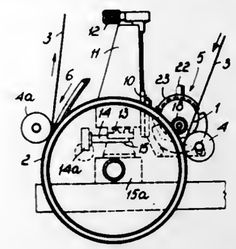
3,645,322

FEED DEVICE FOR CONTINUOUS CASTING MACHINES FOR THE PRODUCTION OF A CONTINUOUS METALLIC INGOT

Ilario Properzi, Via Vittor Pisani 8, Milan, Italy

Filed Mar. 2, 1970, Ser. No. 15,748
Claims priority, application Italy, Dec. 19, 1969, 26078A/69; Jan. 20, 1970, 19584A/70
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 **3 Claims**

A feeding device for continuous casting apparatus arranged to pour molten metal into a peripheral groove of a casting wheel in order to obtain a continuous rod, and provided with a crucible which may oscillate around a substantially horizontal axis the latter being coincident with the axis of an outlet nozzle for the molten metal.

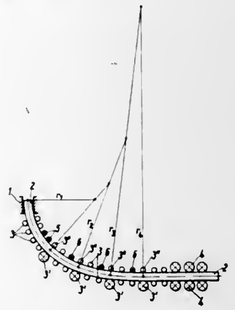


3,645,323

ROLL SYSTEM FOR CONTINUOUS CASTING MACHINES

Gerd Vogt, Schuerkesfeld, and Hans Schrewe, Duisburg-Ungelsheim, both of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Jan. 14, 1970, Ser. No. 2,918
Claims priority, application Germany, Jan. 21, 1969, P 19 03 426.5
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **8 Claims**



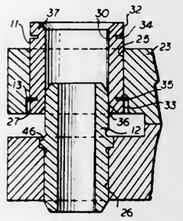
A roll system for withdrawal of the casting in a continuous casting machine is disclosed, providing for particular distribution of power driven rolls and idlers along the withdrawal path.

3,645,324

FOUNDRY FLASK GUIDE APPARATUS

Harlan E. Hicks, Martinsville, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,681
Int. Cl. B22c *21/10*
U.S. Cl. 164—388 **8 Claims**



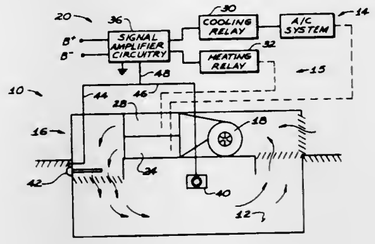
A guide pin and bushing assembly for use in the alignment of the cope and drag of a foundry flask or core box wherein the bushing is reversible and is formed with two external annular grooves and carries a resilient retaining ring in one of said grooves. As the bushing becomes worn at one end on its interior through repeated frictional contact with the guide pin, it can be reversed to use the other end by removal of the retaining ring and replacing the ring in the other annular groove. This effectively doubles the useful life of the bushing.

3,645,325

AIR-CONDITIONING CONTROL SYSTEM FOR MINIMIZING OFFSET AND ZONE TEMPERATURE OSCILLATIONS

Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Sept. 23, 1970, Ser. No. 74,305
Int. Cl. F25b *29/00*
U.S. Cl. 165—27 **9 Claims**



An air-conditioning system for a zone is disclosed which includes air-heating and air-cooling apparatus which are cycled for heating or cooling air moving to the zone through a duct. Cycling of the apparatus is governed by a temperature control system including a zone air temperature sensor and a duct air temperature sensor. The duct sensor has a relatively large authority in affecting control of the air-conditioning apparatus when the heating or cooling load on the zone is light so that variations in the duct air temperatures alone can effect cycling of the apparatus without any appreciable variation in the zone air temperature from a set point temperature. The authority of the duct sensor diminishes substantially when the zone temperature is relatively remote from the set point so that the conditioning apparatus is not cycled according to the duct air temperature.

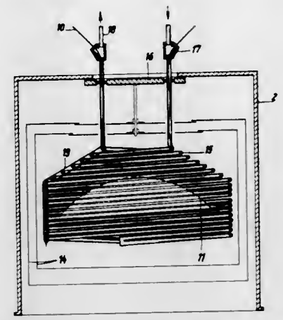
3,645,326

DEVICE FOR HEATING AND COOLING AN ENCLOSED CHAMBER

Paul Hochschorner, Frankenbach, and Fritz Kielwein, Neckarsulm, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm am Danube, Germany

Filed July 8, 1969, Ser. No. 839,904
Claims priority, application Germany, July 27, 1968, P 17 58 719.8
Int. Cl. F25b *29/00*
U.S. Cl. 165—48 **11 Claims**

The invention relates to a device for heating and cooling an enclosed chamber comprising a cooling pipe within which is mounted a heating conductor. The cooling pipe is in the form of a coil, preferably of bifilar construction. The cooling pipe has a branchpiece at each end outside the chamber, the branchpieces being spatically separated and from which the ends of the heating conductor are taken. The resistance of the ends of the heating conductor where it passes out of the chamber are of as low a resistance as possible.

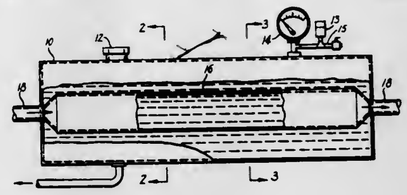


3,645,327

HOT WATER TANK HEATER

George S. Henley, 7421 Lindale Drive, Sacramento, Calif.

Filed May 1, 1970, Ser. No. 33,595
Int. Cl. B60h *1/06, 1/08*
U.S. Cl. 165—51 **1 Claim**



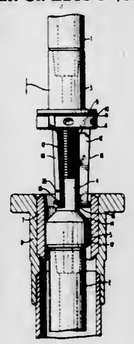
A radiator, a tank, a cylindrical passageway running through the tank, a pump for pumping heated radiator water through the cylindrical passageway, and a pump for pumping the heated water in the tank about the cylindrical passageway out of the tank for use.

3,645,328

RETRIEVING TOOL AND METHOD

H. Rowe Greene, Jr., Box 2905, 104 Honeysuckle Lane, Lafayette, La.

Filed June 22, 1970, Ser. No. 48,410
Int. Cl. E21b *17/12*
U.S. Cl. 166—85 **10 Claims**



A retrieving tool including extensible and retractable means for positive engagement with a wear bushing used in

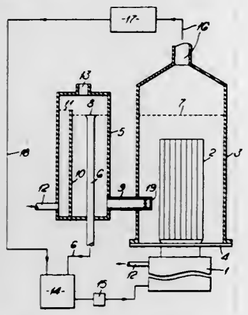
the oil-drilling industry, and capable of disengaging and removing such a wear bushing from its casing head.

3,645,329

ELECTRON TUBE COOLING SYSTEM

Thomas Harvey Treherne, Brixham, and Ewart Peter Coote, Paignton, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,541
Claims priority, application Great Britain, Feb. 19, 1969, 8,944/69
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **11 Claims**



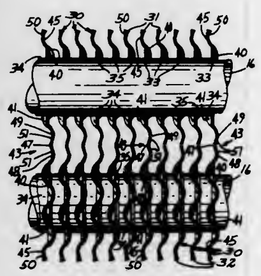
In a water-cooling system for a high-power electron tube, some of the water used for cooling the tube body is fed from an intermediate supply vessel to a boiler in which an electrode of the tube is cooled by evaporation of the water. The water level in the boiler is controlled by an overflow outlet of the intermediate supply vessel. The supply vessel is fed with water via a weir, or an equivalent thereof, providing water at or above the level of the overflow outlet of the vessel. The weir may be provided with means to reduce the speed and the turbulence of the water entering the vessel. The interconnection between the vessel and the boiler is located at a depth below the level of the overflow outlet and is also provided with means to reduce agitation of the water in the boiler and backflow of the water from the boiler to the vessel.

3,645,330

FIN FOR A REVERSIBLE HEAT EXCHANGER

John D. Albright, Minnetonka, and Raymond J. Myers, Wayzata, both of Minn., assignors to McQuay, Inc., Minneapolis, Minn.

Filed Feb. 5, 1970, Ser. No. 8,912
Int. Cl. F28d *1/00*
U.S. Cl. 165—151 **9 Claims**



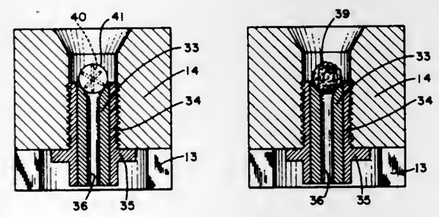
A sheet of material defining a pair of parallel opposed edges adapted to be positioned generally transverse to the direction of airflow through the exchanger, said sheet of material having a plurality of corrugations therein extending parallel to the edges and a plurality of openings therethrough for receiving fluid conduits therein, and a portion of said sheet of material adjacent said opposed edges extending at an angle, relative to a plane including the sheet of material, greater than zero and less than 45°, such that for any given set of conditions for the heat exchanger (including rate of airflow, number of fins per inch, etc.) the exchanger is reversible in the airflow, without inflicting a loss in the heat transfer or an increase in the pressure differential across the exchanger, and the air deflection at the outlet of the exchanger is approximately zero in either direction.

3,645,331

METHOD FOR SEALING NOZZLES IN A DRILL BIT

William C. Maurer, Houston; Joe K. Heilhecker, Bellaire, and Robert L. Graham, Houston, all of Tex., assignors to Esso Production Research Company

Filed Aug. 3, 1970, Ser. No. 60,234
Int. Cl. E21b *7/18*
U.S. Cl. 175—65 **12 Claims**



A method for selectively sealing nozzles in an erosion bit without removing the bit from the well comprising the steps of (a) plugging the nozzles centrally located in the bit with sealants including at least one temporary plug so that the bulk fluid flow is through the peripherally located nozzles; (b) plugging at least one of the peripheral nozzles with pumpdown sealants; and (c) thereafter removing the temporary plug. Depending on its composition, the temporary plug can be removed by erosion, pressure, thermal decomposition, or combinations thereof.

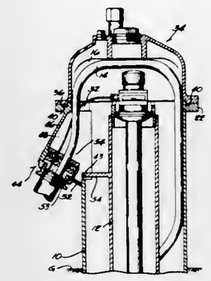
3,645,332

WELL CAP AND SEAL THEREFOR

John Gordon Baker, Evansville, Wis., assignor to Baker Manufacturing Company, Evansville, Wis.

Continuation of application Ser. No. 793,453, Jan. 23, 1967, now abandoned. This application May 11, 1970, Ser. No. 37,405
Int. Cl. F21b *33/03*
U.S. Cl. 166—75 **12 Claims**

A cap and conductor seal arrangement for a well having a tubular well casing with an upper portion extending out of the ground. A circular casing flange is eccentrically joined preferably by welding to the upper portion of the well casing and has an opening therethrough the same diameter as the inside of the well casing and aligned therewith. The casing flange has a conductor opening located beyond the radius of said opening. A circular cap member having a flange thereon adapted for mating engagement with the casing flange is provided. The joint between the flanges is hermetically sealed by an O-ring sealing member mounted in a circular groove in the casing flange. A conductor housing attached to said casing flange and the well casing is provided. The conductors approach the well in a conduit, enter on a slant through an



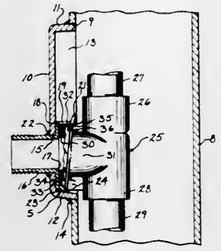
aperture in the bottom of the conductor housing, pass through a conductor seal and continue upwardly on a curved path through said conductor opening then over the top of the well casing and down into the well to electrical power to a submersible pump or other equipment therein and air and/or water passages for control and measurement purposes.

3,645,333

PITLESS WELL ADAPTERS

Herbert W. Maass, 10940 W. Congress St., Milwaukee, Wis.

Filed Sept. 23, 1970, Ser. No. 74,663
Int. Cl. E21b *33/03*
U.S. Cl. 166—85 **10 Claims**



A well casing has a boxlike adapter extension projecting laterally therefrom and there is a tubular nipple extending through an upright wall of the box above the bottom thereof, the nipple carrying an enlarged stainless steel bearing face within the wall of the adapter box which bearing face is provided with integral guideways at opposite sides thereof for receiving a wedge block projecting from a bronze T-fitting, said T-fitting and wedge block having a lateral passageway registrable with the opening of the nipple. The guideways are open at the bottom to allow the lower edge of the wedge block to project a short distance therethrough so that the ends of said lower edge contact the arcuate bottom wall of the adapter box when the wedge block is in operative position with respect to the nipple. Thus the load is carried by the bottom wall of the adapter box rather than by the guideway of the nipple. The nipple and guideway are of stainless steel to prevent electrolytic action and the wedge and guideways provide for a fast sealing engagement at the end of the insertion.

ERRATUM

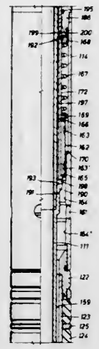
For Class 166—85 see:
Patent No. 3,654,328

3,645,334

WELL PACKER APPARATUS

Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 7, 1970, Ser. No. 26,384
Int. Cl. E21b *33/129*
U.S. Cl. 166—120 **20 Claims**



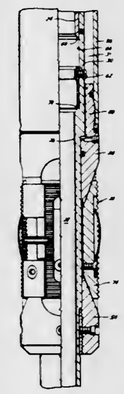
A well packer apparatus having a mandrel movable between extended and contracted positions within an anchor body that carries holddown slips, an internal bypass passage that is opened and closed by a balanced valve sleeve movable longitudinally relative to the mandrel and the anchor body, first coengageable elements to prevent operation of said slips when the mandrel ix extended, second coengageable means to move said valve sleeve to closed condition as the mandrel is moved to contracted position, and a mechanical interlock to releasably secure the mandrel in contracted position.

3,645,335

SLIDING SLEEVE ASSEMBLY FOR A HYDRAULICALLY SET WELL PACKER

James H. Current, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Nov. 27, 1970, Ser. No. 93,023
Int. Cl. E21b *23/00*
U.S. Cl. 166—179 **5 Claims**



A sliding sleeve assembly for opening the setting port of a hydraulically set well packer which may be reversibly positioned for actuation in either an upwardly or downwardly direction. A shearable plug initially blocking the setting port

and positioned in an elongate recess in the packer which extends equal distances on either side of the setting port with a shoulder at each end of the recess and a sliding sleeve telescopically positioned in the recess and in engagement with the plug whereby when the sleeve is longitudinally moved the plug is sheared. One end of the sleeve extending from the axis of the port a distance equal to one-half the length of the recess whereby the one end will engage one of the shoulders at the end of the recess and said sleeve may be positioned in the recess for actuation in either the upwardly or downwardly direction. The sleeve including an actuation shoulder positioned on one side of the plug when the sleeve is in engagement with the plug and including a wedge-shaped shoulder on the second side of the plug protecting the plug but allowing passage of a setting tool. The shoulders at the ends of the recess being tapered for retracting a setting tool after the sleeve is shifted in the recess.

3,645,336
METHOD FOR PLUGGING HIGHLY PERMEABLE ZONES

Charles W. Young, 4417 Yale, Metairie, La., and Charles F. Blankenhorn, 631 La Vereda Drive, La Habra, Calif.

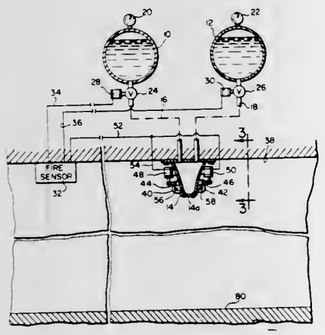
Filed Feb. 24, 1970, Ser. No. 13,776
Int. Cl. E21b *33/13, 33/138*
U.S. Cl. 166—288 **9 Claims**

Steam, sodium silicate and a gelling agent are mixed adjacent the exposed face of a highly permeable zone and then injected therein. The silica gel plug formed in the zone is hard, glassy and substantially impermeable.

3,645,337
FIRE CONTROL SYSTEM

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Dec. 29, 1969, Ser. No. 888,373
Int. Cl. A62c *35/00*
U.S. Cl. 169—14 **9 Claims**

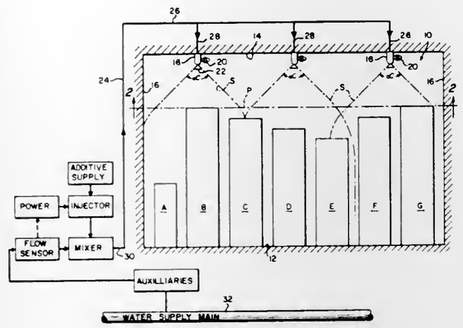


A fire control system in which two fluids are dispensed from two pressurized tanks into a mixing chamber disposed at an elevated position with respect to the floor of the structure to be protected, where they are mixed to form a gel. The gel is continuously discharged from the chamber and forms a gas-impervious sheet extending to the floor to act as a fire barrier.

3,645,338
FIXED FIRE-EXTINGUISHING SYSTEM

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Oct. 8, 1969, Ser. No. 864,612
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **10 Claims**

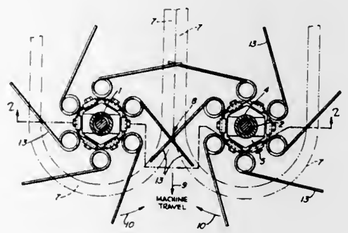


A fixed fire protection system and method by which discrete areas of extinguishant coverage are selected for each of several nozzle heads on the basis of the maximum elevation of fuel surfaces in the space protected.

3,645,339
SPRING FINGERS FOR HARVESTING MACHINES

Julian E. Williams, 1441 North Central Ave., Tifton, Ga.

Filed Feb. 25, 1970, Ser. No. 13,933
Int. Cl. A01d *25/04*
U.S. Cl. 171—61 **5 Claims**



The invention relates to a device applied to a harvesting machine and composed of spring fingers to guide and aid in gathering and directing vines or plants from the plow blade to thereby direct the plants and vines to a plurality of cooperating chains.

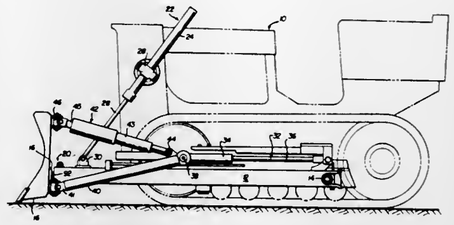
3,645,340
CONTROL SYSTEM FOR A DOZER BLADE

Claude M. Frisbee, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 5, 1969, Ser. No. 874,303
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 **5 Claims**

A control system for a dozer blade or the like incorporating valving for combining with a tilt control for the blade tilt

motors and hydraulic circuitry for the lift motors to additionally provide blade pitch control. Also disclosed is a ball

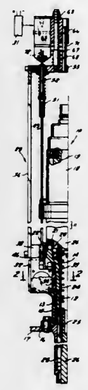


and socket connection for connecting the dozer blade to the dozer frame.

3,645,341
PNEUMATIC NUT-RUNNER HAVING A TORQUE SENSING DEVICE

Lester A. Amtsberg, Utica, and William K. Wallace, Barneveld, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Original application Dec. 3, 1968, Ser. No. 788,220, now Patent No. 3,538,763, dated Nov. 10, 1970. Divided and this application Apr. 13, 1970, Ser. No. 27,822
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **4 Claims**

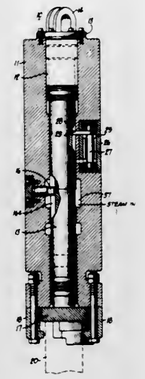


A torque sensing device is attached to a bearing mounted housing of a pneumatic nut-running tool. The device utilizes torque reaction transmitted through the tool to the housing to cause actuation of an external push rod to operate a microswitch in a signal circuit when torque of a preset valve has been delivered to the work. As the reactionary torque in the tool is relaxed, the torque sensing device progressively automatically returns to normal condition. The tool is bearing mounted in a supporting block that is fixed to a gang-plate adapted to be held stationary. The gang-plate is adapted to carry a plurality of such tools, the torque sensing device of each of which is associated with a separate microswitch in a common signal circuit.

3,645,342
PERCUSSION HAMMER

George C. Wandell, Soddy, Tenn., assignor to Vulcan Iron Works Inc., Chattanooga, Tenn.

Filed June 1, 1970, Ser. No. 42,338
Int. Cl. B23g *5/00*
U.S. Cl. 173—17 **2 Claims**

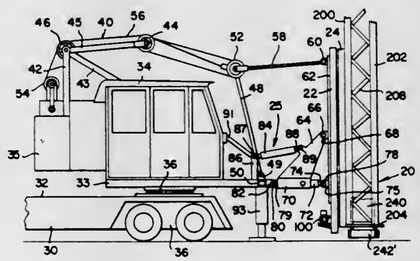


There is provided a percussion hammer of the type used for driving piles and the like, and including a differential diameter piston defining a ram reciprocally positioned within a differential diameter cylinder. An anvil is mounted for limited movement in one end of the cylinder positioned in the path of the ram to receive percussion blows therefrom. Valve means are provided for controlling the inlet of working fluid and the exhaust of the working fluid from the cylinder so as to cycle the ram through power and return strokes. Safety means are provided for rendering the valve inoperative to cycle the ram when the percussion hammer is out of engagement with a pile.

3,645,343
ROTARY DRILLING MACHINE

Gordon E. Mays, 245 27th Ct. N.W., Birmingham, Ala.

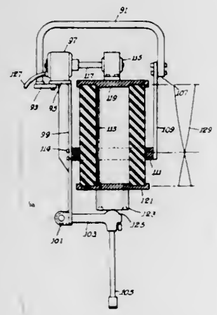
Filed May 11, 1970, Ser. No. 36,363
Int. Cl. E21b *3/02*
U.S. Cl. 173—43 **20 Claims**



A rotary drilling machine has first and second frames connected by rotary bearing means to rotate on a first axis perpendicular to the frames. A mast assembly is carried by the second frame and rotates on the first axis. In the mast assembly is a moveable platform carrying a drill pipe and casing fixture. The casing fixture releasably supports a casing. Supports in the mast assembly permit the drill pipe and casing to move up and down together, or to permit the casing to move independently of the pipe and core or vice versa. A

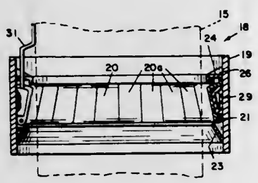
hollow core in the drill pipe rotates with the pipe and feeds fluid to a drilling area. The fluid is drawn up between the casing and drill pipe. A rotary joint structure connects the first frame to rotatable carrier of a gantry and draw works to rotate on a horizontal second axis. Moveable supports in the first and second frames permit the mast assembly and second frame to move longitudinally with respect to the first frame.

3,645,344
ELASTOMER RESONATOR FOR ORBITING-MASS OSCILLATOR
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.
Original application Sept. 8, 1967, Ser. No. 666,398, now Patent No. 3,544,073. Divided and this application June 4, 1970, Ser. No. 43,447
Int. Cl. B06b *1/16*; **B25d** *11/04*
U.S. Cl. 173—49 **4 Claims**



An orbiting-mass oscillator is coupled to a low-impedance elastomer in which a resonant standing-wave pattern can be established. The elastomer serves as a transmission and energy storage medium for the energy and is coupled to a free-standing heavy mass.

3,645,345
DYNAMIC PILE-DRIVING SHOES
Horace W. Olsen, Houston, and Max Bassett, P.O. Box 808, South Houston, both of Tex., assignors to said Bassett, by said Olsen
Filed July 14, 1970, Ser. No. 54,774
Int. Cl. E21b *1/06*
U.S. Cl. 175—56 **8 Claims**

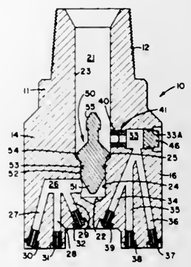


An annulus encircles the lower end portion of a pile which is impacted at its upper end. The annulus contains a radially contractable and expansible collar consisting of a plurality of individual segments, and an expansible and contractable hollow ring is interposed between the annulus and the collar. The collar is actuated by hydraulic fluid under pulsating pressure, so that the collar segments impart vibration to the pile while it is being driven into the earth. The hollow ring has at least two segmental sections each spanning only a portion of the total number of collar segments, and the hydraulic fluid supply is controllable by valves so that the ring segments may be actuated in unison or in alternating succession.

ERRATUM

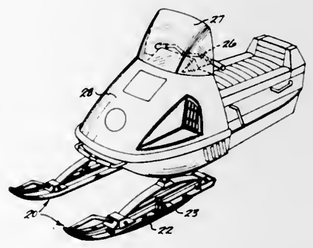
For Class 175—65 see:
Patent No. 3,645,331

3,645,346
EROSION DRILLING
James F. Miller, and William C. Maurer, both of Houston, Tex., assignors to Esso Production Research Company
Filed Apr. 29, 1970, Ser. No. 32,954
Int. Cl. E21b *9/10, 9/02, 7/18*
U.S. Cl. 175—237 **4 Claims**



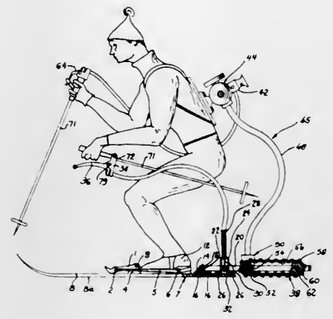
An erosion bit for earth-drilling operations having a first nozzle system open for conducting drilling fluid and a second nozzle system closed by a pressure-sensitive closure means. Means are provided for plugging the first nozzle system and for actuating the pressure-sensitive closure means to open the second nozzle system. Drilling fluid can initially be flowed through the first nozzle system until the nozzles become eroded and then through the second nozzle system.

3,645,347
GUIDE MEANS FOR SKIS
Williard L. Brant, 12044 78th S., Seattle, Wash.
Filed May 26, 1971, Ser. No. 146,862
Int. Cl. B62b *17/02*
U.S. Cl. 180—5 **9 Claims**



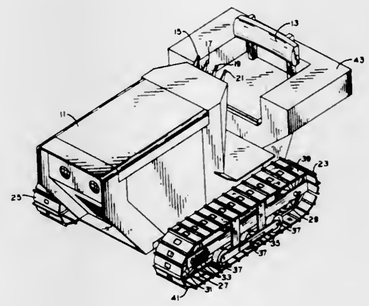
An adjustable guiding and steering means for a ski which may be utilized to enhance the controllability of skis on difficult terrain is described. The guide means comprises a guide member having a portion thereof positioned beneath the surface of the skis and resiliently forced into contact with the snow or ice. The degree of penetration into the snow or ice is governed by the amount of resilient force applied to a downwardly bowed segment of the guide means. The guide means is useful in aiding both human skiers and snowmobiles to negotiate corners and maintain balance on terrain such as crusted snow or ice.

3,645,348
POWER SKI
Richard F. Thompson, Glen Ellyn, Ill., assignor to Royce Hill Husted, Glenn Ellyn, Ill.
Filed May 29, 1969, Ser. No. 828,968
Int. Cl. B62m *27/00*
U.S. Cl. 180—5 R **2 Claims**



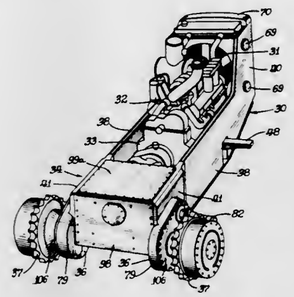
This invention relates to a ski equipped with mechanical propelling means to propel the ski over snow-covered surface; the under surface of the ski slides over the snow at all times, and the mechanical propelling means may be engaged and disengaged from the snow surface.

3,645,349
DRIVE FOR A REDUCED SCALE TRACK-LAYING UTILITY VEHICLE
David E. Nichter, R.R. 2, Churubusco, Ind.
Filed Jan. 5, 1970, Ser. No. 1,069
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **5 Claims**



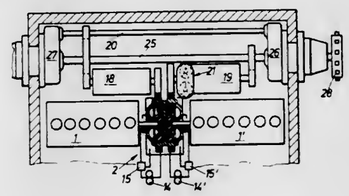
A unique drive arrangement for a hydraulically powered tractor unit characterized by its uniform and efficient power distribution is disclosed. In a first embodiment, one pool of each of two dual spool control valves regulates the flow of hydraulic fluid between individual pumps and motors for each track of the vehicle, the second spool of each of the control valves being available to actuate accessories on the vehicle. In a second embodiment, a single pump through a dual spool valve operates the accessories while a tandem pump through individual single spool valves operates each of the drive motors.

3,645,350
FRAME WITH DOUBLE WALLS FOR CRAWLER TRACTOR
Jack M. Dell, Wheaton; Frank J. Kowalczyk, Lincolnwood; Ronald J. Fanslow, Lexington Field, and Marino J. Pisani, North Riverside, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 30, 1970, Ser. No. 8,200
Int. Cl. B62d *55/00*
U.S. Cl. 180—9.2 R **15 Claims**



Integrated tractor frame of double-wall construction. Each of two sides of the front section of the tractor frame comprises two spaced parallel walls secured to one another by top and bottom strips and having upwardly extending front portions for mounting a radiator for the tractor. Each of two sides of the rear section of the tractor frame is formed of a double-wall casting provided with an elephant ear at which is located the driving connections between the steering drive mechanism within the rear section of the tractor frame and the sprocket for driving a loop of track links.

3,645,351
DUAL-ENGINE VEHICLE AND METHOD OF OPERATING THE SAME
Helmut Muller, Heidenheim, Germany, assignor to Voith Getriebe KG, Heidenheim, Germany
Filed July 29, 1970, Ser. No. 59,211
Claims priority, application Germany, Aug. 13, 1969, P 19 41 152.0
Int. Cl. B60k *5/08*
U.S. Cl. 180—54 C **7 Claims**

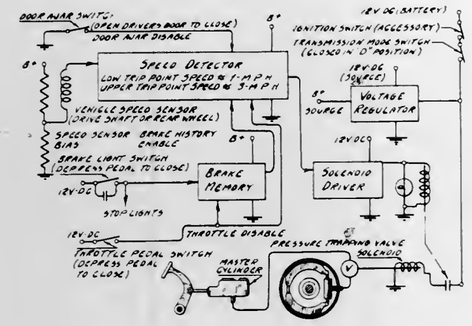


In a tank having a pair of supercharged engines for driving the transmission via a hydraulic torque converter having a controllable bypass coupling, vibration control and efficiency are improved by providing for the engines individual fluid couplings with a common output to a controllable converter for adaption to the power level. Controllable guide vanes of the converter serve to block the hydraulic coupling when the bypass coupling is operative.

3,645,352
ANTICREEP BRAKE SYSTEM FOR A WHEELED VEHICLE

Clarence C. Stark, Plymouth, and Carlos M. Barrera, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1970, Ser. No. 48,066
Int. Cl. B60t *7/12*
U.S. Cl. 180—82 **14 Claims**

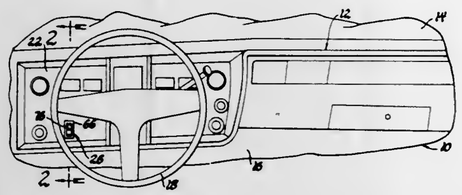


An automatic, creep control brake system for a wheeled vehicle having fluid pressure operated brakes including a valve in the pressure line for the vehicle wheel brakes which retains driver developed brake pressure while the vehicle is stationary, and an electronic control system responsive to wheel speed, brake pedal application and throttle movement to control the pressure retaining valve so that the wheel braking pressure is relieved automatically while the vehicle is operating under normal operating conditions and to apply anticreep braking pressure automatically after the vehicle is brought to a stop by the wheel brakes.

3,645,353
CONTROL ELEMENT MOUNTING ARRANGEMENT

Kenneth P. Cope, Warren, and Donald G. Baer, Girard, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1970, Ser. No. 31,083
Int. Cl. B60k *37/06*
U.S. Cl. 180—90 **3 Claims**

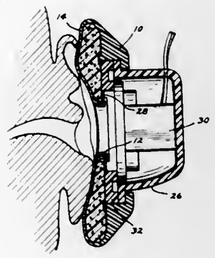


An arrangement for mounting a switch assembly on a vehicle instrument panel structure so as to be releasable under impacts, the arrangement including a receptacle having a hook-shaped projection and a cantilever spring-type latch element with a cam surface thereon. The switch assembly and receptacle are unitized and the hook-shaped projection on the latter engages the lower margin of an aperture in the panel structure to detachably mount the switch and receptacle unit on the panel structure for pivotal movement between a mounted position in the aperture and a releasing position angularly spaced from the mounted position. The latch member resiliently engages the panel structure to maintain the receptacle in the mounted position and the cam surface is operable under a force of impact on the receptacle to initiate deflection of the latch member and release of the switch and receptacle unit for pivotal movement from the mounted to the releasing position.

3,645,354
EARPHONE PAD

Donald L. Kliewer, Minneapolis, Minn., assignor to The Telex Corporation, Tulsa, Okla.

Filed Oct. 1, 1970, Ser. No. 77,174
Int. Cl. G02k *13/00*; **H04r** *25/00*
U.S. Cl. 181—23 **8 Claims**

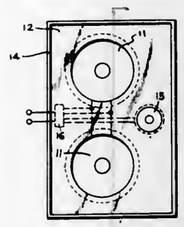


An earphone pad for use in combination with an earphone structure that has a peripheral flange around its housing for supporting an earphone pad and a circular opening in the housing for communicating acoustical vibrations from an electroacoustical transducer within the housing to the ear of a user. The earphone pad has an outer ring of resilient material which is dimensioned to sealably engage the flange on the housing and provide an outer acoustical seal therearound and an inner ring of resilient material which is dimensioned to sealably engage the periphery of the opening in the housing to provide an inner acoustical seal therearound. The inner and outer resilient rings are joined together in substantially coaxial relationship by a relatively thin annular sheet of resilient material which constitutes the ear-engaging surface of the earphone pad. An annular pad of resilient material is positioned on the inside of this ear-engaging surface to provide an acoustical seal between the earphone housing and the ear of the user. The outer ring of resilient material, inner ring of resilient material, and the annular ear-engaging surface that joins the two rings together are preferably a unitary, molded structure which is made of surgical silicone plastic by an injection molding operation.

3,645,355
LOUDSPEAKER SYSTEM

Edward M. Long, Elk Grove Village, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 26, 1970, Ser. No. 5,787
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—31 B **7 Claims**

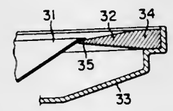


A loudspeaker system which achieves a relatively uniform increase in response over a particular low-frequency range by means of a preselected center-to-center spacing of from about 6 inches to about 9 inches between two direct-radiating bass speakers which are mounted in substantially the same plane on the face baffle of a sealed enclosure and which are connected in parallel with the same polarity. Such a dual woofer speaker system has an improved frequency response rolloff characteristics and provides improved reproduction of the impact sound of percussion instruments.

3,645,356
LOUDSPEAKER

Hiromi Sotome, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 23, 1970, Ser. No. 100,959
Claims priority, application Japan, Dec. 26, 1969, 44/104291
Int. Cl. G10k *13/00*; **H04r** *7/00*
U.S. Cl. 181—32 R **1 Claim**



A loudspeaker including a diaphragm, means for driving said diaphragm, an annular suspension member of rubberlike elastic material attached to the marginal edge of said diaphragm and a supporting frame to which said suspension member is fixed, characterized in that said suspension member has a relatively large radial width and a tapered thickness which gradually decreases from the outer peripheral portion to the inner peripheral portion, and said member is fixedly connected at said outer peripheral portion to the supporting frame and at said inner peripheral portion to said marginal edge of the diaphragm.

3,645,357
QUARTER-WAVE TUNER STRUCTURE

Thomas R. Cassel, 226 Shirley, Birmingham, Mich.

Filed Aug. 20, 1970, Ser. No. 65,375
Int. Cl. F01n *1/02, 7/18*
U.S. Cl. 181—36 B **14 Claims**

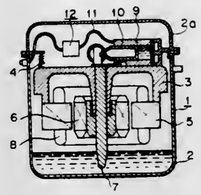


A vehicle exhaust system is disclosed in which a sound-attenuating device in the form of a quarter-wave tuner is incorporated within an exhaust gas pipe. A partition of sheetlike construction extends axially of the pipe over a predetermined length and extends transversely from wall to wall with its opposite edges in contact therewith to separate the space into first and second portions. In the tuner structure the length is approximately equal to one-fourth of the wavelength of the sound energy to be attenuated and the upstream end of the partition is located at a pressure point corresponding to the wavelength to be attenuated and the downstream end of the partition is closed. The pipe is formed with protuberances on the internal surface such as would result from indentations of the wall and the protuberances are arranged along the length of the pipe to retain the sheetlike partition in place in engagement with the wall of the pipe. This construction permits the location of the partition in an exhaust gas pipe to form a sound-attenuating structure in either a straight or curved section of the pipe so that the pipe and the attenuating structure may be fit into the available space under the vehicle body.

3,645,358
MUFFLER FOR HERMETICALLY SEALED MOTOR COMPRESSORS

Tadao Kubota; Takashi Matsuzaka, and Seizi Inokuchi, all of Fuji, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 29, 1970, Ser. No. 102,453
Claims priority, application Japan, Oct. 27, 1970, 45/106249
Int. Cl. F01n *1/02*
U.S. Cl. 181—36 R **4 Claims**

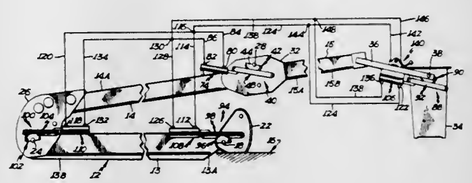


A muffler for hermetically sealed motor compressors comprising a muffler cup constituting a resonance chamber therein, two linearly arranged tubings penetrating the muffler cup and engageably joined in its interior so as to constitute a gas passage and a plurality of openings formed at the joint of said tubings so as to cause their interior to communicate with the resonance chamber whereby noises generated by compressed gases are absorbed in the resonance chamber through said openings for silent operation of a compressor.

3,645,359
APPARATUS FOR AUTOMATICALLY MAINTAINING THE ANGULAR POSITION OF AN AERIAL PLATFORM USED IN CONJUNCTION WITH A BOOM

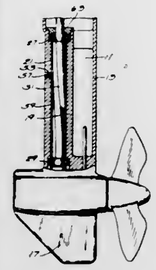
James W. Raymond, Duluth, Minn., assignor to Reach-all Manufacturing Co., Duluth, Minn.

Filed Aug. 13, 1970, Ser. No. 63,570
Int. Cl. B66f *11/04*
U.S. Cl. 182—2 **10 Claims**



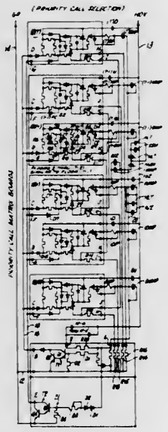
Hydraulic apparatus for maintaining the angular position of an operator basket on the end of a three-section articulated boom is disclosed. A double acting hydraulic cylinder and rack and pinion are associated with each pivot point on the boom, including the pivot point between the operator basket and the end of the boom, such that rotational movement of any or all joints in the boom causes a corresponding movement of hydraulic fluid at all joints. The double-acting cylinders are interconnected, major area to major area and minor area to minor area, such that a net rotation of the boom sections about the joints of the boom provides a net amount of hydraulic fluid to the cylinder associated with the basket to thus rotate the basket according to the net amount of rotation of the boom sections to thus maintain the angular position of the basket with respect to a fixed reference.

3,645,360
UPPER BEARING LUBRICATION FOR OUTBOARD GEARCASE
Theodore J. Holtermann, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Mar. 12, 1970, Ser. No. 19,050
Int. Cl. F16n *13/00*
U.S. Cl. 184—6.18 **4 Claims**



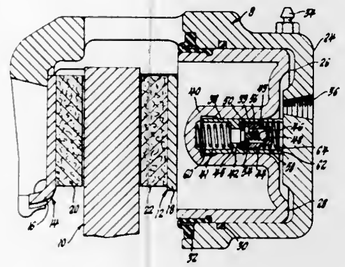
An arrangement for lubricating the upper bearing for a drive shaft in a marine propulsion drive shaft housing. In accordance with the invention, the drive shaft below the bearing is housed in a cavity which has a cross-sectional dimension only slightly greater than that necessary to afford rotation of the shaft. The cavity is provided with oil so that the cavity is only partially full when the shaft is not rotating, and the shaft is formed, below the bearing, with a noncircular cross section so that shaft rotation raises the level of the oil in the cavity and communicates the oil with the lower bearing.

3,645,361
ELEVATOR CONTROL SYSTEM WITH PRIORITY DISPATCHING CAPABILITY
James H. Stichweh, Princeton, Ind.; Stephen A. Hornung, Neuilly-sur-Seine, France, and Paul Duckwall, III, Louisville, Ky., assignors to K. M. White Company, Inc., Louisville, Ky.
Filed May 5, 1970, Ser. No. 34,839
Int. Cl. B66b *1/22*
U.S. Cl. 187—29 R **26 Claims**



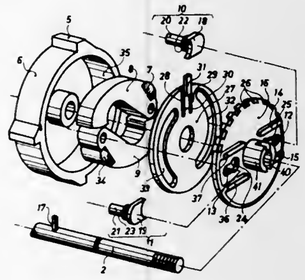
In a multicar elevator system, means are provided to assign priority status to a call for service having the longest waiting time. The nearest available car to the landing at which that call is made is assigned to respond to only that call. The car responding to a priority call may also be assigned to respond to calls made at an adjacent located in the direction of travel of the car to the priority call landing.

3,645,362
KICKBACK CONTROL AND WEAR ADJUSTMENT MECHANISM FOR DISC BRAKE
Elias W. Scheibe, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 4, 1970, Ser. No. 34,445
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **6 Claims**



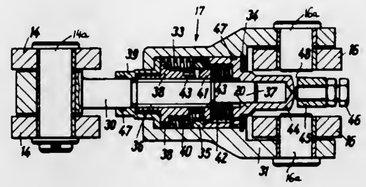
A disc brake caliper including a valve mechanism communicating with an expansible chamber interposed between the piston and the caliper; the valve mechanism maintaining a residual pressure in the expansible chamber to limit the travel of the piston into the caliper housing following each brake release to compensate for wear and controlling further piston movement into the caliper upon relative movement of the disc and caliper during vehicle cornering.

3,645,363
SPEED-REGULATING DEVICE
Gustav Fuths, Feldhorn, Germany, assignor to Olympia Werke AG, Wilhelmshamen, Germany
Filed Jan. 22, 1970, Ser. No. 4,801
Claims priority, application Germany, Jan. 23, 1969, P 19 03 158.4
Int. Cl. F16d *59/00*
U.S. Cl. 188—184 **11 Claims**



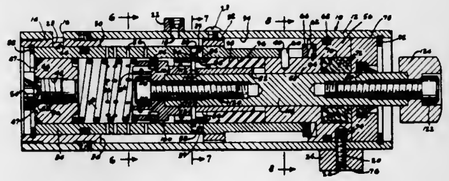
A speed-regulating device for speed-controlled components for precision mechanical application, for example, typewriter carriages, wherein the speed of a rotating shaft is regulated by varying the radial distance from the axis of the shaft of the pivotal bearings for a plurality of centrifically actuated unilaterally mounted brake levers disposed within a brake housing.

3,645,364
SELF-ADJUSTING BRAKING APPARATUS
Alfred Otto, Remscheid; Horst Klassen, St. Sebastian, both of Germany, and Daniel Steiner, Schaffhausen, Switzerland, assignors to Bergische Stahl-Industrie, Remscheid, Germany and Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed June 10, 1969, Ser. No. 831,861
Claims priority, application Germany, June 11, 1968, P 17 50 849.5
Int. Cl. F16d *65/66*
U.S. Cl. 188—196 D **19 Claims**



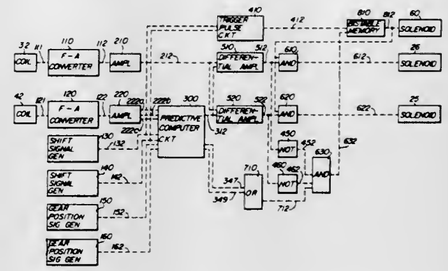
A self-adjusting braking apparatus, particularly for rail-mounted vehicles, comprises two brakeshoes which are movable against opposite sides of a disk by two levers each of which has one end pivotally connected to a shoe. The other end of one of the levers is pivoted to the frame of the vehicle and the other end of the other lever is movable with reference to the other end of the one lever by a braking cylinder. A coupling device of infinitely variable length connects intermediate portions of the two levers so that the levers pivot with reference to the coupling device while the other end of the other lever is subjected to the action of the braking force whereby the shoes move toward the respective sides of the disk. The length of the coupling device is automatically reduced in response to engagement of a projection of the coupling device with an abutment provided on a third lever one end of which is connected to the one end of the other lever and the other end of which is pivoted to the frame. Shortening of the coupling device compensates for wear on linings of the brakeshoes.

3,645,365
ADJUSTABLE SHOCK ABSORBER
John A. Domek, Lombard, Ill., assignor to Efdyn Corporation, Chicago, Ill.
Filed Feb. 26, 1970, Ser. No. 14,285
Int. Cl. F16f *9/44*
U.S. Cl. 188—285 **5 Claims**



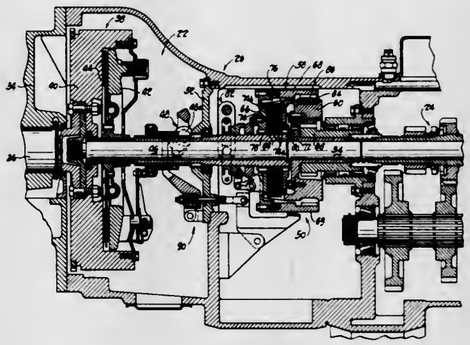
A hydraulic shock absorber including a casing having fluid passageway means, a pressure tube within the casing and having metering ports of various sizes in the wall thereof, and a piston slidable in the pressure tube. The pressure tube is rotatable whereby different ones of the metering ports may be selectively aligned with the fluid passageway means for adjusting the flow of fluid from the pressure tube to the fluid passageway means upon application of impact forces to the piston.

3,645,366
ENGINE SPEED AND CLUTCH SYNCHRONIZING CONTROLS INCLUDING TRANSMISSION CONTROLS
Akio Numazawa, Toyota, and Osamu Ito, Yoyota, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan
Filed June 1, 1970, Ser. No. 42,425
Claims priority, application Japan, June 3, 1969, 44/43885
Int. Cl. B60k *21/00*
U.S. Cl. 192—.08 **10 Claims**



An electronic control system for a clutch located between an engine and a variable ratio transmission includes means to detect the speeds of the input and output clutch shafts, and to control the engine speed before and during gear shifts so that the clutch will engage at synchronous clutch shaft speeds. A special preshift predictive computer means is used in combination with special digital logic circuitry to insure reliable and optimum operation.

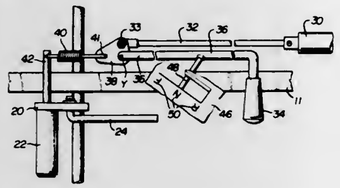
3,645,367
OPERATOR FOR CLUTCH AND SYNCHRONIZER BRAKE
William S. Coleman; Michael J. McGraw, and Lowell W. Syverson, all of Minneapolis, Minn., assignors to White Farm Equipment Company
Filed May 25, 1970, Ser. No. 40,109
Int. Cl. F16d *67/02*
U.S. Cl. 192—4 A **10 Claims**



A transmission for a tractor which includes an engine crankshaft, a transmission input shaft and first and second clutches between the shafts for transmitting power from the engine crankshaft to the transmission input shaft. An inertia brake assembly is supported adjacent the second clutch with a brakeshoe engageable with the drumlike surface of one member of the second clutch. The brake is actuable from the

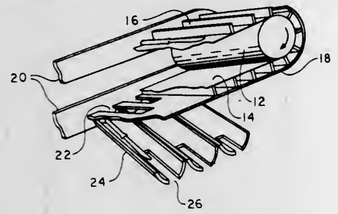
clutch operating pedal for the first clutch when that pedal is depressed beyond a position in which the first clutch is disengaged. The clutch pedal engages the brake with the second clutch to terminate free rotation of the second clutch, the second clutch output member, the transmission input shaft and gearing in the transmission.

3,645,368
BRAKE OPERATED TRANSMISSION NEUTRALIZER
Andrew Blaauw, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed Oct. 26, 1970, Ser. No. 83,752
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 C **9 Claims**



A vehicle which has a transmission having forward and reverse control means in which the forward and reverse control means is connected to a bracket member on the manual control lever to shift the transmission from neutral to forward or reverse; the vehicle is further equipped with a brake mechanism actuated by a pivoted brake pedal which is connected by means of a return spring to the bracket member attached to the control lever; the spring normally tends to constantly urge the control lever in the neutral position; when in tension a lost motion connection is provided between the spring and the bracket member to allow the bracket member to be pivoted by shifting of the direction control lever without loading the spring; the mechanism functions such that, when the brake is applied, the lost motion connection is taken up and the spring is tensioned causing the direction control lever to return to neutral; the spring and the bracket member on the control lever further provides an override means permitting the tractor transmission to be shifted into forward or reverse before the brake is released by stretching the spring to obtain vehicle motion prior to complete brake release.

3,645,369
UTENSIL POLARIZING APPARATUS
George J. Rebane, 3003 N. Auburn Court, Santa Susana, Calif., and Stephen T. Braunheim, 2024 Lombardy Drive, La Canada, Calif.
Filed May 6, 1970, Ser. No. 35,137
Int. Cl. B65g *11/20*
U.S. Cl. 193—43 B **3 Claims**



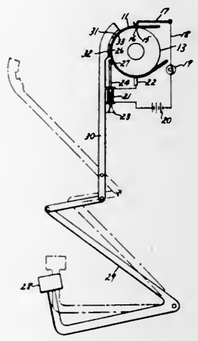
Apparatus for receiving and polarizing utensils that have been sorted as to type. The sorting may be accomplished by passing them over a shield containing sorting slots of increasing lengths through which the utensils drop according to their length. From the sorting slots the utensils pass into the polarizers which automatically turn the utensil so that it will pass handle first into the storage bin.

3,645,370
APPARATUS FOR RAISING AND LOWERING A TENNIS COURT NET
John Rodwell, Hornchurch, and Harry Marsden, Dartford, both of England, assignors to Tennis Unlimited Incorporated, New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,607
Claims priority, application Great Britain, Dec. 9, 1968, 58,340/68; Mar. 26, 1969, 15,778/69
Int. Cl. G07f *5/10*
U.S. Cl. 194—9 T **16 Claims**



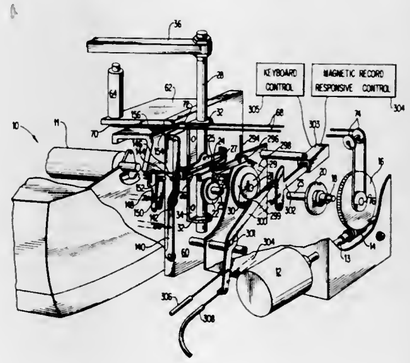
Apparatus for raising and lowering the net of a tennis court which is incorporated in the post supporting the net. The apparatus includes a hydraulically operable ram and cylinder device, the ram of which is connected to the cord of the net so that the net is raised when the ram is extended. The ram is extended by a manually operable pump. A valve biassed to the open position is located so that fluid pumped from a reservoir into the cylinder is returned to the reservoir through the valve. The valve is closed to trap fluid in the cylinder to enable the ram to be extended by insertion of appropriate coin in a coin-operable mechanism. Operation of the coin-operable mechanism starts a timing device which is operative to open the valve at a predetermined time, usually one hour, after the valve has been closed. When the valve is opened the ram retracts under the weight of the net and/or the effect of a spring to cause the net to be lowered.

3,645,371
PRINTING MEANS FOR SORTING AND ROUTING SYSTEM
Arthur Jovis, 1501 Undercliff Ave., Bronx, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,114
Int. Cl. B41j
U.S. Cl. 197—1 **4 Claims**



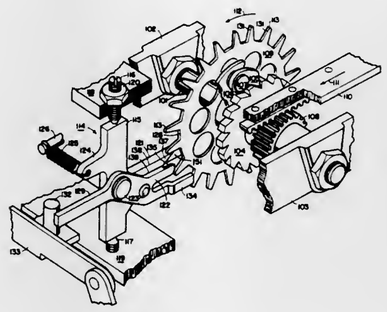
A printing means of a type adapted to simultaneously print ordinary legible indicia and corresponding magnetic ink characters upon a label in which the activating for magnetic character operation is made by the presence of a label in a particular location upon a platen, whereby an electrical circuit is closed through a predetermined opening in said label.

3,645,372
AUTOMATIC TYPE ELEMENT CHANGING MECHANISM FOR SINGLE ELEMENT TYPEWRITER
Newton G. Noell, and Donald C. Roller, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,453
Int. Cl. B41j *23/04, 1/60, 1/32*
U.S. Cl. 197—18 **6 Claims**



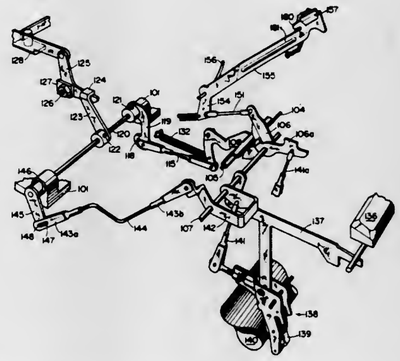
Type element changer mechanism for selectively interchanging type elements on a single element typewriter to provide a plurality of type fonts, selectively changeable under the control of a control unit allowing a typewriter having a memory and/or control unit to print several type fonts without manual changing of the type elements.

3,645,373
ESCAPEMENT MECHANISM
Richard W. Allen, Rochester, N.Y., assignor to The Singer Company
Filed May 21, 1969, Ser. No. 826,539
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 **4 Claims**



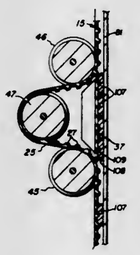
A rigid unitary escapement pawl is provided which has first and second pawl tines which may be alternately engaged with a tooth of an escapement wheel during an escape operation. The unitary structure includes first and second stops which coact with the sides of an escapement wheel to limit the pivotal motion of the structure during an escape cycle of operation. One of the stops provides added rigidity and strength to the associated pawl tine.

3,645,374
ESCAPEMENT-INITIATING MECHANISM FOR TYPEWRITER
Richard W. Allen, Rochester, N.Y., assignor to The Singer Company
Filed Nov. 28, 1969, Ser. No. 880,820
Int. Cl. B41j *19/54*
U.S. Cl. 197—97 **1 Claim**



An escapement mechanism is disclosed which initiates the escapement action at an earlier point in each cycle than prior art devices and which has a reduced tendency to slow the typebar on its way to the printing position. A linkage is provided between the ribbon lift structure and the escapement structure for initiating an escapement by the same action that initiates the ribbon lift and with the power provided directly from the power roll. The invention eliminates the need for the familiar "U-bar." A spring is provided in the throat of the typebar guide for reducing the typebar velocity to an optimum value just prior to impact. The same spring also returns energy to the typebar to accelerate it to its rest position and thereby reduce the elapsed time per cycle of operation.

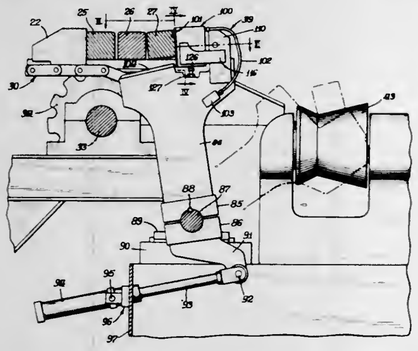
3,645,375
CONVEYOR SYSTEM FOR MOVING FIXTURES THROUGH A SELECTED PROGRAM
John R. Gelzer, 3042 McKinley Ave., Columbus, Ohio
Filed Dec. 4, 1969, Ser. No. 882,029
Int. Cl. B23q *7/00*
U.S. Cl. 198—19 **12 Claims**



A conveyor system comprising an endless conveyor extending through a predetermined path. Cooperating with this

conveyor is an associated guide which along with the conveyor provides a continuous guideway for receiving and guiding fixtures which are adapted to support workpieces that are to be subjected to a certain program of operations. The fixtures are engaged by the conveyor and moved through the guideway at a selected speed, continuously along the greater portion of the guide path, but at the locations where the operations are to be performed, the successive fixtures are caused to stop or dwell for a predetermined period while an operation is performed on the workpieces carried thereby.

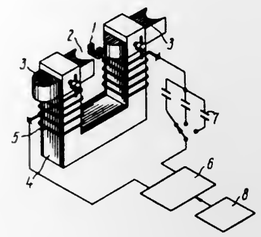
3,645,376
BILLET HANDLING SYSTEM INCLUDING MAGNETIC PICKOFF MEANS
Richard S. Gewartowski, Mount Prospect, Ill., assignor to Magnaflux Corporation, Chicago, Ill.
Filed Aug. 21, 1969, Ser. No. 851,809
Int. Cl. B65g 47/00
U.S. Cl. 198—27 **11 Claims**



Billet-handling system in which a plurality of spaced arms pivotal on a common horizontal axis carry electromagnets having faces engageable with longitudinally spaced portions of a vertical face of a billet on an edge portion of a horizontal support table, the arms being rotatable to move the billet sidewise to a position over receiving rollers which move the billet lengthwise. The magnets are supported on the arms through a pivotal connection which is preferably loose and the arms are independently operated through fluid-operating means, with the magnets being independently movable into firm engagement with the billet even though the billet is twisted or cambered. Each arm is preferably provided with a surface which underlies the billet during the pickoff and transfer operation.

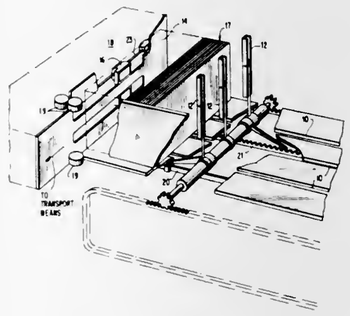
3,645,377
METHOD OF ORIENTATION OF NONMAGNETIC CURRENT-CONDUCTING BODIES MAGNETIC FIELD AND DEVICES FOR CARRYING SAME INTO EFFECT
Bruno Domenikovich Zheigur, ulitsa Miera, 18, kv. 7, Poselok Salaspils Rizhsky raion; Robert Karlovich Kalnin, ulitsa Gorkogo, 53, kv. 19; Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81; Alexandr Alexandrovich Shevchenko, ulitsa Suvorova, 23, kv. 4; Vyacheslav Semenovich Dorofeev, ulitsa Frunzes, 11, kv. 5, all of, Riga; Artur Eduardovich Mikelson, ulitsa Miera, 16, kv. 36, Poselok Salaspils Rizhsky raion, and Igor Mikhailovich Kirko, ulitsa Kr. Barona, 78, kv. 1, Riga, all of U.S.S.R.
Filed Dec. 16, 1969, Ser. No. 885,534
Claims priority, application U.S.S.R., Dec. 25, 1968, 1289052; 1289060; 1289062
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB **14 Claims**

The present invention relates to methods for orientation of current-conducting bodies and devices for carrying into effect the methods. One of such devices comprise an electromagnet having a magnetic core including poles spaced to define an electromagnet having a magnetic core including poles spaced to define an orientation zone, a capacitor, a winding operatively associated with the core and connected



in series with the capacitor, an AC supply source having a frequency corresponding to a selected relationship between the inductive and pure resistance of the bodies to be oriented and a conveyor system to move the bodies through the zone.

3,645,378
EDGE FEED TRANSPORT SYSTEM FOR DOCUMENT SORTING AND STACKING
Marek Jakubowski, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,599
Int. Cl. B65g 43/00
U.S. Cl. 198—38 **11 Claims**

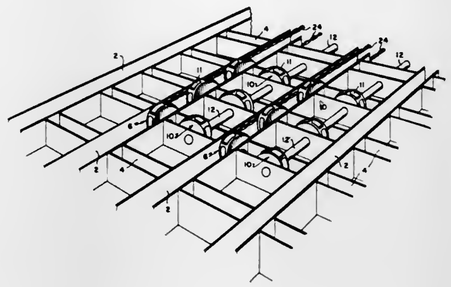


The invention pertains to a document transport and sorting system utilizing an edge feed concept for transporting documents, one at a time, on unique document carriers, from a loading station to a plurality of unloading stations. At the unloading stations the documents are removed from the transport means and selectively deposited in a plurality of stackers.

3,645,379
TRANSFER TABLE
Andrew T. Kornylak, 400 Heaton St., Hamilton, Ohio
Filed Apr. 22, 1969, Ser. No. 819,516
Int. Cl. B65g 13/02
U.S. Cl. 198—127 **6 Claims**

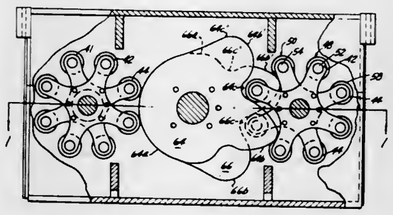
A transfer table for orienting and conveying articles. A network of rollers are mounted to orbit in normally related

planes and to rotate about axes normal to the radius of orbit.



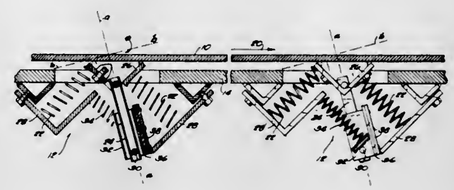
In one form of the invention the rollers are power driven in the orbiting planes.

3,645,380
TRANSFER MECHANISM HAVING CAM DRIVE
William A. Waara, Detroit, Mich., assignor to Visi-Trol Engineering Company, Detroit, Mich.
Filed June 26, 1970, Ser. No. 50,193
Int. Cl. B65g 25/04
U.S. Cl. 198—219 **11 Claims**



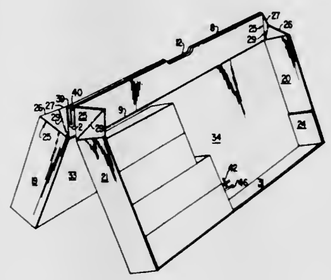
A transfer mechanism having a substantially horizontal fixed support and a movable support adapted to raise vertically a workpiece resting on the horizontal fixed support, move the workpiece a predetermined distance substantially parallel with the horizontal fixed support and then lower the workpiece vertically onto the horizontal fixed support. The movable support is lowered vertically and travels horizontally in an opposite direction to return to its starting position. The motive force for the movable support comprises a cam means having a continuous single rotary input shaft and two alternately operative rotary output shafts. The cam means is so arranged that the input shaft alternately transmits rotary motion to one of the output shafts to produce 180° of rotary motion thereof, while the other of the output shafts is held stationary. The cam means then rotates the other output shaft for 180° of rotation while maintaining the first-mentioned output shaft stationary. One of the output shafts is operatively connected to the movable member in such a fashion as to cause vertical upward movement thereof during the first 180° of rotation of the same output shaft and downward vertical movement during the second 180° of rotation of the same output shaft, while the other output shaft is adapted to cause a horizontal back and forth movement of the movable support intermittent the up and down motion of the movable support respectively during the two alternating 180° rotary motion of the last-mentioned output shaft.

3,645,381
VIBRATORY CONVEYOR
Raimond J. Smiltneek, Butler, Wis., assignor to Logemann Brothers Company, Milwaukee, Wis.
Filed Aug. 12, 1969, Ser. No. 849,326
Int. Cl. B65g 27/00
U.S. Cl. 198—220 CA **10 Claims**



A vibratory conveyor in which the conveyor deck is supported on a base by elastic connectors which include directional dampers which permit substantially undamped vibratory motion in the plane of the deck, yet, provide significant damping in a direction perpendicular to the deck. The dampers are comprised of rods which are pivotally connected to the underside of the deck and are pivotally connected to a friction slide which is at an inclined angle in respect to the deck and which is spring biased in engagement with a complementing frictional surface of the base.

3,645,382
BOX STRUCTURE CONVERTIBLE INTO AN EASEL
Andrew M. Abrams, Spring Valley, N.Y., assignor to Union Camp Corporation, Wayne, N.J.
Filed Oct. 8, 1970, Ser. No. 79,129
Int. Cl. B65d 5/52
U.S. Cl. 206—45.21 **11 Claims**

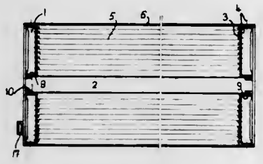


The invention comprises a box in which educational blocks, puzzles, artist material or the like, may be packaged. The box is formed of two nearly symmetrical open halves folded along a center score line in the flat blank from which the box halves are formed. Additional score lines parallel to the fold score line provide hinge lines whereby the two open halves may telescope, to thereby utilize one half as a cover for the other half, or both halves may abut at their open faces to provide a box of maximum volume. The halves may be folded back to a position, wherein an easel or display structure is formed. Securing means are provided to secure the two halves in the easel-forming position. A preferred form of securing means comprises slots in the easel surfaces of the box and a plastic flexible member having rigid transverse rod members at the ends, the rods being dimensioned to fit through the slots, and upon a 90° rotation to engage the easel surfaces and prevent collapse of the same.

3,645,383
SHIPPING UNIT FOR CLOTH LENGTHS HAVING A DELICATE SURFACE PARTICULARLY WOVEN AND KNITTED PLUSHES, VELVETS AND FURNISHING BROCADES

Louis L. Lekane, Brussels, Belgium, assignor to Serasi S.P.R.L., Brussels, France

Filed Mar. 23, 1970, Ser. No. 21,988
Claims priority, application Germany, Mar. 24, 1969, P 19 14 891.5
Int. Cl. B65d 85/66; B65h 75/14, 75/22
U.S. Cl. 206—51 10 Claims

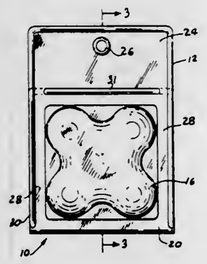


Shipping unit for material lengths having easily damaged surfaces, particularly cloths, characterized by a central tube and two end units (1), cylindrically flat, round or polygonal, made of plastic, cardboard or other substances, of a length equal to the width of the cloth wound in a spiral and fastened by clips (4) on the inside face of the end units (1). These cloth lengths (5) are held at a distance from each other, namely without touching. A cylindrical outer cover (6) either of plastic, paper, cardboard or other substance, is fastened by means of clips (4) on the edges of the rim (14) of the end units (1). Handles (17) are also fastened on these rims (14) in order to carry the whole unit.

3,645,384
SINGLE-PIECE BLISTER PACKAGE

Harold Wind, c/o Ideal Mounting & Finishing Co., Inc. 49-20 Van Dam St., Long Island City, N.Y.

Filed July 9, 1970, Ser. No. 53,410
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 1 Claim

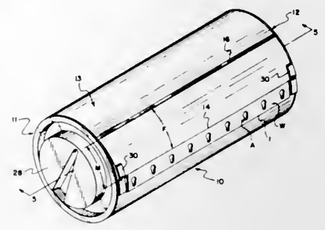


A preformed blister package having a hinged portion integral therewith permitting a lower portion to be rotated about said hinge up against the upper portion thereof in back-to-back relationship providing a fully enclosed package.

3,645,385
OPENABLE CARTRIDGE FOR FACILITATING EGRESS AND INGRESS OF STRIP MATERIAL

Clifford B. Bushnell, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 20, 1969, Ser. No. 835,128
Int. Cl. B65d 85/67; B65h 75/02
U.S. Cl. 206—52 R 3 Claims

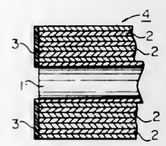


A cartridge for strip material is disclosed which includes a convolution of flexible sheeting wound around spaced, end members. The sidewall sheeting is attached to the end members in a manner providing a movable flap portion which is breakably sealed to an overlapped potion of the sheet convolution. The flap portion is movable to position which facilitates egress and ingress of a strip of web material. One end member is provided with an aperture through which a cartridge core can be connected to rotary drive and the other end member is provided with a surface construction adapted for connection to a separate rotary drive by which the entire cartridge can be moved for breaking the cartridge seal.

3,645,386
A ROLL OF FILM MATERIAL HAVING A PROTECTION LAYER IN THE END THEREOF

Moriyuki Takaichi; Naotoshi Hamachi; Gakuo Iwatuka, and Yoshiteru Nakahara, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 10, 1970, Ser. No. 10,261
Claims priority, application Japan, Feb. 14, 1969, 44/12182
Int. Cl. B65d 65/42, 85/66
U.S. Cl. 206—59 F 7 Claims



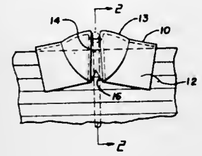
A structure of a roll of a filmy article such as a paper provided with at least one thin resinous layer covering at least one side surface of the roll for protection of the roll from deformation, damage and contamination and a method of making the roll structure.

3,645,387
EDGE CLIP FOR PACKAGES

Frederick William Hunt, 5888 Beresford S., South Burnaby, British Columbia, Canada

Filed July 7, 1969, Ser. No. 839,514
Int. Cl. B65d 71/04
U.S. Cl. 206—60 4 Claims

A clip for a package to prevent the binding element from damaging the edge of the package, said clip comprising an L-shaped clip for fitting over the edge and a groove formed in a raised portion of the clip to receive the binding element so that as that element is tensioned the clip is deformed to draw

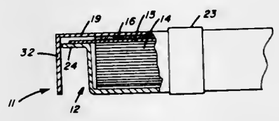


the upper edges of the groove together to secure the clip to the element.

3,645,388
PACKAGE FOR A PLURALITY OF PRESSURE-SENSITIVE SENSITIZED SHEETS

John Rice Fessenden, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,881
Int. Cl. B65d 85/00
U.S. Cl. 206—62 R 4 Claims

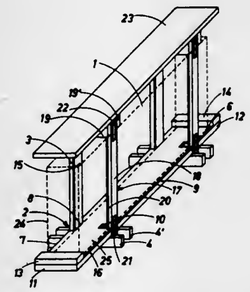


A package for a plurality of pressure-sensitive sensitized sheets wherein the sheets are positioned so that at least one of the sheets has its sensitized surface in contact with a surface of an adjacent sensitized sheet. The sheets are enclosed in the package and protected from abrading against one another by having a springlike pad means compressed in the package and maintained in compression by a plurality of walls so that the tendency of the pad means to expand continuously applies a compressive force to the sheets.

3,645,389
PACKAGING DEVICE FOR SHEET MATERIALS

Marcel Castiaux, Roux, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 29, 1969, Ser. No. 872,149
Claims priority, application Great Britain, Nov. 6, 1968, 52,574/68
Int. Cl. B65d 85/46
U.S. Cl. 206—62 R 9 Claims

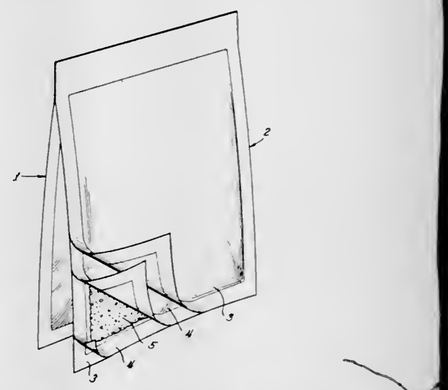


A device is disclosed for packaging a stack or stacks of sheet articles such as sheets of glass. The device comprises a rectangular frame formed of two L-shaped sections and is positioned around a stack of sheet articles. A panel or floor member is disposed between one side of the frame and a face of the stack so that the edges of the sheet articles of the stack rest upon the floor member. On both ends of the floor member there are mounted stops which abut faces of the stack to prevent movement of the stack with respect to the frame. Protective panels may also be mounted on the frame to extend over at least a portion of a face of the stack to protect or to enclose the packaged sheets. The L-shaped sections of the frame may be assembled in various positions so as to vary the dimensions of the opening of the frame to accommodate stacks of various cross-sectional areas. The package may also comprise two or more frames with each frame made of a U-shaped section and a crosspiece to bridge the open ends of this section.

3,645,390
DIAZO COPYING MACHINE ROLL CLEANER PACKAGE

Robert F. Ryan, 640 East Shabonee Trail, Mount Prospect, Ill.

Filed Aug. 7, 1969, Ser. No. 848,330
Int. Cl. B65d 81/32; C11d 7/56
U.S. Cl. 206—84 3 Claims



An aqueous cleaner for restoring synthetic rubber squeegee roll comprising critical levels of anionic surfactant, nonionic surfactant, water-soluble wax solvent, and halogen-containing oxidizing agent. A novel, dry, i.e., free-flowing, mixture which is readily packaged in commercial equipment, and which is storage stable for prolonged periods of time is provided for solution in water to provide the cleaning medium.

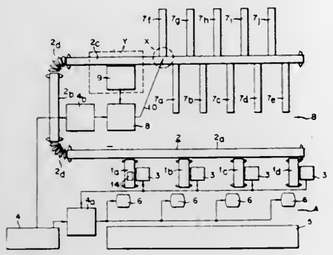
3,645,391
ARTICLE-CLASSIFYING APPARATUS

Hiroshi Hirakawa, Tokyo, and Terumasa Kobayashi, Kanagawa-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 21, 1970, Ser. No. 100,307
Claims priority, application Japan, Dec. 22, 1969, 44/102684
Int. Cl. B07c 3/14
U.S. Cl. 209—73 6 Claims

In an article-classifying apparatus of the type wherein labels formed with classifying patterns are applied onto articles to be classified, the patterns are read and the articles are classified in accordance with signals produced as a result of reading the classifying patterns, there are provided means responsive to article-classifying signals for forming article-classifying patterns on labels, means for applying the labels onto the articles when they are mounted on a first conveyor

route, a second conveyor route for receiving the labeled articles from the first conveyor route, a plurality of gates in the second conveyor route, means for reading the classifying patterns on the labels while the articles are being conveyed by

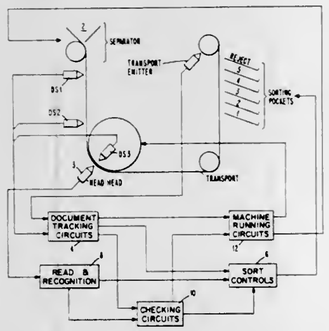


the second conveyor route for generating gate control signals and means responsive to the gate control signals for selectively operating the gates for classifying the articles according to the patterns.

3,645,392
DOCUMENT SORTING SYSTEM

Rudy M. Chittenden; Stephen Deskevich, both of Endicott; Norman R. Plummer, Owego; Gene D. Rohrer, and Louis F. Zaman, III, both of Endicott, all of N.Y., assignors to International Bushiness Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1970, Ser. No. 66,937
Int. Cl. B07c *3/10*
U.S. Cl. 209—74 M **9 Claims**



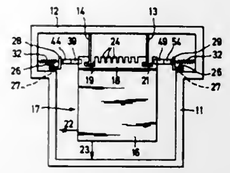
A magnetic ink character reader/sorter having improved means for processing the character signals, storing the pocket selection control signals derived therefrom, and checking the overall operation of the machine. The documents are read by an improved single-gap recognition system, and the sorting information derived therefrom is supplied to a plurality of buffers in accordance with control signals derived from the motion of a document transport.

3,645,393
DEVICE FOR SELECTING INDEX CARDS OF SHEETLIKE FORM

Herbert Weidanz, Odenthal-Globusch, Germany, assignor to Datagraph AG, Zug, Switzerland

Filed Mar. 12, 1970, Ser. No. 18,950
Claims priority, application Germany, Apr. 19, 1969, P 19 19 924.7
Int. Cl. B07c *5/00*
U.S. Cl. 209—80.5 **12 Claims**

A plurality of fingers are arranged at acute angles to both sides of a stack of index cards which are releasably suspended along their upper edges from supporting and guiding rails. The index cards can be selected from the stack, moved to a using station and returned to the end of the stack.

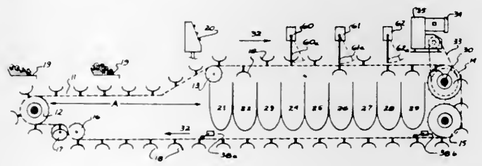


The fingers can be moved into the stack in the direction of movement of the stack so as to divide the stack into smaller individual stacks and to impart a uniform direction of movement to the stack.

3,645,394
APPARATUS FOR SORTING AND GRADING CUT FLOWERS

Richard J. Goodale, Watsonville, Calif., assignor to Goodale Manufacturing Company, Inc., Watsonville, Calif.

Filed Sept. 21, 1970, Ser. No. 73,837
Int. Cl. B07c *1/14*
U.S. Cl. 209—82 **9 Claims**

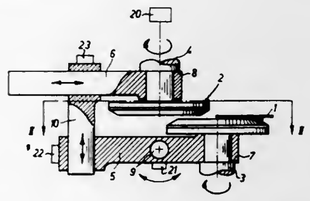


An apparatus for grading cut flowers according to stem length and quality of the flower buds. The cut flowers are placed on trays which are carried by a continuous conveyor past a programming station that is controlled by an operator. The trays are provided with a mechanical device that rides on a track and holds the tray upright until it arrives at the bin into which the cut flower carried by the tray is to be dumped. The quality flowers are graded into several categories depending upon the stem lengths.

3,645,395
APPARATUS FOR SORTING SIMILAR TYPE OBJECTS

Jakob Bosch, St. Gallen, Switzerland, assignor to Heinrich Schmid, vorm. Schmid & Solin, St. Gallen, Switzerland

Filed Nov. 6, 1970, Ser. No. 87,403
Claims priority, application Switzerland, Nov. 13, 1969, 16916/69
Int. Cl. B07c *5/00*
U.S. Cl. 209—91 **10 Claims**

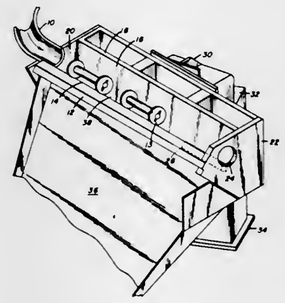


An apparatus for sorting substantially similar type objects which differ from one another either in terms of the properties of two oppositely situated surfaces of the object or in terms of the spacing of such two surfaces from one another. In order to effectively sort such objects, the inventive apparatus incorporates two entrainment members possessing object entrainment surfaces spaced in substantial parallelism from one another. When the apparatus is utilized for sorting objects possessing different spacing of such surfaces, then, the entrainment members can be movably driven in the same sense or direction, and in the other situation where there are sorted objects whose surfaces possess different properties, such entrainment members are driven in a manner that at least the overlapping portions of such entrainment members are moved in a respective opposite sense or direction with respect to one another.

3,645,396
SPOOLING GAUGE AND REJECT SYSTEM

Frederick W. Reiss, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,846
Int. Cl. B07b *13/06*
U.S. Cl. 209—97 **6 Claims**



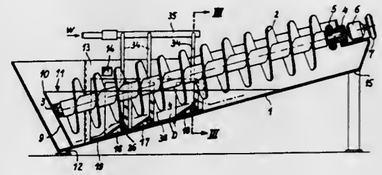
Apparatus and method for separating spool-shaped articles having defective flanges from similar articles which are substantially free from flange defects includes translating the articles in an axial direction over an opening of predetermined width less than the flange diameter between members supporting the article by contact at the flange perimeter, and rotating the articles about the core axis so that the articles with defective flanges are rotated into a position in which the flange dimension is insufficient for the flanges to support the articles. The defective articles thereby fall through the opening whereas the articles substantially free from flange defects will not. The apparatus desirably includes track means which defines the opening, supply means for supplying the articles to the track for travel in an axial direction, and means, advantageously vibrational means, for moving and rotating the articles.

3,645,397
MECHANICAL CLASSIFIER

Viktor Weiss, Radenthein, Austria, assignor to Osterreichisch-Amerikanische Magnesit Aktiengesellshaft

Filed Nov. 18, 1969, Ser. No. 877,613
Claims priority, application Austria, Nov. 20, 1968, A 11275/68
Int. Cl. B03b *3/32*
U.S. Cl. 209—464 **8 Claims**

A mechanical classifier for separating sludge into coarse grained and fine-grained portions, and having a trough with a bottom ascending at a slant above which a conveying mechanism is disposed for advancing the coarse-grained material upwardly along the trough bottom. A weir for overflow of the fine-grained material is located at the deep end of the trough, and a sludge inlet is provided above the level of the weir for introducing the sludge into the trough. Supplementary water is applied to the trough between the sludge inlet and the discharge end of the trough bottom through at least one conduit which extends transversely over the trough bottom and upwardly of the two sidewalls of the trough above the level of the sludge bath established by the weir. The conduit includes a protective shield facing the sludge

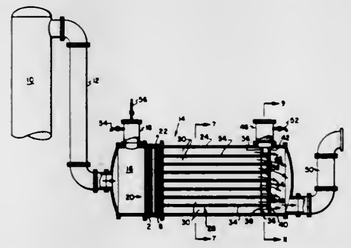


inlet and ascending at a slant toward the trough axis. Supplementary water supplied to the conduit passes therefrom through openings below the bath level preferably formed as slits in the conduit wall facing toward the discharge end of the trough. To increase the separating capability of the classifier, additional conduits may be provided, preferably arranged in spaced transverse zones to permit sedimentation of the materials between the zones.

3,645,398
COALESCER CARTRIDGE AND COALESCER FOR OILY WATER

Robert J. Flocco, Summit, N.J., assignor to Esso Research and Engineering, Company

Filed July 24, 1969, Ser. No. 844,297
Int. Cl. B01d *21/10*
U.S. Cl. 210—73 **10 Claims**



A replaceable coalescing cartridge, capable of use in any commercial coalescer, comprising an upstream coalescing section and a downstream bubble breaking section, transforms small diameter oil droplets into larger droplets without the formation of oil surfaced water bubbles. A coalescer, fitted with said cartridge, employing a honeycomb of curve-shaped settling ducts is provided.

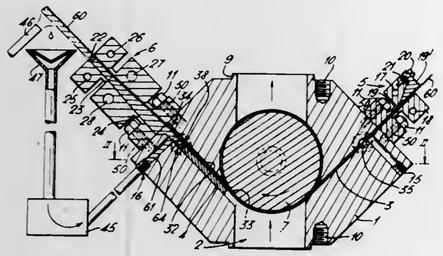
3,645,399
FILTERING PROCESS AND APPARATUS

Peter G. Kalman, 51 Compayne Gardens, London, N.W. 6, England

Filed Sept. 3, 1969, Ser. No. 854,943
Claims priority, application Great Britain, Sept. 3, 1968, 41,915/68; Mar. 25, 1969, 15,667/69; May 13, 1969, 24.416/69
Int. Cl. B01d *29/02*
U.S. Cl. 210—77 **31 Claims**

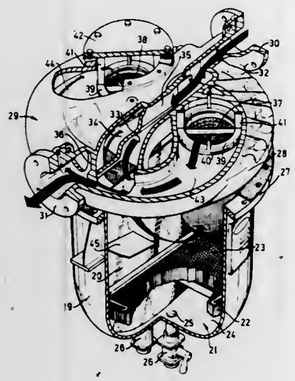
A process for filtering a substance flowing through a passageway in which a filter band is introduced across the

passageway through slotted inlet and outlet ports, a sealing substance different from that being filtered is introduced into the ports, temperature conditions are established in the ports such as to cause the sealing substance therein to solidify to form rigid sealing plugs, and, when desired, the filter is moved through the inlet and outlet ports to introduce a fresh part of the filter across the passageway under such conditions



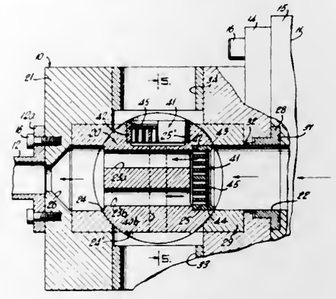
in the ports that the sealing plugs are maintained. Also a filtering apparatus having a passageway through which the substance to be filtered can flow, slotted inlet and outlet ports flanking the passageway through which a filter band is introduced, the ports being cooled so that substance entering them is solidified to form sealing plugs, and a backing support consisting of a rotary drum or an endless train of rollers for supporting the filter band across the passageway.

3,645,400
SELF-CLEANING FILTER APPARATUS
Terence John Floyd, 66 Wrottesley Road, Tettenhall, Wolverhampton, Staffordshire, England
Continuation-in-part of application Ser. No. 764,517, Oct. 2, 1968, now abandoned. This application Aug. 28, 1970, Ser. No. 67,782
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 **5 Claims**



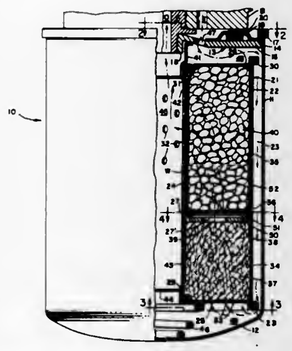
In a multiunit filter apparatus for removing solid particulate matter from a flowing fluid, automatic cleaning of the filter units is effected without employing valves and without interrupting the flow of fluid to be filtered, by connecting the filter units in parallel between a common inlet and outlet and forming the inlet as a multistable diverter of the coanda-type which periodically switches the incoming fluid from one filter unit to another and creates a reverse flow of fluid through a filter unit from which the incoming flow has been temporarily switched.

3,645,401
FILTER CHANGING DEVICE
John S. Roberts, Columbia, Md., assignor to Concorde Fibers, Inc., Columbia, Md.
Filed Mar. 6, 1970, Ser. No. 17,283
Int. Cl. B01d *29/02*
U.S. Cl. 210—232 **4 Claims**



A filter changing device comprising a rotatory structure having first and second passage means therethrough in nonparallel, nonintersecting relationship, each of the passage means being adapted releasably to hold a filter, and means for supporting the rotatory structure for rotation about an axis from a first position in which the respective ends of the first passage means are at predetermined points to a second position in which the respective ends of the second passage means instead of the first passage means are located at the same predetermined points.

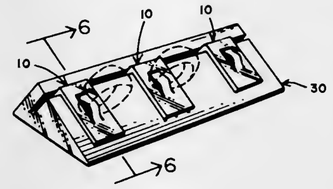
3,645,402
LIQUID COOLANT CONDITIONER
Willis Alexander, Hagerstown, Md., and Robert J. Shaltis, Hastings, Mich., assignors to Mack Trucks, Inc., Allentown, Pa., by said Alexander and Hastings Manufacturing Company, Hastings, Mich., by said Shaltis
Filed Dec. 10, 1970, Ser. No. 96,866
Int. Cl. B01d *25/06*
U.S. Cl. 210—266 **42 Claims**



This invention discloses a disposable-type filter particularly adapted for use in the coolant system of internal combustion engines, the filter including a housing having a support plate provided with a central interiorly threaded outlet neck and with inlet passages spaced radially from said neck, a rigid canister provided in said housing in spaced relation from said support plate, a stepped tubular adapter seated over said outlet neck and separating said canister from said support plate.

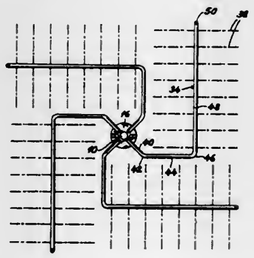
and a spring mounted in said housing pressing said canister and said adapter toward said support plate. In accordance with the invention the canister includes a central tube which is perforated adjacent one end, a perforated bottom end plate, an imperforate top end plate, and an imperforate exterior tubular wall, said end plates being rigidly joined to the exterior and central tubes. The canister is separated into two interior chambers by an annular perforated partition. The bottom chamber is filled with a depth medium of filtering material such as wood wool, rayon fibers, or the like, on top of which rests a cathodic anode disc. The top chamber is provided with a chemical package including ion exchange beads and soluble corrosion prevention chemicals. The flow of liquid within the filter is through the inlet passages into the space between the top of the canister and the support plate, down between the outside of the canister and the housing to the bottom of the housing, upwardly in series through the perforated bottom end plate, the depth filtering media, the anode disc, the transverse partition into the chemical package, radially inwardly from the chemical package through the perforations in the central tube, upwardly through the central tube and thus out of the filter through the outlet neck.

3,645,403
COMBINED RING DISPLAY DEVICE AND CARRIER
Max Walters, 20340 N.E. 20th Ct., North Miami Beach, Fla.
Filed Dec. 9, 1970, Ser. No. 97,437
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 **3 Claims**



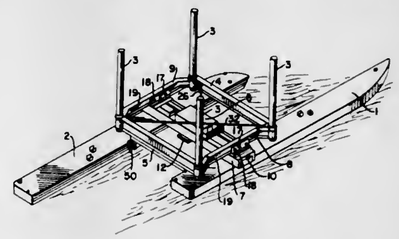
A display device and a carrier therefor adapted to receive and retain a ring thereon for display purposes wherein the ring is received by a resilient tab formed on the display device and held against rotational movement at any desired angle, the display device having a leg portion that is received by a slot formed in an elongated carrier having a triangular cross-sectional shape.

3,645,404
DISPLAY STANDS
Svend Georg Hansen, Tranegardsvej 13 B, 2900 Hellerup, Denmark
Filed Feb. 11, 1970, Ser. No. 10,580
Int. Cl. A47f *5/05, 5/10*
U.S. Cl. 211—168 **11 Claims**



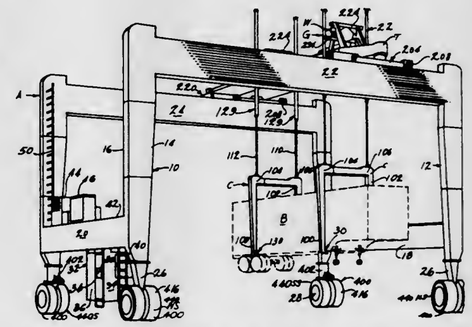
A display stand comprising the following components: (a) an upright (post), (b) a plurality of arms adapted to be mounted on the post, and (c) a substantially hub-shaped connecting member having a central bore for mounting the connecting member on the post coaxially therewith. The connecting member comprises a plane upper surface provided with a plurality of bores arranged coaxially with the central bore and radial grooves in said surface extending from each of the last-mentioned bores towards the central bore, but terminating at a distance therefrom. One end of each of the arms is bent over to provide an L-shaped hook, one part of which is adapted to be embedded in a horizontal position in one of the radial grooves in the upper surface of the connecting member. The other part of the L-shaped hook is adapted to be inserted in a vertical position in the bore adjacent the groove in the connecting member and to extend therethrough, so as to provide for detachably mounting and supporting the arms in a fixed position relatively to the connecting member.

3,645,405
CARGO-HANDLING VESSEL
Nicholas M. Stiglich, Cresskill, N.J., assignor to Eness Research & Development Corp., Westwood, N.J.
Filed Apr. 20, 1970, Ser. No. 30,100
Int. Cl. B66c *23/52*
U.S. Cl. 212—3 **10 Claims**



A vessel of severable hull sections designed to be rotatably severable in controlled fashion and capable of supporting means for lifting and transferring cargo to or from an adjacent ship or pier or an intermittent barge or any combination of the like.

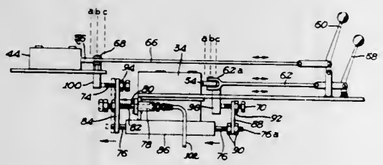
3,645,406
GANTRY CRANES
James W. Brazell, Fulton County, near Atlanta, Ga., assignor to Southern Iron and Equipment Company, Chamblee, Ga.
Filed Oct. 24, 1968, Ser. No. 770,170
Int. Cl. B66c *5/02*
U.S. Cl. 212—14 **12 Claims**



A gantry crane suitable for service in so-called piggyback operations where trailers or containers are handled to and from railroad cars. With a typical capacity of 50 tons the crane can move cargo with its bottom lift grappling arms or

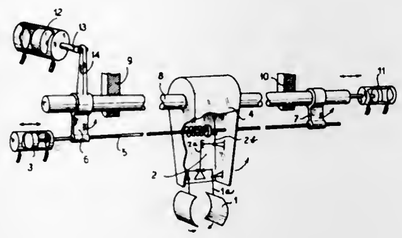
with optional spreader beam for top lift containers. Essentially hydraulic, the crane is self-propelled using a V-8 diesel engine to drive a plurality of hydraulic pumps. All power for load handling and crane movement is transmitted hydraulically. A stepless, reversible hydrostatic drive propels the crane in either direction at typical speeds up to 465 feet per minute. A hydraulic cylinder in each of the grappling arms provides the load-clamping force. Two cylinders are connected to each of the grappling arms for hoisting. A counterbalance valve at each of the hoisting cylinders provides failsafe suspension of the load. Another hydraulic cylinder moves one grappling arm relative to the other so that loads of varying lengths can be handled properly. A stepless reversible hydrostatic drive is incorporated in each of two trolley trucks, which are controlled independently so the operator can rotate the load in a horizontal plane, plus or minus typically 35° from the track centerline and also the operator can move the trolley toward or away from his location. A servo-controlled power steering arrangement, incorporating a conventional Davis steering gear, allows steering about either pair of the nonsteered wheels. An automatic weighing system is incorporated to accurately determine and record the weight of the load simultaneously as the load is being handled. Load cells are used which are transducers that relate tensile force to an electrical signal which can be used to indicate the weight of the load and to print a ticket. The load cells are suspended from a frame. Drive wheels are driven directly from a hydraulic motor without the use of any gearing. Two steered struts include two hydraulic motors each, one for each wheel. The hydraulic motor may be of the fixed displacement type powered by a variable displacement pump which is reversible and driven by the engine at constant speed whereby the operator may vary the direction of travel and travel speed with a single control. Since the motors are connected in parallel, differential motion for steering and or maneuvering is available. The crane has a very short turning radius and under ideal conditions could approach pivoting about each of the fixed (nonsteered) struts. The trolley which supports the grappling arms is positioned by two independently driven trolley trucks that operate along rails mounted on girders. A trolley beam includes inverted rails which ride on double-flanged wheels of a spider assembly. This arrangement allows a variation in truck pivot centers as the trolley displaces the angular relationship and a dashpot at the end limits the travel of the spider and thus a displacement angle.

3,645,407
OVERLOAD PROTECTOR FOR CRANE BOOMS
Daniel F. Przybylski, 639 West Lake St., Winona, Minn.
Filed June 15, 1970, Ser. No. 46,224
Int. Cl. B66c *13/48, 23/54*
U.S. Cl. 212—39 R **9 Claims**



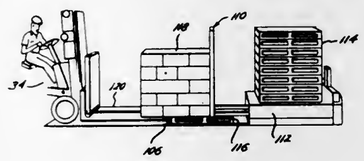
A vertically pivotable crane boom having a plurality of hydraulically extensible boom sections and equipped with a hydraulic lift cylinder for elevating and lowering the boom is provided with a plurality of stop devices automatically movable in response to an overload condition on the boom into blocking position adjacent hydraulic fluid control valves to prevent the manual operation of said valves in such a way as to extend the boom sections, lower the boom or hydraulically raise a lift cable on the boom. Hydraulic fluid from the boom lift cylinder is utilized to actuate a fluid motor which shifts the stop devices into said blocking position when the fluid pressure in said lift cylinder reaches a predetermined high level indicative of an overload condition on the boom.

3,645,408
ARTICLE TRANSFER MECHANISM
Bruno Bronzini, Turin, Italy, assignor to Fratelli Morando & C.S.p.A., Turin, Italy
Filed June 26, 1970, Ser. No. 50,154
Claims priority, application Italy, Feb. 25, 1970, 67616 A/70
Int. Cl. B66c *1/42*
U.S. Cl. 214—1 BB **2 Claims**



Article transfer mechanism grips and releases articles, swings them about a horizontal axis, and translates them parallel to that axis. A pair of cam-operated jaws is actuated by a reciprocable rod which in turn is swung bodily about an axis parallel to the rod and translated along that axis. Three separate fluid motors actuate the gripping, swinging and translating devices.

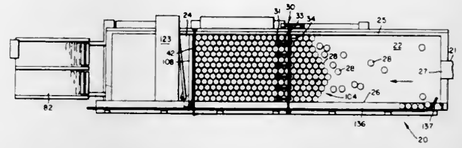
3,645,409
LOAD TRANSFER AND PALLET STACKER
Stuart W. Sinclair, Houston, Tex., assignor to Anderson, Clayton & Co., Houston, Tex.
Filed Mar. 9, 1970, Ser. No. 17,749
Int. Cl. B65g *57/30, 67/04*
U.S. Cl. 214—6 BA **7 Claims**



A load transfer and pallet stacker for use with a platen bearing lift truck, whereby a load is transferred from a pallet directly on to the platen, and the pallet is vertically stacked. A traction plate, transfer unit and elevator unit are interconnected to make the device portable. Push-pull and push only truck-operated units are described, as well as a power-operated unit.

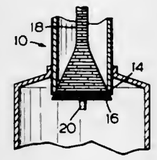
3,645,410
CONTAINER-PACKING APPARATUS
Johnnie L. Powell, Turlock, Calif., assignor to Mandrel Industries, Inc., Houston, Tex.
Filed June 22, 1970, Ser. No. 48,269
Int. Cl. B65g *57/24*
U.S. Cl. 214—6 N **12 Claims**

A pallet that is dimensioned for fully supporting a certain number of cans that are packed in layers, and the layers in an even number of staggered diamond pattern rows, is to be packed with an extra row in each layer. The bottom layer is to be centered on the pallet so that the containers of the edge rows, including the extra row, each overhang beyond the pallet by less than half so as still to be solidly supported. The apparatus accomplishes this packing by moving a set including the extra row of containers along a path above the pallet with



the set preceded by a single row and followed by a remainder to permit the set to separate therefrom; and then removing the preceding row before the set is lowered onto the pallet. The containers of the preceding row are then recirculated to the upstream portion of the path to beome part of a subsequent set.

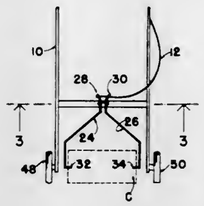
3,645,411
BLAST FURNACE BELL CONSTRUCTION
Phillip Courtenay Kempe, Brighton, South Australia, assignor to Canron Limited, Montreal, Quebec, Canada
Filed May 28, 1970, Ser. No. 41,238
Claims priority, application Canada, Apr. 22, 1970, 80,780
Int. Cl. F27d *3/10*
U.S. Cl. 214—36 **17 Claims**



An improved bell for blast furnace including arcuate-shaped wear ring segments formed from a laminate consisting of a thick layer of wear-resistant brittle material and a thin layer of ductile material. The outer surface of the wear ring segments is obliquely disposed and the ductile component is disposed below the brittle component. The wear surface of the bell is formed by a plurality of wear rings mounted on a reusable frame by suitable mounting pins. The bell also has a sealing surface formed by a pair of wear ring segments which are releasably secured at the lower end thereof to engage the sealing surface of the loading hopper. The segments which form the sealing surface are again a laminated construction consisting of alternately disposed layers of a brittle wear-resistant material and a ductile impact-absorbing material.

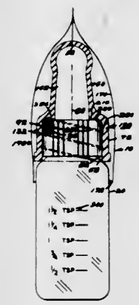
3,645,412
MATERIAL HANDLERS
Lowell N. Brown, 11612 Bowling Green St., St. Louis County, Mo.
Filed July 15, 1970, Ser. No. 54,962
Int. Cl. B62b *1/06*
U.S. Cl. 214—377 **1 Claim**

This invention relates to a portable Material Handler for use in lifting and carrying about small boxes or crates which are filled with extremely heavy materials utilizing a pair of remotely controlled tongs mounted on a portable lift cart,



pivotally mounted on the cart for forward and backward swinging movement thereon.

3,645,413
MEDICINE DISPENSER WITH NIPPLE-INSERT
Donita L. Mitchell, 2006 Benson Garden Blvd., Omaha, Nebr.
Filed July 10, 1970, Ser. No. 53,876
Int. Cl. A61j *9/04, 9/08*
U.S. Cl. 215—11 R **5 Claims**



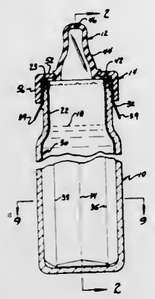
A unit-dose medicine dispenser for babies comprising a hollow medicine vial of less than 3 teaspoonsful volume, an annular nipple-insert having an outer wall onto which the nipple is stretched, the inner wall of the nipple-insert being threadedly attached to the vial.

The combination of the dispenser described with a covering extended around the nipple for protecting the nipple from the fingers during attachment to the vial.

3,645,414
NURSING UNIT WITH IMPROVED PLASTIC LINER
Arthur C. Barr, 111 King St., Madison, Wis.
Continuation-in-part of application Ser. No. 862,840, Oct. 1, 1969, now Patent No. 3,545,637, which is a continuation-in-part of application Ser. No. 744,537, July 12, 1968, now Patent No. 3,471,050. This application Aug. 31, 1970, Ser. No. 68,368
Int. Cl. A61j *9/04*
U.S. Cl. 215—11 R **8 Claims**

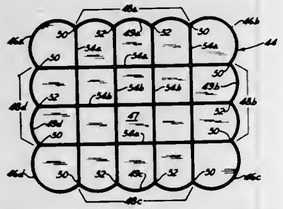
An impervious baby bottle is provided with a plastic liner, a nursing nipple and a retaining cap. A venting insert is provided at the bottle mouth, between the lip and the liner, to vent the area between the bottle and liner to atmosphere so the liner collapses as liquid is dispensed therefrom. The bot-

tle is provided with an annular recess into which the venting insert fits to position and hold the insert at the bottle lip. The



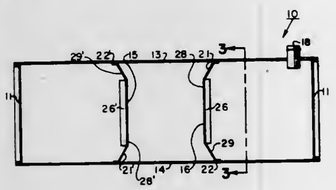
plastic liner is formed of a flattened plastic tube having reentrant folds at the longitudinal sides.

3,645,415
MULTICYLINDER TANKS
Rex V. Phelps, Tulsa, Okla., assignor to Warren Petroleum Corporation, Tulsa, Okla.
Filed Apr. 23, 1970, Ser. No. 31,311
Int. Cl. B65d *1/24*
U.S. Cl. 220—22 **3 Claims**



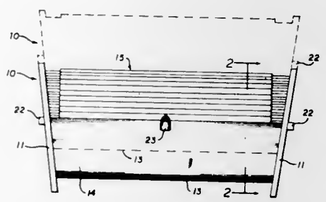
A tank having an outer wall comprising a plurality of intersecting vertical cylindrical segments joined together at the intersection and arranged with their concave surfaces facing inwardly. Webs joined to junctures of the cylindrical segments and extending across the tank to other junctures carry a part of the outward force applied to the outer wall by liquids stored in the tank.

3,645,416
TANK BAFFLE
Robert Main, Jr., Hutchinson, Kans., assignor to Deluxe Specialties Manufacturing Company, Inc., Hutchinson, Kans.
Filed Sept. 16, 1969, Ser. No. 858,447
Int. Cl. B65d *25/04*
U.S. Cl. 220—22 **6 Claims**



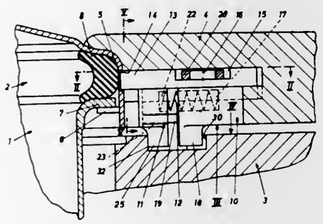
A tank or container for liquid especially adapted to withstand repeated high internal pressure resulting from movement of the liquid therein. One or more pairs of baffles are arranged in parallel within the tank. Each baffle is of a general arch shape preferably having a flat section disposed transversely in said tank perpendicular to the longitudinal axis of the tank with an angular flanged section at both the top and bottom edge. The edges of the flanges are affixed to the tank top and bottom, respectively, leaving the opposite sides free to flex against the tank walls opposing the tendency of the tank to collapse in response to internal pressure forces resulting from movement in liquid.

3,645,417
TAPERED CONTAINER HAVING SLIDABLE COVER
Adelaido M. Leal, 1105 Parsons Lane, Fort Worth, Tex.
Filed Oct. 5, 1970, Ser. No. 77,797
Int. Cl. B65d *43/12*
U.S. Cl. 220—41 **3 Claims**



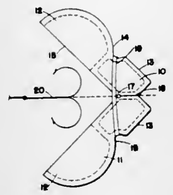
A container having downwardly converging sides whereby other containers of the same size and shape may be stacked one within the other when the containers are not in use, each container having a slidable cover less than the top width of the container and having spring-biased projections along the sides of the cover for effectively widening the cover area at the top when the container is in its closed position.

3,645,418
PRESSURE COOKER SAFETY DEVICE
Karl-Oskar Oberlander, Geislingen am Steige, Germany, assignor to Wurttembergische Metallwarenfabrik, Geislingen am Steige, Germany
Filed July 14, 1970, Ser. No. 54,705
Claims priority, application Germany, July 17, 1969, P 19 36 505.0
Int. Cl. A47j *27/08;* **B65d** *45/00*
U.S. Cl. 220—55.3 **21 Claims**



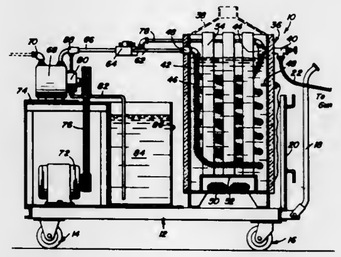
A safety device for a steam pressure cooker has a gasket lifter mechanism for selectively lifting the sealing gasket of the pressure cooker to provide for an escape of steam prior to each opening of the cooker, and preferably also whenever the cooker lid is incorrectly positioned relative to the cooking vessel.

3,645,419
HOOK GUARD AND FLOAT
Nelson Shorrock, R.R. #1, Dryden, Ontario, Canada
Filed Mar. 9, 1970, Ser. No. 17,728
Int. Cl. A01k *97/00;* **B65d** *51/10*
U.S. Cl. 220—31 S **1 Claim**



Two substantially hollow spherical portions are normally held closed by a rubberband around the bases of offset manipulative portions. When these portions are pressed together, the two halves open against the pressure of the band so that a fishhook can be inserted or removed from the enclosure. The manipulative portions may be hollow and sealed so that the device can be used as a float also.

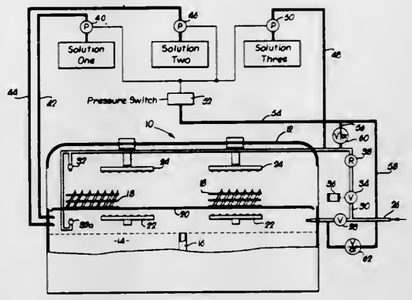
3,645,420
HIGH-PRESSURE HOT WATER CLEANER
Joseph G. Machado, P.O. Box 3711, Modesto, Calif.
Filed June 23, 1969, Ser. No. 835,586
Int. Cl. B67d *5/62*
U.S. Cl. 222—23 **16 Claims**



Cleaning apparatus having a tank of hot medium from which heat is transferred to a cleaning fluid conducted through a coiled heat transfer tube. Cold cleaning fluid is delivered by a continuously operative liquid pump to the heat transfer tube from which the heated and pressurized cleaning fluid is delivered to a spray gun having a trigger for initiating an automatic multistage cycle to sequentially spray a surface with water, detergent and a mixture thereof at elevated temperatures.

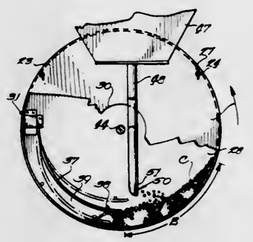
3,645,421
METHOD OF ADDING INGREDIENTS TO A DISHWASHING MEDIUM
John B. Tuthill, Kansas City, Mo., assignor to American Dish Service of Kansas City Inc., Kansas City, Mo.
Filed Feb. 16, 1970, Ser. No. 11,613
Int. Cl. B67d *5/08*
U.S. Cl. 222—57 **7 Claims**

The active ingredients of the rinsing and washing media of a commercial dishwashing machine, which are incompatible in concentrated solutions, are independently introduced into the rinse line and washing medium respectively. The flow of the concentrated solutions of the active ingredients is responsive to a predetermined rise in the pressure of the water being added to the dishwashing medium thereby assuring that



a quantity of each of the active ingredients is added each time water is added in proportion to the quantity of water added.

3,645,422
FEEDER APPARATUS FOR METERING A PREDETERMINED AMOUNT OF PRODUCT
Charles De Witt Cretors, Deerfield, Ill., assignor to C. Cretors & Co., Chicago, Ill.
Filed Mar. 30, 1970, Ser. No. 23,580
Int. Cl. B65d *83/06*
U.S. Cl. 222—169 **6 Claims**

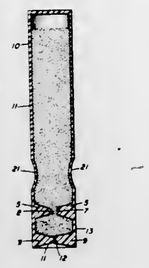


A rotatable feeder apparatus for metering a predetermined amount of product is provided which can be removably mounted on a cooking machine. The apparatus includes a casing which forms a chamber and has an inlet port for receiving a feed tube and a discharge outlet port. An adjustable product volume control is disposed within the casing and forms a measuring area for controlling the amount of product conveyed to the discharge outlet port per revolution of the feeder.

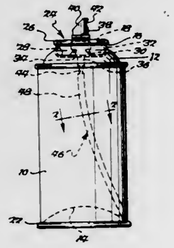
3,645,423
FULCRUM VALVE DISPENSING CONTAINER
William E. DeGraw, Danbury, Conn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,361
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 **13 Claims**

A storage container allows a measured quantity of the free-flowing material to be dispensed. In operation, a fulcrum

valve in the container closes flow of material between storage and dispensing sections wherein the closing valve acts as a fulcrum to open an outlet from the container located in the dispensing section.



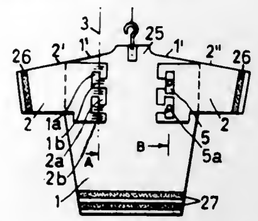
3,645,424
DIP TUBE FOR AEROSOL DISPENSER
Paul E. Gunning, Kenmore, N.Y., assignor to Osmose Wood Preserving Co. of America, Inc., Buffalo, N.Y.
Filed Nov. 6, 1969, Ser. No. 874,530
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.1 **2 Claims**



A dip tube for an aerosol dispenser comprising an elongated plastic tube having a shape retaining wire embedded into the body of the plastic tubing and coextensive therewith for controlling the curvature of the dip tube and maintaining it in a predetermined orientation. Alternatively, the wire can be inserted within the tube with the opposite ends thereof embedded in the inner wall of the tube or the wire can be provided with loops at opposite ends thereof and applied externally of the tube to stabilize the curvature of the tube.

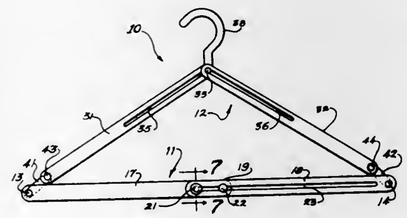
3,645,425
DEVICE FOR THE TENSIONING AND DRYING OF GARMENTS
Anneliese Witzke, Calwer St. 3, Hirsau, Kreis Calw, Germany
Filed Feb. 28, 1969, Ser. No. 803,361
Int. Cl. A41h *5/00*
U.S. Cl. 223—69 **13 Claims**

A device for the tensioning and drying of garments such as knit goods, particularly in the form of sweaters, pullovers and vests, includes a bust or torso portion conforming to the outline or contour of the body and including shoulder and neck portions of the garment. One or more sleeve-forming or similar attachments are adapted to be engaged through an opening of the garment such as at the sleeve and mounted in a simple manner on the bust portion. The attachments have projecting portions or recesses which interengage with complementary portions of the bust portion to anchor the attachments to the latter portion in adjusted position at which



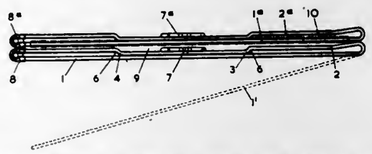
the attachments define contour extensions of the torso portion and provide a proper extension to support, block and tension corresponding parts of the garment to be dried in a stretched and like portion.

3,645,426
COLLAPSIBLE GARMENT HANGER
James T. Glascock, Rt. #1, Cedar Grove, Ind., and Glen R. Schlemmer, 110 Elbern Ave., Harrison, Ohio
Filed May 18, 1970, Ser. No. 38,046
Int. Cl. A47j *51/08*
U.S. Cl. 223—89 **9 Claims**



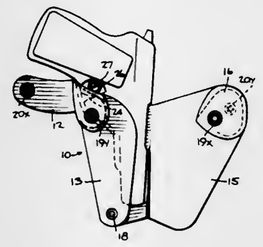
A collapsible garment hanger which opens to a triangular shape and collapses to a shortened and elongated shape. A telescopic lower member which locks in an extended position is joined through pivotal links to the opposite ends of an extendable top member which defines the two upper inclined shoulder sections of the hanger. These upper sections are pivotally attaches the hanger hook to the center of the top member.

3,645,427
CLOTHES HANGER
Adriaan Dekker, Dordrecht, Netherlands, assignor to Tomado N V, Dordrecht, Netherlands
Filed Nov. 12, 1969, Ser. No. 875,651
Claims priority, application Germany, Nov. 12, 1968, G 68 06 558.7
Int. Cl. A47j *51/15*
U.S. Cl. 223—96 **3 Claims**



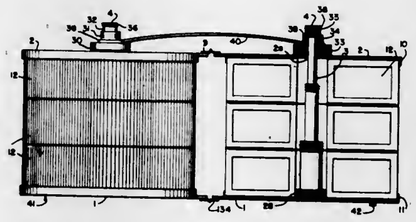
A clothes hanger of the kind comprising a single length of wire bent back on itself to form two arms extending parallel to each other and adapted to be latched together in the manner of a safety pin with one of said arms having a hanger-suspending hook at its center, the improvement consisting in providing the hook carrying arm with a central offset portion to form a recess for accommodating said hook so that when two of such hangers are hung on a rail closely adjacent to each other the hook on one hanger will not come into contact with a garment hung on an adjacent hanger.

3,645,428
OPEN-TOP GUN HOLSTER
Robert Angell, 514 East 88 Street, New York, N.Y.
Filed July 2, 1970, Ser. No. 52,002
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 B **5 Claims**



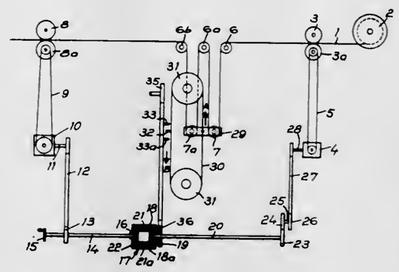
An open-top holster for a handgun whose grip is exposed, the holster affording maximum security for the gun and yet having the capability of being readily unlatched to facilitate a quick draw. The holster is constituted by a central section having first and second flaps on either side thereof, the first flap being folded over the central section and being secured thereto to define a tapered pocket that is shaped to receive the barrel and trigger assembly of the gun. The second flap is foldable over the first flap and is detachably secured thereto by a snap fastener which may be unlatched simply by forcing a finger between the flaps. Anchored on the central section is a locking stud which projects within the trigger guard of the gun behind the trigger to impede movement thereof as well as to prevent removal of the gun from the holster as long as the second flap is latched.

3,645,429
CARRIER FOR CAROUSEL SLIDE MAGAZINE OR THE LIKE
Milton J. Knapp, 1210 North Taft Street, Arlington, Va.
Filed Feb. 4, 1970, Ser. No. 8,500
Int. Cl. B65d *13/00*
U.S. Cl. 224—45 G **15 Claims**



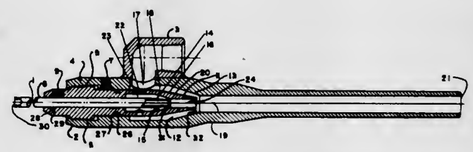
A carrying device, for carousel slide magazines or other articles including a central aperture, comprising first and second planar members in parallel spaced relationship, at least one telescoping connecting member rigidly mounted in perpendicular relation to the first planar member and extending through the central apertures of the said carried articles and through the second planar member, fastening means attaching to the telescoping connecting member to secure the first planar member, the carried articles, and the second planar member in stacked relationship.

3,645,430
APPARATUS FOR DRIVING A SHEATH AT VARIABLE AND AUTOMATICALLY ADJUSTABLE SPEED IN A MACHINE FOR MAKING PLASTIC BAGS
Georges Lagain, 3 rue des Sorbiers, 95 Ermont, France
Filed May 15, 1970, Ser. No. 37,675
Claims priority, application France, May 20, 1969, 6916303
Int. Cl. B65h *23/22*
U.S. Cl. 226—40 **4 Claims**



This invention relates to a device for driving a sheath at variable and automatically adjustable speed, characterized in that the members for controlling the speed of the two motor speed regulators are connected respectively by a transmission to two shafts on which are keyed two planetary pinions of a differential, the cage of which carrying the satellite pinions may be rotated during the displacement of a set of free rollers on which the sheath is wound.

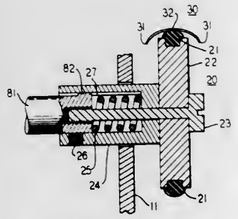
3,645,431
YARN-FORWARDING APPARATUS AND PROCESS
David M. Harrison, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 31, 1969, Ser. No. 846,561
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **11 Claims**



A yarn-forwarding apparatus which comprises a housing having an internal bore passing therethrough. The bore is divided into sections having different diameters which are connected by a converging surface. A hollow element is mounted in the bore of the housing and has an internal bore of different diameters which are connected by a converging surface. The end of the hollow element which is mounted in the bore of the housing is provided with a converging outer surface having less taper than the converging surface of the internal bore of the housing and a first annular converging chamber is formed between the converging surfaces of the housing and the hollow element. A hollow tube is mounted in the bore of the hollow element. The end of the hollow element which is mounted in the bore of said hollow element is

provided with a converging outer surface having less taper than the converging surface of the internal bore of the hollow element and a second converging chamber is formed between the converging surfaces. Inlet means is provided in the housing and the hollow element for introducing a gaseous medium into the first and second converging chambers.

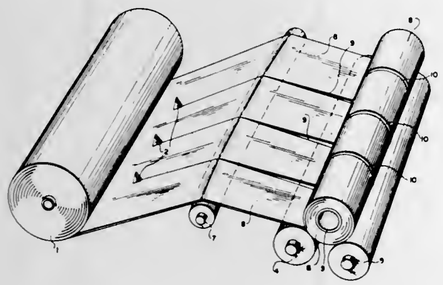
3,645,432
TRANSPORT APPARATUS
John J. French, Wayne, N.J., assignor to Certex, Inc., Fairfield, N.J.
Filed Nov. 19, 1969, Ser. No. 878,089
Int. Cl. B65h *17/20*
U.S. Cl. 226—190 **8 Claims**



Transport apparatus for the automatic positioning of a flexible record-keeping member, such as magnetic tape, with respect to a transducer, such as a read-write head.

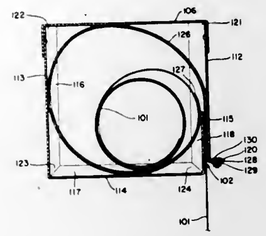
The automatic positioning is achieved by the use of a drive capstan which is narrower than the tape and has a crowned driving face. In addition, the capstan is spring-loaded for adjustment with respect to the read-write head. Tension is applied to the tape by way of standard vacuum columns used in a transport unit.

3,645,433
SPREADER ROLL
Robert G. Lucas, and Kenneth G. Frye, both of Downingtown, Pa., assignors to Corporation Beloit, Beloit, Wis.
Filed Dec. 16, 1967, Ser. No. 885,558
Int. Cl. B65h *17/20*
U.S. Cl. 226—190 **4 Claims**



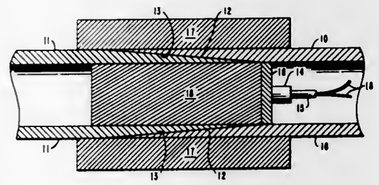
A spreader roll which is useful to spread a slit web into a plurality of separated webs includes an adjustably bowable shaft and a cylindrical outer surface mounted for rotation about the bowable shaft. According to the present invention, the spreader roll is improved by providing an outer cylindrical surface which is made up of a plurality of separate segments axially aligned along the shaft and each segment being freely rotatable about the shaft independently of the other segments.

3,645,434
FILM CASSETTE
Harry Rab, Fairport, N.Y., assignor to The Singer Company
Filed Apr. 27, 1970, Ser. No. 32,012
Int. Cl. B65d *85/67*
U.S. Cl. 226—196 **8 Claims**



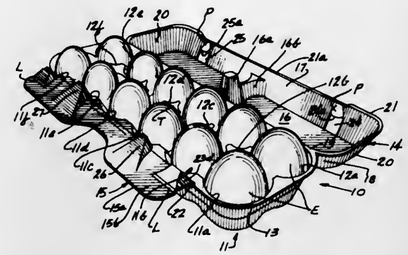
There is disclosed a substantially lighttight film cassette into which a length of exposed photographic medium may be incrementally inserted through a slot. A pliable guide medium having a low coefficient of friction, a width not exceeding that of the film cassette, and a length of the order of the cross-sectional perimeter of the film cassette is attached to the film cassette for guiding and expediting the insertion of the exposed photographic medium. The medium is inserted into the cassette by external advancing means which advance the medium in controlled increments.

3,645,435
MEANS FOR JOINING METALLIC TUBES BY EXPLOSIVE BONDING
Alfred E. Doherty, Jr., Anaheim, and Louis H. Knop, Glendora, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Original application Aug. 19, 1965, Ser. No. 481,023, now Patent No. 3,535,767. Divided and this application July 24, 1969, Ser. No. 871,140
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **4 Claims**



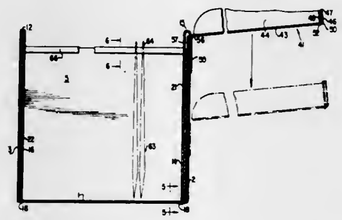
Disclosed is means for the explosive bonding of metallic tubing sections to one another. The portions of the tubes to be bonded are maintained in intimately contacting relationship, and an explosive charge is provided in proximity thereto. This charge, when detonated, creates shock waves which cause the sections to be driven together, creating the bond. Additional axial or circumferential support means may be provided to constrain the tubing sections during bonding. The means for maintaining the intimately contacting relationship may comprise this support means, the explosive charge, or a combination thereof.

3,645,436
CARTON LOCK CONSTRUCTION
James W. Boyd, Crown Point, Ind., and Clifford H. Bessett, South Holland, Ill., assignors to Packaging Corporation of America, Evanston, Ill.
Filed June 3, 1970, Ser. No. 43,089
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R **7 Claims**



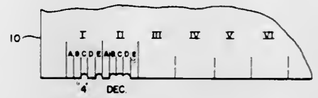
A carton lock construction is provided for releasably securing a cover in a closed overlying relation with respect to the open top of a tray. One lock component of the carton includes a flap hingedly connected to the upper edge of the tray delimiting the open top thereof. The flap, when in a locking position, assumes an upright position disposed in telescoping relation behind a depending wall of the closed cover. The flap is provided at its lateral end limits with substantially flat inwardly projecting locking ledges. The ledges are provided with broad substantially flat surfaces which are located intermediate the flap hinge and the upper elongated edge of the flap. The cover depending wall is provided with a pair of inwardly projecting protuberances which engage the corresponding flap locking ledges and retain the cover in its closed position.

3,645,437
COVERED FILE BOX
Buddy E. Giebel, 328 Tremont Street, Monroe, Mich., and Marilyn F. Reiter, 313 East 78th St., New York, N.Y.
Filed July 17, 1970, Ser. No. 55,705
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R **5 Claims**



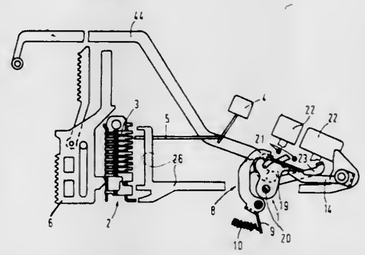
The file primarily for suspended folders comprises a box and a cover therefor, both made of inexpensive material, such as paperstock. The file may be sold in a knockdown kit comprising two prescored and precut blanks, one for the box section and the other for the cover. The cover is attached to the box section by flaps which permit a hinged opening and closing movement and also slidable movement away from the top of the box when it is fully open. Plastic strips are also provided to be placed on the top edges of the sides of the box to facilitate easy sliding movement for the means suspending the folders and other contents within the box.

3,645,438
FLOATING DECIMAL CODING SYSTEM
John L. Lanahan, Whitesboro, N.Y., assignor to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,441
Int. Cl. G06k *1/08*
U.S. Cl. 234—1 **6 Claims**



A method and apparatus for coding and selecting data members such as cards. A plurality of series arranged fields on the data member are coded and sensed in sequence with a special code to represent a number, the field following the last digit of the number being a decimal, which decimal can be placed at any field in the series. An electrical circuit for coding and sensing includes a keyboard connected through a stepping switch to coding and sensing solenoids.

3,645,439
MUTUAL LOCKING DEVICE FOR THE KEYBOARD OF A CALCULATING MACHINE
Carlo Bellis, Strambino (Torino), Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Torino, Italy
Filed July 21, 1970, Ser. No. 56,873
Claims priority, application Italy, July 23, 1969, 52763 A/69
Int. Cl. G06c *25/00, 29/00*
U.S. Cl. 235—60.49 **12 Claims**

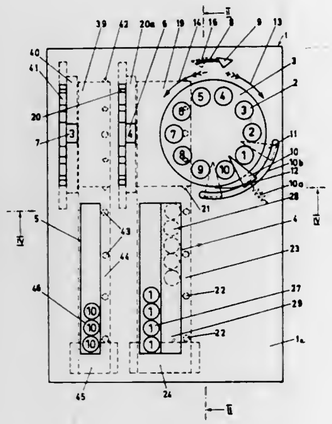


A mutual locking device establishing a mechanical interrelationship between the numerical keyboard and the operating keyboard of an electric calculating machine for preventing the commencement of an operating cycle initiated before the last of the numerical inputs has been completely entered, including means memorizing the operating input and entering the operating input immediately upon completion of the entry of the numerical input; and preventing the entry of a numerical input initiated while an operating cycle is in progress, including means for memorizing the numerical input and entering the numerical input immediately upon completion of the operating cycle.

3,645,440
CALCULATING INSTRUMENT
Karola Thevis, Oberndorf/Neckar, Germany, assignor to Schildkrot AG. vorm Rheinische Gummi und Celluloid Fabrik, Mannheim, Germany
Filed July 15, 1969, Ser. No. 841,752
Claims priority, application Germany, July 17, 1968, P 17 72 896.0; Oct. 15, 1968, P 18 03 134.0
Int. Cl. G06c *27/00*
U.S. Cl. 235—66 **32 Claims**

A calculating instrument for use by children wherein a dial disk indexes one of two digit wheels and the one wheel in-

dexes the other wheel. The wheels are mounted in a housing behind windows each of which exposes a single digit on the respective wheel. Each digit on the other wheel represents a numerical value 10 times the value of a digit on the one wheel and the wheels drive endless belts respectively having



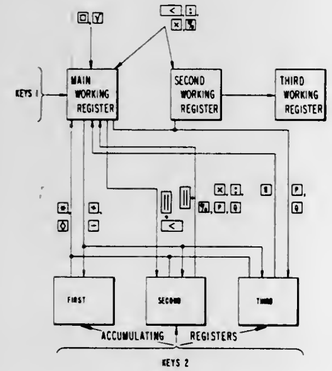
rows of unit symbols and decade symbols. A third digit wheel is indexed in response to successive manipulations of the dial disk when the instrument is set to perform a multiplication or division. The digits of the third wheel represent a series of multiplicands or quotients.

3,645,441

KEYBOARD FOR A DESK COMPUTER

Giovanni De Sandre, Milan, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Turin, Italy

Filed Oct. 24, 1969, Ser. No. 869,272
Claims priority, application Italy, Oct. 28, 1968, 19970-B/68
Int. Cl. G06c *7/02, 25/00*
U.S. Cl. 235—145 R 1 Claim



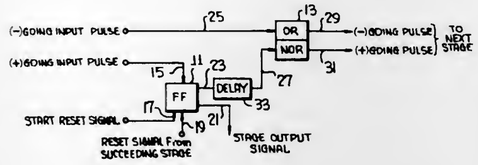
A calculator, including working registers and one or more accumulating registers, is provided with a keyboard including numerical keys, function keys and a connecting key. The connecting key, when operated, connects a selected accumulating register with a predetermined working register controlled by the function keys. The number contained in the selected accumulating register is thereby designated as an operand in the performance of a function selected by the simultaneous or subsequent operation of a function key.

3,645,442

FLUIDIC COUNTER

Peter Bauer, Germantown, Md., assignor to Bowles Engineering Corporation, Silver Spring, Md.

Filed Sept. 16, 1969, Ser. No. 858,322
Int. Cl. G06d *1/08*
U.S. Cl. 235—201 17 Claims



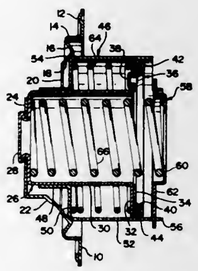
A fluidic binary counter stage requires only two fluidic elements; a flip-flop and an OR/NOR gate. Input pressure pulses set the flip-flop, the reset output from which remains applied to the OR/NOR gate until the input pulse terminates. Pulsed pressure interruptions are applied to the or/NOR gate, the NOR and OR signals from which are delivered to the next counter stage as input pressure and inverted pressure pulses respectively. The counter can count in any base number system by connecting a reset signal to each flip-flop from an appropriate subsequent stage.

3,645,443

AUTOMOBILE THERMOSTAT

James R. Willson, Garden Grove, Calif., and Keith T. Krueger, Bellefontaine, Ohio, assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 19, 1969, Ser. No. 886,668
Int. Cl. F01p *7/16*
U.S. Cl. 236—34 9 Claims



An automobile thermostat including an operator member for moving a valve member away from a valve seat when the temperature of a coolant is increased to a predetermined value, the operator member being constructed of a material having a temperature-actuated shape memory or a modulus of elasticity that varies with temperature.

3,645,444

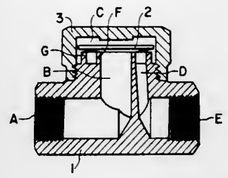
STEAM TRAP OF THE DISC-TYPE

Katsuji Fujiwara, 911 Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo-ken, Japan

Filed Aug. 12, 1969, Ser. No. 849,435
Int. Cl. F16t *1/04*
U.S. Cl. 236—59 8 Claims

This invention relates to a disc-type stream trap, wherein a disc valve is mounted in a chamber defined by a main body and a cover with the main body formed with an inlet port and an outlet port, and having outer and inner annular valve seats, The central portion of the disc valve is made slightly

higher or the inner annular valve seat is made slightly higher than the outer seat so that the valve may maintain its closed



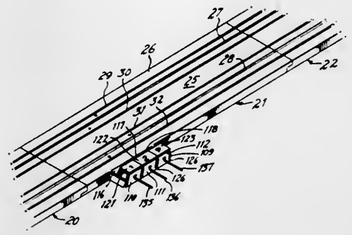
state due to intimate contact with the valve seats, even through the valve becomes curved when exposed to steam at high temperatures and pressure at work.

3,645,445

TRACK FOR MODEL VEHICLES

Cheng Ying Lai, Hong Kong, and Charles Patrick Goins, Atco, N.J., assignors to Tyco Industries, Inc., Woodbury Heights, N.J.

Filed Feb. 18, 1970, Ser. No. 12,254
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E 3 Claims



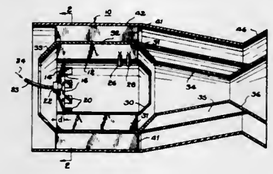
A section of track having conductive rails for sliding engagement with model vehicles, wherein a plurality of wire supports are provided corresponding to respective conductive rails, a wire is supported by each wire support and connected to a respective rail, and holding members are resiliently mounted adjacent to respective wires for releasably holding conductive leads against the wires.

3,645,446

ARTIFICIAL ICE NUCLEI GENERATOR

Bradley T. Patten, 10460 S.W. 44th Terrace, Miami, Fla.

Filed Sept. 4, 1970, Ser. No. 69,694
Int. Cl. A01g *15/00*
U.S. Cl. 239—14 7 Claims



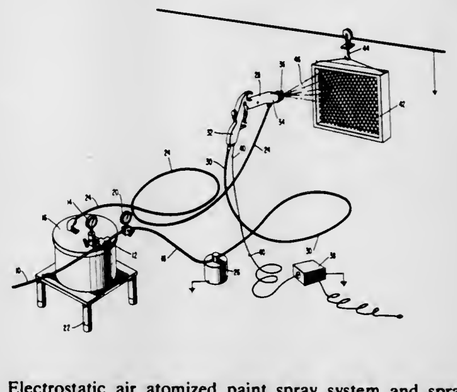
In this generator, a nose cone is mounted in the inlet of a cylindrical combustion chamber. Openings in the cone's surface admit combustion air into the chamber, and slots around the cone's base establish a boundary layer airflow along the chamber wall. A fuel injection nozzle mounted in the apex of the nose cone sprays an acetone solution of a silver iodide-sodium iodide complex into the chamber, where the resulting vapor is ignited. The combustion temperature and hence the vaporization of the complex is controlled by a choke that terminates the combustion chamber. A shell mounted around the combustion chamber ducts preheated air into a heat-insulated, choked chamber where the air quenches the growing nuclei. The resultant dispersion is expanded by a diverging tail portion of the shell. A housing mounted around the shell ducts cool air into the expanding dispersion. A diverging tail portion on the housing deflects outwardly the air flowing along the housing.

3,645,447

ELECTROSTATIC PAINT SPRAY SYSTEM

Philip L. Cowan, Basking Ridge, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Filed Dec. 31, 1968, Ser. No. 788,148
Int. Cl. B05b *5/00*; F23d *11/28*
U.S. Cl. 239—15 17 Claims



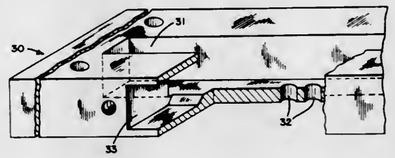
Electrostatic air atomized paint spray system and spray device wherein power for charging air atomized spray droplets and for maintaining electrostatic depositing field is obtained from self-contained electrogasdynamic generator operatively responsive to the flow of seeded atomizing air therethrough.

3,645,448

INLET PLATE FOR A COATING HEAD

Philip H. Houser, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

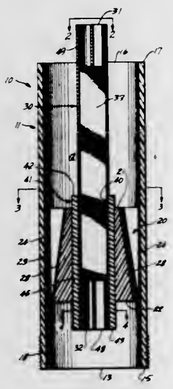
Filed Nov. 17, 1969, Ser. No. 877,256
Int. Cl. B05b *5/00*; F23d *11/28*
U.S. Cl. 239—15 5 Claims



In a laminated coating head in which drops of coating material are ejected from relatively small orifices in an orifice plate to provide a patterned coating, as in printing, and a filter plate is positioned upstream of the orifice plate to remove any foreign particles from the coating material and prevent clogging of the orifices, an inlet plate having an elongated slot therein is positioned between the filter plate and the orifice plate to thereby form a chamber between the two

and allow turbulence generated in the coating by its passage through the filter plate to decay before the coating material reaches the orifice plate. Additionally, the inlet plate is provided with a series of passages extending from the slot and concentrically arranged with respect to the orifices to channelize the flow and eliminate cross flow before the coating material is delivered to the orifices.

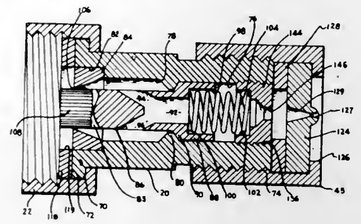
3,645,449
MULTITIER ORNAMENTAL FOUNTAIN
John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.
Continuation-in-part of application Ser. No. 784,541, Dec. 9, 1968, now Patent No. 3,558,053, which is a continuation-in-part of application Ser. No. 691,111, Dec. 8, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 492,389, Oct. 4, 1965, now abandoned. This application Oct. 5, 1970, Ser. No. 78,117
Int. Cl. B05b *17/08*
U.S. Cl. 239—17 **28 Claims**



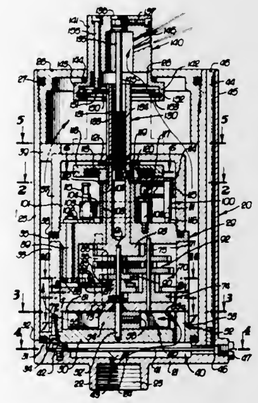
An ornamental fountain nozzle includes an elongate tubular body having a duct formed therethrough between opposite open ends of the body. An elongate plug is disposed across the duct inwardly of the body adjacent its outlet end and has its periphery engaged with the walls of the duct. A plurality of tapered grooves are formed in the sidewalls of the plug at regular intervals around the plug and are inclined in a skew manner to the axis of the duct. A hollow open-ended tube is disposed coaxially of the duct through the plug so that liquid introduced to the inlet end of the body flows through the tapered skew plug grooves to define the lower tier of a fountain discharge pattern and also flows through the central tube to define an upper central tier of the pattern.

3,645,450
SOLIDS ABRADING DEVICE
Oliver J. Calder, 1205 E. Madison, Orange, Calif.
Filed May 22, 1970, Ser. No. 39,621
Int. Cl. B05b *15/02*
U.S. Cl. 239—116 **17 Claims**

Airless spray equipment is described that is free from clogging. The clogging is prevented by passing the liquid, upstream of the spray tip, through anticlogging means comprising a constricted orifice which surrounds a mandrel that has a fluted end and that extends past the orifice entrance. The mandrel is slidably mounted in the orifice with a spring to bias it against movement by fluid pressure. Any solids in the liquid that would clog the spray tip are abraded by the action of the mandrel. In a preferred embodiment, the orifice and mandrel assembly is used with a pole spray extension having a slave valve at its discharge end to eliminate any spitting of liquid. The pole assembly is formed from a plurality of sections that are readily attachable with a threaded male coupling.



3,645,451
SPRINKLER DEVICE
Fred Hauser, 1544 Midvale Avenue, Los Angeles, Calif.
Filed Aug. 24, 1970, Ser. No. 66,321
Int. Cl. B05b *3/16*
U.S. Cl. 239—206 **9 Claims**

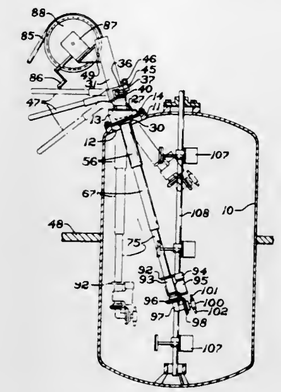


A water sprinkler device in which a water-operable motor drives a rotatable sprinkler head in an oscillating part-cycle movement so as to discharge water over a selected arcuate sector. The size of such sector may be manually adjusted or selected during operation of the sprinkler. The arcuate sector selected may be manually oriented with respect to the sprinkler device during operation. The radius of the arcuate sector may also be externally adjusted during operation of the device. The device comprises an inner and outer housing, a water turbine, alternate counterrotating gear transmission paths, a reduction gear train, and an overcenter actuating assembly. The sprinkler head is rotated in opposite direction depending upon the engagement of the head through one of the counterrotating gear transmission paths from the unidirectionally operating water turbine.

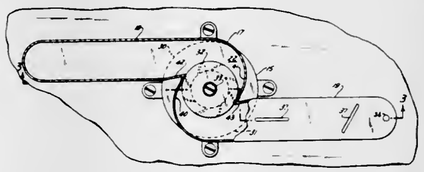
3,645,452
TANK CLEANER
Albert L. Stoeckel, Euclid, and Alfred F. Zoltai, Elyria, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Apr. 27, 1970, Ser. No. 32,290
Int. Cl. B05b *3/02*
U.S. Cl. 239—227 **8 Claims**

A portable high-pressure tank-cleaning apparatus with telescopic sections adjustably secured to a base section. A

cleaning head is mounted at the end of the forwardmost section and is positioned upon extension of the telescopic sections. The adjustability of the telescopic sections on the base permits the cleaning head to be positioned at different positions in the tank.



3,645,453
DISHWASHER IMPELLER AND SPRAY APPARATUS
Wendell D. Morgan, Marion, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed Aug. 20, 1970, Ser. No. 65,524
Int. Cl. B05b *3/04*
U.S. Cl. 239—237 **6 Claims**



A dishwasher impeller and spray apparatus having a power-driven impeller and a hollow spray arm mounted in substantially the same plane for relative rotation about an axis. A cavity formed in the spray arm contains the impeller and has thrust members formed therein and extending inwardly toward the impeller to divert water into end portions of the spray arm from a path tangential to the periphery of the impeller. The water flowing along the tangential path impinges on the thrust members and exerts a force thereon causing the spray arm to rotate at a rate controlled by water pressure and an angle between the thrust member and the periphery of the impeller.

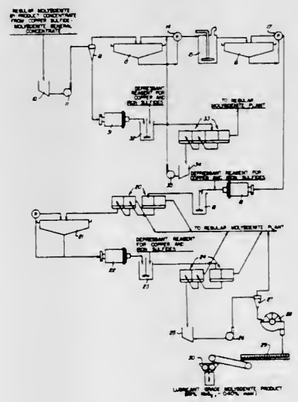
3,645,454
SEPARATION OF NICKEL FROM ASBESTOS ORE
Richard Payson Fowler, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,443
Int. Cl. B03c *1/30*
U.S. Cl. 241—4 **10 Claims**

The nickel-alloy awaruite found in chrysolite asbestos ore tailings is concentrated by magnetically separating the asbestos ore tailings to obtain a magnetically attracted, nickel-enriched fraction. The nickel-enriched fraction is mechanically impacted, preferably by ball milling, to increase the maximum dimension of the awaruite particles and to fracture the other more easily ground material in the tailings, mainly magnetite and serpentine rock, into smaller particles.



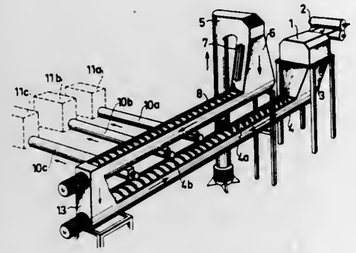
After the maximum dimension of the awaruite particles has been increased, they can be efficiently size-separated from the smaller particles of fractured magnetite and serpentine.

3,645,455
PRODUCTION OF LUBRICANT-GRADE MOLYBDENITE FROM BYPRODUCT CONCENTRATES OF PORPHYRY COPPER ORES
Cecilio O. Castillo, Hurley, N. Mex., assignor to Kennecott Copper Corporation, New York, N.Y.
Filed Apr. 4, 1969, Ser. No. 813,666
Int. Cl. B02c *1/00*; B03d *1/00, 1/14*
U.S. Cl. 241—20 **5 Claims**



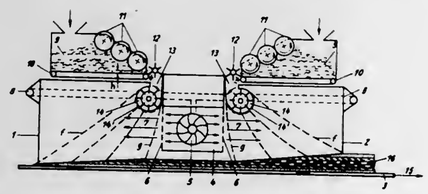
Lubricant-grade molybdenite is produced from byproduct molybdenite flotation concentrates of porphyry copper ores by a sequence of purification steps which include controlled grinding to liberate contaminant minerals and to flatten the molybdenite, followed by a flotation step for the selective recovery of the so-flattened molybdenite. The grinding is controlled to soften impact and minimize duration of the grinding period.

3,645,456
METHOD FOR CONVERTING SHEET CELLULOSE PULP TO DEFIBRATED PULP
Stig Olof Grafstrom, Bondsjo, and Nils Verner Blomqvist, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed June 3, 1969, Ser. No. 830,042
Claims priority, application Sweden, June 5, 1968, 7547/68
Int. Cl. B02b 5/02; B03b 7/00
U.S. Cl. 241—29 4 Claims



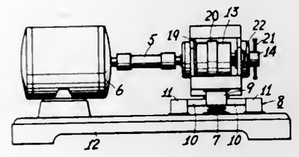
Method and apparatus are provided for converting sheet cellulose pulp to defibrated pulp, uniformity of the defibrated pulp stock being ensured by pooling the shredded pulp obtained from a plurality of cellulose pulp sheets, and uniformly feeding the pooled shredded pulp fibers to the disintegrators.

3,645,457
APPARATUS FOR DEPOSITING COMMINUTED MATERIALS UPON TRAVELING CONVEYING MEANS
Berndt Greten, and Heinrich Mund, both of Springe, Germany, assignors to Bahre-Metallwerk K.G., Springe, Germany
Filed Dec. 8, 1969, Ser. No. 882,916
Claims priority, application Germany, Dec. 20, 1968, P 18 16 212.4
Int. Cl. B02c 19/00
U.S. Cl. 241—60 4 Claims



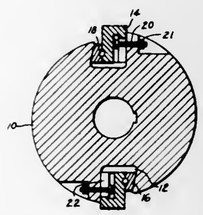
An apparatus for producing chip or fiberboards in which specific amounts of loose chips or fibers are fed continuously into at least two chambers in each of which these chips or fibers are broken up into small particles by means of a comminuting mechanism and are intimately mixed with each other and thrown through substantially horizontally extending dispersing air currents and in the first chamber at different angles in a direction opposite to the direction of travel of a conveyor belt or the like passing through the chambers in a horizontal direction near the bottom of the chambers, and in the following chamber at different angles in the opposite direction, i.e., in the direction of travel of the conveyor belt, so that in the first chamber at first the finest particles are deposited on the belt and thereafter progressively coarser particles upon the finer particles, while in the following chamber at first the coarsest particles and thereafter the progressively finer particles are deposited on the particles which were previously deposited.

3,645,458
VIBRATING GRINDING MILL
Hideharu Tobe, 903-17, 1-banchi, 4 chome, Shimomeguro, Meguroku, Tokyoto, Japan
Filed Jan. 29, 1970, Ser. No. 6,842
Claims priority, application Japan, Feb. 7, 1969, 44/8705; Feb. 27, 1969, 44/16844
Int. Cl. B02c 17/14
U.S. Cl. 241—175 3 Claims



A miniature grinding device for grinding small samples which comprises an electrically driven vibratory structure including an eccentrically weighted shaft, a frame supported on said shaft, one or more cylindrical grinding chambers secured to said frame and an axially aligned free-moving grooved rod or roller in each chamber, each said rod having a size slightly less than the inside volume of each chamber.

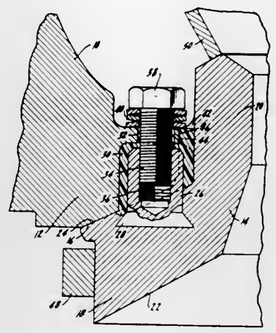
3,645,459
ROTOR FOR A ROLL CRUSHER
Robert Lucas, Paris, and Jean-Pierre Millier, Grenoble, both of France, assignors to Fives Lille-Cail, Paris, France
Filed Mar. 2, 1970, Ser. No. 15,630
Claims priority, application France, Feb. 28, 1969, 6905246
Int. Cl. B02c 13/06
U.S. Cl. 241—191 5 Claims



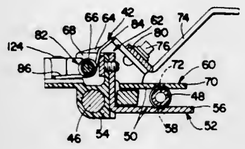
A peripheral crushing element is held in a dovetailed groove of a rotor by a prismatic wedge member which is interposed between one face of the crushing element and the tapering wall of the groove. The wedge member extends the length of the crushing element and has opposite walls in abutting engagement with the crushing element face and the groove wall, respectively. A key locks the wedge member to the crushing element into a unit for joint movement in an outward direction.

3,645,460
UPPER LINER FOR CRUSHERS
Francis Scaffidi, West Allis, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Oct. 27, 1969, Ser. No. 869,544
Int. Cl. B02c 2/04
U.S. Cl. 241—299 9 Claims

A bowl liner and a bowl for use in gyratory cone crushers in which the body of the liner has improved wear-resistant features and the liner is mounted in a shock-free manner to greatly increase the life of the liner. A circumferential, inwardly extending bowl ledge is provided with sockets through which inserts which are fused to the liner body project. The inserts have bores threaded to receive spring-loaded mounting bolts yieldably connecting the liner to the bowl.

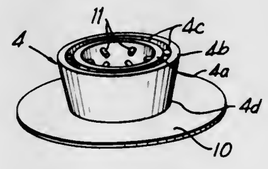


3,645,461
WINDING APPARATUS
Robert E. Morton, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed May 11, 1970, Ser. No. 36,126
Int. Cl. B65h 54/14, 54/36
U.S. Cl. 242—31 6 Claims



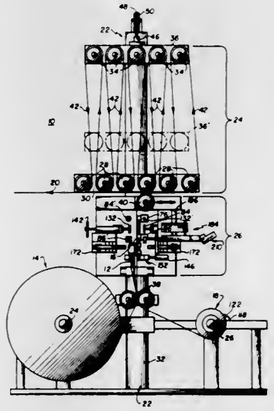
A winding machine, such as a Unifil loom winder, manufactured by Leesona Corporation, Warwick, Rhode Island 02887, has a yarn traversing member releasably threadedly secured to a traverse rod which is reciprocated and rotated to provide a to-and-fro traversing motion and a builder motion to the traversing member and to a yarn advancing through a guide eye of the traversing member as the yarn is wound onto a rotating bobbin. To retain the traversing member operatively threadedly engaged with the traverse rod throughout reversal of the traversing member at relatively high-winding speeds, the traversing member has a pair of threaded jaws releasably held in positive threaded engagement with the traverse rod during winding. In one embodiment the jaws are urged into resilient engagement with the traverse rod in such a manner that should engagement of one of the jaws loosen its threaded engagement with the rod, the other jaw is more firmly threadedly mated with the rod threads. In another embodiment, the jaws are held in operatively fixed relationship with each other when they are operatively threadedly mated with the traverse rod. Upon completion of winding of a bobbin at a predetermined, adjustable position of the traversing member, the jaws are automatically opened to release the traversing member from the traverse rod. A retriever is automatically inserted between the opened jaws and the jaws are then automatically closed onto the retriever and held out of engagement with the traverse rod as a retriever carrier returns the traversing member to its starting point. While en route to the starting point, a cutter is operated to cut the yarn between the traversing member and the filled bobbin which has been doffed. A flap on the retriever carrier clamps the cut end of the yarn from the supply and engages the yarn for winding onto an empty bobbin which has been donned into the winder. The retriever carrier and the cutter are then returned to their original positions and the cycle is completed. Optionally, a tip bunch may be wound on the filled bobbin.

3,645,462
ENDLESS TAPE CARTRIDGE
Fukuzo Ito, and Masaoki Sekine, both of Kanagawa-ken, Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed May 28, 1969, Ser. No. 828,498
Claims priority, application Japan, June 11, 1968, 43/40161
Int. Cl. B65h 17/48
U.S. Cl. 242—55.19 A 3 Claims



A tape recorder cartridge having a single hub on which a looped endless tape is wound up in a convoluted manner. The hub consists of the main driving wheel for taking up the tape and a driven wheel rotatably mounted on the outer periphery of the main driving wheel with torque transmitting means therebetween. The endless tape is arranged for being wound up on the outer periphery of the driven wheel, pulled out of the innermost convolution of the tape wound up on the driven wheel, and rewound on the outermost convolution on the periphery of the driven wheel.

3,645,463
WEB-SPLICING APPARATUS
Frank R. Helm, Linden, N.J., assignor to Champion Paper Products Company, Union, N.J.
Filed Oct. 6, 1969, Ser. No. 864,037
Int. Cl. B65h 19/18
U.S. Cl. 242—58.1 30 Claims



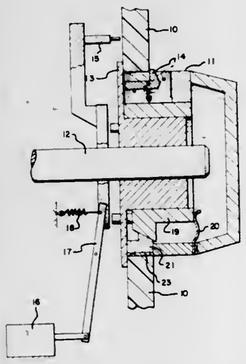
Apparatus is disclosed for automatically splicing the beginning of one roll of paper or the like onto the approximate end of a second roll of paper or like material without discontinuing the flow of paper to a utilizing device. The ap-

paratus includes a support stand having means for supporting the first and second rolls of paper in rotatable relationship therewith; a festooner arrangement carried by the support stand for establishing an elongated path of travel for paper of the second roll moving through the apparatus and for allowing the utilizing device to feed upon the paper carried by the festooner when the second roll of paper has stopped rotating; and clamping, severing and splicing means responsive to the halt of the second roll of paper for clamping the paper of said second roll at a first predetermined location, severing the paper of said second roll at a second predetermined location, below the first predetermined location, and for joining the beginning of said first roll to the severed end of said second roll; whereby the utilizing device will begin feeding on the paper of the first roll of paper. In addition, there is disclosed preparing apparatus operatively positioned on the support stand for treating the beginning end of the first roll of paper such that it may be subsequently joined to the trailing end of the second roll of paper.

3,645,464
REEL LATCH

Zoltan Herger, Northglenn, and Paul O. Pearson, Longmont, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed Apr. 30, 1970, Ser. No. 33,371
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **8 Claims**



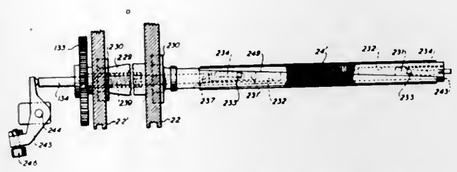
A magnetic tape drive unit has an automatic latch for locking a magnetic tape reel to the shaft. When the reel is placed on the shaft, a sensor is actuated by proximity of the reel to its operating position. Pads on the shaft hub are driven into frictional engagement between the hub and the reel when the sensor is actuated. A solenoid actuator operates a combination of cone and cams which translate axial motion of the solenoid actuator into radial motion which drives the friction pads into engagement with the reel.

3,645,465
WEB WINDING MACHINE

Walter E. Peery, Princeton, N.J., assignor to Eureka-Carlisle Company, Scranton, Pa.

Original application Oct. 22, 1965, Ser. No. 501,631, now Patent No. 3,462,093, dated Aug. 19, 1969. Divided and this application Mar. 4, 1969, Ser. No. 816,464
Int. Cl. B65h *75/24*
U.S. Cl. 242—72.1 **4 Claims**

A first member supported at one of its ends for rotation and against axial displacement is formed with a uniform outer surface along one of its longitudinal sides and a tapered surface opposite thereto. A second member, formed with a tapered surface on one of its sides and a uniform surface opposite thereto, is disposed with its tapered surface cooperating with the first member's tapered surface. A rod secured to the second member extends through an orifice in the fist

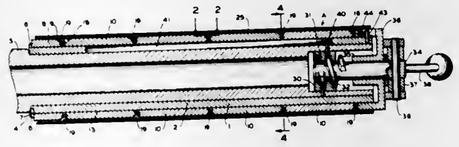


member to facilitate longitudinal displacement of the second member on the first and a corresponding change in the size of the mandrel diameter. A resilient shroud encompasses the length of the mandrel.

3,645,466
EXPANDABLE MANDREL

Harald E. Karlson, Santa Monica, Calif., assignor to Goldsworthy Engineering, Inc.

Filed Aug. 1, 1969, Ser. No. 846,789
Int. Cl. B65h *75/24*
U.S. Cl. 242—72.1 **6 Claims**



The invention relates to a mandrel which is expandable and retractable within definite limits to predetermined diametral sizes and is capable of being disposed upon a central support shaft. The mandrel includes a support tube having a series of longitudinally aligned wedging rings concentrically disposed about said tube, said wedging rings having recesses for accommodating radially expandable cylindrical wedges. Each of the wedging rings is provided with an abutment at one end for engaging the wedges and arresting the innermost limit of travel. Furthermore, the abutments are designed to engage the next adjacent wedging ring, thereby limiting the outermost limit of travel of the wedges. In addition, the support tube is shiftable along the central support shaft by means of a crank handle so that any package formed on the mandrel can easily be removed therefrom.

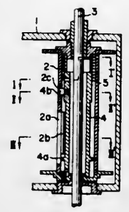
3,645,467
SPOOL FOR CAMERAS

Akihiko Sato, Tokyo, and Minoru Takahashi, Yokohama-shi, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,590
Claims priority, application Japan, Dec. 25, 1968, 43/113220
Int. Cl. B65h *75/28*
U.S. Cl. 242—74.2 **4 Claims**

A spool which can automatically take up a film only by inserting the leading end portion thereof into a film insertion slot of the spool is provided. The spool comprises rotatable outer and inner cylinders, the former having insertion slots while the latter, pawls for engagement with perforations of film and positioned normally in nonalignment with the insertion slots by means of a spring. Upon insertion, the film moves along the inner surface of the outer cylinder and its

perforation automatically engages with the pawl, thereby securely holding the film. Upon rewinding of the film, the

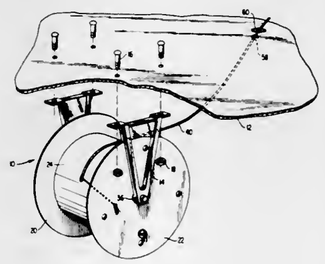


pawls disengage from the perforations since the outer cylinder is held stationary by the film while the inner cylinder rotates.

3,645,468
ANCHOR LINE REEL ASSEMBLY

Alan Y. Edelberg, Fort Worth, and Jimmy E. Hill, Houston, **both of Tex., assignors to West Products Corporation, Newark, N.J.**

Filed Sept. 8, 1969, Ser. No. 855,901
Int. Cl. B65h *75/48*
U.S. Cl. 242—107 R **2 Claims**



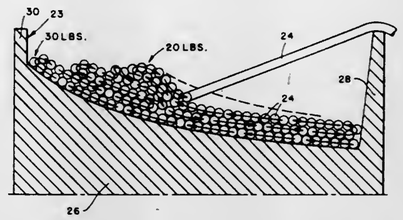
A reel for an anchor line is mounted on the underside of a boat deck with the line passing through a deck fitting. Metallic ribbon springs which are unwound from a takeup reel onto an output reel during the laying of the anchor cause the line to be rewound rather than accumulate on the deck during manual raising of the anchor. Line guides positioned on the reel supports prevent the line from fouling.

3,645,469
NONROTATING SPOOL WITH OPTIMUM WIRE TENSION UPON PAYOUT

Edward G. Fischer, Verona, and Albert J. Molnar, Trafford, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 24, 1969, Ser. No. 869,032
Int. Cl. B65h *75/14, 49/02*
U.S. Cl. 242—118.4 **3 Claims**

An improvement to minimize payout tension of a wire on a nonrotating spool wherein the spool has a drum portion between inboard and outboard flanges, the improvement comprising the drum having outside diameters which progressively increase from the inboard end to the outboard end according to a desired maximum constant tension contour, and the wire being wound on the drum to form outside

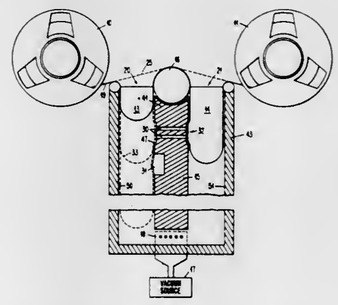


diameters which progressively increase from the inboard end to the outboard according to a desired minimum constant tension contour.

3,645,470
SELF-VALVING WEB LOADING AND TRANSPORTATION

William H. Dickinson, Boulder, and John W. Irwin, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,815
Int. Cl. G11b *15/58, 15/66*
U.S. Cl. 242—182 **7 Claims**



In a single capstan two-vacuum chamber web transport, the web (tape) is vacuum urged into the chambers. The web has a tendency to slip over the capstan such that one chamber receives all of the tape to the exclusion of the other. This undesired action is prevented by providing fluid communication means extending between the two chambers with no other fluid communication connections. As the web enters one chamber, it is clamped to the fluid communication means by the vacuum applied through the other chamber. Movement of the web over the capstan is then inhibited, and the web loads into the other chamber. When the web is in both chambers, the fluid communication means is sealed off by the web making it inoperative.

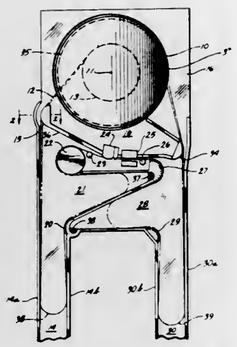
3,645,471
APPARATUS FOR GUIDING TAPE BETWEEN TWO PLANES

Magne Jarle Kjos, Agoura, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 8, 1970, Ser. No. 70,239
Int. Cl. G11b *15/32, 15/58, 23/12*
U.S. Cl. 242—182 **13 Claims**

Tape on a storage reel is guided to a work plane canted relative to the reel by a tape guide and a vacuum column.

The tape guide has a tape-guiding surface that is perpendicular to the plane of the tape on the reel. The vacuum column



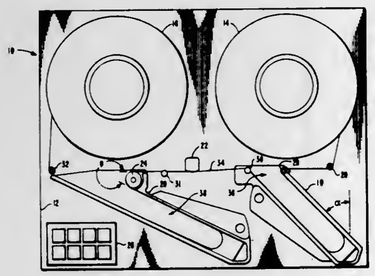
lies in the work plane and has an outer sidewall that coincides with the line of intersection of the two planes. A tape cleaner is placed on or near the tape guide.

3,645,472

HIGH-PERFORMANCE TAPE MEMORY SYSTEM

Azmi S. Audeh, Camarillo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 7, 1970, Ser. No. 78,661
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **9 Claims**



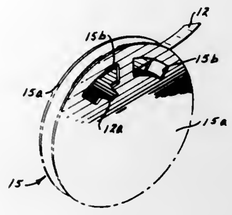
A digital magnetic tape transport utilizes two vacuum storage chambers, a magnetic head and a capstan positioned along a straight-line tape-threading path between a supply reel and a takeup reel. The vacuum chambers are asymmetrically disposed with similar but differing inclinations to provide maximum chamber length as well as a sufficient wrap on the capstan to prevent slippage, while being confined within the outline of a standard mounting rack. Such an arrangement also decreases the number of tape guides while increasing tape stability, avoids frictional contact between the capstan and the oxide surface of the tape, and is particularly suited for automatic and cartridge loading.

3,645,473

TAPE-RETAINING ARRANGEMENT

David Martin Kitch, 660 Fargo Street, Owensboro, Ky.

Filed Oct. 6, 1969, Ser. No. 864,135
Int. Cl. B65h *75/34*; **G03b** *1/04*; **G11b** *15/60*
U.S. Cl. 242—210 **4 Claims**



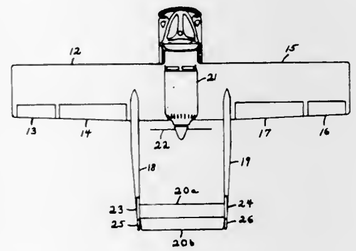
An arrangement for the free end of a rolled tape, such as a magnetic tape, which effectively retains the tape on its spool, and which, at the same time, permits ready withdrawal of the tape, when desired.

3,645,474

COMBINED LAND AND AIR VEHICLE

Samuel H. Arbuse, P.O. Box 244, Palm Beach, Fla.

Filed May 8, 1970, Ser. No. 35,683
Int. Cl. B64c *37/00*
U.S. Cl. 244—2 **10 Claims**



A combined land and air vehicle includes an automobile having an engine for travel on land and a detachable air structure. The automobile is adapted to be connected with the air structure which includes wings, tail assemblies and an airplane engine, for air travel. To become ready to fly, the steering wheel of the automobile is disconnected from the front automobile wheels and is connected with the elevator and aileron controls. A rudder-steering pedal trolley system is engaged, which has pedals that are removed when driving on land and which are connected for flying. A power transmission system permits the automobile engine to rotate the propeller in case of failure of the airplane engine.

3,645,475

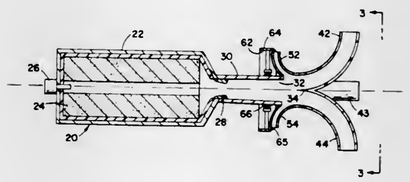
FLUID AMPLIFIER WITH DIRECT-COUPLED GYROCONTROL

William W. Stripling, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 1, 1969, Ser. No. 881,033
Int. Cl. F42b *5/18*
U.S. Cl. 244—3.22 **6 Claims**

A large power-flueric amplifier is controlled by selective restriction of opposing control parts. An inertially stabilized wheel serves to orifice the amplifier control ports to generate

a control moment for directional control of a rocket or missile. A hot gas generator furnishes output gases that exhaust through the fluid amplifier, exiting through opposing exhaust ports around the periphery of the missile to maintain the missile on the original flight path. The inertially stabilized wheel, spinning in a plane normal to the missile flight path, spins on a sleeve or bearing through which the nozzle of the flueric amplifier passes. Tubular members extend radially from the flueric amplifier interaction chamber and terminate adjacent the interior annular surface of the spinning wheel. The wheel



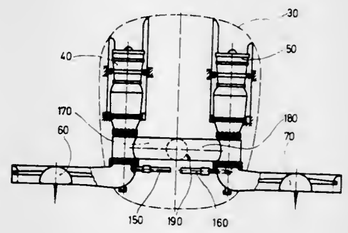
covers a portion of each tube inlet and varies the opening of each control inlet in response to relative motion between the spinning wheel and the missile. Ambient air pressure at each control inlet is constantly applied to uniformly exhausting gases when the missile is aligned with the spinning gyrowheel. Deviation in missile direction results in increased ambient pressure at one control port and decreased pressure at the opposing control port, causing the exhaust gases to move toward one wall, thus, producing an imbalance in the exhaust port gases which restore the missile to the flight path.

3,645,476

LIFT ENGINE ARRANGEMENT FOR V/STOL AIRCRAFT

Erich J. Haberkorn, Friedrich-Frobel-Strasse 40, Riemerling, Germany

Filed Nov. 26, 1969, Ser. No. 881,944
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 B **1 Claim**



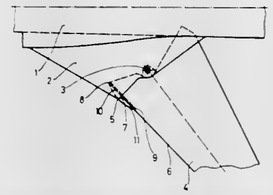
A V/Stol aircraft has jet engines which are mounted vertically in the aircraft and their discharge is conducted directly to a lift-fan associated with each engine. In order to change the position of the fans from an inoperative one within the aircraft to an operative one extending outwardly of the aircraft, they are mounted for rotation about the axis of their respective engine, and the engines may be mounted either rigidly or for rotation about their own axes together with their associated fan.

3,645,477

SWING-WING AIRCRAFT

Herwig Kratschmar, and Gero Otto Madelung, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm, Munich, Germany

Filed Dec. 18, 1969, Ser. No. 886,088
Claims priority, application Germany, Dec. 20, 1968, P 18 16 065.1
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **7 Claims**



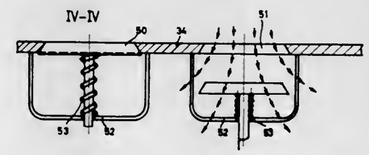
A gap filler for swing-wing aircraft including means for adjustably inserting a plugging member into the gap formed between the movable wing and its fixed support in its movement from one extreme position to the other. Means are provided for coordinating the movement of the gap plugging member with the movement of the movable wing to provide a substantially continuous, smooth leading edge for aerodynamic efficiency.

3,645,478

TAKEOFF AND LANDING PLATFORM FOR VERTICAL TAKEOFF AND LANDING PLANES

Gero Otto Madelung, Munich, Germany, assignor to Entwichlungsring Sued GmbH, Munich, Germany

Original application Oct. 13, 1966, Ser. No. 586,478, now Patent No. 3,436,036, dated Apr. 1, 1969. Divided and this application Nov. 19, 1968, Ser. No. 793,631
Claims priority, application Germany, Dec. 23, 1965, E 30725
Int. Cl. B64f *1/00*
U.S. Cl. 244—114 **9 Claims**



A jet stream dispersion takeoff and landing platform for vertical takeoff and landing airplanes including a flat plate member having an upper jet stream inlet side and a lower jet stream outlet side, supporting legs therefor, the plate member further having a plurality of circular openings therethrough with a downwardly opening circular closure for each of the openings and U-shaped brackets on the outlet side supporting and limiting the downward opening of each circular closure.

3,645,479

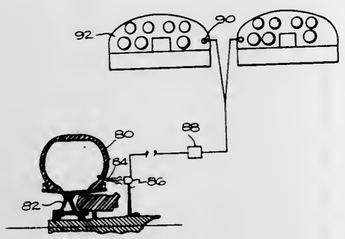
AIRCRAFT TIRE EXPLOSION PREVENTION SYSTEM

Vaclav Kostroun, and Henry H. W. Quenzler, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

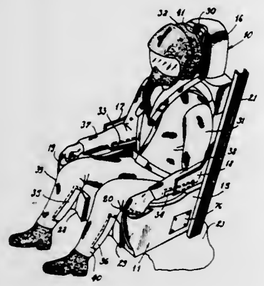
Filed Mar. 16, 1970, Ser. No. 19,603
Int. Cl. B64c *25/36*
U.S. Cl. 244—103 R **6 Claims**

The rotation of each aircraft tire is monitored and compared and when a discrepancy in these rotations shows an

off-synchronized tire rotation, a warning device is activated. In addition, a temperature-sensing valve on each aircraft tire will release the air pressure in the tire and activate the warning device when a predetermined temperature level is sensed and thereafter stop the air release when a predetermined lower air pressure is reached.

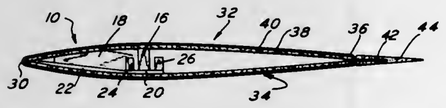


3,645,480
VEHICLE SEAT RESTRAINING SYSTEM
David Forman, Centerport, N.Y., assignor to Fairchild Industries, Inc., Montgomery County, Md.
Filed Apr. 20, 1970, Ser. No. 30,031
Int. Cl. B64d *25/02*
U.S. Cl. 244—122 AG **13 Claims**



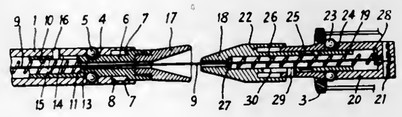
A vehicle seat restraining system that includes one or more electromagnets located on the vehicle seat for magnetically restraining an occupant to the vehicle seat. Magnetically attractive members are also provided that are worn by the occupant that are adapted to be attracted by the electromagnets on the vehicle seat when the magnets are energized. A power source is also provided to energize the electromagnets on the vehicle seat.

3,645,481
AIRFOIL STRUCTURE
Leonard R. Purdy, Oakwood, Ga., assignor to Lanier Industries, Inc., Oakwood, Ga.
Filed Apr. 22, 1970, Ser. No. 30,735
Int. Cl. B64c *3/20*
U.S. Cl. 244—123 **11 Claims**



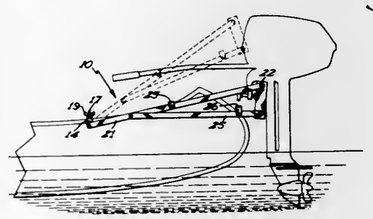
An airfoil structure is disclosed, using a unitary laminated load-bearing skin member, and a rigid internal bracing structure. The skin member includes an outer layer of sheet plastic polymeric material defining the airfoil surface, and an inner rigidifying layer of plastic polymeric foam material bonded to the outer layer.

3,645,482
TOWING DEVICE FOR SLEEVES TOWED BY AN AIRCRAFT
Henri Savarieau, Montgeron, France, assignor to R. Alkan & Cie, Paris, France
Filed Oct. 21, 1970, Ser. No. 82,737
Claims priority, application France, Oct. 29, 1969, 6937184
Int. Cl. B64d *3/00*
U.S. Cl. 244—137 **3 Claims**



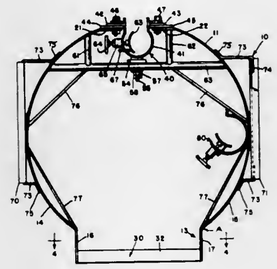
The sleeve exchange device for sleeves towed by an aircraft comprises a hollow external element attached to the end of a towing rope wound by a winch on the towing aircraft. This external element comprises on its outer peripheral surface a single circular set of balls adapted either to project therefrom or to recede in recesses for retaining or releasing rings to which are anchored the launched sleeves. The balls are operated by the movement within the external element of an internal element traversed by the rope. The device comprises also a hollow supporting member rigid with the aircraft and having disposed therearound the rings for anchoring the sleeves to be launched, this supporting member comprising on its outer peripheral surface another circular set of balls adapted to project from or recede into suitable recesses under the control of a guide member adapted to move within the supporting member and to coact with the internal element when the rope is wound.

3,645,483
MOTOR-MOUNTING DEVICE FOR CANOES
Carleton E. Bartosch, and Dorothy E. Bartosch, both of 1815-70th Avenue North, Minneapolis, Minn.
Filed Oct. 30, 1969, Ser. No. 872,523
Int. Cl. B63h *24/26*
U.S. Cl. 248—4 **3 Claims**



A device for mounting outboard motors to canoes permitting the motor to be positioned directly astern including a reclosable clamp mechanism for clamping the unit to the canoe gunwales and having rearwardly extending arms to a mounting base with intermediate cross arms having contacting portions thereon to contact selected portions of the canoe and prevent lateral movement of the unit relative thereto. The device further provides means for shifting the motor to a position removed from the water.

3,645,484
HOSE HOLDER
Edwin C. Itner, Cass Lake, Minn.
Filed Apr. 27, 1970, Ser. No. 32,200
Int. Cl. F16l *11/14*
U.S. Cl. 248—80 **5 Claims**



A hose holder for firehose which may be used to hold either the inlet end of the hose when taking water from a pond or which may be used to hold the outlet end of the hose when directing water under pressure to the burning structure and which includes several bases and a hose clamp mounted on a hoop with one of the bases having a platform on which the foot of the user may be stood to hold the hose in discharge position, the hose clamp being angularly adjustable relative to the hoop and bases.

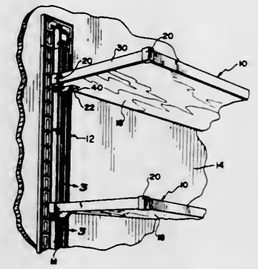
3,645,485
DISPLAY DEVICE
Ronald J. Gold, Spring Valley, N.Y., assignor to S.L.R. Systems, Inc., New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,764
Int. Cl. A47f *5/00*
U.S. Cl. 248—223 **8 Claims**



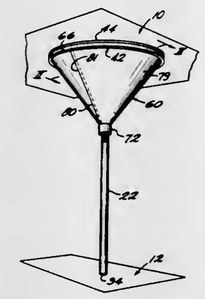
Display device having a cantilevered element and a plurality of color-coded sections. The element forms a lower prong of a U-shaped hook, the upper prong containing a faceplate having identifying indicia.

3,645,486
MODULAR WALL SHELVING
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.
Continuation-in-part of application Ser. No. 745,287, July 16, 1968, now Patent No. 3,563,626. This application Feb. 5, 1970, Ser. No. 8,830
Int. Cl. A47b *47/00*
U.S. Cl. 248—243 **10 Claims**

Modular knockdown shelving having vertical pilasters comprising a baseplate secured to the wall with hook end brackets that slidably interlock with metal channel supports in supporting relation. The channel supports have spaced apertures which receive adjustably located shelf support brackets upon which fabricated shelf members are slipped horizontally in place. End lock elements on the pilasters hold the elements in assembled relationship.



3,645,487
STRUCTURAL MEMBER
David W. Gilchrist, 215 West Water Street, Elmira, N.Y.
Filed Dec. 4, 1969, Ser. No. 881,947
Int. Cl. E04g *25/00*
U.S. Cl. 248—354 S **13 Claims**

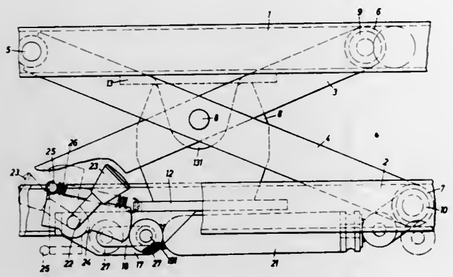


A structural member for removable insertion between two planar surfaces, designed to withstand eccentric loads of a magnitude less than will cause such deflection of its member as to reduce its effective length; the member comprising a column extending between two generally parallel, rigid surfaces arranged at a fixed, constant spacing; at least the upper portion of the column having a rigid structural sleeve of increasing cross-sectional dimension in an upwardly direction, the upper end of which makes positive bearing around its periphery with the upper parallel surface.

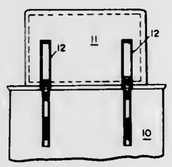
3,645,488
VEHICLE SEAT CONSTRUCTION
Klaus Sturhan, Lemgo/Lippe, Germany, assignor to Gebr. Isringhausen, Lemgo/Lippe, Germany
Filed Apr. 10, 1970, Ser. No. 27,264
Claims priority, application Germany, June 21, 1969, G 69 24 745
Int. Cl. F16m *11/00*
U.S. Cl. 248—399 **9 Claims**

An upper support is upwardly spaced above a lower support and movable towards and away from the same. A connecting means connects the supports with one another with

freedom of movement of the upper support relative to the lower support. First damping means continuously acts upon the upper support for damping movement of the same relative to the lower support. Second damping means is activated at the will of the user for damping movements of the upper support with reference to the lower support in conjunction with and in addition to the action of the first damping means.



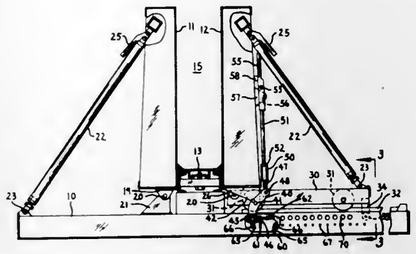
3,645,489
MIRROR BRACKET
Kenneth H. Gutner, 1530 Old Skokie Road, Highland Park, Ill.
Filed Apr. 9, 1970, Ser. No. 26,915
Int. Cl. A47g *1/24*
U.S. Cl. 248—480 **1 Claim**



A mirror bracket made up of two elongated interconnected, pivotally related members, one for attachment to a mirror back and the other for attachment to a dresser back, the dresser element being equipped with novel transversely extending ribs which serve to both reinforce the dresser element while also creating a slight distortion in the dresser element to facilitate immobilization by gripping the dresser back.

3,645,490
ADJUSTABLE FORM FOR CASTING CONCRETE BEAMS
Robert W. Beasley, Newberg, Oreg., assignor to Ted Nelson Company, Portland, Oreg.
Filed Oct. 1, 1970, Ser. No. 77,107
Int. Cl. B28b *7/02*
U.S. Cl. 249—50 **10 Claims**

A plurality of form sections are connected together end-to-end for casting rectangular concrete beams on edge in horizontal position. Each form section is mounted on transverse base beams secured to a concrete foundation or floor. One side form in each form section is mounted on trolleys to roll out on the base beams away from the opposite side form. Provision is made for longitudinal expansion movement of the side forms when they are heated to cure the concrete. Each trolley is equipped with a special locking device to hold the rollout side form in different casting positions for casting beams of different widths. A grooved roller in the locking device engages a bar on a base beam to perform the three functions of locking the trolley against rollout, holding the trolley down to prevent uplift from the fluid pressure of the wet concrete and permitting movement of the locking device with longitudinal expansion and contraction of the rollout side form.

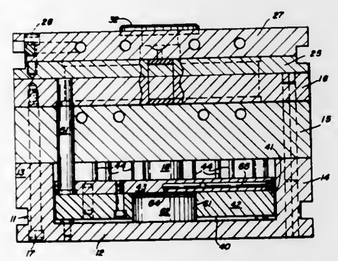


3,645,491
SOLUBLE METAL CASTING CORES COMPRISING A WATER-SOLUBLE SALT AND A SYNTHETIC RESIN
Warwick N. Brown, and Peter M. Robinson, both of Birmingham, England, assignors to Aeroplane and Motor Aluminum Castings Limited, Birmingham, England
Filed July 22, 1969, Ser. No. 843,774
Int. Cl. B22c *1/22*; **B28b** *7/34*; **C08q** *5/10*; **C08g** *9/10*; **C08q** *51/04*
U.S. Cl. 249—61 **14 Claims**

This invention discloses novel water-soluble cores for use in the casting of metals, and also methods of making such cores. The cores essentially consist of a water-soluble salt and a synthetic resin.

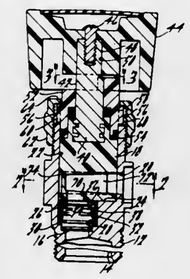
One form of the core consists of a mixture of a water-soluble salt and a liquid synthetic resin binder such as to retain the salt grains in the agglomerate. Another form of the core consists of grains of a water-soluble salt which are coated with a synthetic resin and subsequently dried to a powder.

3,645,492
EJECTION ACTUATOR FOR PLASTIC INJECTION MOLD
Stefan T. Edlis, 400 Ridge, Elmhurst, Ill.
Filed Dec. 30, 1969, Ser. No. 889,043
Int. Cl. B29c *7/00*; **B29f** *1/14*
U.S. Cl. 249—68 **8 Claims**



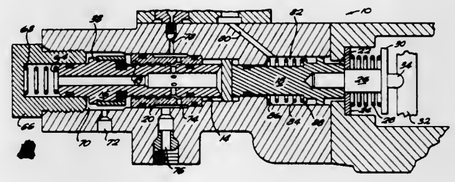
An ejection actuator for a plastic injection mold comprising a cylinder built into the ejector plate of the mold base, a free piston engaging the ejector housing and projecting into the cylinder, and a fluid pressure inlet with a metering orifice for introducing air or other fluid, under pressure, into the cylinder; the complete actuator, other than the fluid source, is located entirely within the mold base.

3,645,493
FAUCET VALVE
Alex Manoogian, Grosse Pointe Farms, and Eric V. Pullen, Northville, both of Mich., assignors to Masco Corporation, Taylor, Mich.
Filed Oct. 12, 1970, Ser. No. 79,908
Int. Cl. F16k *5/04*, *5/18*
U.S. Cl. 251—120 **7 Claims**



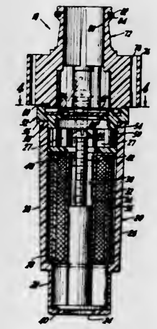
A water faucet comprising a rotatable valving member having a vertically disposed inlet passage in its bottom surface offset from the axis of rotation and movable into and out of registry with an inlet port in the bottom wall of the valve body and having an interior laterally extending discharge passage through which water is discharged to the outlet port in the valve body. The inlet and discharge passages in the valving member are so arranged relative to the inlet and outlet ports in the valve body that when there is only slight communication between the inlet passage and inlet port, the water must flow through a narrow channel defined between the valving member and valve body, rather than directly from the discharge passage to the outlet port, thus creating a back pressure which serves to reduce the noise of operation of the faucet.

3,645,494
VALVE FOR FLUID-ACTUATED BRAKE SYSTEM
William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Aug. 19, 1969, Ser. No. 851,417
Int. Cl. F16k *47/04*
U.S. Cl. 251—121 **9 Claims**



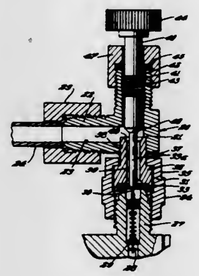
An improved main valve for a fluid-actuated brake system incorporating skid control wherein an elongated passage is provided between an inlet chamber containing high-pressure fluid and an outlet chamber and a movable seal is provided in the inlet chamber for closing one end of the passage. A flanged retainer sleeve is capable of pulling the seal away from the passage when the chambers are to be communicated, and the closely spaced walls of the passage apply frictional forces to the fluid flowing therethrough so as to reduce the velocity of the fluid thereby reducing the problem of erosion and damage to the seal and the valve passage due to the flow of high-velocity fluid. The passage is configured so that the frictional forces applied to the fluid by the passage walls are progressively reduced in response to progressive opening of the valve.

3,645,495
SOLENOID ACTUATED FLEXIBLE FLAPPER VALVE
Julian Robert Aymar, deceased, late of N. Merrick, N.Y. (by Michael R. Aymar, administrator), assignor to Surgical Dynamics Inc., Berkeley Heights, N.J.
Filed Jan. 9, 1970, Ser. No. 1,728
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **9 Claims**



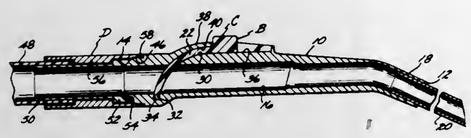
A low-cost valve is provided comprising a molded plastic body in which the movable armature of a solenoid acts against a valve flapper defined by a thin flexible disk. When the solenoid is energized the armature displaces the disk and opens the valve.

3,645,496
DEVICE FOR SERVICING REFRIGERATION SYSTEMS
Clarence C. Rawlins, 25 Indian Trail, Barrington, Ill.
Filed Apr. 17, 1970, Ser. No. 29,614
Int. Cl. F16k *31/50*; **F25b** *45/00*
U.S. Cl. 251—148 **5 Claims**



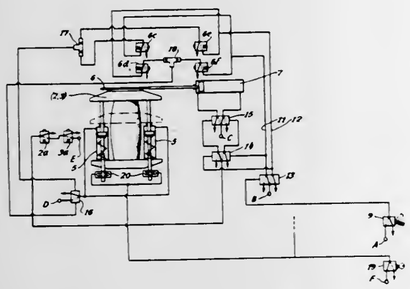
A device for servicing refrigeration systems of refrigerators and air conditioners, which involves the use of a novel coupling facilitating connection of testing or refilling equipment to the liquid refrigerant supply line and the suction line in the system, without escape of refrigerant.

3,645,497
RESILIENT GATE VALVE STRUCTURE
Robert P. Nyboer, 2016 Calle Candela, Fullerton, Calif.
Filed Oct. 14, 1970, Ser. No. 80,536
Int. Cl. F16k 3/28
U.S. Cl. 251—148 8 Claims



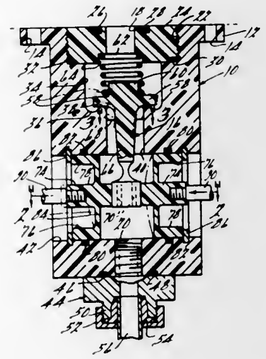
A valve structure that includes an elongate valve body through which a longitudinal bore extends, said structure including a transversely and longitudinally movable resilient valve member for control of a flowable material through said bore. The valve structure is particularly adapted for use in the field of dentistry on aspirator instruments, but may be used equally well in the control of a flowable material from a first zone to a second enclosed zone that is maintained at a negative pressure relative to said first zone.

3,645,498
COUPLING STATION
Arthur Bunting, Gillingham, and Arthur Victor Heighton, Ongar, both of England, assignors to Hall-Thermotank International Limited and Overseas Containers Limited, London, England
Filed Oct. 23, 1969, Ser. No. 868,733
Claims priority, application Great Britain, Oct. 24, 1968, 45,228/68
Int. Cl. F16k 5/14
U.S. Cl. 251—159 8 Claims



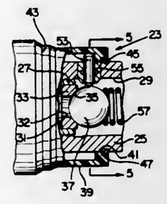
A coupling station for coupling an air duct to an airport of a cargo container which comprises a coupling member movable in the direction of airflow therethrough between extended and retracted positions and a closure plate for sealing the open end of the coupling member, the closure plate moving in a plane normal to the direction of extension and retraction of the coupling member, the closure plate moving in a plane normal to the direction of extension and retraction of the coupling member in a plane located between the extended and retracted positions. The coupling station may be provided with automatic control from a two-position switch which when moved into a first position from a second position retracts the coupling member, then moves the closure plate to the open position and finally extends the coupling member and when moved into the second position from the first position retracts the coupling member, then moves the closure plate into the closed position and finally extends the coupling member.

3,645,499
VALVE STRUCTURE
Shunso F. Watanabe, Livonia, Mich., assignor to Kelsey-Hayes Company
Filed Mar. 23, 1970, Ser. No. 21,759
Int. Cl. F16k 1/16
U.S. Cl. 251—303 8 Claims



A flow control device comprising a housing formed with a valve chamber including a seat on which a tiltable valve is adapted to be disposed in sealing engagement therewith. A controlled opening of the valve is achieved by an actuator operatively connected to the stem portion of the valve so as to effect a tilting of the head portion thereof relative to the valve seat. The design of the individual components comprising the valve assembly enables their fabrication from plastic materials by modern molding techniques providing a precision valve assembly at a fraction of the cost of similar type valves heretofore known.

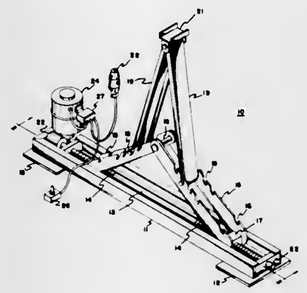
3,645,500
THROTTLE SLEEVE FOR FLUID-POWERED DEVICE
Harvey J. Walter, Joppatown, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 21, 1970, Ser. No. 65,951
Int. Cl. F16k 31/528
U.S. Cl. 251—340 7 Claims



A portable pneumatic device including an elongated housing having a rotary pneumatic motor therein. Pressurized air is delivered to the rear end of the housing to drive the motor

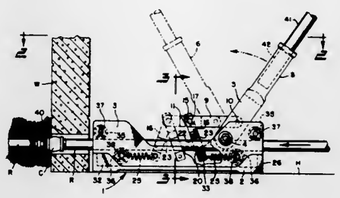
and rotate a tool disposed at the front of the housing. Airflow to the motor is controlled by a throttle valve actuated by a rotatable cam sleeve or collar disposed on the housing. The sleeve is constructed to maximize ease of control of the tool and minimize the possibility of inadvertent or accidental tool operation.

3,645,501
AUTOMOTIVE JACK
Bryan H. Musgrove, 270 East Pennsylvania, Boise, Idaho
Filed Mar. 23, 1970, Ser. No. 21,612
Int. Cl. B66f 3/00
U.S. Cl. 254—126 1 Claim



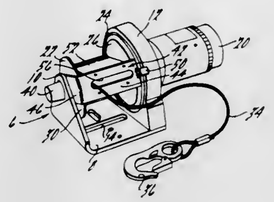
A motor drives a threaded rod having a pair of hinged lever arms connected thereto. A pair of hinged lift arms are carried in notches in the terminal edges of the lever arms to increase the lifting capacity of the jack. The hinged lever arms are caused to be moved inwardly and outwardly in response to rotation of the threaded arm while the hinged terminal ends are simultaneously caused to be moved upwardly and downwardly.

3,645,502
ROD AND PIPE PUSHER AND PULLER
Charles Stromp, Jr., 478 Lake Forest Drive, Bay Village, Ohio
Filed Aug. 8, 1969, Ser. No. 848,437
Int. Cl. E21b 19/00
U.S. Cl. 254—29 R 8 Claims



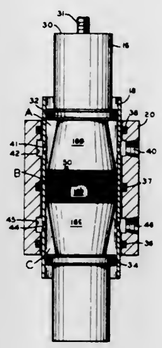
A device for pushing and pulling pipe or rod through the ground having a gripping plate connected to a lever arm mounted for reciprocating movement by swinging movement of the lever arm. An opening is provided in the gripping plate for insertion of the pipe or rod therethrough, and the gripping plate is maintained in tilted position by a spring which may be connected between the bottom of the plate and either end of the pusher and puller frame depending on the desired direction of tilt for pushing or pulling the pipe or rod in either direction.

3,645,503
CABLE CONTROL UNIT
Ralph G. Doerfling, Walled Lake, Mich., assignor to Superwich, Inc., Pomfret, Conn.
Filed Aug. 13, 1970, Ser. No. 63,418
Int. Cl. B66d 1/38
U.S. Cl. 254—197 8 Claims



A winch assembly particularly suitable for use in connection with boat trailers comprising a flanged spool having a cable wrapped therearound which is maintained in appropriate helically wound superimposed layers by means of a cable control unit pivotally mounted about the axis of rotation of the spool, which further serves as a safety guard and also prevents an unraveling of the cable from around the spool when tension is removed from the cable.

3,645,504
SONIC DISPERSING APPARATUS
Stanley E. Jacke, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Nov. 22, 1968, Ser. No. 778,274
Int. Cl. B01f 11/02; B06b 3/00
U.S. Cl. 259—2 10 Claims

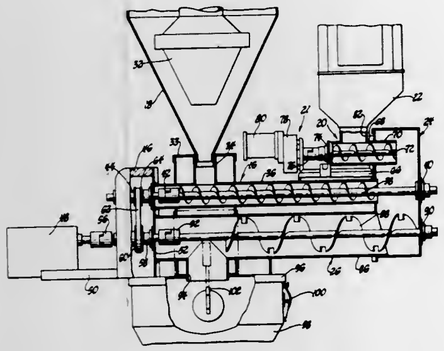


A sonic dispersing apparatus comprises an elongated mechanical transmitting member resonating along its longitudinal axis. An annular sleeve is disposed around the vibrational loop region of said member to form with said member a narrow annular chamber through which liquid to be emulsified is passed.

3,645,505
COLOR BLENDER FOR PLASTIC-PROCESSING MACHINES

John H. McLeod, Jr., Royal Oak, and Robert E. Thoreson, Birmingham, both of Mich., assignors to Thoreson-McCosh, Inc., Troy, Mich.

Filed May 1, 1970, Ser. No. 33,623
Int. Cl. B01f 7/08, 15/04
U.S. Cl. 259—10 10 Claims



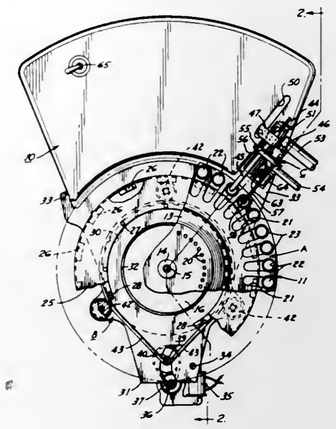
There is disclosed a color blender for plastic-processing machines of the type which is adapted to be mounted on the machine. The color blender comprises a constant rate screw-type conveyor for the primary material and a variable rate screw-type conveyor for the color additive, both of which have an outlet in a combining chamber. The materials are commingled in the combining chamber and a mixing conveyor thoroughly blends the components and delivers them to a receiver such as a holding hopper on the processing machine. The variable rate conveyor forms a part of a separable unit which may be readily replaced to change colors or the type of additive. The speed of the variable rate supply unit is adjusted to select the desired ratio of additive to primary material. The constant rate conveyor and the mixing conveyor are driven by a constant speed motor in synchronism with each other. In a modification the blender is provided with a pair of variable rate supply units together with the constant rate conveyor so that an additional component such as regrind material may be combined with the primary and color additive materials.

3,645,506
SAMPLING SUPPLY DEVICE HAVING MAGNETIC MIXING

William Selesnick, Shaker Heights, Ohio, assignor to Micro-Metric Instrument Co., Valley View, Ohio

Filed July 30, 1969, Ser. No. 846,040
Int. Cl. B01f 9/10
U.S. Cl. 259—58 9 Claims

Process and apparatus adapted to supply sequentially a series of samples, normally liquid, at a sampling station for further processing such as by a conventional analyzer, wherein the samples are stirred or agitated magnetically to maintain them substantially in a homogenous condition. For this purpose, minute dipolar magnets are freely contained in the samples, and the supply device contains recovery means for recapturing the magnets after the samples have passed the sampling station. Dipolar master magnets are passed relatively to the freely-held magnets to induce their rotation. In a

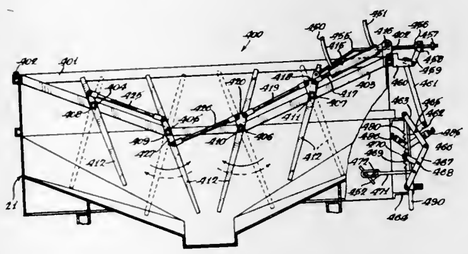


preferred form, a turntable carries the master magnets, and belt drive means jointly supports and rotates the turntable.

3,645,507
FEED MIXER ATTACHMENT

Bert A. Birdsall, Mondamin, Iowa

Original application Aug. 15, 1968, Ser. No. 752,843, now Patent No. 3,572,643. Divided and this application Aug. 10, 1970, Ser. No. 62,394
Int. Cl. B01f 11/04
U.S. Cl. 259—100 7 Claims



A material carrier movable over the ground and having automatic cycling feed mixer structure disposable in the container of the carrier to mix material carried therein. This construction includes rockable shafts each having tooth means thereon with structure for rocking the shafts in unison and in opposite directions to reduce forces transmitted to the container.

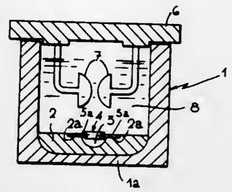
3,645,508
MAGNETIC STIRRER FOR CONDUCTING DIELECTRIC TESTS ON INSULATING OILS

Paul M. C. R. Balteau, 37 Rue J. Musch, 4920 Embourg, Belgium

Filed June 3, 1970, Ser. No. 43,127
Claims priority, application Belgium, June 11, 1969, 42306
Int. Cl. B01f 7/16
U.S. Cl. 259—107 5 Claims

In a container for conducting dielectric tests on insulating oils, there is provided a stirring means consisting of a

removable displaceable element equipped with a permanent magnet accommodated in the receptacle of said container

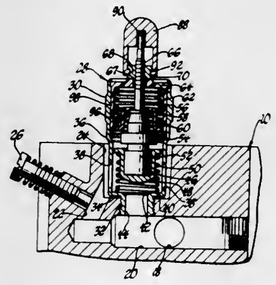


and moved by a magnetic control means located outside said receptacle.

3,645,509
IDLE AIR CONTROL

Clarence J. Eckert, and Benedetto C. Nardone, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 25, 1970, Ser. No. 41,141
Int. Cl. F02m 23/10
U.S. Cl. 261—39 A 1 Claim

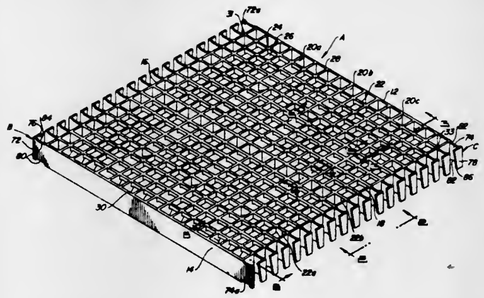


Idle airflow is bypassed around the closed throttle in an internal combustion engine induction passage and controlled by poppet and slide valve embodiments of an idle air control valve to regulate engine idle speed. The valves are positioned by a power element which is electrically heated to a predetermined temperature during the engine warmup period.

3,645,510
GRID MEMBER AND WALL FORMED THEREFROM

Warren L. Klugman, Middleburg Heights, Ohio, assignor to Ceilcote Company, Berea, Ohio

Filed Mar. 4, 1970, Ser. No. 16,470
Int. Cl. B01f 3/04
U.S. Cl. 261—94 6 Claims

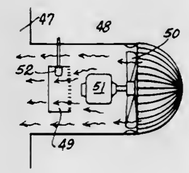


A grid member for supporting packings in liquid-gas contact apparatus is molded in one-piece of synthetic plastic material. The grid member is rectangular and has spaced-apart intersecting ribs which provide high-structural strength with a minimum of plastic material. The grid member includes interlocking projections extending outwardly from a pair of opposite side edges. A plurality of the grid members are assembled into a perforate grid supporting wall for supporting packings in liquid-gas contact apparatus.

3,645,511
PILOT FOR GAS BURNER

Erhard E. Alms, Barrington, and James E. Mitchell, Cary, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill., by said Mitchell

Filed Mar. 18, 1970, Ser. No. 20,543
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A 2 Claims

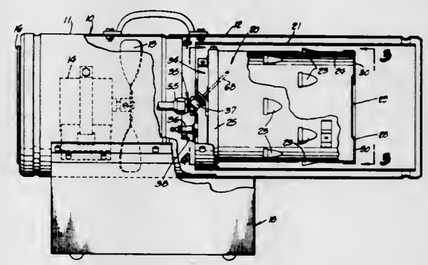


A pilot for a large capacity gas burner which uses a fixed metering orifice instead of an adjustable needle valve to produce a constant and reliable flame for igniting a relatively large capacity gas burner.

3,645,512
FORCED AIR HEATER

Charles E. Dent, Upland, and Donald A. Vaughn, Ontario, both of Calif., assignors to Scheu Manufacturing Company, Upland, Calif.

Filed May 13, 1970, Ser. No. 36,707
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A 11 Claims

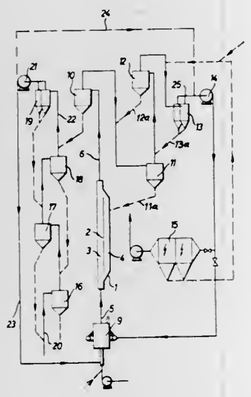


There is a disclosure herein a portable forced air heater including an outer housing containing a combustion chamber and a blower motor mounted upstream of the combustion chamber. An airscoop and nozzle assembly are mounted at the inlet end of the combustion chamber. The construction of the combustion chamber and burner components allows improved performance and relatively easy assembly and disassembly.

3,645,513
METHOD AND DEVICE FOR THERMICALLY TREATING FINE-GRAINED MATERIALS SUSPENDED IN A HOT GAS STREAM

Herbert Deussner, Bensberg, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Jan. 15, 1970, Ser. No. 3,141
Claims priority, application Germany, Jan. 18, 1969, P 19 02 390.6
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 A 5 Claims



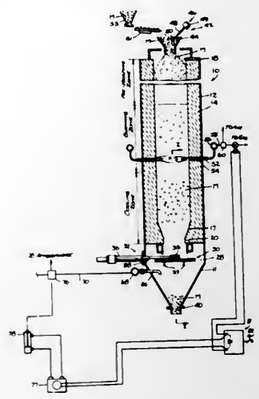
Fine-grained material, such as lime, dolomite and magnesite, is subjected to a thermic treatment in suspension in a hot gas stream and the desired product is subsequently separated in a separator. A vertically disposed treatment chamber is divided into two vertical parallel reaction zones and is connected at its lower end with a hot gas producer whose hot gases pass through the treatment zones and into separator. The material to be treated is so introduced into the treatment chamber that the coarser fraction of the material drops in one of the reaction zones into an upstream of the hot gas having a relatively low velocity while subsequently in the other reaction zone the material is caused to flow with increased velocity and then into the separator. The exhaust gas leaving the separator is conducted to a preheater, preferably a multistage cyclone heat exchanger, and the dust discharge conduit of the latter is connected with one of the two reaction zones of the treatment zone. The treated material which leaves the separator is cooled and the extracted heat is conducted to the hot gas producer as additional combustion air.

3,645,514
PRODUCTION OF REFRACTORY MATERIALS

Ernest A. Lado, Hastings-on-Hudson, N.Y., assignor to Nichols Engineering & Research Corp., New York, N.Y.

Filed July 2, 1970, Ser. No. 51,780
Int. Cl. F27b *1/00*
U.S. Cl. 263—29 7 Claims

The disclosure relates to the production of refractory material in a vertical shaft forced draft kiln wherein the air and fuel supply to the kiln are periodically and automatically interrupted for short periods of time. This effects the continuous and uniform, uncompacted downward travel of the

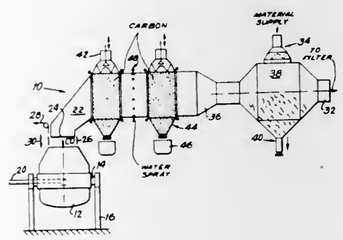


refractory material in the kiln, thereby avoiding fusion of the refractory material in the kiln shaft.

3,645,515
METALLURGICAL FURNACE INSTALLATION AND OPERATING METHOD

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Filed Oct. 12, 1970, Ser. No. 79,821
Int. Cl. F27b *7/02*
U.S. Cl. 263—32 36 Claims

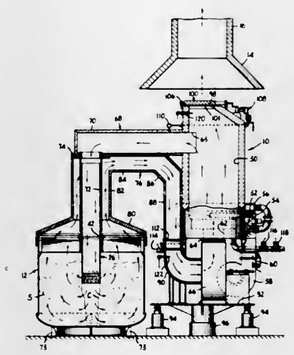


A metallurgical furnace installation and method for operating the metallurgical furnace installation. The installation includes a vessel in which metallurgical operations are carried out with development of waste gas which flows out of the vessel. A waste gas cooler receives the waste gas from the vessel. Certain materials, such as scrap, limestone, dolomite, and the like, are generally used as at least part of the charge for the vessel and must be pretreated as by being heated to a suitable temperature and provided with certain desired characteristics by exposure to a given gaseous atmosphere. These materials are directed through the waste gas cooler to be treated directly by the waste gas therein. Thus, the waste gas itself is used for the pretreatment of materials which form at least part of the charge, with this pretreatment being carried out according to the temperature and/or composition of the waste gas. A suitable supply supplies the material to the interior of the waste gas cooler to be exposed to the waste gas therein, and then the treated material is removed by a discharge device from the interior of the waste gas cooler to be utilized in the vessel of the furnace installation.

3,645,516
METHOD OF AND APPARATUS FOR PREHEATING SCRAP METAL

Alexander J. Turpin, and William T. Yarnell, both of Lebanon, Pa., assignors to Buell Engineering Company, Inc., Lebanon, Pa.

Filed Apr. 20, 1970, Ser. No. 30,010
Int. Cl. F27b *3/02*
U.S. Cl. 263—40 25 Claims

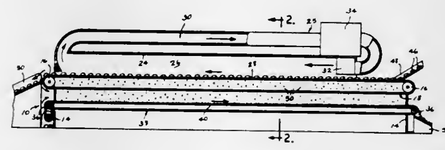


Scrap metal contained in a receptacle is preheated, preparatory to charging it into refining apparatus, by circulating through it hot gases generated by burning a carbonaceous fuel in a combustion chamber remote from the receptacle. The hot gases from the heating chamber are conducted along a confined path into generally the center of the scrap in the receptacle and are withdrawn from the receptacle and returned to the heating chamber, a portion of the exhaust gases being recirculated back to the scrap. Part of the gases in the combustion chamber are vented to a stack to make way for the introduction of the oxygen-containing gas that supports combustion in the combustion chamber. A substantial part of the combustibles in the scrap are vaporized and withdrawn from the scrap and are delivered to and burned in the combustion chamber, thus limiting a significant pollution factor in the operation. The combustion chamber and gas circulating equipment constitutes a unitary furnace structure that may be moved into and out of position in operative relation to the scrap receptacle.

3,645,517
METHOD AND APPARATUS FOR COLLECTING FINES PRODUCED DURING THE DRYING OF CHARCOAL BRIQUETTES

Frederick C. Mennen, Michigan City, Ind., assignor to United States Packaging Corporation, La Porte, Ind.

Filed Apr. 2, 1970, Ser. No. 25,101
Int. Cl. F27b *9/14*
U.S. Cl. 263—5 Z 4 Claims

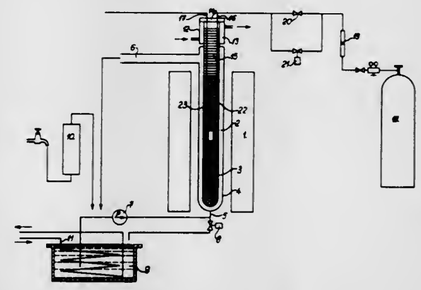


Method and apparatus for collecting fines produced during the drying of charcoal briquettes in a furnace. A conveyor having a run passing through the furnace for supporting the briquettes during the drying thereof is provided. The conveyor has openings therein through which fines produced during the drying process may fall. An endless power-driven belt having a run positioned under and generally coextensive with the briquette supporting run of the conveyor is provided to catch the falling fines and transport the fines to a depository which is spaced from the furnace.

3,645,518
HARDENING AND/OR TEMPERING FURNACE FOR SELF-HARDENING STEEL ALLOYS AND HIGH-SPEED STEELS

Claude P. Beguin, and Jean-Pierre F. Betrix, both of Peseux, Switzerland, assignors to Borel S. A., Peseux, Switzerland

Filed Feb. 3, 1970, Ser. No. 8,374
Claims priority, application Switzerland, Feb. 4, 1969, 1675/69
Int. Cl. C21d *1/76*
U.S. Cl. 266—4 E 8 Claims



A furnace for hardening self-hardening steel alloys and high-speed steels comprises a chamber with double walls of refractory material such as quartz. A piece to be hardened is held in the chamber in an atmosphere of inert gas. Heating means bring the temperature in the chamber up to the hardening temperature of the piece which is then abruptly cooled by circulating cooling water between the double walls. An oil hardening bath may be located below the chamber so that air hardening, drawing and tempering as well as oil hardening can all be carried out with the same installation.

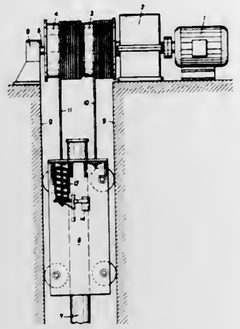
3,645,519
ROPE OR CHAIN RUPTURE SAFETY DEVICE

Walter Schwarz, Linz, and Karl Steinmair, Schiedlberg, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 13, 1970, Ser. No. 54,469
Claims priority, application Austria, July 31, 1969, A 7379/69
Int. Cl. C21c *7/06*
U.S. Cl. 266—34 LM 5 Claims

A rope or chain rupture safety device for a blowing lance secured to two ropes or chains, respectively, of which one rope or chain is passed over a driven main drum and the other rope or chain is passed over an unstressed auxiliary drum, the auxiliary drum being connected with said main drum by means of a multiplate friction clutch arranged between them and rotatable relative to said main drum in case of a rope or chain rupture, in which the improvement resides in that the auxiliary drum comprises an element

which is rotatable relative to the main drum, connected with the shaft of the main drum by screw threaded means and screwable towards the friction clutch under progressively increasing engagement pressure of the plates of the friction



clutch. This design is simple and safe. It affords the advantage that the auxiliary rope is loaded only with the double nominal load when the main rope breaks and that the initial braking moment may be lower by about one-third than so far.

3,645,520
CONSUMABLE LANCE

Thomas R. Acre, Lower Burrell; Frederick M. Gimbel, Delmont; Sundaresan Ramachandran, Natrona Heights, and Thomas F. Beck, Bethel Park, all of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed July 29, 1970, Ser. No. 59,267
Int. Cl. C21c *7/06*
U.S. Cl. 266—34 L **15 Claims**

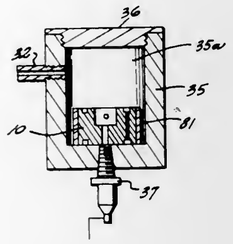


Described herein is a consumable lance for introducing fluid into a liquid at a controlled angle of introduction as the lance is consumed.

3,645,521
APPARATUS FOR TREATING ARTICLES OF MANUFACTURE TO ELIMINATE SUPERFLUOUS PROJECTIONS

Henry C. Geen, and Edwin E. Rice, both of Ann Arbor, Mich., assignors to Chemotronics, Incorporated, Ann Arbor, Mich.

Continuation of application Ser. No. 844,703, May 28, 1969, now abandoned, which is a division of application Ser. No. 723,052, Apr. 22, 1968, now Patent No. 3,475,299, which is a continuation-in-part of application Ser. No. 643,890, June **6, 1967, now abandoned. This application Sept. 2, 1970, Ser. No. 69,188**
Int. Cl. C21d *7/00*
U.S. Cl. 266—2.5 **10 Claims**

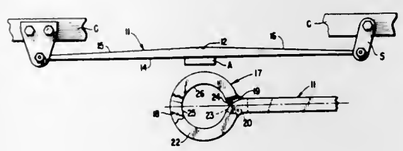


Apparatus for the elimination (destruction or removal) of superfluous projections, such as unwanted burrs and sharp edges, or shaped or fabricated articles of manufacture utilizing means for generating a transient thermal energy release in a compressed gaseous material provided in a sealed and confined space or chamber is described. In particular, the apparatus includes article-contacting shielding means within the chamber for allowing selected portions of the article to be exposed to the thermal energy release without substantially altering the configuration and working dimensions of the article. Preferably piston means connected by conduit means to the chamber is provided to compress a combustible gaseous material in the chamber prior to the ignition of the combustible gaseous material which generates the energy release.

3,645,522
SPRING LEAF

Frederick T. Rowland, Birmingham, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 1, 1970, Ser. No. 42,290
Int. Cl. B60g *11/02*; **F16f** *1/18*
U.S. Cl. 267—54 **9 Claims**

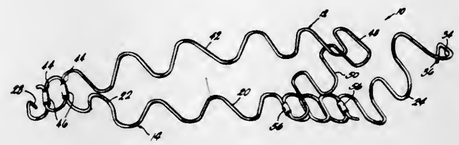


A spring leaf comprising an integral substantially cylindrical eye structure on at least one of its ends consisting essentially of adjacent parallel portions cylindrically curved in opposite directions out of the plane of the leaf.

3,645,523
SEAT SPRING UNIT

Harold I. McMahon, High Point, N.C., and Albin J. Niewulis, Lexington, Ky., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Filed Jan. 27, 1970, Ser. No. 6,256
Int. Cl. A47c *23/16*
U.S. Cl. 267—107 **6 Claims**

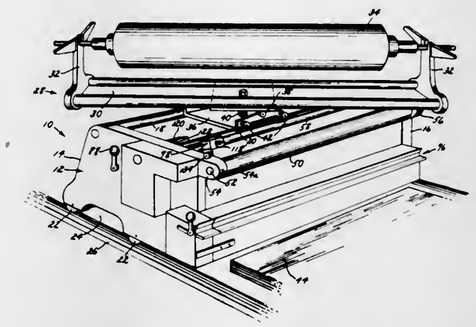


A seat spring unit mounted on horizontally spaced frame rails and consisting of upper and lower connected spring members. The upper spring member forms the primary load support section for the spring unit and includes a return bent upon itself section at its rear end which is supported on the lower spring member. This construction thus adapts the spring unit for supporting light loads wherein the entire resistance to the load is taken up by the upper spring member, the return bent section of which provides increased comfort for the seat occupant in the occupant's tail bone area where principal support is necessary for comfort. When heavier loads are applied to the spring unit, the lower spring member provides additional resilient resistance to load after the upper spring member has been deflected, thus enabling construction of seating units capable of comfortably supporting occupants whose weights vary over a wide range.

3,645,524
EDGE ALIGNMENT ASSEMBLY FOR CLOTH-SPREADING MACHINE

Harold H. Grimm, Bronx, and Ira Zuckerman, Far Rockaway, both of N.Y., assignors to Panther Machine Corp., New York, N.Y.

Filed June 8, 1970, Ser. No. 44,119
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **8 Claims**

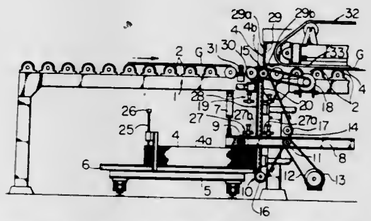


In a turntable fabric spreading machine in which fabric is drawn from a supply roll mounted on a turntable structure and fed through the machine to be deposited in layers on a table surface, the turntable structure is mounted on a carriage for lateral movement thereon and is driven in such lateral movement by a reversible motor mounted beneath said turntable structure and cooperating with a chain extending across the width of said carriage, a photoelectric sensing member is mounted on the carriage for scanning the edge of the fabric feeding through the machine, and is operatively connected to the motor for energizing the same to shift the turntable structure and fabric roll automatically in response to the sensing of a deviation in the lateral position of the fabric edge. The sensing means is movably mounted on the carriage by a linkage manually operable to shift the sensing member to a retracted position when the fabric is to be initially threaded through the machine.

3,645,525
METHOD AND APPARATUS FOR PLACING BUFFER SHEET ALONG MOVING RIGID SHEET

Kazuo Ishihara, Nishinomiya-shi; Toyoo Segawa, Higashiosaka-shi, and Hiroaki Zaita, Ichihara-shi, all of Japan, assignors to Nippon Sheet Glass Co., Ltd.

Filed Aug. 18, 1969, Ser. No. 850,968
Claims priority, application Japan, Aug. 22, 1968, 43/60277; Aug. 23, 1968, 43/60661; Oct. 2, 1968, 43/86402
Int. Cl. B42c *1/00*, *11/04*
U.S. Cl. 270—45 **12 Claims**

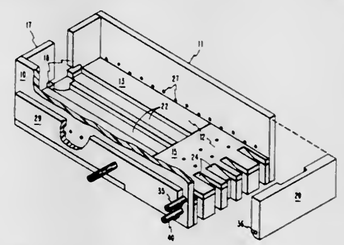


A method of automatically placing a soft buffer sheet such as paper, fabrics, nonwoven fabrics and synthetic resin films along a moving rigid sheet, and an apparatus for practicing the method comprising a conveying passageway for transferring rigid sheets, a station for keeping a stack of the buffer sheets, a vacuum device applying a suction to; and transferring the buffer sheets, a feed device for feeding the buffer sheets, a device for interrupting the vacuum device, related apparatus for bending the projecting end of the buffer sheet over the surface of the rigid sheet, and apparatus for conveying the buffer sheet covered rigid sheets by the use of vacuum suction means to a station where they are successively vertically registered and stacked in predetermined numbers.

3,645,526
NO-MOVING PARTS, PNEUMATIC HOPPER/SEPARATOR

Joseph J. Holecek, Byron, and Larry D. Zolnosky, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

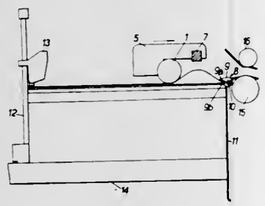
Filed Dec. 29, 1969, Ser. No. 888,549
Int. Cl. B65h *3/08*
U.S. Cl. 271—32 **8 Claims**



The disclosure pertains to a document hopper separator mechanism which is wholly pneumatically actuated to feed

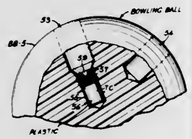
documents serially from the bottom of a document deck disposed therein. Riffle jets introduce air to support the deck and separate the lowermost documents from the document guide surface and one another while selectively operable eject jets function to eject the lowermost document from the hopper to a transport mechanism.

3,645,527
SHEET-FEEDING DEVICES
Albert George Ronald Gates, London, England, assignor to Gestetner Limited, Tottenham, London, England
Filed May 25, 1970, Ser. No. 39,977
Claims priority, application Great Britain, June 12, 1969, 29,957/69
Int. Cl. B65h 3/06
U.S. Cl. 271—42 **11 Claims**



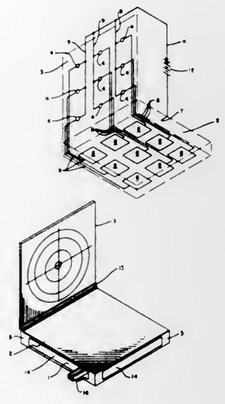
The specification discloses a sheet feeder in which the sheets are driven by one-way rotatable friction rollers mounted on a lever freely pivotably mounted on a reciprocable support, the height of the pivot of the lever being adjustable to vary the angle of inclination of said lever to the horizontal to adapt the sheet feeder for feeding different weight sheets. The pivot of the lever may also be adjustable forwards and backwards to adapt the feeder for different sheet sizes and thicknesses of paper.

3,645,528
BOWLING BALL INCLUDING TUNED LOADING CIRCUIT
William D. Cornell, Grand Haven, Mich., assignor to Brunswick Corporation
Original application July, 1965, Ser. No. 474,442, now Patent No. 3,447,804. Divided and this application Feb. 14, 1969, Ser. No. 799,392
Int. Cl. A63b 37/00
U.S. Cl. 273—63 R **6 Claims**



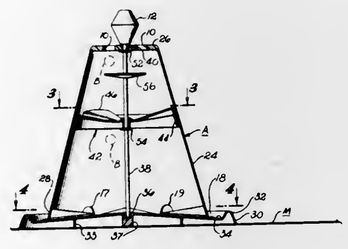
A loading circuit tuned to an identifying frequency is molded within a plastic housing. The housing is threaded into a cavity located in a fingerhole of a bowling ball. The circuit includes a resistor, a capacitor and an inductance coil connected in series.

3,645,529
ELECTRIC GAME BOARD WITH INDICATOR
Thomas W. Andrews, 2300 Bellfield Avenue, Cleveland Heights, Ohio
Filed Apr. 29, 1970, Ser. No. 32,904
Int. Cl. A63f 9/00
U.S. Cl. 273—108 **10 Claims**



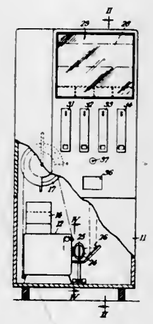
A game device of chance and skill is disclosed wherein electrically conductive game pieces are propelled in electrically contacting relationship between two facing horizontal conductive game board surfaces. One of the game board surfaces is electrically segmented into a plurality of conductive terminals which are electrically related to lights on a display board so that as a game piece moves between the game board surfaces, a visual display is presented on the display board to indicate the relative position of the game piece on the game board.

3,645,530
RANDOMLY EXITING BALL AND GAME APPARATUS
Edward A. Hernandez, 1500 Elevado Street, Los Angeles, Calif., and James B. Van Leeuwen, 4226 McFarland Avenue, Burbank, Calif.
Filed Mar. 12, 1970, Ser. No. 18,834
Int. Cl. A63b 71/00
U.S. Cl. 273—138 R **1 Claim**



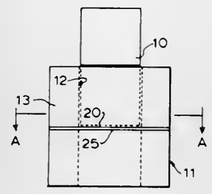
A random-event structure is disclosed for use with a ball which passes through the structure and exits randomly from one of a plurality of ports. A truncated conical housing encloses a rotary interference and distribution structure for randomly altering the path of a ball through the housing to exit from one of the ports which are spaced apart about the base of the housing.

3,645,531
RANDOMLY OPERATED PICTURE PROJECTING CHANCE APPARATUS
Lawrence Wright, Alresford, England, assignor to Backagee Limited
Filed May 14, 1969, Ser. No. 824,522
Claims priority, application Great Britain, May 16, 1968, 23,398/68
Int. Cl. A63b 71/06
U.S. Cl. 273—138 A **10 Claims**



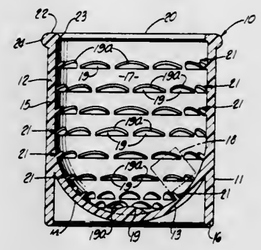
The specification discloses a gaming machine comprising a projector for projecting an endless film of horse races. The film is divided into four subframes a selected one of which is brought to a screen by means of a system of tilting mirrors. The selection of subframe is made at random twice in each race to give unpredictable variations of the race shown; a coin mechanism is provided so that bets can be made and winnings paid out in accordance with the outcome of the race.

3,645,532
DICE GAME OF CHANCE DEVICE
Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.
Filed Dec. 21, 1970, Ser. No. 100,132
Int. Cl. A63f 5/04
U.S. Cl. 273—142 A **4 Claims**



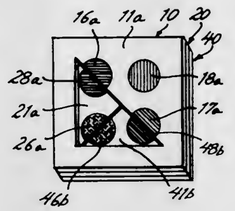
The device of this invention may be used in a dice game of chance normally requiring one or more dice, each showing from one to six spots on an upturned surface. The die portion of the present device is designed to display from one to six illuminated spots on an upturned surface which is supported on a base and rotated. When a die stops its rotating the number of spots illuminated will be a function of an angular position in relation to the base portion of the device. The base includes a mask and a light source, and the mask controls a passage of light to the light-admitting ends of an array of light guides which extend to the upturned surface. The device also includes means for stopping the rotating die at one of a predetermined number of possible angular positions.

3,645,533
DICE CUP
Victor Lester, P.O. Box 608, Sonora, Calif.
Filed Sept. 24, 1970, Ser. No. 75,223
Int. Cl. A63f 9/04
U.S. Cl. 273—145 A **12 Claims**



A plastic dice cup for use in various games of amusement includes a chamber which is cylindrical along the sides and concave at the bottom. The inner surface of the chamber is provided with a plurality of projections which are arranged in rows, each of which is staggered with respect to projections in adjacent rows.

3,645,534
CARD PUZZLE
Joseph A. Weisbecker, 1220 Wayne Avenue, Erlton, Cherry Hill, N.J.
Filed Nov. 12, 1969, Ser. No. 875,801
Int. Cl. A63f 9/08
U.S. Cl. 273—157 A **4 Claims**

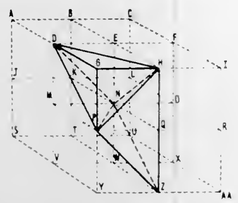


A group of cards each having a through opening and a characteristic marking proximate to the through opening, adapted for arrangement in stacked relation to locate the markings of different cards in complementary relation with each other.

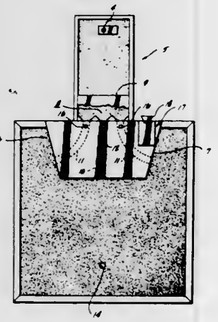
3,645,535
BLOCK CONSTRUCTION
Alexander Randolph, 1-Chome 10-9, Shinjuku-ku, Naka Ochiai, Tokyo, Japan
Filed Apr. 23, 1970, Ser. No. 31,175
Int. Cl. A63f 9/12
U.S. Cl. 273—157 R **8 Claims**

A block system useful as a puzzle or game consisting of a group of solids adapted to be assembled into a larger regular polyhedron. The solids each have shapes that are determined by an assembly of components that include a tetrahedron and

one or more fractional sections of an octahedron. The fractional sections comprises one-eighth and one-fourth sections of a regular octahedron.

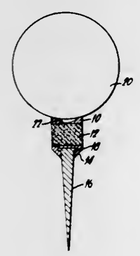


3,645,536
GOLF GAME APPARATUS INCLUDING MESSAGE BROADCASTING CIRCUITRY
Francis X. Tierney, 96 Gardenglen, West Covina, Calif.
Original application Sept. 23, 1968, Ser. No. 761,512, now Patent No. 3,575,559. Divided and this application Feb. 8, 1971, Ser. No. 113,354
Int. Cl. A63b 69/36
U.S. Cl. 273—185 R 1 Claim



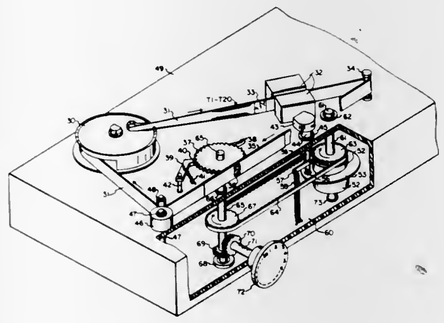
A plurality of messages are recorded on magnetic tape or the like. The messages are selected and broadcasted in a random fashion in response to a golf ball or the like being knocked into one of two or more channels which contain sensors or switches that actuate circuits associated with respective sensors. A miniature golf hazard is disposed over the first and second channels to conceal the entry of the channels from the view of a player.

3,645,537
TILTTOP GOLF TEE
Leo R. Parenteau, Drummondville, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Oct. 5, 1970, Ser. No. 77,932
Int. Cl. A63b 57/00
U.S. Cl. 273—207 4 Claims



A golf tee comprising a thin flexible horizontal disc having a ball-receiving recess; an inverted elongated metal cone; and a vertical spongy cylinder disposed and connected between the disc and the cone.

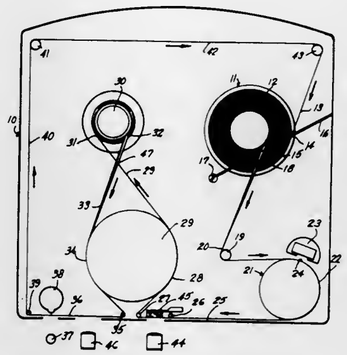
3,645,538
DEVICE FOR POSITIONING A TAPE HEAD TO TRACKS OF A MULTITRACK RECORDING TAPE
Joseph James Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.
Filed June 22, 1970, Ser. No. 48,368
Int. Cl. G11b 5/00
U.S. Cl. 274—4 A 7 Claims



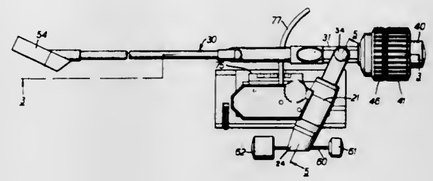
A device for sequentially positioning a tape head to consecutive tracks of a cartridge-type multitrack recording tape, wherein a short section of heavy-type tape having a small rectangular opening formed therein is spliced into the tape loop. A sprocket gear having an associated spring-biased detent pawl is so located that the rectangular opening will successively engage one tooth of the gear at a time for each complete cycle, or revolution, of the tape, to cause the gear to rotate an angular increment determined in accordance with the number of teeth thereon. A cam is rotatably controlled by the gear for moving a cam follower, which is attached at one end to the tape head, for moving the tape head transversely across the tape to the next consecutive track. A manually operable indexing arrangement is provided for controlling the cam to move the tape head to any selected track on the tape.

3,645,539
DELAY LOOP TAPE CARTRIDGE
John Paul Jenkins, Towanda, Ill., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Mar. 19, 1969, Ser. No. 808,584
Int. Cl. G11b 25/06, 23/06
U.S. Cl. 274—4 B 6 Claims

A tape delay cartridge device having a continuously moving closed loop of magnetic tape passing adjacent to a record head and subsequently adjacent to a playback head. A secondary loop of the tape is formed between the record head and the playback head such that there is an excess of length therebetween. This excess of length or loop provides a delay in the playback of information recorded by the record head. In this way, information being recorded can be continuously monitored, and the tape can be stopped before any bit of information reaches the playback head to delete certain portions thereof such as may be required in censoring telephone conversations or the like which are to be broadcast "live." The delay loop may be of a variable length in that the magnetic tape is wound a plurality of times around a reel prior to passing adjacent to the playback head. A flywheel is provided to stabilize the motion of the tape as it passes from the record head to the playback head through the delay reel and loop assembly. The entire magnetic tape takes the form of a closed loop, and it is wound about a storage reel which may include any variable length of the magnetic tape thereby providing a long tape and avoiding the splice problems associated with a small closed loop wherein the splice passes beneath the playback head in rapid succession.

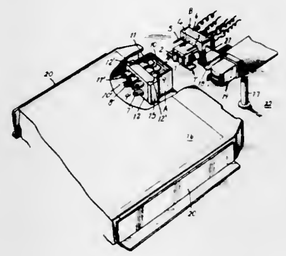


3,645,541
PICKUP ARMS
Alastair John Robertson-Aikman, "Stokes," Steyning, Sussex, England
Filed Mar. 17, 1969, Ser. No. 807,547
Claims priority, application Great Britain, Mar. 19, 1968, 13,318/68
Int. Cl. G11b 3/10
U.S. Cl. 274—23 R 18 Claims



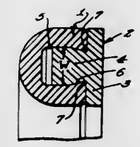
This invention relates to an improved phonograph pickup arm assembly affording a wide range of adjustments. In particular, the arm includes means for adjusting playing weight in which variation of playing weight is accompanied by automatic adjustment of a force correcting the side thrust of skating force at the stylus. The correcting force is produced by inclination of the pivotal axis of the arm by an angular amount about which produces an appropriate horizontally resolved part of the vertical force of the stylus. The pickup arm can be unplugged towards its inward end.

3,645,540
DEVICE FOR CONNECTING ELECTRICAL CIRCUITS
Yoshinobu Tanaka, Warabi-shi, and Kiyoshi Takahashi, Saitama-ken, both of Japan, assignors to Teikoku Dempa Co., Ltd., Tokyo, Japan
Filed June 19, 1969, Ser. No. 834,680
Claims priority, application Japan, Nov. 25, 1968, 43/102104; Nov. 28, 1968, 43/103245; Oct. 28, 1968, 43/93290; 43/93291; 43/93288; June 9, 1968, 43/51269; Oct. 10, 1968, 43/93289
Int. Cl. G11b 5/00
U.S. Cl. 874—4 R 11 Claims



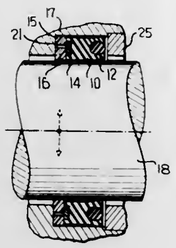
A jack and plug connector for electrical circuits and particularly cartridge-type tape players or radio receiving equipment with the plug being mounted on the chassis of the tape player and the jack being mounted on or a part of the cartridge insertable in the tape player whereby when the cartridge is inserted in the tape player, the jack and plug are plugged into one another providing an electrical connection between the circuits of the tape player and the cartridge.

3,645,542
SEALING RINGS
Frederick J. Adams, Campton, England, assignor to Cam Gears Limited, Hitchin, Hertfordshire, England
Filed May 25, 1970, Ser. No. 40,319
Claims priority, application Great Britain, June 10, 1969, 29,336/69
Int. Cl. F16j 15/18
U.S. Cl. 277—1 9 Claims



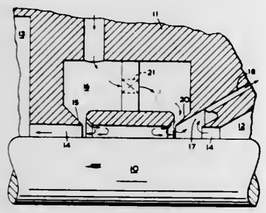
A multiple ring seal installed with the constituent rings in separated relation and automatically assembled upon application of pressure after installation. The seal includes an axially grooved resilient first ring and a rigid second ring having at least a portion seated in the groove of the first ring to stiffen the inner and outer peripheral sealing legs of the first ring. The resilient first ring is sufficiently flexible that during installation it will easily pass through a bore or around a member to be sealed without being damaged by rough surfaces, ports or recesses and the rigid second ring may be split or sized to fit the parts to be sealed. The second ring may have a head flange overlying the first ring to align with the groove a stem portion to be seated in the first ring.

3,645,543
SHAFT PACKING ASSEMBLY
Kazimierz T. Ksieski, Inglewood, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 14, 1970, Ser. No. 63,678
Int. Cl. F16j 15/32
U.S. Cl. 227—58 9 Claims



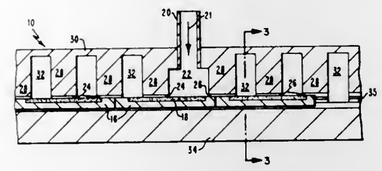
This disclosure relates to a packing capable of accommodating limited transverse relative movement of a shaft and housing sealed thereby. The packing includes a combination of backup rings which prevent seal extrusion between the shaft and the housing while permitting the transverse movement.

3,645,544
SEAL PRIMARILY FOR A TURBINE
Robert George Unsworth, and Arnold Bainbridge, both of Rugby, England, assignors to The English Electric Company Limited, London, England
Filed Aug. 27, 1969, Ser. No. 853,292
Claims priority, application Great Britain, Aug. 27, 1968, 40,862/68
Int. Cl. F16j 15/44
U.S. Cl. 277—70 6 Claims



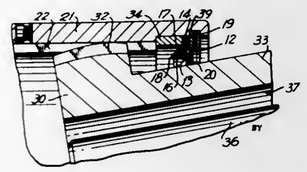
A pressure seal is provided as an alternative to the normal gland or labyrinth seal between two relatively rotatable members **10, 11**. In this seal an annular jet of seal fluid is directed from a first duct **15** defined in one of the members **10, 11** towards the other member so as to form a moving curtain of seal fluid therebetween, and means **19** is provided for forming an annular mass of seal fluid on the higher pressure side of the moving curtain whereby to prevent entrainment of fluid from the region **12** which adjoins the higher pressure side into the moving curtain and thence into the region **13** adjoining the lower pressure side. A second duct **20** may be defined within the one member **11** for the purpose of forming a further moving curtain of seal fluid between the annular mass and the higher pressure region **12**. The second duct **18** may be fed from the same pressure source as the first, suitable throttling means **21** being interposed between the two.

3,645,545
ENTRANCE-EXIT ATMOSPHERIC ISOLATION DEVICE
Richard R. Garnache, South Burlington, and Donald M. Kenny, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 30, 1970, Ser. No. 59,496
Int. Cl. B65d 53/00
U.S. Cl. 277—72 SR 9 Claims



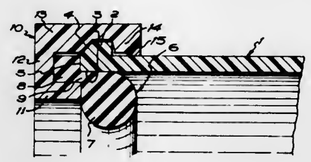
An atmospheric isolation device for separation of two atmospheres of a continuous semiconductor processing apparatus which includes a gas entry tube, a plurality of first gas restricting means leading to a first atmosphere, a plurality of second gas restricting means leading to a second atmosphere, and adjacent to each gas restricting means an expansion chamber for increasing back pressure and for destroying lift produced by the Bernouilli effect of the gas passing through the restricting means.

3,645,546
SEALING RING
Samuel Kaufman, Tappan, N.Y.; Donald E. De Rocker, Ramsey, N.J., and Herbert A. Conrad, Tappan, N.Y., assignors to Sier-Bath Gear Co., Inc., North Bergen, N.J.
Continuation-in-part of application Ser. No. 813,146, Apr. 3, 1969. This application Mar. 29, 1971, Ser. No. 128,793
Int. Cl. F16j 15/16
U.S. Cl. 277—205 10 Claims



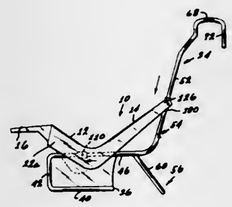
A ring for effecting a fluidtight seal between the confronting peripheral faces of relatively universally movable sleeve and shaft comprises an annular elastomeric body member including an intermediate section having a length between said peripheral faces of said sleeve and shaft sufficiently greater than the distance between said peripheral faces to accommodate the maximum misalignment of said sleeve and shaft without breaking the seal. In a preferred embodiment, the intermediate section is defined by converging conical walls joined at a circular elbow permitting movement of the walls about the elbow. Flanges projecting from the free edges of the walls and self-hinged thereto have annular channels in which are nested rigid coplanar annuli. The inner flange tightly engages the shaft surface and the outer flange is restrained between shoulders on the sleeve.

3,645,547
PIPE COUPLINGS
John B. Glover, Stocksbridge, England, assignor to The Hepworth Iron Company Limited
Filed Oct. 17, 1969, Ser. No. 867,313
Claims priority, application Great Britain, Feb. 7, 1969, 6,837/69
Int. Cl. F16j 15/10; F16l 21/02
U.S. Cl. 277—207 6 Claims



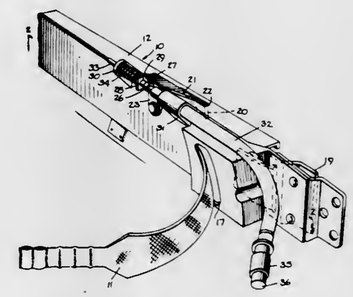
A pipe coupling comprises a slightly resilient plastics socket with an integral external peripheral projection adjacent its mouth, a resilient sealing ring having an annular sealing head inside the socket and an annular flange abutting the rim of the mouth of the socket, the sealing head being connected to the flange by an annular neck having a radial thickness less than the axial and radial thicknesses of the flange, and a locking ring of slightly resilient channel section plastics material, with the annular base of the channel section lying against the face of the flange of the sealing ring, remote from the mouth of the socket, with the annular inner side of the channel section locking ring lying against the inside face of the flange of the sealing ring and having an axial depth not greater than the axial thickness of the flange, and with the annular outer side of the channel section locking ring overlapping the outside of the mouth of the socket and having on its inner face an integral peripheral projection engaging behind the projection round the outside of the socket.

3,645,548
SAFETY AUTO SEAT
Arthur N. Briner, 17126 Sunderland Drive, Granada Hills, Calif.
Filed July 28, 1969, Ser. No. 845,460
Int. Cl. B60r 21/10; A47c 1/08
U.S. Cl. 297—216 3 Claims



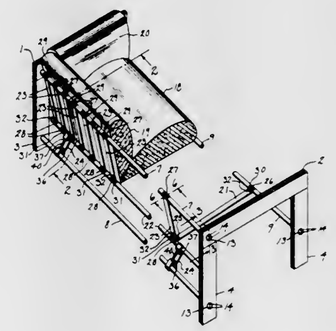
The device is a safety auto seat particularly for children. It comprises a seat having a back portion and a seat portion mounted on a frame, the frame being configurated to be suspended or hung over the back of an auto seat. The seat itself is attached to the frame to allow relative movement as between the seat and the frame, to allow relative movement as between the seat and the frame, the occupant of the seat being normally held therein by a strap. Sliding connections are provided between the back portion of the seat and the frame and between the seat portion of the seat and the frame so that in the event of a collision (head-on, for example) and high deceleration forces the seat can translate moving forward relative to the frame and thus protecting the occupant from injury from the impact.

3,645,549
AUTOMATIC BELT RETRACTOR
George H. Jantzen, Bronx, N.Y., assignor to M. Steinthal and Company, Inc., New York, N.Y.
Filed June 23, 1969, Ser. No. 835,345
Int. Cl. B60r 21/10; A62b 35/82; A47d 15/00
U.S. Cl. 297—388 20 Claims



An elongated retractor serves as a guide for a retracting slide within it. When the belt is fully extracted, the slide is pulled to a position where it engages a pivotable locking member and is locked against retracting the belt. A cable is arranged to push or pull the locking member about its pivot axis out of engagement. A spring holds the locking member in position for engagement when the cable is not actuated.

3,645,550
FURNITURE CONSTRUCTION
Roy J. Biehl, Milwaukee, Wis., assignor to Sahn, Inc., Milwaukee, Wis.
Filed Oct. 15, 1969, Ser. No. 866,684
Int. Cl. A47c 7/02; A44c 5/18
U.S. Cl. 297—454 2 Claims



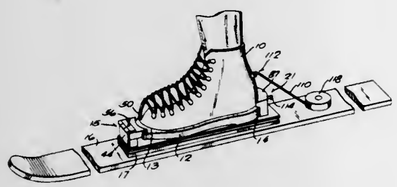
A pair of inverted U-shaped end pieces joined by upper and lower back beams and a front beam form the skeleton of a sofa that employs a tensioned system of leather straps to support seat and back cushions. Back straps generally are vertically strung between the upper back beam and a floating beam. Seat straps are generally horizontally strung between the front beam and the floating beam. Adjustable tensioning

straps stretch from the lower back beam to the floating beam. Unique, self-tightening attachments of the straps to the beams use novel H-shaped, cast aluminum fasteners.

3,645,551
CONVERSION OF UNDERGROUND SULFUR DEPOSITS
Robert R. Thompson, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed June 8, 1970, Ser. No. 44,554
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **8 Claims**

Sulfur in underground deposits can be readily converted to hydrogen sulfide, and the latter produced, by bringing a suitable hydrocarbon into contact with the sulfur at a temperature of at least 200° F. Where necessary, the formation may be heated to the desired temperature either by means of a bottomhole heater or by combustion. Production of the resulting hydrogen sulfide may be accomplished either through a single-well or multiwell system. The resulting gaseous product can then be processed in a known manner to produce free sulfur.

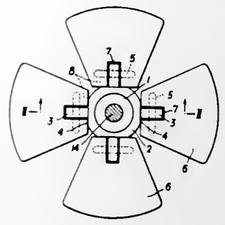
3,645,552
SUCTION SKI BINDING
George Kulick, 201 East 66th Street, New York, N.Y.
Filed Oct. 6, 1969, Ser. No. 863,921
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 M **10 Claims**



Disclosed herein is a release binder for releasably securing ski boots to skis which utilizes vacuum coupling means in the form of a plurality of suction cups mounted on a boot carrier to secure the boot carrier to a ski. The suction cups are received in concave depressions in a plate mounted on the ski. In one embodiment the boot carrier includes a sheet of magnetic material which provides a magnetic bond in addition to the vacuum bond. A ski boot is secured to the boot carrier frame by various releasable clamps. A safety cord connected to the ski boot and to a reel mounted on the ski restrains free travel of the ski when the boot and boot carrier are released from the ski during a spill.

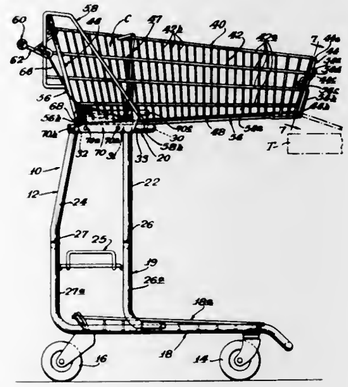
3,645,553
DISK FOR SKI POLE
Hans Hinterholzer, Salzburg, Austria, assignor to Intamin A. G., Zurich, Switzerland
Filed Sept. 15, 1969, Ser. No. 858,026
Claims priority, application Austria, Sept. 16, 1968, A 8986/68
Int. Cl. A63c *11/24*
U.S. Cl. 280—11.37 Z **9 Claims**

A disk for a ski pole is formed from four generally clover-leaf-shaped vanes mounted on a ring which is limitedly swivelable on the stem of the pole near its pointed lower end, the vanes being individually pivoted to that ring for swinging downwardly under a load of snow into a limiting position in which they may form a generally frustopyramidal structure.



The vanes, when unloaded, may be retracted by a spring into a coplanar position perpendicular to the ring axis.

3,645,554
SHOPPING CART
Gene B. Von Stein, and Norman R. Young, both of Oklahoma City, Okla., assignors to Unarco Industries, Inc., Chicago, Ill.
Filed May 4, 1970, Ser. No. 34,016
Int. Cl. B62b *11/00*
U.S. Cl. 280—33.99 R **10 Claims**

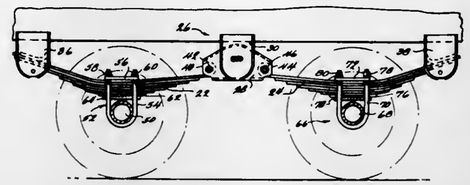


A high-basket shopping cart for counter-level discharge is arranged for basket-telescoping storage with similar carts by providing a control handle for the cart which is at a convenient height when the cart is used for its intended purpose and which moves to an unobstructing position when the baskets telescope for purposes of storage.

3,645,555
TANDEM AXLE SUSPENSION
Charles O. Traylor, Springfield, Mo., assignor to Hutchens and Son Metal Products, Inc., Springfield, Mo.
Filed Dec. 11, 1969, Ser. No. 884,373
Int. Cl. B60g *5/06*
U.S. Cl. 280—104.5 B **5 Claims**

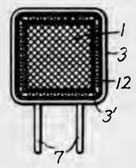
A tandem axle suspension whereby each of the tandem axles is fastened to an associated spring by means of an axle seat assembly and each of the springs is nonslidably connected at one end to an equalizer assembly which is fastened to the frame of the vehicle and slidably connected at the other end to hanger brackets likewise fastened to the frame.

The springs are fixed to a pivot beam on the equalizer assembly, preferably at a point below the axis of rotation of the pivot beam, so that during acceleration and deceleration, the tendency of the wheels to impart undesirable rotation to the axles, with resultant rotation of the beam, is opposed by horizontal forces generated by the springs on the pivot beam



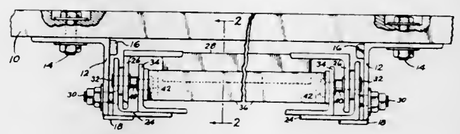
at the points of attachment of the springs to the pivot beam. In the embodiment of the invention described below, the springs each are clamped to the axle by means of a pair of serrated plates, one of which is movable with respect to the other to vary the separation between the axle and the end of the spring fixed to the pivot beam.

3,645,556
SAFETY NET PILLOW FOR VEHICLE PASSENGERS
Yasusaburo Kobori, Tokyo, Japan, assignor to Kabushikikaisha G.I.C., Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,477
Claims priority, application Japan, Dec. 18, 1968, 43/109928; May 15, 1969, 44/46072
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **2 Claims**



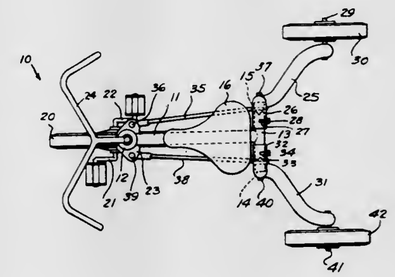
A safety net pillow for the prevention of the snapping back of the head of a vehicle passenger having a net stretched on a frame, and leg means attached to the lower portion of the frame for detachably mounting the frame on the back of a seat of the vehicle in such a manner that the net stretched on the frame stands substantially upright.

3,645,557
FOLDABLE RETRACTABLE STEP ASSEMBLY FOR CAMPERS AND LIKE VEHICLES
Art Aldropp, and Archie Aldropp, both of P.O. Box 95, Langlois, Oreg.
Filed Mar. 25, 1970, Ser. No. 22,593
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **1 Claim**



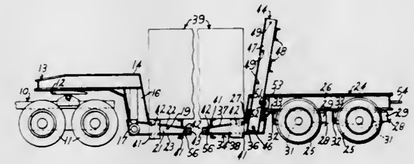
A foldable retractable step assembly for campers and like vehicles comprises a bracket with means for attachment to a structural support member of a camper. At least one step and riser, preferably a plurality of steps and risers, are suspended on the bracket. Pivotal mounting means with associated stop means pivotally mount the upper end of the upper riser on the bracket and the upper ends of the subsequent risers on the outer ends of the adjacent steps. Pivotal mounting means mount the inner ends of the steps on the lower ends of the risers. The steps and risers thus are alternately adjustable between an extended use position, and a folded, nesting, transport position underlying the bracket. Retracting means are associated with the bracket which enable retraction of the folded assembly beneath the support when the assembly is in transport position.

3,645,558
BICYCLE TRAINER VELOCIPEDE
Wayne W. McMullen, Coon Rapids, Minn., assignor to Frank C. Freidheim, Minneapolis, Minn.
Filed Mar. 31, 1970, Ser. No. 24,222
Int. Cl. B62k *5/08*
U.S. Cl. 280—270 **3 Claims**



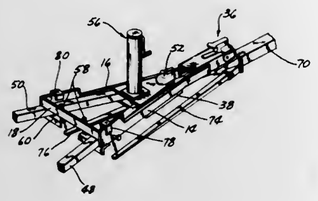
A velocipede having swingable rear wheel mounts controlled by the steering of the velocipede so that on turning the front wheel of the velocipede the swinging rear wheel mounts are swung oppositely to cause the velocipede to bank in the same manner as the bicycle is banked in making a turn. The velocipede rider is thus trained in the motions a bicycle will make on turning to assist in preparing him to ride a bicycle.

3,645,559
TRAILER HAVING GOOSENECK AND BOGIE CONNECTED SELECTIVELY TO EACH OTHER AND TO CARGO UNIT
George T. Stafford, Jr., P.O. Box 2805, Birmingham, Ala.
Filed Apr. 24, 1970, Ser. No. 31,658
Int. Cl. B62d *53/08*
U.S. Cl. 280—415 B **2 Claims**



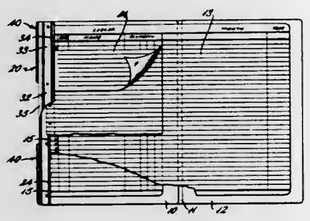
Apparatus connecting gooseneck and bogie selectively to each other and to cargo unit. Support members extend rearwardly from gooseneck and forwardly from bogie and detachably connected to adjacent portions of cargo unit. Connector member carried by bogie and connectable to support members.

3,645,560
HITCH EXTENSION MEANS
Merrell D. Steele, 822 East Broadway, Des Moines, Iowa
Filed May 6, 1970, Ser. No. 35,195
Int. Cl. B60d 1/00
U.S. Cl. 280—482 4 Claims



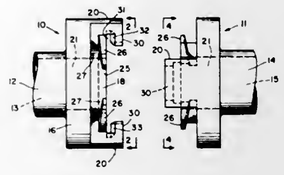
A hitch extension means for use with a trailer having a forwardly extending tongue means with a first coupling socket means on the forward end thereof. The extension means comprises a second coupling socket means at the forward end thereof which may be detachably secured to a coupling ball at the rearward end of the vehicle. The extension means includes first and second frame members which extend outwardly and rearwardly from the second coupling socket means. A third frame member extends between the rearward ends of the first and second frame members over the tongue means. A plate is secured to the first and second frame members rearwardly of the second coupling socket means and has a coupling ball mounted thereon adapted to detachably receive the first coupling socket thereon. Means is provided on the extension means to limit the movement of the extension means with respect to the trailer tongue.

3,645,561
CLAMP BOARD FOR MULTIPLE ENTRY ACCOUNTING
Richard G. Kendall, 207 Stevens Mills Road, Auburn, Maine
Filed July 8, 1970, Ser. No. 53,051
Int. Cl. B41l 3/04
U.S. Cl. 282—29 B 3 Claims



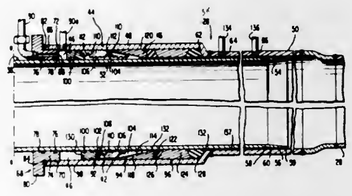
A multiposition clamp apparatus having a plurality of spaced generally parallel hinges arranged in a manner that clamp movement can be shifted from one hinge to another so that a plurality of accounting forms are held in predetermined selected position to record information on a plurality of documents simultaneously and such documents can applied and removed independently. The multihinged clamp can be selectively moved to any one of a plurality of positions and in certain positions the clamp will remain in fixed position while in other positions the clamp will move automatically.

3,645,562
COUPLING DEVICE
Matthew R. Fandetti, 42 Belmont Street, Brunswick, Maine, and Joseph P. De Azevedo, 1065 Farm Road, Secaucus, N.J.
Filed Mar. 10, 1970, Ser. No. 18,136
Int. Cl. F16l 55/00
U.S. Cl. 285—73 6 Claims



A coupling device consisting of a pair of identical one-piece units adapted to be placed into and out of interlocking engagement. Each unit includes a cylindrical first member, a second member extending above the first member, and a pair of third members extending above the first and second members, the upper surfaces of these members being planar and parallel. An opening extends through the first and second members. The second member is formed with a pair of spaced inwardly extending recesses and includes a plurality of spaced first locking elements each of which is positioned to a side of corresponding recess. Each first locking element has a lower surface spaced from the upper surface of the first member and inclined downwardly in a direction away from the corresponding recess. Each third member includes a second locking element projecting over and above the second member and having a lower surface that is spaced from the upper surface of the second member and is inclined downwardly from each end.

3,645,563
METHOD AND APPARATUS FOR MAKING SUBMERGED PIPELINE CONNECTIONS
William R. Rochelle, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed May 7, 1969, Ser. No. 822,409
Int. Cl. F16l 35/00
U.S. Cl. 285—24 24 Claims

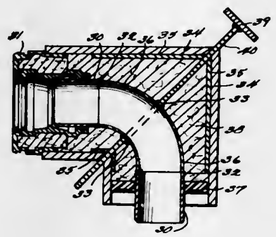


A method and apparatus for making a connection between conduits, either submerged or to be submerged, characterized by the provision of a telescoping terminus on a flowline. In some operations where the flowline is laid either toward or away from an underwater installation, it may be lowered, while maintaining the terminus substantially fixed with respect to the remainder of the flowline, to a submerged position where the terminus is spaced from the installation. Subsequently, the terminus is telescoped into engagement with an alignment means, such as a riser adapter, either through diver assistance, or by remote operation of a terminus moving means. This means may be provided by a flexible drawline, which may be threaded through the alignment means, attached to the terminus, and subsequently tensioned to telescope the terminus. Release of the drawline may be accomplished through the application of fluid pressure.

Means are provided for latching the terminus into the riser adapter and for locking a slip joint between the terminus and the remainder of the flowline.

Other connections between the terminus and an installation conduit may be accomplished adjacent the surface of the water. The conduit and pipeline may be lowered together, with the terminus locked, and after lowering the terminus may be freed to permit proper positioning of the installation conduit relative to the installation. Alternatively, the lowering operation may take place with the installation conduit in its proper position relative to the installation and with the terminus unlocked, whereupon relative movement of the telescoping terminus facilitates the operation of lowering the installation conduit and the connected flowline. After lowering the slip joint may be locked.

3,645,564
INSULATED CONDUIT-FITTING ASSEMBLY
Winfield F. Corriston, Far Hills, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,155
Int. Cl. F16l 59/16
U.S. Cl. 285—47 7 Claims

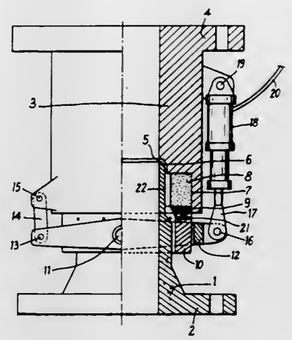


An insulated conduit-fitting assembly comprising an outer casing having a support shell secured to its inner edge. An inner transfer pipe is positioned within the outer casing and is surrounded by insulation material filling a substantially annular space. One end of the inner transfer pipe is recessed within the outer casing, with the recessed end of the inner transfer pipe having a coupling assembly mounted thereon. At least one end of the inner transfer pipe extends beyond the edge of the outer casing with each of the extended ends of the inner transfer pipe cooperating with an end sealing ring. The support shell is positioned within the outer casing so that it is separated from the ring coupling assembly and the end seal by insulation material.

3,645,565
SEALINGTIGHT, CONTROLLED-FRICTION CONNECTING DEVICE BETWEEN TWO PIPE ELEMENTS
Jean-Jacques Houot, Sartrouville; Yves Pelissier, Pau, and Jean-Francois Durand, Nantes, all of France, assignors to Etablissement public a caractere industrial et commercial dite: Entreprise De Recherches Et D'Activites Petrolieres (Elf)
Filed Dec. 29, 1969, Ser. No. 888,658
Claims priority, application France, Dec. 31, 1968, 183119
Int. Cl. F16l 55/00
U.S. Cl. 285—18 2 Claims

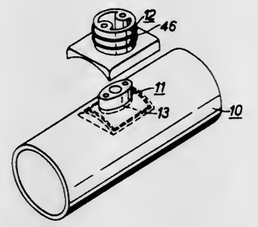
A device for connecting two pipe elements to one another, comprising a sealing element which is deformable under mechanical force, and has a considerable potential deforma-

tion, and an assembly carried by one of the parts to be connected together and adapted to compress the said deformable sealing element, the assembly comprising a ring applied



against the said sealing element and carried by rods fast with links bearing on the part supporting the said assembly and operated by a jack whose mobile element actuates the ring so as to effect the deformation of the said sealing element.

3,645,566
SADDLE-TYPE TEE CONNECTOR
Gerhard Dyck, Saskatoon, Saskatchewan, Canada, assignor to Dyckes Sprinkler Co. Ltd., Saskatoon, Saskatchewan, Canada
Filed Dec. 4, 1969, Ser. No. 882,203
Claims priority, application Canada, Dec. 20, 1968, 038,380
Int. Cl. F16l 5/00
U.S. Cl. 285—197 27 Claims

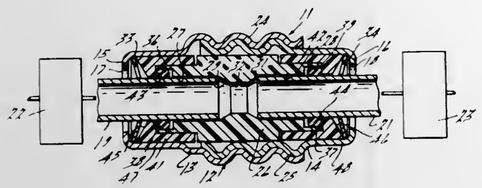


A saddle-type tee fitting for a pipe is herein provided. The tee includes a particularly recited external component adapted to be situated on the exterior wall of the pipe, a particularly recited internal component adapted to be situated within the pipe near the external component, and a particular coupling means for these components.

3,645,567
PUSH TOGETHER TUBE CONNECTOR
Joseph F. Reinker, Jr., Parma, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Feb. 24, 1970, Ser. No. 13,438
Int. Cl. F16l 17/00
U.S. Cl. 285—340 5 Claims

A connector for coupling tube ends by pushing the ends into the connector. The assembly comprises a housing having two separable sections, an inner body insert within the housing into which the tube ends are pushed, from opposite sides, annular seals retained by the inner body insert and engaging the tube ends, and at least one outer body insert confining its

adjacent seal and held in place by the housing. Partial separation of the housing sections will permit pressurized fluid in the connection to force the outer body insert away from the



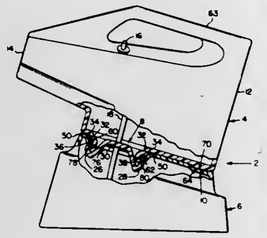
inner body insert, freeing the adjacent seal and permitting slow leakage. This will prevent a sudden spurt of fluid such as Freon from causing injury to the operator. Reconnection is obtained by reuniting the housing sections.

3,645,568

METHOD AND APPARATUS FOR CONNECTING AND LOCKING TWO MEMBERS TOGETHER

Samuel A. Halaby, Jr., Pittsford, N.Y., assignor to Samuel Halaby, Inc., Rochester, N.Y.

Filed July 24, 1969, Ser. No. 844,307
Int. Cl. F16l *17/00*
U.S. Cl. 285—360 **7 Claims**



The combination of: (1) a bayonet or other turn-type connecting mechanism for connecting two members together, and (2) a separate locking mechanism, spaced from the connecting means, and automatically put in locking engagement at a predetermined angular orientation of the two members as they are being turned to connect them together. Before rotating the two members to disconnect them, the locking mechanism must be disengaged; this is accomplished by a combination tilting and rotational movement of the two connected members.

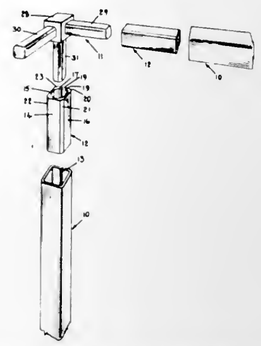
3,645,569

CONNECTOR FOR JOINING TUBULAR MEMBERS

Frederick W. Reilly, Toronto, Ontario, Canada, assignor to Beautiline Limited, Downsview, Ontario, Canada

Filed Sept. 4, 1970, Ser. No. 78,343
Int. Cl. F16b *2/20*
U.S. Cl. 287—54 A **9 Claims**

An insert for use in forming a releasable locked joint between a hollow rectangular tubular member and a cubical connector which has at least two spigots of rectangular cross section. The insert fits into the tubular member and has a spigot locking portion at each corner, which bridges the corner of the tubular member to provide a void or cavity in



each corner. The locked joint is established by inserting the spigot into the insert and then turning the tubular member one-eighth to bring the spigot corners into an interference fit with the spigot locking portions.

3,645,570

COUPLING THREAD FOR PERCUSSION DRILL RODS

Ernst Lennart Johansson; Karl Lennart Gosta Lumen, and Hans Per Olof Lundstrom, all of Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed Aug. 12, 1970, Ser. No. 63,212
Claims priority, application Sweden, May 4, 1970, 6,062/70
Int. Cl. F16b *7/00*
U.S. Cl. 287—117 **3 Claims**



In a connection between two threaded sections of percussion drill rods held together by a threaded coupling sleeve, the rod threads and sleeve threads have—in longitudinal section—straight flank portions and straight (or only slightly curved) top and bottom portions, the flank portions being connected by curved portions. In coupled state, there is abutting contact (between rod and sleeve threads) only as regards the straight flank portions.

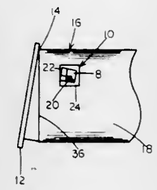
3,645,571

LOCKING MEANS

Walter Lunsford, 5719 Okeechobee Blvd., West Palm Beach, Fla.

Filed Mar. 2, 1970, Ser. No. 15,547
Int. Cl. E05c *19/06*
U.S. Cl. 292—19 **5 Claims**

A locking means for a receptacle that includes a container and cap that are moved into a closed position by moving the cap toward the container opening along a line generally parallel to the centerline of the container opening. The container is opened by removing the cap in the following manner, pivoting one point on the cap about another point on the edge opposite said first point. The locking means includes a male latching means and a female latching means. The male locking means includes a closure cam portion to lock the male locking means in the female locking means, a



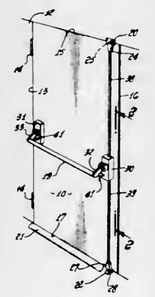
locking abutment located opposite the closure cam portion, and a opening cam portion for unlocking the male locking means from the female locking means. The female locking means includes a cavity for receiving the male locking means. The cavity includes a holding edge to mate with the locking abutment on the male latching means, and a camming edge to be moved by the opening cam portion of the male locking means.

3,645,572

PANIC BAR STIFFENER

William F. McFarlane, Van Nuys, Calif., assignor to Hally Stamping & Manufacturing Company, Los Angeles, Calif.

Filed Aug. 10, 1970, Ser. No. 62,273
Int. Cl. E05c *9/04, 15/02*
U.S. Cl. 292—21 **7 Claims**



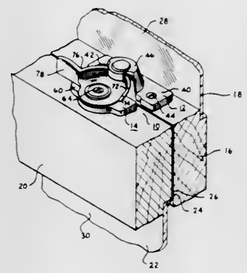
An emergency-exit door provided with a latch mechanism including a panic bar adapted to be pushed to raise upper and lower vertical actuating rods which in turn release upper and lower latch bolts so that the door can be opened. Biasing devices are removably installed in the hinge arms of the panic bar to increase the pressure required to actuate the latch mechanism during times when it is desirable to discourage persons from using the emergency-exit door as an exit from a building when no emergency exists.

3,645,573

WINDOW LOCK

Robert E. Strang, North Liberty, Ind., assignor to The Injection Plastic Co., Inc., Tippecanoe, Ind.

Filed Dec. 11, 1969, Ser. No. 884,222
Int. Cl. E05c *3/04*
U.S. Cl. 292—241 **9 Claims**



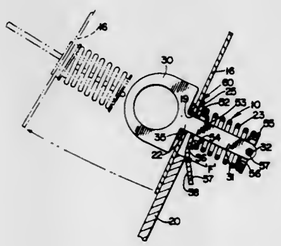
A lock for a window of the type having upper and lower vertically sliding sections with frame members at the lower and upper edge, respectively, the lock including a lug member with an inwardly facing shoulder for one window section and an element having an eccentric edge for engaging the shoulder for the other of the window sections. The parts are constructed of a firm but resilient plastic material which offers sufficient yieldability to cause the window to stay firmly locked and to compensate for changes in temperature and moisture without becoming unlatched or loose. A single screw is used to attach the element with the eccentric edge and an insert is preferably used to retain the elements of a base member in place.

3,645,574

FASTENING DEVICE

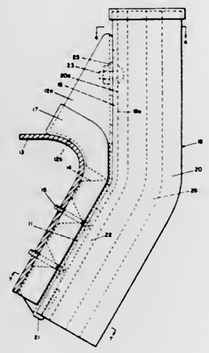
Thomas J. Scarnato, Barrington; Martin H. Meyer, Elburn, and George B. Cicci, Broadview, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1970, Ser. No. 8,798
Int. Cl. E05c *3/10, 5/02*
U.S. Cl. 292—242 **1 Claim**



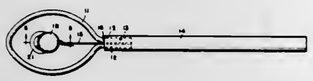
A fastener for securing a hinged door against an adjacent panel and mountable on one of the door and the panel, the fastener being selectively positionable to coact with its mounting to clasp a portion of the other of the door and the panel, wherein the holding force securing the door is nearly constant over a wide range of thicknesses of the portion clasped.

3,645,575
RESILIENT BUMPER GUARD FOR MOTOR VEHICLES
Coleman M. Slavney, 1618 Jefferson Street, Madison, Wis.
Continuation-in-part of application Ser. No. 795,980, Feb. 3, 1969, now Patent No. 3,563,595, dated Feb. 16, 1971. This application Jan. 13, 1970, Ser. No. 2,484
Int. Cl. B60r *19/06*, *19/08*; B61f *19/04*
U.S. Cl. 293—67 10 Claims



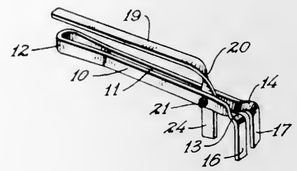
A bumper guard assembly for motor vehicles, parking ramps, loading docks, and the like, comprising a channel-shaped mounting bracket and a bumper member. The mounting bracket has spaced V notches in the flanges thereof to facilitate conforming the bracket generally to a desired shape. The bumper member has a baseplate bonded to a resilient element. The baseplate has a substantially longitudinally extending slot and the resilient element has a groove in the rear face thereof communicating with the slot for receiving the head of a mounting bolt for securing the bumper member to the mounting bracket above an attaching lip on the lower end of the mounting bracket.

3,645,576
EYE CONTACT LENS MANIPULATOR
Eugene S. Horres, 1736 Savannah Highway, Charleston, S.C.
Filed May 27, 1970, Ser. No. 40,879
Int. Cl. A61f *9/00*
U.S. Cl. 294—1 CA 9 Claims



A device for placing a contact lens in and recovering it from the human eye comprises an oval loop adapted to be placed against the eyelids and to hold them open against blinking. A handle is provided at one end to facilitate manipulating the loop. A resilient wire filament extends from one end of the loop to the center and it carries a knob or a suction cup offset outwardly from the plane of the loop. The knob is adapted with the aid of a wetting agent to support a lens to be placed in the eye. The suction cup is used when it is desired to recover a lens from the eye. Alternatively, the suction cup may be supported directly on the knob. In either case, the knob or suction cup is moved toward the eye with a finger against the resilient tension of the wire filament until either the lens contacts the eye ball or the suction cup contacts a lens in the eye, whereupon it is released leaving the lens in the eye or removing it from the eye as the case may be. When blinking is not a problem, a simplified form of the invention is the form of a bent rod having a handle at one end and a knob or suction cup at the other end.

3,645,577
GRIPPER CLAMP FOR SCREEDS
Harvey G. Peper, 633 South Dakota Avenue, New Richmond, Wis.
Filed June 3, 1970, Ser. No. 43,107
Int. Cl. B25b *7/08*
U.S. Cl. 294—104 3 Claims



A gripper clamp is provided for facilitating the handling of screeds used in the rough levelling of concrete. The screeds are usually two by fours or two by sixes and are held by workmen at opposite ends. The handling of such screeds is simplified by the use of a gripping tool including a first handle having right angularly extending jaws to engage one side of the screed and a relatively movable handle pivotal relative to the first and having a jaw end engageable with the side of the screed engaged by the first-named jaws.

3,645,578
EASY HOLE DIGGER
Charles L. Renfroe, 506 Coronado Avenue, Roseville, Calif.
Filed Jan. 29, 1970, Ser. No. 6,891
Int. Cl. A01b *1/02*
U.S. Cl. 294—50.9 1 Claim

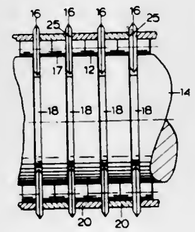


A digging implement for making holes of generally narrow but relatively large depth, the implement comprising a handle supported to a working head, the working head comprising a spade blade that is transversely, centrally divided and connected pivotally free together so that the tip member of the spade blade can be moved between a straight to a perpendicular direction so that it may be used for digging and also raising dirt upwardly from within a hole.

ERRATA

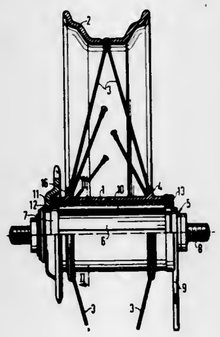
For Classes 297—216 thru 299—5 see:
Patent Nos. 3,645,548 thru 3,645,551

3,645,579
PRESSURE ROLLER APPARATUS FOR ROCK BREAKING
Jacob Marcovitch, Johannesburg, Republic of South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein
Filed July 10, 1969, Ser. No. 840,735
Claims priority, application South Africa, Aug. 2, 1968, 68/4996
Int. Cl. E21c *37/04*
U.S. Cl. 299—75 11 Claims



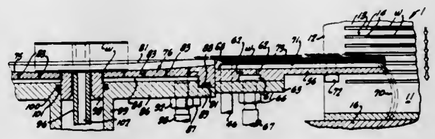
This invention relates to methods of rock breaking which comprise orbiting small rollers around a backing roller that is urged towards the rock face. The rollers each have a raised working zone which is preferably circular in section and which may have hard metal inserts. The rollers may be moved in an arc over the rock face or may be moved stepwise thereof. The working zones apply substantial localized forces to the rock face which forces cause the rock face to break.

3,645,580
WHEEL FOR TWO-WHEEL VEHICLES
Helmut Spies, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Feb. 16, 1970, Ser. No. 11,507
Claims priority, application Germany, Feb. 15, 1969, P 19 07 721.5
Int. Cl. B60b *24/07*
U.S. Cl. 301—55 11 Claims



Wheels for two-wheel vehicles, e.g., bicycles and motorcycles, include a hub sleeve and a rim, said hub sleeve and said rim being connected by a plurality of radially extending spokes attached to a spoke attachment sleeve releasably mounted on said hub sleeve.

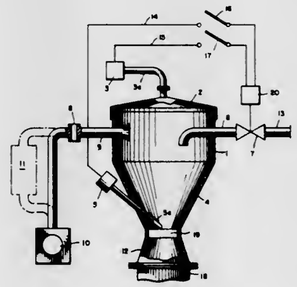
3,645,581
APPARATUS AND METHOD FOR HANDLING AND TREATING ARTICLES
Cecil A. Lasch, Jr., Mountain View; George H. Bingham, Los Altos; Gerhard Berz, Menlo Park, and Earl G. Troyer, Cupertino, all of Calif., assignors to Industrial Modular Systems Corporation, Cupertino, Calif.
Filed Nov. 26, 1968, Ser. No. 779,033
Int. Cl. B65g *51/02*, *60/00*
U.S. Cl. 302—2 R 52 Claims



Improved apparatus and method for transporting articles and for centering articles in sequence by means of fluid-bearing devices. The apparatus and method disclosed have particular utility in the handling and treatment of fragile articles, such as silicon wafers, but their utility is not restricted to such use. After centering, the articles are transferred by vacuum means to a spinning unit at which the articles are treated, as by coating the same with a liquid product, such as a photoresist material. Transfer from the spinning unit is by vacuum means.

In a substantially continuous procedure, articles to be treated are withdrawn in sequence from a supply magazine by fluid-bearing structure, moved through the centering and treating steps, and deposited in a discharge magazine by fluid-bearing structure without manual handling during the procedure. The fluid-bearing structure of an alternative embodiment is provided with bidirectional capability.

3,645,582
PROCESS AND APPARATUS FOR FEEDING SOLID PARTICLES UNDER VACUUM
Hans Siemetzki, Bechhausen, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed Nov. 16, 1970, Ser. No. 89,903
Claims priority, application Germany, Nov. 25, 1969, P 19 59 015.9
Int. Cl. B65g *53/50*, *53/60*, *53/66*
U.S. Cl. 302—35 7 Claims



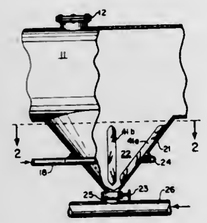
A process and apparatus for feeding a particulate solid material, especially a pulverulent or granular thermoplastic material by gravity flow under vacuum into the feed chamber of a continuously operated screw extruder or similar

processing apparatus, the apparatus including a single supply container from which the solid material flows into said feed chamber and to which additional solid material is conducted through a signal operated valve which is automatically opened and closed in response to the minimum level of material in the container and the maximum gas pressure in the container, respectively.

3,645,583
APPARATUS AND METHOD FOR HANDLING FINELY DIVIDED SOLIDS

Calvin P. Heath, 2158 Wisteria Street, Baton Rouge, La.

Filed Apr. 9, 1970, Ser. No. 26,882
Int. Cl. B65g *53/40*
U.S. Cl. 302—53 **7 Claims**

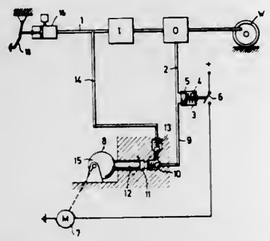


An improved apparatus and method for the discharge, by fluidization and gaseous transport, of finely divided solids from the interior of a storage or transport vessel, such as, for example, a highway bulk transport trailer, or a railway car for similar service. The apparatus includes at least one assembly for providing a fluidizing gas under moderate pressure at the lower boundary of a mass of the finely divided solids in a discharge hopper conventionally forming part of the vessel or tank. The said assembly includes a distributor means and a fabric cover therefor, said cover being characterized in that it has a proportion of looseness, with respect to the gas releasing surface of the distributor means. Upon application of gas pressure to cause flow through said loose cover a vibration is initiated and fluidizing and discharge is accomplished at a greatly accelerated rate.

3,645,584
FLUID RETURN CIRCUIT FOR ANTILOCKING BRAKE SYSTEMS

Heinz Leiber, Leimen, and Fritz Krumling, Leimen-Lingental, both of Germany, assignors to Teldix GmbH, Heidelberg, Germany

Filed July 8, 1969, Ser. No. 839,905
Claims priority, application Germany, July 8, 1968, P 17 55 906.7
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **11 Claims**

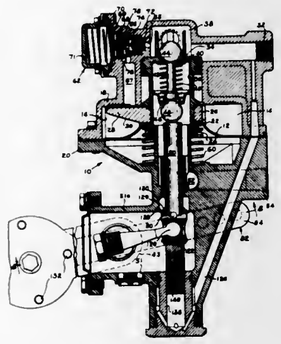


The fluid return circuit in an antilocking control system for vehicle brakes includes a pump constructed to prevent introduction of air into the brake fluid system. The pump is of the positive displacement-type and includes a piston and a drive for the piston. The drive is arranged so that it operates the piston only during the working or pumping stroke and has no effect on the piston during the return or inlet stroke. Instead, the return stroke of the piston is effected only as a consequence of the presence of fluid to be returned.

3,645,585
BRAKE-BALANCING VALVE WITH BRAKE TAPE COMPENSATING MEANS

Brian C. Deem, and Guenter K. Herold, both of Elyria, Ohio, assignors to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Feb. 9, 1970, Ser. No. 9,797
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R **8 Claims**

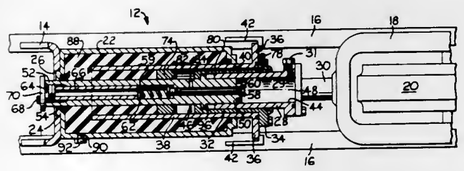


A brake-balancing valve of the type including a constant effective area subject to brake valve pressure and a variable effective area subject to brake chamber pressure, fluid pressure responsive feed valve means for delivering fluid from an inlet to the opposite side of the variable effective area to compensate for brake tare losses whereby the proportioned brakes perform their proper share of braking effort, the feed valve being responsive to the pressure acting on the opposite side of the variable diaphragm whereby a constant compensating pressure is delivered to the opposite side of the diaphragm under all conditions. The invention also includes an improved two-arm articulated lever means which provides over travel for severe axle movement.

3,645,586
TRACK-ADJUSTING AND RECOIL MECHANISM

Donald A. Piepho, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 8, 1970, Ser. No. 53,177
Int. Cl. B62d *55/30*
U.S. Cl. 305—10 **7 Claims**



A track-type tractor comprising an endless track entrained about a drive sprocket and an idler has a self-contained adjuster and recoil mechanism operatively connected to the idler to maintain a preset tension on the endless track. The recoil portion of the mechanism comprises a compressible material contained in a housing which yieldably urges the idler wheel in a forward direction. The tension in the track may be easily adjusted through the admission of an incompressible fluid into a variable volume chamber to thereby permit easy adjustment of the track tension to accommodate changing conditions of track wear.

3,645,587
DRILL STRING MEMBER AND METHOD FOR MANUFACTURE

Bill G. Parker, 212 Saxon Drive, Lafayette, La.

Filed Nov. 18, 1969, Ser. No. 877,754
Int. Cl. F16c *17/00*
U.S. Cl. 308—4 A **9 Claims**

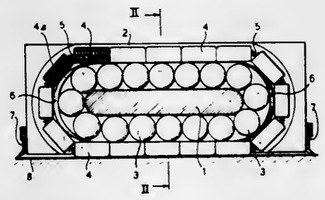


A bottom hole stabilizer, or similar drill string member, is provided with three substantially straight longitudinal ribs on its surface, and the ribs are spaced apart to leave annular flow areas between rib sections. The member is formed as an integral construction by milling flat bottom grooves into a tubular blank having a circular outside periphery when viewed in cross section. The flat bottom grooves are milled into the blank for a sufficient distance to provide substantial annular flow area while also leaving a relatively broad rib section between each annulus area. The member is especially useful for packing a hole just above the drilling bit of a drill string.

3,645,588
ROLLING SLIDES

Guglielmo Pepi, Vico Canavese, Turin, Italy

Filed Mar. 30, 1970, Ser. No. 23,662
Claims priority, application Italy, Mar. 31, 1969, 51224A/69
Int. Cl. F16c *19/00*
U.S. Cl. 308—6 C **7 Claims**

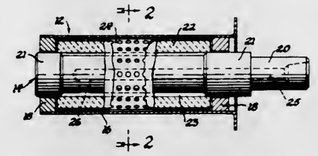


A rolling slide has a bearing body supported by rolling elements which roll both on a closed surface of the body and on an internal surface of an endless belt surrounding the body. The endless belt is made up of a number of resiliently interconnected shoes some of which rest directly on the surface over which the slide moves.

3,645,589
AIR BEARING WITH LOW TENSILE STRENGTH PERMEABLE SLEEVE

Melvyn R. Bird, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1970, Ser. No. 94,855
Int. Cl. F16c *17/16, 13/02*
U.S. Cl. 308—9 **7 Claims**

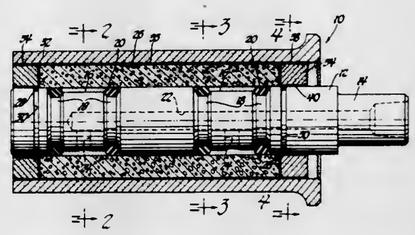


An externally pressurized, gas-bearing roll shell has a low tensile strength, permeable sleeve restricting gas flow to the gas load carrying layer. Three schemes are shown for mounting the permeable sleeve on a stationary mandrel in such a manner that excessive tensile stress is not imparted to the sleeve.

3,645,590
CARBON-GRAPHITE GAS-BEARING ROLL

Melvyn R. Bird, Huron; Paul J. Christiansen, Sandusky, and Philip B. Zeigler, Fort Clinton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1970, Ser. No. 99,159
Int. Cl. F16c *17/16, 13/02*
U.S. Cl. 308—9 **6 Claims**



A high speed, lightly loaded, externally pressurized gas bearing roll for use in the processing of yarns and the like is characterized by a lightweight, substantially impermeable, resin impregnated carbon-graphite rotatable shell mounted on a permeable carbon-graphite sleeve with an interposed externally pressurized gas film.

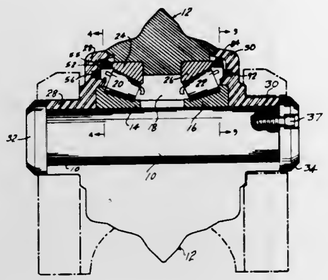
3,645,591
FIXED SHAFT ROTARY SEAL ASSEMBLY

Douglas F. Winberg, Bellevue, Wash., assignor to Subterranean Tools, Inc.

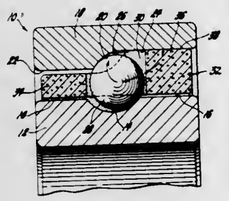
Filed May 8, 1969, Ser. No. 822,920
Int. Cl. F16c *33/76*
U.S. Cl. 308—187.1 **22 Claims**

The disclosure herein relates to a rotary seal assembly, wherein a fixed shaft supports a rotary assembly, such as a cutter assembly for tunnel boring and mining, and the rotary assembly is mounted by antifriction bearings. In order to

maintain lubricant in the bearing and exclude pieces of material being drilled from the bearings, a seal is provided. This seal is between a metallic ring carried by the rotor, as the outer bearing race of the antifriction bearing, and a graphite ring carried by the stator. The seal is between two relatively slidingly engaging, annular faces or annular seals. The graphite seal is urged toward the metallic ring so as to seat the graphite seal and the metallic ring.



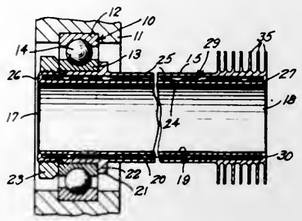
3,645,592
LUBRICANT CIRCULATING ANGULAR CONTACT BALL BEARING
William Kenneth Flandrena, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1969, Ser. No. 857,125
Int. Cl. F16c *33/66, 33/38*
U.S. Cl. 308—187 **1 Claim**



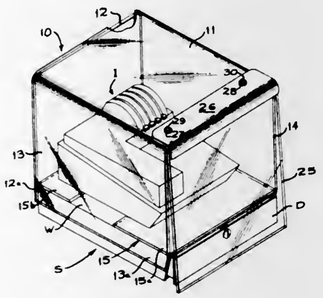
An angular contact bearing having a porous, permeable separator for lubricant circulation is disclosed. The separator includes a cylindrical surface which wipingly engages a cylindrical surface continuous with the raceway on the outer race. The lubricant circulation is from the cylindrical surface of the race through the porous separator to the balls; the balls in turn redistributing the lubricant back to the raceways and cylindrical surface.

3,645,593
HEAT TRANSFER BEARING MOUNTING
Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio
Filed Oct. 13, 1969, Ser. No. 865,605
Int. Cl. F16c *37/00*
U.S. Cl. 308—189 **5 Claims**

An antifriction bearing assembly mounting wherein the inner ring of the bearing, in the preferred embodiment, is mounted on a hollow sleeve which in turn is mounted on the rotating shaft, the sleeve extends axially along the shaft and is hollow in the manner of an envelope. The interior is filled with a heat conductive material such as sodium and the axial end of the sleeve remote from the bearing has radially outwardly directed cooling fins associated therewith. In this manner, heat created during rotation of the bearing assembly is drawn away from the inner ring of the bearing to a point where it can be effectively dissipated.



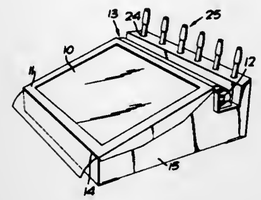
3,645,594
ENCLOSURE FOR IMPRINTER SUBJECT TO WEATHER ELEMENTS
Adam Cintz, 1027 Alma Street, Palo Alto, Calif.
Filed Jan. 15, 1971, Ser. No. 106,659
Int. Cl. A47b *81/00*
U.S. Cl. 312—100 **10 Claims**



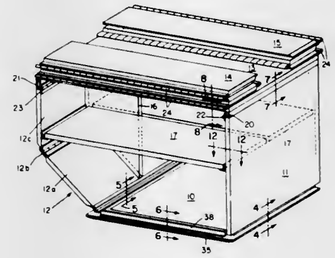
A boxlike, transparent, rigid, plastic enclosure for an imprinter supported by an outdoor cash stand at a service station having a bottom wall formed to be supported by the cash stand with an imprinter disposed on the enclosure above the cash drawer of the cash stand. One end of the enclosure adjacent to the access for the cash drawer is pivotally attached or removably attached to the top wall of the enclosure to provide easy access to the imprinter.

3,645,595
DRAWING DESK
David Balfour Urquhart, and Robert Broadley, both of Ajenda Products, 302 Upper Richmond Road West, London, S.W. 14, England
Filed June 29, 1970, Ser. No. 50,712
Claims priority, application Great Britain, June 30, 1969, 32,958/69
Int. Cl. A47b *27/00, 63/04, 17/00*
U.S. Cl. 312—23 **6 Claims**

A desk is formed from a folded cardboard blank to have a flat top surface. A channel is provided along one edge of the top surface to receive a roll of paper. A mask is attached to the desk to overlie a marginal area of the top surface and to hold paper drawn from the roll flat against the top surface.



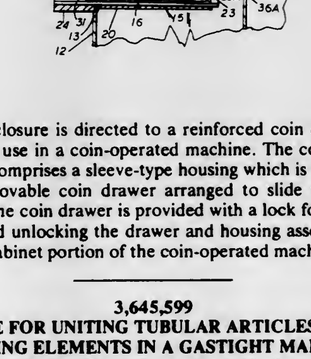
3,645,596
CARGO CONTAINER CONSTRUCTION
Harry M. Russell-French, Philadelphia, Pa., assignor to Boothe Airside Services, Inc.
Filed Dec. 30, 1969, Ser. No. 889,108
Int. Cl. A47b *43/00;* **B65d** *7/28*
U.S. Cl. 312—258 **1 Claim**



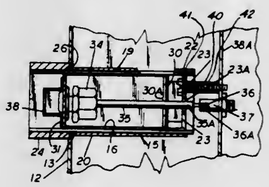
This application discloses a cargo container construction which provides an erection and knockdown arrangement which keeps the parts together in knockdown condition so that no parts will be lost and so that all parts needed for reerection will be carried by the units handy for use when reassembly is desired; also a construction designed to form a package of minimum size in the dismantled or knockdown condition with full assurance that no parts will be lost and that no components will be crushed or marred if the dismantled packages are stacked on each other or with other goods for return shipment; and especially a construction which can be quickly and easily erected with full assurance that no parts will be missing.

3,645,597
TABLE WITH SELF-CONTAINED COVER
Toshihiko Sakow, 3 Horizon Road, Fort Lee, N.J.
Filed Jan. 23, 1970, Ser. No. 5,249
Int. Cl. E06b *9/14*
U.S. Cl. 312—297 **12 Claims**

A flat-tabletop-type of work surface can be enclosed with a tambour or rolltop-type of member, which slidably engages upwardly swingable sides or end members, the side edges of the tambour being resistant to being displaced laterally. When the table is in its open position, the tambour extends downward on a track between two legs of the table. When the table is in its closed position, the sides or end members are folded upwardly about the tabletop to a vertical position and the tambour is pulled up, around and over the top of the table, the sides having tracks which slidably engage the sides of the tambour.



3,645,598
REINFORCED COIN DRAWER ASSEMBLY
Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Industries, Inc., Brooklyn, N.Y.
Filed Nov. 5, 1970, Ser. No. 87,100
Int. Cl. A47b *95/00*
U.S. Cl. 312—333 **8 Claims**

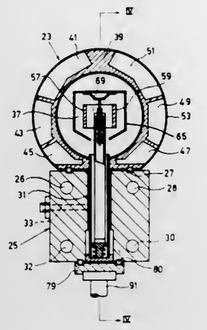


This disclosure is directed to a reinforced coin drawer assembly for use in a coin-operated machine. The coin drawer assembly comprises a sleeve-type housing which is reinforced and a removable coin drawer arranged to slide within the housing. The coin drawer is provided with a lock for securely locking and unlocking the drawer and housing assembly to a frame or cabinet portion of the coin-operated machine.

3,645,599
DEVICE FOR UNITING TUBULAR ARTICLES WITH SEALING ELEMENTS IN A GASTIGHT MANNER
Johannes Maria Van Bragt, Emmasingel, Eindhoven, Netherlands
Filed Feb. 17, 1970, Ser. No. 12,052
Claims priority, application Netherlands, Feb. 18, 1969, 6902495
Int. Cl. H01j *7/20, 9/38*
U.S. Cl. 316—30 **6 Claims**

An oven device suitable for uniting in a gastight manner a plurality of tubular envelopes of densely sintered material having sealing members at both ends. The oven device can

be made to cooperate with a vacuum system and a gas supply and comprises a U-shaped heating member of graphite where

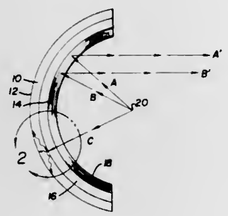


the envelopes, situated in a row between the limbs of the heating member are locally heated.

3,645,600
HEAT ABSORBING REFLECTOR UTILIZING A METALLIC SUBSTRATE

Michael Doctoroff, Rochester; Bernt D. Hoppert, Dansville, and Steven H. Leece, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,463
Int. Cl. G02b *5/26*
U.S. Cl. 350—1 **6 Claims**



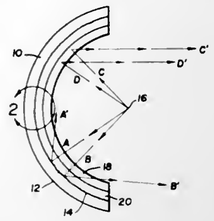
A reflector, for reflecting generally all wavelengths of radiation of visible light from a multilayer interference reflecting coating for generally concentrated projection of the visible light and for absorbing substantially all wavelengths of radiation of heat, is provided for by a metallic substrate having formed thereon, between it and the multilayer interference reflecting coating, an antireflection coating having a continuously graded refractive index for transmission therethrough of wavelengths of heat radiation for absorption into the metallic substrate.

3,645,601
REFLECTOR FOR SPECULARLY REFLECTING VISIBLE RADIATION AND DIFFUSELY REFLECTING HEAT RADIATION

Michael Doctoroff, Rochester; Bernt D. Hoppert, Dansville, and Steven H. Leece, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 3, 1070, Ser. No. 86,464
Int. Cl. G02b *5/26*
U.S. Cl. 350—1 **9 Claims**

A reflector, for reflecting generally all wavelengths of radiation of visible light for generally concentrated projection of the visible light and for reflecting substantially all wavelengths of radiation of heat in a generally random pattern, is provided for by a metallic substrate having a roughened irregular surface for randomly reflecting wavelengths of radiation of heat. An intermediate layer disposed immediately upon the roughened surface of the

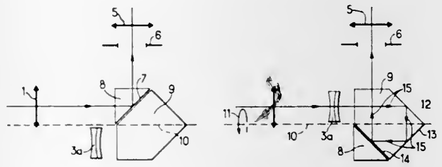


metallic substrate provides an optically smooth base over the roughened surface for deposition of a multilayer interference reflecting coating for reflecting in a concentrated projection generally all wavelengths of radiation of visible light. As a modification the intermediate layer includes impurities for diffusingly reflecting or absorbing heat radiation for added efficiency of heat dispersion.

3,645,602
COMPACT OPTICAL SYSTEM PERMITTING AN INSTANTANEOUS INCREASE IN MAGNIFICATION WITHOUT REFOCUSSING

Serge Clave; , and Marcel Clave, both of 9 Rue Olivier-metra, Paris, France

Filed May 8, 1970, Ser. No. 35,774
Claims priority, application France, May 21, 1969, 6916575
Int. Cl. G02b *21/20, 7/04, 15/00*
U.S. Cl. 350—36 **14 Claims**



Optical system comprising a Barlow amplifier and adapted to make it possible to change the magnification of an image formed by an objective without displacing the image by varying the length of the optical path travelled in dependence upon the enlargement of said image. This optical device is characterized by the fact that it comprises an assembly of reflecting plane surfaces some of which are pivotally mounted so as to permit an increase in the number of reflections undergone by said rays at the same time as said magnification. The device is particularly applicable to telescopes and to binoculars, which may be provided with means for increasing their stereoscopic effect.

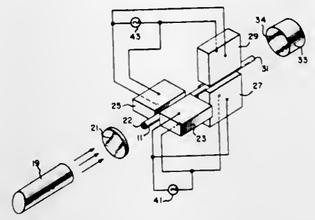
3,645,603
LIGHT MODULATION IN OPTIC FIBER

Luther W. Smith, 5 Bridges Road, Brimfield, Mass.

Filed Sept. 24, 1969, Ser. No. 860,748
Int. Cl. G02f *1/24*; **G02b** *5/14*
U.S. Cl. 350—149 **14 Claims**

Light is modulated in an optic fiber by applying compression across diameters of the fiber angularly displaced from

one another and axially displaced from one another along the fiber. Independent phase modulation is achieved by varying the compression applied across the diameters equally and

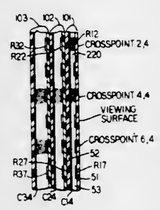


with the same direction. Independent amplitude modulation is achieved by varying the compression applied across the diameters equally and with opposite polarity directions.

3,645,604
LIQUID CRYSTAL DISPLAY

Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 10, 1970, Ser. No. 62,282
Int. Cl. G02f *1/28*; **G09f** *11/00*
U.S. Cl. 350—160 **12 Claims**



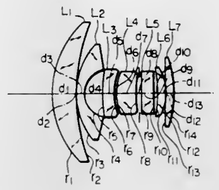
An improved liquid crystal display is disclosed in which a multilevel gray scale is provided by stacking a plurality of conventional liquid crystal display devices and addressing the respective display devices in selected combinations. Successive display devices in the stack are of different thicknesses or of different material composition, such that with like magnitude signals applied thereto, each display scatters light by a different predetermined amount. A single addressing circuit is employed in common for all of the display devices, with respective bits of a multibit gray scale codeword determining the energization of the individual display devices in the stack.

3,645,605
ULTRAWIDE-ANGLE PHOTOGRAPHIC OBJECTIVE LENS

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 23, 1970, Ser. No. 58,451
Claims priority, application Japan, Aug. 4, 1970, 44/61183
Int. Cl. G02b *9/62, 9/64*
U.S. Cl. 350—214 **3 Claims**

Ultrawide-angle photographic objective lens having a back focus or rear focal length of about 1.2–1.3 times the focal length of the entire system, an aperture of 1/3.5 and an angle of field of 90°. The objective lens comprises seven lens groups, the foremost first to fourth lens groups of which inclusive constitute the forward lens groups of a negative power adapted to form a virtual image of the object while the fifth to seventh lens groups constitute the rearward lens groups adapted to form a real image from the virtual image. Assuming that the focal length of the entire system is f, the focal length of the respective lens group is fi (i=1,2,—) and the radius of curvature of the respective surface of each lens group, the thickness of each lens component or airgap and



the refractive index of each lens component are ri, di and ni (i=1, 2,—) respectively, the objective lens satisfies the following relationships under the condition that the third lens group and the fourth lens group are separated by an airgap:

(1) $0.5f < |f_2| < f$

(2) $\sum_{i=1}^{i=7} di < f$

(3) $0.2f < r_{ii} < f$

$0.2f < r_7 < f$

(4) $0.2f < d_5 + d_7 < 0.4f$

while the objective lens satisfies the following relationships when the third and fourth lens groups are cemented with each other:

(1) $0.5 < |f_2| < f$

(2) $\sum_{i=1}^{i=6} di < f$

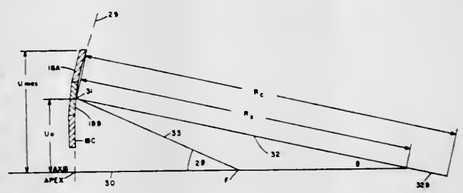
(3) $0.2f < r_{ii} < f$

(4) $0.2f < d_5 + d_{ii} < 0.4f$

3,645,606
MULTIFACET SUBSTANTIALLY PARABOLOIDAL COLLIMATOR AND METHOD FOR MAKING SAME

Allan D. La Vantine, Tarzana, Calif., assignor to TRW Inc., Redondo Beach, Calif.

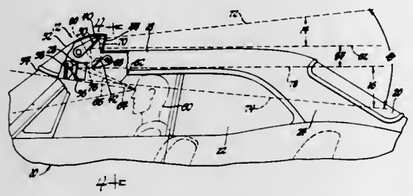
Original application July 26, 1967, Ser. No. 656,093, now Patent No. 3,494,231. Divided and this application Jan. 12, 1970, Ser. No. 2,026
Int. Cl. G02b *5/10*; **B23p** *19/00*
U.S. Cl. 350—292 **2 Claims**



A light reflecting collimator having a substantially paraboloidal surface and being formed of a plurality of juxtaposed facets each having a substantially paraboloidal surface.

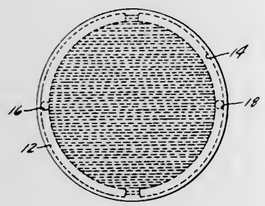
A method for making such a collimator of a plurality of facets each having a substantially paraboloidal surface on individual plates and each facet formed on each plate being defined by two paraboloidal radii lying in orthogonal planes.

3,645,607
SPLIT IMAGE REAR-VIEWING SYSTEM
Donald R. Whitney, Birmingham, Mich., assignor to General Motors Corporation
Filed Apr. 27, 1970, Ser. No. 32,071
Int. Cl. G02b *5/08*
U.S. Cl. 350—301 **4 Claims**



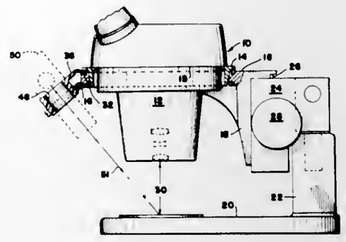
A split image rear-viewing system for a motor vehicle includes a primary mirror mounted adjacent the vehicle roof which provides a lower sight path looking directly through the vehicle windows and an upper sight path looking over the roof through a rearwardly facing periscope. The individual sight paths are optically separated by a narrow occulted strip but blend into a single observed image rearwardly of the vehicle due to the pupillary diameter of the observer's eyes.

3,645,608
COOLING MEANS FOR REFLECTING DEVICE
Charles F. Staley, Lake Park, and Fredrick J. Staudt, Riviera Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation of application Ser. No. 804,386, Mar. 3, 1969. This application May 5, 1970, Ser. No. 34,672
Int. Cl. G02b *5/08*
U.S. Cl. 350—310 **7 Claims**



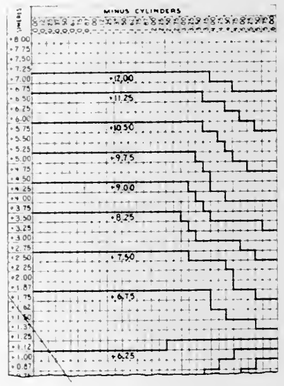
This reflecting device is for use with beams having the ability to heat said reflecting device while being reflected thereby and includes a thick backing plate with a channel plate fixed to the surface thereof with the channels facing the backing plate. A reflecting surface is formed on the flat side of the channel plate and a manifold system directs a coolant through the passages formed by the channels of the channel plate and the flat mating surface of the backing plate. The manifold system includes an inlet and an outlet which can be connected to any desired control means to achieve the proper flow. This cooling arrangement not only provides the cooling necessary to maintain the reflecting device in an operating condition but also maintains the high quality of the reflecting surface. The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,645,609
ACCESSORY MOUNTING MECHANISM FOR A MICROSCOPE
Robert W. Holmes, Perinton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed June 22, 1970, Ser. No. 48,152
Int. Cl. G02b *21/06*
U.S. Cl. 350—91 **3 Claims**



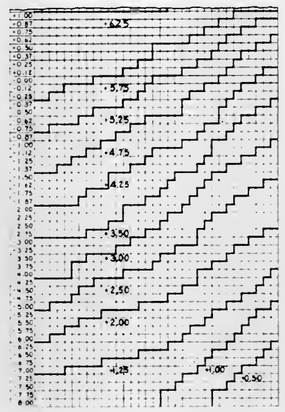
A groove, or pocket, is formed between two members for holding an optical head of a microscope and a tab member fits lockably into the pocket so formed, for retaining a microscope accessory. At least one of the two pocket-defining members is demountable. Means may be employed to adjust the angular position of said accessory.

3,645,610
OPHTHALMIC LENS SERIES
Frank E. Duckwall, and Edward J. Labelle, both of Indianapolis, Ind., assignors to Textron, Inc., Providence, R.I.
Continuation of application Ser. No. 630,336, Apr., 1967, now abandoned. This application May 18, 1970, Ser. No. 37,455
Int. Cl. G02c *7/02*
U.S. Cl. 351—159 **1 Claim**



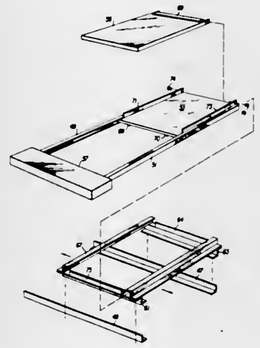
A new and improved method of designing an ophthalmic lens series and a new and improved ophthalmic lens series. The method takes into consideration numerous factors affecting lens performance and by means of systematic calculations and graphical analysis provides the lens designer with a means for determining, for any given prescriptive power, the lens shape which will provide optimum visual acuity at angles of viewing up to 40° from the optical axis of the lens, simultaneously giving consideration to tangential and sagittal power errors, errors of astigmatism, variations in stop distance, ability of the eye to accommodate for certain errors, lens thickness, visual tasks of the wearer determined by

statistical techniques, and many other factors. The lens series may cover the entire range of ophthalmic prescriptions and provides lenses having increased visual acuity over the whole



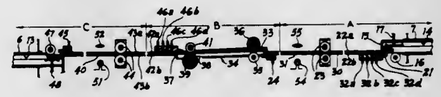
area of the lens including angles of view up to 40° from the optical axis of the lens. A comparatively small number of groups of lenses are used, each group having one base curve identical for all lenses of the group.

3,645,611
PRECISION PLANER POSITIONING MECHANISM
Warren H. Smith, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 6, 1969, Ser. No. 822,231
Int. Cl. G03b *1/48, 23/08*
U.S. Cl. 353—23 **2 Claims**



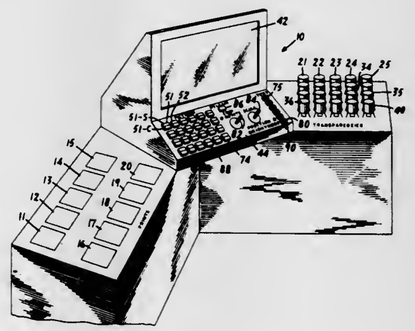
This disclosure describes a precision planer positioning mechanism for positioning a microfiche in an optical viewing or projecting mechanism having a vertical projection axis. The positioning mechanism comprises: a glass plate fixedly mounted in a horizontal plane so that the glass plate intersects the projection axis of the optical system; and, a holder for holding microfiches and moving them through the projection axis. The holder includes nylon or other suitable plastic runners that rest on the glass plate. The runner in combination with the glass plate allow the microfiche to be moved through the projection axis without changing the focal distance between the projection lens and the microfiche as different microfiche images are moved into the projection axis.

3,645,612
READER FOR INFORMATION CARRIERS IN SHEET FORM
Heinz Streicher, Echterdingen; Siegfried Riek, Esslingen-Weil, and Manfred Leutwein, Rommelshausen, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,791
Claims priority, application Germany, Nov. 16, 1968, P 18 09 313.5
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **15 Claims**



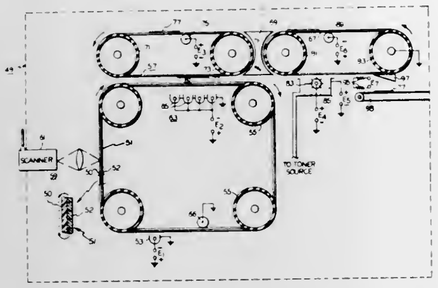
Apparatus is disclosed for projecting images derived from information-bearing media (or information carriers) including first and second stations (or magazines) for receiving a plurality of the image-bearing media, a feed path disposed between the first and second stations, first and second lens means for projecting images derived from two information-bearing media and a storage station disposed with respect to the feed path for receiving and storing information bearing media.

3,645,613
EDITORIAL LAYOUT PROJECTOR
Robert M. Brink, New Canaan, and Paul E. Welch, Riverside, both of Conn., assignors to Time, Incorporated, New York, N.Y.
Original application June 3, 1968, Ser. No. 734,074. Divided and this application June 18, 1970, Ser. No. 47,269
Int. Cl. G03b *21/00*
U.S. Cl. 353—121 **1 Claim**



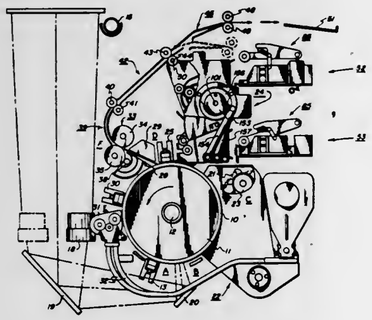
The page layout of a printed publication is simulated by an imaging process under the direct physical control of an editor. Controls are provided for selecting pictures and bogus type for simultaneous display on a screen in a simulated layout and for instantaneously cropping, rotating, scaling, positioning, and adjusting brightness levels so that the editor can immediately see and evaluate changes in layout.

3,645,614
APERTURE-CONTROLLED ELECTROSTATIC PRINTING SYSTEM EMPLOYING ION PROJECTION
Samuel B. McFarlane, Jr., Summit, N.J.; Joseph Burdige, Spring Valley, and Norman E. Alexander, Scarsdale, both of N.Y., assignors to Electroprint, Inc., Palo Alto, Calif.
Filed Mar. 1, 1968, Ser. No. 709,578
Int. Cl. G03g 15/00
U.S. Cl. 355—3 12 Claims



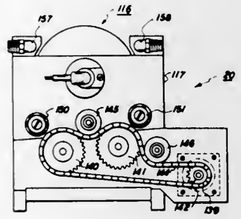
Methods and apparatus for electrostatic printing including a multilayer screen having a conductive layer and an insulative layer and having apertures therein, means for deploying opposite electrostatic charges across the insulative layer, an image projecting system for modulating the charge on the insulative layer in accordance with light received thereby, a Corotron or other like means for projecting ions through unblocked apertures in the screen and through partially blocked apertures in the screen in fewer numbers to a substrate for subsequent developing and fixing to provide both positive and negative reproductions.

3,645,615
COPYING APPARATUS
Merton R. Spear, Jr., Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 838,953
Int. Cl. G03g 15/00
U.S. Cl. 355—3 9 Claims



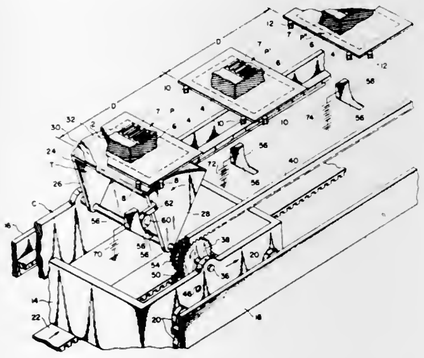
A copying apparatus capable of being selectively operated to feed individual cut sheets of final support material from one of a plurality of supply trays through a series of sheet processing stations to form a simplex image of an original thereon. A second mode of operation is provided wherein copy sheets fed from a first supply tray are simplexed and then automatically delivered to a second supply tray where the sheets are stored in an orientation wherein the sheets can be refed through the processing stations. The original is then changed and the image-bearing sheets fed from the second supply tray through the sheet processing apparatus to create a duplexed image on the reverse side thereof.

3,645,616
PHOTOELECTROPHORETIC IMAGE TRANSFER APPARATUS
Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,978
Int. Cl. G03g 15/00
U.S. Cl. 355—3 7 Claims



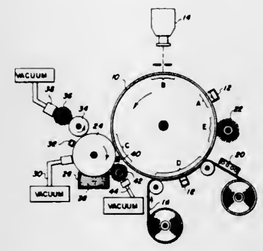
A web-handling system is used for feeding a web from a spool to an output roller. The web is dispensed from the spool by a control mechanism responsive to slack in the web. The slack in the web is taken up by a pinch feed mechanism that includes a flat plate traveling past the output roller. The web is used to receive an image formed on the flat plate from a photoelectrophoretic ink exposed to electromagnetic radiation and subjected to electric fields.

3,645,617
MULTIPLE IMAGE TRANSFER DEVICE
John S. Pollock, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,644
Int. Cl. G03g 15/14
U.S. Cl. 355—4 14 Claims



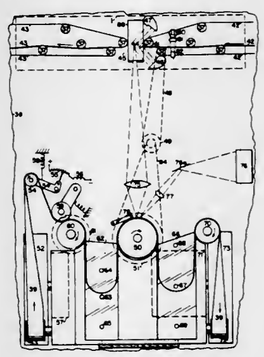
A device for transferring electrostatic toner images to a receiver is provided wherein a receiver is attached to a roller segment having a relatively large diameter. The roller segment is mounted in a carriage for movement along a path past a plurality of image transfer stations. A cycloidal cam surface controls rotational movement of the roller segment so that the toner images are transferred to the receiver substantially without smearing. The relatively large diameter of the roller segment assures a longer contact time at each station to assure more complete transfer than would result with a smaller radius transfer roller or roller segment.

3,645,618
VACUUM NOZZLE TO REMOVE AGGLOMERATES ON A TONER APPLICATOR
Fredrick Lancia, and Gerald L. Miller, both of Columbus, Ohio, assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 18, 1970, Ser. No. 99,556
Int. Cl. G03g 15/00
U.S. Cl. 355—15 20 Claims



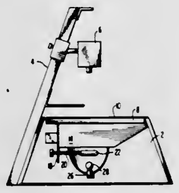
Development method and apparatus employing a donor member adapted to retain toner on its periphery and a number of processing stations arranged around its periphery, including a toner loading station having means to load toner on the peripheral surface of the donor member, and a toner layer preparation station having means to prepare the toner layer on the donor member prior to presentation of the toner layer to the imaged region of a photoconductor development station.

3,645,619
DOCUMENT CAMERA SYSTEM
John S. Burton; Samuel Gilman; Michael Rothbart, all of Los Angeles, and Ronald L. Whitney, San Fernando, all of Calif., assignors to Terminal Data Corporation, Van Nuys, Calif.
Filed May 5, 1970, Ser. No. 34,671
Int. Cl. G03b 15/00
U.S. Cl. 355—40 12 Claims



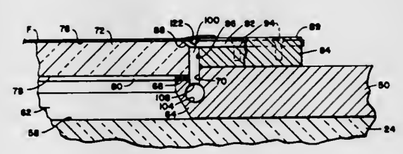
A filmstrip-recording system for making optical exposures upon film of documents translated by a belt in continuous motion. The film is rapidly started and stopped for each exposure. The exposure is made while the document and the film are both moving synchronously. Indicia having positional significance are applied while the film is in motion, and indicia having human-readable significance are applied while the film is stationary. Under the control of a coactive computer, documents are selectively sensed for recording or for not recording, and as to the specific identity of the human-readable indicia that shall be applied. Electronic timing and control circuits, including ramp function elements, are employed to achieve approximately an order of magnitude greater speed of operation than state of the art devices.

3,645,620
PHOTOGRAPHIC SLIDE COPYING APPARATUS
Daniel L. Jaffe, 5708 Beech Avenue, Bethesda, Md.
Filed June 25, 1969, Ser. No. 836,320
Int. Cl. G03b 27/76
U.S. Cl. 355—63 2 Claims



A photographic copying apparatus utilizing a housing with an opening therein which is adapted to receive a photographic transparency to be copied by a copying camera mounted exterior to the housing. Within the housing, there is an electronic flash unit mounted within a cup-shaped reflector at the apex of which there is supported an illuminating viewing lamp having a variable intensity control for compensating for tonal differences in the transparencies. The flash unit, the illuminating lamp, the opening and the camera lens are all in alignment and when the flash unit is energized, it throws up a highly uniform pattern of light to the transparency by virtue of the combined diffusing surfaces of the spherical view lamp and the cup-shaped reflector.

3,645,621
CAMERA-PROJECTOR WITH VACUUM FILM PLATEN
Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Western Blue Print Co., Kansas City, Mo.
Filed May 27, 1970, Ser. No. 40,881
Int. Cl. G03b 27/64
U.S. Cl. 355—76 18 Claims

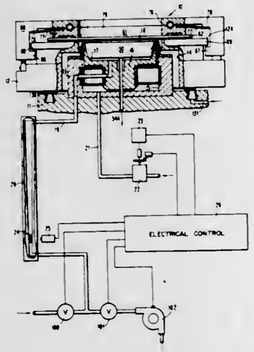


Camera-projector having a frame-enclosed transparent platen supported on the first surface of its condenser, the peripheral edge of the platen being spaced from the frame to provide a continuous channel thereabout which is connected to an evacuating pump. The frame has registration pins by which film is located on the platen with its margin over the channel, and the edge of the platen is notched at spaced intervals to promote vacuum pull down of the film flat against the platen surface.

3,645,622
METHOD AND APPARATUS FOR ALIGNING A PHOTOMASK

Rene P. Cachon; Forrest R. Grundon, both of Wappingers Falls; Frank H. Masterson; Joseph C. Miller, both of Poughkeepsie, and Fred E. Wustrau, Accord, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,257
Int. Cl. G03b 27/02
U.S. Cl. 355—132 26 Claims



Apparatus and method for accurately aligning a semiconductor wafer to a photomask, comprising a base and a frame for the apparatus. The base portion includes a chamber in which is mounted a piston which is restrained from lateral movement while permitting vertical reciprocation thereof. In the upper portion of the piston is a socket which supports a gimbal, the gimbal including a surface for receiving a wafer thereon. Mounted on the frame is a carriage which includes a mask clamp for positioning a mask in superimposed overlapping relation relative to the gimbal while clamping the mask to the frame. A source of fluid is connected to the socket so that the gimbal will float on a cushion, for example, of air. The piston is elevated by air pressure to cause the piston to raise beyond the point of contact of a wafer mounted on the gimbal with the mask. In response to the increase in fluid pressure which results from the contact of the wafer with the mask a sensor stops the air pressure to piston. Thereafter the piston is lowered a preset and predetermined amount to thereby space the wafer from the mask permitting adjustment of the base relative to the frame.

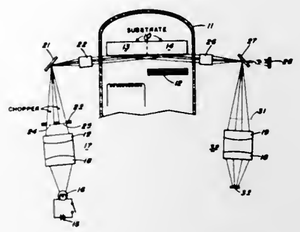
Also disclosed is a novel gimbal with a wafer alignment apparatus build in so as to automatically initially position the wafer in a desired predetermined position on the gimbal.

3,645,623
APPARATUS FOR MONITORING FILM THICKNESS BY REFLECTING A LIGHT BEAM FROM THE FILM SURFACE

Raymond A. Patten, 8612 Madison Place, Oxon Hill, Md.

Filed Sept. 25, 1970, Ser. No. 75,520
Int. Cl. G01b 11/06, 11/14
U.S. Cl. 356—1 10 Claims

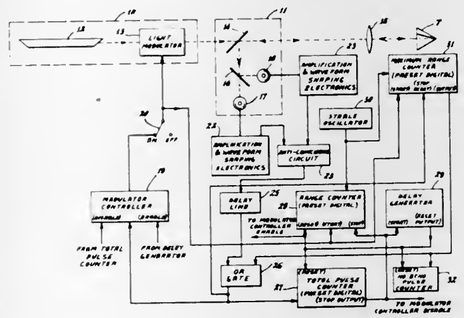
This disclosure is directed to a nondestructive test system which makes use of a reflected light beam to determine the thickness of a film deposited onto a substrate within a vacuum system. The thickness of the film is monitored during deposition without any deleterious effects on the film deposition. The system may likewise be used for relative position of one part with respect to another part.



3,645,624
RANGE-MEASURING METHOD AND APPARATUS

Stanley Schenkerman, Mamaroneck, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed July 7, 1970, Ser. No. 52,971
Int. Cl. G01c 3/08
U.S. Cl. 356—5 10 Claims

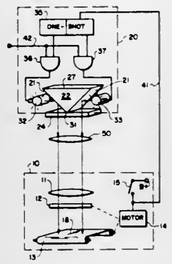


For measuring the distance from a point to a target a pulse of energy having a distinctive wavelength is sent at a predetermined velocity from the point. Echoes of the pulses reflected from the target are received at the point and echoes having only the distinguishing wavelength are processed. A successive pulse is sent when the echo of a previous pulse is received, or when no echo is received after a predetermined maximum elapse of time that is more than the time for an echo to be received from a target at the maximum expected distance from the point. The time to accumulate a predetermined number of responses is measured. The target distance is then proportional to the pulse velocity times one-half the time interval between the sensing of the first pulse and, either the receipt of the last echo or the elapse of a predetermined maximum time after the sending of the last pulse, less the total time of any such predetermined maximum elapses of time, divided by the total number of pulses sent less the number sent in response to any said maximum elapses of time. The foregoing steps eliminate errors due to noise and to echoes that are too weak to be received.

3,645,625
TEST DEVICE FOR AN IMAGE MOTION COMPENSATION AERIAL CAMERA

Karl Leistner, RFD 1, P.O. Box 117, Eatontown, N.J.

Filed Dec. 22, 1970, Ser. No. 100,739
Int. Cl. G01p 21/00
U.S. Cl. 356—27 7 Claims

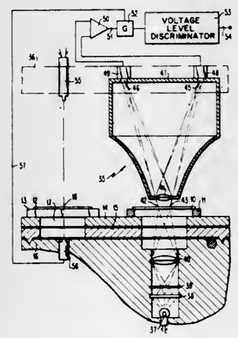


The device for calibrating an image motion compensation aerial camera includes a pair of transparent scales formed on an enclosure having two light tight compartments, one for each scale. Each compartment contains a flash lamp which is energized at specifically spaced intervals determined by a one-shot multivibrator. During a test, the camera photographs a superposition of the two scales while the film is in motion. The amount of displacement between the photographed scales will indicate the velocity of the film.

3,645,626
APPARATUS FOR DETECTING DEFECTS BY OPTICAL SCANNING

William O. Druschel, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 15, 1970, Ser. No. 46,093
Int. Cl. G06k 9/08
U.S. Cl. 356—71 25 Claims

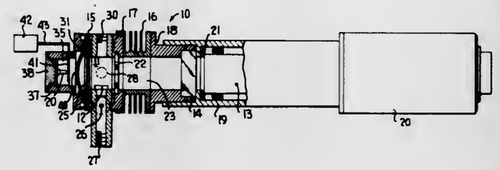


Apparatus for detecting defects in optically discernible patterns on substrates. In apparatus which compares the optically discernible patterns in a pair of regions by coincidentally scanning said regions with a pair of optical sensing members in order to detect differences in the coincidentally sensed data, there is provided a control pattern and a third optical sensing means for scanning the control pattern along a path coincident with the scan paths of the first two sensing means. The control pattern contains optical indicia. When the third sensing means senses one of these optical indicia it activates means which interrupts the comparison of the data sensed by the pair of sensing means.

3,645,627
CALIBRATION SYSTEM FOR PHOTODETECTING INSTRUMENTS

Samuel S. Brody, Springfield, and William B. Holland, Vienna, both of Va., assignors to Melpar Inc., Falls Church, Va.

Filed Apr. 14, 1969, Ser. No. 815,711
Int. Cl. G01j 3/30, 3/48
U.S. Cl. 356—87 11 Claims

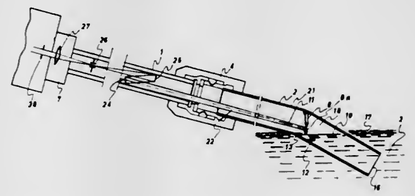


A photometric emission detector is provided with an integral calibration source including a source of light and apparatus for controlling the passage of light and the quantity of light passed along the optical path via which induced radiant energy emissions are detected when the detector is in use.

3,645,628
APPARATUS FOR DIRECT SPECTROMETRIC ANALYSIS OF MOLTEN SUBSTANCES

Milan Bojic, 87 bis, rue Georges Ducrocq, 57 Metz, and Daniel Jorre, 58 bis, rue Ivan Tourgueniev, 78 Buogival, both of France

Filed Jan. 29, 1971, Ser. No. 110,998
Claims priority, application France, Feb. 5, 1970, 7004032
Int. Cl. G01j 3/30
U.S. Cl. 356—86 16 Claims

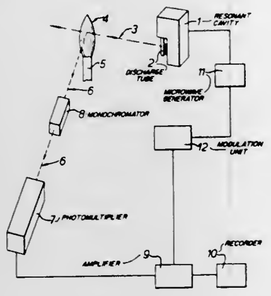


Apparatus for direct spectrometric analysis of molten metals has a spectrometer connected with a light-conveying tube provided at its free end with a coupling for an expendable tubular extension which is immersible into a bath of molten metal. A main electrode in the extension is connected with a spark generator by way of the tube and the generator produces a spark between the electrode and the surface of molten metal in the extension when the distance between such surface and the electrode is within a desired range. The light which is produced in response to generation of the spark is conveyed by an optical system in the tube and is analyzed in the spectrometer. The distance between the electrode and the surface of molten metal in the extension can be regulated by changing the pressure of an inert gas which is circulated in the extension above the surface of molten metal to evacuate metallic vapors which develop in response to generation of the spark.

3,645,629
APPARATUS FOR SPECTROSCOPIC ANALYSIS WITH MODULATED ELECTRODELESS DISCHARGE TUBE

Roy Maurice Dagnall, Chalvey, Slough, England, assignor to Technicon Corporation, Tarrytown, N.Y.

Filed July 3, 1969, Ser. No. 838,975
Int. Cl. G01j 3/30
U.S. Cl. 356—85 11 Claims

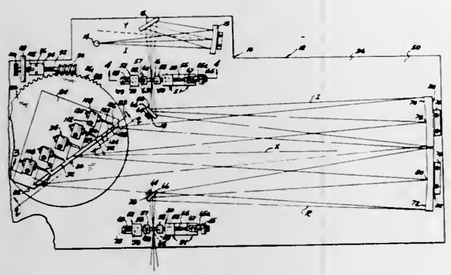


A gas, or electrodeless, discharge lamp for use in spectroscopic analysis is excited in a microwave field of sufficiently high intensity to maintain a high-residual ion concentration within said lamp to reestablish the discharge therein with minimal delay. Also, the microwave field exciting the lamp is modulated, whereby the emission, or beam, from the lamp irradiating an atomic vapor is modulated in "on-off" fashion without physical obstruction of said beam.

3,645,630
MONOCHROMATOR

Harry S. Newcomer, P.O. Box 340, Cape May, N.J.

Original application Jan. 20, 1964, Ser. No. 338,744, now Patent No. 3,428,391, dated Feb. 18, 1969. Divided and this application Jan. 22, 1968, Ser. No. 699,497
Int. Cl. G01j 3/14
U.S. Cl. 356—100 1 Claim

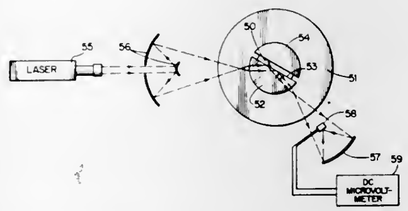


This compact monochromator employs two concave collimating mirrors of different sizes mounted off-axis adjacent one another edge-to-edge in such a manner that the central ray of the larger dispersed light collimating mirror makes a larger acute angle relatively to the entrance face of the dispersing prism array than the central ray of the incident-light collimating mirror makes thereto. This insures that the collimating mirrors cover the full aperture of the dispersing prism array yet at the same time obtains the most compact monochromator housing. Incident light from a light source is transmitted through an entrance slit at one side of the monochromator and reflected by an incident-light reflector to the smaller incident-light collimating mirror, whereas dispersed light from the larger dispersed-light collimating mirror is reflected by a dispersed-light reflector through an exit slit at the opposite side of the monochromator.

3,645,631
APPARATUS AND METHOD FOR MEASURING THE CARRIER CONCENTRATION OF SEMICONDUCTOR MATERIALS

Dinesh C. Gupta, Cambridge, Mass., assignor to GTE Sylvania Incorporated

Filed May 5, 1970, Ser. No. 34,700
Int. Cl. G01n 21/46, 21/34
U.S. Cl. 356—136 10 Claims

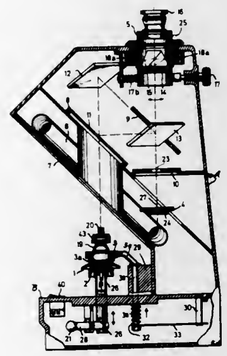


Technique of measuring the free carrier concentration in a silicon specimen by passing a beam of infrared or far infrared energy from a laser through a body of intrinsic germanium to impinge on a surface of the silicon specimen which contacts the germanium at an optically flat interface. The angle of incidence is varied until substantially all of the incident radiation is reflected and detected by a photodetector. This angle of incidence is designated the critical angle and is a measure of the carrier concentration of the silicon specimen.

3,645,632
DEVICE FOR THE ADJUSTMENT OF A RAW-EDGED LENS WITH RESPECT TO AN OUTLINE PATTERN OF ITS MOUNT

Wilhelm Schmidt, Aalen, and Erwin J. Daniels, Konigsbronn, both of Germany, assignors to Carl Zeiss Stiftung, Wuerttemberg, Germany

Filed Sept. 23, 1970, Ser. No. 74,614
Claims priority, application Germany, Sept. 26, 1969, P 19 48 644.3
Int. Cl. G01b 9/08
U.S. Cl. 356—165 9 Claims

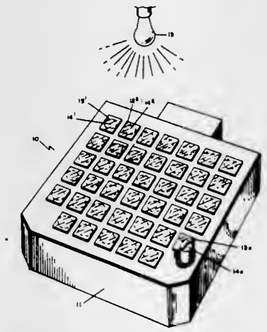


The device of the invention is used for the adjustment of a raw-edged spectacle glass between two supports with respect to an outline pattern conforming to the mount or frame into which the edge-ground spectacle glass is to be fitted. An optical system contains a transparent slidably adjustable scale plate in the plane of which is projected the image of an outline pattern and an image of the spectacle glass, the edge of which is to be ground in accordance with the outline of the outline pattern. The spectacle glass is placed between two supports which engage the two faces of the spectacle glass; the spectacle glass is slidably adjusted between these supports until the image of the spectacle glass appears within the outline of the image of the outline pattern in the plane of the scale plate which is observed by a telescope ocular. The scale plate is provided with a centrally located adjusting mark and two coordinate systems consisting of two sets of uniformly spaced parallel lines.

3,645,633
CHROMACORDER

Paul J. Kisatsky, Mount Fern, and Louis R. Szabo, Landing, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 11, 1971, Ser. No. 105,385
Int. Cl. G01j 3/46, 3/48; G01j 3/50
U.S. Cl. 356—177 10 Claims



An instrument for the instantaneous measurement of the chromaticity of time variant spectral sources including a plurality of narrow band sensors or transducers that in combination encompass the visible spectrum. Each consists of an interference filter and a linear photovoltaic cell whose three output voltages have been "optimum multiplied" for the three tristimulus functions through a voltage divider network. The corresponding individual outputs of the sensors are added by a summing feedback amplifier to provide a voltage output proportional to the tristimulus values. These proportional outputs are then summed by a unity gain summing amplifier whose output in turn is applied to one input of a pair of ratio recorders. The other ratio recorder inputs each receive one of the proportional outputs. Each ratio recorder inputs each receive one of the proportional outputs. Each ratio recorder output, therefore, is one of the normalized chromaticity coordinates. The output coordinate values (x and y) are simultaneously fed into a chart recorder to derive a plot of the chromaticity coordinates vs. time.

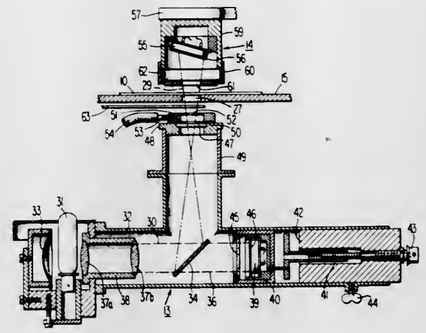
The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,645,634
APPARATUS FOR MEASURING LIGHT TRANSMISSION OF A SEMITRANSPARENT MEMBRANE

Jean Bertolet Bucher, Lancaster, Pa., assignor to RCA Corporation

Filed May 14, 1970, Ser. No. 37,215
Int. Cl. G01n 21/30
U.S. Cl. 356—201 8 Claims

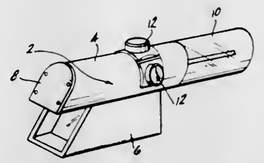
An apparatus, including a light-beam-producing means, a means for splitting the bean into a measuring beam and a reference beam, a reference photocell in the path of the reference beam, a measuring photocell having a substantially flat window in the path of said measuring beam for producing a measured signal, a means for holding the semitransparent membrane in the path of the measuring beam, and means for comparing the reference signal with the measured signal for producing an output signal. The window is mounted at an angle with respect to the path of the measuring beam to deflect any reflected light away from the path of the measuring beam. A shutter may be positioned in the path of the measuring beam. In one form of the apparatus, the light source, beam splitter and reference photocell are enclosed in a dusttight enclosure having an exit window for transmitting the measuring beam. A means for producing a turbulent flow of clean gas in front of the exit window may be provided.



3,645,635
SIGHTING DEVICE

William F. Steck, El Paso, Tex., assignor to W. R. Weaver Company

Filed May 5, 1970, Ser. No. 34,665
Int. Cl. G02b 23/10
U.S. Cl. 356—252 4 Claims



A sighting device for use, for example, with a shotgun, the device employing a reticle of fluorescent acrylic polymer disposed out of the field of view. The image of the reticle is projected into the field of view by a preferably dichroic partial reflector. Windage and elevation adjustments are included for moving the reticle to zero in the device on the target in the field of view.

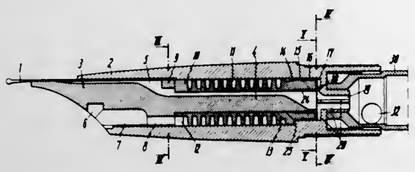
3,645,636
INK FLOW CONTROL IN A FOUNTAIN PEN

Otto Mutschler, Ludolf-Krehl-Strasse 21, Heidelberg, Germany

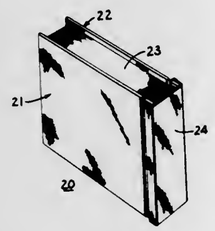
Filed Dec. 3, 1970, Ser. No. 94,836
Claims priority, application Germany, Apr. 11, 1970, P 20 17 353.9
Int. Cl. B43k 5/18
U.S. Cl. 401—227 10 Claims

Flow of ink from a storage compartment to the writing point of a fountain pen is controlled by a throttling portion in the air conduit which admits air to the ink compartment dur-

ing writing. This portion is kept filled with air by a system of capillary ducts including three or more radial ducts in a front face of a partition which separates the compartment from the cavity in the front part of the pen barrel. The ducts communicate with an annular groove between the inner barrel surface and a feed bar assembly, and the groove intersects the air conduit immediately adjacent the throttling portion which is kept filled with ink by capillary forces unless the latter can be overcome by a sufficient pressure differential between the ink compartment and the atmosphere.



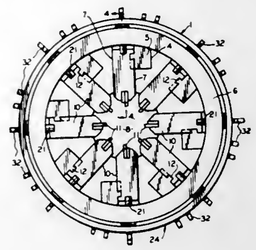
3,645,637
BOOKBINDER
Arthur R. Gustafson, Norridge, Ill.
Filed Apr. 22, 1970, Ser. No. 30,779
Int. Cl. B42f *13/08*
U.S. Cl. 402—15 **9 Claims**



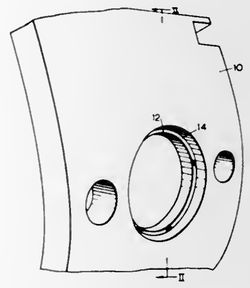
A binder for a stack of sheets including hinged covers with the binding portion of the first cover having posts which are bendable into vertical position to extend lockingly through aligned slits formed in the lateral edges of the sheets and with the binding portion of the opposite cover having loops in which the tips of posts are retainingly received. The binding portion of one of the covers has a flat backing sheet of metal secured to its outside surface with a terminal portion which flatly overlies the outside surface of the cover but which is bendable along a first scoreline to form a loop and bendable along a second scoreline to form a backing and with the terminal portion being subsequently looped and bent at 90° to form a finished edge which overlies the binding portion of the other cover. Means are provided for clamping the finished edge snugly in place.

3,645,638
METHOD AND APPARATUS FOR CUTTING THREADS
Fred Theuerkauf, Naples, Fla., assignor to The Pipe Machinery Company, Wickliffe, Ohio
Filed Sept. 8, 1970, Ser. No. 70,111
Int. Cl. B23g *1/00, 5/10, 1/02, 1/22*
U.S. Cl. 408—1 **14 Claims**

A series of individual single tooth thread cutting tools are rotated concurrently about the axis of a pipe and are applied in cutting relation thereto in succession, at the same starting point, by movement radially of the pipe in a time delay relation to each other. They are maintained in cutting relation concurrently until they advance near to the end of the portion to be threaded. They are then retracted from the pipe in succession in the same order in which they were engaged with the pipe, in the same time delay relation to each other, all at the same location endwise of the pipe and substantially the same location circumferentially of the pipe.



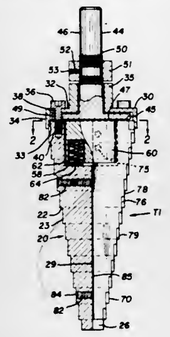
3,645,639
BORING MACHINES
John Atherton, Halifax, England, assignor to Staveley Machine Tools Limited, Halifax, England
Filed Aug. 1, 1969, Ser. No. 846,895
Int. Cl. B23b *29/03*
U.S. Cl. 408—146 **10 Claims**



A boring machine attachment to enable a recess of constant depth to be bored around a hole in a cylindrical wall, comprises a toolholder adapted for powered compound movement having a rotary component and an axial reciprocating component, said toolholder 50 being capable of axial movement in guides (said guides being adapted to provide said rotary component of said compound motion) and a crank device operatively connected to said toolholder to produce axial reciprocation of said toolholder in timed relationship to the mechanism which produces said rotary motion.

3,645,640
ROTARY CUTTER TOOL
Michael F. Zukas, Bayberry Road, Southhold, N.Y.
Filed June 11, 1970, Ser. No. 45,321
Int. Cl. B23b *29/034*
U.S. Cl. 408—192 **11 Claims**

A tool assembly for boring, turning, countersinking, chamfering and facing workpiece comprising a generally cylindrical tool body with an axially extending tool slot for removably receiving a flat cutting blade. A tool driver connected to the tool body maintains rotational motion between the tool body and the workpiece. The tool body has a means for limiting depth of cut by the blade and a means for guiding the cutting blade. A blade holder in the tool body is normally retracted by a spring means so that the blade is sheathed in the body. The blade holder may be axially advanced in the tool body by relative axial movement of the tool driver and the tool body to project the cutting edge of the cutting blade, while the tool body is engaged with the workpiece for guiding the cutting blade.



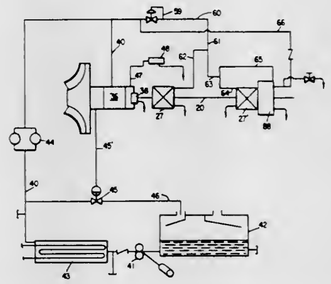
3,645,641
COUNTERSINK
Jae Sun Kim, 538 Pine Avenue, Long Beach, Calif.
Filed May 4, 1970, Ser. No. 34,342
Int. Cl. B23b *51/10*
U.S. Cl. 408—199 **8 Claims**

A countersink for forming an annular chamfer around a circular hole. The countersink has a conical leading end which includes a cutout having a conical portion. The apex of the conical portion is coincident with the apex of the leading end to thereby form straight cutting and trailing edges. The cutting edge has a constant cutting angle along its length and the leading end is spirally ground.

3,645,642
TAPER DRILL
George Koslow, 149 Church Street, New York, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,186
Int. Cl. B23b *51/02*
U.S. Cl. 408—202 **8 Claims**

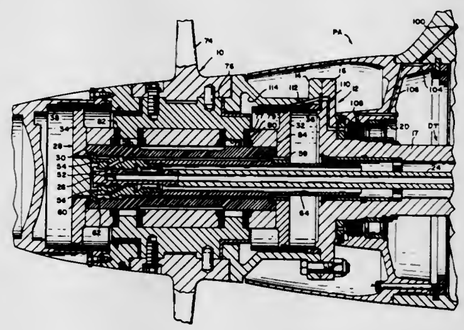
There is provided a tapered drill bit for making straight holes with portable electric drills characterized by having improved features of safety, drilling ease, speed, and utility.

3,645,643
SEAL AND LUBRICATION SYSTEM FOR ROTATING MACHINERY
Maurice B. King, III, Liverpool, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 11, 1970, Ser. No. 36,152
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 **3 Claims**



An arrangement for preventing leakage of gas from a compressor by supplying fluid at a pressure that always exceeds the pressure of the gas by a predetermined value to a location of likely leakage wherein means are provided to assure flow of the fluid through the location over a wide variation in the pressure of the gas so that adequate cooling of the parts involved may be always obtained. Included in the arrangement is a pressure regulator valve unit constructed so that the operating parts will function despite minor misalignment such as may be encountered in assembling the parts.

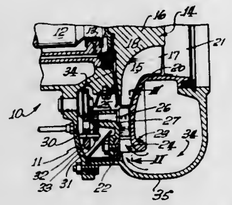
3,645,644
INTERLOCKING VARIABLE-PITCH PROPELLER ASSEMBLY
Vern L. Schwisow, Marysville, Wash., assignor to Hydro Drive Corporation, Seattle, Wash.
Filed Jan. 22, 1970, Ser. No. 5,018
Int. Cl. B63h *3/08*
U.S. Cl. 416—157 **6 Claims**



Variable-pitch propeller blades are mounted for rotation about the longitudinal axis of the propeller hub and also for independent rotation about radial axes of the hub. The blades are rotated about the radial axes to change their pitch by guides slidably mounted in slots in a plurality of interlocking floating plates. A sealing system includes a stationary double-ring seal biased against the sealing surfaces of the rotatable propeller hub and a static head of fluid acting at

critical points of the propeller hub to prevent leakage of surrounding water into the propeller hub and drive assemblies.

3,645,645
VARIABLE-AREA NOZZLE SEAL
Edward L. Gammill, Phoenix; Nick M. Hughes, and James A. Rhoden, both of Scottsdale, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Oct. 19, 1970, Ser. No. 82,023
Int. Cl. F01d *17/00*; **F04d** *27/00*
U.S. Cl. 415—163 **7 Claims**

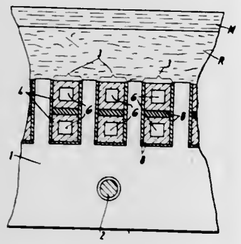


This variable-area nozzle vane seal consists of a slot extending from side-to-side of a vane and from a point adjacent the leading edge to another near the overlap of the vanes when in reduced nozzle area positions. This slotting establishes in effect labyrinth seals between the sides of the vanes and the air passage in which they are disposed. The seal is further improved by drilled holes establishing communication between the slots mentioned above and the spaces between adjacent vanes. Airflow through the spaces causes reduced pressure in the slots and leakage is collected and added to flow through the nozzle to assist turbine operation.

ERRATUM

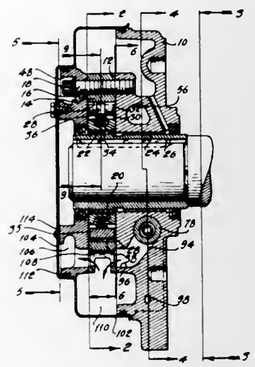
For Class 416—157 see:
Patent No. 3,645,644

3,645,646
ELECTROMAGNETIC PUMP OR CONVEYOR TROUGH
Axel Von Starck, Remscheid-Luttringhausen, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany
Filed Feb. 12, 1970, Ser. No. 10,793
Claims priority, application Germany, Feb. 12, 1969, P 19 06 922.8
Int. Cl. C21b *7/14*; **F27b** *3/18*
U.S. Cl. 417—50 **11 Claims**



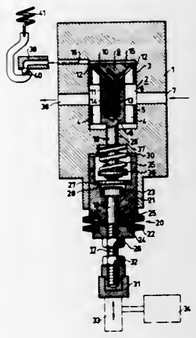
An electromagnetic pump or conveyor trough for generating a traveling magnetic field by means of current carried by conductors mounted in slots in the bottom of the trough to move an electrically conductive liquid wherein a first hollow tubular conductor having its bore eccentrically offset toward the bottom of the slot and a second hollow tubular conductor with a height which does not substantially exceed the electromagnetic penetration depth are mounted atop each other in each slot with the second conductor nearest the open end of the slot.

3,645,647
POSITIVE DISPLACEMENT FLUID PUMPS
Fred A. Ciampa, Birmingham, and Sergio J. Mazzola, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 14, 1970, Ser. No. 2,702
Int. Cl. F04b *23/04*; **F04c** *1/00*; **F04b** *49/00*
U.S. Cl. 417—79 **6 Claims**



A positive displacement fluid pump adapted especially to be used in a power steering circuit for an automotive vehicle, said pump including a pump housing in which is formed internal high-pressure cavities in communication with the discharge side of the pump and internal porting for controlling discharge and entry of fluid for the pumping chambers of the pump, an integrated reservoir surrounding the housing and a flow control valve assembly in fluid communication with supercharged portions of the pump, the overall pump assembly being characterized by reduced axial and radial dimension.

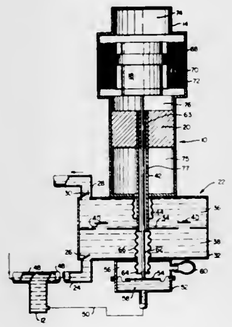
3,645,648
HYDRAULIC PULSE GENERATOR
Sture Anders Backman, and Knut Ludvig Winquist, both of Orebro, Sweden, assignors to Johan H. Graffman, Benicasim, Castellon, Spain
Filed Mar. 24, 1969, Ser. No. 809,685
Claims priority, application Sweden, Aug. 23, 1968, 11,405/68; Dec. 6, 1968, 16,743/68
Int. Cl. F04b *19/00*, *21/04*, *49/00*
U.S. Cl. 417—214 **6 Claims**



A device for creating a flow of liquid and for imparting a pulsating pressure condition thereto, such as, for example, a

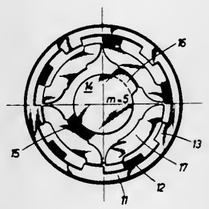
device for pumping liquid fuel to the nozzle of an injection-type carburetor.

3,645,649
STIRLING CYCLE-TYPE THERMAL DEVICE SERVO PUMP
William T. Beale, Athens, Ohio, assignor to Research Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 812,530, Mar. 5, 1969, now Patent No. 3,552,120. This application Mar. 4, 1970, Ser. No. 16,519
Int. Cl. F04b *17/00*; **A61f** *1/00*; **F25b** *9/00*
U.S. Cl. 417—379 **7 Claims**



A servo pump assisting a pulsating primary pump. A Stirling cycle engine drives an expansible chamber pump in series with the primary pump. Pulses are transmitted from the primary pump to drive the displacer piston of the engine to drive the pump in phase with the primary pump.

3,645,650
MAGNETIC TRANSMISSION
Nikolaus Laing, Hofener Weg 35-37, 7141 Aldinger, near Stuttgart, Germany
Filed Feb. 9, 1970, Ser. No. 9,916
Claims priority, application Austria, Feb. 10, 1969, A 1319/69
Int. Cl. F04d *25/06*; **H02k** *49/06*
U.S. Cl. 417—420 **42 Claims**



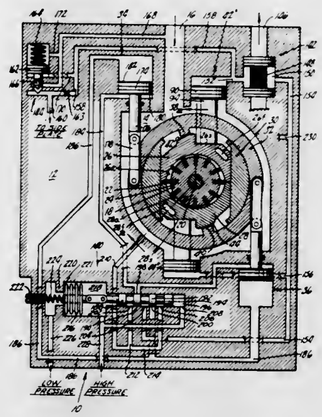
A magnetic transmission with two pole rings separated by a conductor pole ring comprising a plurality of conductors with the two pole rings being independently arranged for rotation with respect to one another where the two pole rings each have a plurality of pole faces of alternating polarity with one of the pole rings having more pole faces than the other whereby rotation of one of the pole rings with respect to the other pole ring will be at a predetermined ratio.

3,645,651
PUMP
Kenneth G. Bills, Trotwood, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 15, 1970, Ser. No. 28,652
Int. Cl. F04b *43/04*
U.S. Cl. 417—479 **9 Claims**



A diaphragm-type pump incorporating a combination diaphragm and one-way flapper valve and a tortuous intake passage to lessen operating noise.

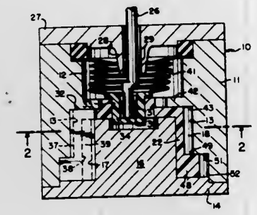
3,645,652
VARIABLE DISPLACEMENT VANE PUMP
John E. Cygnor, Middletown, Conn., assignor to Chandler Evans Inc., Hartford, Conn.
Filed Apr. 14, 1970, Ser. No. 28,393
Int. Cl. F04c *15/04*
U.S. Cl. 418—31 **5 Claims**



A variable displacement vane pump has a plurality of vanes slidably fitted in slots formed substantially radially in a rotor. Two identical track elements are movably arranged around the rotor to provide a track for the vanes. The positions of the track elements determines the displacement of the pump. Each track element includes a radial inlet passage and a radial outlet passage. The inlet passage of one of the track elements is diametrically opposed from the inlet passage of the other of the track elements and the outlet passage of one of the track elements is diametrically opposed from the outlet passage of the other of the track elements in order to pressure balance the rotor. The track elements are slidably mounted within a frame around which is rotatably disposed a cam actuation ring. Cam members are provided on the cam ring to contact respective cam surfaces on the track elements and control the position of the track elements

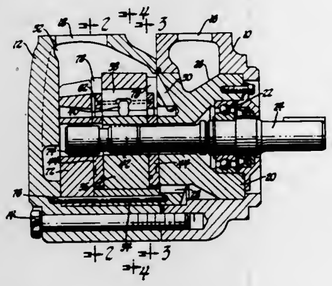
with respect to the rotor. The cam ring is rotated about the frame by means of pistons.

3,645,653
PUMP
Kurt Herbert Arnold, W. Caldwell, N.J., assignor to Valcor Engineering Corporation, Kenilworth, N.J.
Filed June 1, 1970, Ser. No. 41,852
Int. Cl. F01c *1/02*; F03c *3/00*
U.S. Cl. 418—56 14 Claims



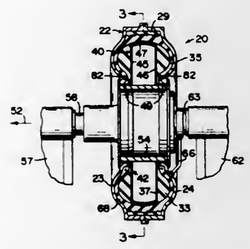
A rotary pump which includes a housing having inner and outer cylindrical surfaces defining a substantially annular internal pumping chamber. A substantially cup-shaped impeller, having inner and outer cylindrical surfaces, is movable within the chamber and is driven by an eccentric member connected to a rotary drive shaft. The position of the impeller is such that the outer housing surface and the inner impeller surface are simultaneously in substantially tangential engagement, respectively, with the outer impeller surface and the inner housing surface at diametrically opposite points of the impeller. The chamber is thereby divided into a pair of crescent-shaped compartments, the wide portion of each being proximal, respectively, to the diametrically opposite points. A flexible guide is fixed to the housing and engages the impeller within the chamber to constrain rotary movement. Inlet and outlet channels are formed in the housing on opposite sides, respectively, of the guide.

3,645,654
POWER TRANSMISSION
Albin J. Niemiec, Sterling Heights, and Raymond B. Pettibone, Troy, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed May 1, 1970, Ser. No. 33,754
Int. Cl. F01c *19/08*, *19/10*
U.S. Cl. 418—133 3 Claims



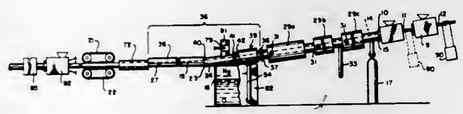
A hydraulic pump or motor unit of the rotary sliding vane type has a casing which supports a shaft and a replaceable cartridge. The cartridge has a wide cam ring and narrower vanes supported in a narrower rotor. Pressure-loaded cheek plates are contoured to fit within the cam ring and have sealed pockets on their outer face in which fluid pressure is applied to clamp the cheek plates against the rotor and vanes.

3,645,655
MOLD FOR CASTING TIRES
Heinz Wilhelm Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 14, 1969, Ser. No. 815,879
Int. Cl. B29c *5/00*; B29f *1/00*; B29h *17/00*
U.S. Cl. 425—35 4 Claims



A mold for the centrifugal casting of vehicle tires comprising a separable outer mold part having an inner surface which defines the outer shape of a tire and which will hold an annular tread design insert which has the design of the tire tread on its inner surface and which may also extend around the outside surface of the to be formed tire down to the bead area. Positioned within the confines of the outer mold part is a ringlike elastic core member which has an outer surface which defines the inner surface of a tire when the elastic core member is held in extended position. The elastic core member has an inner surface which permits it to be collapsed and removed from the finished tire. A plurality of form members are located in the inner surface of the elastic core member to hold the core member in extended position. The form members are located in end-to-end relationship to each other and form a generally ringlike shape with each form comprising a sector of the ring. A cylindrical support holds the form members in position and when removed permits removal of the form members from the elastic core member in a generally radially inwardly direction. Means are provided for rotating the mold and also for introducing a flowable and curable elastomeric material into the space between the outer mold part and the elastic core member.

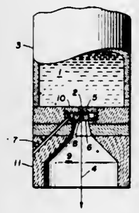
3,645,656
CONTINUOUSLY MANUFACTURED CABLE
John Dale Stauffer, Dekalb, Ill.; Edwin Henry Arnaudin, Jr., Marion, and Willis Lee Chrisman, Fairmount, both of Ind., assignors to Anaconda Wire and Cable Company, New York, N.Y.
Filed May 7, 1969, Ser. No. 842,418
Int. Cl. B29h *5/00*
U.S. Cl. 425—71 14 Claims



Method and apparatus are disclosed for continuously manufacturing a cable of the type having a central conductor around which are concentrically arranged successive outer layers; electrostatic shielding insulation and jacket layers.

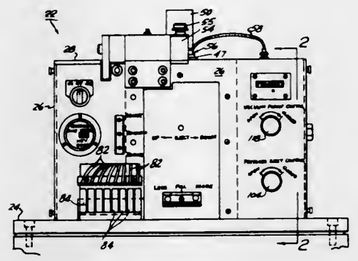
The method and apparatus includes unique means for vulcanizing the insulation layer and for subsequent cooling.

3,645,657
METHOD AND APPARATUS FOR IMPROVED EXTRUSION OF ESSENTIALLY INVISCID JETS
Roger S. Otstot, Raleigh, and John W. Mottern, Cary, both of N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed July 2, 1969, Ser. No. 838,593
Int. Cl. D01d *1/00*; B22d *11/00*
U.S. Cl. 425—72 3 Claims



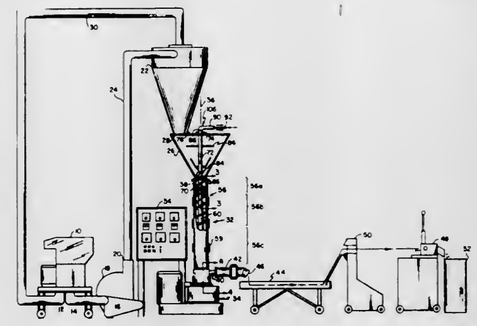
Low viscosity melts, notably metals and their alloys, are spun for extended periods, with attenuation and with induced velocity profile relaxation by spinning the molten materials at appropriate velocities first into a flowing inert gas and then into a film stabilizing gas. The inert gas zone is provided by a "gas plate" having an orifice aligned essentially coaxially with and beneath the extrusion orifice to provide an inert gas flow between the orifice plate and the gas plate.

3,645,658
FLUID POWER EJECT MECHANISM FOR A POWDER COMPACTING PRESS
Georges D. DeTroyer, Detroit, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.
Filed Sept. 29, 1969, Ser. No. 861,611
Int. Cl. B29c *3/00*
U.S. Cl. 425—78 13 Claims



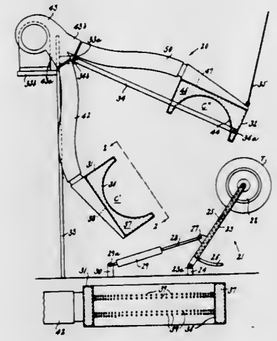
A fluid power system for a pickup and discharge mechanism for small manufactured articles or parts, such as made by a powder compacting press or the like. After compacting in a die cavity, the finished parts upon ejection from the die cavity or cavities are picked up by a pickup head operatively connected to a suction source for displacement of the finished parts over a discharge port or ports through which the finished parts are individually discharged by means of a gentle blast of pressurized air. The suction force to pick up the finished parts is obtained from a flow of air through an appropriate venturilike aspirator assembly.

3,645,659
EXTRUDING PLASTIC
Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Mar. 13, 1969, Ser. No. 806,861
Int. Cl. B29f *3/02*
U.S. Cl. 425—204 5 Claims



An extruder is shown having: cooled screw in the feeder section; rotation retarding means in the barrel of the feeder section in the form of open mouth axial grooves; the vertical arrangement of the extruder with the hopper immersing the cooled portion of the screw with inlet plastic such as flakes of scrap; an extension of the screw into the hopper agitating the flakes and housing water inlet to the feeder; a drive shank at the outlet end isolated by an internal air chamber from the heated extruder; the shank cooled by an inserted cooling member; a sealing member surrounding the shank defining a restricted passage that tapers and accommodates eccentricity; the stationary walls of the surrounding member are grooved, resisting outward leakage of the plastic. These various features are shown to enable feeding of difficult materials and scrap and to achieve a compact, simple, efficient machine.

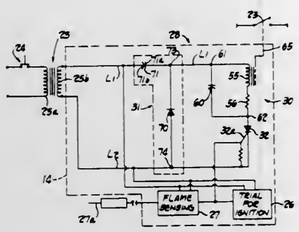
3,645,660
APPARATUS FOR JET AIR COOLING OF TIRES DURING POSTINFLATION
Richard H. Hugger, Ridgewood, and George C. Huang, Kinnelon, both of N.J., assignors to Uniroyal, Inc.
Original application Nov. 22, 1966, Ser. No. 596,114, now abandoned. Divided and this application May 21, 1969, Ser. No. 851,112
Int. Cl. B29h *5/02*
U.S. Cl. 425—445 17 Claims



Various forms of apparatus for cooling pneumatic tires as they are removed from the press following the mold cycle

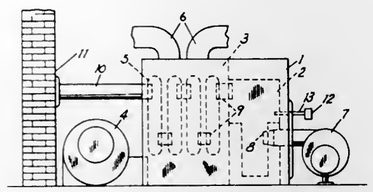
and are subjected to a postinflation cycle outside the press, are disclosed. The basic apparatus includes means defining a cooling zone in which each tire being cooled may be axially received. The cooling zone is provided with orifice means arranged coextensively with its peripheral boundary to enable cooling air to be directed in jet form against the tire in its shoulder regions simultaneously along the entire circumference thereof, preferably so as to be incident initially directly against the shoulder regions of the tread. By proper choice of the blower means, the sizes, distribution and arrangement of the orifices, and the sizes and pressure drop characteristics of the duct system, the airflow conditions can be controlled to deliver a desired tire to air heat transfer coefficient ranging from about 15 to about 70 B.t.u./hr./sq. ft./° F. over the surface of the tire so as to ensure that, subject to appropriate adjustment of the duration of the jet air cooling relative to the duration of the in-mold heating, the finished tire is characterized by an optimized set of circumferentially substantially uniform thermal, physical and geometrical properties. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,645,661
BURNER CONTROL SYSTEM
Kenneth C. Goodman, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed Aug. 6, 1969, Ser. No. 848,062
Int. Cl. F23n *5/00*
U.S. Cl. 431—24 **12 Claims**



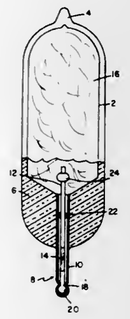
A burner control system is disclosed including a burner and fuel supply structure controlling the flow of fuel to the burner. Circuitry for controlling operation of the fuel supply structure includes an AC power supply, a voltage doubler arrangement, a relay, and a condition responsive switch for connecting the relay across the voltage doubler. The condition responsive switch is preferably an electronic switch rendered conductive when flame is sensed at the burner. The relay is operatively energized only in response to an applied voltage which is greater than the peak power supply voltage. If any component of the control circuitry short circuits, or otherwise fails, the relay cannot be operatively energized thus preventing the supply of fuel to the burner.

3,645,662
SAFETY SWITCH AND CIRCUIT FOR OIL-BURNING FURNACE
Gordon McLarty, P. O. Box 55, Augusta, Mich.
Filed Feb. 25, 1970, Ser. No. 14,081
Int. Cl. F23n *5/02*
U.S. Cl. 431—78 **8 Claims**



Oil-burning furnace designed to normally operate as subatmospheric pressure in the combustion chamber has an open tube opening from the combustion chamber to the exterior of the furnace adjacent the burner. A normally closed heat-responsive fuse or switch is mounted adjacent the outer end of the tube, to be responsive to abnormal backflow of hot combustion gases from the furnace. The fuse or switch is connected in controlling relation to the power circuit of the burner, to shut off the burner if abnormal back pressure develops in the combustion chamber. The switch and tube are adjustable to vary the degree of sensitivity of system to back pressure.

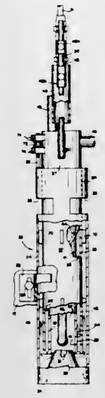
3,645,663
PHOTOFLASH LAMP AND METHOD OF PREPARING AND APPLYING FULMINATING MATERIAL
John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products, Inc.
Filed Dec. 2, 1970, Ser. No. 94,317
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **12 Claims**



A percussive-type photoflash lamp, the primer of which comprises a wire anvil partially coated with fulminating material and coaxially supported within a tube in a manner providing a clearance between the coating of fulminating material and the inner wall of the tube. The fulminating material includes a red phosphorus fuel, a chlorate salt oxidizer, a powder combustible, incandescible metal, and a powdered carbon additive for facilitating propulsion of the powdered metal from the primer tube into the lamp envelope when ignited. The fulminating material is prepared and applied in the following manner: the red phosphorus, powdered metal and powdered carbon area dispersed in water to provide an aqueous slurry; the anvil wire is dipped into this aqueous slurry; the coating is dried; a dissolved chlorate salt solution is prepared; and the coated wire is dipped into the chlorate solution so as to permeate the previously applied coating.

3,645,664
HEATING APPARATUS FOR VAPORIZING PROPANE FUEL AND THE LIKE
John Rodney Clinton, P. O. Box 27, Leaburg, Oreg.
Filed May 28, 1970, Ser. No. 41,206
Int. Cl. F23d *11/44*
U.S. Cl. 431—209 **8 Claims**

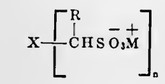
Heating apparatus for vaporizing fuel is disclosed including a plenum of sleevelike shape having a jacket spaced from the outer sleeve wall. A burner discharges a flame through the sleeve with diverting means at the opposite end of the plenum to redirect the flame generated heat in an opposite direction for complete heating of the fuel in the sleevelike plenum. The vaporized fuel is supplied to burners as shown adjustably disposed above the crop to be flame treated.



CHEMICAL

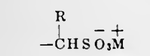
3,645,665
DYEING CELLULOSIC TEXTILES WITH VAT AND SULFUR DYES USING SODIUM DITHIONITE AND AN ALDEHYDE-BISULFITE ADDITION PRODUCT STABILIZER
James N. Etters, Danville, Va., assignor to Dan River Inc., Danville, Va.
Filed May 26, 1969, Ser. No. 827,894
Int. Cl. D06p *1/22, 1/30*
U.S. Cl. 8—34 **4 Claims**

An improved process for dyeing cellulosic textiles with vat or sulfur dyes using sodium dithionite as reducing agent, using as a stabilizer for the reducing agent a stabilizer of the formula



wherein M is a monovalent cation selected from the class consisting of alkali metal and ammonium cations, R is a monovalent group selected from the class consisting of hydrogen, alkyl, alkenyl and furyl, *n* is an integer of 1 to 3, X is a group having a valence of *n* and is selected from the class consisting of hydroxyl and substituents having the formula

and R′ is a monovalent radical selected from the class consisting of hydrogen and monovalent hydrocarbon, said stabilizer being used in an amount providing about 0.01 to about 2 mols of



unit of said stabilizer per mol of said reducing agent. Also, the stabilizer as defined above in dry particulate form and novel mixtures of reducing agent and stabilizer.

3,645,666
METHOD FOR UNIFORMING THE COLOR OF WOOD AND WOOD ARTICLES
Carroll F. Bailey, and W. Richard Oetgen, both of Orangeburg, S.C., assignors to U.S. Plywood Champion Papers Inc., New York, N.Y.
Filed Dec. 11, 1969, Ser. No. 889,860
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 **12 Claims**

A method for uniformly bleaching the color of wood substrates which is characterized by preheating the substrates to a temperature of between about 140° and 200° F. applying a bleaching solution of hydrogen peroxide with, or without, an alkali metal silicate to at least the surfaces of the substrates, exposing the covered surfaces to vapors of anhydrous ammonia and drying. The apparatus for carrying out the method has a conveyor arranged for presenting the substrates or finished articles to a preheating station, preheating means such as a quartz tube or a convection oven, bleach-applying means, ammonia applying means and finally drying means.

With this invention, after drying of the wood panel or assembled article, the surface thereof is free of residues which usually are left after other bleaching methods. No washing or neutralizing step is necessary with the claimed method.

3,645,667
NONAQUEOUS CROSS LINKING OF CELLULOSE WITH A METHYLOLATED UREA IN THE ABSENCE OF AN ACIDIC CATALYST
Elwood J. Gonzales, Gretna; Ralph J. Berni, Metairie, and Ruth R. Benerito, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed May 22, 1970, Ser. No. 39,922
Int. Cl. D06m *13/14, 13/16, 13/38*
U.S. Cl. 8—116.3 **5 Claims**

This invention comprises the treatment of cellulosic textiles in the absence of an acidic catalyst with dimethylolethyleneurea (DMEU) dissolved in nonaqueous or predominantly nonaqueous solvent systems, such as neat dimethylformamide, neat dimethylacetamide, 90 percent (vol.) ethanol in water, 90 percent (vol.) dioxane in water 90 percent (vol.) tetrahydrofuran in water, and 50 percen.

(vol.) dimethylformamide in dioxane. The cellulosic products thus modified have high dry and wet wrinkle recovery when compared to cellulosjc textiles treated with DMEU dissolved in water only.

3,645,668
METHOD OF MANUFACTURING SMOOTH-SURFACE SHEET MATERIALS

Kazuo Nagoshi, and Hiroshi Hayanami, both of Kurashiki, Japan, assignors to Kuraray Co. Ltd., Kurashiki, Japan

Continuation-in-part of application Ser. No. 563,999, July 11, 1966, now abandoned. This application Sept. 29, 1969, Ser. No. 862,088
Int. Cl. D06m
U.S. Cl. 8—130.1 **1 Claim**

Smooth-surface sheet materials are produced by forming a napless, nonwoven fibrous sheet by applying to the nap on the surface of a needle punched nonwoven fibrous sheet consisting essentially of synthetic fiber either a solvent or swelling agent for at least a part of the material constituting the nap, and subjecting the sheet to pressing, thereby laying and bonding the nap over the surface of the sheet, and impregnating the fibrous sheet with a polyurethane elastomer and covering the surface of the fibrous sheet with a layer of polyurethane elastomer.

3,645,669
METHOD AND ARRANGEMENT FOR TESTING THE LIQUID IN WASHING MACHINES

Gerhard Rausch, Obere Waldstr, 14, Meersburg, Bordensee, Germany

Continuation-in-part of application Ser. No. 322,220, Nov. 7, 1963, now abandoned. This application Feb. 28, 1969, Ser. No. 813,381
Int. Cl. B08b *3/00*
U.S. Cl. 8—137 **4 Claims**

In a washing machine, a galvanic element in the form of a pair of electrodes of different metals is mounted within the container for the washing liquid which acts as an electrolyte. The electrodes continuously sense the degree of dissociation of the washing liquid during the washing process with additional detergent or washing agent being added in response to the degree of dissociation. The washing liquid will contain the dirt released from the laundry being washed, the fresh water initially added at the beginning of the washing process and the washing agent or detergent.

3,645,670
PROCESSES FOR SCOURING TEXTILES

Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 3, 1970, Ser. No. 16,244
Int. Cl. D01c *1/00*
U.S. Cl. 8—139 **4 Claims**

Textile fibers which have been desized and are about to be bleached are scoured with an alkaline caustic solution containing a surfactant and a synergistic inhibiting agent such as a mixture of amino tri(methylene phosphonic acid) and triethanolamine. This process provides fibers with a substantially reduced impurity level and an end product which is substantially more conducive to subsequent bleaching and dyeing processes.

3,645,671
FLUE GAS DESULFURIZATION WITH AMMONIUM SULFITE

Lindsay I. Griffin, Jr., Summit, and Albert B. Welty, Jr., Westfield, both of N.J., assignors to Esso Research and Engineering Company

Filed Oct. 24, 1969, Ser. No. 869,226
Int. Cl. C01b *17/60;* **C01c** *1/22*
U.S. Cl. 23—2 SQ **8 Claims**

Flue gas is desulfurized by absorption in aqueous ammonium sulfite in a multiple-stage countercurrent absorber. The absorber effluent solution is regenerated by acidifying a portion thereof with ammonium bisulfate to liberate sulfur dioxide decomposing the resulting ammonium sulfate at high temperature by direct contact with hot combustion gases, and by reacting the ammonia thus formed with a second portion of the absorber effluent solution to prepare fresh ammonium sulfite absorbent solution. Regeneration is carried out at constant rate regardless of variations in the flow rates of flue gas and absorbent solution in the absorber; this is accomplished by use of surge tanks for storage of both absorbent and absorber effluent solutions.

3,645,672
MANUFACTURE OF COMPOSITE FERRITES

Frederick C. Cowlard, and George Ord, both of Ilford, England, assignors to The Plessy Company Limited, Ilford, England

Continuation of application Ser. No. 719,878, Apr. 9, 1968, now abandoned. This application Nov. 12, 1970, Ser. No. 89,013
Int. Cl. C01g *49/00;* **C04b** *35/26*
U.S. Cl. 23—51 **3 Claims**

Ferrite powder of consistent good quality and homogeneity is obtained by using nitric acid to form solutions of the nitrate of each of the metals involved, mixing the solutions in the requisite proportions, and decomposing the mixture by deposition on a hot surface while avoiding any accumulation of liquid, and then calcining the obtained oxide mixture to obtain ferrite powder with a desired proportion of ready-formed ferrite. The nitrous gases formed during solution and decomposition are used for the reconstitution of nitric acid, the tail gas of the reconstitution system being preferably contacted with an aqueous suspension of a basic oxide of a constituent metal of the ferrite, thereby forming the nitrate solution of the constituent metal.

3,645,673
PROCESS FOR THE PRODUCTION OF POTASSIUM NITRATE BY THE ION EXCHANGE METHOD

Mario Labriola, Milan, Italy, and Sandor Vajna, Bad Honnef, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 1, 1969, Ser. No. 881,272
Int. Cl. C01d *9/04*
U.S. Cl. 23—102 A **10 Claims**

Process for the manufacture of potassium nitrate in the ion exchange method by reaction of nitric acid with potassium ions of a cation exchanger and recharging of the exchanger bed, characterized in that the water filled exchanger bed is supplied with a series of five feed groups, the third group being composed of the nitric acid process feed, the fifth group being composed of pure water, and wherein from the exchanger bed there is won a series of five withdrawn groups, the third withdrawn group comprising the potassium nitrate product of the ion exchange, the second, fourth, and fifth withdrawn groups being reused as, respectively, said first, second, and fourth feed groups.

3,645,674
PROCESS FOR THE MANUFACTURE OF AMMONIUM POLYPHOSPHATE

Gero Heymer, Knapsack near Cologne, and Heinz Harnisch, Lovenich near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed May 5, 1969, Ser. No. 821,967
Claims priority, application Germany, May 31, 1968, P 17 67 655.0
Int. Cl. C01b *25/28;* **C05b** *7/00*
U.S. Cl. 23—106 **6 Claims**

Production of chain ammonium polyphosphates of the general formula $(NH_4)_{n+2}P_nO_{3n+1}$ by the reaction of a polyphosphoric acid with gaseous ammonia. Ammonium polyphosphates with a chain length *n* longer than that of the feed polyphosphoric acid are produced by heating a polyphosphoric acid with a P_2O_5-content higher than 76 weight percent to a temperature between 80° and 100° C.; introducing gaseous ammonia thereinto while arresting the supply of further heat; allowing the temperature in the reaction mixture to increase under the action of the heat of neutralization set free; maintaining the reaction mixture, if necessary by cooling, between 300° and 330° C. until the temperature itself commences to fall below 300° C; allowing the reaction mixture to stand at temperatures between 230° and 270° C., which are maintained, if necessary by supplying further heat, until formation of a viscous crystalline magma which practically ceases to absorb further ammonia; cooling the reaction product, washing it and drying it at temperatures lower than 100° C.

3,645,675
AMMONIUM PYROPHOSPHATES, PROCESSES FOR PREPARING, AND USES

Paul G. Sears, Lexington, Ky., and Howard L. Vandersall, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 722,499, Dec. 7, 1967, now abandoned , which is a division of application Ser. No. 514,657, Dec. 17, 1965, now abandoned , which is a continuation-in-part of application Ser. No. 301,918, Aug. 13, 1963, now abandoned. This application Dec. 19, 1969, Ser. No. 886,775
Int. Cl. C01b *25/28*
U.S. Cl. 23—106 **6 Claims**

Ammonium pyrophosphates of the formula $(NH_4)_2H_2P_2O_7$ and $(NH_4)_3H_2P_2O_7$ are useful as intermediates in the preparation of polymeric water insoluble ammonium polyphosphates and as final products in detergent and fertilizer applications. The new ammonium pyrophosphates are prepared by condensing orthophosphoric acid with a combined ammoniating and condensing agent, e.g., urea, in a molar ratio of nitrogen to phosphorus of 1.4 to 1.75 or 2.5 to 4.0.

3,645,676
PRODUCTION OF MONOCALCIUM ORTHOPHOSPHATE

Linden Wayne Cochran, Basking Ridge, N.J., assignor to Multi-Minerals Limited, Toronto, Ontario, Canada

Filed Mar. 4, 1969, Ser. No. 804,276. The portion of the term of the patent subsequent to Feb. 10, 1987, has been disclaimed.
Int. Cl. C01b *25/22, 25/32*
U.S. Cl. 23—109 **4 Claims**

A multicycle process for the continuous production of high-purity monocalcium orthophosphate which may, if desired, be used as a fertilizer material. The monocalcium orthophosphate is produced by the digestion of phosphate raw material with phosphoric acid to form a solution containing monocalcium orthophosphate which is then crystallized and recovered from solution. A portion of the recovered salt is removed as the end product. The remaining portion is contacted with a cationic exchange resin on the hydrogen cycle to produce phosphoric acid which is recycled for use in the digestion of more phosphate raw material.

3,645,677
PRODUCTION OF GYPSUM

Hakuichi Akazawa; Shigeaki Washio, both of Kakogawa; Keiji Kaji, Akashi, and Shisao Fujita, Kakogawa, all of Japan, assignors to Taki Fertilizer Manufacturing Co., Ltd., Kakogawa, Japan

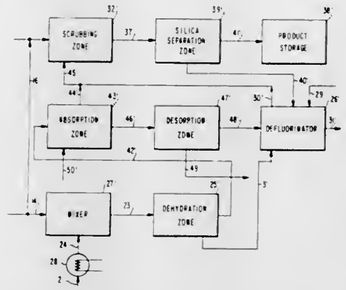
Filed Sept. 24, 1969, Ser. No. 860,770
Claims priority, application Japan, Sept. 24, 1968, 43/68292
Int. Cl. C01b *25/22;* **C01f** *11/46*
U.S. Cl. 23—122 **8 Claims**

Production of calcium sulfate dihydrate (gypsum) by hydrating calcium sulfate hemihydrate in admixture with a surface active agent, sulfuric acid and phosphoric acid, the mole ratio H_2SO_4/H_3PO_4 being greater than 0.4.

3,645,678
CONCENTRATING FLUOSILICIC ACID

William R. Parish, and James C. Kelley, both of Lakeland, Fla., assignors to Wellman-Lord, Inc.

Filed Mar. 9, 1970, Ser. No. 17,580
Int. Cl. C01b *7/22, 33/08, 33/00*
U.S. Cl. 23—153 **21 Claims**

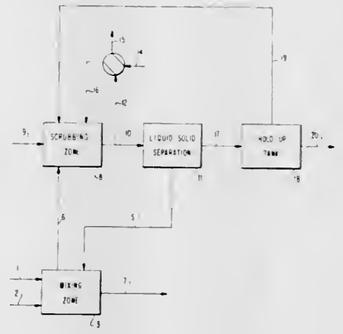


A process for the concentration of aqueous fluosilicic acid solutions is disclosed. In the process, a dilute aqueous fluosilicic acid solution is premixed with concentrated sulfuric acid under superatmospheric pressure and elevated temperatures; the mixture is introduced to a reduced pressure, high-temperature dehydration zone to release a gaseous overhead containing essentially all of the silicon tetrafluoride and a liquid sulfuric acid bottoms; the gaseous overhead is passed to a scrubbing zone to effect reaction of the silicon tetrafluoride with the water content of a dilute aqueous fluosilicic acid solution and thereby concentrate the fluosilicic acid content therein and the concentrated fluosilicic acid solution is then recovered. Advantageously, the diluted sulfuric acid bottoms can be contacted with a siliceous material to convert any contained hydrogen fluoride to another silicon tetrafluoride-containing gaseous overhead which is also passed to the scrubbing zone to effect further concentration. Hydrogen fluoride may also be recovered in pure form in a particular embodiment.

3,645,679
CONCENTRATING FLUOSILICIC ACID

William R. Parish, and James C. Kelley, both of Lakeland, Fla., assignors to Wellman-Lord, Inc.

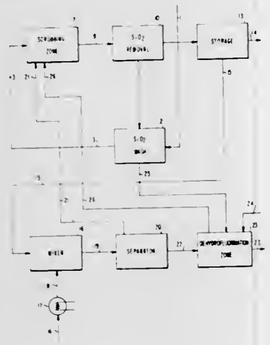
Filed Mar. 9, 1970, Ser. No. 17,590
Int. Cl. C01b *7/00, 33/12, 33/08*
U.S. Cl. 23—153 **10 Claims**



A process for the concentration of aqueous fluosilicic acid solution is disclosed. In the process, a dilute aqueous fluosilicic acid solution is mixed with concentrated sulfuric acid in the presence of silica in a mixing zone to release a gaseous

overhead of silicon tetrafluoride (formed by dehydration of the fluosilicic acid) and yield dilute sulfuric acid as bottoms; the gaseous overhead is passed to a scrubbing zone to effect reaction of the silicon tetrafluoride with dilute fluosilicic acid, and thereby yield a slurry of silica in concentrated, aqueous, fluosilicic acid solution. The silica and the concentrated acid are separated, and the silica can be sent to the mixing zone.

3,645,680
CONCENTRATING FLUOSILICIC ACID
William R. Parish, and James C. Kelley, both of Lakeland, Fla., assignors to Wellman-Lord, Inc.
Filed Mar. 9, 1970, Ser. No. 17,611
Int. Cl. C01b *7/00, 33/12, 33/08*
U.S. Cl. 23—153 **15 Claims**



A process for the concentration of aqueous fluosilicic acid solutions is disclosed. In the process, a concentrated aqueous fluosilicic acid solution is premixed with concentrated sulfuric acid under superatmospheric pressure and elevated temperatures; the mixture is introduced to a reduced pressure, high-temperature dehydration zone to release a gaseous overhead containing essentially all of the silicon tetrafluoride formed by the dehydration of the fluosilicic acid and a liquid sulfuric acid bottoms containing essentially all of the hydrogen fluoride thereby produced; the gaseous overhead is passed to an aqueous scrubbing zone to effect reaction of the silicon tetrafluoride with the water content of a dilute, aqueous fluosilicic acid scrubbing solution and thereby yield a concentrated, aqueous fluosilicic acid solution. The concentrated fluosilicic acid solution is recovered and part is recycled for use as the fluosilicic acid solution which is mixed with the concentrated sulfuric acid. Advantageously, the dilute sulfuric acid bottoms is contacted with a siliceous material to convert the hydrogen fluoride therein to another silicon tetrafluoride-containing gaseous overhead which is also passed to the scrubbing zone to effect further concentration.

3,645,681
PRODUCTION OF GASEOUS HYDROGEN FLUORIDE
Roland Bachelard, Lyon, France, assignor to Ugine Ruhlmann, Paris, France
Continuation-in-part of application Ser. No. 737,327, June 17, 1968, now abandoned. This application July 8, 1970, Ser. No. 53,300
Claims priority, application France, May 30, 1967, 108352, Oct. 27, 1967, 126140
Int. Cl. C01b *7/22, 9/08, 1/16*
U.S. Cl. 23—153 **11 Claims**

A process for preparing substantially pure gaseous hydrogen fluoride from ammonium bifluoride by reacting a product containing ammonium bifluoride with a metal fluoride or a double fluoride of ammonium and metal at a temperature up to 500° C. to produce substantially pure gaseous hydrogen fluoride and a fluometallate. The fluometallate can thereafter be decomposed into gaseous ammonium fluoride and the metal fluoride or double fluoride of ammonium and metal. The process is conducted under anhydrous medium reaction conditions, and the starting materials are solid prior to being heated.

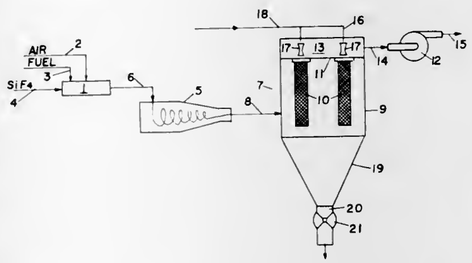
3,645,682
PROCESS FOR PRODUCING PHOSPHORIC ACID BY THE USE OF ION EXCHANGE RESINS
Linden Wayne Cochran, Basking Ridge, N.J., assignor to Multi-Minerals Limited, Toronto, Ontario, Canada
Filed Sept. 13, 1967, Ser. No. 667,568
Int. Cl. C01b *25/18*
U.S. Cl. 23—165 **11 Claims**

The invention relates to an improved method of ion exchange. The inventive concept involves directly contacting a substantially dry ion exchange resin with a substantially dry material which material is solubilized by the resin. The inventive principle is applicable to cationic or anionic resins and is adaptable to fixed bed, semimoving bed or continuous ion exchange systems. New results and advantages include significantly improved quality and yield of ion exchange product. The invention is particularly applicable to the production of phosphoric acid produced by reacting monocalcium orthophosphate with a strong acid ion exchange resin on the hydrogen cycle.

3,645,683
REGENERATION OF ACID
Charles Levi Isbell, Jr., Charleston, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 724,303, Feb. 6, 1968, now Patent No. 3,549,320, which is a division of application Ser. No. 349,536, Mar. 3, 1964, now Patent No. 3,419,601.
This application Mar. 10, 1970, Ser. No. 18,323. The portion of the term of this patent subsequent to Dec. 22, 1987, has been disclaimed.
Int. Cl. C01b *17/50*
U.S. Cl. 23—177 **10 Claims**

Production for sulfur dioxide containing gas by spraying a waste liquor containing a sulfur acid and an ammonium salt into a reactor in the presence of molecular oxygen at a temperature of 850° C. to 1,150° C.

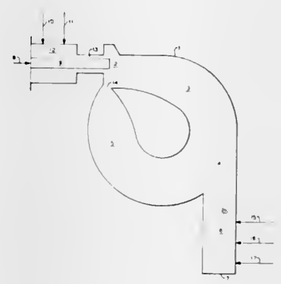
3,645,684
FRACTIONATION OF SILICA AEROSOLS
George L. De Cuir, Monroe, La., assignor to Cities Service Company, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,633
Int. Cl. C01b *33/18, 33/14*
U.S. Cl. 23—182 V **10 Claims**



Pigmentary silica is produced by hydrolysis of silicon tetrafluoride in hot flame gases. The silica in the resultant aerosol is then agglomerated and the silica is thereafter filtered from the gases at a temperature above the dew point.

The concentration of silica in the aerosol is substantially the same at filteration as when produced, i.e., little or none of the agglomerated silica is permanently separated from the aerosol prior to filtration.

3,645,685
CARBON BLACK MANUFACTURE
Willie W. Crouch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 3, 1969, Ser. No. 873,432
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 **8 Claims**



Carbon black is produced by introducing a hydrocarbon feed and hot combustion gases into a feed introduction zone, passing the resulting mixture into a carbon black formation zone under carbon black forming conditions to produce smoke comprising carbon black, dividing said smoke into separate first and second portions, recycling said first portion of smoke under carbon black forming conditions to the feed introduction zone, and recovering carbon black from said second portion of smoke. Loop reactor apparatus for conducting the process is disclosed.

3,645,686
PRODUCTION OF ULTRAPURE SEMICONDUCTOR MATERIALS
Thomas N. Tucker, Thomas Township, Saginaw County, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed May 4, 1970, Ser. No. 34,866
Int. Cl. C01b *33/02*
U.S. Cl. 23—223.5 **7 Claims**

A method of reducing the contamination of ultrapure materials, such as silicon, with impurities from carbon bodies used in the production of said material s which method comprises pretreating the carbon bodies with water vapor at high temperature whereby the impurities react with the water vapor and either diffuse to the surface of the carbon body and are removed or remain complexed within the carbon body.

3,645,687
IMMUNODIFFUSION PLATE APPARATUS
Samuel T. Nerenberg, 21 Haynard Court, Burlingame, Calif.
Filed Jan. 5, 1970, Ser. No. 642
Int. Cl. C12b *1/00;* **G01n** *33/16*
U.S. Cl. 23—230 R **8 Claims**

A device for the quantitative determination of protein by radial diffusion thereof through a coating of antibody on a sheet formed of a paper-thin liquid-permeable chemically inert layer (e.g., cellulose acetate) on a resilient liquid-impermeable backing (e.g., flexible plastic). The device includes a wall and marginal framework therearound, having a slot for slidably receiving a perforate or solid plate into a fixed position above the wall. The device further includes means for slidably receiving said sheet between the wall and either of the plates in position. Blood serum may be applied via a capillary tube through the openings in the perforated

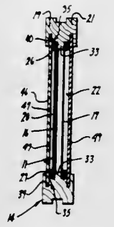
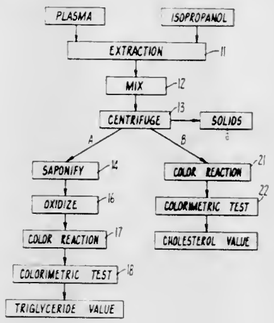


plate onto a sheet in predetermined placement. In one embodiment, the device contains identical back-to-back units as above described. In a second embodiment, one side of such back-to-back units contains parallel members mounted on one wall and cooperating therewith to form parallel slots adapted to receive a number of sheets.

3,645,688
MEASURING TRIGLYCERIDE AND CHOLESTEROL IN BLOOD PLASMA OR SERUM
Ronald B. Smernoff, Belmont, Calif., assignor to Oxford Laboratories, San Mateo, Calif.
Filed Mar. 25, 1970, Ser. No. 22,548
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **10 Claims**

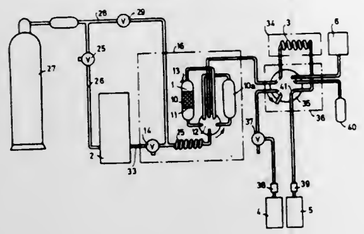


Method of detecting and analyzing hyperlipoproteinemia. Interfering components of blood or plasma are extracted with an alumina mixture and values of cholesterol and triglyceride in the extract are determined, so that the type and presence of hyperlipoproteinemia may be recognized.

3,645,689
METHOD AND APPARATUS FOR ANALYZING PROTEINS
John A. Sjoquist, Uppsala, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden
Filed Apr. 9, 1970, Ser. No. 26,977
Int. Cl. G01n *31/06, 31/08, 33/00*
U.S. Cl. 23—230 R **16 Claims**

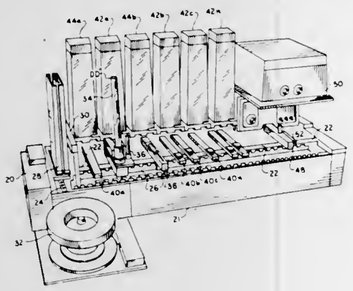
A method and an apparatus for determining the sequence of the amino acids in a protein. The protein is applied to the surface of a solid support arranged in a reactor. A vaporized

coupling agent is supplied to the protein thus forming a protein derivative. The protein derivative is split at the first peptide binding by a supplied vaporized splitting agent and



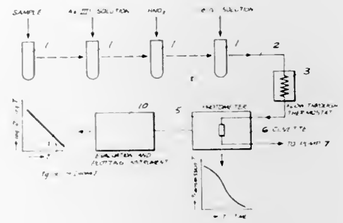
the amino acid derivative split off is transferred to an absorber. By raising the temperature of the absorber the amino acid derivative is then transferred to an analyzer, e.g., a gas chromatograph.

3,645,690
AUTOMATED CHEMICAL ANALYZER
Jerry E. Rochte, Seal Beach; Donald N. Martin, Whittier; Jack L. Hoffa, Brea, and George V. Moore, La Habra, all of Calif., assignors to Beckman Instruments, Inc.
Filed Jan. 22, 1968, Ser. No. 699,618
Int. Cl. G01n *33/16, 1/10, 1/18*
U.S. Cl. 23—230 R **39 Claims**



A system employing individual sample capsules, each of inexpensive hollow body, open bottom construction with end tabs and cups formed in the body, a pair of horizontal rails on which the capsules are conveyed side-by-side past processing stations in stop and go fashion by the up-and-down action of the rails and to-and-fro movement of a pair of racks having teeth-engaging within the capsule body and moving the capsule in one direction when the rails are down, the teeth being free of the capsule to move in the opposite direction when the rails are up, with automatic means for dropping a capsule onto the rails, transferring a sample from a container to one of the cups in the capsule, adding reagents, filtering the reacted sample, transferring fluid from one cup to another, incubating the sample, performing a colorimetric reading and removing fluid from all cups prior to discard of the capsule, the system being essentially pneumatically operated using pneumatic logic controlled by triggers associated with the various components of the system.

3,645,691
METHOD OF QUANTITATIVELY DETERMINING IODINE AND THYROID HORMONES
Guenter Knapp, Sorgerweg 16/8010, and Hans Spitzy, Herrengasse 3/8010, both of Graz, Austria
Filed Feb. 26, 1969, Ser. No. 802,421
Claims priority, application Austria, Feb. 27, 1968, A 1889/68
Int. Cl. G01m *21/24, 31/22, 33/16*
U.S. Cl. 23—230 R **3 Claims**



Improved method of quantitatively determining iodine or thyroid hormones according to the method of Sandell and Kolthoff by replacing sulfuric acid by nitric acid. A preferred measuring apparatus consists of a thermostat, a photometer, and an evaluating and plotting instrument.

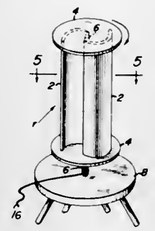
3,645,692
PROCESS FOR THE PREPARATION, PRESERVATION AND TRANSPORTATION OF BLOOD AND SERUM SAMPLES FOR USE IN CLINICAL ANALYSES
Harald Stork, Lampertheim/Hessen, and Felix Helmut Schmidt, Mannheim-Neuostheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
Filed June 11, 1969, Ser. No. 832,432
Claims priority, application Germany, July 15, 1968, P 17 73 841.9; Mar. 19, 1969, P 19 13 817.1
Int. Cl. G01n *31/04, 33/18*
U.S. Cl. 23—230 B **10 Claims**

Process for the preparation, preservation and transportation of blood and serum samples for use in the determination of chemical and biochemical components therein, comprising applying onto an absorbent carrier having ion exchange properties samples of serum or blood, drying the carrier and sample and eluting the same just immediately prior to carrying out the indicated determination, the determination being carried out on the eluate.

3,645,693
CHEMICAL DETECTOR
Edward J. Poziomek, Bel Air, and Eleanor V. Crabtree, Towson, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 3, 1969, Ser. No. 873,707
Int. Cl. G01n *21/12;* **G01n** *31/22*
U.S. Cl. 23—230 R **6 Claims**

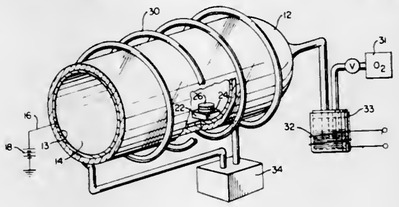
Electrophile compounds used as intermediates or pesticides can be detected by forming volatile derivatives of said compounds by treatment with N-alkylformamides producing isocyanide ions which contact an inert support medium, then treating said medium and its contents with a detector agent for said ions thus producing the color detector signal for said ions.

3,645,694
AUTOROTATING BODY GAS DETECTOR AND METHOD OF USING THE SAME
Abraham Flatau, Joppa, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 16, 1968, Ser. No. 761,390
Int. Cl. G01n *31/22*
U.S. Cl. 23—232 R **9 Claims**



The method of detecting various constituents comprising placing an autorotating body in a fluid medium fitted with absorbent materials capable of retaining the various fluid components which are subsequently tested for presence or absence by known chemical and/or physical means.

3,645,695
FURNACE APPARATUS FOR BLOCKING SODIUM IONS
Ronald L. Koepp, Dayton, and Stanley J. Dudkowski, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Oct. 14, 1969, Ser. No. 866,185
Int. Cl. B01j *1/00;* **C23c** *11/00*
U.S. Cl. 23—252 R **4 Claims**

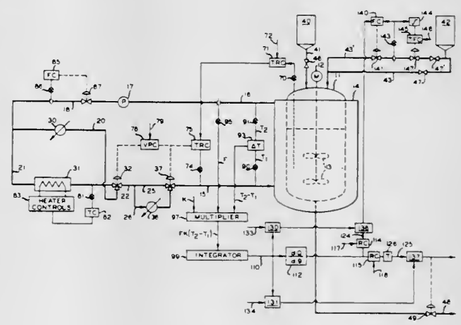


The present invention relates to a processing apparatus for growing and annealing a silicon dioxide insulator layer to obtain a mobile positive ion free silicon dioxide insulator layer. A mobile positive ion free silicon dioxide insulator layer is required in order to make a stable insulated gate field effect transistor. The processing apparatus comprises a nonoxidizing high-melting-point platinum metal film coated quartz furnace tube, potential means for placing a positive potential upon the platinum metal film coating of the platinum metal film coated quartz furnace tube to repel mobile ions therefrom, heater means for heating the interior of the quartz furnace tube, and gas means for passing oxygen gas through the platinum metal film coated quartz furnace tube. A silicon wafer may be oxidized in said processing apparatus to form a relatively mobile positive ion free silicon dioxide insulator layer of an insulated gate field effect transistor upon the silicon wafer. The silicon dioxide insulator layer is relatively uncontaminated by mobile positive ions which exist to the outside of the platinum metal film coated quartz furnace tube. A silicon wafer which previously has been coated by a silicon dioxide insulator layer may be processed to remove mobile ions within the silicon dioxide insulator layer. Mobile positive ions are repelled by the positive potential applied to the platinum metal film away from the outside of the quartz furnace tube, and mobile positive ions of the silicon dioxide insulator layer within the platinum metal film coated quartz tube are removed by the flowing oxygen gas due to the low-vapor pressure of the mobile positive ions.

3,645,696
METHOD FOR STABILIZING CHROMOGENIC TEST REAGENT FOR ALDEHYDE
Rudolph L. Iannacone, Cranbury, and Anthony J. Revukas, Cranford, both of N.J., assignors to Cities Service Oil Company
Filed Apr. 30, 1970, Ser. No. 33,538
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 TP **12 Claims**

A chromogenic reagent normally unstable upon exposure to air is stabilized for use in an aldehyde detection test. The chromogenic reagent, preferably 3-methyl - 2-benzothiazolinone hydrazone hydrochloride monohydrate (MBTH), is prepared by adsorption on a suitable supporting media and drying in an inert atmosphere.

3,645,697
CONTROLLING APPARATUS OF A REACTOR
Alfred A. Hoffman, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 18, 1969, Ser. No. 843,158
Int. Cl. G01n *25/42*
U.S. Cl. 23—253 A **5 Claims**

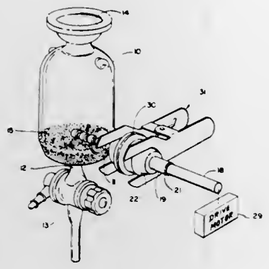


A batch reactor is controlled by measuring heat transfer to or from the reactor and integrating the measured signal. When the integrated signal reaches a preselected value, the reaction is terminated. The integrated signal can also be used to control introduction of a reactant.

3,645,698
SAMPLING APPARATUS
Leslie D. Holybee, Cupertino; Henry Faigh, Sunnyvale, and Robert B. Samuels, Menlo Park, all of Calif., assignors to Beckman Instruments, Inc.
Filed Oct. 6, 1969, Ser. No. 863,873
Int. Cl. G01f *11/10*
U.S. Cl. 23—253 R **9 Claims**

An apparatus for monitoring the progress of a peptide synthesis process being carried out in a closed reaction vessel

including a slidable member having a plurality of pockets for trapping small aliquots of peptide-resin cooperating with the



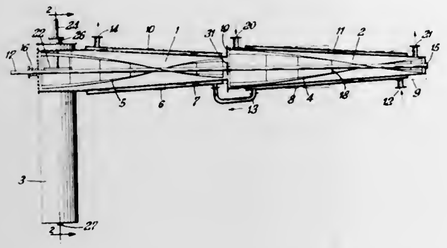
interior of the reaction vessel for selectively removing samples of peptide-resin without exposing the interior of the reaction vessel to the surrounding environment.

3,645,699

SOLID-LIQUID CONTINUOUS COUNTERCURRENT PURIFIER METHOD AND APPARATUS

John Alfred Brodie, New South Wales, Australia, assignor to Union Carbide Australia Limited

Filed Sept. 17, 1969, Ser. No. 858,596
Claims priority, application Australia, Sept. 18, 1968, 43524/68
Int. Cl. B01d *9/04*
U.S. Cl. 23—273 F **12 Claims**



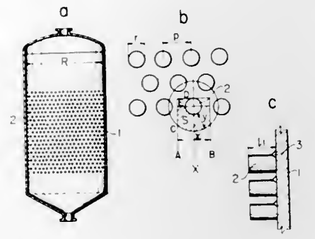
At least one component of a multicomponent molten mixture is separated from the mixture and purified by introducing the mixture into the recovery section of an array of apparatus comprising a recovery section, a refining section and a purifying section. The recovery and purifying sections each have helical scraper-conveyors to move crystals through them, increasing cross sectional areas in the direction of crystal progression and downward temperature gradients in the direction of liquid and reflux movement which is countercurrent to the crystal progression. The feed mixture is introduced to the recovery section near its junction with the refining section and flows in the countercurrent or reflux direction. Crystallization occurs at a certain temperature encountered in the recovery section and the crystals grow and are purified as they are moved by the scraper-conveyors through the recovery and refining sections and into the purifying section and purify by gravitational movement through the countercurrent molten reflux. At the end of the progression through the purifier, the crystals are remelted and withdrawn as substantially pure preselected component.

3,645,700

APPARATUS FOR FLUIDIZED-BED REACTIONS

Masao Nagamura; Hiromichi Seya; Takaya Iseki, and Mikio Suzuki, all of Chiba-ken, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1970, Ser. No. 3,910
Claims priority, application Japan, Jan. 24, 1969, 44/4735
Int. Cl. B01j *9/18*
U.S. Cl. 23—284 **8 Claims**



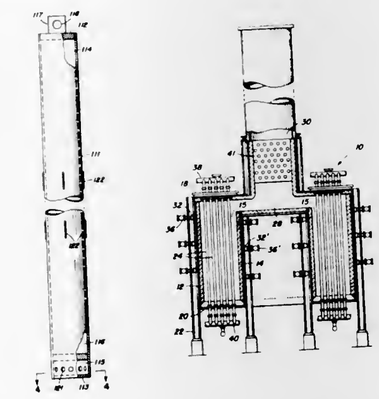
The invention provides an improved vessel for fluidized-bed reactions, characterized by the provision of metal or nonmetal projections of various shapes at calculated intervals on the internal sidewall of the vessel. The improved vessel results in a substantially reduced wear of the internal wall of the fluidized-bed vessel without detracting from the heat-exchange efficiency between the internal wall and the exterior of the vessel.

3,645,701

REFORMER FURNACE

Ira N. Banchik, Brooklyn; Morgan C. Sze, Garden City, L.I., both of N.Y., and Maldwin J. Maddock, Elizabeth, N.J., assignors to The Lummus Company, New York, N.Y.

Original application June 19, 1967, Ser. No. 647,021, now Patent No. 3,527,565, dated Sept. 8, 1970. Divided and this application Feb. 2, 1970, Ser. No. 12,497
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 M **7 Claims**



Reformer furnace having a plurality of tubes in the radiant section thereof, the lower portion of the tubes having a reformer catalyst and the upper portion being free of catalyst. A plug is positioned in the upper portion to provide a restricted flow passage for a steam-hydrocarbon mixture introduced into the tubes and the plug includes means for evenly distributing the mixture from the restricted flow passage over the catalyst.

3,645,702

DIFLUOROBROMINIUM TETRAFLUOROBORATE

Madeline S. Toy, Fountain Valley, and William A. Cannon, Costa Mesa, both of Calif., assignors to The United States of America as represented by the Secretary of the Army

Filed July 19, 1968, Ser. No. 745,984
Int. Cl. C01b *35/00, 7/24;* **C06d** *5/00*
U.S. Cl. 23—367 **2 Claims**

The novel compound difluorobrominium tetrafluoroborate and method of preparation thereof consisting of the contacting of boron trifluoride with bromine trifluoride.

3,645,703

HELIUM PERMEABLE CONTAINERS

Louis Frank, Baltimore, and Harry P. Kling, Glenarm, both of Md., assignors to Hittman Associates, Inc., Baltimore, Md.

Continuation-in-part of application Ser. No. 454,542, May 10, 1965, now abandoned. This application July 28, 1966, Ser. No. 568,597
Int. Cl. G21c *13/00*
U.S. Cl. 29—182.5 **16 Claims**

An alpha-emitting radioisotope source container which allows for the controlled release of helium gas without permitting any radioactive material to escape, the container being a metal-fiber composite of helium impermeable metallic wall means with helium permeable quartz fibers reinforcing the wall means and extending continuously through at least a portion of said wall means and providing a fibrous helim leak path.

3,645,704

MIDDLE DISTILLATE POUR DEPRESSANT

Herbert G. Burkard, Convent Station; Harold N. Miller, Millington, and Edward N. Kresge, Elizabeth, all of N.J., assignors to Esso Research and Engineering Company

Continuation of application Ser. No. 637,334, May 10, 1967, now abandoned. This application Aug. 19, 1969, Ser. No. 854,021
Int. Cl. C10l *1/20*
U.S. Cl. 44—62 **12 Claims**

Middle distillate oils are improved with respect to flow and pour point by incorporating therein halogenated polymers comprised of ethylene and C_3–C_{18} alpha-olefins.

3,645,705

TRANSPARENT COMBUSTIBLE MATERIAL SUITABLE FOR CANDLE BODIES

Aaron Miller, Niles, Ill., and William Siegfried, Oshkosh, Wis., assignors to Kolar Laboratories, Inc., Chicago, Ill.

Filed Mar. 3, 1970, Ser. No. 16,222
Int. Cl. C10l *5/00*
U.S. Cl. 44—7.5 **6 Claims**

A transparent combustible candle body material formed by combining a straight chain aliphatic amide with light mineral oil and adding alcohol thereto.

3,645,706

RESINOID GRINDING WHEELS CONTAINING NICKEL-COATED CUBIC BORON NITRIDE PARTICLES

Harold Paul Bovenkerk, Worthington, and William Arthur Berecki, Columbus, both of Ohio, assignors to General Electric Company

Filed Dec. 16, 1969, Ser. No. 885,630
Int. Cl. B24d *17/00*
U.S. Cl. 51—295 **6 Claims**

An improved resinoid grinding wheel particularly useful for the wet or dry grinding of hardened steels and steel alloys utilizes nickel-coated cubic boron nitride particles as the abrasive medium.

3,645,707

GLASS FIBER COATING METHOD

Thomas E. Philipps, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Feb. 9, 1970, Ser. No. 10,054
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **8 Claims**

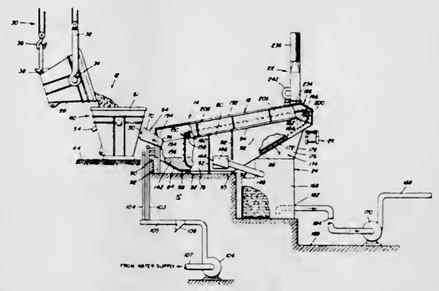
A method of using a composition in the treatment of glass fibers to provide easier filamentizing of fiber strands, said composition is especially adapted for use on glass fibers which are to be used in the production of glass fiber mats when maximum water-repellent properties are desired. In a preferred embodiment the composition consists of phenyltrimethoxy silane in a suitable solvent.

3,645,708

STEEL SLAG HANDLING SYSTEM AND METHOD FOR USING

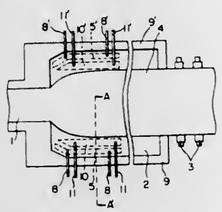
John J. Grady, deceased, late of New Florence, Pa. (by Betty Jane Grady, executrix), assignor to International Steel Slag Corporation, Washington, D.C.

Continuation of application Ser. No. 632,704, Apr. 21, 1967, now abandoned, and a continuation-in-part of Ser. No. 632,822, Apr. 21, 1967, now Patent No. 3,523,015, and 632,704, and 632,822, Continuation-in-part of **application Ser. No. 428,519, Jan. 27, 1965, now Patent No. 3,316,075, and a continuation-in-part of 535,143, Mar. 17, 1966, now abandoned , and 428,519, , and 535,143, , Continuation-in-part of application Ser. No. 126,792, June 21, 1961, now** abandoned. This application Dec. 4, 1969, Ser. No. 882,317.
The portion of the term of this patent subsequent to Apr. 25, 1984, has been disclaimed.
Int. Cl. C03b *5/18*
U.S. Cl. 65—19 **27 Claims**



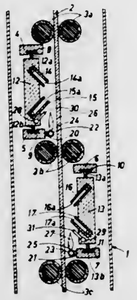
A system is described for improved processing and disposal of molten steel slag formed during steel furnace operation. The system comprises steel slag granulator apparatus of the type described in detail in copending U.S. Pat. application Ser. No. 428,519 and associated equipment including controllable molten slag feeding apparatus, aspirator-pump means for collecting the steam generated during the slag granulation process, and for transferring it to a suitable disposal point, an improved water nozzle arrangement to produce a U-shaped or H-shaped jetstream of water for slag granulation, and a hydraulic transport apparatus for conveying the granulated and cooled steel slag away from the granulator in the form of a water-slag slurry. The system also includes slag dewatering apparatus to extract the granulated slag particles from the slurry to permit storage or disposal in relatively dry form, and high-efficiency filtering means to permit direct disposal of the granulating water in nearby rivers or sewers without danger of contamination due to high solids concentration in the discharged water. One embodiment includes means for stockpiling the dried slag directly on the ground, while a second embodiment includes means for classifying the slag particles by size prior to storage.

3,645,709
PROCESS FOR MANUFACTURE OF FLAT GLASS ON A MOLTEN METAL BATH
Yukiya Fujimoto, and Isao Kurashina, both of Kyoto, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Mar. 9, 1970, Ser. No. 17,639
Claims priority, application Japan, Mar. 12, 1969, 44/19137; Apr. 22, 1969, 44/31849
Int. Cl. C03b *18/02*
U.S. Cl. 65—27 **10 Claims**



In a process for the manufacture of flat glass which comprises flowing molten glass onto a molten metal bath and advancing the molten glass on the bath in ribbon form, the improvement residing in that the molten metal is contacted with a refractory of acidic or neutral oxide or low alkali or nonalkali glass which is replaceably immersed in the molten metal bath, and that the refractory or low alkali or nonalkali glass on which the reaction product thereof with the alkali metal oxide in the molten metal is formed is withdrawn from the bath to be replaced by new refractory or glass at regular intervals.

3,645,710
DIFFUSION TREATMENTS OF SELECTED BODY SURFACE PORTIONS BY ELECTRIC ARC
Emile Plumat, Gilly, and Lucien F. Leger, Montigny le Tilleul, both of Belgium, assignors to Glaverbel S.A., Watermael Boistfort, Belgium
Filed Apr. 18, 1968, Ser. No. 722,390
Claims priority, application Luxembourg, Apr. 25, 1967, 53,513; Aug. 30, 1967, 54,401; Great Britain, Feb. 6, 1968, 5839/68
Int. Cl. C03c *15/00, 29/00*; **C22d** *1/18*
U.S. Cl. 65—30 **14 Claims**

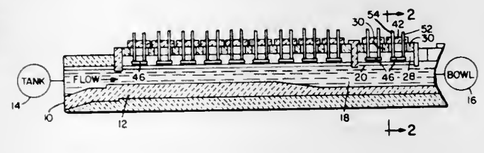


Method and apparatus for the controlled diffusion of ions from a gaseous medium into selected surface portions of a body by contacting such portions with a gaseous diffusion substance at least one element of which represents a source of the ions which are diffused into the material, and maintaining such element in an ionized state in the immediate vicinity of such portions for permitting such ions to diffuse into the body surface.

3,645,711
METHODS OF MAKING OPAL GLASS ARTICLES
Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Original application July 14, 1967, Ser. No. 653,404, now abandoned. Divided and this application Jan. 19, 1970, Ser. No. 3,999
Int. Cl. C03b *29/00*; **C04b** *33/00*
U.S. Cl. 65—33 **7 Claims**

Methods of making thermally opalizable glass compositions suitable for use in making opal glass containers and low-expansion, heat resistant oven ware consisting essentially of SiO_2, Al_2O_3, B_2O_3, CaO, MgO and Na_2O in specified critical amounts. Preferably, an article is formed of the above glass composition, and heat treated to provide an in situ glass-in-glass phase separation by maintaining the article at a temperature in the neighborhood of 1,050° to 1,550° F. for about one-fourth to 8 hours.

3,645,712
RADIATION TARGET STRUCTURE AND USE TO COOL MOLTEN GLASS
Allen C. Ihrig, and Richmond W. Wilson, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 6, 1970, Ser. No. 35,055
Int. Cl. C03b *5/22*
U.S. Cl. 65—83 **5 Claims**

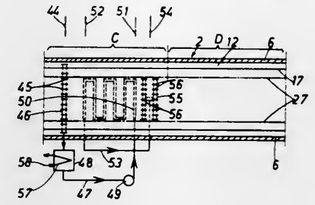


Adjustable, thin, fluid-cooled radiation targets are provided for selectively cooling the center surface portion of a molten glass stream in a glass making furnace forehearth. These radiation targets, which are generally of truncated triangular shape when viewed from an end in a direction parallel to the glass stream, may be arranged in tandem along the glass stream center surface portion, with each target having a plurality of connected wall panels defining a low-profile-closed chamber including a top portion spaced a substantial distance below the forehearth roof and inwardly converging side portions spaced a substantial distance from the glass stream edges. A plurality of spaced baffles within the closed chamber, and together therewith, define a circuitous fluid passageway having fluid entry and exit ports on the opposite ends thereof. Means are provided for supplying and removing a cooling fluid and further means control the degree of cooling imparted by the radiation target. A method for cooling the glass surface center portion includes positioning the radiation targets within a preselected region above the glass surface center portion and controlling the degree of cooling of the radiation targets.

3,645,713
PROCESS FOR THE TREATMENT OR PRODUCTION OF FLOATING FLAT GLASS
Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium
Filed Oct. 3, 1969, Ser. No. 863,656
Claims priority, application Great Britain, Sept. 5, 1969, 44,046/69
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **5 Claims**

A float tank used in the production or treatment of flat glass floating on a liquid bath has a refractory floor with

passageways formed therein. The passageways communicate with openings in different regions of the tank floor so that the



liquid may be circulated between these regions and thereby control or regulate the temperatures within the bath as may be desired.

3,645,714
BALANCED RELEASE PELLETED BARK PRODUCTS AND PROCESS
Elizabeth C. Heming; Warren W. Mathews, and William J. Wilson, all of Vancouver, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed May 23, 1969, Ser. No. 827,172
Int. Cl. C05f *11/02*
U.S. Cl. 71—23 **5 Claims**

There is disclosed a method for producing the resultant pelleted products for horticultural and other purposes made up of bark from the group hemlock, balsam, spruce, pine, redwood, or mixtures thereof, said bark being blended with water-soluble nutrient fertilizer material. The blended mixture may contain other inert materials, such as wood, peat moss and the like, with or without the addition of other active ingredients, such as herbicides, pesticides, nutrients, and the like. These products readily disintegrate on contact with moisture in the soil and manifest balanced release characteristics.

3,645,715
ALGICIDAL AGENTS
Werner Daum, Krefeld-Bockum; Wilfried Paulus, and Otto Pauli, both of Krefeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 11, 1968, Ser. No. 783,134
Claims priority, application Germany, Dec. 27, 1967, P 16 43 384.4
Int. Cl. A01n *9/00, 23/00*
U.S. Cl. 71—67 **11 Claims**

Algicidal compositions of, and methods of combating algae including slime bacteria, using certain N-chlorophenyl-alkylene polyamines and their corresponding water soluble salts, some of which are known, which possess algicidal and slime bactericidal properties and which may be produced by conventional methods.

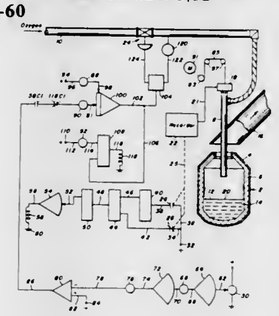
3,645,716
NEODECANOIC ACID AS A POSTEMERGENT HERBICIDE
Alfred J. Rutkowski, Colonia, N.J., assignor to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 687,145, Dec. 1, 1967, now abandoned. This application Oct. 3, 1969, Ser. No. 863,716
Int. Cl. A01n *9/04, 9/24*
U.S. Cl. 71—113 **5 Claims**

Neodecanoic acid, preferably formulated with a suitable solvent such as for example heavy aromatic naptha and a suitable emulsifier, such as for example, alkylated aryl polyether alcohol or a blend of anionic and nonionic emulsifiers, such as an alkylated aryl polyether alcohol plus a sulfonate has been found to be especially useful as a broad base postemergent herbicide when it is directly sprayed at the base of a growing crop at a time when the crop is at least twice the height of the weed. By using this acid in such a manner, it functions as a selective weed killer which does not cause injury to the crops when sprayed on a directed spray postemergence basis.

3,645,717
PROCESS OF PRODUCING SPONGE IRON PELLETS
Kurt Meyer, Frankfurt; Hans Rausch, Oberursel, and Wilhelm Thumm, Frankfurt, all of Germany, assignors to Metallgesellschaft A.G., Frankfurt am Main, Germany
Filed Apr. 9, 1969, Ser. No. 814,814
Claims priority, application Germany, Apr. 17, 1968, P 17 58 171.4
Int. Cl. C21b *13/08*
U.S. Cl. 75—33 **12 Claims**

Improvements in the production of iron by the direct reduction of iron ore, wherein the iron ore is admixed with about 5 to 25 weight percent fine-grained metallic iron without any carbonaceous material added to the admixture; the admixture is pelletized and the pellets are fired at about 700° to 1,050° C. in either a slightly oxidizing, a neutral, or a slightly reducing atmosphere. The pellets produced by such firing have an iron to oxygen mol ratio of about 1:1 to 1:1.4. These pellets are then directly reduced with solid and/or gaseous reducing agents at about 650° to 1,250° C. but below the softening temperature of the charge. The product resulting from the reduction is about 70 to 100 weight percent metallic iron, has superior shrinkage as compared to prior art products, has a greater crushing strength and has a lesser tendency to reoxidize than prior art products.

3,645,718
METHOD FOR MAKING STEEL
Joseph A. Murphy, Murraysville, Pa., assignor to Crucible Inc.
Original application Oct. 9, 1967, Ser. No. 673,666, now Patent No. 3,598,386, dated Aug. 10, 1967. Divided and this application July 31, 1970, Ser. No. 64,936
Int. Cl. C21c *5/32*
U.S. Cl. 75—60 **4 Claims**



This invention relates to a method and apparatus for making steel in a converter top-blown with oxygen. In particular, the invention relates to operating a converter top-blown with oxygen by monitoring the temperature on the area of the bath surface contacted by the oxygen jet, which is the reaction zone, determining the reaction-zone temperature decrease indicating the end of desiliconization of the bath, and thereupon increasing the amount of oxygen and preferably also decreasing the height of the oxygen lance above the bath surface during the carbon-removal portion of oxygen blowing. The increased oxygen flow rate and decreased lance height is maintained for the remainder of the steelmaking operation.

3,645,719
SLAGGING IN BASIC STEEL-MAKING PROCESS AND COMPOSITIONS THEREFOR
William J. Minnick, Cheltenham, Pa., assignor to G. & W. H. Corson, Inc., Plymouth Meeting, Pa.
Filed Oct. 15, 1969, Ser. No. 866,727
Int. Cl. C22b *9/10*
U.S. Cl. 75—94 **10 Claims**

In a basic steelmaking process wherein dolomite is charged as a slag-forming ingredient, the improvement wherein dolomite, prior to its charging, is intimately mixed with iron oxide in defined proportions, and formed into shaped bodies. In one preferred embodiment, the intimate mixture is prereacted, by heating, to convert the calcium oxide portion of the mixture into dicalcium ferrite with or without conversion of magnesium oxide to magnesio ferrite. Compositions for addition to a basic steelmaking furnace in the form of preformed bodies of an intimate mixture of dolomite and iron oxide or the stated ferrite or ferrites resulting from the aforesaid prereaction, are also provided.

3,645,720
METHOD OF DEOXIDIZING STEEL
Ryochiro Imai, and Yoshihiko Kawai, both of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Aug. 4, 1969, Ser. No. 847,053
Claims priority, application Japan, Aug. 8, 1968, 43/55988
Int. Cl. C21c *7/06*
U.S. Cl. 75—58 **4 Claims**

In a steel manufacturing process an oxygen concentration cell is immersed in the molten steel bath, the maximum differentiated value of the electromotive force is detected and the detected maximum value is utilized as the control factor for adjusting the quantity of deoxidizing agent to be subsequently added into the molten steel bath.

3,645,721
HEAT-TREATABLE, HIGH-STRENGTH, HIGH-TOUGHNESS, LOW-CARBON, NI-MO ALLOY STEEL
John Savas, Brecksville, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed Jan. 25, 1968, Ser. No. 700,440
Int. Cl. C22c *39/36, 39/50, 41/00*
U.S. Cl. 75—123 J **4 Claims**

An alloy steel consisting of about 0.15–0.25 percent carbon, 8–12 percent nickel, 0.50–1.5 percent molybdenum, up to 1 percent each of manganese and silicon, up to 0.25 percent V, balance substantially all iron, heat treatable to a combination of high strength and high toughness with controlled austenitic transformation.

3,645,722
FREE MACHINING STAINLESS STEEL ALLOY
Grant M. Aulenbach, Mohnton, and Kermit J. Goda, Jr., Leesport, both of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.
Filed Sept. 4, 1969, Ser. No. 855,416
Int. Cl. C22c *39/20, 39/14*
U.S. Cl. 75—124 **13 Claims**

Stainless steel alloy containing about 10 to 30 percent chromium, 0.015 to 0.75 percent sulfur and/or selenium, 0.5 to 7 percent copper, 0.25 to 4 percent aluminum, 0.001 to 0.75 percent tellurium and the balance iron and optional elements. Ferritic and martensitic compositions are provided having improved free machining properties or an improved combination of free machining and corrosion-resistance properties in selected media.

3,645,723
QUENCHED AND TEMPERED LOW-ALLOY STEEL
John Y. Riedel, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Filed Nov. 28, 1969, Ser. No. 880,978
Int. Cl. C22c *39/20, 39/02*
U.S. Cl. 75—124 **4 Claims**

A hypoeutectoid boron steel product characterized by a minimum yield strength of 100,000 p.s.i. and a Charpy V-notch 15 ft.-lb. impact transition temperature below −50° F. in thick sections.

3,645,724
STAINLESS STEEL
Robert L. Goldberg, 56 Wilshire Drive, Sharon, Mass.
Filed Feb. 10, 1969, Ser. No. 798,120
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C **6 Claims**

This invention is for a martensitic, heat hardenable steel of the following composition:

chromium	18 to 20%
molybdenum	0.2 to 0.8%
carbon	1.1 to 1.3%
boron	0 to 0.2%
iron	balance

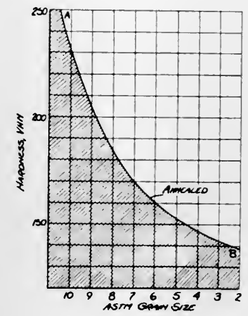
The alloy is preferably heat tempered at a temperature of from 1,000° to 1,200° F. It is characterized by high-wear resistance, corrosion resistance in various media and a freedom from staining. These properties render the steel especially useful for the formation of surgical instruments having a sharp cutting edge.

3,645,725
AUSTENITIC STEEL COMBINING STRENGTH AND RESISTANCE TO INTERGRANULAR CORROSION
Elbert E. Denhard, Jr., Towson, and Robert R. Gaugh, Lutherville, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio
Filed May 2, 1969, Ser. No. 821,460
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 A **4 Claims**

Austenitic stainless steel characterized by a combination of good hot-rolling and good cold-rolling properties, good strength and ductility, and good welding properties, with resistance to intergranular corrosion in the as-welded condition. The steel contains about 17.5 to 22.5 percent chromium, about 5 to 9.5 percent nickel, at least 2.5 percent but less than 7 percent manganese, with a nitrogen content of about 0.2 to 0.4 percent, carbon not exceeding 0.040 percent, and remainder substantially iron. Where desired, there may be employed columbium in amounts up to about 1 percent and/or molybdenum up to about 3 percent. The steel is made available in the form of hot and cold flat-rolled products, as well as wire. It is suited to a wide variety of applications in the arts.

3,645,726
RESISTANCE TO STRESS-CORROSION CRACKING IN NICKEL ALLOYS
Harry R. Copson, Mahwah, N.J., and Sheldon W. Dean, Jr., Hamden, Conn., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed May 26, 1965, Ser. No. 459,050
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **6 Claims**

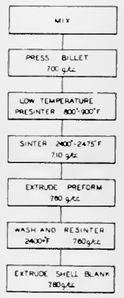
Nickel-chromium and nickel-chromium-iron-base alloys having an improved level of resistance to intergranular stress-corrosion cracking when in contact with aerated high-purity water at elevated temperatures. Alloys contain controlled amounts of aluminum, titanium, silicon and carbon. Grain size and alloy hardness correlated to further minimize stress-corrosion attack.



3,645,727
METHOD FOR MELTING TITANIUM ALLOYS
Walter L. Finlay, New York, N.Y., and Howard B. Bomberger, Jr., Canfield, Ohio, assignors to Crucible Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 523,866, Feb. 1, 1966, now Patent No. 3,508,910. This application Oct. 28, 1969, Ser. No. 871,968
Int. Cl. C22c *1/02*
U.S. Cl. 75—175.5 **2 Claims**

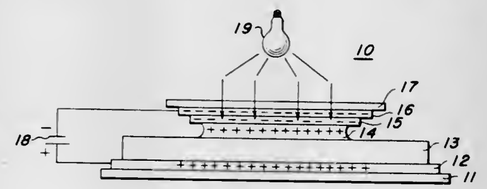
This invention relates to a method of making a homogeneous ingot of a titanium base alloy by mixing particles of titanium with a master alloy in the form of fine granules, said master alloy containing 30 to 75 percent by weight of molybdenum, 25 to 70 percent by weight of at least one of the elements selected from the group consisting of chromium, titanium, zirconium, nickel and copper, but not over 30 percent chromium, not over 25 percent titanium, not over 40 percent zirconium, not over 10 percent nickel and not over 10 percent copper, compacting the mixture into the form of a compacted article and then melting said compacted article in a vacuum.

3,645,728
METHOD FOR MAKING SPARK PLUG SHELLS
John Hrinevich, Jr., Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 3, 1970, Ser. No. 43,001
Int. Cl. B22f *5/00*
U.S. Cl. 75—214 **4 Claims**



The invention relates to a method for making high-ductility spark plug shells including the steps of forming a relatively high-density annular billet of about 7.0 g./cc. from a mixture of iron powder and lubricant, sintering the billet at a relatively high temperature of at least 2,400° F. after heating at a substantially lower temperature to drive off lubricant, forming a shell preform from the sintered billet by forward and backward extrusion to produce a density of about 7.6 g./cc., sintering the preform at an elevated temperature in excess of 2,400° F. and extruding the resultant body to form a spark plug shell blank having a density of at least 7.8 g./cc., sintering being performed in a reducing atmosphere.

3,645,729
METHOD OF TRANSFERRING ELECTROSTATIC LATENT IMAGES USING MULTIPLE PHOTOCONDUCTIVE LAYERS
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Sept. 23, 1966, Ser. No. 581,602, now Patent No. 3,539,255. Divided and this application Sept. 15, 1969, Ser. No. 870,821
Int. Cl. G03g *5/04*
U.S. Cl. 96—1 **4 Claims**



A photosensitive element comprising a photoconductive light controlled storage layer and adjacent thereto a photoconductive multiplying layer which has an electric field placed across the two layers. The storage layer is exposed to uniform illumination and subsequently the multiplying layer is exposed to the image illumination. Following the cessation of exposure and removal of the charging field, the two layers are stripped apart and the storage layer developed by a conventional method.

3,645,730
REPRODUCTION OF IMAGES USING LIGHT SENSITIVE CURABLE LIQUID POLYMERS
Victor S. Frank, Silver Spring, and Donald P. Gush, Hyattsville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Oct. 11, 1968, Ser. No. 766,949
Int. Cl. G03c *1/68*
U.S. Cl. 96—28 **32 Claims**

Reproduction of printed or other images from a negative or positive master on a paper or transparency is possible using a laminated element containing a photocurable liquid polymer. A dry process is disclosed for preparing transparent positive and negative images in a single image exposure. The imagewise exposure is through a stencil, or a negative or positive transparency (halftone or line). The process, for example, includes placing a photocurable liquid polymer layer between two sheets, at least one of which is transparent, exposing the laminate to actinic or UV radiation through a negative image, and separating the sheets. Depending upon the system, a positive image is formed on the sheet proximate the light source and a negative image on the other sheet, or vice versa. The two sheets have different adhesive forces for cured and uncured photoadhesive compositions, which accounts for the adhesion of the cured and uncured to different sheets. The photocurable liquid polymer composition consists essentially of an ethylenically unsaturated polyene containing at least two reactive carbon to carbon bonds per molecule, a polythiol containing at least two thiol groups per molecule, a photocuring rate accelerator and black, white or colored fillers, pigments or dyes.

3,645,731
SILVER SALT DIFFUSION ALKALINE BATH OF TRISODIUM PHOSPHATE AND A POLYALCOHOL

Werner Liebe; Harald von Rintelen, both of Leverkusen, Germany; Gerard Laurens Vanreusel, Hove, and Camille Angelina Vandeputte, Mortsel, both of Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 9, 1970, Ser. No. 10,035
Claims priority, application Germany, Feb. 8, 1969, P 19 06 296.5
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **2 Claims**

The modification of the silver salt diffusion process comprises exposure of a supported silver halide emulsion layer containing a photographic developer and development of the exposed layer with an alkaline Trisodiumphosphate bath while in contact with a nucleated image-receiving layer. The stability of the bath is improved by incorporating water-soluble aliphatic polyalcohols or polyamines.

3,645,732
ETCHING ALCOHOL-SOLUBLE NYLON WITH AQUEOUS SOLUTIONS

Viron V. Jones, Caldwell, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 19, 1969, Ser. No. 825,992
Int. Cl. G03c *5/00;* **G03f** *7/00;* **G03c** *11/00*
U.S. Cl. 96—36 **6 Claims**

Images and exposure masters for lithography, cartography and engineering drawing reproduction are prepared by forming a protective resist pattern on a layer of an alcohol-soluble nylon and etching away the unprotected portions of the nylon layer with an aqueous solution of sodium salicylate. The nylon layer may include distinctly colored dyes for imaging purposes or may include actinically opaque dyes, pigments or light absorbers for the preparation of photographic reproduction master sheets. The present method employs aqueous media throughout and avoids the use of flammable organic solvents.

3,645,733
SUBTITLING OF PROCESSED PHOTOGRAPHIC MATERIALS

Eric Maria Brinckman, and Louis Achilles Meeussen, both of Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

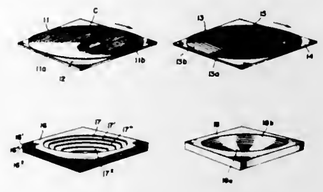
Filed Mar. 27, 1969, Ser. No. 810,959
Claims priority, application Great Britain, Mar. 27, 1968, 14,779/68
Int. Cl. G03c *5/00, 5/04*
U.S. Cl. 96—36 **19 Claims**

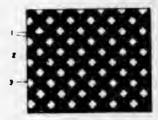
Graphic information, such as a subtitle, is recorded on a recording material, such as a motion picture film, by means of an externally applied surface layer of an organic film-forming polymer adapted to undergo a differential increase in solubility in an appropriate solvent as a result of imagewise heating so that, by contacting the differentially heated and thereby solubilized surface layer with the appropriate solvent, the relatively more soluble areas can be selectively removed, leaving the underlying areas of the recording material exposed. Heating can be effected directly within the surface layer by uniformly distributing throughout the polymer forming the same finely divided pigment or dye which, when exposed to a radiation image such as from a copying light, preferably a flashlight, absorbs such radiation and converts the same directly into heat. Where sufficient pigment or dye is present as to impart opacity to the surface layer, preferably an optical density of at least one, the graphic information can be formed by selective removal of the nonimage areas of the surface layer leaving an opaque relief image thereof to constitute the graphic information. Alternatively, the recording material with the partially removed surface layer thereon can be contacted with a liquid effectively bleaching the colorant material, i.e., the metallic silver or dye image, therein or, in the case of motion picture film, carrying a developed silver halide emulsion layer disintegrating the binder of that layer, or contains a dye which penetrates the exposed regions of the recording material.

3,645,734
PROCESS OF MANUFACTURING A MASTER DOT PATTERN FOR PHOTOETCHING A GRADED-HOLE SHADOW MASK

Kinich Noguchi, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 387,724, Aug. 5, 1969. This application Dec. 22, 1969, Ser. No. 883,668
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **12 Claims**



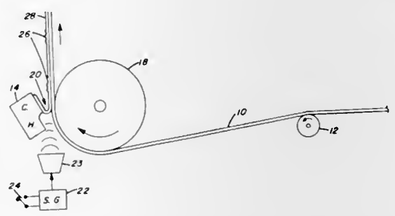


A process for the production of master dot patterns for photoetching a graded-hole shadow mask for use in a color picture tube including mounting a grading mask having its transparency concentrically, progressively decreasing from the center toward the periphery thereof between a light source and a photographic material and inserting a screen between the grading mask and the light source.

3,645,735
COATING BEAD MODULATION AND RECORDING THEREBY

Arthur Daniel Danielson; Lyle Charles Klier, both of Rochester, N.Y., and John D. O'Brien, Guadalajara, Jalisco, Mexico, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1969, Ser. No. 867,030
Int. Cl. G03c *1/00*
U.S. Cl. 96—67 **2 Claims**



Thickness variations in the optical coating on a web may be employed for control, playback, and other purposes. Coating thickness variations are produced by vibrating the coating bead. A photographic web is produced by vibrating the bead formed between an emulsion coating hopper and a web base, thereby to provide a light-sensitive web having record data manufactured therein.

3,645,736
PHYSICAL DEVELOPMENT SYSTEMS, PROCESSES AND RELATED MATERIALS

Lois E. Mowat, Waltham, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed July 11, 1968, Ser. No. 743,983
Int. Cl. G03c *5/54*
U.S. Cl. 96—48 **8 Claims**

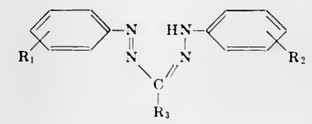
This disclosure relates to a new and useful complex of silver ion with nitrilotriacetate ions which is particularly useful in sensitizing a photographic latent image on a photosensitive medium especially those in which the photosensitive component is a photoconductor. The complex can be applied to the photoexposed medium or formed on the medium before or during photoprocessing. Also described are methods of photoprocessing latent photographic images, especially by amplifying latent silver images with nonsilver metals such as copper and tin.

3,645,737
SILVER HALIDE PHOTOGRAPHIC PROCESSING USING FORMAZANS

Eric Macdonald, Llanbrynmair, Wales, assignor to Ilford Limited, Essex, England

Filed Jan. 23, 1969, Ser. No. 793,553
Claims priority, application Great Britain, Jan. 26, 1968, 4,303/68
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **3 Claims**

This application describes a process of color development of color photographic material wherein at least one silver halide emulsion layer containing a developable silver salt is color developed to yield a dyc image, the developed silver and the residual silver halide being removed, the step of developing the photographic material with a color developing solution in the presence of an image-forming color coupler and a formazan compound of the formula:



wherein R_1 and R_2 are each selected from hydrogen atoms or solubilising groups and R_3 is a hydrogen atom or an aryl, alkyl, aralkyl or a —CN group or a solubilising group selected from —COOH, $-CH_2SO_3H$ or $-CH_2COOH$, at least one of R_1, R_2 or R_3 being a solubilising group, the two phenyl groups optionally carrying further substituents.

3,645,738
STABILIZING SILVER IMAGE IN PRESENCE OF HETEROCYCLIC THIOXO COMPOUND CONTAINING SULPHOGROUP

Jozef Frans Willems, Wilrijk, Belgium, and Oskar Riester, Leverkusen, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed May 10, 1968, Ser. No. 728,321
Claims priority, application Great Britain, May 18, 1967, 23,050/67
Int. Cl. G03c *5/38*
U.S. Cl. 96—61 **10 Claims**

A rapid process for producing a stable photographic image is disclosed which comprises developing an exposed silver halide emulsion layer of a photographic material and treating the developed emulsion layer with a stabilizing solution containing a stabilizing agent such as ammonium thiocyanate and a heterocyclic thioxo compound showing thioxo-thiol tautomerism and corresponding to the formula



wherein Z represents the atoms necessary to close a five or six member heterocyclic nucleus containing at least one sulfo group in acid or salt form. The residual unexposed and undeveloped silver halide which is left in the emulsion layer forms a light inert complex. The thioxo-thiol compound improves the stability of the produced image to light, heat, and humidity.

3,645,739
THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENTS

Kinji Ohkubo; Takao Masuda, and Junpei Noguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 21, 1967, Ser. No. 617,498
Claims priority, application Japan, Feb. 21, 1966, 41/10383
Int. Cl. G03c *1/76, 1/06, 1/02*
U.S. Cl. 96—67 **8 Claims**

A photographic light-sensitive element capable of providing stable images by a thermal development, having a light-sensitive layer containing benzotriazolyl silver, a silver halide or an organic halide capable of forming a silver halide by the reaction with benzotriazolyl silver, a reducing agent, and an organic acid or a salt thereof.

3,645,740
PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENT WITH GELATIN SUBBING LAYER

Fumihiko Nishio; Nobuo Tsuji; Teppei Ikeda, and Hideo Kawaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 15, 1970, Ser. No. 3,201
Claims priority, application Japan, Jan. 16, 1969, 44/3041
Int. Cl. G03c *1/80*
U.S. Cl. 96—87 R **8 Claims**

A photographic element having a subbing layer comprising at least one member selected from the group consisting of (1) a glycidyl methacrylate homopolymer, (2) a glycidyl acrylate homopolymer, (3) a copolymer of glycidyl methacrylate and a copolymerizable vinyl compound, (4) a copolymer of glycidyl acrylate and a copolymerizable vinyl compound which prevents sticking of the photographic element is disclosed.

3,645,741
DIAZOTYPE LIGHT-SENSITIVE MATERIAL FOR INTERMEDIATE ORIGINAL

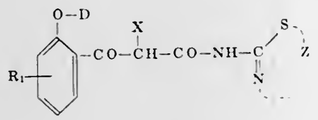
Syuhei Shiraishi, Fujisawa-shi, and Tadashi Saito, Yokohama-shi, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jan. 2, 1970, Ser. No. 389
Claims priority, application Japan, Jan. 9, 1969, 44/1786
Int. Cl. G03c *1/58*
U.S. Cl. 96—91 **4 Claims**

There is provided a diazotype light-sensitive material for intermediate original (or substitute original), the light-sensitive material being able to give a dye-image which is easy to see and has low transmission of ultraviolet rays. Said material contains derivative of 1-hydroxynaphthalene-3,8-disulfonic acid as one coupling component together with diazonium compound in the light-sensitive layer.

3,645,742
COLOR PHOTOGRAPHY
Marcel Hendrik Verbrugghe, Wilrijk; Arthur Henri De Cat, Mortsel, and Marcel Karel Van Doorselaer, S-Gravenwezel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Nov. 27, 1968, Ser. No. 779,627
Claims priority, application Great Britain, Jan. 5, 1968, 854/68
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 12 Claims

Light-sensitive silver halide emulsions comprising a yellow-forming color coupler having the formula



wherein:
X stands for hydrogen or a group which splits off on color development,
D represents a residue rendering the molecule fast to diffusion and comprising from five to 20 carbon atoms,
R_1 stands for hydrogen, alkyl, alkoxy, halogen, a dialkylamino group or a sulphamoyl group, and
Z represents the atoms necessary to close a nucleus of the thiazole series,
are described. Upon color development of the described emulsions yellow azomethine dyes are formed which have a high stability against heat and moisture and possess favorable spectral properties.

3,645,743
PROCESS FOR HARDENING PROTEIN LAYERS
Bruno Mucke, Koeln-Buchheim; Karl Lohmer, Leverkusen, and Heinrich Gold, Koeln-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 8, 1969, Ser. No. 848,717
Claims priority, application Germany, Aug. 27, 1968, P 17 95 237.3
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 5 Claims

A process for hardening photographic gelatin layers, wherein a dihalogen substituted di- or triazine is added as hardening agent to the casting solution for the photographic layer; the casting solution is applied onto the support and the layer is dried. The drying the performed in effective contact with a water-soluble salt of a primary, secondary or tertiary amine.

3,645,744
PHOTO- AND HEAT-SENSITIVE COMPOSITIONS
Brazelton Fulkerson, and John W. Mench, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,650
Int. Cl. G03c *1/68, 1/86, 1/94*
U.S. Cl. 96—115 4 Claims

It has been discovered that coatings of cellulose propionate 3-morpholinobutyrate are sensitive to heat and light, such sensitive being illustrated by the insolubilization of the polymer that occurs upon exposure to such energy. Such coatings are useful as radiation-sensitive photoresists.

3,645,745
METHOD OF PRODUCING A SOLUBLE PROTEIN PRODUCT
Pete J. Magnino, Jr., and Christopher W. Frederiksen, both of St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed July 8, 1968, Ser. No. 743,034
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 21 Claims

Producing a soluble protein product from oleaginous seed materials which involves altering the physical structure of the protein molecules by subjecting to a solution having a pH range from 1 to 2 or from 10 to 12 and heating said liquid portion to 85° to 350° F., later precipitating the protein and, subjecting an aqueous suspension of this precipitated protein to instantaneous heat and pressure, then passing through a zone of lower pressure and converting the protein to a dry, particulate protein product. This soluble protein may be used to produce protein-enriched food products and is particularly desirable for use in clear or transparent food products or foods where high solubility is desired, since said protein is very soluble and, therefore, does not distract from the physical properties of a clear food product.

3,645,746
PRESERVATION OF PROTEINACEOUS MATERIALS AND EDIBLE FIBERS SPUN THEREFROM
William T. Akinson, Minneapolis, Minn., assignor to Archer Daniels Midland Company, Minneapolis, Minn.
Filed Feb. 7, 1969, Ser. No. 797,668
Int. Cl. A23j *1/14*; A23l *1/20*
U.S. Cl. 99—17 12 Claims

A process for preserving aqueous proteinaceous materials, e.g. soy flour, and the process of spinning edible fibers comprising the steps of:

I. heating the proteinaceous material to a temperature of above 140° F. in aqueous slurry, and then
II. treating a mixture of the heat-treated protein, a water soluble alginate and water with peroxide,
III. adding carrageenin before or after heat treatment, and then
IV. spinning the mixture into a coagulating bath, e.g. aqueous $CaCl_2$.

3,645,747
METHOD OF PRODUCING A SIMULATED MEAT
Hugh C. Palmer, Pacific Palisades, Calif., assignor to Kal Kan Foods, Inc., Vernon, Calif.
Filed July 25, 1969, Ser. No. 845,070
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 7 Claims

An edible product simulating meat in texture and appearance composed in major part of a vegetable protein mass having an internal structure stretched into the form of fibers, filaments and tissuelike membranes coagulated from a viscoelastic state to stable attenuated form. In making the product, a slurry with water of a vegetable protein material having viscoelastic properties similar to those of vital wheat gluten is heated to reduce the permeability to gases of the exposed surface of the material by coagulation thereof, after which the material is treated to generate gases internally of the mixture and to cause the gases to expand while their escape is inhibited by the lower permeability of the said surface so that the mixture enlarges in volume and becomes internally attenuated, after which the attenuated mixture is coagulated to a denatured product.

3,645,748
POTATO STRIP AND METHOD OF PRODUCING FRENCH FRIED POTATOES
Laurence James Ilines, 7 Feldbar Court, Willowdale, Ontario, Canada
Filed Mar. 22, 1967, Ser. No. 625,231
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 5 Claims

An uncooked strip of extruded potato mix having an elongated body and a polygonal cross section defined by concave sides of predetermined radius of curvature substantially equal to the mean of the longest and shortest dimension of the cross section of the strip meeting at rounded corners, said rounded corners having a predetermined radius of curvature which is substantially equal to about one-eleventh of the radius of said concave sides, the concave sides being deformable by cooking to acquire a flat condition while said rounded corners remain unchanged.

3,645,749
ELECTROLESS PLATING BATHS WITH IMPROVED DEPOSITION RATES
Milan Paunovic, Port Washington, N.Y., assignor to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.
Filed June 4, 1970, Ser. No. 43,553
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 12 Claims

There are provided compositions comprising imino compounds, specifically, ethoxylated cyclohexylamines and benzyliminodiacetic acid, complexed with copper ions. These compositions in aqueous alkaline media, in the presence of a reducing agent, provide baths for the autocatalytic electroless deposition of the copper metal. The new baths have improved stability and plating rates.

3,645,750
ALUMINOUS CEMENT-TRICALCIUM SILICATE BINDERS
Gerard Henri Sadran, Paris, France, assignors to Ciments Lafarge S.A., Paris, France
Filed Dec. 16, 1968, Ser. No. 784,239
Claims priority, application France, Dec. 22, 1967, 133633
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 7 Claims

Aluminous cements are disclosed containing tricalcium silicate. The tricalcium silicate acts as a delayed-action water-binding agent, which removes water from cement mortars in excess of that required to hydrate aluminous cement to the stable crystalline form of tricalcium aluminate hexahydrate.

3,645,751
PREPARING CHEESE CURD
Alden H. Wakeman, Lake Mills, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of application Ser. No. 754,823, Aug. 23, 1968, now abandoned. This application Jan. 20, 1971, Ser. No. 108,012
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 6 Claims

A continuous process for preparing cheese curd from milk which includes the sequential steps of (a) deaerating the milk, (b) cooling the deaerated milk, (c) adding acid to the cooled milk in a manner which provides substantially instantaneous acidification of the milk but which avoids localized overacidification, (d) immediately heating the acidified milk by passing it through heat exchange means to coagulate the curd-forming elements in the milk and form curd, (e) periodically momentarily reversing the flow of the coagulating milk during passage through the heat exchange means, (f) cutting the formed curd as it emerges from the heat exchange means, (g) cooking the cut curd, (h) cooling the cooked curd, (i) draining the whey from the curd and (j) washing the curd.

3,645,752
METHOD OF MAKING STABILIZED IMPREGNATED PEANUTS
James R. Baxley, Edenton, N.C., assignor to Peanut Research & Testing Laboratories, Inc.
Filed Oct. 3, 1969, Ser. No. 863,712
Int. Cl. A23l *1/36*
U.S. Cl. 99—126 3 Claims

Highly stable, flavor impregnated peanuts are produced by first pressing out a substantial portion of the natural oil. The pressed, partially defatted peanuts are then oil roasted to reconstitute the nuts back to their original shape and size. After oil roasting, the nuts are drained and while still hot transferred to a second oil bath of a substantially lower temperature than the first. This quenches the roasting treatment and releases vacuum developed within the nut oil cells by the reconstitution process. In the second oil bath, the oil replaces the natural oil in the nut, the replacement oil preferably being of a high-stability type. Flavor impregnants may be included in the second oil bath, as desired.

3,645,753
MEAT-FLAVORING COMPOSITION
Rupert Josef Gasser, Kempttal, Switzerland, assignor to Societe d'Assistance Technique Pour Produits Nesite S.A., Lausanne, Switzerland
Filed July 10, 1970, Ser. No. 53,989
Claims priority, application Great Britain, June 5, 1970, 27,262/70
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 6 Claims

A meat-flavored composition is prepared by heating together yeast autolysate, vegetable protein hydrolysate, hydrolysed meat extract and lactic acid, under specific conditions. Other features of the invention are disclosed in the specification.

3,645,754
MEAT FLAVOR AND ITS PREPARATION
Charles Wiener, Middletown, N.Y., assignor to Polak's Frutal Works, Inc., Middletown, N.Y.
Filed Aug. 1, 1968, Ser. No. 749,276
Claims priority, application Great Britain, Aug. 11, 1967, 37,099/67
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 3 Claims

A process for the preparation of a meat flavor and to food products containing this flavoring substance. The present invention provides a process for the preparation of a meatlike flavoring substance which comprises reacting certain sulfide or hydrosulfide sulfur compounds with certain carbohydrates preferably in the presence of a solvent.

3,645,755
NOVEL SPIRO COMPOUND AND BLACK TEA COMPOSITIONS CONTAINING THE SAME
Yajiro Sakato; Kazuo Ina, both of Iwata-shi; Yukitsune Yamamoto, Kyoto-shi, and Harumi Morishita, Hamamatsu-shi, all of Japan, assignors to Kaken Kogyo Kabushiki Kaisha, Senhoku-gun, Osaka-fu, Japan
Filed Jan. 21, 1969, Ser. No. 792,810
Claims priority, application Japan, Jan. 26, 1968, 43/4856
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 18 Claims

1-oxa-8-oxo-2,6,10,10-tetramethyl-spiro-[4,5]-6-decene; compositions for improving aroma and flavor of black tea which contain the above compound; and black tea containing the above compound.

3,645,756
FLAVORING MATERIAL PREPARED FROM ONIONS

Heinz Huth, Wiesenweg 33a, 345 Holzminden, Germany

Filed Aug. 15, 1969, Ser. No. 850,646
Claims priority, application Austria, Aug. 16, 1968, A 8011/68
Int. Cl. A23l *1/22, 1/02*
U.S. Cl. 99—140 R 4 Claims

Flavoring material is prepared from onions by expressing their juice, flash heating, cooling and concentration. Condensate from the vapor evolved during concentration can be extracted and used as well.

3,645,757
FOOD PACKAGING METHOD EMPLOYING RELEASE AGENT COATED PACKAGING MATERIAL

Arthur L. Gordon, Des Plaines, and Leonard A. Warwick, Niles, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

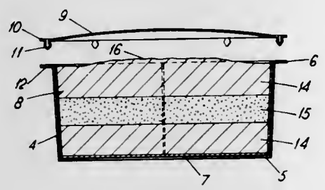
Continuation-in-part of application Ser. No. 654,041, July 10, 1967, now Patent No. 3,519,470. This application May 28, 1970, Ser. No. 41,635
Int. Cl. B65b *25/06*
U.S. Cl. 99—171 CA 5 Claims

An improved package for moisture-containing food products and a method for providing improved release properties for such food products is provided. The release properties are provided by a thin film or layer of a suitable readily hydrated hydrocolloid. Suitable hydrocolloids may be selected from pregelatinized starches, modified cellulose materials or mixtures thereof.

3,645,758
PACKAGE FOR A LAYER CAKE

John MacManus, 143-16 Twenty-second Road, Whitestone, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,293
Claims priority, application Great Britain, Mar. 7, 1969, 12,264/69
Int. Cl. B65d *43/10, 85/36*
U.S. Cl. 99—172 8 Claims

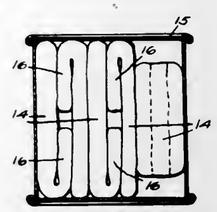


A cylindrical transparent outer container has an open top. A removable baseboard is inserted through the open top of the container and rests on inturned flanges at the bottom of the sidewall of the container. A discontinuous transparent liner fits with its free ends abutting one another nesting inside and against the inner wall of the container and resting on the baseboard. A layer cake fits snugly within the liner so that the one or more layers of filling are sealed between the layers of baked cake by the engagement of the edges of the layers of baked cake against the liner.

3,645,759
METHOD OF PACKING FLEXIBLE PACKAGES IN A CYLINDRICAL CONTAINER

Fred Heiligman, Framingham, Mass., assignor to The United States of America as represented by the Secretary of the Army

Filed June 25, 1970, Ser. No. 49,703
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 4 Claims

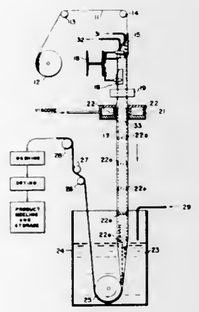


A method of packing a plurality of substantially flat elongated flexible packages in a rigid cylindrical container where the length of the packages exceeds the interior height of the container comprising folding the flexible packages transversely to a length which is less than the interior height of the container and providing a folded end portion which is less than half the interior height of the container, stacking the folded packages in pairs with their folded end portions in the same plane, placing the stacked pairs into the container and filling the remaining space between the container wall and the stacked pairs with a single flexible package folded at least twice transversely and placed sidewise in the container. The method is particularly useful in packing five 1-pound packages of sliced bacon in a standard size (No. 10) tin plate container.

3,645,760
DRY SAUSAGE CASING

Merril N. O'Brien, 1717 N. Logan, and Albin F. Turbak, 215 Denvale Drive, both of Danville, Ill.

Filed Jan. 5, 1970, Ser. No. 7,297
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 9 Claims



A synthetic tubular sausage casing for processing dry sausages is prepared by impregnating or coating a reinforcing paper, preferably a saturating tissue, with a solution or dispersion of a water-soluble or dispersible protein, having a molecular weight above about 10,000 and an isoelectric point in the range from pH 2 to pH 6. The solution or dispersion is of a concentration such that the protein is impregnated in or coated on the paper at a concentration of about 0.1 percent –6.0 percent based on dry weight of the paper. The paper coated or impregnated with protein is cross linked by reaction with a nontoxic cross-linking agent (nontoxic in the resulting product). The coated or impregnated paper is then formed into a tubular casing and impregnated with viscose or other suitable material which is hardened or regenerated in and upon the protein saturated or coated paper reinforcement.

ERRATUM

For Class 106—1 see:
Patent No. 3,645,749

3,645,761
GLASS SOLDER

Susumu Kawamura, and Fumio Yamaguchi, both of Otsu-shi, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan

Filed Nov. 24, 1969, Ser. No. 879,558
Claims priority, application Japan, Dec. 23, 1968, 43/93768
Int. Cl. C03c *3/10, 3/04, 3/08*
U.S. Cl. 106—53 1 Claim

A glass solder composition comprising a mixture of a major portion of lead oxide, bismuth trioxide, boron trioxide, zinc oxide, silicon dioxide, and a minor amount of additional oxide chosen from one or more of the group of sodium monoxide, potassium monoxide, lithium oxide and barium oxide.

3,645,762
HYDRAULIC MORTAR OR CEMENT COMPOSITION

Franz Mikoteit, Neubeckum, and Hans-Joachim Tennstedt, Enniger, both of Germany, assignors to Elsa Zement- und Kalwerke Aktiengesellschaft, Neubeckum, Westphalia, Germany

Filed Apr. 17, 1970, Ser. No. 29,682
Claims priority, application Germany, Apr. 25, 1969, P 19 21 084.5
Int. Cl. C04b *7/02*
U.S. Cl. 106—89 6 Claims

A hydraulic mortar or cement composition which is suitable for application by spray coating and useful in sealing the walls of galleries in coal mines or other excavations, comprises limestone marl containing a small concentration of clay, slightly burnt and completely deacidified cement clinker, and a small amount of an anhydrous calcium salt such as calcium chloride to accelerate initial hardening.

3,645,763
COMPOSITION FOR ELIMINATING EFFLORESCENCE IN PORTLAND CEMENT PRODUCTS

Anthony R. Ronzio, and Bernard T. Pull, both of Littleton, Colo., assignors to Bio-Organic Chemicals, Inc., Denver, Colo.

Filed Apr. 15, 1970, Ser. No. 28,951
Int. Cl. C046b *13/24*
U.S. Cl. 106—90 7 Claims

A composition comprising polyvinyl alcohol characterized by high-molecular weight and viscosity and very low solubility of insoluble in water, mixed with barium hydroxide or barium oxide, and added to Portland cement in the proportion ranging from 3/4 to 5 percent of the alcohol to 100 percent of the cement, effective to prevent bleeding of salts out of the cement and thereby markedly lessen or eliminate efflorescence in Portland cement products.

3,645,764
METHOD OF PRODUCING HIGH-STRENGTH CONSTRUCTION COMPOSITIONS OF A MIXTURE OF SOIL, PORTLAND CEMENT AND ASPHALT

Michael Stram, Chicago, Ill., assignor to Sinclair Oil Corporation, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,961
Int. Cl. C04b *7/02*
U.S. Cl. 106—96 8 Claims

There are disclosed high-strength construction compositions comprising a mixture of soil, Portland cement and asphalt, and a method of producing such compositions. The wet compressive strength of compositions containing a mixture of soil and asphaltic binder is significantly increased by the addition of Portland cement.

ERRATUM

For Class 106—104 see:
Patent No. 3,645,750

3,645,765
CARBON BLACK PELLETING AGENT

Arthur E. Frazier, and Robert E. Dollinger, both of Borger, Tex., assignors to Phillips Petroleum Company

Filed Nov. 20, 1968, Ser. No. 777,490
Int. Cl. C09c *1/58*
U.S. Cl. 106—307 5 Claims

A carbon black pelleting agent which acts as a pelleting agent and which acts to disperse the carbon black in rubber which comprises an aqueous solution of a polyethyoxylated fatty acid.

3,645,766
METHOD FOR DRYING AND STORING DRY FLOWERS AND LEAVES

Pietro Mazzucato, and Gino Mazzucato, both of Via S. Fermo 5, Padova, Italy

Filed Apr. 16, 1969, Ser. No. 816,821
Claims priority, application Italy, Apr. 17, 1968, 31819 A/68; Nov. 22, 1968, 31878 A/68
Int. Cl. A01n *3/02*
U.S. Cl. 117—3 1 Claim

A drying and storing method, particularly fitted for flowers and leaves, wherein the vegetables are delicately immersed in a suitably heated powder material having a high absorbing power, so that dehydration process gradually occurs in the absence of light and active atmosphere gases, whereupon the dried flower is preheated to paraffin melting temperature and immersed for a few minutes in a melted paraffin or wax bath, then removed and cooled down to room temperature.

3,645,767
PROCESS FOR COATING CERAMIC MOLDS

Percy Ronald Taylor, Wrexham, Wales, England, assignor to Monsanto Chemicals Limited, London, England

Filed Feb. 12, 1970, Ser. No. 10,980
Claims priority, application Great Britain, Feb. 19, 1969, 9,061/69
Int. Cl. B44d *1/20*; B29c *1/04*
U.S. Cl. 117—5.1 1 Claim

The walls of the pattern cavity of a fired ceramic mold for use in metal casting are coated with a dispersion in a liquid medium of a particulate solid selected from graphite, molybdenum disulphide and aluminum and the liquid medium is evaporated to leave a deposit of the particulate solid of such thickness that the dimensions of the pattern cavity are not significantly altered. The coating reduces or eliminates mold-metal interaction thereby facilitating separating of the mould from the casting.

3,645,768
FOAMABLE RESINOUS MATERIALS

Charles E. Coco, Shillington, and Suzanne M. Garszczynski, Reading, both of Pa., assignors to Wyomissing Corporation

Filed Mar. 7, 1968, Ser. No. 711,438
Int. Cl. B44d *5/00;* **B32b** *5/18*
U.S. Cl. 117—8 **3 Claims**

A foamable resin system is provided that is especially adapted to be applied to a substrate in the form of a smooth, flexible, nontacky coating. The system has a unique combination of properties including a long shelf life, the ability to be foamed at relatively low temperatures (for example, below the softening or mobility point of the base resin), and the ability to rigidify at temperatures approximating foaming temperatures. The invention makes use of plasticizers for the resin that are inactive or inactivated at ambient temperatures, that are effective to soften the resin at foaming temperatures, and that may be dissipated or otherwise pacified at foaming temperatures.

3,645,769
DISPOSABLE TISSUE

Charles Willey, 205 West 23rd; Walter R. Willey, 1103 East 10th, both of Pittsburg, Kans., and Charles R. Willey, 1415 Sargent, Joplin, Mo.

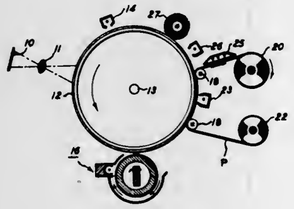
Continuation of application Ser. No. 578,468, Sept. 12, 1966, now abandoned. This application June 22, 1970, Ser. No. 48,530
Int. Cl. B44d *1/40*
U.S. Cl. 117—16 **4 Claims**

A disposable tissue such as toilet tissue which is impregnated with 0.5–2.5 percent by weight of the paper article by a viable yeast.

3,645,770
IMPROVED METHOD FOR DEVELOPING XEROGRAPHIC IMAGES

Thomas J. Flint, Herkimer, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original application Apr. 22, 1968, Ser. No. 723,041, now Patent No. 3,552,355. Divided and this application Apr. 16, 1970, Ser. No. 33,117
Int. Cl. G03g *13/22*
U.S. Cl. 117—17.5 **1 Claim**

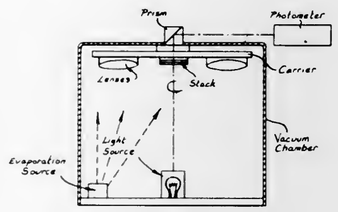


An improved method for developing latent electrostatic images by forming a surface coating of developer material including a magnetic component and an electroscopic component, transporting the coating of developer material along a path past latent electrostatic images to be developed, and uniformly charging the outer surface of the coating of a polarity opposite that of the latent electrostatic images. At development an outer layer portion of the coating is deflected into close proximity with the latent images to be developed and oscillating toward and away from the images in the development zone to effect a continuous undulating flow pattern of the outer layer of the coating.

3,645,771
MULTILAYER BLOOMING PROCESS INCLUDING PRECOATING OF THE SUBSTRATE USED FOR MONITORING

John Ward, Elizabeth Park, South Australia, Australia, assignor to The Commonwealth of Australia, c/o the Secretary, Department of Supply, Canberra, Australia

Filed May 7, 1969, Ser. No. 822,632
Claims priority, application Australia, May 10, 1968, 37634
Int. Cl. B29d *11/00;* **C03c** *13/00*
U.S. Cl. 117—33.3 **8 Claims**



A method of carrying out multilayer blooming which includes means to more accurately measure the thickness of the layers during blooming which consists in the use of a stack having at least one layer thereon to enhance the light transmission or reflection difference as the blooming layers are deposited on the stack during blooming of the articles, the stack preferably comprising a substrate having precoated thereon alternately high and low refractive index materials having an optical thickness of a quarter wavelength or multiples thereof at a selected wavelength.

3,645,772
PROCESS FOR IMPROVING BONDING OF A PHOTORESIST TO COPPER

John Lester William Jones, New Shrewsbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 30, 1970, Ser. No. 51,393
Int. Cl. B44c *1/22;* **B44d** *1/34;* **G03c** *1/94*
U.S. Cl. 117—34 **8 Claims**

A process for improving the bonding of photoresist layers to copper surfaces by exposing the copper surface to the action of a nitrogen-containing organic compound containing at least one other hetero-atom and at least one five- or six-membered ring. A photoresist layer is then applied to the treated copper surface. Ethanol and other solutions of the nitrogen-containing compounds are effective.

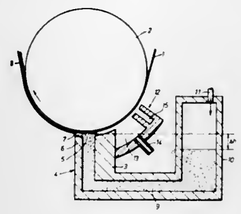
3,645,773
PROCESS FOR COATING SUBSTRATES IN STRIP-FORM WITH PHOTOGRAPHIC EMULSION

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Fritz Maus, Cologne-Flittard; Wolfgang Schweicher; Willi Wasser, both of Leverkusen; Kurt Browatski, Lagenfeld, and Josef Friedsam, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1969, Ser. No. 797,808
Int. Cl. B44d *1/12;* **B05c** *3/12;* **G03c** *1/74*
U.S. Cl. 117—34 **2 Claims**

A process for coating a viscous solution by a wetting process on a movable substrate. The coating solution is

formed by a narrow gap between coating apparatus and the movable substrate so that the narrow gap is part of a coating

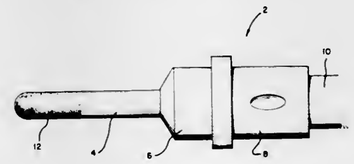


chamber of the coating apparatus. The coating chamber is connected to a vacuum means at the side of the coating apparatus from which the substrate is introduced.

3,645,774
GOLD COATING BY SALT DECOMPOSITION

John Thomas Schreck, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 15, 1969, Ser. No. 858,061
Int. Cl. B44d *1/44;* **C23c** *17/02*
U.S. Cl. 117—46 CA **3 Claims**



Nickel substrate is provided with a thin gold coating or plating by depositing a mixture of potassium gold cyanide and petrolatum on the surface and heating the surface to a temperature sufficient to cause decomposition of the potassium gold cyanide and removal of the petrolatum.

3,645,775
PROCESS FOR PRODUCTION OF AN ARTIFICIAL LEATHER AND PRODUCT

Helmut Schulze, Bodelschwingstr. 34, and Gerhard Seibert, Bergweg 13, both of Erlenbach, Germany

Filed Dec. 12, 1969, Ser. No. 884,731
Claims priority, application Germany, Dec. 17, 1968, P 18 15 043.1
Int. Cl. D06n *3/00;* **B32b** *27/40*
U.S. Cl. 117—63 **7 Claims**

Process of producing an artificial leather by coagulating or hardening a polyurethane gel applied to a substrate into a microporous layer which is permeable to water vapor, wherein a silicone oil is added to the initial gelable solution of the polyurethane in an organic solvent.

3,645,776
PROCESS FOR PREPARATION OF LEATHERLIKE SHEET MATERIAL WITH EXCELLENT LASTABILITY

Shogo Nakajo, Nishinomiya, and Yoshitami Saito, Kurashiki, both of Japan, assignors to Luraray Co., Ltd., Kurashiki, Japan

Filed Nov. 12, 1968, Ser. No. 775,141
Claims priority, application Japan, Nov. 21, 1967, 42/74906, Jan. 23, 1968, 43/4133
Int. Cl. B44d *1/44*
U.S. Cl. 117—64 **15 Claims**

Leatherlike sheet material is prepared by impregnating a nonwoven fibrous mat or napped cloth with a solution of polymeric material, coagulating the solution by wet method to form a homogeneous fine sponge structure without sticking to the fibers and then contacting the impregnated mat or cloth with a heated surface at an elevated temperature above softening temperature of the polymeric material to soften the polymeric material and to form a thin polymer film on the surface of the impregnated mat or cloth.

3,645,777
PROCESS OF COATING GLASS WITH DURABLE COATINGS AND RESULTING PRODUCTS

Theodore B. Sierad, Harrison, N.Y., assignor to The Brudenell Corporation, Port Washington, N.Y.

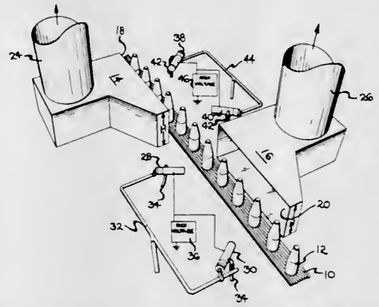
Filed Sept. 4, 1970, Ser. No. 69,962
Int. Cl. C03c *17/32;* **C23c** *3/02*
U.S. Cl. 117—71 R **8 Claims**

A glass coating composition comprising 30 to 57 parts by weight of a butylated urea formaldehyde, 10 to 35 parts by weight of a partially hydrolyzed copolymer of vinyl acetate and vinyl chloride, and 27 to 45 parts by weight of a hydrogenated furfuraldehyde ketone useful in the application of decorative coatings to glass articles and the like, including various types of electrical lamps wherein a colorful effect is obtained.

3,645,778
METAL OXIDE COATINGS ON GLASS

Edward P. Nesteruk, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 6, 1969, Ser. No. 789,199
Int. Cl. B05b *5/02*
U.S. Cl. 117—93.4 **14 Claims**



While being nonrotatably transported along a flight conveyor, glass containers are electrostatically treated with colored metal oxide film-forming organometallic compounds. The organometallic compounds are electrostatically sprayed in a nonflammable solvent system containing a halogenated solvent while a horizontal flow of air is provided across the flight conveyor in impinging relation with respect to the container being treated.

3,645,779
METHOD OF COATING A TRANSPARENT SYNTHETIC POLYMER SUBSTRATE WITH BORON OXIDE-SILICON DIOXIDE GLASS

Gerhard Kienel, Hanau, Main, Germany, assignor to Leybold-Heraeurs-Verwaltung GmbH, Koln-Bayental, Germany

Filed July 11, 1969, Ser. No. 841,124
Claims priority, application Germany, July 11, 1968, P 17 71 793.0
Int. Cl. B32b *27/06;* **B44c** *1/22*
U.S. Cl. 117—106 R **12 Claims**

A synthetic polymer substrate is provided with a hard, abrasion-resistant surface free of fine hairline cracks by

vapor depositing under vacuum for degassing, onto the surface a B_2O_3-SiO_2 glass containing less than 5 percent by weight of Na_2O. The deposited glass coating has a temperature coefficient of expansion which more nearly corresponds to that of the substrate than does SiO_2.

3,645,780

IMPROVING SOIL RESISTANCE THROUGH THE USE OF RARE EARTH METAL CONTAINING COMPOUNDS

Julian J. Hirshfeld, and Bertie J. Reuben, both of Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 8, 1966, Ser. No. 570,777
Int. Cl. D06m *11/04*
U.S. Cl. 117—138.8 F **14 Claims**

A process of improving the soil resistance of polyamide, acrylic, and polyester fiber through impregnating the fiber with an aqueous solution containing a rare earth metal halide, drying the impregnated fiber, and impregnating the dried fiber with a reagent to form a substantially aqueous insoluble rare earth metal compound.

3,645,781

TREATMENT OF KERATINOUS FIBERS AND FABRICS

Thomas D. Brown, Keighley; Michael Rushforth, Brighouse; Bryan Dobinson, Duxford; Walter Wilson, Cambridge, and Kenneth Winterbottom, Whittlesford, all of England, assignors to I.W.S. Nominee Company Limited, London, England and Ciba-Geigy AG, Basel, Switzerland

Filed July 14, 1969, Ser. No. 841,557
Claims priority, application Great Britain, July 15, 1968, 33,687/68
Int. Cl. D06m *15/16*
U.S. Cl. 117—141 **27 Claims**

The present invention relates to a process for rendering keratinous material, particularly wool, resistant to shrinkage and for imparting durable press characteristics to the material. The products used therefor are polythiol compounds containing in the molecule (a) a radical of a polyhydric alcohol, (b) poly(oxyalkylene) chains, and (c) radicals of mercapto-ethers or mercapto-esters.

3,645,782

COVERED WELDING ELECTRODE

Edwin W. Johnson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1969, Ser. No. 805,233
Int. Cl. B23k *35/00*; **C23d** *3/00*
U.S. Cl. 117—205 **7 Claims**



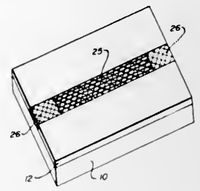
A covered welding electrode for making fully austenitic steel welds characterized by high strength, good ductility, and acceptable impact resistance at all temperatures from near to absolute zero up to at least 900° F. The electrode comprises a fully austenitic steel core wire enclosed by a coating comprising a particular mixture of nonmetallic and metallic ingredients. The nonmetallic ingredients include an alkaline-earth carbonate, at least one oxide of the group consisting of Al_2O_3 and Cr_2O_3, at least one fluoride of the group consisting of CaF_2 and cryolite, a silicate binder, at least one substance of the group consisting of TiO_2 and the titanates of sodium, potassium, and calcium. In addition, at least one of the group consisting of SiO_2, feldspar, calcium silicate may be added as an optional ingredient. The metallic ingredients include at least one metal powder selected from the group consisting of Fe, Ni, Cr, Mn, and master base alloys of Mo, V, Al, and B.

3,645,783

T.IIN FILM PLANAR RESISTOR

Robert E. Rupert, San Francisco, Calif., and Norman C. Anderson, Wellesley Hills, Mass., assignors to Infrared Industries, Inc., Santa Barbara, Calif.

Filed June 3, 1970, Ser. No. 42,921
Int. Cl. H01c *7/00*
U.S. Cl. 117—212 **2 Claims**



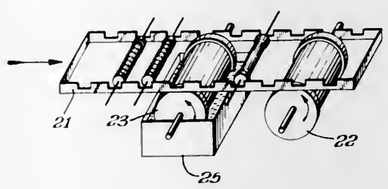
A planar film circuit in which a metallic oxide planar film is on a dielectric substrate, said planar film having areas of insulation comprising said metallic oxide, and areas of conduction comprising reduced metal. The planar film surface is not altered by the presence of said insulating and conducting areas. The method for forming said metallic oxide planar film circuits provides depositing said metallic oxide by reactive sputtering of a metal under vacuum in the presence of oxygen, and selectively reducing areas of said metallic oxide with hydrogren and an energy source. The method is used to obtain planar film electrical circuits having resistor and capacitor elements.

3,645,784

VITREOUS ENAMEL RESISTOR

Walter Helgeland, Nashua; James B. Lazott, Bedford; Philip J. Duke, New Boston; William J. Taggart, Nashua, all of N.H.; George W. Heacox, Pepperell, Mass., and Abe Brandsma, Nashua, N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed Dec. 18, 1969, Ser. No. 886,240
Int. Cl. B44d *1/14*, *1/02*
U.S. Cl. 117—215 **2 Claims**



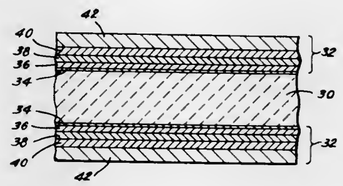
Fused vitreous enamel wire-wound resistor formed by roll coating the surface of the wire and core with a fluid vehicle containing a fused ground vitreous enamel frit dispersed therein, and then heat treating so as to drive off the vehicle and remelt the fused enamel frit.

3,645,785

OHMIC CONTACT SYSTEM

Hanspeter P. K. Hentzschel, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1969, Ser. No. 875,883
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **16 Claims**



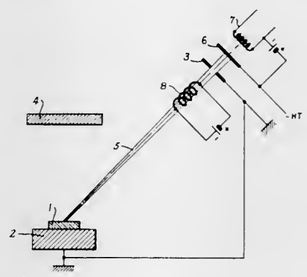
An ohmic contact system for a ceramic body having a predetermined relationship between various physical characteristics, such as temperature and resistance, for example, a wafer of semiconducting barium titanate having a positive temperature coefficient of resistance. A film of germanium is deposited on at least one surface of the wafer to protect the surface properties thereof. A layer of a preselected metal which adheres well to germanium and is readily bondable, such as gold, is deposited on the germanium film. A layer of a preselected barrier layer, such as nickel, which functions to prevent the penetration of subsequently applied process materials, such as solder, which might adversely affect the underlying gold layer, is deposited on the gold layer. An exterior layer of a readily solderable material which adheres well to the underlying nickel layer, such as gold, is deposited on the nickel layer. An external electrical conductor may then be readily soldered to the external gold layer to provide a good ohmic and mechanical contact to the wafer. An additional base layer of a preselected material, such as palladium, which adheres well to nickel and to gold may be deposited intermediate the nickel layer and the exterior gold layer to provide an improved base for the external gold layer.

3,645,786

METHOD FOR DEPOSITING ON A SUPPORT A THIN LAYER OF A SOLID CERAMIC ELECTROLYTE FOR A FUEL CELL

Helmut Tannenberger, 4, Avenue Jules Crosnier, and Pierre Lanaspeze, 20 rue des Caroubiers, both of Geneva, Switzerland

Filed July 18, 1968, Ser. No. 745,726
Claims priority, application Switzerland, July 19, 1967, 10255/67
Int. Cl. C23c *13/04*
U.S. Cl. 117—221 **15 Claims**



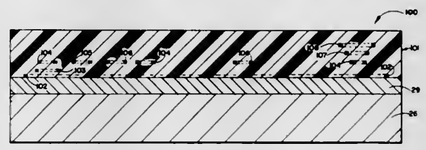
A process has been provided for preparing thin solid electrolyte layer suitable for use in fuel cells. This process comprises the following steps: making electrically conductive at least one substance intended to form the electrolyte layer; maintaining said substance placed on at least one conductor in an enclosure under a vacuum, said support being connected to at least one anode of at least one electron beam accelerating anode and being at the same potential thereof; bombarding said substance by at least one focused electron beam; increasing the energy of said beam to bring gradually the substance being bombarded to a temperature close to the melting point of the substance; and maintaining this temperature, for a sufficient time to obtain by progressive evaporation, a layer of electrolyte of a desired thickness deposited on a support placed within the enclosure.

3,645,787

METHOD OF FORMING MULTIPLE LAYER STRUCTURES INCLUDING MAGNETIC DOMAINS

Jack E. Mee; David M. Heinz; Thomas N. Hamilton; Paul J. Besser, and George R. Pulliam, all of Orange County, Calif., assignors to North American Rockwell Corporation

Filed Jan. 6, 1970, Ser. No. 989
Int. Cl. H01f *10/06*
U.S. Cl. 117—239 **6 Claims**



A composite consisting of multiple layer structures, the basic structure of which is a chemically vapor deposited film on a substrate wafer, disclosed herein. The film is of such material appropriate for creating therein single wall magnetic domains which are capable of being moved about in predetermined directions within the thickness of the film and in the plane of the film. Devices are adapted to the film for sensing the motion of these domains thereby enabling application of these structures toward circuits which may be particularly utilized in memory or logic applications. A complete family of film on substrate materials are fabricated through a unique process, one of the steps of the process relates to establishment of the exact location of the substrate within the reactor at which deposition of the film upon the substrate is to be made in order to obtain the desired film characteristics. Included, are provisions for making multiple film layers to result in a matrix of films and hence a multitude of such circuits.

3,645,788

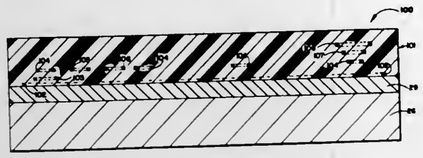
METHOD OF FORMING MULTIPLE-LAYER STRUCTURES INCLUDING MAGNETIC DOMAINS

Jack E. Mee; David M. Heinz; Thomas N. Hamilton; Paul J. Besser, and George R. Pulliam, all of Orange County, Calif., assignors to North American Rockwell Corporation

Filed Mar. 4, 1970, Ser. No. 16,446
Int. Cl. H01f *10/06*
U.S. Cl. 117—239 **7 Claims**

A composite consisting of multiple-layer structures, the basic structure of which is a chemically vapor-deposited film on a substrate wafer, disclosed herein. The film is of such material appropriate for creating therein single-wall magnetic domains which are capable of being moved about in predetermined directions within the thickness of the film and in the plane of the film. Devices are adapted to the film for sensing the motion of these domains thereby enabling application of these structures toward circuits which may be particularly utilized in memory or logic applications. A complete family of film on substrate materials are fabricated through a

unique process, one of the steps of the process relates to establishment of the exact location of the substrate within the reactor at which deposition of the film upon the substrate is to be made in order to obtain the desired film characteristics.



Included are provisions for making multiple film layers to result in a matrix of films and hence a multitude of such circuits. Films used are comprised of at least three and four elements.

3,645,789
CLEANSING PROCESS

Dietrich Mandelkow, Knapsack near Cologne, and Hugo Werner, Hermulheim near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Sept. 15, 1969, Ser. No. 858,155
Claims priority, application Germany, Sept. 18, 1969, P 17 96 190.9
Int. Cl. B08b *3/08*
U.S. Cl. 134—2 7 Claims

Process for cleansing soiled apparatus parts, especially the pipe systems and vapor sides of surface condensers. The soilings include yellow phosphorus, red phosphorus, phosphorus sludge or mixtures thereof, which may be further contaminated with arsenic, antimony and/or compounds thereof. The cleansing operation is carried out using an aqueous solution of sodium peroxide or of a mixture of sodium carbonate and hydrogen peroxide.

3,645,790
COMPOSITION AND PROCESS FOR CLEANING METAL

Peter Burden, Stoke Poges, and Colin Alfred Whitton, Ashford, both of England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,331
Claims priority, application Great Britain, Feb. 17, 1969, 8,489/69
Int. Cl. C23g *1/06, 1/12*
U.S. Cl. 134—3 6 Claims

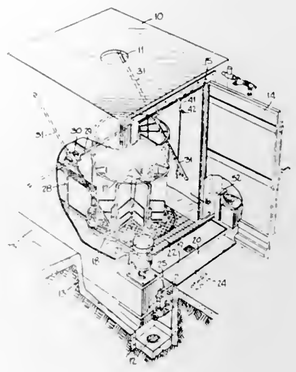
A composition for cleaning aluminum and aluminum alloy surfaces which comprises from about 1 to 30 percent by weight phosphoric acid and from about 0.15 to 15 percent by weight nitric acid, the weight ratio of nitric acid to phosphoric acid being about 0.02–0.6:1. This solution further contains from about 0.05 to 20 percent by weight of a nonionic surface active agent, which is stable in the nitric acid containing solution. This cleaning composition is particularly adapted for use in the spray cleaning of aluminum alloy surfaces which contain 2 percent or more of alloy elements, such as magnesium.

3,645,791
METHOD FOR WASHING INDUSTRIAL ARTICLES

Howard M. Sadwith, Colts Neck, N.J., assignor to Industrial Washing Machine Corporation, Matawan, N.J.

Original application Oct. 30, 1967, Ser. No. 679,097, now Patent No. 3,517,675, dated June 16, 1970. Divided and this application Dec. 4, 1969, Ser. No. 879,969
Int. Cl. B67c *1/00*; B08b *3/02*
U.S. Cl. 134—25 A 4 Claims

The method of washing industrial articles, involving the steps of placing the articles to be washed on a platform rotating at a predetermined speed in an enclosure; directing a series of streams of water on said articles, said streams of water issuing from nozzles on a rotating spray head, whereby through the rotation of the articles and the rotation source of



the streams of water, variation in the incident angles of the streams of water impinging on the articles is greatly increased to produce a scrubbing, scouring, or lifting effect on dirt and foreign matter present on the articles being washed.

3,645,792
ELECTRICAL ENERGY STORAGE DEVICE UTILIZING CURRENT COLLECTOR HAVING ANISOTROPIC ELECTRICL PROPERTIES

Thomas H. Hacha, Willoughby, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 20, 1969, Ser. No. 808,877
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 1 Claim

An electrical energy storage device is provided which has a pair of spaced aluminum-lithium alloy anodes with an active carbon cathode interposed therebetween and the anodes and cathodes are separated by an inert spacer material containing a fused salt electrolyte.

This device is assembled by enclosing the cathode in a fiber mat, which functions as the spacer, positioning the cathode in a screen basket, closing the basket to contain the cathode, inserting the screen basket into a container, positioning an anode within the container on each side of the screen basket, and hermetically sealing said container.

3,645,793
METHOD FOR PRODUCING POROUS METAL BATTERY ELECTRODE STRUCTURE

Edward R. Hein, Doylestown, and William E. Veit, Ivyland, both of Pa., assignors to ESB Incorporated

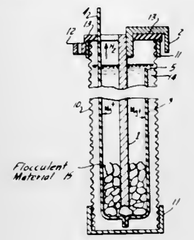
Filed June 1, 1970, Ser. No. 41,883
Int. Cl. H01m *13/08*
U.S. Cl. 136—24 7 Claims

A method for the preparation of highly porous metallic battery electrode structures by the action of pressure alone without the application of heat is described in which the surface of the powders used for the compact is cleaned by the action of mild acids prior and during the pressing operation. In a first modification, a mixture of metallic powder, a powdered nonreactive pore-forming agent and a mild acid are pressed to form a porous structure. In a second modification, a mixture of metallic powder and a powdered slightly soluble mild acid are pressed to form a porous structure. In the two modifications the pore former is removed after the pressing operation.

3,645,794
DISPOSABLE ANODE PACKAGE

Robert P. Hamlen, Scotia, and Erwin G. Siwek, Ballston Spa, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 19, 1970, Ser. No. 12,645
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A 4 Claims



The disclosure describes a disposable anode package for use in mechanically rechargeable oxygen-depolarized metal-air batteries. The anode package includes a cellophane envelope which retains the flocculent discharged anode material. A pull tab at the top of the cellophane envelope allows the spent anode to be removed. Dependent on the thickness of the individual cells, nonreactive mesh or fiber separator materials are used to prevent the discharged flocculent matter from dropping to the bottom of the anode package.

3,645,795
ELECTROCHEMICAL CELLS

William E. Elliott, Elmgrove, and James R. Huff, Milwaukee, both of Wis., assignors to Globe Union Inc., Milwaukee, Wis.

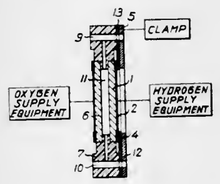
Filed Dec. 7, 1966, Ser. No. 599,759
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A 10 Claims

Electrochemical primary and secondary cells which utilize alkali or alkaline earth metal anodes such as lithium, potassium, sodium, calcium and magnesium, and catalytic air electrodes which utilize components of the atmosphere, namely, oxygen and water as a source of electrochemical power. The electrolyte system in the electrochemical cells comprises a nonaqueous electrolyte solvent, namely, an organic solvent of sufficient polarity to dissolve an electrolyte salt.

3,645,796
ELECTROCHEMICAL CELL CONTAINING ELECTRICAL CONTACT AND METHOD OF USING

Harald Bohm, Oberursel, and Joachim Heffler, Grossauheim, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Dec. 18, 1969, Ser. No. 886,154
Claims priority, application Germany, Dec. 19, 1968, P 18 15 690.6
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 D 9 Claims



To prevent corrosion at the contact to a gas-diffusion electrode of an electrolytic cell, the electrode is provided on its gas-side with a hydrophobic porous coating of, for example, polytetrafluoroethylene and with a layer of graphite, tungsten carbide, or niobium silicide in conductive contact with the electrode.

3,645,797
METAL PHOSPHATIZING COMPOSITION AND PROCESS

Guy Lorin, Epinay sur Seine, France, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

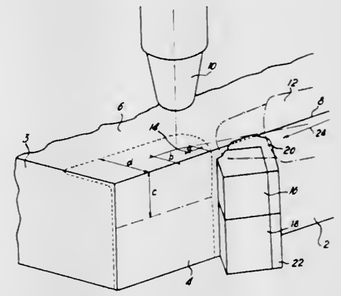
Filed Dec. 17, 1969, Ser. No. 885,994
Claims priority, application France, Dec. 24, 1968, 180365
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 R 2 Claims

In a phosphating process in which the metal surface is treated with a solution of phosphoric acid, a dibasic phosphate and an accelerator which is a nitrated aromatic derivative having at least one free phenol radical, the nitrated organic derivative is dissolved in a nonionic surfactant which is the reaction product of ethylene oxide and a hydrophobic base, before being combined with the phosphoric acid and dibasic phosphate to form the phosphating solution. In this manner, a more homogeneous composition is obtained than has heretofore been possible when the nitrated organic derivative per se, has either been mixed with the phosphated compounds to form a concentrate composition or has been added to the aqueous phosphating solution.

3,645,798
METHOD FOR THERMOCHEMICALLY SCARFING A SEMIFINISHED PRODUCT

Jacques Birr, Paris; Bernard Abel, Epinal, both of France, and Patrice Charbonnier, Pointe Noire, Congo, assignors to L'Air Liquide Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude

Filed July 29, 1969, Ser. No. 845,757
Claims priority, application France, Aug. 2, 1968, 161766
Int. Cl. B23k *7/06*
U.S. Cl. 148—9.5 6 Claims



Method for thermochemically scarfing a semifinished product having a horizontal face and a vertical face.

A scarfing torch scarfs simultaneously contiguous strips of both faces. A row of burners heats the upper portion of the vertical face. In case this face is too broad, a supplementary row of smaller scarfing torches scarfs the lower portion.

3,645,799
METHOD OF ACTIVATING NICKEL-BASED CATALYSTS

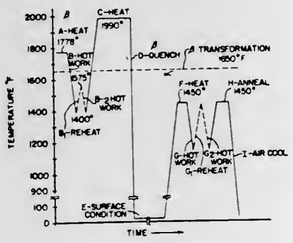
Bernard Goue, Gif-sur-Yvette; Louis Guitard, Paris, and Claude Edon, Fontenay-aux-Roses, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed May 29, 1968, Ser. No. 733,076
Claims priority, application France, May 29, 1967, 108159
Int. Cl. C21d *1/00*; C22f *1/10*
U.S. Cl. 148—2 15 Claims

A method for activating nickel-based catalysts and the products resulting therefrom, which comprises annealing and

hardening a nickel-based alloy prior to mechanical shaping, mechanically shaping said alloy, annealing and hardening said alloy a second time, isothermally annealing said alloy and thereafter cooling said alloy to about room temperature.

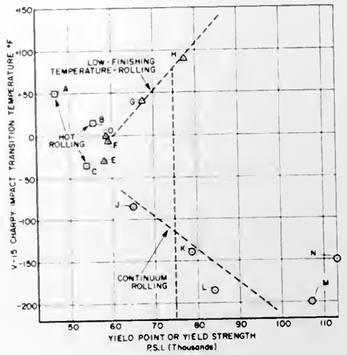
3,645,800
METHOD FOR PRODUCING WROUGHT ZIRCONIUM ALLOYS
James W. Mock, Franklin Township, Export, and William C. Bowen, McKeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 17, 1965, Ser. No. 515,297
Int. Cl. C21d
U.S. Cl. 148—11.5 **7 Claims**



1. The method of producing zirconium-base alloys having improved mechanical properties and corrosion resistance, the steps comprising heating the alloy to a temperature within the all beta phase region for a period of time to place in solution the alloying components and impurities while preventing excessive grain growth, quenching the alloy at a rate of at least 90° F. per minute to a temperature below the all alpha phase temperature, reheating the alloy to a temperature within the all alpha phase region, hot working the alloy while in the alpha phase to effect a minimum reduction in cross-sectional area of at least 40 percent to final size, annealing the alloy at a temperature within the alpha phase, and thereafter cooling the alloy to room temperature.

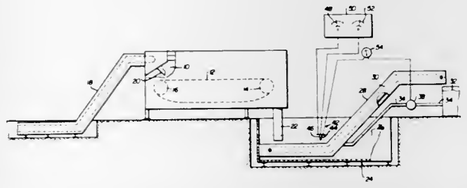
3,645,801
METHOD OF PRODUCING ROLLED STEEL HAVING HIGH STRENGTH AND LOW IMPACT TRANSITION TEMPERATURE
George F. Melloy, and Joseph D. Dennison, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Continuation-in-part of application Ser. No. 741,372, June 27, 1968, now abandoned. This application Dec. 20, 1968, Ser. No. 786,844
Int. Cl. C21d *7/14, 9/46*
U.S. Cl. 148—12 **4 Claims**

Rolled steels characterized in their as-rolled condition by an unexpected combination of high-strength and low-impact transition temperature. The product is produced by rolling a steel workpiece containing both austenite and ferrite, preventing complete recrystallization at any time thereafter, and continuing the rolling of said workpiece as it is cooling in



the temperature range between the Ar_1 temperature and 600° F.

3,645,802
METHOD OF MAINTAINING CONSTANT WATER VOLUME IN A MOLTEN SALT SOLUTION
William R. Keough, Bloomfield Hills, Mich., assignor to Multifastener Company, Detroit, Mich., a part interest
Filed Oct. 27, 1969, Ser. No. 869,568
Int. Cl. C21d *1/46, 1/60*
U.S. Cl. 148—15 **2 Claims**

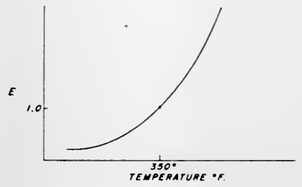


A method of maintaining the percentage of water in a molten salt solution substantially constant. The method includes the step adding water to a body of molten salt in response to a rise in the electrical resistivity of the solution beyond a certain predetermined value, and continuing the addition until the electrical resistivity falls back to the predetermined value.

3,645,803
METHOD FOR IMPROVING THE FRACTURE TOUGHNESS OF METALS AND ALLOYS
Ralph W. Huber, College Park; William S. Pellini, Forest Heights, and Robert J. Goode, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 16, 1970, Ser. No. 29,193
Int. Cl. C21d *1/00;* **B23p** *3/09*
U.S. Cl. 148—127 **3 Claims**

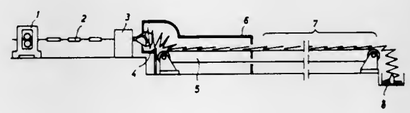
This invention is directed to a method of improving the fracture toughness of titanium alloys by bonding a high-strength alloy of normally low toughness onto a lower strength alloy of high fracture toughness with subsequent heat treatment of the combination if desired or required.

3,645,804
THERMAL TREATING CONTROL
Basil M. Ponchel, Mentor-On-The-Lake, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jan. 10, 1969, Ser. No. 790,366
Int. Cl. C21d *1/00;* **G06g** *7/24*
U.S. Cl. 148—128 **8 Claims**



A method for imparting to a metal or other body the predetermined effects of a specific thermal exposure at a preselected temperature T′, but where the actual temperature of the body varies during the treatment from the desired temperature T′, is provided by maintaining the treatment until the cumulative thermal effects reach a predetermined value. Also contemplated is an arrangement for measuring cumulative time and temperature effects during a thermal treatment wherein means are employed to provide a signal output which represents the thermal effect function based on the temperature which signal is fed to a means accumulating that signal and providing an additional signal upon reaching a predetermined accumulation.

3,645,805
PRODUCTION OF PATENTED STEEL WIRE
Bernd Hoffmann, Dusseldorf; Georg Bollig, Buderich, and Otto Dopper, Krefeld, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Original application May 3, 1967, Ser. No. 635,776. Divided and this application Nov. 10, 1969, Ser. No. 871,313
Claims priority, application Germany, May 7, 1966, 38955
Int. Cl. C21d *9/52*
U.S. Cl. 148—156 **11 Claims**

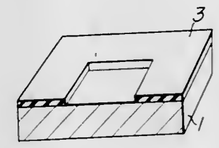


A method for producing patented steel wire by depositing the wire in nonconcentric overlapping turns on a moving conveyor belt and controlling its temperature to convert its texture to ferrite and pearlite.

3,645,806
COATING SOLUTIONS DERIVED FROM PEROXY DISULFURIC ACID OR PEROXY DIPHOSPHORIC ACID
Richard Elliott Shaw, Windsor, and Michael Ware, Penn, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Aug. 8, 1969, Ser. No. 848,699
Claims priority, application Great Britain, Aug. 16, 1968, 39,268/68
Int. Cl. C23f *7/08*
U.S. Cl. 148—6.15 Z **8 Claims**

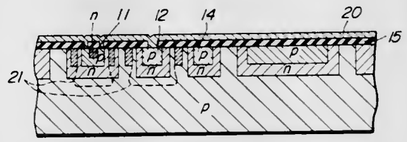
An acidic phosphating solution for coating metal surfaces comprising (1) zinc phosphate (2) an acid radical derived from peroxy disulphuric acid, peroxy diphosphoric acid, peroxy diboric acid or peroxy dicarbonic acid and (3) a conventional phosphating accelerator.

3,645,807
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE
Minoru Ono, Kodaira-shi, and Toshimitu Momol, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 21, 1967, Ser. No. 692,547
Claims priority, application Japan, Dec. 26, 1966, 41/84435
Int. Cl. H01l *7/50, 7/44*
U.S. Cl. 148—187 **7 Claims**



A method for forming a silicon nitride film on the surface of a semiconductor substrate in the following way. A silicon oxide film is formed on a prescribed portion of the surface of the semiconductor substrate. A silicon nitride film is deposited to cover the surfaces of the silicon oxide film and of the semiconductor substrate. At least one portion of the silicon nitride film deposited on the silicon oxide film is removed. The silicon oxide film in this portion is removed from the surface of the semiconductor substrate. Thus, a silicon nitride film having a prescribed pattern is formed on the surface of the semiconductor substrate.

3,645,808
METHOD FOR FABRICATING A SEMICONDUCTOR-INTEGRATED CIRCUIT
Takamitsu Kamiyama, Kokubunji-shi, and Michiyoshi Maki, Kodaira-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 24, 1968, Ser. No. 747,361
Claims priority, application Japan, July 31, 1967, 42/48796
Int. Cl. H01l *7/34*
U.S. Cl. 148—187 **8 Claims**



A method for selectively diffusing gold into a silicon substrate, wherein a plurality of circuit elements spaced from each other are formed on a surface portion of the substrate and a gold layer, not covering the PN-junction exposed at the surface thereof, is deposited on the surface of a specific circuit element which is desired to have a high-switching speed and then said gold is subjected to thermal treatment so that said deposited gold may be diffused into said specific circuit element.

3,645,809
AQUEOUS SLURRY EXPLOSIVES HAVING IMPROVED OXIDIZER-FUEL SYSTEM AND METHOD OF MAKING

Frederic S. Stow, Jr., Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 9, 1969, Ser. No. 883,625
Int. Cl. C06b *15/00*
U.S. Cl. 149—38 **23 Claims**

Aqueous slurry-type inorganic oxidizer salt explosive containing a defined nitrate salt fuel-oxidizer system imparting unpredicted low-aqueous aqueous solution precipitation temperatures, which, in turn, provide for improved sensitivity, detonation rate, available energy and fluid properties at temperatures as low as −60° C. and lower.

Method for manufacture of the explosives under ambient temperature conditions utilizing two separate solutions each having a crystallization temperature below the ambient temperature, is provided, thus eliminating need for elevated mixing, and solution, temperatures utilized heretofore.

3,645,810
SOLID FUEL COMPOSITION

Seymour A. Genden, Detroit, Mich., assignor to The United States of America as represented by the Secretary of the Army

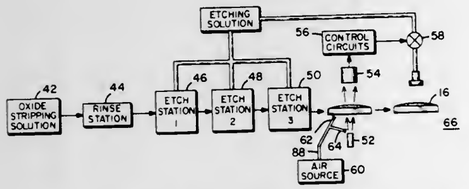
Filed June 14, 1955, Ser. No. 515,564
Int. Cl. C06d *5/06*
U.S. Cl. 149—43 **4 Claims**

1. A solid fuel comprising a composition consisting of about 80 to 95 percent by weight of magnesium powder: 2 to 10 percent by weight of sodium nitrate; 2 to 10 percent by weight of a synthetic rubber cement; 6 to 8 percent by weight of stearic acid, and compressed into a solid having a specific gravity of from 1.30 to 1.70.

3,645,811
METHOD AND APPARATUS FOR CONTROLLING THE SIZE OF PERFORATIONS IN A SHADOW MASK

John G. Davies, and John C. Thomas, both of St. Paul, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed Mar. 2, 1970, Ser. No. 15,366
Int. Cl. C23f *1/02*; **B23p** *15/00*
U.S. Cl. 156—5 **10 Claims**



Air is blown onto a television shadow mask during the etching of the holes in the mask in order to remove excess etching solution from the holes and permit optical measurement of the size of the holes. Air is also blown onto the optical measurement apparatus for the same purpose.

3,645,812
METHOD OF PURIFYING A QUARTZ PROCESSING VESSEL FOR USE IN THE PRODUCTION OF SEMICONDUCTORS

Erhard Sussmann, Poing, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

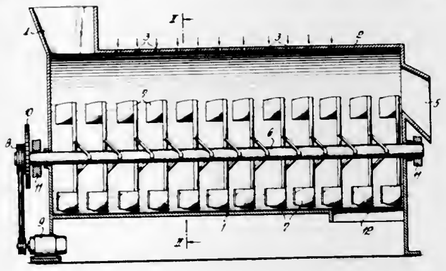
Filed Sept. 10, 1968, Ser. No. 758,708
Claims priority, application Germany, May 3, 1968, P 17 71 305.2
Int. Cl. H01l *7/50*, *7/44*
U.S. Cl. 156—17 **6 Claims**

Described is a method of purifying a quartz processing vessel used in the production of semiconductors and more particularly for epitaxy from the gaseous phase. According to the invention, the entire inside surface of the processing vessel is provided with a highly pure silicon layer by precipitation from the gaseous phase. The silicon layer and its quartz base are thereafter tempered at a temperature of at least 1,000° C. The silicon layer is then selectively removed from its quartz base and the processing vessel is then ready for use as intended.

3,645,813
METHOD OF CONGLOMERATING FIBERS

Hans Dieter Pelikan, Duesseldorf-Nord, and Hans Joachim Funke, Duesseldorf-Oberkassel, both of Germany, assignors to Feldmuhle Aktiengesellschaft, Duesseldorf, Germany

Filed Aug. 20, 1969, Ser. No. 851,764
Claims priority, application Germany, Aug. 24, 1968, P 17 28 102.6
Int. Cl. B29j *5/00*
U.S. Cl. 156—62.4 **9 Claims**

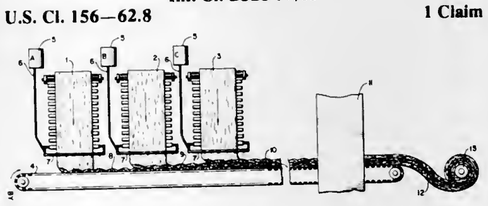


Lignocellulose fibers obtained from wood in a defibrator form conglomerates when held in a state of high turbulence while suspended in air. Globular conglomerates having diameters of 2 to 30 mm., relatively dense outer shells and loose cores are produced continuously in a turbulence zone in dwell times of a few minutes.

3,645,814
PROCESS FOR PRODUCING RESIN TREATED COTTON BATTING PRODUCTS WHEREIN THE DENSITY OF PORTIONS OF THE PRODUCT CAN BE VARIED TO MEET END USE REQUIREMENTS

Nestor B. Knoepfler, New Orleans, and Paul A. Koenig, Kenner, both of La., assignors to The United States of America as represented by the Secretary of Agriculture

Continuation-in-part of application Ser. No. 728,162, May 10, 1968, now abandoned. This application Oct. 10, 1969, Ser. No. 865,323
Int. Cl. B32b *17/05*
U.S. Cl. 156—62.8 **1 Claim**

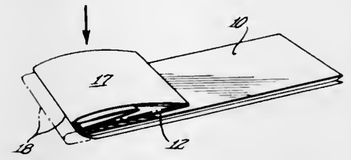


Variations in density, flame retardancy, resiliency, dimensional stability, coherence, integrity, and moldability are imparted to fibrous cellulosic batting upon treatment wherein the batting is impregnated with aqueous mixtures containing certain combinations of thermoplastic and thermosetting resins selected for their compatibility with each other and with such additives as urea phosphate complexes, borated urea-formaldehyde, diammonium phosphate, or boron containing organic or inorganic salts, by changes in the relative ratio of thermoplastic to thermosetting resin components.

3,645,815
METHOD OF CLOSING BOTTOM FLAPS OF PAPER BAGS

Clifford J. Bedore, New Holstein, Wis., assignor to H. G. Weber and Company, Inc., Kiel, Wis.

Filed Dec. 12, 1969, Ser. No. 884,483
Int. Cl. B31b *49/04*; **B65d** *33/00*
U.S. Cl. 156—69 **6 Claims**



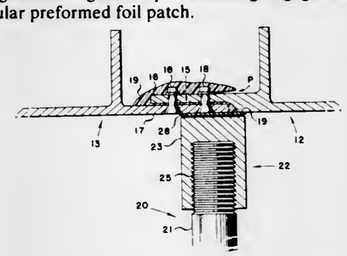
A method of securing the trailing bottom flaps of paper bags into place on the bag bottoms after the leading flaps have been secured, the method comprising thrusting the trailing flap flatwise against the body of the bag and then folding the bottom backwardly onto the trailing flap and pressing the same thereagainst until preapplied adhesive has set.

3,645,816
METHOD FOR SEALING LEAKS IN FLUID TANKS

Michael G. Billias, Decatur, and Robert L. Floyd, Jr., Norcross, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed July 14, 1969, Ser. No. 841,389
Int. Cl. B32b *35/00*
U.S. Cl. 156—94 **10 Claims**

A method and apparatus for effecting permanent external repairs of fluid leaks generally around fasteners in a rigid hollow articles such as aircraft integral fuel tank leaks by placing over the leaking fastener a metallic foil preformed patch having the same configuration as the protruding portion of the fastener and coated with a polysulfide sealant, or other types of rapid cure sealants, and then curing the sealant preferably by the application of heat to the localized area by a heating tool having interchangeable tips for mating engagement with the particular preformed foil patch.



3,645,817
BONDING WITH AN ELECTRICALLY HEATED, NONCURING SEALANT TAPE

John Walker, Sarnia, Ontario, and Ronald H. McEuan, Cooksville, Ontario, both of Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

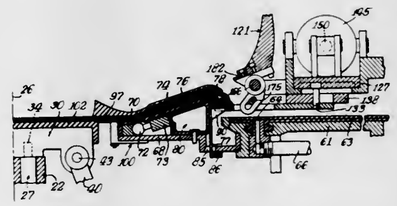
Continuation-in-part of application Ser. No. 760,686, Sept. 18, 1968, now abandoned. This application Nov. 24, 1969, Ser. No. 879,591
Claims priority, application Canada, Oct. 3, 1967, 1,516
Int. Cl. C09j *3/14*; **B29c** *27/06*; **E06b** *7/23*
U.S. Cl. 156—108 **6 Claims**

Thermosensitive compositions are provided comprising an elastomeric polymer, a compatible polymer which may be a resinous polymer (such as an ethylene/vinyl acetate copolymer) or a flexible thermoplastic polymer (such as a multiblock copolymer), finely divided metal particles and optionally filler and plasticizer materials. The compositions are suitable for use in sealant tapes which comprise an electrically conducting core embedded in a matrix of the compositions. Electric current may then be passed through the core to soften the matrix for installation onto bondable surfaces.

3,645,818
TIRE BUILDING METHOD

Larry C. Frazier, Sun City, Ariz., assignor to National Standard Company, Niles, Mich.

Original application Dec. 2, 1968, Ser. No. 780,435, now Patent No. 3,582,435, dated June 1, 1971. Divided and this application Sept. 21, 1970, Ser. No. 73,781
Int. Cl. B29h *17/22*, *17/26*
U.S. Cl. 156—128 **2 Claims**



Method of building pneumatic tires in which tire carcass material is initially formed into a tubular cylinder after which radially outwardly extending tire bead shoulders are formed inwardly of the ends of the tubular cylinder and into engagement with tire beads supported concentrically outwardly of the displaced material forming the tire bead shoulders, initially supporting the tire bead shoulders in engagement with the tire beads, displacing the outer ends of the tubular cylinder axially inwardly to encase the tire beads while the latter are initially supported in engagement with the tire bead shoulders, thereafter, secondarily supporting the encased tire beads and releasing the initial supporting of the tire beads followed by radially displacing the intermediate portion of the tubular cylinder and moving the encased tire beads while secondarily supported axially toward each other to form the tubular cylinder into substantially torous configuration.

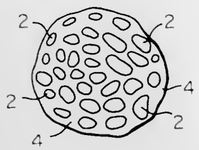
3,645,819
METHOD FOR MANUFACTURING SYNTHETIC MULTICORE ELEMENTS

Shigeru Fujii; Takashi Miwa; Kazushige Noji; Chikatsu Okagawa, all of Nagoya-shi, and Masamichi Toki, Otsu-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 13, 1968, Ser. No. 712,778
Claims priority, application Japan, Mar. 16, 1967, 44/21483; May 11, 1967, 42/38736; Aug. 16, 1967, 42/52169; Oct. 26, 1967, 42/68553; Oct. 21, 1967, 42/88955; Nov. 11, 1967, 42/72363
Int. Cl. B29b *17/32*
U.S. Cl. 156—148 **12 Claims**

A method for manufacturing improved synthetic bonded filament yarn by forming a unit composite from matrix and

island components, assembling a plurality of the unit composites into a randomly bundled multifilament yarn and heating the multifilament yarn at a temperature between the melting points of both components. The cross section of the unit composite can be obtained in any of so-called sheath-core configuration, randomly distributed configuration and

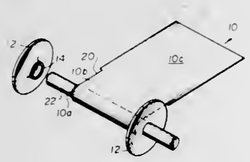


bimetallike configuration of the components. The bonded filament yarn has excellent flexibility and a unique surface condition having many wrinkles thereon and the bonded filament yarn of the present invention can be advantageously used for numerous industrial uses such as chafer fabrics of tires, bowstrings, fishing nets, guts of rackets, etc.

3,645,820
METHOD OF MAKING FLANGED-END TUBULAR ELEMENTS OF PLASTIC MATERIAL

Michael J. Clary, Canadaigua, N.Y., assignor to Garlock Inc., Palmyra, N.Y.

Filed May 28, 1970, Ser. No. 41,261
Int. Cl. B31c *1/00*
U.S. Cl. 156—191 3 Claims

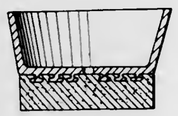


A flared-in central opening portion of an otherwise flat, plastic, flange element is disposed between and in overlapping relationship with edge portions of cylindrically wound plastic tape, whereafter, the overlapping portions of the tape and flange element are fused to unify them. The wound tape may have a thus associated flange element at either or both ends thereof.

3,645,821
METHOD FOR CONNECTING FOAMED MATERIALS TO THERMOPLASTIC BODIES

Manfred Baumann, Heerbrugg, and Alois Stahli, Diepoldsau, both of Switzerland, assignors to Baumann AG, Diepoldsau, Switzerland

Filed June 3, 1969, Ser. No. 830,044
Int. Cl. B32b *3/06*
U.S. Cl. 156—196 7 Claims



There is disclosed a method for connecting a thermoplastic handle, grip or container with a sponge or foamed material. This method enables a sponge to be adequately secured to the thermoplastic member. Articles produced according to this invention are advantageously used in the application and spreading of a detergent composition (in liquid or paste form) upon a surface.

3,645,822
METHOD FOR PROVIDING MULTILAYER FILMS HAVING IMPROVED SLIP PROPERTIES

Almar T. Widiger, and Drew H. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 31, 1969, Ser. No. 795,452
Int. Cl. B29c *19/00*; B32b *27/08*; C09j *00/00*
U.S. Cl. 156—243 11 Claims



Slip properties of multilayer films of thermoplastic organic polymers are improved by incorporating small amounts of a conventional slip additive, e.g., oleamide, into one or more of the inner layers of said films. Said films exhibit slip characteristics which are retained for relatively long periods of time.

3,645,823
PROCESS FOR FORMING A MICROFICHE

Fritz Merk, Wiesbaden; Gerhard Debus, Assmannshausen, and Herbert Ewald Muller, Wiesbaden, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Nov. 24, 1969, Ser. No. 879,017
Claims priority, application Germany, Nov. 27, 1968, P 18 11 212.4
Int. Cl. B32b *7/06*
U.S. Cl. 156—247 6 Claims

A microfiche is formed by coating a transparent support sheet with a layer of transparent potentially adhesive thermoplastic composition exhibiting low adhesive tackiness at ambient conditions, but which is heat-activatable to adhesive tackiness, positioning microfilm image elements on the layer under a sufficient pressure to superficially adhere the elements to the layer, and bringing the thermoplastic composition to adhesive tackiness in the areas of the microfilm elements. Reheating the thermoplastic composition in the areas of the microfilm elements renders the elements removable from the sheet, thus providing for replacement of microfilm elements to revise or update the microfiche.

3,645,824
PROCESS FOR PROVIDING IMPROVED POLYVINYLIDENE CHLORIDE-COATED SUBSTRATES

Richard A. Patton, Prospect Heights, Ill., assignor to Morton International, Inc.

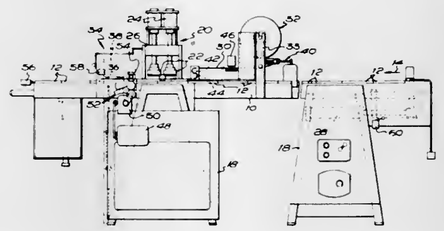
Filed Oct. 29, 1968, Ser. No. 771,618
Int. Cl. C09j *5/00*
U.S. Cl. 156—322 1 Claim

A method of retaining adhesion, reducing blocking, and increasing the solvent resistance of polyvinylidene chloride-coated substrates comprising coating a substrate with a solution or aqueous dispersion of a polyvinylidene chloride composition, removing the volatile matter therefrom, heating the coated substrate to a temperature of from about 100° to about 200° F., and maintaining the temperature of said coated substrate for a period of time ranging from about at least 20 hours for a temperature of about 100° F. to at least about 2 minutes for a temperature of about 200° F.

3,645,825
APPARATUS FOR SEALING THIN WALLED CONTAINERS

Thomas Norman Gaunt, Leeds, and Edward Dodsworth, Pudsey, both of England, assignors to Plastona (John Waddington) Limited, Leeds, England

Filed May 19, 1969, Ser. No. 825,756
Claims priority, application Great Britain, May 21, 1968, 24,083/68; 24,084/68; Feb. 1, 1969, 5,543/68
Int. Cl. B29c *27/02*; B65b *7/00*
U.S. Cl. 156—361 7 Claims

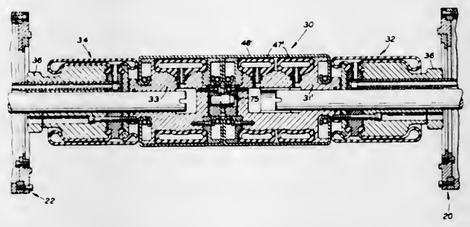


Apparatus for sealing molded thin wall thermoplastic containers with lidding from a roll of lidding material wherein the containers move on platens in queues in groups of four containers on each platen past a sealing head and the lidding material is adhered about the top peripheral flange of the container, while the containers almost touch, the movement of the queue unrolling the roll of lidding material, and thereafter severing the lidding material between adjacent containers in the queue. The lids may be printed.

3,645,826
TIRE BUILDING DRUM

Virgil E. Henley, Akron, and Walter W. Lauer, Jr., Canton, both of Ohio, assignors to The General Tire & Rubber Company

Filed Feb. 6, 1970, Ser. No. 9,711
Int. Cl. B29h *17/16*, *17/22*
U.S. Cl. 156—401 10 Claims

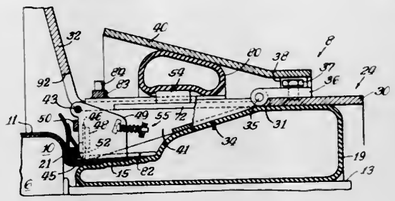


A tire-building machine is a structural combination of two relatively independent sections. Each section comprises a support housing, a rotatable shaft cantilevered from the housing and a cylindrical drum mounted at the free end of the shaft for rotation therewith. With the axes of the shafts aligned, the drums thereon are connectable at their outer axial ends to form a divisible tire-building drum of predetermined axial length or "set." An annular ply turnup bladder is mounted for rotation with each shaft adjacent the inner axial end of each drum. Also, an annular bead ring carrier is mounted on each housing to reciprocate coaxially of each shaft. The set of the divisible drum can be adjusted by replacing one or both of the constituent drums with other drums of different lengths.

3,645,827
APPARATUS FOR INCORPORATING TIRE BEADS INTO A TIRE

Larry C. Frazier, Sun City, Ariz., assignor to National-Standard Company, Niles, Mich.

Filed Feb. 19, 1970, Ser. No. 12,774
Int. Cl. B29h *17/22*
U.S. Cl. 156—401 12 Claims



Tire-building apparatus embodying combined tire bead holder and ply turnup means having bead placer means embodying bead finger frame means carrying bead-supporting fingers which in a one position of the bead finger frame means hold tire beads concentrically against tire bead shoulders inwardly of outer end portions of tire carcass material supported around first inflatable bag means which provides for displacing the bead finger frame means to another position freeing the bead supporting finger means from the beads while the bead placer means hold the beads against the tire bead shoulders, in which the bead placer means is moved outwardly by further expansion of the first inflatable bag means and the tire beads are further encased in the outer end portions of the tire carcass material, and in which the tire bead holder and ply turnup means are then moved axially to effect displacement of the outer end portions of the tire carcass material on the inflatable bag means to fully encase the beads in the outer end portions of the tire carcass material. The apparatus, as noted, embodying second inflatable bag means operative in association with the first bag means to permit upon inflation of the first inflatable bag means movement of the bead finger from the bead, and the apparatus as first noted in which the tire bead holder and ply turnup means embody sidewall pusher means for applying sidewall components to the tire carcass material after the latter is formed into a substantially torous configuration.

Method of building a tire in which tire carcass material is formed with tire bead shoulders from which outer end portions of tire carcass material extend, supporting tire beads concentrically at the tire bead shoulders, freeing the support of the tire beads while maintaining the tire beads against the tire bead shoulders and partially encase the tire beads in the outer end portion of the tire carcass material, and then displacing the outer end portions of the tire carcass material over the tire beads and onto the tire carcass material at the tire beads to fully encase the tire beads.

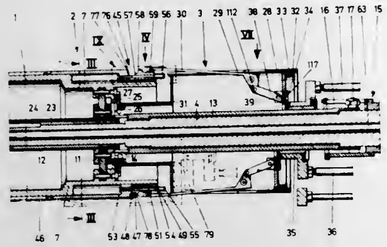
3,645,828
TIRE BUILDING-UP DRUM

Walter Balle, Dornigheim, and Gerhard Held, Hochstadt, both of Germany, assignors to Leonhard Herbert Maschinenfabrik

Filed Mar. 4, 1970, Ser. No. 16,285
Claims priority, application Germany, Aug. 21, 1969, P 19 42 579.7
Int. Cl. B29h *17/14*
U.S. Cl. 156—402 20 Claims

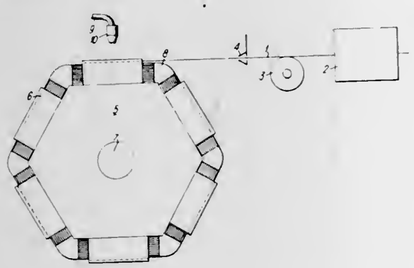
A tire-constructing machine having a case-making drum adjustable as to its diameter with annular grooves at the axial

ends thereof to receive bead rings of the tire. Wrapping means are provided at both ends of the drum with wrapping fingers and exchangeable segments of various length so that



the case-making drum is variable in itself and stops are provided on the drum for the front ends of the wrapping fingers to limit the retracting movement of the wrapping fingers.

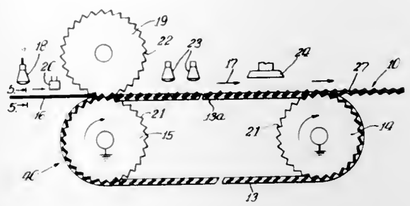
3,645,829
APPARATUS FOR PRODUCING A FIBER REINFORCED COMPOSITE MATERIAL
Jack Palfreyman, Tansley, near Matlock, and Henry Edward Middleton, Derby, both of England, assignors to Rolls-Royce Limited, Derby, England
Filed Nov. 15, 1968, Ser. No. 776,115
Claims priority, application Great Britain, Dec. 5, 1967, 55,170/67
Int. Cl. B65h *81/08*
U.S. Cl. 156—441 **1 Claim**



The present invention relates to apparatus for producing a carbon or boron fiber reinforced composite material for use in the manufacture of blades for gas turbine engines. The apparatus consists of a number of aerofoil section formers mounted on a rotatable drum means for winding a continuous fiber or bundle of fibers under tension onto the formers, a source of curable matrix material located adjacent the drum, and means for curing the matrix material.

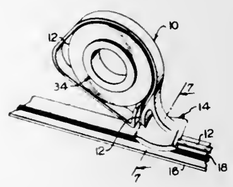
3,645,830
APPARATUS FOR FORMING PLASTIC LOUVER SCREEN
Harold Warp, Chicago, Ill., assignor to Flex-O-Glass, Inc.
Original application Aug. 14, 1967, Ser. No. 660,478, now abandoned. Divided and this application Oct. 13, 1969, Ser. No. 871,436
Int. Cl. B32b *31/18*
U.S. Cl. 156—510 **15 Claims**

Apparatus for forming a plastic louver screen from a flat sheet of plastic material, said screen having a plurality of cut louvers twisted from the flat configuration of the sheet and permanently set without residual stress in the twisted configuration. The disclosed apparatus for forming the plastic louver screen includes a forming support member, means for softening the plastic sheet and cutting the plastic sheet to conform to the forming support member, thereby to provide in the sheet a louver screen configuration. The forming support member may comprise a plurality of block members having upper surfaces defining the metal louver screen con-



figuration or a continuous belt defining the metal louver screen configuration. The louver screen is formed of a settable plastic. In one form, the louver screen includes a layer of metal which may be embedded therein or define a surface thereof.

3,645,831
SLIDE FASTENER ADHESIVE TAPE APPLICATOR
Bruce K. Thaeler, Meadville, Pa., assignor to Textron Inc.
Filed Jan. 21, 1970, Ser. No. 4,650
Int. Cl. B32b *31/04*
U.S. Cl. 156—527 **1 Claim**

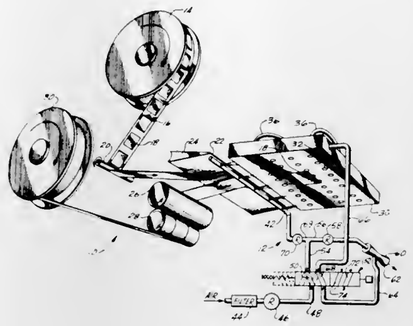


An adhesive tape applicator for applying adhesive tape from a roll to a slide fastener tape in spaced relation to the meshing elements of the slide fastener including a compartment for rotatably supporting the roll of adhesive tape, and a pressure foot-receiving adhesive tape from the compartment through a passage and having a surface for pressing the adhesive tape onto the slide fastener tape and a guide channel laterally displaced from the surface for receiving the meshing elements of the slide fastener. The applicator is guided along the slide fastener by the engaging of the meshing elements with the guide channel to apply the adhesive tape to the slide fastener tape in spaced relation with the meshing elements.

3,645,832
PNEUMATIC LABEL APPLICATION SYSTEM
Anton Sauer, Baldwin Park, Calif., assignor to Avery Products Corporation, Marino, Calif.
Filed Feb. 2, 1970, Ser. No. 7,793
Int. Cl. B32b *31/04, 31/10*
U.S. Cl. 156—541 **12 Claims**

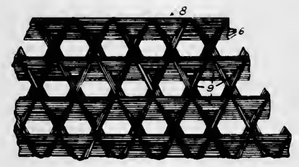
A venturi provided with a steady or intermittent high-pressure flow of a gaseous medium, such as air, creates a suction potential at a perforated surface to attract and register a

pressure-sensitive label dispensed from a carrier web. The label is subsequently transferred onto a substrate by a reverse



high-pressure flow of the gaseous medium through the perforated surface in the direction of the substrate.

3,645,833
ARTICLE AND METHOD OF QUASI-ISOTROPIC CORE FILAMENTS
Irving E. Figge, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army
Filed May 20, 1970, Ser. No. 39,597
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **10 Claims**



A quasi-isotropic sandwich-type structural core filament winding made by a jig on which the fiber filaments are interwoven in a manner where each fiber lays on top of the preceding fiber so that when the winding is completed, a core is produced which consists of a series of tetrahedrons, half of which point upwards and half point downwards. The completed winding is then coated with an epoxy resin and cured, when removed from the jig. The jig may be of varied shapes so that the core is flat, cylindrical, air foil or other irregular shapes.

3,645,834
REINFORCED FLUOROCARBON POLYAMIDE CONTAINERS
Lee A. McCaffrey, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 24, 1969, Ser. No. 809,997
Int. Cl. B32b *15/08, 27/12*
U.S. Cl. 161—92 **5 Claims**

This invention relates to the method of making a container, said container comprising forming a laminate comprising a polyamide fabric having a coating of a fluorocarbon composition thereon and a film of either a polyimide or a fluorocarbon adhered to the fluorocarbon composition coating, said film containing a metallic deposit of a reflective nature on its outer surface.

3,645,835
MOISTURE-VAPOR-PERMEABLE PRESSURE-SENSITIVE ADHESIVE MATERIALS
Martin E. Hodgson, Harlow, England, assignor to T. J. Smith & Nephew Limited, Kingston-upon-Hull, England
Filed July 7, 1969, Ser. No. 839,436
Claims priority, application Great Britain, July 9, 1968, 32,588/68; Oct. 22, 1968, 50,045/68; Dec. 20, 1968, 60,756/68
Int. Cl. C09j *7/02;* **A61f** *13/00;* **A45d** *31/00*
U.S. Cl. 161—146 **26 Claims**

This invention relates to a moisture-vapor-permeable pressure-sensitive adhesive material for use on animal skin and nails, e.g. a surgical drape, suture strip or sheet, adhesive dressing, bandage, plaster, strapping tape, decorative nail covering, or decorative cosmetic product. The adhesive material comprises a backing material, and a pressure-sensitive adhesive on at least substantially the whole of the body adhering portion of at least one surface of said backing material, both said backing material and said adhesive being moisture-vapor-permeable and unaffected by water and at least one of said backing material and said adhesive comprising a synthetic polymer and being continuous and nonpermeable to liquid water, said adhesive material having a moisture vapor permeability of at least 300 g./sq. meter/24 hours/40° C./80 percent RH.

3,645,836
WATER-ABSORPTION FIBROUS MATERIALS AND METHOD OF MAKING THE SAME
David Torr, 150 East 56th Street, New York, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,760. The portion of the term **of the patent subsequent to Oct. 17, 1984, has been disclaimed.**
Int. Cl. A61f *13/18;* **B32b** *5/22*
U.S. Cl. 161—151 **12 Claims**

A readily disposable water absorbent product, such as a diaper, bed napkin or catamenial device, and process of making the same, the product comprising a supporting sheet of cellulose fiber and a layer of dry, flexible fibers which on contact with 20 times their weight of water at 25° C. lose their fibrous character and form a soft plastic gel, said flexible fibers consisting essentially of a polysaccharide gum or starch and the weight ratio of said cellulose fibers to said gel-forming fibers being in the range of 20:1 to 1:1.

3,645,837
LAMINATES
Douglas S. Chisholm, Midland, and Walter J. Schrenk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application Dec. 29, 1967, Ser. No. 694,470, now Patent No. 3,357,265, dated Jan. 19, 1971, which is a continuation-in-part of application Ser. No. 402,118, Oct. 7, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 432,258, Feb. 12, 1965, now abandoned. Divided and this application Aug. 14, 1970, Ser. No. 63,839
Int. Cl. B32b *3/26, 7/00, 27/08*
U.S. Cl. 161—160 **5 Claims**

Plastic film or sheet having a plurality of layers is formed by deforming a flowing stream having layers of diverse thermoplastic material to provide a sheet or film having a laminar structure. Alternating foamed and unfoamed layers are obtained.

3,645,838
RIGID MULTILAYER FORMED SHEET STRUCTURES
Ritchey O. Newman, Jr., Midland, and Walter J. Schrenk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Feb. 2, 1970, Ser. No. 8,058
Int. Cl. B32b *00/00, 25/12, 27/08*
U.S. Cl. 161—164 **5 Claims**

This invention provides economical multilayer sheets that combine high-barrier layers with layers of rigid polyvinyl chloride or impact polystyrene.

3,645,839
GLASS SEALING COMPOSITIONS CONTAINING ALUMINUM TITANATE

Frank Veres, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Continuation-in-part of application Ser. No. 790,465, Jan. 10, 1969, now abandoned. This application Sept. 23, 1969, Ser. No. 860,433

Int. Cl. B32b *17/06*; **C03c** *3/04*

U.S. Cl. 161—193 **11 Claims**

A crystallizable fusion-type glass sealing composition, such as lead borosilicate or lead-zinc-borate solder glass, having incorporated therein from about 1 to about 25 percent by weight of aluminum titanate; which solder glass is useful in sealing TV bulbs, in electronics sealing applications and in other instances where the sealing of a glass surface to another surface, such as glass, can be accomplished at a temperature sufficiently low as not to damage any sensitive or delicate electronic parts closely spaced from the surfaces being sealed.

3,645,840
METHOD FOR PEROXIDE BLEACHING OF PULP

Robert M. Lincoln, Moylan, and Joseph A. Meyers, III, Springfield, both of Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 781,989, Dec. 6, 1968, now abandoned. This application Jan. 19, 1971, Ser. No. 107,843

Int. Cl. D21c *3/00*

U.S. Cl. 162—78 **4 Claims**

Bleaching of ligneous cellulosic materials such as paper pulp by treating the pulp with a combination of tertiary butyl hydroperoxide and hydrogen peroxide as the bleaching agent.

3,645,841
WATER-SOLUBLE QUATERNIZED MELAMINE-ALDEHYDE RESINS AND THEIR APPLICATION IN THE PAPER INDUSTRY

Jean-Antoine Cabestany, Stains, and Yves Lefebvre, Montmorency, both of France, assignors to Nobel Hoechst Chimie, Puteaux de Seine, France

Filed Dec. 29, 1969, Ser. No. 888,933

Claims priority, application France, Dec. 30, 1968, 181890

Int. Cl. D21d *3/00*

U.S. Cl. 162—166 **11 Claims**

A water-soluble resin is prepared by condensing 1 to 6 moles of an aldehyde compound such as glyoxal with 1 mole of melamine and reacting the resulting product with 0.2 to 0.5 moles of a quaternization agent such as dimethyl sulfate per mole of said melamine.

3,645,842
DUAL FABRIC APPARATUS FOR PAPER WEB FORMATION

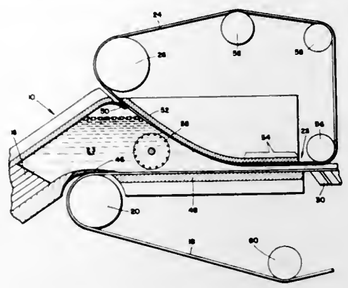
George T. Ward, Greenwich, Conn., assignor to International Paper Company, New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 796,131

Int. Cl. D21f *11/04*

U.S. Cl. 162—303 **5 Claims**

To form a web of papermaking fibers in the process of papermaking, a suspension of such fibers is passed from a head box between a pair of endless fabrics, at least one of which is a foraminous forming carrier. The fabrics are moved over paths formed by head box walls which have respective facing surfaces which are substantially impervious and which are substantially parallel over a substantial distance to and including the outlet orifice of the head box and are spaced a predetermined distance apart. Prior to any substantial formation of a web, the suspension leaves the orifice entrained between the fabrics and moves at the same speed and in the same direction. Thereafter a web of the papermaking fibers is formed by removing water from the suspension through the



forming carrier without exerting substantial shear forces upon the forming web.

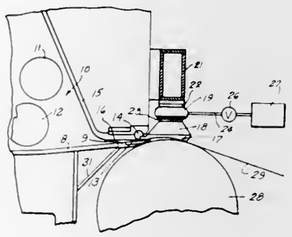
3,645,843
FLUID CONTROL OF HEADBOX SLICE OPENING

John F. Schmaeng, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 30, 1970, Ser. No. 33,247

Int. Cl. D21f *1/06*

U.S. Cl. 162—347 **8 Claims**



A control for the headbox slice opening of a papermaking machine in which the slice is position controlled by pneumatic means, such that the load upon the slice lips is transferred to a heavy frame member. Air blocks are mounted between the slice lip and the heavy frame member to allow precise position control of the slice lips.

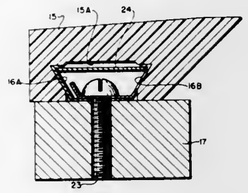
3,645,844
MOUNTING MEANS FOR FOIL TYPE AND SIMILAR ELEMENTS

John E. Grenier, Cherry Valley, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed Apr. 22, 1968, Ser. No. 722,960

Int. Cl. D21f *1/48*

U.S. Cl. 162—352 **4 Claims**



The disclosure describes a support for a stationary drainage element for a paper machine extending across the Fourdrinier wire. The support comprises a flaring tenon for a dovetail slide incorporating means to adjust the distance between the flaring walls. The drainage element has a mortise slot for cooperating with the slide. The flare of the slide is adjusted by means of an actuator mounted at one end of the support.

This abstract is intended neither to define the invention of the application, which is to be measured by the claims, nor in any way to be limiting as to the scope of the invention.

3,645,845
RECOVERY OF NITROGENOUS MATERIAL FROM MICRO-ORGANISMS

Philippe Corteel, Versailles, France, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 13, 1967, Ser. No. 630,510

Claims priority, application Great Britain, Apr. 15, 1966, 16,536/66

Int. Cl. C12d *13/06*

U.S. Cl. 195—4 **9 Claims**

Cells of a micro-organism are treated with a proteolytic enzyme to cause degeneration of protein components of the cell wall, thereafter deactivating or removing the proteolytic enzyme and continuing enzymatic attack on the cell wall with a carbohydratase (whereby attack on the protein of the cytoplasm is avoided or reduced) thereafter recovering an aqueous fraction containing nitrogeneous material.

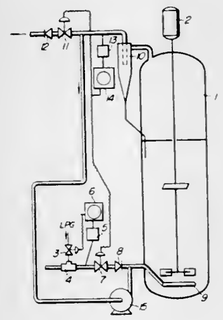
3,645,846
PROCESS AND APPARATUS FOR ADDING A LIQUEFIED HYDROCARBON GAS TO A CULTURE MEDIUM

Osamu Imada, Machida-shi; Kazuo Hoshia, Tokyo, both of Japan, and Masatami Tanaka, deceased, late of Machida-shi, Japan (by Itsuko Tanaka, administratrix), assignors to Kyowa Hakko Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan

Continuation of application Ser. No. 696,957, Jan. 10, 1968, now abandoned. This application June 24, 1968, Ser. No. 740,448

Int. Cl. C12d *13/06*; **C12b** *1/00*

U.S. Cl. 195—28 R **14 Claims**



A continuous process and apparatus for culturing a microorganism in an aqueous nutrient medium under aerobic conditions in the presence of a liquefied hydrocarbon gas which comprises adding fresh liquefied hydrocarbon gas to the culture medium, measuring the concentration of the unused liquefied hydrocarbon gas removed from the culture medium, discharging the unused liquefied hydrocarbon gas to the atmosphere until a predetermined concentration of said liquefied hydrocarbon gas is reached, and then recycling the liquefied liquefield hydrocarbon gas while at the same time discontinuing the addition of the fresh liquefied hydrocarbon gas until the concentration of the unused liquefied hydrocarbon gas falls below said process concentration. The rpocess and apparatus of the present disclosure is also applicable to liquefied hydrocarbon gas-air mixtures.

3,645,847
MICROBIOLOGICAL HYDROXYLATION OF AROMATIC ACIDS

Robert W. Eltz, Media, Pa., assignor to Sun Oil Company, Philadephia, Pa.

Filed Feb. 8, 1968, Ser. No. 703,870

Int. Cl. C12b *1/00*

U.S. Cl. 195—30 **5 Claims**

A benzoic acid having from zero to three methyl and/or halo substituents and having at least two adjacent unsubstituted ring carbon atoms can be converted to the corresponding dihydroxybenzoic acid derivative by the action of various species of Nocardia which are normally incapable of performing such a conversion. This is accomplished by first contacting the Nocardia cells with an aromatic or halogenated aromatic hydrocarbon for a time sufficient to induce the enzyme system of said cells to perform such an hydroxylation, and thereafter contacting the induced cells with the benzoic acid substrate under aerobic conditions.

3,645,848
PROCESS OF PREPARING GLUCOSE ISOMERASE

Chin K. Lee; Lawrence E. Hayes, and Margaret E. Long, all of WinstoneSalem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 17, 1969, Ser. No. 877,474

Int. Cl. C12d *13/10*; **C13k** *9/00*

U.S. Cl. 195—31 R **17 Claims**

Glucose is converted to fructose in the presence of an enzyme preparation derived from a member of the genus *Arthrobacter*.

3,645,849
STABILITY OF ENZYMES

Oscar S. Gray, Fort Lauderdale, Fla., assignor to Gray Industries, Inc., Fort Lauderdale, Fla.

Filed Apr. 17, 1969, Ser. No. 817,181. The portion of the term **of the patent subsequent to Feb. 10, 1987, has been disclaimed.**

Int. Cl. C12k *1/00*; **C07g** *7/02*

U.S. Cl. 195—62 **20 Claims**

Enzymes in an aqueous medium are cooled to 50° F. or below and then subjected to microwave energy under controlled conditions whereby the stability of the enzymes against deterioration is materially increased.

3,645,850
PREPARATION OF ACID CARBOXYPEPTIDASE

Eiji Ichishima, and Fumihiko Yoshida, both of Noda-shi, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed Apr. 8, 1969, Ser. No. 814,269

Claims priority, application Japan, Dec. 9, 1968, 43/89525

Int. Cl. C07g *7/028*

U.S. Cl. 195—66 R **1 Claim**

A new enzyme, acid carboxypeptidase, whose significant characteristics are to give high activity at the low optimum pH, i.e., pH 1.5 to 5.5, and whose substrate specificity, molecular weight and other properties are entirely different from those of already known carboxypeptidase, is prepared by cultivating organism belonging to Aspergillus to obtain the crude enzyme solution and then purifying the above-obtained enzyme solution by one or more processes which include appropriately selecting and/or combining, of fractional precipitation, solvent precipitation, dialysis, various chromatographies, gel filtration. Said enzyme thereby obtained has the great advantage of enzymatically hydrolyzing protein and peptides within a low pH range where the danger of contamination is minimized.

3,645,851
RECOVERY OF GLUCOSE OXIDASE

Hans Ulrich Bergmeyer, Tutzing; Wolfgang Gruber, Garathshausen; Hans Moellering, and Waldemar Thum, both of Tutzing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Nov. 14, 1968, Ser. No. 863,374
Claims priority, application Germany, Nov. 20, 1967, P 16 42 592.6
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **11 Claims**

Process for the recovery of glucose oxidase in highly purified form comprising adjusting the pH of an aqueous solution containing impure glucose oxidase to a value of from 6.5 to 7.5, while maintaining the temperature of the solution at from 15° to 25° C., adding methanol up to a concentration of 62 volume percent and separating off the precipitate thereby formed.

3,645,852
METHOD OF BINDING WATER-SOLUBLE PROTEINS AND WATER-SOLUBLE PEPTIDES TO WATER-INSOLUBLE POLYMERS USING CYANOGEN HALIDE

Rolf E. A. V. Axen, Simonsbo, Upplands Ballnge; Jerker Olof Porath, Karlsrogatan 42, and Erik Sverker Ernbach, Vaktgatan 8, both of Uppsala, all of Sweden

Continuation-in-part of application Ser. No. 729,914, May 17, 1968, now abandoned. This application Mar. 6, 1970, Ser. No. 17,336
Claims priority, application Sweden, May 23, 1967, 7169/67
Int. Cl. C07g *7/00, 7/02*
U.S. Cl. 195—68 **8 Claims**

Cyanogen halides are employed for binding water-soluble proteins and water-soluble peptides containing a primary or secondary amino group to a water-insoluble polymer containing one or more hydroxyl and/or primary and/or secondary amino groups. The invention is useful, among other things, for binding water-soluble enzymes to water-insoluble polymers while preserving the activity of the enzyme.

3,645,853
DIAGNOSTIC COMPOSITION AND METHOD FOR THE DETECTION OF NITRATE REDUCTION

Donald P. Kronish, Rockaway, and William D. Young, Jr., Montclair, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 24, 1969, Ser. No. 836,089
Int. Cl. C12k *1/06*
U.S. Cl. 195—103.5 R **11 Claims**

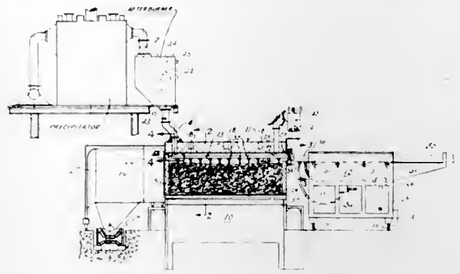
A diagnostic composition and method for detecting the reduction of nitrate to nitrite by micro-organisms which comprises a carrier material impregnated in specific zones with a nitrate-containing medium, a barrier composition, and two stable reagent solutions. In use, a suspension of the culture to be tested is incubated in the presence of the nitrate medium and the reduction of nitrate to nitrite is indicated by the formation of color in the reagent zones.

3,645,854
METHOD IN BYPRODUCT COKE OVEN OPERATION AND APPARATUS FOR SAME

Albert Calderon, 7732 Ragall Parkway, Cleveland, Ohio

Filed Feb. 26, 1970, Ser. No. 14,268
Int. Cl. C10b *39/06*
U.S. Cl. 201—39 **13 Claims**

An improved method for byproduct coke oven operation wherein the problems of pollution caused by charging, oxidation of green coke, pushing and quenching are eliminated by the quenching operation taking place within the oven prior to the removal of the doors and pushing of the coke; the combustion gases created by the charging, and the steam and water gases generated by the quenching are extracted and completely burned in an afterburner prior to the gases being dust-cleaned in a precipitator. The coke being quenched in the sealed oven to a temperature lower than the ignition

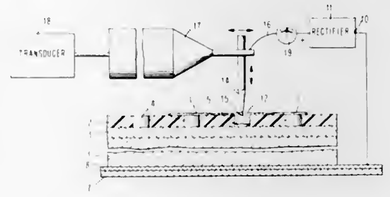


point of the coke eliminates the oxidation thereof after it is pushed from the oven thereby increasing the efficiency of the oven from the standpoint of yield.

3,645,855
ULTRASONIC REPAIR PLATING OF MICROSCOPIC INTERCONNECTIONS

Renee L. Wisman, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,878
Int. Cl. C23b *7/00, 5/48;* **B23p** *1/02*
U.S. Cl. 204—16 **4 Claims**



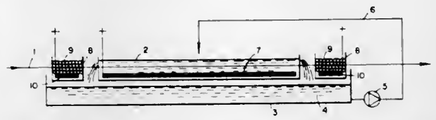
Plating equipment for special applications includes a point tipped ultrasonically agitated bonding tool adapted for electroplating. In the application process the tool receives continuous plating current and intermittent side-to-side ultrasonic agitation. In conjunction with commercial dry film photoresist masks and brush plating solutions the equipment is used to construct microscopic spot plating deposits. The equipment and method are especially useful for customized repair/rework or interconnection elements (vias) in printed circuit devices as a supplement to the basic mass manufacture process. Spot deposits made by this method are formed rapidly, well-adhered and comparable in overall quality to deposits produced on a mass manufacturing scale by conventional immersion plating techniques. Plating current and tool tip diameter critically affect plating quality.

3,645,856
PROCESS AND APPARATUS FOR ELECTROLYTIC TREATMENT OF TRANSPORTED WIRES

Kurt-Jurgen Schulze, Oberbruch, Germany, assignor to Glanzstoff AG, Wuppertal, Germany

Filed Mar. 19, 1970, Ser. No. 20,888
Claims priority, application Germany, Mar. 20, 1969, P 19 14 178.7
Int. Cl. C23b *5/68;* **B01k** *3/00*
U.S. Cl. 204—28 **5 Claims**

Process and apparatus for the electrolytic treatment of wires being transported through an electrolytic bath wherein the current supply to the wires is improved by conducting the wires in contact with a granular conductor of the first class

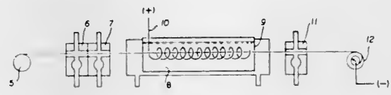


arranged in a suitable bed or layer externally of the electrolytic bath.

3,645,857
METHOD OF MAKING PLATED WIRE MEMORY ELEMENT

Robert D. Fisher; Ernest W. Jones, both of Woodstock, and Eugene A. Grossi, Saugerties, all of N.Y., assignors to Ferroxcube Corporation, Saugerties, N.Y.

Filed May 28, 1969, Ser. No. 828,674
Int. Cl. C23b *5/32, 5/58, 5/68*
U.S. Cl. 204—28 **2 Claims**



A method of making a plated wire nondestructive readout memory element in which a beryllium copper wire is first copper coated and electrolytically polished to optimize the surface of the copper coating and then continuously electroplated in a nickel sulfamate-ferrous sulfate bath to produce nonmagnetostrictive permalloy coating thereon.

3,645,858
SILVER PLATING BATHS

Wilfred Dingley, Ottawa; John S. Bednar, Gatineau Point, and Raymond R. Rogers, Ottawa, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 3, 1969, Ser. No. 839,003
Int. Cl. C23b *5/62*
U.S. Cl. 204—34 **27 Claims**

Novel stable aqueous cyanide-plating baths are provided which include silver ions, sodium ions and cyanide ions, in which the OH^- normality, the "free" CN^- normality, the sodium cyanide normality and the total silver normality are interrelated according to a specified formula. Novel procedures for electroplating are also provided.

3,645,859
DURABLE, ANTICORROSIVE AND ATTRACTIVE SURFACE COATINGS WITH ELECTRICAL CONTACT APPLICATION

Eugene P. Damm, Jr.; Allen W. Grobin, Jr., both of Poughkeepsie; Edwin H. Herel, Fishkill, and David A. Radovsky, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1970, Ser. No. 51,701
Int. Cl. C23f *17/00*
U.S. Cl. 204—35 N **7 Claims**

Electrically functional and decorative surface coatings—which are durable, attractive in appearance and resistant to corrosion and most importantly have long-lasting retention of foregoing properties under service conditions—are produced by reactive absorption of unsaturated oils into oxides of certain metals and metal alloys. The oil-treated oxide surfaces—especially after periods of in-service use—have lower contact impedance, higher conductivity, better retention of appearance and greater resistance to wear and corrosion than the untreated oxides. It appears that a highly stable interfacial compound is formed between the oil, the oxide coating and possibly the unoxidized basic metallic material, which differs considerably from the oxide in stability and general physical composition. Existence of this compound is evidenced by the heightened ability of the treated finish to withstand corrosion and scratching, and the tendency of the finish to actually harden and acquire greater wear resistance and permanence of appearance with age.

3,645,860
PROCESS FOR THE PREPARATION OF AN ELECTROCATALYST

Jerry Haskel Fishman, New York; Jean Francois Henry, Huntington Station, and Susanne Tessore, New York, all of N.Y., assignors to Leesona Corporation, Warwick, R.I.

Filed Mar. 4, 1969, Ser. No. 804,308
Int. Cl. C23b *9/00, 5/24*
U.S. Cl. 204—35 R **13 Claims**

A method for the preparation of an electrocatalyst which comprises (a) electrodepositing less than a complete monomolecular layer of material on a substrate utilizing cathodic polarization of short duration, and (b) oxidizing the electrodeposit and the substrate utilizing anodic polarization, also of short duration is described. The deposited material preferably is a metal or metal oxide having useful catalytic and/or electrical properties, e.g., platinum or gold. The substrate preferably is a metal or metal oxide such as tantalum oxide, tungsten oxide, or a sodium tungsten bronze, Na_xWO_3. The substrate is treated in an electrolyte containing a very dilute solution of the material to be deposited and/or in the presence of a counterelectrode containing this material. Several repetitions of these method steps, i.e., reversing the polarity such that the deposition and oxidation steps alternate, results in the complete or partial integration of minute portions of electrodeposited material in the substrate material. This method is useful for providing or improving catalytic activity in a substrate. The products produced by the method are useful in electrochemical devices.

3,645,861
METHOD OF PLATING ON STAINLESS STEEL

Bruce J. Garvey, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 8, 1970, Ser. No. 70,559
Int. Cl. C23b *5/08, 5/50*
U.S. Cl. 204—49 **2 Claims**

A process by which a metal may be plated on a stainless steel metal substrate whereby the final electroplated composite possesses greatly improved adherence. Said process involves the electrodeposition of a nickel strike layer on the stainless steel base metal prior to plating a "Woods strike" nickel electroplating bath in which the nickel therein is in the form of nickel bromide and the acid in the bath is hydrobromic acid. The composition and operating conditions of said bath comprise:

$NiBr_2$	100–800 g./l.
HBr	0.2%–20% by weight
Current Density	5–200 a.s.f.
Bath Temperature	60°–115° F.

3,645,862
METHOD OF MAKING AN ELECTRODE

Joseph Bernard Cotton, Little Aston, Sutton Coldfield; William Raymond Bennett, Birmingham; John Alan Bell, Streetly, and Peter Charles Steele Hayfield, Castle Bromwich, all of England, assignors to Imperial Metal Industries Limited, Birmingham, England

Filed Sept. 25, 1968, Ser. No. 762,621
Claims priority, application Great Britain, Sept. 26, 1967, 43,678/67
Int. Cl. C23b *9/00*
U.S. Cl. 204—56 R **5 Claims**

An electrode and method of manufacture thereof in which a film-forming base is provided with an electrically conduc-

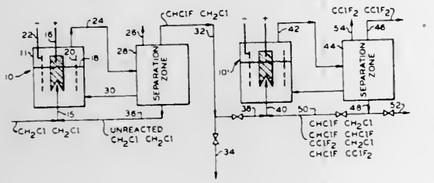
tive coating which comprises a mixture containing at least one chemical compound of the film-forming metal and at least one chemical compound of at least one other metal.

3,645,863

ELECTROCHEMICAL FLUORINATION

William S. Stewart, and John W. Vanderveen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 20, 1969, Ser. No. 867,732
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 **9 Claims**



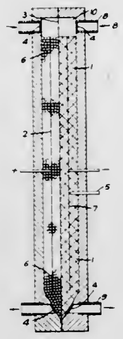
In an electrochemical fluorination process, the residence time or contact time of the feedstock with the fluorinating species within the pores of a porous anode is regulated so as to reduce or eliminate the formation of undesired by-products and increase the production of the desired final product.

3,645,864

PROCESS FOR THE PREPARATION OF A P-AMINO PHENOL BY THE ELECTROLYTIC REDUCTION OF NITROBENZENE

Darryl William Lawson, Wonersh, and David Stanley Salter, Horsham, both of England, assignors to Constructors John Brown Limited, London, England

Filed May 28, 1970, Ser. No. 41,529
Claims priority, application Great Britain, May 28, 1969, 27,058/69
Int. Cl. C07b *29/06*
U.S. Cl. 204—74 **9 Claims**



A process for the preparation of p-amino phenol and derivatives thereof, which process comprises reducing nitrobenzene electrolytically at a particulate electrode maintained at a cathode potential less negative than −0.40 volts with respect to a saturated calomel electrode, in an acidic medium at a temperature in the range of from 60° to 150° C. Preferably the cathode potential is in the range of from −0.25 to −0.35 volts with respect to a saturated calomel electrode.

3,645,865

PRODUCTION OF SOLS

Terence Gordon Tripp, Chester, England, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Filed Jan. 14, 1970, Ser. No. 2,954
Claims priority, application Great Britain, Jan. 22, 1969, 3,641/69
Int. Cl. B01k *1/00*
U.S. Cl. 204—96 **10 Claims**

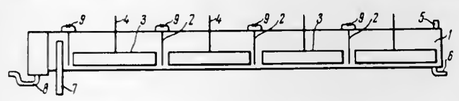
This invention involves a process for the production of a silica sol in which an electric current is passed through a liquid medium comprising a solution in a lower monohydric alcohol of a metal salt that is ionised to a sufficient extent and is present in sufficient amount to function as a supporting electrolyte using an anode comprising silicon in contact with the liquid medium with water being present in an amount of about 10% by weight based on the weight of the lower monohydric alcohol.

3,645,866

METHOD OF ELECTROLYSIS WITH A FLOWING MERCURY CATHODE IN A CHLORINE CELL

Georgy Ivanovich Volkov, Ulitsa Melnikova 23, kv. 11, Moscow, U.S.S.R.

Filed Aug. 26, 1969, Ser. No. 853,063
Int. Cl. C01d *1/08*
U.S. Cl. 204—99 **4 Claims**



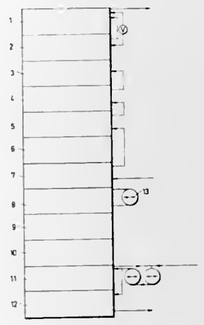
A method of electrolysis with a flowing-mercury cathode in a chlorine cell of the horizontal or slightly inclined type with transverse sectional partitions stopping short of the cell bottom, wherein electrolysis is carried out at pressure varying from section to section, such pressure increasing in the direction opposite to the movement of the mercury and electrolyte.

3,645,867

METHOD OF TREATING CYANIDE-CONTAINING LIQUORS IN SURFACE TREATMENT INSTALLATIONS

Harry A. H. Ericson, Goteborg, and Gustav Bertil Norstedt, Kungsor, Sweden, assignors to Nordnero Aktiengesellschaft, Lucerne, Switzerland

Filed June 19, 1969, Ser. No. 834,787
Claims priority, application Sweden, June 19, 1968, 8,355/68
Int. Cl. B01k *1/00;* **B01d** *13/00.*
U.S. Cl. 204—130 **1 Claim**



A method of removing cyanide wastes from cyanide-containing surface treating baths in a metal-treating process which includes an electrolytic alkaline cleaning bath and a cyanide-containing surface treating bath comprising passing the waste cyanide-containing water from the cyanide treatment bath to an alkaline electrolytic cleaning bath, whereby the cyanide is electrolytically oxidized.

3,645,868

METHOD FOR THE PREPARATION OF 1,2-DIBROMO - 2,2-DIHALOETHYL DIALKYL PHOSPHATES

Federico Garcia-Jiménez and Roberto Flores-Segura, Mexico City, Mexico, assignors to Interoceanica S.A., Mexico City, Mexico

No Drawing. Filed June 25, 1970, Ser. No. 49,966
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 HA **13 Claims**

Dialkyl-1,2-dibromo - 2,2-haloethyl phosphates, which are insecticides, are prepared by bromination of the corresponding dialkyl-2,2-dihalovinyl phosphates in presence of a free radical type catalyst and under illumination from a light source.

3,645,869

PREPARATION OF A FIBROUS THERMOPLASTIC COPOLYMER OF COTTON AND STYRENE BY RADIATION TREATMENT

Jett C. Arthur, Jr., Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Continuation-in-part of application Ser. No. 320,969, Nov. 1, 1963. This application Jan. 10, 1968, Ser. No. 696,711
Int. Cl. B01j *1/00, 1/12;* **C08d** *9/06*
U.S. Cl. 204—159.12 **3 Claims**

This invention relates to the treatment of cotton with styrene monomer dissolved in an essentially anhydrous solvent and then to the radiation copolymerization of the styrene monomer with fibrous cotton cellulose and has as its objects modifications of the physical properties of cotton, particularly imparting thermoplasticity, decreasing stiffness, increasing elongation-at-break, increasing resistance to wetting with water, and changing other related properties of cotton fibers to impart new and desirable properties for use in finished cotton products.

3,645,870

PROCESS FOR PREPARING VINYL CHLORIDE POLYMERS OR COPOLYMERS HAVING BUTADIENE AND ACRYLATE MONOMERS RADIATION GRAFTED THERETO

Norio Sagane, Kyoto-shi, and Hiroshi Harayama and Yotaro Morishima, Osaka-fu, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed July 14, 1969, Ser. No. 841,539
Claims priority, application Japan, July 20, 1968, 43/51,488
Int. Cl. C08d *9/08;* **C08f** *1/16, 29/12*
U.S. Cl. 204—159.17 **6 Claims**

Process for producing high-impact resins comprising graft polymerizing alkyl acrylate or alkyl methacrylate monomer, butadiene, and vinyl chloride-containing resin powder by impregnating the vinyl chloride resin with the monomer and irradiating the impregnated powder with ionizing radiation while in contact with gaseous butadiene to provide products having superior durability; together with the products obtained thereby.

3,645,871

USE OF BARIUM METABORATE IN ELECTRODEPOSITABLE COMPOSITIONS

Myron J. Krupp, Grafton, Frederick R. Colburn, Franklin, and John P. Knudtson, Milwaukee, Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Aug. 8, 1968, Ser. No. 751,033
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 **7 Claims**

This invention relates to novel pigmented electrodepositable compositions. More particularly, this invention relates to the use of barium metaborates to reduce stain of resin films electrodeposited on iron containing metal substrates, particularly steel substrates.

3,645,872

PROCESS FOR DEPOSITING ORGANIC COATINGS

Jürgen Weigel, Illingen, Germany, assignor to ECM Gesellschaft fur Elektrochemische Materialbeschichtung mbH & Co. KG, Frankfurt am Main, Germany

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,160
Claims priority, application Germany, Jan. 17, 1968, P 16 46 037.0
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **20 Claims**

A process for depositing organic coatings upon metallic or other conductive substrates wherein the organic substance is a dispersion of incompletely, partially or completely polymerized material in an aqueous electrolyte. The substrate is connected as an anode or a cathode in the dispersion and juxtaposed with a counterelectrode. An electrical potential is applied and the conductivity of the dispersion is initially established at 5,000–100,000 μmho-cm.$^{-1}$ at 20° C. The dispersion includes one or more organic substances which deposit upon the substrate under the influence of the electrical potential such that within 25 seconds after the current-density peak develops, the electrical resistance at the deposition-receiving electrode increases to reduce the current density to a level below 20% of the peak thereof. Preferably, the current density is reduced below 20% of its peak level within 10 seconds after the current density peaks.

3,645,873

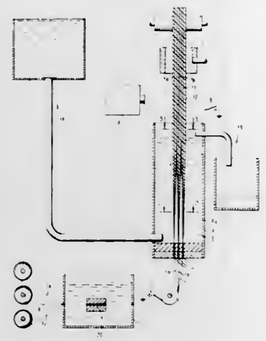
METHOD OF PRODUCING INSULATED WIRE ASSEMBLIES

Blair E. Cornish, Stone Ridge, and Eugene P. Damm, Jr., and Mark A. Faigenbaum, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

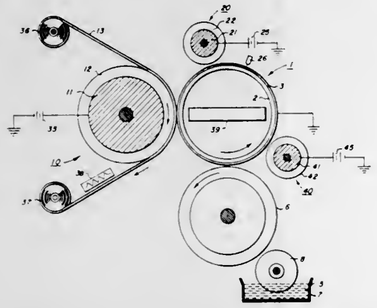
Filed June 30, 1969, Ser. No. 837,568
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **7 Claims**

Insulative film coatings formed upon separated metal wires by electrophoretic deposition from aqueous polymer latex dispersions are found to be conjoinable into supporting structures which are thick by comparison to diameters of enclosed wires and which have pre-determinable dimensional properties when solidified. Electrical signal

transmission lines are made at reduced cost by this process. Wires in such lines are held close together without touching at spacing distances held to tight tolerances. The electrophoretically applied insulating-supporting structure of these lines can be provided with such other desirable features as internal continuity (i.e. crack-free, void-free), thermal stability, abrasion resistance, high dielectric strength, flexibility, and uniform cohesion to the supported wires.



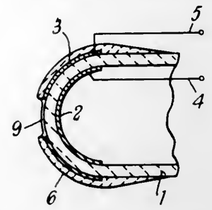
3,645,874
IMAGE DENSITY CONTROL IN PHOTOELECTROPHORETIC IMAGING
John B. Wells, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,506
Int. Cl. B01k *5/00*
U.S. Cl. 204—181 **5 Claims**



A photoelectrophoretic imaging system is disclosed whereby the density of the image produced at high speeds is increased by the introduction of a "density control" electrode.

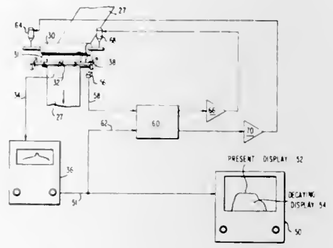
3,645,875
ELECTRODE ASSEMBLY
Robert George Hamilton Record, Haydn Wilson, and Derek Austen Rudd, Luton, England, assignors to George Kent Limited, Luton, England
Filed Nov. 21, 1968, Ser. No. 777,841
Claims priority, application Great Britain, Nov. 23, 1967, 53,424/67
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **8 Claims**

An electrode assembly, particularly for use at high temperatures, comprises a non-porous refractory base with metal electrode layers, of platinum for example, on opposed sides, at least one of which has a complete or discontinuous refractory overlayer for exposure to hot gases or liquids. The overlayer is porous where the electrode layer is completely encapsulated but need not be where portions, preferably edge portions, are exposed. The base



may be constituted as a tube or as the closed end of a tube. The refractory material may be yttria stabilised thoria or lime stabilised zirconium oxide.

3,645,876
CURRENT TRANSFER MEASUREMENT ALONG A LINEARLY EXTENDED CONTACT
Walter A. Wilson, Pittsburgh, Pa., assignor to National Steel Corporation
Filed July 8, 1969, Ser. No. 839,853
Int. Cl. C23b *5/00, 5/68*
U.S. Cl. 204—211 **3 Claims**



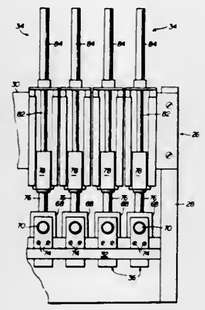
Current transfer along a linearly extended electrical contact is determined during or prior to commencing electroplating or other processing of strip material permitting corrective measures directed toward higher yield and higher quality production. Current distribution is determined by measuring the magnetic flux pattern in the strip material along the linearly extended electrical contact. Automated contact control across the strip is obtained responsive to such measurements.

3,645,877
ELECTROCHEMICAL DEBURRING APPARATUS
David W. Sickels, Plymouth, and Robert E. Sills, Livonia, Mich., assignors to Electrogenics, Inc., Wayne, Mich.
Filed Oct. 13, 1969, Ser. No. 865,874
Int. Cl. B23p *1/04, 1/12*
U.S. Cl. 204—224 **8 Claims**

Electrochemical deburring apparatus for a workpiece including a nonconductive support structure, and a tool electrode mounted on the support structure connected to the negative terminal of a power source. The tool electrode comprises a base, a center shaft extending upwardly from the base, and an outer sleeve extending upwardly from the base concentric with the center shaft and defining a cavity therebetween. The tool electrode has a conduit in the lower portion of it through which electrolyte under pressure is introduced into the cavity. The tool electrode has means for causing turbulent flow of electrolyte while it is in the cavity.

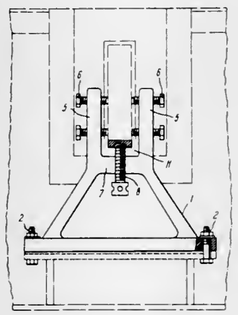
An insulated stop is mounted on the top of the center shaft of the tool electrode and is adapted for cooperating fit within a recess of a workpiece when the workpiece is

seated on the tool electrode, thereby radially aligning the workpiece. The apparatus also has insulated means for clamping the workpiece in position on the tool electrode with the insulated stop in contact with the workpiece, and ears of the workpiece having edges to be deburred projecting into the cavity of the tool electrode between the center shaft and the outer sleeve. The apparatus also



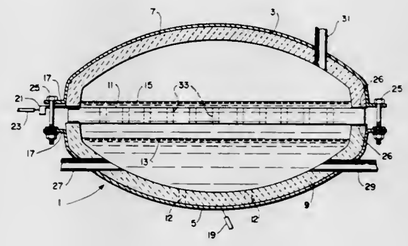
includes means for inserting an electrode connected to the positive terminal of a power source into the workpiece, whereby when electrolyte is passed between the tool electrode and the workpiece and direct current is passed between the workpiece and the tool electrode, the desired areas of the workpiece are deburred. Also disclosed is a method of deburring workpieces.

3,645,878
DEVICE FOR SETTING CATHODES IN ELECTROLYZERS
Evgeny Ivanovich Adaev, 2 Schukinsky proezd 10, korpus 1, kv. 56; Alexandr Vasilievich Blinov, Ulitsa Gorkogo 41, kv. 48; and Georgy Mikirtychevich Kamarian, Vorontsovskaya ulitsa 30 "b," kv. 18; and Viktor Alexandrovich Novoselov, Ulitsa Vavilova 10, korpus 20, kv. 28, all of Moscow, U.S.S.R.
Filed Apr. 23, 1969, Ser. No. 818,634
Int. Cl. C23b *5/70*
U.S. Cl. 204—243 R **2 Claims**



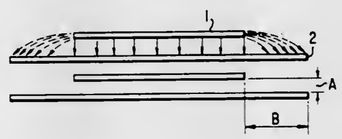
A device for setting the cathodes in electrolyzers made in the form of several diametrically disposed forked members installed at the same level, in which the aperture between the tines of the forked members is used for setting the current-carrying lead of the cathode, in which case each forked member has a means for adjusting the position of the cathode in two mutually perpendicular planes.

3,645,879
CONSTRUCTION OF ELECTROLYTIC CELL
Charles F. Bonilla, Tenafly, N.J., assignor to Barry F. Haskett, Geneva, Switzerland
Filed June 8, 1970, Ser. No. 44,440
Int. Cl. C22d *3/02;* **B01k** *3/04*
U.S. Cl. 204—247 **14 Claims**



An improved construction for electrolytic cells for the electrolysis of molten sodium chloride and similar salts is provided. The electrolytic cell is characterized in that the anode consists of horizontal slabs of graphite supported by the refractory wall of the bottom half of the cell structure and the anodes are submerged slightly in the electrolyte employed. Such a structure provides a stronger anode, and more rigidly positioned with respect to the bottom of the cell, than if the same were hanging from the top of the cell by stems or necks, as in conventional electrolytic cells.

3,645,880
ELECTRODE APPARATUS FOR BRINE ELECTROLYSIS
Kenji Ueda, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 14, 1970, Ser. No. 37,160
Claims priority, application Japan, May 14, 1969, 44/37,256
Int. Cl. B01k *3/04*
U.S. Cl. 204—278 **9 Claims**



An apparatus for electrolyzing brine, or seawater, characterized by a cathode edge projection from the edge of a parallel and opposite insoluble anode which is substantially five times greater than the distance between these electrodes. The apparatus is immersed in a brine conducting passageway and current is applied thereto for permitting electrolysis of the brine during continuous operation thereof, with little or no precipitative deposit on the electrodes, and thereby providing uninterrupted flow of the brine through the passageway and the electrode apparatus for preventing marine growth on parts contacted by the brine.

3,645,881
RIFLE BARREL ELECTROPLATING FIXTURE

Alfred J. Williams, Berkley, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1969, Ser. No. 872,804
Int. Cl. B01k *3/04*; C23b *5/70, 5/56*
U.S. Cl. 204—286 2 Claims

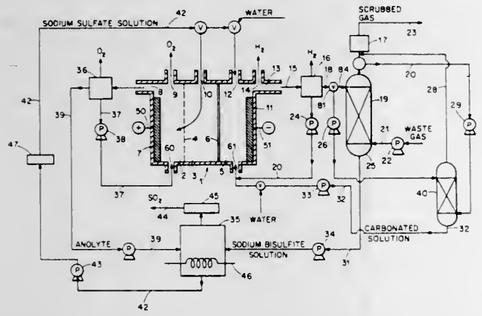


A tool adapted to insure concentricity between an electroplating anode and the bore of a small bore rifle, the tool comprises a chamber-anode-positioner, a muzzle cap, and a muzzle-anode-positioner acting in concert to locate the anode in the center of the bore.

3,645,882
CARBONATION PROCESS FOR SO_2 REMOVAL

Edgardo J. Parsi, Watertown, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Division of application Ser. No. 795,921, Feb. 3, 1969, now Patent No. 3,515,513, which is a continuation-in-part of application Ser. No. 704,284, Feb. 9, 1968, now Patent No. 3,524,801, which in turn is a continuation-in-part of application Ser. No. 693,903, Dec. 27, 1967, now Patent No. 3,523,880. This application Apr. 1, 1970, Ser. No. 31,459
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 4 Claims

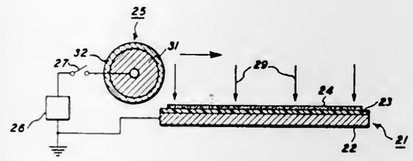


This invention is directed to increasing the current efficiency of the cation exchange membrane located next to the cathode in a three chamber cell for the electrolytic conversion of an alkali metal sulfate for use in the removal and recovery of sulfur dioxide contaminants from flue gases. After the removal of said sulfur dioxide contaminant from flue gas, carbon dioxide is introduced into the cell's catholyte solution by contacting catholyte solution with at least a portion of the said treated flue gas at any point in the catholyte system, preferably by recycling the catholyte solution between the cell's cathode compartment and a carbonation tower.

3,645,883
PHOTOELECTROPHORETIC IMAGING APPARATUS EMPLOYING PHOTOSENSITIVE PARTICLES EXHIBITING FATIGUE CHARACTERISTICS

Ray H. Luebbe, Jr., Rochester, and Leonard M. Carreira, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 1, 1970, Ser. No. 42,409
Int. Cl. B01d *13/02*
U.S. Cl. 204—300 2 Claims

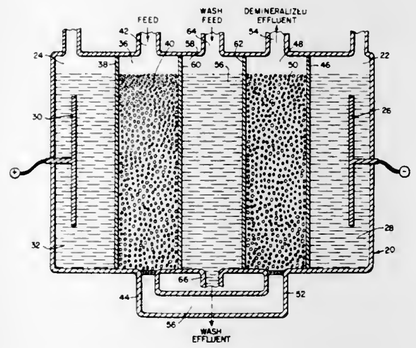


An electrophoretic imaging system comprising exposing a suspension of electrically photosensitive particles in a liquid carrier to imagewise light and, subsequently, developing the image by applying a field across the suspension which causes particle migration in image configuration. The photosensitive particles of this system exhibit fatigue characteristics in that they remain electrically sensitive for a period of time after having been exposed to activating electromagnetic radiation.

3,645,884
ELECTROLYTIC ION EXCHANGE APPARATUS

Edwin R. Gilliland, 95 Longmeadow Road, Belmont, Mass. 02178

Filed July 10, 1969, Ser. No. 840,763
Int. Cl. B01d *13/02*; C02b *1/82*
U.S. Cl. 204—301 5 Claims

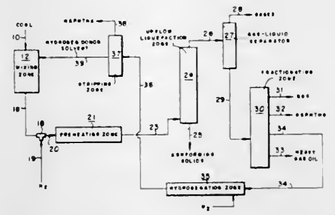


The invention is directed to an ion-selective membrane-electrodialysis apparatus employing a filler of ion-exchange resin in certain chambers of said apparatus for the purpose of deionizing solutions while simultaneously electrolytically regenerating said ion-exchange material.

3,645,885
UPFLOW COAL LIQUEFACTION

Grady W. Harris, Cambridge, Mass., and Frank B. Sprow, Houston, Tex., assignors to Esso Research and Engineering Company

Filed May 4, 1970, Ser. No. 34,224
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 12 Claims



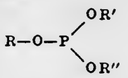
Coal is liquefied without employing internal mixing (by stirrers, etc.) in a turbulence-free upflow liquefaction zone, providing improved yields and selectivity of desirable liquid products than a well-mixed liquefaction zone. Before introduction to the upflow liquefaction zone, a slurry of the coal in a hydrogen-donor solvent is preheated to a temperature within the range from about 700° F. to about 900° F. and subjected to conditions of turbulence, a treatment which causes the coal particles, especially caking-type coal particles, to disintegrate without agglomeration. Introduced into a lower portion of the liquefaction zone, the coal, in mixed solid and liquid phase, is plug flowed upwardly at a superficial liquid velocity sufficient to carry upward all particles which have a maximum settling velocity of from about 0.01 to about 0.04 ft./sec. Particles of higher settling velocities settle through the zone. Continued dissolution of large convertible coal particles decreases their size until they too rise through the liquefaction zone. Settled ash-forming particles are removed from a lower portion of the zone. A liquefaction product is removed from an upper portion of the zone. The liquefaction product contains from about 70 to about 96 weight percent of MEK soluble materials. Solids recovered from a lower portion of the liquefaction zone contain from about 25 weight percent to about 35 weight percent of MEK insolubles and from about 35 to about 45 weight percent of ash. Conditions in the liquefaction zone include a temperature within the range from about 700° F. to about 1000° F., a pressure within the range from about 350 p.s.i.g. to about 3000 p.s.i.g. and an average liquid residence time within the range from about 5 minutes to about 60 minutes. The hydrogen-donor solvent may be supplemented with from abouut 0.1 to about 10 weight percent of hydrogen in gaseous form in the liquefaction zone. Preferred hydrogen donors include indane, C_{10}–C_{12} Tetralins, C_{12} and C_{13} acenaphthenes, di-, tetra-, and octahydroanthracene, and tetrahydroacenaphthene.

3,645,886
REDUCING FOULING DEPOSITS IN PROCESS EQUIPMENT

Bruce G. Gillespie, Cranford, and Jack E. Ryer, East Brunswick, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 778,751, Nov. 25, 1968, now Patent No. 3,558,470, which is a continuation-in-part of application Ser. No. 694,039, Dec. 28, 1967. This application May 15, 1970, Ser. No. 37,846
Int. Cl. C10g *9/16*; C10l *1/26*; C23f *14/00*
U.S. Cl. 208—48 AA 9 Claims

To reduce or prevent the fouling of process equipment in petroleum or chemical industries wherein an organic feedstock is subjected to heat exchange at a temperature of from about 200° to about 1300° F., there is added to that organic feedstock a very low concentration, of the order of about 0.5 to 200 parts per million, a mixture of about 75 to 99 wt. percent of a fatty acid ester of an alkanolamine and from about 1 to 25 wt. percent of a phosphorous acid or a mono, di, or tri-organic phosphite ester having the formula:

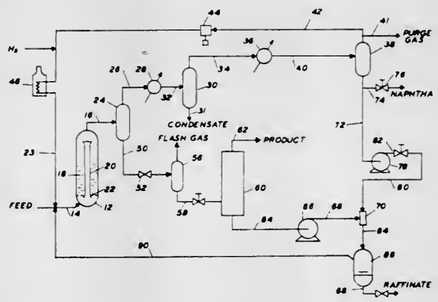


wherein R, R′ and R″ are hydrogen or a hydrocarbon radical, including alkyl, aryl, aralkyl, alkaryl, cycloalkyl, or alkenyl, or a simple halogenated derivative of such hydrocarbon radical.

3,645,887
HEAVY OIL HYDROGEN TREATING PROCESS

William R. Mounce, East Windsor Township, N.J., assignor to Cities Service Research and Development Company, New York, N.Y.

Filed Apr. 28, 1970, Ser. No. 29,214
Int. Cl. C10g *13/02, 37/00*
U.S. Cl. 208—96 6 Claims



A process for achieving a high conversion of residual heavy oil feedstock is disclosed. The process comprises withdrawing liquid effluent containing unconverted residual oil including thermally degraded material from an ebullated catalyst bed reactor operating at a temperature between about 800° F. and 900° F. and a pressure between 1500 p.s.i.g. and 400 p.s.i.g., mixing the unconverted residual oil with a naphtha stream condensed from reactor vapor effluent, separating the mixture into an extract containing unconverted residual oil miscible in the naphtha and a raffinate containing the thermally degraded material and recycling the extract to the reactor in order to increase the amount of available unconverted residual oil in the liquid phase in the reactor.

3,645,888
CATALYTIC REFORMING PROCESS

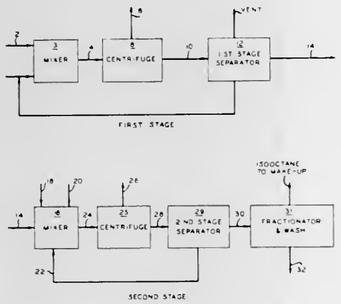
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 828,762, May 28, 1969. This application June 26, 1970, Ser. No. 50,295
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 17 Claims

A gasoline fraction is catalytically reformed by contacting, in a reforming zone at reforming conditions, the gasoline fraction, hydrogen and water or a water-producing substance with a catalytic composite comprising a combination of a platinum group component, a germanium component and a halogen component with a porous

carrier material. Key feature involves maintaining the total amount of water, or water equivalent, continuously entering the reforming zone in the range of about 10 to about 50 wt. p.p.m. of the gasoline fraction.

3,645,889
ISOLATION OF n-PARAFFINS FROM MIXED BRANCH AND STRAIGHT CHAIN HYDROCARBONS
Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 29, 1969, Ser. No. 888,230
Int. Cl. C07b *21/00*
U.S. Cl. 208—308 **6 Claims**



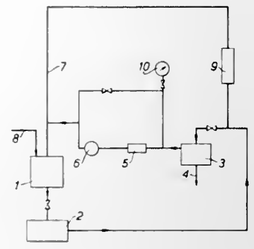
A high purity n-paraffin stream is efficiently achieved by admixing the partially enriched n-paraffin stream from a first urea adduction stage with a low boiling solvent-diluent, re-adducting, then recovering an enriched n-paraffin stream in which the major portion of the occluded impurity is the easily separable low boiling solvent-diluent.

3,645,890
REVERSE OSMOSIS MEMBRANES FROM CRYSTALLINE POLYMERS OF VINYL METHYL ETHER
Carl A. Lukach and Harold M. Spurlin, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed May 6, 1969, Ser. No. 822,289
Int. Cl. B01d *39/00, 13/00*
U.S. Cl. 210—23 **10 Claims**

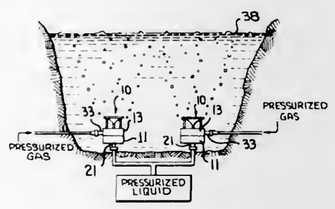
Reverse osmosis membranes useful for desalination of water comprise thin films of crystalline homopolymers or copolymers of vinyl methyl ether which are either supported on a microporous substrate or in the form of thin walled hollow fibers.

3,645,891
SEPARATION OF METAL COMPOUNDS
Alan Goldup, Weybridge, Michael Thomas Westaway, Ottershaw, and Geoffrey Walker, Woking, England, assignors to The British Petroleum Company Limited, London, England
Filed Oct. 22, 1969, Ser. No. 868,551
Claims priority, application Great Britain, Oct. 29, 1968, 51,232/68
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **15 Claims**

An organometallic compound of a metal of Group VIII or VII–A or V–A of the Periodic Table according to Mendeleef is separated from a solution of the compound in an organic component, by bringing the solution into contact with one side of a silicone rubber membrane at an applied pressure greater than the pressure on the opposite side of the membrane, the pressure differential being greater than the osmotic pressure of the system and the molecular cross section of the organometallic compound being greater than that of the organic component and collecting as a liquid the organic component which permeates the membrane, the permeate having a reduced content of the organometallic compound.



3,645,892
AERATION AND FOAM SEPARATION EMPLOYING VORTEX ELEMENT
Edward H. Schulman, Greenbelt, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.
Filed June 13, 1969, Ser. No. 833,011
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **15 Claims**

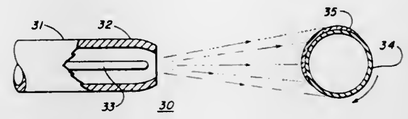


A vortex valve having supply and control inlet ports is supplied with pressurized gas and pressurized liquid at respective ones of its inlet ports, and provides an output flow comprising the liquid with interspersed tiny gas bubbles. The output flow may be employed to transfer the gas bubbles to a body of liquid for aeration purposes. Alternatively the output flow is employed in foam separation processes wherein the tiny gas bubbles efficiently induce flotation of surface-active or flocculent material suspended or otherwise immersed in a body of liquid.

3,645,893
METHOD OF TREATING ANIMAL WASTE
Ernst Rohrer, Boden, CH–9470 Buchs, Switzerland
No Drawing. Filed Aug. 19, 1969, Ser. No. 851,452
Claims priority, application Switzerland, Aug. 22, 1968, 12,616/68
Int. Cl. C02c *5/02*
U.S. Cl. 210—50 **16 Claims**

The invention relates to a method of treating waste from animal excreta in the form of manurial liquids by precipitating or flocculating the liquid and solid constituents and thereafter separated.

3,645,894
FREE-FLOWING PLASMA SPRAY POWDER
Casimir W. Krystyniak, Schenectady, N.Y., assignor to General Electric Company
Original application Dec. 1, 1965, Ser. No. 510,931, now Patent No. 3,429,962, dated Feb. 25, 1969. Divided and this application Aug. 16, 1968, Ser. No. 753,211
Int. Cl. B05b *7/20;* **C04b** *35/48*
U.S. Cl. 252—1 **3 Claims**



The preparation of metallic oxide layers and bodies consisting thereof by the plasma spray deposition of substantially spherically-shaped agglomerate particles of metal oxides, the particles being substantially uniform in composition and having as at least one of the metal oxides an oxide of a refractory metal, is described. Specific examples include a free-flowing powder of such spherical particles containing in physical combination (a) a first metal oxide selected from the group consisting of unstabilized zirconia and undoped thoria and (b) a second metal oxide selected from the group consisting of CaO, a mixture of rare earth oxides, Y_2O_3 and Yb_2O_3 and describe the deposition of such a powder by plasma arc spraying. As the result of this method of deposition the unstabilized ZrO_2 becomes stabilized or the undoped ThO_2 becomes doped.

3,645,895
SODIUM CHLORATE COMPOSITIONS OF REDUCED FIRE HAZARD CONTAINING AN ALKALI METAL SILICATE FIRE RETARDANT
John A. Peterson, Niagara Falls, N.Y., and Albert H. Ross, Niagara Falls, Ontario, Canada, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Jan. 15, 1968, Ser. No. 697,637
Int. Cl. C09k *3/28;* **A01n** *5/00;* **B23p** *1/16*
U.S. Cl. 252—8.1 **14 Claims**

An alkali metal silicate alone or in combination with one or more alkali metal or ammonium-chromate, hydroxide, carbonate, sulfate, borate and phosphate when added to solutions of an alkali metal or ammonium chlorate in minor amounts will act as flame retardants for combustible organic material upon which the chlorate has been deposited. The function of these flame retardants when added to chlorate containing solutions does not detract from the function of the chlorate solution in electrochemical machining, milling and grinding operations or in agricultural applications.

3,645,896
FILM FORMING HYDRAZINE-CONTAINING CORROSION INHIBITOR
Arthur L. Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Jan. 10, 1969, Ser. No. 790,485
Int. Cl. C23f *11/00*
U.S. Cl. 252—8.55 D **3 Claims**

Corrosion rates in oil wells are reduced by injecting in combination from about 5 to about 200 p.p.m. of a film-forming nitrogen-containing corrosion inhibitor (e.g. an imidazoline compound) and 0.01–1.0 p.p.m. of hydrazine. Such is especially useful with water injection wells.

3,645,897
WATER BASED LUBRICANTS
Howard D. Gower, Munster, Ind., and Bob G. Gower, Park Forest, and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 712,965, Mar. 14, 1968. This application Sept. 26, 1969, Ser. No. 861,500
Int. Cl. C10m *1/28*
U.S. Cl. 252—34.7 **26 Claims**

Water-soluble amine salts of styrene-maleic anhydride copolymer resins and half-esters thereof are employed in aqueous solutions as coolants and lubricants for metal working and operations. Metal working lubricant compositions are also formulated which comprise these amine salts along with extreme pressure agents such as amine salts of fatty acids and organic phosphate esters. Other additives may also be employed in the lubricating compositions of this invention.

ERRATUM

For Class 252—62.9 see:
Patent No. 3,645,974

3,645,898
MAGNET CORE BUILT UP FROM TITANIUM-CONTAINING MANGANESE-ZINC-FERROUS FERRITE AND METHOD OF MANUFACTURING THE SAME
Jacob Klerk and Theodorus Gerhardus Wilhelmus Stijntjes, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 30, 1969, Ser. No. 820,455
Claims priority, application Netherlands, May 2, 1968, 6806184
Int. Cl. C04b *35/38*
U.S. Cl. 252—62.59 **5 Claims**

A magnet core having a temperature factor of the effective magnetic initial permeability which is substantially constant over an extensive temperature range, especially suitable for use in inductance-capacitance filters in which polystyrene capacitors are used. The temperature variability of the capacity of the capacitors in question may then be compensated for by the temperature variability of the filter coils, in which the magnet cores according to the invention serve as core bodies.

The magnet cores according to the invention consist of a ferrite material having a composition lying within the following range of concentration limits of the five-components system MnO—ZnO—Fe_2O_3—TiO_2—FeO:

27–40 mol. percent MnO
8–16 mol. percent ZnO
40–49.5 mol. percent Fe_2O_3
0.5–7, preferably 2–6 mol. percent TiO_2
3–7.5 mol. percent FeO.

These cores are manufactured by mixing MnO, ZnO, Fe_2O_3 and TiO_2, or compounds which decompose upon heating to form those oxides in proportions yielding upon sintering the aforesaid materials, compacting the oxide mixture into cores which are heated to between 1100° C. and 1450° C. for 30 to 60 minutes and thereafter cooling in an atmosphere containing specified quantities of oxygen.

3,645,899

MOLDED EPOXY RESIN ELECTRICAL INSULATING BODY CONTAINING ALUMINA AND SILICA

Donald H. Linson, Mansfield, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio

Filed Aug. 19, 1968, Ser. No. 753,414
Int. Cl. H01b *3/08, 3/10, 3/40*
U.S. Cl. 252—63.5 4 Claims



There is provided a resinous molded insulating device, e.g. a line post insulator, having improved tracking characteristics at high voltages formed from an alicyclic diepoxy carboxylate which enables a substantial reduction in the amount of hydrated alumina contained in the resinous body over that required with other resins. The invention also relates to a method of producing these products characterized by the ability to interrupt the hardening reaction occurring with the compositions at the gel stage when the product is quite rubbery but cohesive whereby the product is removed from the mold in the partially cured state and the cure is completed outside the mold.

3,645,900

ELECTRO-INSULATING VARNISHES

Klaus Ohm and Joseph Weder, Offenbach am Main, Germany, assignors to Schramm Lack- und Farbenfabriken Aktiengesellschaft, Offenbach am Main, Germany

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,378
Claims priority, application Germany, Sept. 21, 1967, P 16 69 046.3
Int. Cl. H01b *3/30;* B44d *1/42*
U.S. Cl. 252—63.7 18 Claims

Electro-insulating stoving varnish made by condensing itaconic acid or an ester of itaconic acid with a monoamino or diamino compound.

3,645,901

WATER-IN-OIL HYDRAULIC FLUID

Howard J. Matson, Harvey, Ill., assignor to Atlantic Richfield Company

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,964
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 18 Claims

Fire resistant, water-in-oil emulsions suitable for use as hydraulic fluids and having improved wear resistance over a wide range of operating conditions, including high pressure conditions, are obtained by incorporating anti-wear additives into the oil phase and certain additives which exhibit anti-wear properties in the water phase. The water phase anti-wear additives include the alkanolamine salts of boric acid and the trialkanolamine borates.

3,645,902

FRICTION OR TRACTIVE DRIVE FLUID COMPRISING ADAMANTANES

Irl N. Duling, West Chester, Frederick P. Glazier, Thornton, and David S. Gates, Swarthmore, Pa., and Robert E. Moore, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Nov. 14, 1969, Ser. No. 876,993
The portion of the term of the patent subsequent to Aug. 3, 1988, has been disclaimed
Int. Cl. C09k *3/00*
U.S. Cl. 252—73 11 Claims

A friction or tractive drive comprises at least two relatively rotatable members in torque transmitting relationship, the tractive surfaces of the members having disposed thereon one or more tractants selected from at least one of the following groups (1) or (2):

(1) a tractant comprising alkylated adamantane hydrocarbon having one adamantane nucleus per molecule with the C_3–C_{20} alkyl moiety as a bridgehead substituent; and,

(2) bis-type hydrocarbon product having two adamantane nuclei linked between bridgehead positions through the C_3–C_{20} alkylene moiety.

3,645,903

WATER-IN-OIL EMULSION HYDRAULIC FLUIDS

Michael A. Stram, Chicago, and Charles L. Zuraw, Harvey, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Feb. 14, 1969, Ser. No. 799,506
Int. Cl. C09k *3/00*
U.S. Cl. 252—77 13 Claims

Stable, water-in-oil emulsions are provided by emulsifying water and mineral oil with oil-soluble mixed imides of styrene-maleic anhydride copolymers which are imidized to at least about 50 mole percent and preferably about 100 mole percent. These emulsions can be readily formed by dissolving in mineral oil an emulsifying amount, such as about 2 to 15 percent by weight of the oil, of the mixed imide and mixing with up to about an equal or more amount of water. The oil-soluble mixed imide is the reaction product of a styrene-maleic anhydride copolymer with a dialkylaminoalkylamine, such as dimethylaminopropylamine, and a primary alkylamine, such as N-stearylamine or a C_{20-22} primary alkylamine, in a mole ratio of dialkylaminoalkylamine to primary alkylamine of about 1:3 to less than about 2:1, the total amount of amines being sufficient to imidize at least about 50 mole percent, and preferably about 100 mole percent, of the styrene-maleic anhydride copolymer. These emulsions possess good stability and rust inhibiting properties. They can be used as lubricating compositions and hydraulic fluids.

3,645,904

SKIN CLEANER

Willis J. Beach, Saginaw, Mich., assignor to Sugar Beet Products Company, Saginaw, Mich.

No Drawing. Filed July 27, 1967, Ser. No. 656,326
Int. Cl. C11d *9/04*
U.S. Cl. 252—89 10 Claims

A skin cleaner of the type having plastic synthetic resin materials in a fine state of comminution included therein so as to impart a scrubbing or mechanical detersive action thereto.

3,645,905

CORROSION INHIBITED MULTI-PURPOSE METAL CLEANER

Myer Rosenfeld, Baltimore, and Troy R. Nichols, Bel Air, Md., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,305
Int. Cl. C09d *9/04;* C11d *3/08;* C23f *11/06*
U.S. Cl. 252—540 8 Claims

A multi-purpose cleaner comprising sodium metasilicate, dodecyl benzene sodium sulfonate, and a nonionic surfactant in combination with a metal corrosion inhibitor consisting of sodium or potassium stannate.

3,645,906

NOVEL COMPOSITIONS OF MATTER AND METHODS FOR PREPARING THE SAME

Joseph C. Valenta and Alfred F. Steinhauer, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 228,026, Oct. 3, 1962. This application Aug. 6, 1968, Ser. No. 750,494
Int. Cl. C11d *1/24, 7/50;* D06l *1/02*
U.S. Cl. 252—171 2 Claims

The present invention involves making clear solutions of hydrophobic liquids and water or aqueous solutions of acids, bases, or salts. It is shown that an alkylated diphenyloxide sulfonic acid salt alone, if halogenated, or if unhalogenated then in combination with certain commercial surfactants, will solubilize into a clear solution a hydrophobic liquid (e.g., chlorinated hydrocarbon) and water, or a solution of an acid, base, or salt in water.

3,645,907

COMPOSITION PREPARED BY TREATING DIAMINE-KETONE MIXTURES WITH CALCIUM CARBIDE

William E. Jackson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Summit, Ohio

No Drawing. Filed Aug. 25, 1969, Ser. No. 869,984
Int. Cl. C08g *22/04, 51/84*
U.S. Cl. 252—182 3 Claims

A composition and method of preparation which comprises treating a mixture of a diamine having primary amino groups and liquid ketone with calcium carbide and a method of curing a polyurethane therewith. The composition and method are particularly useful in the preparation of curatives for polyurethane.

3,645,908

KETONE PEROXIDE COMPOSITION STABILIZED WITH AN AMINE

Wolfgang Edl, Grosshesselohe, Gebhard Faber, Hohenschaftlarn, Michael Koehler, Munich, Heinz Winter, Pullach, and Heinz Meyer, Munich, Germany, assignors to Elektrochemische Werke Munchen Aktiengesellschaft, Hollriegelskreuth, near Munich, Germany

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,444
Claims priority, application Germany, Sept. 23, 1966, E 32,532; May 31, 1967, E 34,095
Int. Cl. C07c *73/00;* C08f *1/60*
U.S. Cl. 252—186 8 Claims

A cross-linking composition which is particularly suitable for the cross-linking of unsaturated polyester resins, contains at least one ketone peroxide, a solvent therefor, and at least one amine compound.

3,645,909

VARIABLE DENSITY LIGHT FILTERING SYSTEM

Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 30, 1969, Ser. No. 837,764
The portion of the term of the patent subsequent to Oct. 29, 1985, has been disclaimed
Int. Cl. F21v *9/00, 9/06;* G02b *5/24*
U.S. Cl. 252—300 9 Claims

A system having the property of automatically varying in optical density in response to a variation in incident light including a solution of a photochromic leuco dye and a completely reversible reducing agent both dissolved in a high viscosity polyhydric alcohol.

3,645,910

AQUEOUS SOL AND GEL OF ZIRCONIUM COMPOUNDS

James Louis Woodhead, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

No Drawing. Original application June 5, 1967, Ser. No. 643,348, now Patent No. 3,518,050, dated June 30, 1970. Divided and this application Nov. 14, 1969, Ser. No. 877,047
Claims priority, application Great Britain, June 9, 1966, 25,840/66
Int. Cl. B01j *13/00;* C01g *25/00*
U.S. Cl. 252—313 R 2 Claims

The invention discloses a novel zirconium compound wherein the ratio of nitrate to zirconia is about 1.1. This compound is made by reacting zirconium hydroxide or carbonate with nitric acid to provide a water-based sol. The sol may be converted into the gel by drying at about 80–90° C. over a period of a few days to give a solid glassy mass which can easily be re-dissolved in water to give the sol. The gel has the empirical formula:

$$[Zr_4(OH)_{12}(NO_3)_2(H_2O)_4](NO_3)_2 \cdot 2H_2O$$

and contains lattice water, covalent nitro groups and ionic nitrate groups.

3,645,911

METHOD FOR ENCAPSULATING AQUEOUS OR HYDROPHILIC MATERIAL

Jan Frans van Besauw, Brasschaat, and Daniel Alois Claeys, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,545
Claims priority, application Great Britain, Nov. 20, 1968, 55,080/68; Dec. 31, 1968, 2,229/68
Int. Cl. A61k *9/04;* B01j *13/02;* G03c *1/10*
U.S. Cl. 252—316 7 Claims

In the encapsulation of water-soluble substances according to U.S. Pat. 3,523,906, a variation in the concentration of such substance in the aqueous core solution is avoided by incorporating in the aqueous continuous phase containing a hydrophilic colloid, the same water-soluble substance to be encapsulated in a concentration at least as great as its concentration in the aqueous core solution.

3,645,912

REGENERATION OF UNSUPPORTED VANADIUM SULFIDE CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,000
Int. Cl. B01j *11/76, 11/02*
U.S. Cl. 252—411 R 2 Claims

A carbonized, unsupported vanadium sulfide catalyst is regenerated with hydrogen sulfide or elemental sulfur by way of a two-stage treatment at elevated temperatures. The first stage is effected at temperatures above about

500° C., whereby carbon disulfide is formed, and the second stage is effected at temperatures below about 500° C., whereby vanadium tetrasulfide is formed. In a preferred method, the carbonized catalyst and elemental sulfur are contacted and heated in a hydrogen sulfide atmosphere. Further, carbon disulfide may be used at the lower temperature to form the vanadium tetrasulfide.

3,645,913

REGENERATION OF COPPER OXIDE AND COPPER CHROMITE CATALYSTS

Clarence E. Habermann, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 5, 1969, Ser. No. 882,715
Int. Cl. B01j *11/30, 11/66*
U.S. Cl. 252—416 **8 Claims**

The activity of a copper oxide or copper chromite catalyst deactivated while being used to convert a nitrile to the corresponding amide may be regenerated by oxidizing the used catalyst in an oxygen-containing gas at an elevated temperature and then contacting the oxidized copper oxide or copper chromite with a reducing agent such as hydrogen at an elevated temperature.

3,645,914

CONVERSION OF INORGANIC OXIDES INTO EXTRUDABLE BINDERS

Edward J. Rosinski, Deptford, and Kenneth G. Simmons, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,662
Int. Cl. B01j *11/40, 11/06*
U.S. Cl. 252—455 R **18 Claims**

A method of rendering solid synthetic hydrous metal oxides or modified natural metal oxides in the form of a powder smaller than about 20 mesh (Tyler) containing 1–30 weight percent water at 1000° F. suitable for catalysts, catalyst binder or catalyst support by a rehydration process employing liquid water and/or steam at temperatures above 100° F. for at least 0.25 hour effecting a hydration of 10–80 weight percent water.

3,645,915

STABILIZED NICKEL OXIDE-NICKEL CHROMITE REFORMING CATALYST

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,257
Int. Cl. B01j *11/06*
U.S. Cl. 252—462 **5 Claims**

A nickel oxide-nickel chromite catalyst stabilized with the oxides of lanthanum or uranium is useful in the steam reforming of hydrocarbons. The catalyst can optionally contain other oxides as promoters, e.g. manganese oxide, magnesium oxide, cerium oxide and rare earth oxides.

3,645,916

METALLIC MORTARS

William Cornelius Hall, Albany Turnpike, Central Valley, N.Y. 10917, and John Merriam Peterson, Foleman Road, Rock Tavern, N.Y. 12575

No Drawing. Filed Nov. 2, 1967, Ser. No. 679,981
Int. Cl. C04b *31/18, 35/68*
U.S. Cl. 252—478 **21 Claims**

Metallic mortars containing an iron ore concentrate characterized by its high bulk density, its blackish shining appearance, and its sharp crystalline corners and flat cleavage planes, uniformly dispersed as a fine aggregate throughout an inorganic cement matrix.

3,645,917

POLYETHERS CONTAINING AZIDOMETHYL SIDE CHAINS

Edwin J. Vandenberg, Foulk Woods, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,186
Int. Cl. C08g *23/06*
U.S. Cl. 260—2 A **8 Claims**

High molecular weight polyethers are provided that contain azidomethyl groups pendant from the main polymer backbone. These polymers are characterized by containing from 0.2 to 100% of azidomethyl ethylene oxide repeating units. They are prepared by reacting a polymer of an epihalohydrin with a metal azide. The azidomethyl polyethers can be cross-linked by heating at low temperature (under 100° C.).

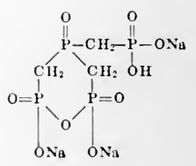
3,645,918

COPOLYMERS FROM ESTERS, SALTS AND ACIDS OF PARTIAL ANHYDRIDES OF PHOSPHINE OXIDE

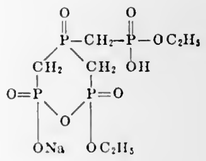
Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 832,492, June 11, 1969. This application Oct. 20, 1970, Ser. No. 82,532
Int. Cl. C08g *33/16, 33/20*
U.S. Cl. 260—2 P **9 Claims**

Copolymers prepared by copolymerizing a polyhydric compound or a polyamine compound with a partial anhydride of an alkylidene phosphonyl phosphine oxide such as:



or



wherein R, X, Y and *n* are defined in the specification.

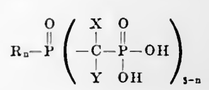
3,645,919

COPOLYMERS FROM PHOSPHINE OXIDE ANHYDRIDES

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 832,410, June 11, 1969. This application Oct. 20, 1970, Ser. No. 82,534
Int. Cl. C08g *33/16, 33/20*
U.S. Cl. 260—2 P **12 Claims**

Polymers prepared by copolymerizing a reactive hydrogen-containing material from the group polyhydric compounds and polyamine compounds with a full anhydride of an organoalkylidene phosphonyl phosphine oxide having the formula:



wherein R, X, Y and *n* are defined in the specification.

3,645,920

PROCESS OF POLYMERIZING A 1,2-MONOEPOXIDE WITH A POLYMERIC HYDROCARBYL ALUMINUM ALKOXIDE CATALYST

Robert K. Schlatzer, Jr., Chagrin Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,097
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A **4 Claims**

There is disclosed a process of polymerizing an epoxide-type monomer such as epichlorohydrin or ethylene oxide employing a new catalyst comprising the complex reaction product of a polymeric hydrocarbyl aluminum alkoxide containing Al—O—Al type linkages with (1) a chelator, (2) water and optionally (3) an ether. Such process produces rubbery polymerized epoxides having a polyether structure which have higher molecular weights and, with the epihalohydrins polymerized alone, more regular structures as indicated by higher crystallinity indices than corresponding polymers made with prior catalysts. The new catalysts also provide a higher yield of polymer per unit of catalyst at more vigorous reaction rates than do prior catalysts. The polyether type rubbers have considerable commercial utility because of their properties of good solvent-, fuel-, oil- and ozone-resistance which are effectively retained over a wide range of temperatures.

3,645,921

REGENERATION OF ANION EXCHANGE RESINS

Eli Salem, Brooklyn, N.Y., and Donald J. Butterworth, Lyndhurst, and Leo F. Ryan, Somerville, N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 30,058
Int. Cl. B01d *15/06;* **C02b** *1/76*
U.S. Cl. 260—2.1 R **11 Claims**

The invention relates to a method for converting strong-base anion exchange resins from the monovalent anion form to the hydroxide form. A solution of polyvalent anions is first passed through the resin to displace the monovalent anions. A solution of alkali metal hydroxide is then passed through the resin to convert it to the hydroxide form, and to produce an effluent solution of hydroxide ions and polyvalent anions. This effluent solution is then neutralized with an acid containing polyvalent anions, and the neutralized solution is passed through a second batch of resin in the monovalent anion form. In the preferred embodiment, a portion of the effluent is retained without neutralization and is delivered to the second batch of resin after the neutralized effluent to perform a portion of the hydroxide regeneration.

3,645,922

ION-EXCHANGE RESINS

Donald Eric Weiss, Blackburn, Victoria, Brian Alfred Bolto, Mitcham, Victoria, and Donald Willis, Blackburn, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Filed Nov. 22, 1968, Ser. No. 778,154
Claims priority, application Australia, Nov. 22, 1967, 30,165/67
Int. Cl. C08f *29/30, 29/36, 29/50*
U.S. Cl. 260—2.1 R **30 Claims**

Composite ion exchange adsorbent in particulate form comprising particulate acidic and basic ion exchange materials dispersed in a homogeneous matrix of a water-insoluble and ion-permeable polymeric material, preferably poly (vinyl alcohol). Such adsorbents may be made by dispersing the ion exchange materials in a solution of the polymeric material in a solvent, dispersing the dispersion in a medium immiscible with the solution, and removing at least a part of the solvent. The adsorbent is particularly suitable for use in the demineralisation of salt solutions.

3,645,923

CARBODIIMIDE FOAM COMPOSITION AND PROCESS FOR THE PREPARATION THEREFOR

Peter T. Kan. Livonia, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,985
Int. Cl. C07c *119/04;* **C08g** *53/08*
U.S. Cl. 260—2.5 **9 Claims**

Novel carbodiimide foams are prepared by condensing an organic polyisocyanate in the presence of a catalytically sufficient amount of a 2,4,6-tris(dialkanolamino)-s-triazine catalyst. The foams of the present invention are rigid, dense, cellular compositions which exhibit excellent flame retardancy and low smoking characteristics.

3,645,924

PROCESS FOR PREPARING FLEXIBLE POLYURETHANE FOAMS AND POLYURETHANE COATINGS

Adolf Wojciech Fogiel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 814,434, Apr. 8, 1969, which is a continuation-in-part of application Ser. No. 765,034, Oct. 4, 1968. This application Feb. 3, 1970, Ser. No. 8,420
Int. Cl. C08g *22/24, 22/36*
U.S. Cl. 260—2.5 AC **18 Claims**

Aliphatic isocyanate based polyurethane foams and coatings. The foams are prepared from aliphatic polyisocyanates, polyols and water in quasi-prepolymer, full prepolymer or one-shot systems using a 2-substituted-1,1,3,3-tetraalkyl guanidine catalyst. The coatings are conventional isocyanato - terminated polyurethane prepolymers cured with moisture in the presence of a 2-substituted-1,1,3,3-tetraalkyl guanidine.

3,645,925

4,4'-DIMORPHOLINODIETHYL ETHER CATALYST FOR POLYURETHANE PREPARATION

George P. Speranza and Michael Cuscurida, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed July 31, 1970, Ser. No. 60,087
Int. Cl. C08g *22/38, 22/44*
U.S. Cl. 260—2.5 AC **4 Claims**

A new amine catalyst for a polyurethane reaction is 4,4'-dimorpolinodiethyl ether. The catalyst is specific for the isocyanate water portion of the urethane reaction and, therefore, is a valuable means of balancing the competing reactions during urethane formation. Flexible polyurethane foams may be used, for example, in cushioning, while rigid polyurethane foams may be used, for example, as insulation.

3,645,926

STABILIZED, SELF-EXTINGUISHING LATEX FOAM RUBBER

Alfred Norman Dunlop, Windsor, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Continuation of application Ser. No. 704,507, Feb. 12, 1968. This application Oct. 29, 1970, Ser. No. 85,219
Claims priority, application Canada, Feb. 18, 1967, 983,202
Int. Cl. C08f *47/10, 15/26, 37/18*
U.S. Cl. 260—2.5 L **5 Claims**

By employing a latex blend having at least 60% solids, which is prepared by:

(a) blending (1) a latex of a resinous vinylidene halide copolymer having ethylenic unsaturation with (2) a latex of a rubbery diolefinic hydrocarbon/vinylidene chloride copolymer,

(b) subjecting this latex blend to coagglomeration treatment,
(c) adding additional resinous latex (1) such that the total halogen of the contained polymers is of the order of 38%,
(d) concentrating this final latex to a solids content of at least 60% yet a viscosity of no more than 12 poise when at 60% solids, and
(e) compounding, foaming, gelling and vulcanizing the concentrated blend,

there is produced a flame-retardant foam rubber composition.

3,645,927
POLYURETHANE CATALYST
Karlheinz Andres, Cologne, Flittard, Franz Karl Brochhagen, Odenthal, Anton Wunderer, Leverkusen, and Josef Fulber, Osnabrueck, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 13, 1969, Ser. No. 824,313
Claims priority, application Germany, May 15, 1968, P 17 69 367.3
Int. Cl. C08g *22/42, 22/44*
U.S. Cl. 260—2.5 AB **4 Claims**

A catalyst is provided for the production of urethane-containing polymers by the reaction between an organic polyhydroxy compound and an organic polyisocyanate in the presence of a blowing agent wherein di-n-octyl tin mercaptide is used as the activator for the isocyanate/hydroxyl hydrogen reaction.

3,645,928
PROCESS FOR THE PREPARATION OF POLYLACTAM FOAMS
Nobuo Wakamura, Hiroshi Okada, Atsushi Osakada, and Takashi Tanaka, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
No Drawing. Filed July 16, 1969, Ser. No. 842,394
Int. Cl. C08j *1/20, 1/26*
U.S. Cl. 260—2.5 N **8 Claims**

An improved process is provided for the preparation of polylactam foams in which ε-caprolactam or a mixture of lactams containing more than 50 mol percent of ε-caprolactam is anionically polymerized in the presence of an alkali catalyst, a blowing agent and a promoter at a temperature of about 100–180° C. The improved process is particularly characterized by the use of a promoter which when added to a mixture of lactam and alkali catalysts causes the mixture to solidify due to crystallization within 3 minutes and to produce a polylactam having a relative viscosity of at least 3 when a conversion reaches equilibrium. The polylactam foams of this invention exhibit improved mechanical and chemical properties in comparison with the polylactam foams of the prior art which make them especially useful for the manufacture of low density articles requiring relatively high strength and chemical resistance.

3,645,929
EXPANDABLE INSULATION COMPOSITIONS
James K. Normanton, Bishop Auckland, Durham, England, assignor to Bakelite Xylonite Limited
No Drawing. Filed July 22, 1969, Ser. No. 843,766
Claims priority, application Great Britain, July 19, 1968, 34,508/68
Int. Cl. C08f *47/10, 29/04;* **B44d** *1/42*
U.S. Cl. 260—2.5 E **10 Claims**

Expandable compositions for electrical conductor insulation contain low density polyethylene and a small amount of high density polyethylene or polypropylene; expanded compositions and electrical conductor coated therewith.

3,645,930
EXPANDABLE COMPOSITIONS AND PRODUCTS
James K. Normanton, Bishop Auckland, Durham, England, assignor to Bakelite Xylonite Limited
No Drawing. Filed July 22, 1969, Ser. No. 843,767
Claims priority, application Great Britain, July 19, 1968, 34,510/68
Int. Cl. C08f *29/04, 47/10;* **B44d** *1/42*
U.S. Cl. 260—2.5 E **7 Claims**

Azodicarbonamide is used with a second organic blowing agent to form cellular ethylene polymer products adaptable for electrical conductor insulation.

3,645,931
BLOWING AGENT COMPOSITIONS
James K. Normanton, Bishop Auckland, Durham, England, assignor to Bakelite Xylonite Limited
No Drawing. Filed July 22, 1969, Ser. No. 843,768
Claims priority, application Great Britain, July 19, 1968, 34,509/68
Int. Cl. C08f *29/04, 47/10;* **C09k** *3/00*
U.S. Cl. 260—2.5 R **8 Claims**

Blowing agent compositions comprising azodicarbonamide and a secondary blowing agent adaptable for expanding plastic materials.

3,645,932
NUCLEATION OF HIGH MOLECULAR WEIGHT POLYAMIDES
Stuart A. Harrison and Kenneth B. Stokes, Minneapolis, Minn., assignors to General Mills, Inc.
No Drawing. Continuation-in-part of application Ser. No. 612,816, Jan. 31, 1967. This application May 22, 1969, Ser. No. 827,039
Int. Cl. C08g *41/04*
U.S. Cl. 260—3 **13 Claims**

Relates to a process of developing rapidly the ultimate crystalline characteristics of certain polyamide resins derived from polymeric fat acids by the incorporation therein of a variety of nylon and other polyamide resins, polyethylene, polypropylene, polycarbonates and polyethylene acrylic acid copolymer ionomers.

3,645,933
COATING COMPOSITION INCLUDING ISOCYANATE-MODIFIED POLYESTER AND CHLORINATED RUBBER
Thomas F. Flint, Laurel Springs, N.J., assignor to The Sherwin-Williams Company, Cleveland, Ohio
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,108
Int. Cl. C08c *9/16;* **C08d** *9/10;* **C08g** *17/16*
U.S. Cl. 260—3.3 **9 Claims**

There is provided an improved coating composition particularly useful for highway marking paints and characterized by extremely fast dry time. The composition includes as essential ingredients an isocyanate-modified polyester such as toluene diisocyanate modified linseed oil/glycerol/phthalate and a chlorinated rubber.

3,645,934
OZONE RESISTANT BLENDS OF NATURAL RUBBER/POLYCHLOROPRENE/EPDM COPOLYMER AND A PROCESS FOR THE PREPARATION THEREOF
Stanley William Caywood, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 10, 1970, Ser. No. 62,595
Int. Cl. C08c *9/10*
U.S. Cl. 260—5 **11 Claims**

There is provided a vulcanizable elastomeric composition having improved resistance to ozone and a process for its preparation. The process consists essentially of preparing a premix by mixing about 15–30 parts based on the total weight of rubbers of a random, linear elastomeric ethylene/propylene/open-chain non-conjugated diene copolymer having a Mooney viscosity (ML–1+4/121° C.) of about 35–75 with about 20–35 parts based on the total weight of rubbers mercaptan-modified sol of a polymer of chloroprene having a Mooney viscosity (ML–1+2.5/100° C.) of about 50, and about 25–60 parts based on the total weight of rubbers of a reinforcing carbon black having an EM surface area of at least about 40 square meters per gram, and mixing the premix with about 50–60 parts based on the weight of total rubbers of natural rubber.

3,645,935
MERCAPTO CARBOXYLIC ACID MODIFIED BUTYL RUBBER
Charles E. Scott, Yardley, Pa., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Apr. 23, 1968, Ser. No. 723,574
Int. Cl. C08d *5/04*
U.S. Cl. 260—5 **19 Claims**

A modified butyl rubber containing carboxyl groups pendant to the polymer backbone. Butyl rubber is halogenated and the halogenated butyl rubber reacted with a mercapto carboxylic acid. Substitution of at least part of the halogen by the mercapto carboxylic acid occurs, presumably through the mercaptan group.

3,645,936
FLAME-RETARDANT REGENERATED CELLULOSE FILAMENTS
Brian C. Gardner, Kenilworth, England, assignor to Courtaulds Limited, London, England
No Drawing. Filed May 5, 1970, Ser. No. 34,868
Claims priority, application Great Britain, May 9, 1969, 23,676/69
Int. Cl. C08g *51/56;* **D01f** *3/12;* **D06m** *13/44*
U.S. Cl. 260—9 **10 Claims**

Flame retardant regenerated cellulose filaments incorporate both tris (2,3 dibromopropyl) phosphate (TDBPP) and a polymer made by reacting excess ammonia with tetrakishydroxymethyl phosphonium chloride (THPC) or THPC/urea or THPC/urea/melamine.

3,645,937
FOUNDRY SAND COMPOSITIONS CONTAINING GRAFT COPOLYMERS OF ACRYLIC ACID WITH WATER-SOLUBLE POLYHYDROXY POLYMERIC COMPOUNDS
William J. Lang, Libertyville, and John J. Krajewski, Wheeling, Ill., assignors to International Minerals & Chemical Corporation
No Drawing. Filed Sept. 4, 1968, Ser. No. 757,473
Int. Cl. B22c *1/26*
U.S. Cl. 260—17 A **16 Claims**

A sand core and mold composition for use in casting metals comprising foundry sand, clay, water and from about 0.0025% to about 1% by weight of a water-soluble graft copolymer of acrylic acid and a minor amount of a water-soluble polyhydroxy polymeric compound, including water-soluble salts thereof.

3,645,938
ADHESIVE COMPOSITIONS FOR WATER-WET CELLULOSIC MEMBRANES
Gerard J. Clarke, Rochester, and Martin E. Rowley, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Jan. 2, 1969, Ser. No. 788,613
Int. Cl. C09j *3/14*
U.S. Cl. 260—17 **2 Claims**

Water-wet cellulose acetate membranes can be joined together effectively by use of a liquid adhesive composition containing 2-ethoxyethyl acetate and/or methyl ethyl ketone and a compatible polymer.

The adhesive compositions can also contain a small amount of a tackifying resin such as poly(α-methyl styrene).

3,645,939
COMPATIBILIZATION OF HYDROXYL CONTAINING MATERIALS AND THERMOPLASTIC POLYMERS
Norman G. Gaylord, New Providence, N.J., assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio
No Drawing. Filed Feb. 1, 1968, Ser. No. 702,204
Int. Cl. C08f *29/10, 29/20 29/30*
U.S. Cl. 260—17.4 GC **18 Claims**

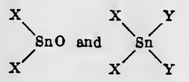
Composites are prepared from a material containing hydroxyl groups, such as cellulose, starch, polyvinyl alcohol, sand, metal or glass and a thermoplastic material containing labile atoms, such as polyethylene or polyvinyl chloride, by reacting the materials with a coupling agent, such as maleic anhydride, in the presence of a free radical initiator. An improved method for incorporating fillers or reinforcing agents into thermoplastic polymers is also provided by precoating the filler or reinforcing agent with a thermoplastic material containing labile atoms in the presence of a coupling agent and a free radical initiator.

3,645,940
POLYSACCHARIDE-REINFORCED RUBBER
Howard L. Stephens, Akron, and Thomas F. Reed, Cuyahoga Falls, Ohio, assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Sept. 18, 1969, Ser. No. 859,195
Int. Cl. C08d *9/06;* **C08c** *9/12*
U.S. Cl. 260—17.4 BB **11 Claims**

Moist polysaccharide-rubber coprecipitates are subjected to vigorous hot mechanical working during the critical phase inversion from rubber particles in a polysaccharide matrix to polysaccharide particles in a rubber matrix. This yields masterbatches which have better dispersion of polysaccharide in rubber than has been previously attained, and which provide vulcanizates having greatly improved strengths and elastic properties.

3,645,941
METHOD OF PREPARING 2-p-DIOXANONE POLYMERS
Thomas C. Snapp and Alden E. Blood, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 1, 1970, Ser. No. 24,877
Int. Cl. C08g *17/02*
U.S. Cl. 260—18 **10 Claims**

This invention relates to a method for preparing homopolymer of 2-p-dioxanone having molecular weights within the range of from about 2000 to about 4000 by utilizing an organotin catalyst having one of the general formulae:



in which the X's represent an alkyl, aryl, aralkyl, or an acyloxy radical and the Y's represent an alkyl, aryl, aralkyl, acyloxy, halogen, or hydroxy radical. These polymers are especially suitable as surface coating materials, e.g. waxes and polishes.

3,645,942
FOUNDRY PROCESS USING A PROPOXYLATED TOLUENE DIAMINE AS AN EXTENDER WITH A CASTOR OIL-AROMATIC DIISOCYANATE PREPOLYMER
Lloyd H. Brown, Crystal Lake, and Laurence J. Klemm, Elgin, Ill., assignors to The Quaker Oats Company, Chicago, Ill.
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,102
Int. Cl. B22c *1/24;* **C08g** *22/04*
U.S. Cl. 260—18 TN **4 Claims**

A foundry process is disclosed including the use of novel core binders which are prepared by first forming

a prepolymer from an aromatic polyisocyanate and non-drying castor oil; then mixing the prepolymer with a high molecular weight hydroxy containing material and an accelerator. The high molecular weight hydroxy containing material can be either an aliphatic polyether polyol or an aromatic polyether polyol. The accelerator can be either a metal naphthenate, organotin compound, or tertiary amine. The prepolymer may also include tung oil.

3,645,943

FREE ISOCYANATE-BLOCKED WRINKLE FINISH COATING COMPOSITIONS AND ARTICLES COATED THEREWITH

Arthur J. Krawczyk, Cheektowaga, N.Y., assignor to Textron Inc.

No Drawing. Filed June 19, 1970, Ser. No. 47,894
Int. Cl. C09d *3/72, 5/28*
U.S. Cl. 260—22 TN **33 Claims**

There is disclosed a normally-liquid, free isocyanate-blocked coating composition which forms a wrinkle-finish coating upon curing, comprising (I) the reaction product of (A) a diisocyanate-aliphatic polyol urethane prepolymer and (B) an isocyanate-reactive oxime, said reaction product containing an essentially stoichiometric equivalent of (B) per equivalent of free isocyanate in (A); and (II) a minor amount sufficient to cause a wrinkle-finish upon curing, e.g., at least about 0.1 weight percent based on the total solids content of urethane prepolymer and oxime in the composition, of zinc in the form of a zinc salt of an α-alkyl branched fatty acid, said zinc salt having been incorporated in the composition after the formation of the reaction product (I). Advantageously, a polyhydroxyl-containing crosslinking agent is also present in the liquid coating compositions and is also incorporated after the formation of the reaction product (I). A process of curing such compositions to effect a wrinkle-finish coating and articles coated therewith are also disclosed.

3,645,944

METALLIC SALTS OF MIXED ACIDS AS STABILIZERS FOR RIGID VINYL RESIN COMPOSITIONS

Edward L. White, Freehold, and William D. Lang, Rahway, N.J., assignors to NL Industries, Inc.

No Drawing. Original application July 31, 1968, Ser. No. 748,945, now Patent No. 3,562,180, dated Feb. 9, 1971. Divided and this application Oct. 6, 1970, Ser. No. 78,556
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 XA **2 Claims**

Lead salts of mixed saturated monocarboxylic aliphatic acids containing from 8 to 14 carbon atoms, lead salts coformed with alkaline earth salts of said mixed acids, and process therefor, as stabilizers for rigid vinyl halide resin compositions.

3,645,945

ASPHALT COMPOSITION

Sherman D. Lesesne, Georgetown, and George P. Speranza, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Feb. 15, 1967, Ser. No. 616,156
Int. Cl. C08g *51/52*
U.S. Cl. 260—28 **2 Claims**

The ductility and the elasticity of an asphalt composition is improved by the in situ formation therein of a polyurethane polymer from added polyol and organic polyisocyanate components. These resultant improved asphalt compositions are desirable for paving surfaces, roofing applications, soil stabilization, sealants and other applications wherein elasticity and ductility are important. The improved asphalt composition exhibits excellent heat stability after being held at high temperatures for an extended period of time.

3,645,946

WAX COMPOSITION

Stuart Lyman, Chicago, Ill., assignor to Surety Manufacturing Co., Inc., Dolton, Ill.

No Drawing. Filed June 23, 1969, Ser. No. 835,803
Int. Cl. C08g *51/52*
U.S. Cl. 260—28 **5 Claims**

A water-dispersible wax composition comprising a silicone, a cationic surfactant, a wax-like binder, an inorganic carrier having a high surface area, and a free flow agent.

3,645,947

LACTONE-DIENE-VINYL-AROMATIC TERPOLYMER EMULSIONS

Donald J. Quigg and James N. Short, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed June 25, 1970, Ser. No. 49,997
Int. Cl. C08d *9/10*
U.S. Cl. 260—28.5 **10 Claims**

Rubber emulsions, comprising (a) a lactone terpolymer, solvent, emulsifying agent and water or (b) a lactone terpolymer, asphalt, solvent, emulsifying agent and water and optionally containing conventional additives such as tackifiers and extender oils, are provided for stabiliing loose soil formations, highway surfaces, railroad ballast, and the like.

3,645,948

AUTOMOTIVE CARPET BACKSIZING COMPOSITION

Roland E. Stahl, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 707,985, Feb. 26, 1968. This application Nov. 9, 1970, Ser. No. 88,159
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 **4 Claims**

Automotive carpet backsizing compositions are disclosed which have superior adhesive properties and can be used to prepare carpets with improved shape retention. The compositions contain blends of particular ethylene/vinyl ester copolymers and microcrystalline or Fischer-Tropsch waxes having melting points of at least 165° F. and needle point penetration values of less than 10. Optionally, the compositions can contain a polyolefin such as polyethylene.

3,645,949

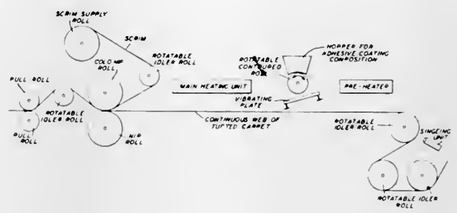
PROCESS FOR CONSTRUCTING TUFTED CARPETS AND RUGS AND BONDING AGENTS USEFUL THEREIN

Fred J. Crimi, Somerville, N.J., assignor to Union Carbide Corporation

Filed Apr. 4, 1968, Ser. No. 718,870
Int. Cl. C08f *29/12*
U.S. Cl. 260—28.5 **10 Claims**

Tufted carpets and rugs of fibrous strands are constructed by singeing the back of a tufted web, and preheating the back of the tufted web, applying a particulate bonding agent to the preheated web, heating the bonding agent above its fusion temperature and applying a pressure with cooling to force the bonding agent over the back of the tufted web and into the fibrous strands.

A novel composition utile as the bonding agent comprises a hydrocarbon polymer of a lower alkene, such as polyethylene, having a melt index less than 150, an ethylene/mono-unsaturated ester copolymer having a melt



index greater than 100 and a wax having a melting point of from 75° to 95° C.

3,645,950

STABILIZATION OF POLY(ETHYLENE OXIDE)

J John Stratta, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,657
Int. Cl. C08f *45/56, 45/62;* **C08g** *51/56*
U.S. Cl. 260—29.2 **3 Claims**

Process for stabilizing aqueous solutions of poly(ethylene oxide) by incorporating a stabilizing amount of manganous ion in the aqueous solution.

3,645,951

CARPET BACKING ADHESIVE AND METHOD OF MAKING

Erich F. Kujas, Philadelphia, Pa., assignor to Prodesco, Inc., Perkasie, Pa.

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,205
Int. Cl. C08g *37/32*
U.S. Cl. 260—29.4 UA **10 Claims**

There is provided an adhesive composition for bonding carpeting yarns to the carpeting backing consisting essentially of hydroxy acrylic acid ester latex, melamine-formaldehyde condensate, dodecenyl succinic anhydride and zinc oxide in defined proportions. A method for making the adhesive composition, and its use, are also provided.

3,645,952

COMPOSITION FOR PAPER COATING AND PRODUCT FORMED THEREFROM

Martin K. Lindemann, Somerville, and Rocco P. Volpe, Newark, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Mar. 31, 1965, Ser. No. 444,418
The portion of the term of the patent subsequent to Apr. 22, 1986, has been disclaimed
Int. Cl. C08f *45/24;* **D21h** *1/28*
U.S. Cl. 260—29.6 T **9 Claims**

A coating composition effective to deposit upon a fibrous web, such as paper or paper board, a glossy, bright coating having desirable "pick" characteristics comprises an aqueous synthetic polymer latex and a mineral filler, the latex containing dispersed vinyl acetate-ethylene-glycidyl acrylate interpolymer of 5 to 40%, preferably more than 15%, ethylene content, the dispersed copolymer having a particle size of 0.1μ to 0.25μ, the latex preferably having a solids content of 35 to 70% of interpolymer and 100 parts of filler preferably being present per 5 to 25 parts of latex solids.

3,645,953

POLYMER LUBRICANT

Raymond R. Hindersinn, Lewiston, and Charles S. Ilardo, Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,950
Int. Cl. C08k *1/40, 1/44*
U.S. Cl. 260—32.6 R **9 Claims**

Compounds of the formula

$$N(CH_2CNHR)_3$$
‖
O

wherein R is alkyl of 12 to 30 carbon atoms are employed as lubricants for vinyl compositions.

3,645,954

CATIONIC THERMOSETTING RESIN

Yutaka Terada, Takatsuki-shi, Masanobu Urata, Osaka, and Kumeo Yamamoto, Kyoto, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,230
Claims priority, application Japan, Feb. 10, 1968, 43/8,486
Int. Cl. C08g *20/20;* **D21h** *3/58*
U.S. Cl. 260—29.2 **6 Claims**

An aqueous cationic thermosetting resin solution is prepared by reacting an aliphatic dicarboxylic acid with a polyalkylenepolyamine, reacting the thus obtained polyamide intermediate with a lactam and further reacting an aqueous solution of the thus obtained block copolyamide with epichlorohydrin. The thus obtained resin solution is useful as an agent for improving a wet strength of paper, pigment retention aid and drainage improver, when applied to paper making, and further useful as a flocculant and shrink-proof agent.

3,645,955

PLASTICIZED, RADIOPAQUE VINYL RESIN COMPOSITIONS

Vincent J. Flynn, Tenafly, N.J., assignor to Scientific Tube Products, Inc., Englewood, N.J.

No Drawing. Continuation-in-part of application Ser. No. 826,778, May 6, 1969, which is a continuation-in-part of application Ser. No. 571,592, Aug. 10, 1966, now abandoned, which in turn is a continuation-in-part of application Ser. No. 518,186, Jan. 3, 1966, now abandoned. This application Mar. 18, 1970, Ser. No. 20,792
Int. Cl. C08f *45/40, 45/42*
U.S. Cl. 260—31.4 **29 Claims**

Novel plasticized, radiopaque compositions are provided by formulating vinyl resins with alkyl 2,5-diiodobenzoates, alkyl or alkoxyalkyl 2,3,4,6-tetraiodobenzoates (I), or mixtures thereof. The compositions are useful in the manufacture of X-ray opaque medical devices, particularly surgical tubing. The new compositions have improved radiopacity, lighter color and smoother surfaces after extrusion. When used singly or together, they have a wide range of flexibility and stiffness. Surgical tubing is provided in a wide range of sizes with properties essential to cardiovascular and ureteral catheterization techniques. The compositions are used also in tubing for stomach, nasal and thoracic catheters.

3,645,956

LIQUID MERCAPTO-TERMINATED POLYMER SEALANT COMPOSITIONS

John I. Doughty, White Bear Lake, and Philip G. Christman, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 15, 1967, Ser. No. 667,983
Int. Cl. C08g *43/00, 51/44*
U.S. Cl. 260—32.6 A **9 Claims**

A one-part, can stable, mercapto-terminated polymer-based sealant containing ingredients which enhance the

transmission of moisture vapor through the sealant body to improve the cure rate. The ingredients include a latent oxidative curing agent, a latent hygroscopic accelerating agent, and a material which promotes the movement of water through the sealant matrix.

3,645,957

POLYAMIDES WITH A PIGMENT DISPERSED IN THE PRESENCE OF DIETHANOLAMIDE AND DIETHANOLAMINE

David James, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 7, 1969, Ser. No. 813,997
Claims priority, application Great Britain, Apr. 10, 1968, 17,274/68
Int. Cl. C08g *51/02, 51/44*
U.S. Cl. 260—32.6 N **18 Claims**

Polyamides having pigments dispersed therein in the presence of a diethanolamine and preferably in the presence of a diethanolamine and a diethanolamide.

3,645,958

METHOD OF MAKING SHAPED ARTICLES FROM FIBERS BONDED WITH OIL-RESISTANT SYNTHETIC RUBBER

Henry Joseph Palumbo, Middlesex, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed May 20, 1968, Ser. No. 730,603
Int. Cl. C08c *11/22*
U.S. Cl. 260—33.6 A **7 Claims**

Shaped articles, such as sheets, made of fibers bonded together by an oil-resistant synthetic rubber, e.g., GRN rubber, are formed by working a dough containing the fibers and rubber into the required shape while evaporating solvent. The dough is prepared by mixing the fibers, plus other rubber compounding materials such as vulcanizing agents, with the oil-resistant rubber that has been previously solvated by soaking for at least several hours in an organic softening liquid diluent in which the rubber is at least substantially insoluble, and then working the mixture into a uniform softened mass by agitation. Sheets formed from the dough may typically be used for gaskets, flange packing, and the like.

3,645,959

PREPARATION OF HIGH MOLECULAR WEIGHT VINYL POLYMERS

Louis Anthony Pilato, Bound Brook, N.J., and Henry Octave Colomb, Jr., South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 5, 1970, Ser. No. 824
Int. Cl. C08f *45/28, 47/20*
U.S. Cl. 260—33.6 DA **15 Claims**

High molecular weight, non-aqueous dispersions, of such vinyl polymers as polyvinyl acetate, polyvinyl stearate, polyvinyl chloride, polyalkyl acrylates, polyalkyl methacrylates, and polystyrene have been prepared by copolymerizing the respective monomer with up to about one percent of a diene such as norbornadiene, ethylidene norbornene, the Diels-Alder reaction product of cyclopentadiene and norbornadiene, norbornadiene dimer and dicyclopentadiene.

3,645,960

POWDERED COATING COMPOSITIONS AND THE METHOD FOR THEIR APPLICATION

Laurence H. Haag, Reading, Pa., assignor to The Polymer Corporation, Reading, Pa.

No Drawing. Continuation-in-part of application Ser. No. 705,126, Dec. 26, 1957, now Patent No. 3,338,863. This application Aug. 7, 1967, Ser. No. 658,594
Int. Cl. C08f *51/04, 51/08*
U.S. Cl. 260—37 SB **5 Claims**

This application discloses a powdered coating composition characterized generally as being a dry blend of thermosetting film-forming resins suitable for forming a coating on an article by thermofusion with up to about 4% of a solid infusible material having an oil absorption value of at least 75 pounds per 100 pounds. Reference is made particularly to the use of synthetic silicates and carbon black for this purpose, as well as to the use of of phenolic resins and the silicone resins. There is also disclosed the use of finely divided silica and epoxy resins for this same purpose.

3,645,961

IMPACT RESISTANT CONCRETE ADMIXTURE

Solomon Goldfein, 1317 Jefferson Ave., Falls Church, Va. 22042

Continuation of application Ser. No. 425,367, Jan. 13, 1965. This application Dec. 5, 1967, Ser. No. 688,261
Int. Cl. C08f *45/16;* **C08g** *51/16*
U.S. Cl. 260—37 N **3 Claims**

The invention is an impact resistant concrete product comprising an admixture of inorganic hydraulic cement and selected aggregate, together with a plurality of selected fibers substantially uniformly distributed throughout said admixture.

3,645,962

FLAME RETARDANT POLYESTER COMPOSITIONS

Robert J. Schwarz, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,679
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **6 Claims**

Linear saturated polyesters and particularly poly(ethylene terephthalate) with improved flame retardancy are provided which contain from 3 to 15% of a homopolyether or copolymer of an oxetane substituted in the three position by 1 or 2 bromomethyl groups or with from 1 to 15% of said polyether and from 0.5 to 5% of an antimony compound.

3,645,963

POLYMERS STABILIZED WITH POLYMETHYLENE SULFIDE

Adam F. Kopacki, Westwood, N.J., and Nathaniel L. Remes, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 684,946, Nov. 22, 1967. This application Jan. 19, 1970, Ser. No. 4,459
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.7 S **6 Claims**

A solid polymeric composition consisting essentially of a solid polymer selected from the class consisting of a hydrocarbon polymer, a substituted hydrocarbon polymer, a polyester, a vinyl polymer and copolymers and terpolymers thereof, stabilized against ultraviolet rays by incorporating therein a stabilizing quantity of a polyalkylene sulfide.

3,645,964

FIRE RETARDANT ACRYLONITRILE POLYMER COMPOSITIONS

Joseph di Pietro, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Filed July 16, 1969, Ser. No. 842,383
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.7 P **3 Claims**

Films or fibers formed from an acrylonitrile polymer are rendered flame retardant by treating the polymeric material with a chlorine-containing hydrocarbon such as a chlorine-containing alkyl phosphate or phosphonate, and a bromine-containing phosphate ester such as tris (2,3-dibromopropyl) phosphate, the molar proportion of Br to Cl in the treated polymer ranging from 3:1 to 1:3.

3,645,965

STABILIZATION OF SYNTHETIC POLYMERS WITH IMIDAZOLIDINE COMPOUNDS

Keisuke Murayama, Syoji Morimura, Toshimasa Toda, Saburo Akagi, Tomoyuki Kurumada, and Ichiro Watanabe, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,974
Claims priority, application Japan, Oct. 23, 1967, 42/68,204; May 18, 1968, 43/33,429
Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.8 N **4 Claims**

Synthetic polymers such as homopolymers of olefins, copolymers of olefines with other ethylenically unsaturated monomers, polyurethanes, polyamides, polyacetals, polyesters, polymerized vinyl monomers and the like are stabilized against photo- and thermal-deteriorations thereof by having incorporated therein an effective amount of one of the 2,5-tri- or tetrasubstituted-4-oxo (or thioxo)-imidazolidines. Among these imidazolidines, some of the 2,5-tri- or tetrasubstituted-4-oxo-imidazolidines are novel substances and other imidazolidines as such are disclosed in the prior art. These novel and old 2,5-tri- or tetrasubstituted-4-oxo-imidazolidines are prepared by a novel process which comprises (1) reacting the corresponding α-aminonitrile with an appropriate ketone or aldehyde in the presence of a basic catalyst or (2) reacting the corresponding α-aminonitrile with an appropriate ketone or aldehyde and then subjecting the intermediate Schiff base to the action of a basic catalyst.

3,645,966

STABILIZATION OF RUBBER

Allen K. Sparks, Des Plaines, and Edwin J. Latos, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Dec. 20, 1967, Ser. No. 691,963, now Patent No. 3,530,076, dated Sept. 22, 1970. Divided and this application Apr. 17, 1970, Ser. No. 29,649
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 **8 Claims**

Stabilizing rubber against ozone cracking by incorporating therein a stabilizing concentration of a synergistic antiozonant mixture of from about 25% to about 75% by weight of N-isopropyl-N'-phenyl-p-phenylenediamine and correspondingly from about 75% to about 25% by weight of N,N'-di-sec-alkyl-p-phenylenedamine containing from 3 to 10 carbon atoms in each alkyl.

3,645,967

PHOTOCHROMIC COMPOUND

Walter Ried, Frankfurt am Main, and Arthur Heinrich Schmidt, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,130
Claims priority, application Germany, Nov. 21, 1969, P 19 58 485.1
Int. Cl. C07c *69/78*
U.S. Cl. 260—476 R **14 Claims**

This invention relates to novel photochromic compounds and to radiation-sensitive recording materials incorporating the said compounds.

3,645,968

SILICONE ELASTOMERS CONTAINING IRON COMPOUNDS AS STABILIZERS

Leslie Nathan Phillips, Farnborough, and David Kenneth Thomas, Farnham, England, assignors to National Research Development Corporation, London, England

No Drawing. Continuation-in-part of application Ser. No. 684,509, Nov. 20, 1967, which is a continuation-in-part of application Ser. No. 472,363, July 15, 1965. This application Apr. 28, 1970, Ser. No. 32,782
Claims priority, application Great Britain, July 15, 1964, 29,098/64
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 R **12 Claims**

Silicone elastomers are described which contain a hydrolytic degradation resistant additive which is an adduct or ferric chloride and an organic compound having three aromatic nuclei attached to one atom. Preferred adducts are those of ferric chloride with triphenylamine or with triphenyl carbinol and a convenient method of preparing the ferric chloride/triphenylamine adduct in solution is described.

The adducts of the present invention interfere with the cross-linking reaction of most curing agents but a class of curing agents, of which 2,5 - dimethyl-2,5-ditertiarybutyl peroxyhexane is the best member, which are not interfered with are disclosed.

3,645,969

CURABLE POLYEPOXIDE COMPOSITIONS CONTAINING AS A CURING AGENT A MIXTURE OF A POLYGLYCOL POLYAMINE AND AN ALKYLENE POLYAMINE

James R. Harvey, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 22, 1970, Ser. No. 48,471
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **18 Claims**

This invention relates to curable polyepoxide compositions, containing as the curing agent a mixture of a polyglycol polyamine and an alkylene polyamine, which when used in the desired manner, as for example in coating, casting or filament winding applications to form articles of desired shape, and cured to infusible products, are characterized by excellent flexibility and toughness and by excellent surface characteristics.

3,645,970

BENZOATE HOMOPOLYMERS HINDERED PHENOLIC GROUPS AS STABILIZERS

Eduard Karl Kleiner, New York, N.Y., assignor to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 738,770, June 2, 1968. This application Oct. 1, 1969, Ser. No. 862,934
Int. Cl. C08f *19/10;* **C07c** *69/76*
U.S. Cl. 260—47 U **2 Claims**

Benzoate monomers containing hindered phenolic groups are derived from α,β-unsaturated acids and benzoic acids containing hindered phenolic groups. The monomers are polymerized, by a free radical initiator yielding polymers which are stabilized of organic materials against degradation caused by oxidation and ultraviolet light. The polymeric stabilizers can be used alone or in combination with other stabilizers.

3,645,971

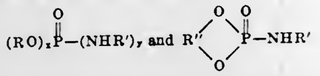
FIRE RETARDANT EPOXY RESINS CONTAINING PHOSPHORAMIDATES

Raymond R. Hindersinn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,865
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 CN **4 Claims**

There is provided a process for producing fire retardant epoxy resins which comprises curing a mixture of (1) an

epoxy resin and (2) a phosphoramidate of a formula selected from the group consisting of:



wherein R is alkyl, aryl, substituted alkyl or substituted aryl, R' is hydrogen or R, R'' is hydrocarbylidene, x is 0 to 2, y is 1 to 3 and the sum of x and y is 3. An amine can be employed to improve the process.

3,645,972
NITRILOTRIACETIC ANHYDRIDE AS AN EPOXY RESIN CURING AGENT
Jack L. Herz, Scarsdale, and Edward D. Weil, Hastings-on-Hudson, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Oct. 27, 1969, Ser. No. 869,876
Int. Cl. C08g *30/12*
U.S. Cl. 260—47 CA **7 Claims**

Nitrilotriacetic anhydride is used to provide relatively low temperature curing (as compared with other anhydrides) of epoxy coatings or laminates. The cured epoxy resins thus obtained are characterized by good mechanical and electrical properties as well as dimensional stability and superior resistance to heat and chemicals. This unusual combination of properties make nitrilotriacetic anhydride an ideal candidate for such applications as curing epoxy resin formulations.

3,645,973
WATER-SOLUBLE SURFACE-ACTIVE CONDENSATION PRODUCTS [AND THE PRODUCTS THEREOF] FROM AMINOPLAST, ALCOHOL OR CARBOXYLIC ACID, POLYOL, AND SALT OF SULFUR CONTAINING ACID
Luzius Schibler, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Continuation of application Ser. No. 757,458, which is a continuation-in-part of application Ser. No. 527,491, Feb. 15, 1966. This application June 4, 1970, Ser. No. 41,773
Claims priority, application Switzerland, Mar. 9, 1965, 3,257/65
Int. Cl. C08g *9/24*
U.S. Cl. 260—67.6 R **7 Claims**

Water-soluble surface-active condensation products from aminoplast precondensates, containing radicals of mono-hydroxy compounds, radicals of alcohols containing at least 2 hydroxyl groups and Me—O_3S groups, where Me represents an alkali metal. These condensation products display a pronounced surface activity and act as lathering agents, detergents, emulsifiers and dispersants.

3,645,974
PIEZOELECTRIC CERAMIC COMPOSITIONS
Noboru Ichinose and Katsunori Yokoyama, Yokohama-shi, Harutoshi Egami, Tokyo, and Yoshikazu Tanno, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Mar. 13, 1969, Ser. No. 806,944
Claims priority, application Japan, Mar. 15, 1968, 43/16,470
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **1 Claim**

Piezoelectric ceramic compositions consisting essentially of a basic composition indicated by the formula:

$$x\mathrm{Pb(SbNb)_{0.5}O_3}—y\mathrm{PbTiO_3}—z\mathrm{PbZrO_3}$$

where:

x=0.5 to 25.0 mol percent
y=36.0 to 55.5 mol percent
z=53.5 to 20.5 mol percent
$x+y+z$=100 mol percent

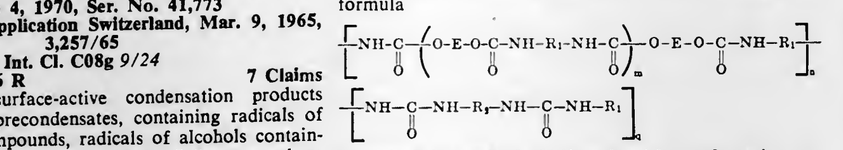
and further containing at least one metal oxide selected from the group consisting of ThO_2 and CeO_2 in an amount of from 0.1 to 3 percent by weight based upon the basic composition.

3,645,975
METHOD OF PREPARING SOLID POLYURETHANE ELASTOMERS
Carl Bernstein, Deerfield, Ill., assignor to Witco Chemical Corporation, New York, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,415
Int. Cl. B65b *11/00;* **C08g** *53/00*
U.S. Cl. 260—75 NE **10 Claims**

Unvulcanized, solid polyurethane elastomers are prepared by reacting an admixture of active-hydrogen-containing linear polyether or polyester polymers or branched-chain derivatives thereof, organic diisocyanates, and such other ingredients as may be required, such as chain-extenders, in a thin-walled, preformed polyethylene reaction container at a temperature from about 125 to 300 degrees F., the reaction mixture advantageously being protected from contact with the atmosphere until a solid polymer is formed. The plastic reaction vessel can be readily cut and stripped from the surface of the solid elastomer or the solid elastomer can be stored or shipped while still encased in the plastic reaction vessel.

3,645,976
ELASTIC POLYURETHANE FIBERS
Isamu Suzuki, Kiyoshi Ichikawa, Yasuji Nakahara, and Kunico Kondo, Fuji-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,390
Claims priority, application Japan, Nov. 5, 1968, 43/80,831; May 21, 1969, 44/38,717
Int. Cl. C08g *22/04, 22/18*
U.S. Cl. 260—75NH **4 Claims**

In the segment polyurethane polymers consisting as the main components of bifunctional low polymeric compounds having terminal active hydrogen atoms, organic diisocyanates and diamines, elastic polyurethane fibers substantially comprising recurring units of the general formula



wherein E is a radical of bifunctional low polymeric compounds having terminal active hydrogen atoms; R_1 is a member selected from the group consisting of 4,4'-methylenebiscyclohexyl, 4,4'-isopropylidenebiscyclohexyl, 4,4'-oxybiscyclohexyl and 1,4-cyclohexylene radicals; R_2 is a member selected from the group consisting of 1,4-cyclohexylene radicals with or without methyl and ethyl groups on the ring; m is from 0 to 2; and n and q are 1 or 2 respectively, and in which at least 50 percent by weight of R_1 has trans-trans conformation except the case where R_1 is 1,4-cyclohexylene in which at least 55 percent by weight has trans conformation and at least 33 percent by weight of R_2 has trans conformation.

3,645,977
ACRYLATE-ACRYLIC ACID-N-VINYL URETHANE TERPOLYMERS
Larry G. Wolgemuth, Cherry Hill, N.J., and William H. Fritock, Glenolden, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,855
Int. Cl. C08f *15/40*
U.S. Cl. 260—77.5 BB **14 Claims**

Heat-curable terpolymers comprising the residues of an acrylate, an acrylate acid and an N-vinyl urethane are

ides, ureas or melamines. These thermosetting coatings baking with various cross-linking agents such as epoxides, ureas or melamines. These thermosetting coatings may be incorporated into paint coating systems, electrocoating systems, fibers and adhesives.

3,645,978
POLYIMINOHYDANTOINS AND METHOD OF PREPARATION
James M. Craven, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington Del.
No Drawing. Filed Aug. 26, 1970, Ser. No. 71,287
Int. Cl. C08g *33/02*
U.S. Cl. 260—77.5 CH **6 Claims**

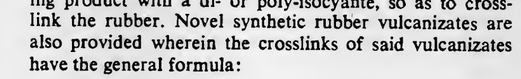
A novel polyiminohydantoin composition which is the reaction product of a multifunctional isocyanate and a multifunctional cyanomethylamine said polymer having utility as high temperature adhesives structural laminates and as binders for laminated circuit boards.

3,645,979
PROCESS FOR COPOLYMERIZATION OF AROMATIC AND ALIPHATIC POLYISOCYANATES TO FORM POLYISOCYANURATES
Dietrich Liebsch, Leverkusen, and Wilhelm Altner, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 25, 1967, Ser. No. 611,693
Claims priority, application Germany, Feb. 2, 1966, F 48,322
Int. Cl. C08g *22/04, 22/26;* **C07d** *55/38*
U.S. Cl. 260—77.5 NC **7 Claims**

A method for preparing polyisocyanates having at least one isocyanurate ring which comprises polymerizing an aromatic and an aliphatic or araliphatic polyisocyanate in the presence of an organic phosphine, the aliphatic or araliphatic polyisocyanate being present in such an amount that more than about 0.5 aliphatically bound —NCO group is present per aromatically bound —NCO group, preferably 0.5 to 10. The products per se have utility as adhesives, lacquers, casting resins, and foams, and also as the isocyanate component in other reactive systems.

3,645,980
VULCANIZATION OF RUBBER
Crispin Stuart Leworthy Baker, Stapleford, Douglas Barnard, Welwyn Garden City, and Maurice Read Porter, Stevenage, England, assignors to The Natural Rubber Producers' Research Association, London, England
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,507
Claims priority, application Great Britain, Oct. 4, 1968, 47,289/68
Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 CR **10 Claims**

The present invention relates to a novel method of crosslinking natural or synthetic rubbers which comprises reacting rubber with a nitrosophenol or nitrosoamine and reacting pendent amino or hydroxyl groups in the resulting product with a di- or poly-isocyante, so as to crosslink the rubber. Novel synthetic rubber vulcanizates are also provided wherein the crosslinks of said vulcanizates have the general formula:



wherein R represents a rubber molecule, Ar is an aromatic group, Y is an oxygen atom or a substituted or unsubstituted —NH— group, and Q is an organic difunctional group.

3,645,981
PROCESS FOR PREPARING POLYTHIOUREAS
Willard Hallam Bonner, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 27, 1969, Ser. No. 869,869
Int. Cl. C08g *22/02*
U.S. Cl. 260—77.5 CH **13 Claims**

Polythioureas are prepared by the solution polymerization of suitable aliphatic and/or alicyclic diamines and carbon disulfide in specified solvents within a controlled temperature range. In this process, shorter reaction times than are required in known processes, provide high molecular weight polymer.

3,645,982
SYNTHESIS OF POLY(ALLYL URETHANES)
Donald W. Larsen, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,537
Int. Cl. C08g *22/06*
U.S. Cl. 260—77.5 BB **4 Claims**

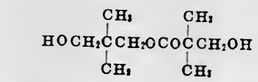
Allyl urethane is formed by reacting a solution of an allyl halide, an alkali metal cyanate and a polyol. The allyl urethanes are useful in the preparation of photocurable liquid polymers, that are photocured by the free radical addition of thiol groups of polythiols to the allyl double bonds.

3,645,983
COPOLYAMIDES FROM 3-(4-CARBOXYPHENYL)-1,1,3-TRIMETHYL-5-INDAN CARBOXYLIC ACID AND BIS(BETA - AMINOETHYL)BENZENE OR -DURENE
James S. Ridgway, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,279
The portion of the term of the patent subsequent to Apr. 25, 1985, has been disclaimed
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **1 Claim**

Copolyamides are prepared by polymerizing adipic acid, hexamethylene diamine, 3-(4-carboxyphenyl)-1,1,3-trimethyl-5-indan carboxylic acid and bis(beta-aminoethyl) benzene or bis(beta-aminoethyl)durene. Filaments made from such copolyamides are useful in reinforcing rubber articles such as pneumatic tires.

3,645,984
NOVEL ACRYLIC MONOMERS, THEIR PREPARATION AND TREATMENT
Rostyslaw Dowbenko and Roger M. Christenson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,672
Int. Cl. C08f *3/50;* **C07c** *69/52*
U.S. Cl. 260—78.4 **23 Claims**

A novel acrylic monomer is prepared by reacting a diol such as



with a acrylic or methacrylic acid or their anhydrides or acid chlorides. The reaction product is a monomer which may be polymerized by subjecting it to ionizing irradiation, actinic light, or to free-radical catalysts, and the resulting polymer is a hard, mar-resistant material.

3,645,985
POLYMERS OF 5-(3-PERFLUOROALKYL-1,2,4-OXADIAZOLYL) OLEFINS

Pier Luigi Pacini, Bruxelles, Belgium, and Eduard Karl Kleiner, New York, N.Y., assignors to Ciba-Geigy Corporation.

No Drawing. Filed June 16, 1969, Ser. No. 833,706
Int. Cl. C08f *3/42, 19/00*
U.S. Cl. 260—78.4 R **21 Claims**

Monomeric 5-(3-perfluoroalkyl-1,2,4 - oxadiazolyl) olefins form homopolymers and copolymers with other ethylenically unsaturated comonomers. The polymers obtained have valuable soil repellent and dyesite properties which are especially useful in textile finishes. Preferred compounds exemplified are 1,2-bis[5-(3-n-perfluoroheptyl-1,2,4-oxadiazolyl)]ethylene and 5-isopropenyl-3-n-perfluoroheptyl-1,2,4-oxadiazole.

3,645,986
ELECTRO-INITIATED POLYMERIZATION HETEROCYCLIC MONOMERS

Mahmoud R. Rifi, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 875,437, Nov. 10, 1969. This application Apr. 9, 1970, Ser. No. 27,160.
Int. Cl. C08g *23/02, 23/14*
U.S. Cl. 260—79 **10 Claims**

Electro-initiated polymerization of heterocyclic monomers including cyclic ethers, sulfides, cyclic esters and cyclic amines has been effected by generating a cationic catalyst electrochemically from one of the monomers itself in the presence of a supporting electrolyte in an anolyte compartment and then adding this catalyst to a monomer optionally containing an organic diol, triol, or polyol as a starter or polymerization regulator.

3,645,987
N-AZOLYL SULFENAMIDES

Joseph Edward Kerwood, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,152
Int. Cl. C07d *85/00, 91/46;* **C08f** *27/06*
U.S. Cl. 260—79.5 B **8 Claims**

Sulfenamides of the formula

$$T-N(R')-S-R$$

wherein R is alkyl, cycloalkyl, aralkyl, substituted aralkyl, aryl, or substituted aryl, where the substituents are alkyl, alkoxy, nitro, chloro, bromo, fluoro, iodo or hydroxy, R' is hydrogen or R''S— where R'' has the same meaning as R and may be the same or different from R, T is azolyl or substituted azolyl selected from the group of thiazolyl, benzothiazolyl, benzoxazolyl, benzimidazolyl and substituted derivatives thereof, where the substituents are lower alkyl, chloro, bromo, fluoro, iodo, nitro or lower alkoxy are premature vulcanization inhibitors of vulcanizable elastomers.

3,645,988
PYRIDYL ACRYLATES AND METHACRYLATES AND DYEABLE ACRYLONITRILE COPOLYMERS PREPARED THEREFROM

Gary G. Hammer and John H. Hennes, Williamsburg, Va., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 17, 1969, Ser No. 834,159
Int. Cl. C08f *7/12, 15/22*
U.S. Cl. 260—80.72 **7 Claims**

Pyridyl acrylates or methacrylates are prepared by reacting the sodium salt of a hydroxy substituted pyridine with acrylyl or methacrylyl chloride. Copolymerization of small amounts of the resulting monomer (e.g. 1–10%) with a major proportion (e.g. 85–99%) of acrylonitrile, optionally containing up to about 10% of another copolymerizable monomer (e.g. methyl acrylate) and spinning, results in fibers having excellent dyeability and heat stability.

3,645,989
FLUORINATED OIL- AND WATER-REPELLENT AND DRY SOIL RESISTANT POLYMERS

Thomas King Tandy, Jr., Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,961
Int. Cl. C08f *15/24, 15/40*
U.S. Cl. 260—80.73 **11 Claims**

Fluorinated oil- and water-repellent and dry soil resistant polymers containing units derived from monomers having the structure $R_fCH_2CH_2O_2CCH{=}CH_2$ wherein R_f is a perfluoroalkyl group of about 4 through 14 carbon atoms, and methyl acrylate or ethyl acrylate, and optionally containing small amounts of units derived from monomers selected from $CH_2{=}CRCONHCH_2OH$, $CH{=}CRCO_2CH_2CH_2OH$ and mixtures thereof wherein R is H or CH_3.

3,645,990
FLUORINATED OIL- AND WATER-REPELLENT AND DRY SOIL RESISTANT POLYMERS

Stuart Raynolds, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,962
Int. Cl. C08f *15/18, 15/40*
U.S. Cl. 260—80.73 **8 Claims**

Fluorinated oil- and water-repellent and dry soil resistant aqueous emulsion polymers containing units derived from monomers having the structure

$$R_fCH_2CH_2O_2CC(CH_3){=}CH_2$$

wherein R_f is a perfluoroalkyl group of about 4 through 14 carbon atoms, and methyl acrylate or ethyl acrylate, and optionally containing small amounts of units derived from monomers selected from $CH_2{=}CRCONHCH_2OH$, $CH{=}CRCO_2CH_2{-}CH_2OH$ and mixtures thereof wherein R is H or CH_3.

3,645,991
VINYLIDENE FLUORIDE COPOLYMERS HAVING IMPROVED RESISTANCE TO HEAT-AGING

Arthur Nersasian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,286
Int. Cl. C08f *1/62*
U.S. Cl. 260—80.77 **6 Claims**

Vinylidene fluoride copolymers having improved resistance to heat-aging are prepared by polymerization in an aqueous medium in the presence of a catalyst system of (a) a water-soluble inorganic peroxy compound capable of initiating polymerization of the monomers, and (b) a water-soluble hypophosphite.

3,645,992
PROCESS FOR PREPARATION OF HOMOGENOUS RANDOM PARTLY CRYSTALLINE COPOLYMERS OF ETHYLENE WITH OTHER ALPHA-OLEFINS

Clayton Trevor Elston, Kingston, Ontario, Canada, assignor to Du Pont of Canada, Limited, Montreal, Quebec, Canada

Filed Feb. 15, 1968, Ser. No. 705,701
Claims priority, application Canada, Mar. 2, 1967, 984,213
Int. Cl. C08f *15/04*
U.S. Cl. 260—80.78 **13 Claims**

Preparation of copolymers of ethylene and an alpha olefin having at least four carbon atoms using an inert solvent and a catalyst formed using particular ratios of an aluminum halide and a vanadium compound.

3,645,993
INTERPOLYMERIZATION OF A MIXTURE OF MONOOLEFINS AND A POLYENE IN THE PRESENCE OF A BASE AND A HALOGENATED COMPOUND

Ronald H. Sunseri, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Coorporation

No Drawing. Continuation-in-part of application Ser. No. 701,852, Jan. 31, 1968, which is a continuation-in-part of application Ser. No. 622,888, Mar. 4, 1967. This application June 16, 1969, Ser. No. 833,695
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 **35 Claims**

Sulfur vulcanizable elastomers which are substantially free of gel are prepared in solution in an organic solvent from a monomeric mixture including ethylene, an alpha-monoolefin containing 3–16 carbon atoms and a polyunsaturated monomer in the presence of a Ziegler-type polymerization catalyst, and a synergistic combination of certain bases and a halogenated organic compound.

3,645,994
PROCESS FOR HYDROGENATION OF AROMATIC HYDROCARBONS

Lloyd M. Watson and William R. Birchall, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Original application Aug. 18, 1967, Ser. No. 661,538. Divided and this application May 21, 1970, Ser. No. 48,597
Int. Cl. C08d *3/04, 3/06;* **C08f** *7/02*
U.S. Cl. 260—82.1 **5 Claims**

A process is provided for the hydrogenation of aromatic hydrocarbons having a naphthalene nucleus, using metallic sodium and a lower aliphatic alcohol as the source of hydrogen, employing sodium with an average particle size within the range from about 0.5 to about 50 microns, dispersed in an inert diluent.

A process is also provided for the preparation of alfin polymers by polymerization of an unsaturated organic compound in the presence of an alfin catalyst, employing as the molecular weight modifier the crude dihydronaphthalene dissolved in an inert diluent that is obtained in this by hydrogenation.

3,645,995
POLYMERIZATION PROCESS

Anthony David Caunt, Welwyn Garden City, England, assignor to Imperial Chemical Industries, Limited, London, England

No Drawing. Filed Jan. 16, 1969, Ser. No. 791,783
Claims priority, application Great Britain, Jan. 29, 1968, 4,497/68
Int. Cl. C08f *1/56, 3/02*
U.S. Cl. 260—88.2 **5 Claims**

Olefines of 5 or more carbon atoms are polymerized using a catalyst of titanium trichloride/organometallic activator. The titanium trichloride component of the catalyst is prepared by the reduction of titanium tetrachloride with a high aluminum alkyl compound, particularly isobutyl aluminum sequichloride.

3,645,996
RESINS USEFUL IN PEPTIDE SYNTHESIS

George Lee Southard, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,884
Int. Cl. C08f *15/00, 15/04*
U.S. Cl. 260—88.2 C **1 Claim**

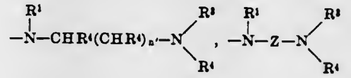
A benzyl styrene-divinylbenzene copolymer useful as an ester-forming C-protecting group in solid-phase peptide synthesis; used in conjunction with easily hydrolyzed N-protecting groups, preferably the enamine derivative prepared from β-dicarbonyl compounds; the benzyl styrene-divinylbenzene copolymer being readily removable, after peptide formation, with dilute acids in non-aqueous solvents at room temperature.

3,645,997
CHELATING COMPOSITIONS

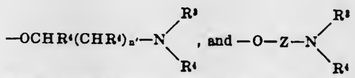
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Continuation-in-part of application Ser. No. 638,615, May 15, 1967. This application Sept. 4, 1969, Ser. No. 855,366
Int. Cl. C08f *7/12, 19/20*
U.S. Cl. 260—88.1 **19 Claims**

New triazine compounds are disclosed having attached to the three valencies of the symmetrical triazine nucleus at least one A' group containing a terminal polymerizable $CH_2{=}C<$ group and at least one chelating T group of the class:



and



wherein each of the symbols, R^1, R^2 and R^3 individually represents a radical selected from the class of —H, —CHR^4COOM and a hydrocarbon radical containing 1–6 carbon atoms and wherein at least one of the radicals represented by R^1, R^2 and R^3 contains a carboxyl group, M is a member consisting of hydrogen, ammonium bases and metals, and R^4 represents a radical selected from the class consisting of hydrogen and a hydrocarbon radical containing 1–6 carbon atoms, *n'* represents an integer of 1–6 and —Z— is a divalent hydrocarbon radical containing 6–12 carbon atoms. These compounds are useful as chelating compositions particularly for the removal of metal from solutions of metal compounds.

3,645,998
METHOD OF PRODUCING POLYVINYL FLUORIDE IN AN AQUEOUS MEDIUM IN THE PRESENCE OF A CATALYST SYSTEM OF TRI-ALKYL BORON AND HYDROGEN PEROXIDE

Yulchi Iikubo, Takuji Nishida, and Yoshiki Furukawa, Onoda, Japan, assignors to Onoda Cement Company, Limited, Yamaguchi Prefecture, Japan

Filed Apr. 16, 1969, Ser. No. 816,678
Claims priority, application Japan, May 8, 1968, 43/30,256
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 **11 Claims**

This invention relates to a method of producing polyvinyl fluoride by polymerizing a monomer of vinyl fluoride in an aqueous medium by using a catalyst comprising trialkyl-boron and hydrogen peroxide for initiating the polymerization of said monomer. The polymerization reaction is easily started in the aqueous medium due to the actions of the special catalyst and the characteristics of the resultant polyvinyl fluoride can easily be controlled.

3,645,999
POLYMERIC MATERIALS

Norman R. Byrd, Dana Point, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of application Ser. No. 486,833, Sept. 13, 1965. This application Oct. 23, 1969, Ser. No. 872,440
Int. Cl. C08f *7/04;* **H01b** *1/06*
U.S. Cl. 260—93.5 **2 Claims**

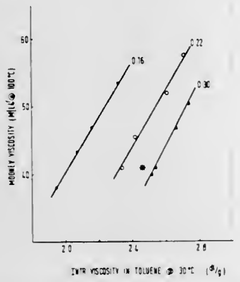
Poly(ring substituted-phenyl acetylene), where the ring substitution can be selected from one or more of nitro, amino, alkoxy, alkyl, alkylthio, hydroxyl, carboxyl, acyl,

mercapto, cyano, halogeno, vinyl, and heterocyclic radicals, and copolymers thereof with olefinically unsaturated monomers are prepared. The polymers have great utility as semiconductors, primarily for use as detectors for polar and/or non-polar materials, in selective fashion.

3,646,000
POLYMERIZATION CATALYST
Bertalan Horvath, Southern London, England, assignor to Phillips Petroleum Company
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,805
Int. Cl. C08f *3/02, 3/04, 3/08*
U.S. Cl. 260—93.7 **1 Claim**

An olefin polymerization process employing a reduced titanium oxide catalyst on a silica support in the presence of an organoaluminum halide, which produces particle-form polymer having molecular weights greater than a million.

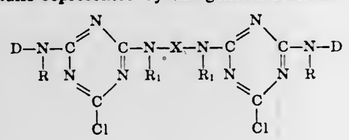
3,646,001
LINEAR POLYMERS OF BUTADIENE
Evalds Lasis and Nathan John McCracken, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada
Filed Nov. 21, 1969, Ser. No. 878,599
Claims priority, application Canada, Dec. 5, 1968, 36,920
Int. Cl. C08d *3/04*
U.S. Cl. 260—94.3 **8 Claims**



Polymers of butadiene-1,3 of a predetermined linearity and having more than 95% of the butadiene units in the cis-1,4 configuration are prepared by polymerizing butadiene-1,3 in the presence of a soluble catalyst comprising a Group VIII metal compound, preferably a cobalt compound, organoaluminum compound and water. The Group VIII metal compound and water, both dissolved in an inert organic liquid, are mixed preferably prior to the addition of the aluminum compound, the aluminum compound is then admixed in the absence of butadiene-1,3 and the mixture is reacted and, if desired, stored at a temperature not more than about 20° C.

3,646,002
COPPER CONTAINING DISAZO TRIAZINE DYES
Herbert Francis Andrew and Robert Higginbottom, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,389
Claims priority, application Great Britain, Jan. 16, 1969, 2,663/69
Int. Cl. C09b *62/08*
U.S. Cl. 260—146 T **6 Claims**

Dyestuffs represented by the general formula:

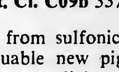


wherein

D represents a radical of a monoazo compound which contains at least one SO_3H group and which contains a heavy metal atom in the form of a metal complex,

either R and R_1 represent H or saturated aliphatic radicals having up to 4 carbon atoms, and

X represents a benzene, diphenylene or naphthalene nucleus which may contain substituents, or an aliphatic radical having at least 2 carbon atoms, or



represents 1,4-piperazinylene

are useful reactive dyestuffs for cellulose textile materials giving a wide range of shades of excellent fastness to washing. They are notable for the high proportion which fixes on the material, especially when applied from saline dyebaths.

3,646,003
COPOLYMERIZABLE (ALKOXYCARBONYLPHENYLAZO) PHTHALOCYANINE DYESTUFFS
Bernard Lamure, Lyon, France, assignor to Societe Rhodiaceta, Paris, France
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,587
Claims priority, application France, Mar. 29, 1968, 146,473
Int. Cl. C09b *43/00, 47/04;* **D06p** *3/00*
U.S. Cl. 260—146 **3 Claims**

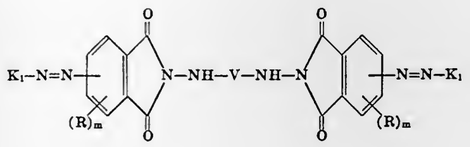
Phthalocyanine dyestuffs of excellent fastness to light and solvents, which are particularly useful for colouring polyesters and polyamides in green and blue shades, have the formula:

$$Pc—[—D—Ar(COOR)_n]_p$$

where Pc is a phthalocyanine nucleus, D is —O—, —S—, alkylene, —CO—, or —N=N—, Ar is an aromatic radical, R is hydrogen atom or a hydrocarbon radical and *n* and *p* are each 1 to 4.

3,646,004
BIS-(N-ACYLAMINO-PHTHALIMIDE)-DISAZO DYESTUFFS
Walter Horstmann, Cologne, Dietmar Kalz, Leverkusen, Gerhard Wolfrum, Opladen, and Edgar Siegel, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,226
Claims priority, application Germany, Dec. 6, 1967, P 16 44 237.8; Apr. 4, 1968, P 17 69 105.3
Int. Cl. C09b *33/02*
U.S. Cl. 260—152 **5 Claims**

Azo dyestuffs free from sulfonic acid groups are prepared which are valuable new pigment dyestuffs characterized by good fastness to light, solvents and migration, and by a good thermal stability adapted for use in coloring papers, lacquers, and synthetic materials and for producing pigment paste and printing inks. The dyestuffs correspond to the general formula



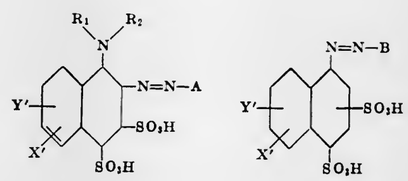
where V stands for a radical —OC—B—CO— or a radical



where B denotes a direct bond, an optionally substituted aliphatic, araliphatic, carbocyclic or heterocyclic radical, X stands for NH, O or S; K_1 denotes the radical of a monofunctional coupling component; R stands for identical or different substituents; and *m* is an integer from 0 to 3.

3,646,005
POLYNUCLEAR AMINES AND PROCESS FOR THE PREPARATION THEREOF
Rene Pierre Victor Roe, Seine Inferieure, and Gerard Thirot, Petit-Quevilly, France, assignors to Ugine Kuhlmann, Paris, France
No Drawing. Filed Mar. 10, 1967, Ser. No. 622,109
Claims priority, application France Mar. 29, 1966, 55,303
Int. Cl. C07c *143/60, 143/66*
U.S. Cl. 260—508 **10 Claims**

The present invention relates to a process for the sulphonation of an aromatic or heterocyclic polynuclear amine which comprises treating the amine, dispersed or dissolved in an aqueous solution of a water-soluble salt of sulphurous acid, with an oxidising agent of which the oxidation potential, measured at 20° C. and pH 7 with respect to the normal hydrogen electrode, is between +0.4 and +0.7 volt, the pH of the medium being maintained approximately constant at a value between 3 and 9.5. It also relates to new sulphonated polynuclear amines and to azo dyestuffs having one of the formulae:



wherein A represents the residue of a diazotisable aromatic or heterocyclic amine, B represents the residue of a coupling compound, R_1 represents a hydrogen atom or an alkyl or aryl residue, R_2 represents a hydrogen atom or an alkyl residue, and X′ and Y′ each represent hydrogen or halogen atoms or hydroxy, alkoxy, carboxy, sulpho or



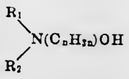
groups.

3,646,006
CRYSTALLIZATION PROCESS
Frank Whitley Lord, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Sept. 30, 1968, Ser. No. 763,982
Claims priority, application Great Britain, Oct. 16, 1967, 47,076/67
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **9 Claims**

Supercooled liquid organic materials are induced to crystallize by dispersing fine bubbles of gas or liquid throughout the liquid material.

3,646,007
COMPLEX OF INOSINE WITH DIALKYL-AMINOALKANOL
Paul Gordon, Chicago, Ill., assignor to Newport Pharmaceuticals, Inc.
Filed Aug. 28, 1969, Ser. No. 853,864
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **16 Claims**

Complexes are formed in inosine and aminoalcohols of the formula



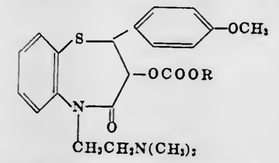
where R_1 and R_2 are lower alkyl and *n* is an integer of 2 to 4. The complexes have pharmacological activity including the ability to restore deteriorated learning and memory behavior. The preferred aminoalcohol is dimethylamino isopropanol. The preferred ratio of inosine to aminoalcohol is 1:3.

3,646,008
BENZOTHIAZEPINE DERIVATIVES
Hiroshi Kugita, Osaka-fu, Satoshi Takeo, Omiya-shi, Masanori Sato, Toda-shi, and Taku Nagao, Omiya-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,897
Claims priority, application Japan, Jan. 25, 1969, 44/5,493
Int. Cl. C07d *43/40*
U.S. Cl. 260—239.3 **3 Claims**

2-(4-methoxyphenyl)-3-hydroxy-5-(β-dimethylaminoethyl) - 2,3 - dihydro - 1,5 - benzothiazepin-4(5H)-one is reacted with a lower alkyl haloformate having the formula

X·COOR

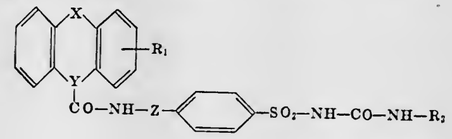
wherein X is a halogen atom and R is a lower alkyl radical. The reaction is conducted in the presence of a base. A benzothiazepine derivative having the formula



wherein R is as defined above, is produced. The benzothiazepine derivative and its pharmaceutically acceptable acid addition salts are useful as coronary vasodilators.

3,646,009
ANTI-DIABETICALLY ACTIVE SULFONYL-SEMICARBAZIDES
Werner Winter, Mannheim, Erich Fauland and Kurt Stach, Mannheim-Waldhof, Felix Helmut Schmidt, Mannheim-Neuostheim and Walter Aumüller, Kelkheim/Munster, Germany, assignors to C. F. Boehringer & Soehne G.m.b.H., Mannheim-Waldhof, Germany
No Drawing. Filed Mar. 11, 1968, Ser. No. 711,840
Claims priority, application Germany, Mar. 15, 1967, B 91,627
Int. Cl. C07d *29/12*
U.S. Cl. 260—239 **6 Claims**

Novel sulfonyl ureas and sulfonyl-semicarbazides having the formula:



wherein X represents oxygen, sulfur, saturated, unsaturated, straight or branched chain alkylene containing up to 3 carbon atoms, oxymethylene, thiamethylene, thiaethylene, iminomethylene, alkylated iminomethylene, acylated iminomethylene, carboximido, alkylated carboximido, or a valency bond, R_1 is hydrogen, halogen, alkyl, alkoxy or trifluoromethyl, Y is saturated, unsaturated, straight or branched chain alkylene containing up to 6 carbon atoms or such alkylene group containing a nitrogen or oxygen atom, Z is straight or branched chain alkylene containing up to 4 carbon atoms and R_2 is straight or branched chain, saturated or unsaturated alkyl or cycloalkyl, and such groups interrupted by oxygen or sulfur atoms or containing an endo-alkylene group, substituted or unsubstituted aryl or aralkyl or substituted, unsubstituted, saturated or unsaturated alkylene-imino containing 3 to 7 carbon atoms or such alkylene-imino containing an endo-alkylene group.

The aforesaid sulfonyl ureas and sulfonyl-semicarazides constitute extremely effective anti-diabetic agents.

3,646,010
SPIROAZETIDINE-ETHANOANTHRACENES

Gilbert H. Berezin, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 726,542, May 3, 1968. This application Apr. 2, 1969, Ser. No. 812,846

Int. Cl. C07d *25/00, 99/04*

U.S. Cl. 260—239 A **10 Claims**

This disclosure teaches that a group of spiroazetidine-ethanoanthracenes are useful as pharmaceutical agents. The disclosure also teaches a method for combatting inflammation by administering pharmaceutical formulations of the compounds of this invention. Representative compounds of this invention include compounds such as 9′,10′-dihydrospiro[azetidine-3,11′-9,10-ethanoanthracene] and derivatives thereof.

3,464,011
PREPARATION OF 2,3-DIHYDRO-1H-1,4-BENZODIAZEPINES 4-OXIDES

Giles Allan Archer, Essex Fells, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 763,004, Sept. 26, 1968. This application Apr. 25, 1969, Ser. No. 819,410

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **5 Claims**

2,3-dihydro-1H-1,4-benzodiazepine 4-oxides are prepared from correspondingly substituted 2-(2-A-ethyl lower alkylamino)benzophenone, where A is a leaving group, by treatment of the latter compounds with hydroxylamine hydrochloride. Alternatively, the aforesaid compounds may be obtained by cyclization of 2-(2-A-ethyl lower alkylamino)benzophenone oximes. The 2,3-dihydro-1H-1,4-benzodiazepine 4-oxides are useful as intermediates in the preparation of pharmacologically active 2,3-dihydro-1H-1,4-benzodiazepines by deoxygenation of the former compounds.

3,646,012
ENAMINE SALT PROTECTION OF STEROIDAL α,β-UNSATURATED KETONES

Brian Gadsby, Maidenhead, England, and Michael R. G. Leeming, Broomall, Pa., assignors to John Wyeth & Brother Limited, Maidenhead, Berkshire, England

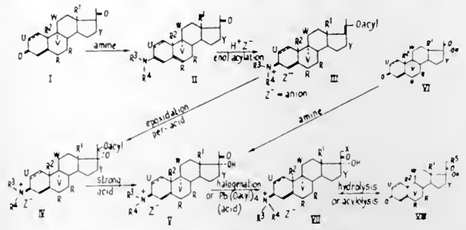
Filed Oct. 3, 1968, Ser. No. 764,705

Claims priority, application Great Britain, Oct. 5, 1967, 45,473/67; Mar. 22, 1968, 13,969/68

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.5 **12 Claims**

The α,β-unsaturated ketonic grouping of a steroid having a second reactive site, such as a carbon-carbon double or triple bond or an enolizable ketonic group, is protected by formation of an eniminium salt. The resulting salt is then treated under neutral or acidic conditions with an electrophilic reagent reactive with said second reactive



site by addition or substitution. Thereafter, the free α,β-unsaturated ketonic grouping is regenerated by alkaline hydrolysis, and a steroid modified by electrophilic reaction at said second reactive site is recovered.

3,646,013
PROCESS FOR THE PREPARATION OF ALDOSTERONE 21-ESTERS

Alberto Ercoli, Milan, Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,909

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 **5 Claims**

A process for the preparation of aldosterone 21-esters in which a corresponding 18-ester -21-acetate of aldosterone is subjected to basic solvolysis: by detachment of the 21-acetate ester and following migration of the esters in 18-position towards 21-position the final aldosterone 21-esters are obtained.

3,646,014
CHEMICAL COMPOUNDS

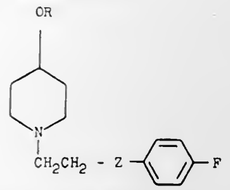
Henry Bader and John H. Biel, Milwaukee, Wis., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 548,402, May 9, 1966. This application Dec. 30, 1966, Ser. No. 606,053

Int. Cl. C07d *29/16*

U.S. Cl. 260—240 K **17 Claims**

Compounds of the formula



in which R and Z are as defined below, which possess analgesic and muscle relaxant activity and are useful as analgesics and skeletal muscle relaxants in animals, and processes for the preparation of the foregoing compounds.

3,646,015
OPTICAL BRIGHTENER COMPOUNDS AND DETERGENT AND BLEACH COMPOSITIONS CONTAINING SAME

Lewis R. Hamilton, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 31, 1969, Ser. No. 846,602

Int. Cl. C07d *27/48*

U.S. Cl. 260—240 CA **8 Claims**

Optical brightener compounds defined as isoindolinyl compounds. The optical activity of these compounds can

be employed to advantage in the optical brightening of a wide variety of natural and synthetic materials. They are useful in the brightening of fabrics and find application in the preparation of laundry detergent compositions and hypochlorite bleach-containing compositions.

3,646,016
NOVEL NITROIMIDAZOLE HYDRAZONE DERIVATIVES

David W. Henry, Menlo Park, Calif., and Dale R. Hoff, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Feb. 4, 1965, Ser. No. 430,250, now Patent No. 3,472,864, dated Oct. 7, 1969, which is a continuation-in-part of application Ser. No. 352,966, Mar. 18, 1964. Divided and this application Oct. 25, 1968, Ser. No. 794,814

Int. Cl. C07d *49/36*

U.S. Cl. 260—240 G **7 Claims**

Novel imidazole hydrazones are provided which are active against the protozoal diseases trichomoniasis, enterohepatitis, and amebiasis, as well as PPLO organisms and certain bacteria.

3,646,017
PROCESS FOR PRODUCING POLYMETHINE DYES

Walter F. Hoffstadt, Vestal, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed May 7, 1969, Ser. No. 822,737

Int. Cl. C09b *23/00*

U.S. Cl. 260—240.1 **9 Claims**

An improved process for the producing of sensitizing dyes, e.g., carbocyanine, merocyanine, chain-substituted carbocyanines and methylene chain-substituted polycarbocyanine and merocyanine dyes, etc., wherein an active methylene-containing compound is reacted with an ammonium compound containing an N-vinyl or N-polyvinyl or N-methylene or N-phenyl-urethane group. Alternatively, such process is conducted by reacting the active methylene group containing compounds with an in situ or a preformed intermediate produced by the reaction of ethyl chloroformate and an anilinovinyl, polyvinyl or methylene quaternary ammonium compound.

3,646,018
OXIDATIVE COUPLING AND DEHYDROGENATION OF METHYL-SUBSTITUTED AROMATIC AND HETEROCYCLIC COMPOUNDS

Roy B. Duke, Jr., and Larry M. Echelberger, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed May 27, 1969, Ser. No. 828,351

Int. Cl. C07c *3/10*

U.S. Cl. 260—240 E **35 Claims**

Substituted aromatic and heterocyclic compounds, where at least one of the substituents is a methyl group (e.g. toluene) are contacted in the vapor phase with oxygen or an oxygen-containing gas and iodine, to form a reaction mixture. This reaction mixture is passed through a reactor containing a substantially inert contact surface, such as granular rocks and then over a catalytic mass containing a chromite at gas hourly space velocities of about 5 to 1500 $hr.^{-1}$ and at temperatures of from about 300° to 1300° F. to form the corresponding saturated and unsaturated coupled products (e.g. bibenzyl and stilbene).

3,646,019
ANTICESTODE HYDRAZINOQUINOLINES

Philip Paul Actor, Phoenixville, Pa., and Cesare Enrico Giuseppe Pellerano, Siena, Italy, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,593

Claims priority, application Italy, Oct. 26, 1968, 23,025/68

Int. Cl. C07d *33/52*

U.S. Cl. 260—240 G **5 Claims**

4 - (heterocyclic aryl methylenehydrazino)quinolines are prepared by reaction of a 4-hydrazinoquinoline with a heterocyclic carboxaldehyde. The products, which may be substituted at the 2,5,6,7, or 8-positions, are anticestodes. 4 - (pyridylmethylenehydrazino) - 2 - methylquinolines are preferred.

3,646,020
4-ACYLOXY-3-PHENYLCARBAMYL-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDES

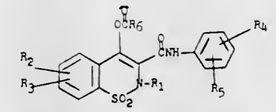
Harold Zinnes, Rockaway, Nell A. Lindo, Chatham, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

No Drawing. Filed July 16, 1970, Ser. No. 55,560

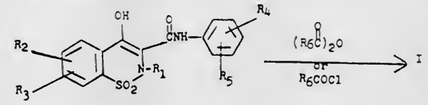
Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **1 Claim**

Substituted 4-acyloxy-3-phenylcarbamyl-2H-1,2-benzothiazine 1,1-dioxides, having the following structural formula:



wherein R_1 is alkyl, aralkyl, cyanomethyl, carboalkoxymethyl, and the like. R_2, R_3, R_4 and R_5 are hydrogen, alkyl, halogen, nitro, acylamino, amino, monoalkylamino, dialkylamino, alkoxy, carboalkoxy, cyano, trifluoromethyl, methylenedioxy, and the like, and R_6 is alkyl, aryl, heterocyclic or alicyclic. These compounds are prepared in accordance with the following reaction scheme:



The compounds of this invention are useful as anti-inflammatory and antipyretic agents.

3,646,021
4 - HYDROXY - 3 - FURYLCARBAMYL - 2H - 1,2-BENZOTHIAZINE 1,1-DIOXIDES AND PROCESS THEREOF

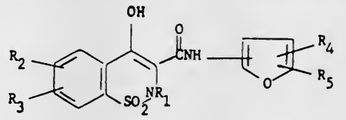
Harold Zinnes, Rockaway, Nell A. Lindo, Chatham, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

No Drawing. Filed July 16, 1970, Ser. No. 55,559

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **3 Claims**

A 3-substituted benzothiazine having the structural formula



is disclosed, wherein R_1 is alkyl, aralkyl, cyanomethyl, carboalkoxymethyl, and the like. R_2, R_3, R_4 and R_5 are hydrogen, alkyl, halogen, nitro, cyano, carboalkoxy, trifluoromethyl and the like. These compounds are prepared by treating the corresponding 2-R_1-2H-1,2-benzothiazine-4(3H)-one 1,1-dioxide with the appropriate R_4–R_5-substituted furylisocyanate in the presence of a strong base. The compounds of this invention are useful as anti-inflammatory, antipyretic and analgesic agents.

3,646,022

FIVE AND SIX MEMBERED HETERO S AND HETERO N FUSED RING COMPOUNDS

Wilfried Graf, Binningen, Basel-Land, and Erich Schmid, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 429,906, Feb. 2, 1965. This application June 7, 1968, Ser. No. 735,179

Claims priority, application Switzerland, Feb. 5, 1964, 1,388/64; Feb. 11, 1964, 1,629/64

Int. Cl. C07d *91/04, 93/08*

U.S. Cl. 260—243 R **14 Claims**

Heterocyclic compounds having at least two rings, each having 5 to 6 ring members and fused through a common nitrogen and a carbon atom which are adjacent and having a sulfur atom in one ring in a position adjacent to the carbon atom common to both rings, a keto group in the other ring in a position adjacent to the nitrogen atom common to both rings and an aryl substituent on the carbon atom common to both rings are anti-inflammatory and CNS active agents.

3,646,023

DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen, Johannes Mueller and Rolf Bosshardt, Arlesheim, Heinrich Peter, Riehen, and Bruno Fechtig, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,638

Claims priority, application Switzerland, Dec. 11, 1968, 18,498/68; Apr. 23, 1969, 6,149/69; June 24, 1969, 9,637/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **6 Claims**

Derivatives of 7-(tetrazolyl-acetylamino)-cephalosporanic acid. Use: antibiotics.

3,646,024

7-[α-(3-IMIDOYLUREIDO)-ARYLACTAMIDO] CEPHALOSPORANIC ACIDS

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 4, 1969, Ser. No. 855,375

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **29 Claims**

7 - [α - (3 - imidoylureido)arylacetamido]cephalosporanic acids and their salts and the corresponding betaines and desacetoxy derivatives are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by gram-positive and gram-negative bacteria. 7 - [D - α - (3 - benzimidoylureido)phenylacetamido] cephalosporanic acid, a preferred embodiment of the invention, is prepared, for example, by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 7-[D-α-(3-phenyl - 1,2,4 - oxadiazole - 5 - amino) phenylacetamido]cephalosporanate which is prepared in turn by reaction of sodium cephaloglycin with 5-chloro-3-phenyl-1,2,4-oxadiazole.

3,646,025

7-[α-(1,3-SUBSTITUTED AMIDINO-2-THIO)ACETAMIDO]CEPHALOSPORANIC ACIDS

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,769

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **46 Claims**

Certain 7 - [α - (1,3 - substituted - amidino - 2 - thio) acetamido]-cephalosporanic acids and derivatives thereof were prepared and found to be potent antibacterial agents, e.g., the reaction of 7-(α-bromoacetamido)cephalosporanic acid with 1,3-diethylthiourea produced 7-[α-(1,3-diethylamidino-2-thio)acetamido]cephalosporanic acid.

3,646,026

PHENYL N-METHYL CARBAMATES

Erwin Nikles, Liestal, and Ladislaus Pinter, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

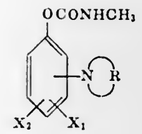
No Drawing. Filed Aug. 28, 1967, Ser. No. 663,509

Claims priority, application Switzerland, Sept. 2, 1966, 12,785/66

Int. Cl. C07d *87/36, 87/42*

U.S. Cl. 260—247.2 B **4 Claims**

The invention relates to carbamates of general formula



wherein R represents an alkylene or alkenylene residue containing 4 or 5 carbon atoms which may be interrupted by an oxygen atom and which may be substituted by lower alkyl groups, and X_1 and X_2 may be identical or different and represent a hydrogen atom, a halogen atom or a lower alkyl group with the proviso that simultaneously there must not be present two of the substituents in the ortho position to the carbamoyloxy residue, and their salts with inorganic and organic acids, and pesticidal preparations containing such carbamates, as active ingredients, together with a suitable carrier.

3,646,027

1-SUBSTITUTED-NITROIMIDAZOL-2-YL-ALKYL CARBAMATES

John A. Carlson, Delmar, N.Y., Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 550,932, May 18, 1966, which is a continuation-in-part of application Ser. No. 470,239, July 7, 1965. This application Sept. 5, 1969, Ser. No. 855,765

Int. Cl. C07d *49/36, 87/36*

U.S. Cl. 260—247.2 B **14 Claims**

1-substituted-5-nitroimidazol-2-yl-alkyl carbamates and acid addition salts thereof are prepared from 1-substituted-5-nitroimidazoles having at the 2-position of the imidazole ring an hydroxyalkyl, mercaptoalkyl, alkylsulfonyloxyalkyl, alkarylsulfonyloxyalkyl, haloalkyl, halocarbonylalkyl or halothiocarbonyloxyalkyl radical. The 1-substituted-5-nitroimidazol-2-yl-alkyl carbamates are useful in the treatment of parasitic diseases. Antiparasitic compositions in which the active ingredient is a 1-substituted-imidazole-2-yl-alkyl carbamate are also provided.

3,646,028

CERTAIN 2-AMINO-4-PHENYL-3,4-DIHYDROQUINAZOLINES

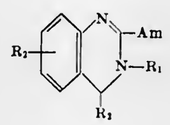
Gordon Northrup Walker, Morristown, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 731,316, May 22, 1968, which is a continuation-in-part of application Ser. No. 638,657, May 15, 1967, which in turn is a continuation-in-part of application Ser. No. 579,483, Sept. 15, 1966, now Pat. No. 3,560,501. This application Sept. 22, 1969, Ser. No. 860,090

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.5 R **6 Claims**

2-amino-4-aryl-3,4-dihydro-quinazolines of the formula



Am=an amino or hydrazino group

R_1=H, aliphatic or araliphatic radical

R_2=H, alkyl, alkoxy, (alkylmercapto, halogeno, CF_3 or NO_2

R_3=aromatic radical

acyl derivatives, quaternaries and salts thereof, such as the 2-dimethylamino-4-phenyl-6-chloro-3,4-dihydro-quinazoline hydrochloride, exhibit anti-inflammatory and coronary dilatory effects.

3,646,029

PIPERAZINO METHYL 1,3 DIARYLGUANDINES

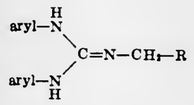
Darrell Dexter Mullins, Nitro, W. Va., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 25, 1968, Ser. No. 762,608

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **6 Claims**

Compounds of the formula



where R is hydroxy, halogen, amino, nitroalkyl, or N-arylcarbamoyloxy are described which are useful for control of soil borne pathogenic organisms which attack the underground parts of plants.

3,646,030

METHOD FOR THE PREPARATION OF BASIC DERIVATIVES OF 9-OXO-10-OXA-9:10-DIHYDROANTHRACENE

Davide Milani, Milan, Italy, assignor to Mondi Pharma Establishment, Vaduz, Liechtenstein

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,373

Int. Cl. C07d *87/34*

U.S. Cl. 260—247.7 F **3 Claims**

A few basic derivatives of 9-oxo-10-oxa-9:10-dihydroanthracene are disclosed, which have an intense stimulating effect on respiration. A method for the preparation of these compounds is also disclosed and mainly consists in the reaction of an N-halogen succinimide with 4-methyl-9-oxo-10-oxa-9:10-dihydroanthracene which has been substituted in the 3 position by a selected substituent.

3,646,031

2-MORPHOLINO CARBONYL PYRAZINES

Hiroshi Abe, Nishinomiya-shi, Yukio Shigeta, Kobe, Fumihiko Uchimaru, Koganei-shi, Seizaburo Okada, Inbagun, and Akira Kosasayama, Tokyo, Japan, assignors to Daiichi Selyaku Company, Limited, Tokyo, Japan

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,348

Claims priority, application Japan, Sept. 20, 1967, 42/59,861, 42/59,862

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 R **3 Claims**

Novel 2-carbonyl pyrazine derivatives are prepared by reaction of the corresponding pyrazine-2-carboxylic acid derivatives with alkyl alcohol or by reaction of the corresponding ester with an amine, and are useful as oral hypoglycemic agent or as reducing agent of non-esterified fatty acid level.

3,646,032

AZIDO-S-TRIAZINES

William J. Priest and Akemi S. Marshall, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application July 25, 1967, Ser. No. 655,740, now Pat. No. 3,532,500. Divided and this application Jan. 16, 1970, Ser. No. 8,135

Int. Cl. C07d *55/18, 55/20*

U.S. Cl. 260—249.9 **3 Claims**

s-Triazines substituted on a nuclear carbon atom with at least one azido group and at least one substituent having a conjugated structure, the pi electron system of which is strongly coupled with that of the triazine nucleus, and which absorbs light in the 300 to 400 mμ range, such as an aromatic substituent, are useful as gas-forming or photoblowing agents in vesicular compositions. These triazines are produced from cyanuric chloride and cyanuric bromide by reaction with a compound which provides the desired non-azido substituent to produce a substituted mono- or dichloro-s-triazine or a mono- or dibromo-s-triazine, followed by reaction with sodium azide to replace chlorine or bromine by the azido group. The azido-s-triazines so prepared are advantageously used in vesicular compositions. The specification and claims designate the scope of the present invention.

3,646,033

DERIVATIVES OF ISOINDOLINE

Heinrich Leister, Cologne-Stammheim, and Heinrich Vollmann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

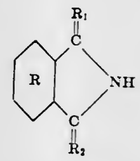
No Drawing. Filed Sept. 8, 1967, Ser. No. 666,458

Claims priority, application Germany, Sept. 9, 1966, F 50,163

Int. Cl. C07d *49/38, 27/48*

U.S. Cl. 260—250 R **6 Claims**

Isoindoline derivatives asymmetrically disubstituted in the 1- and 3-position corresponding to the general formula

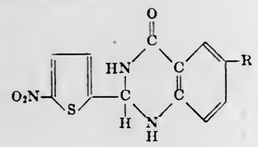


in which the cyclic radical R is an aromatic ring, a substituted aromatic ring, a tetrahydrogenated aromatic ring, a nitrogen-containing heterocyclic ring, or a sulphur-containing heterocyclic ring and R_1 and R_2, which are different, are bivalent radicals of a compound which con-

tains two active hydrogen atoms attached to a carbon or nitrogen atom and a two-stage process for making the same. The isoindoline derivatives are excellent dyestuffs for dyeing and printing synthetic fiber materials.

3,646,034
2,3-DIHYDRO-2-(5-NITRO-2-THIENYL) QUINAZOLIN-4(1H)ONES
Robert J. Alaimo, Norwich, N.Y., assignor to The Norwich Pharmacal Company
No Drawing. Filed May 18, 1970, Ser. No. 38,553
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QA **4 Claims**

A series of 2,3-dihydro-2-(5-nitro-2-thienyl)quinazolin-4(1H)ones of the formula:



wherein R is hydrogen, chloro or nitro are especially inimical to *Hemophilus vaginalis*.

3,646,035
1-PHENYL-4-PYRROLINYLPIPERAZINES AND RELATED COMPOUNDS
Fred M. Hershenson, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,842
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **7 Claims**

1-phenylpiperazines having a pyrrolinyl, tetrahydropyridyl, or tetrahydroazepinyl substituent at the 4-position are described herein. They possess antibacterial, antiprotozoal, anthelmintic, anti-fungal, and anti-algal activity. The compounds are prepared by the reaction of a 1-phenylpiperazine with the appropriate imido ester.

3,646,036
1-FARNESYLACETYL-4-HYDROXYALKYL-PIPERAZINES
Ivar Laos, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed Mar. 30, 1970, Ser. No. 24,010
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 C **6 Claims**

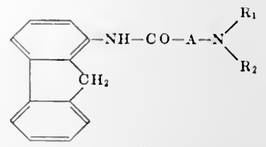
N-substituted farnesylacetyl piperazines are prepared by acylation of an N-substituted piperazine with a farnesylacetyl halide. These amides exhibit valuable pharmacological properties, e.g. anti-ulcerogenic, anti-bradykinin, anti-protozoal and anthelmintic.

3,646,037
IMIDAZOLIDINONE DERIVATIVES
Walter Schindler, Riehen, Basel, and Erich Schmid, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Mar. 26, 1970, Ser. No. 24,392
Claims priority, application Switzerland, Mar. 28, 1969, 4,799/69; May 21, 1969, 7,693/69
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **8 Claims**

1 - [4-[3-[dibenz[b,f]azepin-5-yl]-2-methyl-propyl]-1-piperazinyl-alkyl] - 3-alkyl-2-imidazolidinone derivatives and the pharmaceutically acceptable acid addition salts thereof are useful for the treatment of psychosomatic disturbances; an illustrative embodiment is 1-[2-[4-[3-(5H-dibenz[b,f]azepin - 5 - yl)-2-methyl-propyl]-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.

3,646,038
1-(N-METHYLPIPERAZINEACETYL) AMINOFLUORENE
René Rachel De Ridder, Brussels, Belgium, assignor to Manufacture de Produits Pharmaceutiques A. Christiaens Societe Anonyme, Brussels, Belgium
No Drawing. Filed Oct. 13, 1967, Ser. No. 675,076
Claims priority, application Great Britain, Oct. 14, 1966, 46,129/66, 46,131/66
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TRI **1 Claim**

Derivatives of 1-aminofluorene of the formula:



and the pharmaceutically acceptable addition salts thereof, in which A is —CH_2— or



R_1 and R_2 are identical or different and each represents a methyl, ethyl, propyl or butyl group, or R_1 and R_2 represent together with the attached nitrogen atom a nitrogeneous heterocyclic group having 1 or 2 nitrogen atoms as hetero-atoms and 4 or 5 carbon atoms in the ring, are effective as anticonvulsants.

3,646,039
4,5-DIHYDROTHIENO[2,3-b][1]BENZOTHIEPIN DERIVATIVES AS CNS DEPRESSANTS
Walter Schindler, Riehen, near Basel, and Armin Zust, Birsfelden, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Filed June 10, 1969, Ser. No. 832,011
Claims priority, application Switzerland, June 20, 1968, 9,211/68; Dec. 23, 1968, 19,149/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **7 Claims**

1 - [2 - or 1-[3-[4-(4,5-dihydrothieno[2,3-b][1]benzothiepin - 4 - yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinones and the pharmaceutically acceptable acid addition salts thereof which compounds exhibit depressant activity on the central nervous system; pharmaceutical compositions comprising these compounds and their salts as aforesaid and methods of producing central nervous system depressant effects in mammals which comprise administering an effective amount of a compound according to the invention or a pharmaceutically acceptable acid addition salt thereof; an illustrative embodiment is 1-[2-[4 - (4,5 - dihydrothieno[2,3-b][1]benzothiepin-4-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolinone.

3,646,040
PROCESS FOR THE PREPARATION OF DIALKYLPYRIDINES
Dieter Dieterich and Rudolf Braden, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 16, 1969, Ser. No. 792,242
Claims priority, application Germany, Jan. 31, 1968, P 16 70 982.3
Int. Cl. C07d *31/10*
U.S. Cl. 260—290 P **6 Claims**

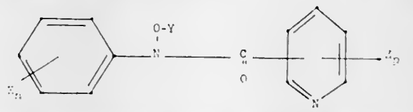
Dialkylpyridines are prepared by reacting an oxetane and from 0.5 to 10 mols of ammonia, methylamine, dimethylamine and mixtures of the foregoing at a temperature of from about 180° C. to about 600° C.

3,646,041
SYM-TRIS-(4-PIPERIDYL) CYCLOHEXANES
Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company
No Drawing. Application Oct. 12, 1967, Ser. No. 674,760, now Patent No. 3,528,988, which is a continuation-in-part of applications Ser. No. 507,556, Nov. 12, 1965, and Ser. No. 571,687, Aug. 11, 1966. Divided and this application Jan. 8, 1970, Ser. No. 7,310
Int. Cl. C07d *29/26*
U.S. Cl. 260—293.63 **1 Claim**

4-vinyl pyridines are trimerized in the presence of an alkali metal organic imide in a solvent, for example the reaction product of sodium and ethylenimine in the presence of excess ethylenimine, to form 1,3,5-tris(4-pyridyl) cyclohexanes which can be reacted with alkyl benzene sulfonic acids to make oil soluble wetting agents useful in making water-in-oil emulsions. The 1,3,5-tris(4-pyridyl) cyclohexanes can also be hydrogenated to form 1,3,5-tris-(4-piperidyl) cyclohexanes. Both types of cyclohexanes find utility as accelerators for sulfur curable millable rubbers and resins, for example, natural rubber. The 1,3,5-tris(4-piperidyl) cyclohexanes can be used to cure epoxides, or anhydride containing polymeric materials (for instance, the copolymer of maleic anhydride and styrene); they will also crosslink or chain extend isocyanate terminated polyurethane prepolymers, or polyisocyanates, and can be used in the one-shot processes of making polyurethanes by mixing with the polyol, H_2O, etc. The 1,3,5-tris-(4-piperidyl) cyclohexanes can be reacted with epoxides and/or episulfides to make ethers and/or thioethers and polyether and/or thioether polyols and/or polythiols which can be reacted with isocyanates or polyisocyanates to make polyurethanes and polythiourethanes.

3,646,042
CERTAIN N-PHENYL, N-LOWER-ALKYL-PYRIDINE CARBOXAMIDES AND DERIVATIVES THEREOF
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 694,124, Dec. 28, 1967. This application Feb. 9, 1970, Ser. No. 10,057
Int. Cl. C07d *31/36*
U.S. Cl. 260—294.9 **7 Claims**

A compound of the formula



wherein *n* is an integer from 1 to 3; X is selected from the group consisting of halogen, lower alkyl, nitro, hydroxy, lower alkoxy, lower alkanoyl, and cyano; Y is selected from the group consisting of lower alkyl, lower alkanoyl, lower alkoxycarbonyl, lower alkythiocarbonyl and carbamoyl, Z is selected from the group consisting of halogen, lower alkyl, lower alkoxy, cyano and nitro; and *p* is an integer from 0 to 2.

3,646,043
CERTAIN O,O-DIALKYL-S-[(1-PYRIDYL-2)-ALKYL-THIOETHYL]-PHOSPHOROTHIOATES AND THE CORRESPONDING PHOSPHORODITHIOATES
Tatsumi Nishimura, Shimizu, Hiroshi Shinohara, Ogasagun, Kiyoshi Takita, Shimizu, and Masaru Kado, Yokohama, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed July 2, 1969, Ser. No. 838,701
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 K **7 Claims**

Novel O,O-dialkyl-S-[1-(pyridyl)-alkylthioethyl]-phosphorothioates and -phosphorodithioates and insecticidal and miticidal compositions comprising the same as an active ingredient.

3,646,044
PRECIPITATION COPOLYMERIZATION OF MALEIC ANHYDRIDE IN AQUEOUS MEDIUM
Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.
No Drawing. Filed May 21, 1969, Ser. No. 826,711
Int. Cl. C08f *33/00, 33/08*
U.S. Cl. 260—296 H **19 Claims**

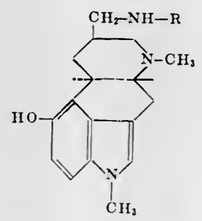
Maleic compound, such as maleic anhydride, and vinyl monomer, such as styrene, are copolymerized in aqueous medium containing water-miscible organic solvent so that polymerization takes place in an aqueous medium to cause the copolymer to precipitate as it is formed. When maleic anhydride is used, it hydrolyzes in the aqueous medium so that the copolymer which is formed is an acid copolymer.

3,646,045
INTERMEDIATES FOR 5-(4-PYRIDYLETHYL)-PYRIDOINDOLE DERIVATIVES
Leo Berger, Montclair, and Alfred John Corraz, Wayne, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Original application Sept. 10, 1968, Ser. No. 758,711, now Patent No. 3,502,688, dated Mar. 24, 1970. Divided and this application Dec. 8, 1969, Ser. No. 883,290
The portion of the term of the patent subsequent to Dec. 16, 1986, has been disclaimed
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **22 Claims**

5 - (4-pyridylethyl)-pyridoindole derivatives having analgesic activity, prepared from the correspondingly substituted 4-piperidones and N-amino-N-arylaminoethylpyridines, are described. The N-amino-N-arylaminoethylpyridines are prepared from the sequential intermediates N-arylaminoethylpyridines and N-nitroso-N-arylaminoethylpyridines.

3,646,046
1,6-DIMETHYL-10α-ERGOLINE DERIVATIVES
Federico Arcamone, Giovanni Franceschi, Alfredo Glasser, and Luciano Dorigotti, Milan, Italy, assignors to Societá Farmaceutici Italia, Milan, Italy
No Drawing. Filed Mar. 4, 1969, Ser. No. 804,287
Claims priority, application Italy, Mar. 7, 1968, 13,625/68
Int. Cl. C07d *43/20*
U.S. Cl. 260—285.5 **7 Claims**

Described are compounds of the formula:



wherein R is selected from the group consisting of the radical of an aliphatic, cycloaliphatic, aromatic and heterocyclic organic acid having from 1 to 10 carbon atoms

which may be substituted by halogen, hydroxy, nitro, amino or alkylamino groups, alkyl, aryl, alkoxy, aryloxy, thio-ether or sulphonic groups, of the radical of an alkyl, arylcarbonic and dialkylcarbamic acid, and a process for the preparation thereof. The compounds possess an anti-enteraminic, oxytocic, adrenolytic, hypotensive and sedative activity.

3,646,047

CERTAIN BENZO[b]THIOPHENE-2-CARBOXAMIDE DERIVATIVES

William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,090

Int. Cl. C07d *31/44*

U.S. Cl. 260—294.8 C **4 Claims**

The preparation of N-(tertiary-aminoalkyl) derivatives of benzo[b]thiophene - 2 - carboxamide and benzofuran-2-carboxamide by reacting the corresponding benzo[b] thiophene or benzo furan carboxylic acid with N,N'-carbonyldiimidazole and sequentially with a primary or secondary alkylamine, is described. Other methods of preparing the compounds of this invention are also described.

The present compounds possess central nervous system (CNS) activity and are useful as tranquilizers, CNS depressants, hypnotics and muscle relaxants.

3,646,048

N-(TERT-AMINOALKYL)-2-INDENE-CARBOXAMIDES

William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,091

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 K **3 Claims**

The preparation of N-(tert. aminoalkyl) derivatives of substituted or unsubstituted 2-indenecarboxamides, is described. The compounds are prepared by several methods, the preferred method being the reaction of a substituted or unsubstituted indenecarboxylic acid with N,N'-carbonyldiimidazole and subsequently with a substituted alkylenediamine. These compounds are useful primarily for their depressant and analgesic activity.

3,646,049

ACYLAMINOBENZIMIDAZOLE DERIVATIVES

Dale R. Hoff, Basking Ridge, and Michael H. Fisher, Bridgewater Township, Somerville County, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 696,496, Jan. 9, 1968, which is a continuation-in-part of application Ser. No. 631,746, Feb. 3, 1967. This application Mar. 5, 1970, Ser. No. 16,957

Int. Cl. C07d *49/38*

U.S. Cl. 260—302 H **18 Claims**

Benzimidazoles having a heteroaryl substituent in the 2-position and a substituted amino radical at the 5- or the 6-position are prepared by variety of techniques including reaction of the corresponding 5-amino or 6-amino benzimidazole with the appropriate acyl halide or haloformate. These benzimidazoles are new compounds having significant anthelmintic activity. Benzimidazoles having the above-stated substituents at the 2- and 5- or 6-positions and further substituted at the 1-position with alkyl, aralkyl, hydroxy, acyl, carboxyalkoxy, carbamoyl, alkoxycarbonyl, alkenyloxy, or alkoxy, including substituted alkoxy, radicals are provided. The preferable substituent in the 1-position is an alkoxy which can be substituted by a large number of radicals.

3,646,050

2-AMINOBENZOTHIAZOLES CONTAINING A POLYFLUOROALKANOYL OF ALKOXY-POLYFLUOROALKYL SUBSTITUENT

Audley L. Cain, Amherst, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application May 18, 1966, Ser. No. 550,959, now Patent No. 3,480,612, dated Nov. 25, 1969. Divided and this application July 28, 1969, Ser. No. 857,259

Int. Cl. C07d *91/46*

U.S. Cl. 260—305 **2 Claims**

Production of certain novel 2-amino-benzothiazole compounds which serve as intermediates in the production of mono- and polyazo dyestuffs containing a polyfluoro alkanol or alkyl ether group and their corresponding quaternary ammonium salts which are particularly useful as dyes for acrylic fibers.

3,646,051

PROCESS FOR THE RESOLUTION OF A SUBSTITUTED IMIDAZOTHIAZOLE

François Dewilde, Saint-Marc-Massy, and Guy Gabriel Frot, Noisy-la-Sec, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,513

Claims priority, application France, Apr. 24, 1969, 6913030

Int. Cl. C07d *99/06*

U.S. Cl. 260—306.7 **6 Claims**

Laevorotatory 6 - phenyl - 2,3,5,6 - tetrahydroimidazo [2,1-b]thiazole, useful as an anthelmintic, is isolated from a mixture of its hydrochloride with the hydrochloride of the racemic hydrochloride by fractional solution in water.

3,646,052

7-v-TRIAZOLYL-(2)-COUMARIN COMPOUNDS

Otto Neuner and Alfons Dorlars, Leverkusen, Carl-Wolfgang Schellhammer, Opladen, and Otto Berendes, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 662,065, Mar. 10, 1967. This application Mar. 11, 1970, Ser. No. 18,003

Claims priority, application Germany, Mar. 19, 1966, F 48,712

Int. Cl. C07d *99/04;* **C09k** *1/02*

U.S. Cl. 260—308 A **9 Claims**

7-v-triazolyl - (2) - coumarin compounds as brightening agents for polyester and polyvinyl chloride materials.

3,646,053

CERTAIN-(2-AMINO-4-THIAZOLYL)INDOLES

John Frank Poletto, Nanuet, N.Y., and George Rodger Allen, Jr., Old Tappan, and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 632,556, Apr. 21, 1967. This application May 18, 1970, Ser. No. 38,551

Int. Cl. C07d *99/06*

U.S. Cl. 260—306.8 R **5 Claims**

This disclosure describes compounds of the class of 3-(2-amino-4-thiazolyl)indoles useful as analgesic agents.

3,646,054

COUMARIN-v-TRIAZOLE OXIDES

Rudolf Kirchmayr, Binningen, Basel-Land, Hansjorg Heller, Riehen, and Jean Rody, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 704,587, Feb. 12, 1968. This application Aug. 28, 1970, Ser. No. 68,025

Int. Cl. C09k *1/02*

U.S. Cl. 260—308 A **8 Claims**

2 - [3 - phenyl-coumarinyl-(7)]-v-triazole-1- (or -3-) oxides which are unsubstituted in 4- and 5-position at the triazole moiety, or have in one or both of the latter two positions non-chromogenic substituents, are described as fluorescers which are useful for the marking, invisible in daylight but fluorescent in ultraviolet light, of objects, such as pieces of laundry. Their production, especially by oxidizing coumarin-(7)-hydrazone-oximes is described.

Furthermore, the conversion of 2-coumarin-substituted v-triazole-1- (or -3-) oxides, by reduction, e.g. with hydrogen in statu nascendi, to the corresponding triazoles is also disclosed.

3,646,055

2,4-DIHYDRO-6-PHENYL-1H-s-TRIAZOLO[4,3-a][1,4] BENZODIAZEPIN-1-ONES

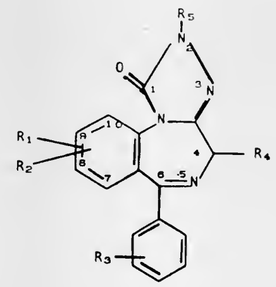
Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,112

Int. Cl. C07d *53/06, 57/02*

U.S. Cl. 260—308 C **3 Claims**

2,4-dihydro-6-phenyl - 1H - s - triazolo[4,3-a]benzodiazepin-1-ones of the formula:



wherein R_1, R_2, and R_3 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and wherein R_5 and R_6 are selected from the group consisting of hydrogen and alkyl, defined as above, are produced from selected 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thiones (I) by condensation with alkyl carbazate, yielding the corresponding 3-(5-phenyl-3H-1,4-benzodiazepin-2-yl)carbazic acid alkyl ester (II), and then heating II to an elevated temperature to obtain compound III (in which R_5 is hydrogen). Alkylation of the latter yields the products of Formula III in which R_5 is lower alkyl .The compounds of Formula III as well as the intermediates II and the pharmacologically acceptable acid addition salts thereof are useful to sedate and tranquilize domestic and zoo animals, particularly mammals and birds.

3,646,056

PROCESS FOR THE PRODUCTION OF 5,5-DIPHENYLHYDANTOIN

Winfried Kolbeck, Munich, and Friedrich Bayerlein, Munich-Obermenzing, Germany, assignors to Diamalt Aktiengesellschaft, Munich, Germany

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,317

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **9 Claims**

5,5-diphenylhydantoin is produced in one step by reacting benzoin with 1–3 equivalents of urea in an alkaline medium in the presence of 0.5–4 equivalents of elemental sulfur at a temperature between 60° C. and the boiling point of the reaction mixture.

3,646,057

2-NITROIMIDAZOLES

Alden Gamaliel Beaman, North Caldwell, N.J., and William Paul Tautz, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,838

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **12 Claims**

2-nitroimidazoles substituted in the 1-position with a lower alkyl amide or a lower alkyl amine which are useful as germicides and anti-protozoal agents.

3,646,058

3-AMINO-4,4-DIHALO-5-PYRAZOLONES

Daniel Bertin, Montrouge, and Pierre Girault, Paris, France, assignors to Roussel-UCLAF, Paris, France

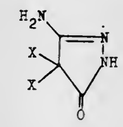
No Drawing. Filed Oct. 28, 1969, Ser. No. 871,959

Claims priority, application France, Nov. 7, 1968, 172,931

Int. Cl. C07d *49/16*

U.S. Cl. 260—310 A **2 Claims**

3-amino-4,4-disubstituted-5-pyrazolones of the formula



(I)

wherein X is chlorine or bromine, and their acid, addition salts, which possess antibacterial activity, process for their preparation, antibacterial compositions containing them, and their use.

3,646,059
PLANT GROWTH REGULATORY UREIDOPYRAZOLES

Richard K. Brantley, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 5, 1969, Ser. No. 822,001
Int. Cl. C07d *49/20*
U.S. Cl. 260—310 R **3 Claims**

Certain ureidopyrazoles, such as (i) 5-(3-phenylureido)-1,3-dimethylpyrazole or (ii) 5-[3-(2-fluorophenyl) ureido]-4-chloro-1,3-dimethylpyrazole, have been found to be effective as plant growth modifiers. The ureidopyrazoles are particularly useful as defoliants on cotton, soybean, and dry bean plants.

3,646,060
DERIVATIVES OF 4a,9b - DIHYDRO - 8,9b-DIMETHYLDIBENZOFURAN AND OF 4a,9b-DIHYDRO - 8,9b-DIMETHYLDIBENZOFURAN-3(4H)-ONE

Elizabeth Benz Morlock, Bronx, and Jay Donald Albright and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 4, 1970, Ser. No. 34,519
Int. Cl. C07d *5/44*
U.S. Cl. 260—326.3 **4 Claims**

This disclosure describes derivatives of 4a,9b-dihydro-8,9b-dimethyldibenzofuran and of 4a,9b-dihydro-8,9b-dimethyldibenzofuran-3(4H)-one useful as intermediates or as analgesic agents.

3,646,061
METHOD OF PREPARING N-ALKOXALYL AND N-FORMYL DERIVATIVES OF α-AMINO ACID ESTERS

Itsutoshi Maeda, Kanagawa-ken, Hideshi Miyayashiki, Tokyo, and Ryonosuke Yoshida, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed May 29, 1969, Ser. No. 829,139
Claims priority, application Japan, June 10, 1968, 43/39,796; Aug. 10, 1968, 43/56,916
Int. Cl. C07d *27/60;* **C07c** *101/00*
U.S. Cl. 260—326.14 T **6 Claims**

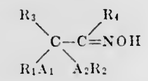
Alkyl esters of alkoxalylamino or N-formylamino acids are produced in high yields directly by heating the acids with oxalic acid or formic acid and a lower alkyl alcohol at 80–200° C.

3,646,062
S,S-SUBSTITUTED 2,2-DI-THIO-, SULFINYL-, AND SULFONYL-ALKANAL AND ALKANONE N-SUBSTITUTED CARBAMOYLOXIMES

Tomas L. Fridinger and Edward L. Mutsch, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 753,752, Aug. 19, 1969. This application July 11, 1969, Ser. No. 841,142
Int. Cl. C07c *131/00;* **C07d** *71/00, 73/00*
U.S. Cl. 260—327 M **7 Claims**

New oximes having the formula



are reacted with selected isocyanates, or with phosgene followed by a reaction with a compound containing a reactive amino

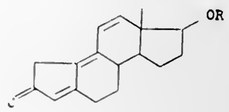
function, to obtain S,S-substituted thio-, sulfinyl-, sulfonyl-alkanal and -alkanone N-substituted carbamoyloxime compounds having a high degree of effectiveness as nematocides, acaricides and insecticides when an effective amount of the compound is applied to plants or to the soil in which they are growing.

3,646,063
PROCESS FOR A-NOR $\Delta^{3(5),9,11}$-ESTRATRIENE-17β-OR-2-ONES

Robert Bucourt and Lucien Nedelec, Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed May 29, 1968, Ser. No. 732,881
Claims priority, application France, May 29, 1967, 108,253; Aug. 23, 1967, 118,793
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **7 Claims**

A process for the preparation of A-nor steroids of the formula



(I)

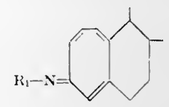
wherein R is selected from the group consisting of hydrogen, an acyl radical of an organic carboxylic acid of 1 to 18 carbon atoms and certain alkyl compounds and to novel intermediates produced therein and novel products produced thereby which have anabolic and androgenic activity.

3,646,064
4-IMINO - 19 - NOR-A-HOMO-STEROID-TRIENES AND A PROCESS FOR THEIR MANUFACTURE

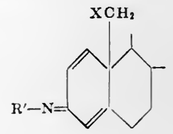
Georg Auner, Basel, and Peter Wieland, Oberwil, Basel-land, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,875
Claims priority, application Switzerland, Dec. 6, 1967, 17,109/67
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **11 Claims**

Steroid compounds of the partial formula



wherein R_1=free or esterified hydroxyl or a substituted amino group, especially those of the androstane, pregnane or cholestane series are prepared by reacting a compound of the partial formula



wherein X is a hydroxyl group esterified with a strong inorganic or organic acid, with a strong inorganic or organic base. Use: Intermediates for the manufacture of the known, pharmacologically active 4-oxo-19-nor-A-homo-steroid-2,4a,10(1)-trienes.

3,646,065
16-OXA STEROIDS

Richard Wightman Kierstead, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Nov. 15, 1965, Ser. No. 496,649, now Patent No. 3,448,123, dated June 23, 1969. Divided and this application Feb. 17, 1969, Ser. No. 799,924
Int. Cl. C07d *5/04*
U.S. Cl. 260—340.9 **1 Claim**

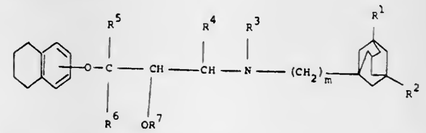
This invention relates to 17-hydroxy-16-oxa-androstan-3-ones, intermediates therefor and processes for making the same. These compounds can be prepared from the corresponding D-ring lactones wherein the 3-carbonyl substituent is protected, i.e., 16-oxa-androstan-17-ones. The subject compounds are pharmaceutically useful as anti-androgens.

3,646,066
ADAMANTYLAMINO-TETRAHYDRONAPHTHYLOXYPROPANOLS AND ESTER DERIVATIVES

Venkatachala Lakshmi Narayanan, North Brunswick, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,663
Int. Cl. C07c *93/00, 93/26*
U.S. Cl. 260—343.7 **13 Claims**

This invention relates to new adamantylamino-5,6,7,8-tetrahydronaphthyloxypropanols and related compounds of the formula



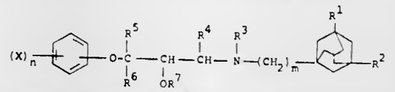
and to salts of such compounds, products which are useful in coronary diseases and as antiviral agents.

3,646,067
ADAMANTYLAMINOPHENOXYPROPANOLS AND ESTER DERIVATIVES

Venkatachala L. Narayanan, North Brunswick, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 57,791
Int. Cl. C07c *93/00, 93/26*
U.S. Cl. 260—343.7 **13 Claims**

This invention relates to new adamantylaminophenoxypropanols and related compounds of the formula:



and to salts of such compounds, products which are useful in coronary diseases and as antiviral agents. In addition, such compounds are useful in water softening and corrosion inhibition.

3,646,068
6-HALO-4-OXA-STEROIDS

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 759,794, Sept. 13, 1968, now Patent No. 3,576,849, which is a continuation-in-part of application Ser. No. 680,308, Nov. 3, 1967. This application June 19, 1970, Ser. No. 47,901
Int. Cl. C07d *10/00*
U.S. Cl. 260—343.2 S **15 Claims**

6-halo-4-oxa-3-oxo-androstanes are prepared via halogenation of 3,5-seco-A-nor-3-oic acids followed by reduction and then lactonization. The end-products are useful as antiandrogens. Particularly preferred embodiments, i.e., 6α-bromo-17β-hydroxy-17α-methyl - 4 - oxa-androstan-3-one are useful as topical agents against acne.

3,646,069
PROCESS FOR MANUFACTURING A NAPHTHALIC ACID DERIVATIVE

Hitoshi Okada, Tokyo, Masaharu Kaneko, Kanagawa-ken, Yoshiaki Kato, Tokyo, and Hiroshi Honda, Kanagawa-ken, Japan, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed June 16, 1969, Ser. No. 833,799
Claims priority, application Japan, June 18, 1968, 43/42,124; Oct. 7, 1968, 43/72,961
Int. Cl. C07c *63/02;* **C07d** *7/18*
U.S. Cl. 260—345.2 **4 Claims**

Naphthalic acid derivatives and their anhydrides are prepared from the corresponding acenaphthene derivatives by oxidation with chromic-sulfuric acid in benzene or substituted benzenes followed by oxidation with alkali metal hypochlorite in an aqueous, alkaline medium, and recovery of the desired products which are dyestuff intermediates.

3,646,070
5-ARYLOXATRICYCLO[3.2.2.$0^{2,4}$]NONANE-1-AMINES

Paul E. Aldrich, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Division of application Ser. No. 753,727, Aug. 19, 1968, now Patent No. 3,565,898, which is a division of application Ser. No. 641,412, May 8, 1967, now Patent No. 3,428,643. Divided and this application Aug. 19, 1970, Ser. No. 65,289
Int. Cl. C07d *1/00*
U.S. Cl. 260—348 C **1 Claim**

5-phenyl, 5 - substituted phenyl, 5 - pyridyl, and 5-substituted pyridyl oxatricyclo[3.2.2.$0^{2,4}$]nonan-1-amines, and N - carboalkoxy - 5 - phenyl, 5 - substituted phenyl, 5 - pyridyl, and 5 - substituted pyridyl oxatricyclo-[3.2.2.$0^{2,4}$]nonan-1-amines.

3,646,071
ANTHRAQUINONE COMPOUNDS

Wolfgang Frey, Munchenstein, Basel-Land, and Wolfgang Schoenauer, Riehen, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,322
Claims priority, application Switzerland, Apr. 8, 1968, 5,122/68; May 31, 1968, 8,169/68; Sept. 30, 1968, 14,593/68
Int. Cl. C09b *1/30*
U.S. Cl. 260—371 **2 Claims**

Water-soluble anathraquinone dyes which bear one or two 3,5,5-trimethylcyclohexylamino groups in the 1- and/or 4-positions and one of two —SO_3H groups bound either directly to a carbon atom of an aromatic ring or indirectly over an oxygen atom to a carbon atom of an aliphatic chain.

3,646,072
TURQUOISE BISCATIONIC ANTHRAQUINONE DYES

Daniel Shaw James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 27, 1970, Ser. No. 58,708
Int. Cl. C09b *1/50*
U.S. Cl. 260—380 **2 Claims**

Acid modified bulk continuous filament nylon fibers can be dyed in turquoise shades with biscationic anthraquinone dyes prepared by quaternizing the biscondensation product of an N,N-disubstituted C_{2-4} alkylenediamine and 1,4,5,8-tetrahydroxyanthraquinone. The biscationic dyes have excellent reserve on unmodified nylon fibers and fibers so dyed have sufficient light fastness for use in nylon styling carpeting.

3,646,073

PREPARATION OF 2,6-DI-TERT-HYDROCARBYL-BENZOQUINONES

John C. Wollensak, Bloomfield Hills, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,353
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R 4 Claims

Air oxidation of 2,4,6-tri-tert-hydrocarbylphenols forms a reaction mixture containing 2,6 - di-tert-hydrocarbyl benzoquinones. The mixture is acidified with a strong mineral acid such as phosphoric acid and then distilled to recover the benzoquinone in improved yield and purity.

3,646,074

3,17-DIOXYGENATED 16α,17α-METHANO-5α-ANDROSTANES AND UNSATURATED CONGENERS

William F. Johns, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 766,300, Oct. 9, 1968. This application Nov. 26, 1969, Ser. No. 880,394
Int. Cl. C07c *169/08, 169/20*
U.S. Cl. 260—397.4 19 Claims

Preparation of the captioned compounds — for example, 3β,17β-diacetoxy-16α,17α-methano-5α-androstane — and the androgenic and anabolic utility thereof is disclosed.

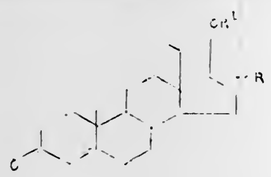
3,646,075

18-METHYL-1,4-ANDROSTADIENES AND PROCESS OF MAKING THE SAME

Hans-Detlef Berndt, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed July 24, 1969, Ser. No. 845,938
Claims priority, application Germany, July 27, 1968, P 17 93 055.1
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 5 Claims

18-methyl-1,4-androstadienes of the formula



wherein R is a saturated or unsaturated hydrocarbon residue and R^1 is hydrogen or acyl.

The compounds are made by dehydrogenating the corresponding 1,2-saturated steroids followed by acylating a free 17-hydroxyl group or saponifying a 17-acyloxy group.

The compounds have a high ratio of the anabolic main action to the androgenic side action. They are useful wherever a build-up of the body albumin is desired, particularly in general debility conditions and during convalescence.

3,646,076

PROCESS FOR ETHYNYLATING 17-KETO STEROIDAL PHENOLS

George C. Buzby, Jr., Philadelphia, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 2, 1970, Ser. No. 42,880
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 11 Claims

17α-ethynyl-13-(lower)alkylgona-(and 8-isogona)-1,3,-5(10)-trien-3,17β-diols and the Δ^{7}-, $\Delta^{8(9)}$- and $\Delta^{9(11)}$)-dehydro analogs thereof are produced from the corresponding 3-hydroxy-17-ketone compounds by reaction with alkali metal (lower)alkoxide followed by reaction with lithium acetylide-ethylenediamine complex and regeneration of the steroidal phenolic function with acid. The products of the process are hormonally active, especially estrogenically and anti-lipemically active and also are useful as intermediates in the preparation of other hormonally active steroids.

3,646,077

PROCESS FOR CONTINUOUSLY MANUFACTURING VINYL ESTERS

Gerhard Hübner and Helmut Kainzmaier, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Continuation-in-part of application Ser. No. 385,048, July 24, 1964. This application Oct. 23, 1967, Ser. No. 677,063
Claims priority, application Germany, Aug. 5, 1963, W 35,033; Mar. 9, 1964, W 36,351
Int. Cl. C07c *69/24, 69/76;* C11c *3/00*
U.S. Cl. 260—410.9 N 2 Claims

This invention relates to the continuous production of vinyl esters, and it has for its object to provide a novel and improved process for this purpose. Another object is to synthesize vinyl esters from acetylene and carboxylic acids having molecular weights in excess of 100, with the use of simple equipment, a marked economy in the use of catalysts, a substantially complete conversion of the acids employed, a space-time yield which is considerably higher than has been obtained heretofore, and without requiring any safeguards to prevent explosions.

3,646,078

OXIDATION OF HYDROCARBONS TO PRODUCE CARBOXYLIC ACIDS

Robert J. Fanning, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of applications Ser. No. 442,577, Mar. 25, 1965, and Ser. No. 501,860, Oct. 22, 1965. This application Dec. 26, 1967, Ser. No. 718,642
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 15 Claims

This invention discloses that oxidation of hydrocarbon materials to produce carboxylic acids is enhanced in a single phase coordinated liquid system containing a suitable reactive diluent system. Propionic acid is a preferred single component reactive diluent system whereas a more highly preferred reactive diluent system is a mixture of acetic acid and another of 3–5 carbon atoms per molecule particularly propionic acid in about equal mol proportions. In comparison to the oxidation of typical hydrocarbon materials without such a reactive diluent system, considerably lower contamination of oxidate by lactones, heavy esters, hydroxyl groups and carbonyl groups is realized.

3,646,079

PREPARATION OF RHODIUM COMPLEXES

Malcolm J. Lawrenson, Twickenham, Middlesex, England, assignor to The British Petroleum Company Limited, London, England

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,685
Claims priority, application Great Britain, Feb. 7, 1968, 6,112/68
Int. Cl. C07j *15/00*
U.S. Cl. 260—429 J 9 Claims

Rhodium complexes are made by reacting a rhodium carbonyl carboxylate with a reagent (other than a hydrogen halide) containing an active hydrogen atom. Acetyl acetonates and similar compounds are preferred.

3,646,080

COMPLEX EUROPIUM SALT

Harvey Pobiner, Princeton, N.J., assignor to American Can Company, New York, N.Y.

No Drawing. Original application June 14, 1967, Ser. No. 645,896. Divided and this application May 12, 1969, Ser. No. 835,859
Int. Cl. C07f *5/00*
U.S. Cl. 260—429.2 1 Claim

A complex of a europium salt, soluble in acidic aqueous media, is provided in the form of europium trichloride complexed with a dipolar aprotic solvent of the type exemplified by N,N-dimethylformamide, N,N-dimethylacetamide, methyl sulfoxide, and N,N,N',N',N'',N''-hexamethylphosphoramide.

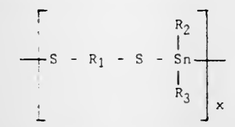
3,646,081

POLYMERIC TIN MERCAPTIDES

Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,094
Int. Cl. C07f *7/22;* C08f *45/56*
U.S. Cl. 260—429.7 5 Claims

Polymeric tin mercaptides of structure:



where R_1 is the hydrocarbon residue of a cycloaliphatic dimercaptan, R_2 and R_3 are alkyl groups of 4 to about 10 carbon atoms, and x is an integer from about 2 to about 10. The compounds of the invention are useful as non-toxic thermal stabilizers for polymers such as polyvinyl and polyvinylidene halides.

3,646,082

PROCESS FOR OPTICALLY RESOLVING DL-GLUTAMIC ACID AND SALTS THEREOF

Kenkichi Ito, Sagamihara, Naomasa Mizoguchi, Tokyo, Miyoji Dazai, Kawasaki, and Osahiro Sato, Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 636,013, May 4, 1967. This application Sept. 4, 1970, Ser. No. 69,992
Claims priority, application Japan, May 21, 1966, 41/32,402
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 9 Claims

When a solution supersaturated with DL-glutamic acid (GA) and containing DL-glutamic acid hydrochloride (GA–HCl) is seeded with L-glutamic acid, and the seeded enantiomorph is thereby crystallized in a first crop of crystals, the solubility of D–GA–HCl in the solution is decreased and the solubility of L–GA–HCl is increased. If the solution is in a condition in which it is compatible with both GA and GA–HCl in the crystalline form, a second crop of D–GA–HCl crystals may therefore be produced simultaneously with the L–GA crystals, or L–GA–HCl may be preferentially dissolved by the solution from crystalline DL–GA–HCl, leaving the D–GA–HCl behind. The solution remains approximately balanced as to L- and D-forms and the undesired enantiomorphs do not tend to crystallize spontaneously. The crystals of the two different compounds are readily separated. D–GA and L–GA–HCl are obtained by seeding the original solution with D–GA. GA–HCl may be replaced in this mechanism by GA–HBr or the zinc and ammonium salts of GA which form conglomerates of the optically active forms when crystallized in the DL form, but those salts of DL–GA whose crystals are racemates are unsuited for the process.

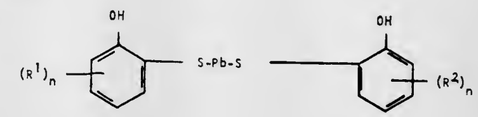
3,646,083

LEAD ORTHOMERCAPTOPHENOL SALT

Emil J. Geering, Grand Island, and George B. Stratton, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 666,914, Sept. 11, 1967. This application Dec. 31, 1969, Ser. No. 889,706
Int. Cl. C07f *7/24*
U.S. Cl. 260—435 R 10 Claims

This invention relates to ortho-substituted phenol lead salts which have a stabilizing action on polyvinyl chloride, and which also impart a stable yellow coloration thereto, of which typical structural formulae are as follows:



in which R^1 and R^2 represent substituents and each n is independently an integer from 0 to 4.

3,646,084

METHOD OF MAKING IMIDATOSILANES

Milton L. Evans, Schenectady, Tyrone D. Mitchell, Troy, and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,853
Int. Cl. C07f *7/10, 7/18*
U.S. Cl. 260—448.2 E 13 Claims

Imidatosilanes are prepared by reacting an imidate with a chlorosilane in an inert organic solvent and in the presence of an amine acid acceptor. The amine salt which is formed as a by-product of the reaction is removed from the imidatosilane which is formed by extracting it with water.

3,646,085

PERFLUOROALKYLETHERAMIDOALKYL-TRIALKOXYSILANES

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,303
Int. Cl. C07f *7/04, 7/18*
U.S. Cl. 260—448.8 R 6 Claims

Perfluoroalkyletheramidoalkyltrialkoxysilanes having the formula $R_fO[C_3F_6O]_nCF(CF_3)CON(R)R'Si(OR'')_3$ wherein R_f is a perfluoroalkyl radical having from 1 to 6 carbon atoms, n is an integer from 0 to 8, R is hydrogen

or an alkyl group having from 1 to 6 carbon atoms and R′ is an alkylene having from 1 to 12 carbon atoms or a

$$-CH_2-CH_2\overset{H}{N}-CH_2CH_2CH_2-$$

group, and R″ is an alkyl radical having from 1 to 6 carbon atoms. The novel compounds are useful as water repellents.

3,646,086

PREPARATION OF AMINE COMPLEXES OF ALUMINUM HYDRIDE

Leslie L. Sims, Mobile, Ala., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 729,913, May 17, 1968. This application Oct. 5, 1970, Ser. No. 78,155

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **6 Claims**

A process for the synthesis of amine complexes of aluminum hydride by the reaction of a tertiary amine hydrohalide or a tertiary amine and an aluminum halide with sodium aluminum hydride in the presence of an ether solvent.

3,646,087

PREPARATION OF AMINOPHENYLTRIALKOXY SILANES

Everett W. Bennett, Katonah, and Peter Orenski, Ossining, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,534

Int. Cl. C07f *7/02*

U.S. Cl. 260—448.2 E **5 Claims**

A process for preparing aminophenyltrialkoxy silanes by reacting a halophenyltrialkoxy silane with ammonia in the presence of a catalytic amount of copper and cuprous chloride.

3,646,088

PREPARATION OF SILOXANES BY REDISTRIBUTION

Georges Bakassian, Caluire, and Andre Bazquin, Luzinay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,505

Claims priority, application France, Nov. 27, 1969, 6940954

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 P **8 Claims**

A redistribution reaction between a siloxane and a chlorosilane, involving cleavage of a silicon oxygen bond, introduction of chlorine into one fragment of the siloxane and introduction of the residue of the chlorosilane into the other fragment of the siloxane, is carried out in a hexaalkylphosphotriamide.

3,646,089

PROCESS FOR PRODUCING ORGANOSILICON COMPOUNDS WITH ISOTHIOCYANATE SUBSTITUENT BONDED THROUGH DIVALENT BRIDGE

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 31, 1969, Ser. No. 796,647

Int. Cl. C07f *7/02*

U.S. Cl. 260—448.2 E **8 Claims**

A process for forming organosilicon compounds with an isothiocyanate group bonded to the silicon atom through an alkylene bridge or alkylene bridge having surfur, oxygen, or nitrogen linkages by reacting the corresponding aminoalkyl-substituted organosilicon compound with carbon disulfide and a dialkyl carbodiimide. A new class of organosilicon compounds having an isothiocyanate group bonded to the silicon atom through an alkylene bridge or alkylene bridge having sulfur, oxygen, or nitrogen linkages.

3,646,090

PROCESS FOR PREPARING LINEAR CHLORINE TERMINATED SILOXANE COMPOUNDS

Everett W. Bennett, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 29, 1969, Ser. No. 829,105

Int. Cl. C07f *7/08;* **C08f** *11/04*

U.S. Cl. 260—448.2 E **10 Claims**

A process for preparing low molecular weight linear chlorine terminated siloxane polymers by reacting a cyclotri-, cyclotetra- or cyclopentasiloxane with thionyl chloride in the presence of a catalyst such as phosphine compound, a phosphine oxide or an amine N-oxide. The said siloxane polymers find utility as cross-linking agents for room temperature vulcanizable resins and rubber systems.

3,646,091

CYANOALKYL (ORGANOFUNCTIONAL) SILICON COMPOUNDS

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 691,928, Dec. 20, 1967. This application July 18, 1969, Ser. No. 843,197

Int. Cl. C07f *7/10;* **C08g** *31/00*

U.S. Cl. 260—448.2 N **8 Claims**

Organofunctional alkyl silicon materials are provided having, in addition, a cyanoalkyl substituent. These compounds are represented by the formula:

(1) QZSiYY′

where Q is a cyanoalkyl radical, Z is an organofunctional radical, an unsaturated aliphatic hydrocarbon radical, or a silalkylene group, Y is a halogen, and Y′ is Y or a monovalent hydrocarbon radical free of aliphatic unsaturation. These organofunctional-alkyl silanes can be employed as intermediates for making organosilicon polymers.

3,646,092

PROCESS FOR THE RECOVERY OF TRIMETHYLFLUOROSILANE FROM A MIXTURE OF SILICONTETRACHLORIDE, TRIMETHYLCHLOROSILANE AND HYDROCARBONS BOILING AT THE SAME RANGE

Christian Dathe, Radebeul, Germany, assignor to Institut fur Silikon- und Fluorkarbon-Chemie, Radebeul, Germany

No Drawing. Filed May 20, 1969, Ser. No. 826,265

Int. Cl. C07f *7/04, 7/18*

U.S. Cl. 260—448.2 E **6 Claims**

A process for the recovery of trimethylfluorosilane from a mixture of silicontetrachloride, trimethylchlorosilane and hydrocarbons boiling in the same range, which comprises reacting said mixture with a difficultly soluble metal fluoride of the first to third main groups of the Periodic System of Elements at about normal temperature in the presence of a solvent including water and organic solvents, and collecting the trimethylfluorosilane escaping from the reaction mixture by condensation. The trimethylfluorosilane can be used e.g. for making hexamethyldisiloxane which is an important material in the production of silicone oils.

3,646,093

PROCESS FOR THE CONTINUOUS HYDROLYSIS OF DIORGANODICHLOROSILANES

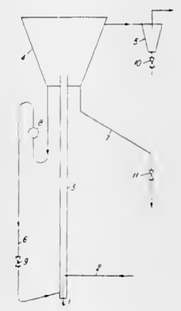
Robert Raphael Puthet, deceased, late of Lyon, France, by Daniel Gras, legal representative, 22 Avenue Montaigne, Paris France

Filed July 22, 1969, Ser. No. 845,124

Claims priority, application France, July 24, 1968, 160,463

Int. Cl. C07f *7/02*

U.S. Cl. 260—448.2 E **3 Claims**



Diorganopolysiloxanes of low viscosity and hydrogen chloride substantially free of organochlorosilanes are made simultaneously and continuously by passing diorganodichlorosilane and a small excess of water vapour to the base of a column containing upwardly circulating diorganopolysiloxane. Hydrogen chloride and part of the diorganopolysiloxane are withdrawn at the top of the column and the remainder of the diorganopolysiloxane is recycled to the base of the column.

3,646,094

ALPHA CYANOBENZYL XANTHATES HAVING PESTICIDAL PROPERTIES

David Hugh Brooks, John Michael Cox, and Ian Trevor Kay, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,707

Claims priority, application Great Britain, Mar. 7, 1968, 11,185/68

Int. Cl. C07c *154/02*

U.S. Cl. 260—455 B **3 Claims**

Compounds having pesticidal properties and characterized by the formula:

$$Z-\underset{\displaystyle X}{\underset{|}{C}}H-S-\overset{\displaystyle S}{\overset{\|}{C}}-A$$

wherein Z represents a substituted or unsubstituted, aromatic group;

X represents an electron-withdrawing group; and A represents a group OR, SR or NR^1R^2 where R, R^1 and R^2 are hydrocarbon groups and where R^1 additionally can be hydrogen, or R^1 and R^2 together with the adjacent N atom form a heterocyclic ring.

3,646,095

ORGANIC DI-ISOCYANATES OF ALKYLADAMANTANES

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 587,948, Oct. 20, 1966. This application Dec. 18, 1968, Ser. No. 784,952

Int. Cl. C07c *19/04*

U.S. Cl. 260—453 AP **5 Claims**

New compounds are disclosed which are 1,3 - diisocyanates of C_{12}–C_{20} alkyladamantanes having 1–2 alkyl groups attached to the adamantane nucleus. They are particularly useful as monomers for preparing polyurethane resins.

3,646,096

PURIFICATION OF AROMATIC DIISOCYANATES

Hans P. Horn, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,841

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **13 Claims**

Aromatic diisocyanates are treated with zinc-fatty acid salts to remove hydrolyzable chlorine and acidic impurities. The desired results are obtained by utilizing diisocyanate-soluble zinc-fatty acid salts which can be separated from the treated diisocyanate by simple distillation and which are added to the diisocyanate in an effective amount sufficient to reduce the hydrolyzable chlorine and the acidic impurity level. The treated and distilled diisocyanates are suitable for the production of colorless polyurethanes.

3,646,097

N,N-DI-(POLYHALOVINYLTHIO) CARBOXAMIDES

Lawrence E. Stevick, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,316

Int. Cl. C07c *119/18*

U.S. Cl. 260—453 R **5 Claims**

N,N-di-(polyhalovinylthio) carboxamides of the formula:

$$R\overset{\displaystyle O}{\overset{\|}{C}}-N-[S-C_2X_aH_{(3-a)}]_2$$

wherein R is hydrogen or a hydrocarbyl radical of 1 to about 10 carbon atoms which has 0 to about 3 halogen substituents of atomic number 17 to 35, X is halogen of atomic number 17 to 35 and *a* is 2 or 3 the

$$S-C_2X_aH_{(3-a)}$$

indicating a polyhalovinylthio group. These carboxamides are fungicidal, algicidal and nematocidal.

3,646,098

BORON ACID ESTERS

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 458,786, May 25, 1965. This application Dec. 30, 1968, Ser. No. 787,990

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **5 Claims**

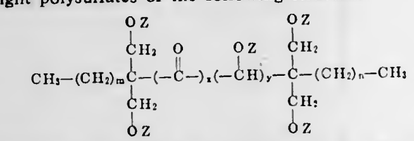
Reaction product of polyhydroxydiphenyl alkane, ether, sulfide or amine, a borylating agent and an N,N-dihydrocarbyl-hydroxy amine, formed at a temperature of from about 60° to about 200° C. These compounds are useful as stabilizing agents for plastic, rubber, hydrocarbon distillate and other organic substrates normally subject to deterioration due to weathering, oxidation, heat, etc.

3,646,099
CYANO CONTAINING OLIGOMERS
Leland E. Dannals, Waterbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Oct. 12, 1967, Ser. No. 674,737
Int. Cl. C07c *121/00, 121/28, 121/41*
U.S. Cl. 260—465.4 8 Claims

The invention relates to a polymerization process employing a bisulfite salt as the initiator and the bisulfite terminated oligomers formed thereby. The oligomers and their salts are useful as conductive agents.

3,646,100
HIGH MOLECULAR WEIGHT POLYSULFATES
Samuel Sherman, Kensington, and Mitchell Danzik, Pinole, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Aug. 28, 1970, Ser. No. 68,030
Int. Cl. C07c *141/02*
U.S. Cl. 260—458 7 Claims

Detergent active materials which are effective in the absence of phosphate builders comprise high molecular weight polysulfates of the following structure:



in which *m* and *n* are integers from 0 to 40 and the sum of *m* and *n* is from 15 to 40, *x* and *y* are integers from 0 to 1 and the sum of *x* and *y* is 1, Z is H or $-SO_3Q$ in which Q is a water soluble, salt-forming cation, and at least 3 and preferably 4 Z's are $-SO_3Q$.

3,646,101
BORONATES AND BORINATES
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 702,835, Feb. 5, 1968, which is a continuation-in-part of application Ser. No. 367,854, May 15, 1964, now Patent No. 3,382,208. This application Mar. 9, 1970, Ser. No. 17,861
Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R 4 Claims

Boronates and borinates of N,N-di-cycloalkylalkanolamine in which the alkanolamine moiety contains from 2 to 8 carbon atoms. These boronates and borinates are useful as weathering stabilizers in plastics, as additives in petroleum products and as bactericides.

3,646,102
METHOD FOR CONTINUOUSLY PREPARING POLYCARBONATE OLIGOMER
Akito Kobayashi, Kiyoshi Watanake, Yoshihiro Narita, Eiji Shiota, and Kenji Iwaoka, Yamaguchiken, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,185
Claims priority, application Japan, Aug. 28, 1968, 43/61,132
Int. Cl. C08g *17/13, 17/005*
U.S. Cl. 260—463 11 Claims

Polycarbonate oligomer having a molecular weight of 450 to 500 is prepared with a good reproducibility and theoretical consumption of phosgene by introducing an aqueous caustic alkali solution of a dihydroxy compound and an organic solvent for polycarbonate oligomer into a tubular reactor, forming a mixed phase stream thereof and feeding thereto phosgene to effect reaction with the mixed phase stream thereof in a parallel-current flow, while temporarily removing the heat of reaction generated at the reaction in the form of the latent heat of vaporization of the said organic solvent.

3,646,103
PROCESS FOR THE PRODUCTION OF NITRILES
Juergen Luecke, Tubingen, Germany, assignor to Sandoz Ltd.
No Drawing. Continuation-in-part of application Ser. No. 807,914, Mar. 17, 1969. This application Jan. 15, 1970, Ser. No. 3,217
Int. Cl. C07c *121/00, 121/02, 121/12*
U.S. Cl. 260—465 13 Claims

Improvement in the production of nitriles by heating carboxylic acids or their functional derivatives with urea, which improvement consists in the additional use of amidosulphonic acid in the reaction mixture.

3,646,104
METHOD FOR THE RING CLEAVAGE OF 2,6-DIOXIMINOCYCLOHEXANONE
Tucker T. Yee, Claymont, Del., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed July 3, 1969, Ser. No. 839,060
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.4 4 Claims

Method for the ring cleavage of 2,6-dioximinocyclohexanone or the monosodium salt thereof to an ester of 5-cyano-2-oximinovaleric acid or an ester of 5-cyano-2-acetoximinovaleric acid utilizing acetic anhydride and a primary or secondary C_1–C_5 aliphatic alcohol at temperatures ranging from ambient to the reflux temperature of the reaction mixture in the absence of any catalyst.

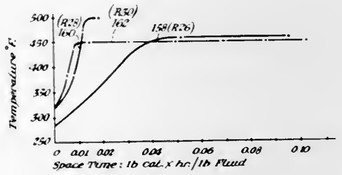
3,646,105
POLYCYCLIC POLYENE HYDROCARBONS AND PROCESS FOR THE PREPARATION THEREOF
Sebastiano Cesca, Arnaldo Roggero, Aldo Priola, and Ermanno Cinelli, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,289
Claims priority, application Italy, Dec. 18, 1968, 25,240/68
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY 6 Claims

New termonomers are disclosed which are represented by the formula:

$$A-(CH_2)_n-$$

wherein A is a radical including at least one ring having an endomethylene group, B is a cyclodiene radical and *n* is 0–5.

3,646,106
CONTROL OF TRACE IMPURITIES IN PETROCHEMICAL PROCESSES
Norman L. Carr, Allison Park, and Rodney E. Peterson, Oakmont, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 12, 1970, Ser. No. 45,717
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 11 Claims



A petrochemical plant comprising reactor means including a catalyst capable of inducing a catalytic exothermic reaction therein, means for controlling the inlet and outlet temperatures of said reactor means, means for supplying

reactants including a normally liquid reactant to said reactor means, and control means for maintaining the temperature of said reactants above the dew point thereof in any part of said reactor means but below a temperature corresponding to a predetermined side reaction rate.

3,646,107
SUBSTITUTED 10,11-DIHYDRO-5H-DIBENZO[a,d] CYCLOHEPTENE ESTERS
Marcia E. Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Original application Jan. 29, 1968, Ser. No. 723,964, now Patent No. 3,576,823. Divided and this application June 22, 1970, Ser. No. 48,477
Int. Cl. C07c *147/06, 125/06*
U.S. Cl. 260—470 13 Claims

A cis or trans 3α,12β-dihydro-8H-dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxol-8-one is treated with a Grignard reagent, i.e., a tertiary aminopropylmagnesium halide, and the Grignard adduct obtained hydrolyzed to form the corresponding 5-hydroxy-5-(3-tertiary aminopropyl) derivative which is dehydrated to form the corresponding 5-(3-tertiary aminopropylidene) derivative. The resulting compound is then hydrolyzed to form the cis or trans 10, 11 - dihydro-10,11-dihydroxy-5-(3-dimethylaminopropylidene)-5H-dibenzo[a,d]cycloheptene. Such compounds may be demethylated to produce the corresponding N-methylaminopropylidene compound. The compounds are useful as antidepressants.

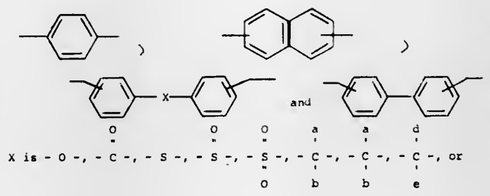
3,646,108
FIBRE-FORMING POLYMERS
Edward Barry Jones and John Mather, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 22, 1966, Ser. No. 596,061
Claims priority, application Great Britain, Sept. 23, 1965, 49,699/65
Int. Cl. C07c *65/20, 69/76, 143/52*
U.S. Cl. 260—473 G 9 Claims

A compound of the formula:

$$R-OC-Ar-O\{(CH_2)_nO-Ar'-O\{(CH_2)_mO-Ar''-CO-R$$

where

Ar, Ar' and Ar'' are each of any one of the following diradicals:



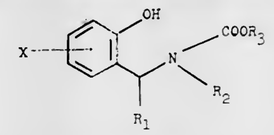
a, *b*, *d* and *e* are each any one of the substituents —H, $-CH_3$ and $-CH_2H_5$,

R is hydroxy, halogen or alkoxy

m, *n* and *p* are each an integer which is not less than 2 and not more than 6, and the aromatic ring, or either or both of the aromatic rings, of the diradicals may optionally be substituted in at least one of the free positions, each such substituent being a methyl, ethyl, methoxy, ethoxy or halogen substituent, and polymeric products prepared therefrom. Shaped articles can be prepared from such polymeric products.

3,646,109
BENZYLAMINE SUBSTITUTED CARBAMATES
John Shavel, Jr., Mendham, and George Bobowski, Morristown, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Original application May 18, 1966, Ser. No. 550,952, now Patent No. 3,452,048. Divided and this application Nov. 22, 1968, Ser. No. 778,338
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 4 Claims

A class of substituted benzylamines of the formula:



(I)

wherein X is hydrogen, lower alkoxy; R_1 is heterocyclic; R_2 is lower alkyl or lower alkenyl; and R_3 is lower alkyl. These compounds are useful as anti-microbial agents.

3,646,110
BIS-(4-HYDROXY-3,5-DIALKYLBENZYL) CARBOXYLIC ACID ESTERS
Heinz Eggensperger, Gadernheim uber Bensheim, Volker Franzen, Heidelberg, Karl-Heinz Diehl, Bensheim, Bergstrasse, and Wilfred Kloss, Kolmbach uber Bensheim, Germany, assignors to Deutsche Advance Produktion G.m.b.H., Lautern am Odenwald, Germany
No Drawing. Filed Mar. 18, 1968, Ser. No. 714,100
Claims priority, application Germany, Mar. 17, 1967, D 52,555
Int. Cl. C07c *69/76, 121/76*; C08f *45/58*
U.S. Cl. 260—473 S 7 Claims

Bis - (4 - hydroxy - 3,5 - dialkylbenzyl) carboxylic acid esters, particularly those of cyanoacetic and malonic acid, are stablilizers for resins. They are prepared by reacting 2 moles of the corresponding benzyl halides or Mannich bases with 1 mole of carboxylic acid ester.

$$CH_3-Ph-SO_2Cl + HO-(CH_2)_n-O-Ar'-O-(CH_2)_n-OH + Cl-SO_2-Ph-CH_3 \longrightarrow$$
$$CH_3-Ph-SO_2O-(CH_2)_n-O-Ar'-O-(CH_2)_n-OSO_2-Ph-CH_3$$

$$CH_3O-COArOH + CH_3-Ph-SO_2O-(CH_2)_n-O-Ar'-O-(CH_2)_n-OSO_2-Ph-CH_3 + HO-Ar''-CO-OCH_3$$
$$+ CH_3O-COAr-O-(CH_2)_n-O-Ar'-O-(CH_2)_n-O-Ar''-CO-OCH_3$$

3,646,111
PROCESS FOR THE MANUFACTURE OF PHENYL ESTERS AND PHENOL FROM BENZENE
Lothar Hörnig and Hans-Jürgen Arpe, Frankfurt am Main, and Manfred Boldt, Fischbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,020
Claims priority, application Germany, Aug. 25, 1967, F 53,330
Int. Cl. C07c *37/00, 51/32*
U.S. Cl. 260—479 R 9 Claims

The invention provides a process for the catalytic preparation of phenyl esters and, if desired, phenol, from benzene and saturated aliphatic carboxylic acids in the presence of a catalyst comprising a noble metal of Subgroup VIII of the Periodic Table and metals of main Group V or VI of the Periodic Table, the atomic number of which latter metals is at least 34.

3,646,112
PERFLUOROPOLYETHER ESTERS

John Deo Sterling, Jr., Wenonah, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,991
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 6 Claims

Esters of the structural formula

$$[F(CF_2)_yO\{C_mF_{2m}O\}_nCF(X)COOCH_2]_{4-a}C(R)_a$$

wherein $-C_mF_{2m}O-$ has the structure

$$-CFCF_2O-$$
$$|$$
$$CF_3$$

or $-CF_2CF_2O-$; y is a cardinal number between and including 1 and 4; n is a cardinal number between and including 0 and 20; R is alkyl of 1–4 carbon atoms; a is 0 or 1; and when $-C_mF_{2m}O-$ is

$$-CFCF_2O-$$
$$|$$
$$CF_3$$

X is CF_3; and when $-C_mF_{2m}O-$ is $-CF_2CF_2O-$ X is F. The esters are prepared from the corresponding acyl fluoride and either a trimethylolalkane or pentaerythritol. The esters are useful as lubricants and hydraulic fluids.

3,646,113
BICYCLO[2.2.1]HEPT-5(6)-YL COMPOUNDS

Edward A. Rick, Charleston, W. Va., and Samuel W. Tinsley, Jr., Darien, Conn., assignors to Union Carbide Corporation

No Drawing. Original application Oct. 16, 1964, Ser. No. 404,474, now Patent No. 3,459,775. Divided and this application Oct. 24, 1967, Ser. No. 677,741
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 6 Claims

2-vinylbicyclo[2.2.1]hept - 5(6) - yl and 2-epoxyethylbicyclo[2.2.1]hept-5(6)-yl compounds, wherein the vinyl compounds are prepared by the addition of the active hydrogen-containing compounds to the strained-ring double bond of the bicyclo-heptene ring in 2-vinylbicyclo-[2.2.1]hept-5-ene and the epoxy compounds are prepared by the epoxidation of the vinyl compounds. The compounds find utility as solvents for resins and oils, monomers for preparing synthetic waxes and resins, chemical intermediates for pharmaceuticals, wetting agents, insecticides, emulsifying agents, detergents, bactericides and fungicides.

3,646,114
CYCLOPENTA <b> PHENANTHRENE STEROID ANALOGUE

Colin G. Pitt, Durham, N.C., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,100
Int. Cl. C07c *69/14*
U.S. Cl. 260—488 B 3 Claims

This invention is addressed to novel cyclopentanophenanthrene steroid analogues including 8β-acetoxy, 4,5,6,6aβ,7,7aβ,8,9,10,10aα,11,11aα - dodecahydro - 7a-methyl-1H-cyclopenta<b>phenanthrene-3(2H)-one, 8β-acetoxy, 6,6aβ,7,7a,8,9,10,10aα,11,11aα - decahydro - 3-methoxy-7aβ-methyl-5H - cyclopenta<b>phenanthrene and 5,6,6a,7,7a,9-hexahydro-3-methoxy-7a-methyl-8H-cyclopenta<b>phenanthrene-8-ol acetate synthesized from m-methoxyphenylacetic acid.

3,646,115
PRODUCTION OF UNSATURATED ESTERS USING COMPLEXED CATALYSTS

Leon Starr, Plainfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Sept. 13, 1967, Ser. No. 667,379
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 5 Claims

Unsaturated esters are prepared by reacting an olefin with a monocarboxylic acid and oxygen in the presence of a complexed catalyst. The catalyst comprises a halide of Rh or Ir wherein the metal has a valence lower than maximum, complexed with carbon monoxide or trihydrocarbyl phosphines, arsines, or stibines or mixtures thereof. The unsaturated esters have many known uses, such as in preparing homopolymers and copolymers with other vinyl compounds in the coating field.

3,646,116
DIRECT PRODUCTION OF ESTERS FROM ETHYLENE AND METHANOL

James D. McClure, Oakland, and Lynn H. Slaugh, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,719
Int. Cl. C07c *69/24*
U.S. Cl. 260—497 A 8 Claims

Methyl esters of linear saturated aliphatic acids are prepared in a single step process from ethylene and methanol.

3,646,117
NITROGEN-CONTAINING DERIVATIVES OF OLIGOMERS OF TETRAFLUOROETHYLENE AND HEXAFLUOROPROPENE

Harold Crosbie Fielding, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Original application May 8, 1967, Ser. No. 636,675, now Patent No. 3,502,728, dated Mar. 24, 1970. Divided and this application Sept. 19, 1969, Ser. No. 870,789
Claims priority, application Great Britain, May 23, 1966, 22,866/66
Int. Cl. C07c *143/56*
U.S. Cl. 260—508 7 Claims

Preparation of nitrogen-containing derivatives of oligomers of tetrafluoroethylene and hexafluoropropene by refluxing an oligomer with a primary or secondary amine in an inert organic solvent whereby fluorine from the oligomer and amino nitrogen-attached hydrogen from the amine are eliminated as hydrogen fluoride and oligomer residue and amine residue become linked through the amino nitrogen atom. The derivatives have empirical formulae $QC—NR_1R_2$ or $QC{=}NR_2$ where QC is the oligomer residue and NR_1R_2 is the amino residue of the amine NHR_1R_2 in which R_1 and R_2 represent alkyl or aryl groups, which may be substituted, and R_1 can be hydrogen, and R_1 and R_2 can form part of a ring system. Preferred reaction solvents are 1,1,2-trifluoro-1,2,2-trichloroethane and methylene chloride, and typical oligomers are tetrafluoroethylene pentamer and hexafluoropropene trimer. Those oligomer derivatives whose R_1 and R_2 groups contain functional groups particularly sulphonic acid and carboxyl groups, and the corresponding salts and esters thereof, possess pronounced surface-active properties. Examples include derivatives made by reacting tetrafluoroethylene pentamer with diethylamine, allyamine, γ-diethylaminopropylamine, sodium p-aminobenzene sulphonic acid, piperazine, N-ethylethanolamine, and those made by reacting respectively tetrafluoroethylene tetramer, pentamer and hexamer and hexafluoropropene trimer with the polyethylene glycol amino derivative

$$NH_2(CH_2CH_2O)_nCH_3$$

3,646,118
RESOLUTION PROCESS

Bernard Goffinet, Paris, and Antoine Locatelli, Rosny-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed July 5, 1968, Ser. No. 742,532
Claims priority, application France, July 7, 1967, 113,581
Int. Cl. C07c *51/42, 61/16*
U.S. Cl. 260—514 P 2 Claims

A process for the recovery of d-trans-chrysanthemic acid from a mixture of dl-trans-cis-chrysanthemic acid with D(—)-threo-1-p-nitrophenyl-2-dimethylamino - propane-1,3-diol.

3,646,119
CARBONATION OF α,β-UNSATURATED CARBONYL COMPOUNDS

Robert Angelo Micheli, Passaic, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 18, 1969, Ser. No. 860,453
Int. Cl. C07c *61/36*
U.S. Cl. 260—514 R 6 Claims

A general procedure for the carbonation of α,β-unsaturated carbonyl compounds utilizes a Group II*a* metal lower alkyl carbonate, e.g., magnesium methyl carbonate as the active reagent. Preferred embodiments relate to the carbonation of 5,6,7,7a - tetrahydro-substituted-5-oxo-indanes. The reaction is conducted generally in an inert organic solvent, preferably a non-protonic solvent, such as dimethylformamide or dimethylsulfoxide at elevated temperatures.

3,646,120
ASPHALTENE-DERIVED SURFACTANT COMPOSITION AND ITS PREPARATION

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,693
Int. Cl. C07c *63/00*
U.S. Cl. 260—515 R 19 Claims

A novel surfactant composition is produced by reacting asphaltenes with an anhydride or halide of one or more of the following dicarboxylic acids: maleic acid, succinic acid and glutaric acid, with the reaction product then being separated and neutralized with a water-soluble oxide or hydroxide of a Group II–A metal. The surfactant composition formed is useful in the preparation of stable water-in-oil emulsions and also for dispersing solid particles in an oily medium.

3,646,121
4-BROMO-3-HYDROXYHIPPURIC ACID AND CATIONIC SALTS THEREOF

Leon Ellenbogen, New City, and Robert Gerard Kelly, Monsey, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,405
Int. Cl. C07c *103/22*
U.S. Cl. 260—519 4 Claims

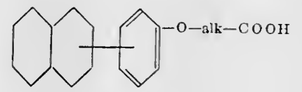
This disclosure describes 4-bromo-3-hydroxyhippuric acid and cationic salts thereof useful for inhibiting the formation of histamine in mammals.

3,646,122
DECAHYDRONAPHTHYL SUBSTITUTED PHENOXYALIPHATIC ACIDS

William Laszlo Bencze, New Providence, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 718,374, Apr. 3, 1968. This application Jan. 27, 1969, Ser. No. 794,383
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 5 Claims

Bicycloalkyl-phenoxy-aliphatic acids, e.g. those of the formula



alk=alkylene or alkenylene

and their functional derivatives are hypocholesterolemic agents.

3,646,123
PROCESS FOR THE CONTINUOUS OXIDATION OF METHYLBENZENE HYDROCARBONS BY NITROGEN DIOXIDE

William D. Vanderwerff, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,496
Int. Cl. C07c *63/26*
U.S. Cl. 260—524 N 12 Claims

A continuous process for the oxidation of methyl-benzene hydrocarbons to benzenecarboxylic acids carried out at atmospheric pressure in the presence of an aromatic solvent and nitrogen dioxide.

3,646,124
PROCESS FOR PURIFICATION OF TEREPHTHALIC ACID OR ITS SALT

Willis C. Keith, Glenwood, and Carl E. Johnson, Matteson, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,603
Int. Cl. C07c *51/48*
U.S. Cl. 260—525 14 Claims

An extraction process for the removal of impurities from terephthalic acid is disclosed. In this process an aqueous solution of a salt of terephthalic acid, for instance containing greater than about 1 weight percent of the salt, is extracted with n-butanol or benzyl alcohol at about 0 to 150° C., and the resulting phases separated to give an aqueous salt solution of increased purity. The terephthalic acid can be precipitated from solution by acidification. The alcohol to salt solution volume ratio in the extraction may often vary from about 1:5 to 15:1.

3,646,125
TEREPHTHALIC ACID PURIFICATION PROCESS

Jean Berthoux, Decines, and Bernard Ginet, Lyon, France, assignors to Progil, Paris, France

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,129
Claims priority, application France, Feb. 26, 1968, 141,514
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 5 Claims

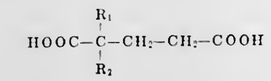
Terephthalic acid is purified by heating in a solvent which is a mixture of acetic acid, water and acetophenone and then recrystallizing. This treatment may be followed by further heating the purified acid in a saturated aliphatic monocarboxylic acid containing 2–5 carbon atoms and recrystallization.

3,646,126
METHOD FOR THE PRODUCTION OF SUBSTITUTED GLUTARIC ACIDS

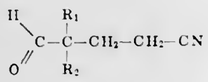
Hermann Richtzenhain, Schwellenbach, and Helmut aus der Funten, Mondorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,921
Claims priority, application Germany, Sept. 4, 1968, P 17 93 350.5
Int. Cl. C07c *55/12, 55/02*
U.S. Cl. 260—530 R **5 Claims**

Method for the production of glutaric acids of the general Formula I



in which R_1 and R_2 signify alkyl groups with 1–4 C-atoms, or in which R_1 and R_2 together with the carbon atom to which they are attached can form a carbocyclic ring, by oxidation and saponification of cyano aldehydes of the general Formula II



in which R_1 and R_2 have the meaning indicated above which oxidation is carried out with chlorine and/or bromine in the presence of at least a stoichiometrical amount of water.

3,646,127
PROCESS FOR THE PREPARATION OF UNSATURATED CARBOXYLIC ACID

Shinichi Akiyama, Kamakura-shi, and Shoichiro Minami and Akinobu Toyoda, Yokohama-shi, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed July 25, 1969, Ser. No. 845,052
Claims priority, application Japan, Aug. 1, 1968, 43/53,932
Int. Cl. C07c *57/04*
U.S. Cl. 260—530 N **6 Claims**

A process for the preparation of unsaturated carboxylic acids, which comprises catalytically reacting an unsaturated aldehyde with molecular oxygen at elevated temperatures in the vapor phase, in the presence of a catalyst comprising (a) molybdenum, (b) palladium or platinum, (c) silver, thorium, antimony, bismuth, chromium, selenium or tellurium, and (d) oxygen, as the essential components, and (e) phosphorus, boron, arsenic or silicon as an optional component.

3,646,128
OXIDATION OF BUTANE

Norman R. Cox and John B. Saunby, St. Albans, W. Va., assignors to Union Carbide Corporation

Continuation of application Ser. No. 474,699, July 26, 1965. This application May 23, 1969, Ser. No. 828,445
Int. Cl. C07c *49/10, 53/08*
U.S. Cl. 260—533 R **9 Claims**

In the liquid phase oxidation of butane the total productivity as well as the productivity of methyl ethyl ketone can be improved by treatment of recycle butane in order to reduce the concentration of carbon oxides, water and methyl ethyl ketone dissolved therein. Similar improvements can be achieved by recycling butane to the top rather than to the bottom of the reaction zone.

3,646,129
PROCESS FOR PREPARING SODIUM NITRILOTRIACETATE

James I. Nutter, Fairview, Pa., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 666,020, Sept. 7, 1967. This application July 14, 1969, Ser. No. 841,519
Int. Cl. C07c *101/20*
U.S. Cl. 260—534 E **10 Claims**

In abstract, this invention is directed to a process for precipitating sodium nitrilotriacetate from an aqueous solution thereof by adding sufficient ammonia to bring the ammonia concentration thereof to about 50–300 grams per liter of solution to precipitate sodium nitrilotriacetonitrile therefrom.

3,646,130
CATALYTIC OXIDATION OF CYCLODODECENE TO 1,12-DODECANEDIOIC ACID

George William Parshall, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 15, 1970, Ser. No. 37,928
Int. Cl. C07c *55/02*
U.S. Cl. 260—533 C **7 Claims**

1,12-dodecanedioic acid, which is a useful starting material for the preparation of fiber-forming polycarbonamides, of plasticizers, and of polyesters, is prepared by the oxidation of cyclododecene with hydrogen peroxide in the presence of rhenium heptoxide catalyst and of a lower carboxylic acid.

3,646,131
PROCESS FOR THE CARBOXYLATION OF COMPOUNDS HAVING A REPLACEABLE HYDROGEN ATOM

Takeo Ikarasi, Niigata-shi, Japan, assignor to Japan Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,644
Claims priority, application Japan, Mar. 21, 1968, 43/18,439; Mar. 22, 1968, 43/18,686; Mar. 23, 1968, 43/18,772
Int. Cl. C07c *51/00, 51/52*
U.S. Cl. 260—537 R **10 Claims**

Carboxylation process comprising reacting a replaceable hydrogen-containing compound represented by the formula A—H wherein A is hydrogen or a COOM′ or



group in which M′ is Na or K and R_1 and R_2 are alkyl, with a compound of the formula M_2CO_3 (M is Na or K) and CO at 250–400° C. under a pressure of 100–1000 kg./cm.² to convert the A—H compound to a compound of the formula A·COOM.

3,646,132
DIACID BRIDGED-RING COMPOUNDS

David J. Trecker and Joseph P. Henry, South Charleston, and John W. Lynn, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1965, Ser. No. 520,298, now Patent No. 3,492,330, dated Jan. 27, 1970. Divided and this application July 30, 1969, Ser. No. 846,251
Int. Cl. C07c *61/12, 69/74*
U.S. Cl. 260—544 L **2 Claims**

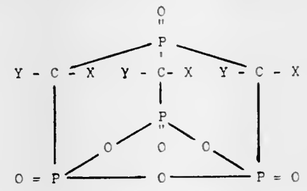
A class of 2,5- and 2,6-diacid norbornane compounds and derivatives, e.g. 5(6)-chloroformyl-2-(chloroformylmethyl(norbornane, is produced by the free radical addition of a functionally substituted alkane to the unsaturated carbon atoms of a bridged-ring olefin. The functionally substituted alkane is free of non-benzenoid carbon-to-carbon unsaturation and contains at least one hydrogen atom bonded to a carbon atom which, in turn is (i) a carbon atom of a functional substitutent or (ii) a carbon atom in a position alpha to the functional substituent. The norbornanes produced have the radical of the functionally substituted alkane bonded to the bridged-ring olefin moiety by a carbon-to-carbon bond. The products are useful in the manufacture of polymers.

3,646,133
ANHYDRIDES OF ORGANO-ALKYLIDENE PHOSPHONYL PHOSPHINE OXIDES

Al F. Kerst, Denver, Colo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 11, 1969, Ser. No. 832,491
Int. Cl. C07d *105/02*
U.S. Cl. 260—545 P **2 Claims**

This invention covers anhydrides of organo (alkylidene phosphonyl) phosphine oxides such as tris(alkylidene phosphonyl) phosphine oxide anhydride having the formula

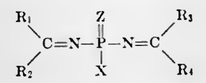


3,646,134
BIS-METHYLENE-AMIDES OF PHOSPHORIC ACIDS AND THEIR THIO-DERIVATIVES

Klaus Hunger, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,581
Claims priority, application Germany, Nov. 28, 1968, P 18 11 351.4, P 18 11 352.5
Int. Cl. C07f *9/22, 9/24, 9/44*
U.S. Cl. 260—551 P **5 Claims**

Bis-methylene amides of phosphoric or phosphoric acid, and their thio derivatives, useful as lubricant additives having antioxidant and thermal-stabilizing properties, of the formula



wherein R_1–R_4, taken alone, are the same or different and are alkyl, cyclohexyl, phenyl, mono- or di-chloro- or bromophenyl, or alkylphenyl; or R_1 and R_2, taken together, or R_3 and R_4, taken together, are alkylene; X is alkyl, cyclohexyl, phenyl, or alkylphenyl bound directly to carbon or by way of an oxygen or sulfur atom, or morpholino or dialkylamino; and Z is oxygen or sulfur. Methods of making said compounds by reacting a ketamine or mixture of ketamines with a compound of the formula



where Y is chlorine or bromine, of with a compound of the formula



to form an intermediate which is subsequently oxidized with oxygen or sulfur. Specific bis-methylenes of a phosphonic acid in which X is hydrocarbyl or dialkylamino.

3,646,135
UREA DYES

Robert F. Coles, East Oakdale Township, Washington County, and Norman P. Sweeny, North Oaks Village, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Sept. 18, 1967, Ser. No. 668,708
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 A **13 Claims**

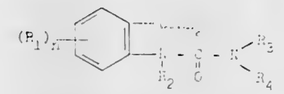
Novel protonatable color precursors are produced by reaction of auramine with alkyl or aryl isocyanates.

3,646,136
2-UREIDO-BENZAMIDES, THEIR PRODUCTION AND USE

Karl Hoegerle, Basel, Switzerland, Jean-Claude Muller, St. Louis, France, and Christian Vogel and Jurg Rumpf, Binningen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,978
Claims priority, application Switzerland, Mar. 29, 1968, 4,710/68
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 A **2 Claims**

2-ureido-benzamides of the formula



wherein

R_1 represents halogen, lower alkyl or lower alkoxy of at most 5 carbon atoms,

R_2 represents hydrogen or lower alkyl of at most 5 carbon atoms,

R_3 represents hydrogen, lower alkyl or lower alkoxy of at most 5 carbon atoms,

R represents an alkyl, alkenyl or alkinyl radical with at most 8 carbon atoms, lower halogen-alkyl, alkoxyalkyl or alkylmercaptoalkyl of at most 5 carbon atoms or cycloalkyl having 3 to 10 carbon atoms as ring members, and

n represents a whole number from 0 to 3,

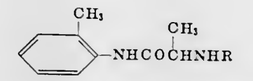
are disclosed as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity. A method for controlling undesirable plant growth with such compounds and compositions containing them as active ingredients are also disclosed.

3,646,137
SUBSTITUTED TOLUIDIDES AND COMPOSITIONS CONTAINING THEM

Charles L. M. Brown, Epsom, England, assignor to Wigglesworth Limited, Westhoughton, England

No Drawing. Original application June 20, 1966, Ser. No. 558,626, now Patent No. 3,544,587, dated Dec. 1, 1970. Divided and this application May 21, 1970, Ser. No. 39,548
Int. Cl. C07c *103/44*
U.S. Cl. 260—557 R **9 Claims**

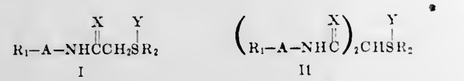
This invention relates to a class of aminopropionyl-o-toluidides and their acid addition salts which are useful as local anaesthetics. The toluidides have the general formula:



in which R represents a cycloalkyl ring which may have alkyl substituents and which contains a total of 3 to 5 carbon atoms in the ring.

3,646,138
β-AMIDOSULFOXIDES
Maximilian von Strandtmann, Rockaway, and Sylvester Klutchko, Hackettstown, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Continuation-in-part of application Ser. No. 843,800, July 22, 1969. This application Mar. 12, 1970, Ser. No. 19,106
Int. Cl. C07c *103/33*
U.S. Cl. 260—558 S **8 Claims**

The present invention is concerned with β-amidosulfoxides of Formulas I and II:



I

II

wherein X is oxygen or sulfur; Y is O or O_2; A is alkyl, cycloalkyl, substituted phenyl, naphthyl, biphenyl, heteroaryl or aralkyl; R_1 is hydrogen, lower alkyl, lower alkoxy, halo or nitro; R_2 is methyl, aryl, heteroaryl or arylmethylene.

The compounds of this invention possess sedative-hypnotic properties.

3,646,139
COCO DIMETHYL BENZYL AMMONIUM p-NITROSOPHENATE
Joseph B. Michaelson, North Hollywood, Calif., assignor to Applied Biological Sciences Laboratory, Inc., Glendale, Calif.
No Drawing. Original application Aug. 9, 1967, Ser. No. 659,320, now Patent No. 3,551,334, dated Dec. 29, 1970. Divided and this application Dec. 30, 1969, Ser. No. 1,911
Int. Cl. C07c *87/30*
U.S. Cl. 260—567.5 **1 Claim**

A new compound, coco dimethyl benzyl ammonium p-nitrosophenate is disclosed. Useful as a bacteriocide, especially against Desulfovibrio desulfuricans, the compound may be mixed with fresh or saline water to be used for secondary oil recovery operations to prevent biosynthetic generation of hydrogen sulfide during such operations.

3,646,140
HEXA-ALKYL-ALKYLENEDIAMINE DIQUARTERNARY DIHALIDE HALOGEN COMPLEXES AND THEIR USE
Robert M. Thomas, Fred R. Gerns, and John L. Sands, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.
No Drawing. Continuation-in-part of application Ser. No. 770,063, Oct. 23, 1968. This application Mar. 3, 1970, Ser. No. 16,215
Int. Cl. C07c *87/30*
U.S. Cl. 260—567.6 P **7 Claims**

Halogen complexes of hexa-alkyl-alkylenediamine diquaternary dihalides are halogenating, defoliant, bactericidal and herbicidal agents.

3,646,141
HALOHYDROXYACRYLAMIDES AND PROCESS FOR MAKING SAME
David I. Randall, Easton, Pa., assignor to GAF Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 617,821, Feb. 28, 1967. This application Sept. 18, 1969, Ser. No. 859,491
Int. Cl. C07c *103/58*
U.S. Cl. 260—562 B **8 Claims**

The compounds are of the class of 2-halo-3-hydroxyacrylamides, a species being 2,3',4'-trichloro-3-hydroxyacrylanilide, useful as herbicides, fungicides, corrosion inhibitors, antioxidants and additives for lube oils.

3,646,142
HYDROGENATION OF POLYMERS
Charles W. Strobel, Borger, Tex., assignor to Phillips Petroleum Company
Filed Nov. 12, 1969, Ser. No. 875,671
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 P **10 Claims**



A method of hydrogenating butadiene/styrene copolymers to produce pour point depressants is disclosed which involves determining the ratio between the quantity of the trans olefinic unsaturation in the reaction mixture and the quantity of the phenyl group within the reaction mixture and recovering the product depressant when the ratio between the two quantities corresponds to the desired pour point effectiveness, the quantitative determinations being preferably determined by infrared analysis.

3,646,143
PROCESS FOR CONVERTING AN OLEFIN TO A PRODUCT CONTAINING HIGHER AND LOWER OLEFINS
Alan F. Ellis, Murrysville, and Edward T. Sabourin, Allison Park, Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 821,945, May 5, 1969. This application Aug. 25, 1969, Ser. No. 852,878
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **16 Claims**

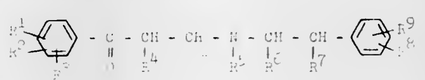
A process for converting, by metathesis, an olefin, particularly an alpha olefin, to a product containing a mixture of olefins of higher and lower carbon number than the olefin charge, which involves contacting the olefin charge with a novel composition containing (1) alumina, (2) cobalt, (3) molybdenum, and (4) silver or copper.

3,646,144
DRUG WITH HYPERTENSIVE ACTION ON THE BASE OF 1-(3,4 - DIMETHOXY - 4-HYDROXYPHENYL)-2-MONOMETHYLAMINOETHANOL
Mario Giani, Milan, Luigi Molteni, Malnate, Varese, and Enzo Gori, Milan, Italy, assignors to Dr. L. Zambeletti S.p.A., Milan, Italy
Filed Oct. 25, 1967, Ser. No. 680,611
Claims priority, application Italy, May 11, 1967, 15,981/67
Int. Cl. C07c *91/34*
U.S. Cl. 260—570.6 **1 Claim**

1 - (3,5 - dialkoxy - 4 - hydroxyphenyl)-2-monoalkylaminoalkanols and especially 1 - (3,5 - dimethoxy-4-hydroxyphenyl)-2-monomethylaminoethanol can be profitably employed in therapy as drugs with hypertensive action. The preferred compound has evidenced an unequivocal hypertensive effect through oral, intramuscular or endovenous way. It can be obtained from acetylsyringic acid chloride via diazoketone, chloroketone reaction of the latter with monomethylamine and catalytic reduction.

3,646,145
N-(1-HYDROXY-1-PHENYL-ETHYL AMINO)-PROPIOPHENONES
Kurt Thiele, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 1, 1968, Ser. No. 741,283
Claims priority, application Germany, June 29, 1967, P 15 93 837.1
Int. Cl. C07c *91/02*
U.S. Cl. 260—570.5 C **6 Claims**

Compounds of the formula

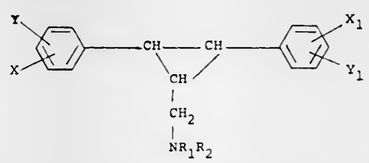


in which:

R^1 is fluorine, —CN, —COOH, —COOAlk, wherein Alk is lower alkyl, lower alkyl mercapto or lower alkyl sulfonyl;
R^2 and R^3 are each selected from the group consisting of hydrogen, chlorine, bromine, lower alkyl, lower alkoxy and hydroxy;
R^4 is hydrogen, methyl or ethyl;
R^5 is hydrogen or lower alkyl;
R^6 is hydrogen or lower alkyl;
R^7 is hydrogen or hydroxy and
R^8 and R^9 are hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy
and their pharmacologically acceptable acid addition and quaternary ammonium salts which have heart activity, particularly in increasing coronary blood flow and contraction amplitude.

3,646,146
DIPHENYLCYCLOPROPYL-METHYL-AMINES
Uberto Teotino and Davide Della Bella, Milan, Italy, assignors to Whitefin Holding S.A., Lugano, Switzerland
No Drawing. Filed Jan. 17, 1967, Ser. No. 609,771
Int. Cl. C07c *87/32*
U.S. Cl. 260—570.5 CA **8 Claims**

Diphenylcyclopropyl-methyl-amines having fairly low toxicity and serving as central nervous system stimulants with marked anti-depressant activity, represented by the formula:



wherein X, Y, X_1, Y_1 are members selected from the group consisting of hydrogen, methyl and methoxy; R_1 is a hydrogen atom or an alkyl radical containing from 1 to 4 carbon atoms; R_2 is hydrogen atom or alkyl radical containing from 1 to 4 carbon atoms, dimethylaminoethyl, dimethylaminopropyl, methylaminopropyl, 2,3-diphenyl-cyclopropane-1-methyl, cyclohexyl radicals and their pharmaceutically acceptable salts with organic and inorganic acids.

3,646,147
TWO-PHASE IODIDE-CATALYSED SYSTEM FOR PREPARING TERTIARY AMINES
Zaven A. Dadekian, Suffern, N.Y., assignor to Baird Chemical Industries, Inc., New York, N.Y.
No Drawing. Continuation of application Ser. No. 617,805, Feb. 23, 1967. This application Mar. 18, 1970, Ser. No. 19,533
Int. Cl. C07c *85/04*
U.S. Cl. 260—583 R **13 Claims**

Tertiary amines are prepared by reacting an alkyl chloride with a lower amine in a two-phase system using an ammonia or alkali metal iodide catalyst.

3,646,148
PROCESS FOR THE PRODUCTION OF METHYLAMINE TOGETHER WITH DIMETHYLAMINE
Edgar Enders, Cologne-Flittard, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 10, 1969, Ser. No. 798,100
Claims priority, application Germany, Mar. 5, 1968, P 16 68 907.9
Int. Cl. C07c *85/00, 87/08*
U.S. Cl. 260—583 J **10 Claims**

Process for producing methylamine and dimethylamine by passing a mixture of carbon monoxide, hydrogen and nitrogen over a catalyst containing uranium or thorium at a temperature of from about 300° to about 600° C.

3,646,149
PROCESS FOR THE PREPARATION OF CANTHAXANTHINE
Jacques Morel, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Aug. 23, 1968, Ser. No. 754,996
Claims priority, application France, Aug. 28, 1967, 119,189
Int. Cl. C07c *45/04, 49/36*
U.S. Cl. 260—586 B **10 Claims**

Canthaxanthine, useful as a colouring agent for foods, may be made by oxidizing β-carotene or retrodehydro-β-carotene with a metaperiodate and, as catalyst, a halogen or a metal oxide of Group V–A, VI–A, VII–A, or VIII of the Periodic Table.

3,646,150
PREPARATION OF CYCLOBUTANONE BY CYCLO-ADDITION OF ETHYLENE AND KETENE
Henry K. Hall, Jr., and Donald E. Plorde, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 10, 1968, Ser. No. 766,623
Int. Cl. C07c *45/00*
U.S. Cl. 260—586 R **1 Claim**

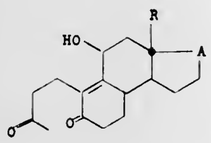
Disclosed herein is a process of preparing cyclobutanone by the thermal cycloaddition of monomeric ketene and ethylene.

3,646,151
TRICYCLIC COMPOUNDS AND PROCESS

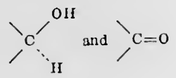
Jacques Prost Marechal, Paris, and Georges Tomasik, Rosny-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,554
Claims priority, application France, Jan. 26, 1968, 137,630
Int. Cl. C07c *49/44*
U.S. Cl. 260—586 **10 Claims**

13β-R-4,5-seco-Δ^9-gonene-3,5-diones of the formula



wherein R represents an alkyl having 1 to 4 carbon atoms and A represents a member selected from the group consisting of



as well as a process for their preparation. The novel compounds are useful as intermediates in the production of known steroids having useful physiological properties.

3,646,152
METHOD OF PREPARING AN ALUMINA CATALYST CONTAINING CHLORINE AND ISOMERIZATION PROCESS UTILIZING THE SAME

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 12, 1969, Ser. No. 823,970
Int. Cl. C07c *5/30;* **B01j** *11/78*
U.S. Cl. 260—683.68 **11 Claims**

A hydrocarbon containing 4 to 7 carbon atoms is isomerized with an alumina catalyst containing chlorine and which may also include a metal from the group; ruthenium, rhodium, palladium and platinum. The chlorine is introduced to the alumina in amounts of 3–12% by contacting the alumina with a combination of molecular chlorine and an organic compound, such as formaldehyde, methyl alcohol or methyl mercaptan, at 400–750° F.

3,646,153
SYNTHETIC FIBERS HAVING IMPROVED SOIL AND STAIN REPELLENCY

Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,368
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 S **5 Claims**

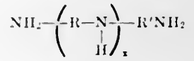
The soil and stain repellency of extruded filaments of a synthetic resin can be improved by incorporating in the resin a small amount, about 1%, of an amphiphatic compound having from one to four fluoroalkyl groups pendent from an organic radical. The repellency is provided by the fluoroalkyl groups, which tend to be concentrated at the surface of the fiber.

3,646,154
HOT MELT ADHESIVE CONTAINING POLYAMIDE AND ETHYLENE-VINYL ACETATE COPOLYMER

Nelson S. Marans and Victor S. Frank, Silver Spring, Md., assignors to W. R. Grace & Co.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,096
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 L **8 Claims**

This invention relates to a hot melt adhesive resin composition which can be set by heat and pressure to bond to solid surfaces. The adhesive composition consists essentially of an ethylene-containing polar copolymer or terpolymer in combination with 10–60% by weight of the composition of a polyamide which is the reaction product of an alkylene or arylene polyamine of the formula:



wherein R and R′ are alkylene, arylalkylene and arylene and x is 0 to 3, and an alkylene dicarboxylic acid or its esters. The adhesive can be used to bond metal, ceramic, leather, paper, wood, plastic and other surfaces.

3,646,155
CROSS-LINKING OF A POLYOLEFIN WITH A SILANE

Henry George Scott, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,346
Claims priority, application Great Britain, Dec. 20, 1968, 60,650/68
Int. Cl. C08f *29/12;* **C08g** *47/10*
U.S. Cl. 260—827 **9 Claims**

Polyolefins are cross-linked by reaction of the polyolefin with an unsaturated hydrolysable silane at a temperature above 140° C. and in the presence of a compound capable of generating free radical sites in the polyolefin, and subsequent exposure of this product to moisture and a condensation catalyst.

3,646,156
POLYAMIDE CONTAINERS OF 2,2,4 AND/OR 2,4,4 TRI-METHYL HEXAMETHYLENE DIAMINE

Johannes Schneider and Wolfgang Pungs, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,856
Claims priority, application Germany, Oct. 30, 1968, P 18 05 921.7
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 TW **4 Claims**

A thermoplastic polyamide molding composition capable of forming transparent hollow blow molded objects at forming temperatures in the range of 170 to 230° C., comprises:

(a) at least 40 weight percent of an amorphous polyamide composed of an aromatic dicarboxylic acid, a trimethyl hexamethylene diamine and a normal aliphatic diamine, the normal aliphatic diamine comprising up to 30 weight percent of the diamines used, and

(b) the balance, aside from customary additives, of a second polyamide formed from a ω-amino acid or ω-lactam, or formed from an aliphatic dicarboxylic acid and a normal aliphatic diamine.

3,646,157
THERMOPLASTIC COMPOSITIONS BASED ON POLYOLEFINES AND POLYAMIDES

Pierre Grosjean, Sainte-Foye-les-Lyon, and Alain Palsky, Caluire, Rhone, France, assignors to Societe Rhodiaceta, Paris, France

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,384
Claims priority, application France, Mar. 22, 1968, 145,008
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 L **3 Claims**

Thermoplastic compositions consisting of polyolefines very finely dispersed in polyamides are made by dispersing the olefine in a diamine-dicarboxylic acid salt solution, and then simultaneously polymerizing the olefine and polycondensing the diamine and dicarboxylic acid by heating under pressure.

3,646,158
FILM OF POLYURETHANE AND ETHYLENE-ACRYLIC ACID INTERPOLYMER

Albert L. Eustice, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Apr. 2, 1968, Ser. No. 718,043. Divided and this application Nov. 12, 1970, Ser. No. 88,856
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 R **4 Claims**

A film is provided which comprises a dispersion of pre-cured polyurethane in acidic copolymer having its main polymer chain saturated and of carbon atoms, a portion of which are substituted with an adhesively effective amount of carboxylic acid groups. The film can be used as an interlayer between a base panel and a constraining sheet to form a constrained layer damped structure, with the acidic copolymer serving to adhere the film to the panel and the sheet.

3,646,159
POLYCARBONATE/POLYACETAL THERMOPLASTIC RESIN COMPOSITIONS

Gerald W. Miller, Pittsburgh, Pa., assignor to Baychem Corporation, New York, N.Y.

No Drawing. Filed Mar. 13, 1968, Ser. No. 712,615
Int. Cl. C08f *29/30, 45/34;* **C08g** *39/10*
U.S. Cl. 260—860 **9 Claims**

Blends of polycarbonates with polyacetals wherein the polyacetal is present in the blend at a concentration sufficient to impart thereto a resistance to environmental stress crazing and cracking greater than that possessed by the polycarbonate itself.

3,646,160
POLYESTERS CONTAINING TERTIARY NITROGEN ATOMS

Erich Eimers, Krefeld, and Hans Rudolph and Werner Kloker, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,822
Claims priority, application Germany, Aug. 29, 1969, P 19 43 954.4
Int. Cl. C08f *21/02*
U.S. Cl. 260—864 **3 Claims**

The invention relates to novel linear polyesters containing hydroxy end groups and an N,N-bis-(β-sec.hydroxyalkyl)-p-alkylphenylamine and certain dicarboxylic acids condensed therein. These novel polyesters are useful as accelerators for mixtures of unsaturated polyesters and copolymerizable monomers which harden at room temperature after the addition of a diacyl peroxide catalyst.

3,646,161
SYNTHETIC RUBBER MIXTURES OF BUTADIENE/STYRENE BLOCK COPOLYMERS

Gunter Marwede and Gottfried Pampus, Leverkusen, and Martin Hoffmann, Bergisch-Gladbach, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 8, 1969, Ser. No. 823,187
Claims priority, application Germany, May 14, 1968, P 17 70 407.3
Int. Cl. C08f *29/12, 33/08*
U.S. Cl. 260—876 B **4 Claims**

Synthetic rubber mixture comprising:

(a) from 10% to 90% by weight of one or more uniform butadiene/styrene block copolymers with a molecular weight of from 30,000 to 150,000, a viscosity [η] measured in toluene of from 0.5 to 2 dl./g. and a styrene content of from 20% to 50% by weight; and

(b) from 90% to 10% by weight of one or more uniform butadiene/styrene block copolymers with a molecular weight of from 100,000 to 1,000,000, a viscosity [η] measured in toluene of from 1.5 to 10 dl./g. and a styrene content of from 0.3 to 20% by weight.

3,646,162
THERMOPLASTIC RESIN BLENDS OF POLYSULFONE AND A GRAFT DERIVATIVE OF A BUTADIENE CONTAINING POLYMER SPINE

Robert L. Lauchlan, Granger, Ind., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed July 15, 1969, Ser. No. 842,002
Int. Cl. C08f *37/18, 41/12*
U.S. Cl. 260—876 R **4 Claims**

Blends of thermoplastic polysulfone resin and a graft derivative of a butadiene containing polymer spine are characterized by an unusually useful combination of properties, particularly low temperature melt processability in combination with high impact strength and flexural strength.

3,646,163
SHAPING COMPOSITION OF CHLORINATED POLYVINYL CHLORIDE HAVING IMPROVED HEAT COLORATION

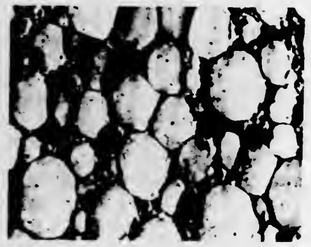
Susumu Taima, Uozu-shi, and Saiji Nozaki, Unazuki-machi, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 620,479, Mar. 3, 1967. This application Oct. 15, 1969, Ser. No. 866,509
Claims priority, application Japan, Mar. 5, 1966, 41/13,150
Int. Cl. C08f *41/12*
U.S. Cl. 260—876 R **4 Claims**

A chlorinated polyvinyl chloride composition for shaping having a markedly improved heat coloration property without substantially lowering the improved heat-softening point inherently possessed by chlorinated polyvinyl chloride, such composition comprising 100 parts by weight of chlorinated polyvinyl chloride with a chlorine content of not less than 60% by weight and 3–40 parts by weight of a butadiene-styrene-methylmethacrylate copolymer blended therewith. The copolymer consists of above 1% and up to 70% by weight of methyl methacry-

late, 1–95% by weight ot butadiene and 3–65% by weight of styrene the sum of these three components being 100% by weight.

3,646,164
IMPACT RESISTANT COMPOSITIONS COMPRISING METHYL METHACRYLATE, DIALLYL PHTHALATE AND AN ETHYLENE COPOLYMER
William George Deichert, Durham, N.H., and Richard Ronald Lemay, Meriden, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sept. 11, 1970, Ser. No. 71,318
Int. Cl. C08f *25/00, 37/00*
U.S. Cl. 260—878 R **7 Claims**



Castable compositions of matter comprising (1) a monomeric mixture of methyl methacrylate and diallyl phthalate with or without comonomers copolymerizable therewith and (2) a copolymer of ethylene, castings thereof and a method for the production thereof, are disclosed.

3,646,165
PROCESSES FOR GRAFTING UNSATURATED ACIDS OR ESTERS ON POLYETHYLENE
Claude Favie, Billere, and Werner Dellsperger and Philippe Meline, Pau, France, assignors to Societe Anonyme dite, Societe Nationale des Petroles d'Aquitaine, Courbevoie, France
No Drawing. Filed June 27, 1969, Ser. No. 837,328
Claims priority, application France, June 28, 1968, 157,143, 157,145
Int. Cl. C08f *1/13, 15/00*
U.S. Cl. 260—878 R **16 Claims**

One or more monomers selected from polymerisable unsaturated acids and esters is or are grafted onto non-preactivated polyethylene in aqueous suspension by first dissolving each monomer to be grafted in the polyethylene suspension and then subjecting the latter to the action of a chemical producer of free radicals at a temperature which is lower than the fusion point of the polyethylene.

3,646,166
BUTYL RUBBER REACTION PRODUCTS
Nathan H. Canter, Edison, and Joseph P. Kennedy, Cranford, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed May 27, 1970, Ser. No. 41,087
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—879 **15 Claims**

Ionic crosslinking is introduced into an uncured butyl rubber by halogenation of butyl rubber, dehydrohalogenation to form conjugated double bonds and reaction of an ethylenically unsaturated compound such as maleic anhydride with this conjugated double bond system to form a graft polymer. The graft polymer is then reacted with a metallic salt or an amine to form an ionic hydrocarbon polymer useful for molded or extruded products.

3,646,167
BLOCK COPOLYMERS CONTAINING A POLYETHYLENE SULFIDE BLOCK
George A. Pope, Clarkson, Ontario, Canada, and Peter T. Hale, Erdington, Birmingham, and David A. Bird, Walmley, Sutton, Coldfield, England, assignors to The Dunlop Company Limited, London, England
No Drawing. Filed Feb. 28, 1969, Ser. No. 803,407
Claims priority, application Great Britain, Mar. 5, 1968, 10,539/68
Int. Cl. C08f *15/04*
U.S. Cl. 260—879 **11 Claims**

A block copolymer having a configuration A, B, C, in which A is a block of a relatively rigid polymer having an average molecular weight of from 5,000 to 50,000. B is an elastomeric block having an average molecular weight of from 20,000 to 400,000 and C is a crystalline block having a molecular weight of from 300 to 20,000.

3,646,168
OIL AND OZONE RESISTANT ELASTOMER BLENDS COMPRISING EPDM RUBBER
Robert E. Barrett, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.
No Drawing. Continuation-in-part of application Ser. No. 575,972, Aug. 30, 1966, now Patent No. 3,492,371, which is a continuation-in-part of application Ser. No. 551,517, May 20, 1966. This application Jan. 22, 1970, Ser. No. 5,155
Int. Cl. C08f *37/18;* **C08d** *9/08*
U.S. Cl. 260—889 **31 Claims**

A rubber composition having good oil and ozone resistance formed of a curable blend of rubbery polymer and an EPDM copolymer formed by interpolymerization of monomers including a 5-alkylidene-2-norbornene having at least 2 carbon atoms in the alkylidene group and having an effective unsaturation of at least 2 carbon-to-carbon double bonds per 1000 carbon atoms in the interpolymer.

3,646,169
SULFUR VULCANIZABLE ELASTOMERIC BLENDS COMPRISING DIOLEFIN RUBBER AND EPDM THERPOLYMERS
Kenneth H. Wirth, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton, Rouge, La.
No Drawing. Continuation-in-part of application Ser. No. 548,614, May 9, 1966, now Patent No. 3,492,370. This application Jan. 22, 1970, Ser. No. 5,117
Int. Cl. C08f *29/12, 41/12;* **C08d** *9/08*
U.S. Cl. 260—889 **26 Claims**

This invention relates to sulfur vulcanizable blends prepared from a diolefin rubber and an interpolymer comprising ethylene, at least one straight chain monoolefin containing 3–16 carbon atoms and a polyunsaturated bridged ring hydrocarbon containing at least one ethylenic double bond in one of the bridged rings. The blends are particularly useful as adhesives in the preparation of rubber laminates.

3,646,170
DISPERSIONS OF CYCLIC ESTER/ALKYLENE OXIDE COPOLYMERS WITH A POLYMERIC DISPERSING AGENT
Robert Dean Lundberg, Somerville, N.J., and Frank Paul Del Giudice, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,322
Int. Cl. C08g *17/017*
U.S. Cl. 260—899 **8 Claims**

Dispersions of linear cyclic ester/alkylene oxide copolymers are produced by reacting an admixture comprising cyclic ester and alkylene oxide monomers, interfacial agent and catalyst, in the presence of certain inert organic vehicles.

3,646,171
BIS-[α-(THIO) PHOSPHORYL OXIMINO]-PHENYLENE-1,4-BIS-ACETIC ACID NITRILES
Walter Lorenz, Wuppertal-Vohwinkel, Günter Unterstenhöfer, Opladen, and Ingebord Hammann, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 23, 1968, Ser. No. 707,394
Claims priority, application Germany, Mar. 1, 1967, F 51,673
Int. Cl. A01n *9/36;* **C07f** *9/06*
U.S. Cl. 260—926 **8 Claims**

Bis-[α-(O-alkyl-O-alkyl - phosphoryl and -thinophosphoryl, and alkyl-O-alkyl-phosphonyl and -thionophosphonyl)-oximinol]-phenylene-1,4-bis - acetic acid nitriles which possess pesticidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding phosphoric (phosphonic) and thiono-phosphoric (-phosphonic) acid ester halide with α, α-'dioximino-phenylene-1,4-bis-acetic acid nitrile.

3,646,172
1 - (O,O - DIORGANOPHOSPHORODITHIATO) ALKYL CARBOXYLATES AND PROCESS FOR MAKING SAME
Herbert Myers, Philadelphia, Pa., assignor to Mobil Oil Corporation
No Drawing. Original application Apr. 5, 1965, Ser. No. 445,697, now Patent No. 3,350,348, dated Oct. 31, 1967. Divided and this application Sept. 8, 1967, Ser. No. 666,464
Int. Cl. C07f *9/08;* **B01j** *1/16*
U.S. Cl. 260—928 **22 Claims**

1 - (O,O-diorganophosphorodithiato)alkyl carboxylates are prepared by reacting an O,O-diorganophosphorodithioic acid with a vinyl carboxylate. These products have utility in inhibiting oxidation and preventing metal corrosion when used in a variety of industral organic media.

3,646,173
PROCESS FOR PREPARING BISPHOSPHITE ESTERS OF ALKYLIDENE DIPHENOL
Irving Gordon, Niagara Falls, James J. Hodan, Williamsville, and James L. Dever, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 466,466, June 23, 1965. This application May 29, 1969, Ser. No. 829,128
Int. Cl. C07f *9/12;* **C08d** *11/04*
U.S. Cl. 260—976 **4 Claims**

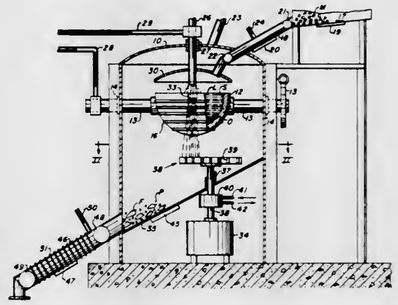
Bisphosphite esters of Bisphenol F are made by reacting an aryl hydroxy compound with formaldehyde in the presence of an acid catalyst, to form a dihydroxy compound condensation product, providing a mixture of such condensation product and an aryl hydroxy compound, and reacting phosphorus trihalide with the mixture to produce the desired bisphosphite. The bisphosphites made are useful for stabilizing rubber compositions against the adverse effect of heat.

3,646,174
PROCESS FOR MAKING SPHEROIDAL AGGLOMERATES
Bruno J. Macri, Springfield, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.
No Drawing. Filed Dec. 12, 1969, Ser. No. 884,697
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C **14 Claims**

Process for making spheroidal agglomerates of particulate solids, such as metallic materials, bonded by a matrix of an organic polymer, which comprises mixing the solid particles with an organic liquid prepolymer curable to a solid polymer, and a volatile liquid which is immiscible with the prepolymer and does not dissolve the solid particles; and continuously agitating the resulting mixture while removing the volatile liquid. During such simultaneous agitation and removal, the prepolymer and solids coalesce into globules containing the particles dispersed therein. The agitation and removal continues until the prepolymer cures into a solid polymer. By liquid "prepolymer" is meant a liquid polymer which is further curable into a higher molecular weight or crosslinked solid polymer. Cure of the prepolymer can be accomplished thermally and/or by addition of curing agent. It is generally preferred to include curing agent in the process mixture.

The solid particles may be the same or different substances. If different, they are intimately admixed in each agglomerate spheroidal particle in desired ratios of concentration.

3,646,175
METHOD AND APPARATUS FOR CONVERTING MISCELLANEOUS PIECES OF REACTIVE METALS TO A USABLE FORM
Howard B. Bomberger, Jr., and Harold D. Kessler, Canfield, Ohio, assignors to RMI Company, Niles, Ohio
Continuation of application Ser. No. 726,400, May 3, 1968. This application Sept. 21, 1970, Ser. No. 74,201
Int. Cl. B22f *9/00*
U.S. Cl. 264—8 **10 Claims**

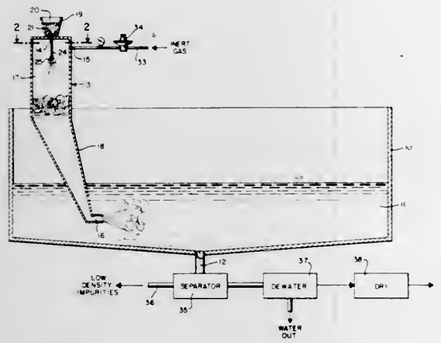


Pieces of a reactive metal, such as titanium or zirconium, are melted on a hearth within a chamber which is evacuated or filled with inert gas. Stream of molten metal overflows the hearth and is acted on by a mechanism which disperses it into small particles. The particles solidify as pellets and/or flakes which are readily blended with sponge metal and used in making up a melting charge. Dense inclusions in the starting material sink to the bottom of the hearth and thus are eliminated from the product.

3,646,176
METHOD FOR PRODUCING LOW OXIDE METAL POWDERS
Maurice Donald Ayers, Stamford, Conn., assignor to Metal Innovations, Inc., Stamford, Conn.
Filed Sept. 4, 1969, Ser. No. 855,096
Int. Cl. B01j *2/06*
U.S. Cl. 264—11 **4 Claims**

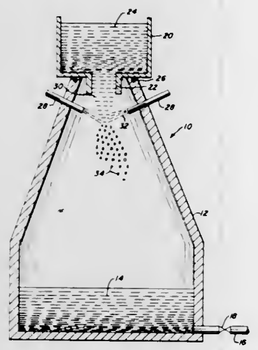
A method is disclosed for producing high purity metal powders having an irregular and angular shape and a very low oxygen content (less than 0.25% oxygen in iron and steel powders). The invention utilizes a high pressure liquid atomization procedure for converting the molten metal to angular particulate form, and provides for the very rapid subsequent cooling of the hot particles under conditions of high pressure sprays and violent turbulence

of the powder particles in the liquid that minimize the formation of oxide impurities on the particle surface. High pressure atomization to produce angular and irregular particles tends to create an oxidizing environment because of the mixture of hot particles and liquid. By rapidly quenching the particles immediately after formation, in a quenching environment that creates a violently



turbulent condition at the surface of the metal, the formation of vapor or steam films is minimized and more rapid heat transfer from the particles to the cooling medium is realized.

3,646,177
METHOD FOR PRODUCING POWDERED METALS AND ALLOYS
Vernon R. Thompson, Pittsburgh, Robert W. Diehl, Robinson Township, Allegheny County, Pa., assignors to Crucible Inc., Pittsburgh, Pa.
Filed Apr. 23, 1970, Ser. No. 31,105
Int. Cl. B22d *23/08;* **B29c** *6/00, 23/00*
U.S. Cl. 264—12 **4 Claims**

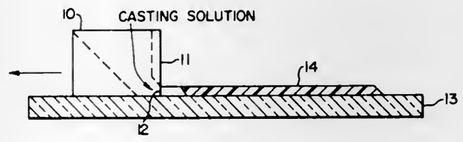


Method for producing powdered metals and alloys that are free from oxidation comprising atomizing molten metal with a fluid jet to form discrete particles thereof, directing said atomized particles to a collecting chamber having therein a reservoir of an inert cryogenic liquid, such as liquid nitrogen, depositing said particles in said liquid to cool the particles and at the same time protect them against oxidation during cooling.

3,646,178
METHOD OF PREPARING MICROPOROUS SHEET STRUCTURES
Harro Traïbel, Leverkusen, Bruno Zorn, Cologne-Flittard, and Klaus König and Wolfgang Heydkamp, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,839
Claims priority, application Germany, Apr. 2, 1968, P 17 69 089.0
Int. Cl. B29d *27/04;* **C08g** *41/04*
U.S. Cl. 264—41 **4 Claims**

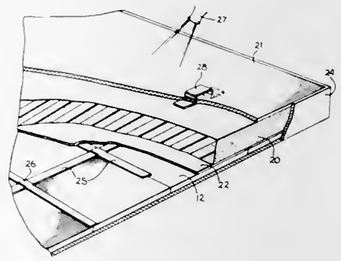
Shaped products are obtained by coagulating aqueous dispersions (latices) of polymers of olefinically unsaturated compounds, for example an emulsion of polyvinyl chloride, by preparing a polyurethane-polyurea in these dispersions.

3,646,179
PROCESS FOR PREPARING HIGH PRESSURE CELLULOSE ACETATE SEMIPERMEABLE MEMBRANES
Regis R. Stana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 22, 1969, Ser. No. 827,014
Int. Cl. B29d *27/04;* **C08b** *17/36, 21/04*
U.S. Cl. 264—41 **6 Claims**



A high strength semipermeable membrane, consisting of a supportive layer and an osmotic skin layer of dense polymeric cellulosic material, is made by (1) mixing polymeric film forming cellulosic material, ethyl acetate and additives such as swelling additives to form a casting solution (2) casting a film from the solution (3) drying the film (4) leaching the film to form a semipermeable membrane and (5) optionally curing the membrane in hot water.

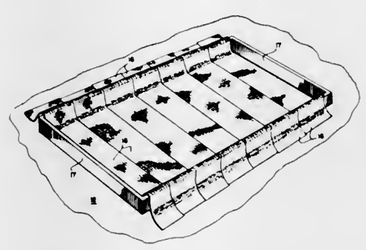
3,646,180
METHOD OF FORMING A FOAM CORED WALL PANEL HAVING CERAMIC TILE ON ONE FACE
Jack M. Winnick, Anaheim, Calif., assignor to Selectile Company, Inc., Los Angeles, Calif.
Filed Oct. 24, 1969, Ser. No. 869,168
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **6 Claims**



Method of forming a modular wall panel is disclosed herein having a central core composed of a foam plastic

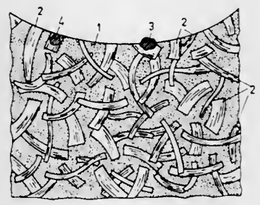
material with a layer of ceramic tiles secured to one surface of the core and a fiber reinforced polyester resin backing layer secured to the other side surface of the core. The abutment joints of the tiles formed by opposing and adjacent edges of the tiles are sealed by strips of adhesive tape and a thin intermediate layer of fiber reinforced polyester resin is disposed between the tape contacting side of the tiles and the core. Securement means for mounting the panel to building structure are incorporated into the fiber reinforced polyester resin backing layer.

3,646,181
METHOD OF CONSTRUCTING AN ORNAMENTAL PLASTER SURFACE UTILIZING A FLEXIBLE WOVEN GLASS STRIP AS AN INTERMEDIATE SUBSTRATE
Alfred O. Galla, P.O. Box 830, Wrangell, Alaska
Filed June 2, 1969, Ser. No. 829,458
Int. Cl. B29c *21/00*
U.S. Cl. 264—73 **1 Claim**



A method of constructing an ornamental plaster surface utilizing flexible strips of woven glass as an intermediate substrate. A mold is covered with flexible woven glass fiber strips and a viscous mixture of Keene's cement and pigment is poured onto the strips. The strips with the mixture adhering thereto are sequentially removed from the mold and applied to a horizontal, vertical or curved surface. The strip is peeled away from the applied viscous mixture and the exterior surface areas are smoothed to remove irregularities.

3,646,182
METHOD FOR PRODUCING A PLASTIC MATERIAL HAVING IMPROVED FRICTIONAL AND SLIDING PROPERTIES
Alois Wilhelm Ferch, Neuss, Germany, assignor to Werner H. Fengler, Dearborn, Mich.
Filed Apr. 3, 1969, Ser. No. 813,135
Int. Cl. B29d *7/18*
U.S. Cl. 264—115 **3 Claims**



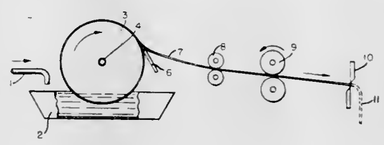
An improved plastic anti-friction bearing material is produced by cutting, turning or otherwise subdividing sintered polytetrafluoroethylene plastic material from a solid body thereof, collecting the resilient shavings or chips so produced in a loosely-piled interlock mass thereof with intervening interstices resembling a mass of excelsior, placing this mass in a mold in engagement with the side walls of the mold. A polymerizing liquid mixture suitable for producing a solid polyamide plastic material is then poured into the mold, and thereby filling the interstices between the interlocking shavings or chips of the polytetrafluoroethylene plastic. Although the latter are lighter than the polymerizing liquid mixture, their interlocking engagement with one another and with the side walls of the mold prevent them from floating to the top of the mold, so that the polytetrafluoroethylene chips or shavings become uniformly distributed throughout the interior of the solid polyamide body produced upon polymerization Subsequent removal of the surface layer of this body uncovers the softer polytetrafluoroethylene chips firmly embedded therein.

In subsequent use, as a bearing element, undesired particles of foreign matter such as grit or metal particles merely move a short distance across a polyamide plastic area into the nearest polytetrafluoroethylene plastic area into which they imbed themselves because of the greater softness of the polytetrafluoroethylene plastic, thereby rendering them harmless.

3,646,183
METHOD OF MAKING PELLETS OF PRECIPITATED SILICA
Barry Topcik, Somerville, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,403
Int. Cl. B01j *2/12*
U.S. Cl. 264—117 **7 Claims**

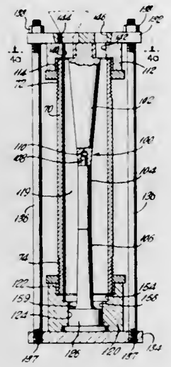
Precipitated silica pigments are pelletized employing from about 0.25 to about 3.0 percent by weight of a surface active agent as a binding agent. The bulk density of the silica is thereby increased, and by means of these pellets the silica can be incorporated into rubber much faster and with greatly reduced fly-loss.

3,646,184
METHOD FOR PRODUCING LESS-STICKY PELLETS OF AMORPHOUS POLYPROPYLENE
Nobuo Nagao, Yokohamashi, and Toshio Okuda, Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan
Filed Nov. 10, 1969, Ser. No. 875,166
Int. Cl. B02c *18/00*
U.S. Cl. 264—144 **1 Claim**



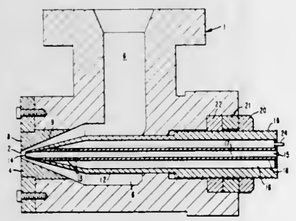
This invention involves forming a reservoir of melted sticky atactic polypropylene having a molecular weight of 10,000 and 100,000, a viscosity of 10 to 1,000 centipoises at a temperature of 130° to 250° C., having a revolving drum dip between 1–50 mm. below the surface of reservoir while revolving it at a linear velocity of 0.005–0.5 m.p.s. so that a layer of polypropylene between 1 mm. and 3 mm. thick adheres to the surface of the drum, cooling the drum, peeling the solidified layer from the rotating drum as a thin sheet, cutting said sheet longitudinally and transversely, and recovering a plurality of pellets of atactic polypropylene that have no mutual stickiness.

3,646,185
METHOD OF CASTING A DIFFUSER ELEMENT
Irving C. Jennings, % The Nash Engineering Co., South Norwalk, Conn.
Continuation-in-part of abandoned application Ser. No. 622,665, Mar. 13, 1967. This application Apr. 16, 1970, Ser. No. 29,251
Int. Cl. B29c *17/12*; B28b *7/28*
U.S. Cl. 264—161 15 Claims



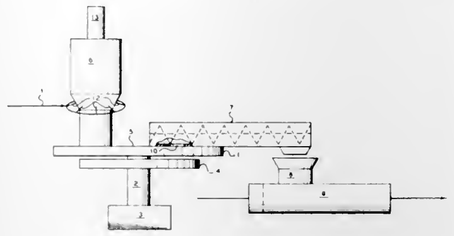
A diffuser element of the type used in a high performance evacuation system as well as the method for fabricating the diffuser is provided. A precisely machined two part tapered mandrel is accurately positioned within a hollow casing. A suitable material that is pourable and which hardens after a period of time is then introduced into the annular chamber defined by the outside diameter of the mandrel and the inside diameter of the casing. After the poured material hardens, the mandrel sections are separated and axially removed. The combination of the hardened material and the casing form the diffuser element.

3,646,186
PROCESS FOR PRODUCING CONTINUOUS ROUND JACKETED LIGHTGUIDES
Thomas C. Hager, Washington, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 600,919, Dec. 12, 1966. This application June 5, 1970, Ser. No. 43,701
Int. Cl. B29d *11/00*; B29f *3/10*; G02b *5/16*
U.S. Cl. 264—174 3 Claims



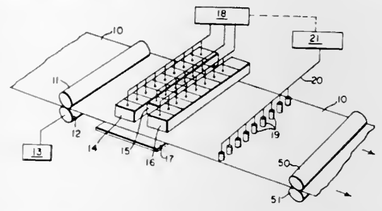
Process and apparatus for protectively jacketing a bundle of polymeric filaments by simultaneously extruding a protective jacket and contacting the bundle with the jacket before the jacket contacts the extrusion orifice.

3,646,187
POLYMER PROCESSING
Paul B. Milam, Jr., and Edward C. Held, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed June 12, 1969, Ser. No. 832,728
Int. Cl. B28b *3/20*; B29f *3/08*
U.S. Cl. 264—176 8 Claims



A method and apparatus are disclosed for preheating a thermoplastic material to a temperature at which the thermoplastic flows unimpededly prior to its final heating before being introduced into an extruder.

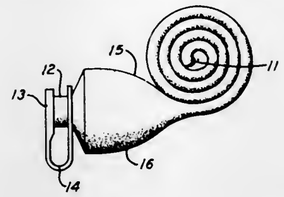
3,646,188
PROCESS FOR IMPROVING UNIFORMITY OF POLYMERIC FILM
David Robert Campbell, Florence, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 775,328, Nov. 13, 1968. This application Feb. 3, 1970, Ser. No. 8,419
Int. Cl. B29c *25/00*
U.S. Cl. 264—230 7 Claims



Improving the uniformity of latent shrinkage in an oriented, heat-set polyethylene terephthalate film by heating those portions of the film having higher latent shrinkage to a higher temperature while holding the film between restraint and minimum relaxation. Optical sensing means are used in conjunction with radiant heaters on a continuous length of film.

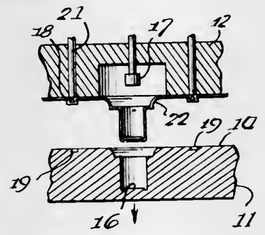
3,646,189
SELF-COLLAPSING CONTAINER FORMING METHOD
John A. Wiedeman, New York, N.Y., assignor to Polymer Sciences Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 736,515, May 12, 1968, which is a division of application Ser. No. 587,571, Oct. 18, 1966, now Patent No. 3,401,837. This application Feb. 16, 1970, Ser. No. 11,763
Int. Cl. B29c *23/12, 23/20*
U.S. Cl. 264—295 9 Claims

A method for the fabrication of a collapsible thermoplastic container for fluid material. A collapsible thermoplastic container is formed from a thermoplastic material having a high tensile modulus. The container includes a chamber defined by a pair of side walls and an end wall, the side and end walls having a retractile memory. The container is deformed into a helical configuration and then heated to an elevated temperature for a time period



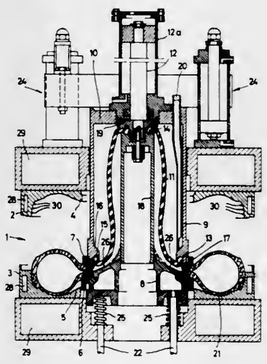
sufficient to heat-set the thermoplastic conainer in a permanent coil configuration.

3,646,190
METHOD FOR STRIPPING FORMED ARTICLES FROM A MOLD
Rudolf A. Spyra, Chicago, Ill., assignor to Seymour C. Graham
Filed Feb. 19, 1969, Ser. No. 800,423
Int. Cl. B29c *7/00*
U.S. Cl. 264—297 9 Claims



Method for the molding of hollow articles, such as containers, from thermoplastic sheet material, and particularly for the separation, or stripping, of the molded thermoplastic sheet material from the mold after the molding operation is completed.

3,646,191
METHOD FOR INSERTING AN INFLATION BAG INTO A TIRE THAT IS TO BE VULCANIZED
Karl Zängl, 10 Monstrasse, 8000 Munich 13, Germany
Original application July 18, 1966, Ser. No. 565,796, now Patent No. 3,465,385, dated Sept. 9, 1969. Divided and this application Mar. 18, 1969, Ser. No. 833,217
Claims priority, application Germany, Oct. 5, 1965, Z 11,787; Mar. 29, 1966, Z 12,139
Int. Cl. B29h *5/06*
U.S. Cl. 264—315 7 Claims



Method for vulcanizing a tire in a vulcanization press utilizing an inflatable expander. The tire is positioned in the press with the beads disposed axially between bead-engaging form elements and the form elements are moved toward each other to engage the beads. The elements are then moved further toward each other to a position wherein the beads are positioned close to one another and the elasticity of the beads causes them to be seated in the elements. The expander is then inflated and the elements are moved axially away from each other so that the expander is forced between the beads and into the tire. The elasticity of the beads causes them to remain in place in the elements until the expander is forced therebetween to maintain them in place. The tire is then vulcanized.

3,646,192
SILICA GEL STABILIZER FOR SUGAR COATED MULTIVITAMIN TABLETS
Louis Magid, Clifton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed June 5, 1969, Ser. No. 830,870
Int. Cl. A61k *9/00, 15/00*
U.S. Cl. 424—35 4 Claims

Sugar coated multivitamin tablets prepared by direct compression containing a high potency of vitamin E are stabilized against cracking and oil bleeding by the inclusion of finely divided silica in the sugar coating.

3,646,193
IgA ANTIBODY FROM LACTEAL FLUIDS
Joseph B. Michaelson, 6732 Coldwater Canyon, North Hollywood, Calif. 91606, and John W. Short, 1055 Grover St., Glendale, Calif. 91201
No Drawing. Continuation of application Ser. No. 685,949, Nov. 27, 1967, which is a continuation-in-part of application Ser. No. 451,961, Apr. 29, 1965. This application July 25, 1969, Ser. No. 848,400
Int. Cl. A61k *27/00*
U.S. Cl. 424—85 8 Claims

A new IgA antibody, a lactimmunin, has been discovered. Uniquely, the new product, derived from immune lacteal fluids such as milk whey or colostrum, confers passive immunity without sensitizing effects even when administered parenterally. The product is prepared by selectively cleaving the relatively large lacteal fluid derived antibody molecules into relatively smaller constituents having either allergenic or antibody properties and isolating the nonallergenic, antibody constituent. The cleaving is easily accomplished by proteolytic digestion of the immune lacteal fluid.

3,646,194
MITHRAMYCINS AS TRANSPLANTED TUMOR INHIBITING AGENTS
Ben A. Sobin, Manhasset, N.Y., John B. Routien, Lyme, Conn., Koppaka V. Rao, Cambridge, Mass., William S. Marsh, Wanaque, N.J., and Aline L. Garretson, East Lansing, Mich., assignors to Pfizer Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 617,442, Dec. 19,1966, which is a continuation-in-part of application Ser. No. 317,399, Oct. 15, 1963, which in turn is a Continuation-in-part of applications Ser. No. 696,676, Nov. 15, 1957, and Ser. No. 39,572, June 29, 1960. This application Aug. 19, 1968, Ser. No. 753,527
Int. Cl. A61k *21/00*
U.S. Cl. 424—119 7 Claims

The mithramycin A is useful in inhibiting the growth of testicular tumors in man. The mithramycin A, B and C are useful in inhibiting the growth of transplanted tumors in lower animals.

3,646,195
METHOD OF REDUCING ADHESIVENESS AND AGGREGATION OF BLOOD PLATELETS
Axel Fredrik Valdemar Eriksson and Per Olov Svard, Sodertalje, Sweden, and Jorg Jurgens, Frankfurt am Main, Germany, assignors to Aktiebolaget Astra, Sodertalje, Sweden
No Drawing. Original application Aug. 26, 1966, Ser. No. 575,406, now Patent No. 3,509,024. Divided and this application Jan. 20, 1970, Ser. No. 4,421
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 **4 Claims**
An aspergillopeptidase ARL 1 isolated from a mixture of aspergillopeptidases has been found effective in reducing adhesiveness and aggregation of blood platelets and is useful in the prevention of the formation of thrombi and emboli.

3,646,196
PROCESS FOR CONTROLLING PULP CHIP DETERIORATION WITH KRAFT GREEN LIQUOR
Edward L. Springer and Wallace E. Eslyn, Madison, Wis., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,074
Int. Cl. A01n *11/00, 11/06*
U.S. Cl. 424—162 **1 Claim**
This invention relates to a treatment used to control the deterioration of pulp chips during outdoor stock piling for long periods of time. The treatment involves a spraying or dipping of the pulp chips with a kraft green liquor which is a mixture of sodium sulfide and sodium carbonate in water. The treatment greatly reduces the loss of wood substance over long periods of outdoor storage. The loss of wood substance in wood chips with the treatment is approximately one-third or less than that without the treatment.

3,646,197
NOVEL PROCESS FOR REMOVING COPPER FROM COPPER-CONTAINING BLEOMYCIN
Hamao Umezawa and Yasuhiko Muraoka, Tokyo, and Yuya Nakayama, Yono-shi, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
No Drawing. Filed May 14, 1969, Ser. No. 824,666
Claims priority, application Japan, May 21, 1969, 44/33,742
Int. Cl. A61k *21/00*
U.S. Cl. 424—177 **6 Claims**
A process for removing copper from a solution of copper-containing bleomycin produced from a culture broth of *Streptomyces verticillus*, in which the copper can be completely removed in a short period of time by adding to said solution hydrogen sulfide or a water-soluble sulfide, e.g. an alkali metal sulfide or an alkali metal thiosulfate thereby removing the copper as a copper sulfide, or by adding a boron hydride compound or a hydrosulfite salt thereby removing the copper as cuprous oxide. According to this process, an improved bleomycin having no ill effects on human body can be obtained.

3,646,198
ORAL SYNERGIZED ANTI-INFLAMMATORY COMPOSITIONS
Frank Eberhard Zimmerman, Mannheim, Germany, assignor to A. G. Knoll Chemische Fabriken, Ludwigshaven (Rhine), Germany
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,329
Claims priority, application Germany, Jan. 2, 1969, P 19 00 041.0
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 **11 Claims**
A pharmaceutical composition for oral administration having anti-inflammatory, anti-pyretic and analgesic properties comprising as the active ingredients escin and 1-phenyl - 2,3-dimethyl-4-(2-bicyclo[2.2.1]heptyl)-amino-3-pyrazoline-5-one in a ratio of 1 to 0.01–20 respectively and in an amount sufficient to relieve the inflammation, the ratio of the active ingredients being such as to synergize their inflammatory activities and cause their acute toxicities to be hypoadditive.

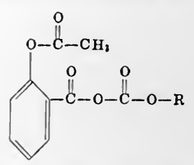
3,646,199
SALICYCLIC ACID o-HYDROXYPHENYLAMIDES FOR COMBATING BACTERIA AND FUNGI
Max Schellenbaum, Muttenz, and Max Duennenberger, Frenkendorf, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 745,100, July 6, 1968. This application Sept. 23, 1970, Ser. No. 74,839
Claims priority, application Switzerland, July 26, 1967, 10,607/67
Int. Cl. A01n *9/24*
U.S. Cl. 424—230 **6 Claims**
This invention provides a method of use for combating harmful microorganisms, such as fungi and bacteria, by applying a salicylic o-hydroxyphenylamide of the general formula



wherein R and R′ each represent a phenyl group with an ortho hydroxy group. R may be further substituted in 3 and 5 position by chlorine or bromine and R′ is further substituted in 4′ or 5′ position by trifluoromethyl, alkyl, cycloalkyl, aryl and aralkyl residues.

3,646,200
TREATMENT OF INFLAMMATION WITH SALICYLIC ACIDS
Tsung-Ying Shen, Bruce E. Witzel, and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed June 25, 1969, Ser. No. 836,640
Int. Cl. A61k *27/00*
U.S. Cl. 424—230 **4 Claims**
New substituted phenoxysalicylic acids and non-toxic pharmaceutically acceptable salts, esters, and amides derived therefrom. The substituted phenoxysalicylic acids disclosed herein have anti-inflammatory, anti-pyretic, and analgesic activity. Also included are methods for preparing said phenoxysalicylic acid compounds.

3,646,201
SALICYLATE CARBONATE COMPOUNDS
Andrew G. Kallianos, James D. Mold, and Melvyn I. Simpson, Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.
No Drawing. Filed July 31, 1969, Ser. No. 846,596
Int. Cl. A01n *9/24;* **A61k** *27/00;* **A61l** *13/00*
U.S. Cl. 424—230 **8 Claims**
This invention relates to novel carbonate anhydride esters of acetylsalicylic acid having the general formula:



wherein R is a radical selected from the group consisting of branched and straight-chained, saturated and unsaturated, aliphatic and alicyclic alcohols having from 2 to 30 carbon atoms and polyhydroxy compounds and mixtures thereof.

3,646,202
LIVER FLUKE COMPOSITIONS CONTAINING SALICYLIC ACID DERIVATIVES
Helmut Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Original application Nov. 22, 1967, Ser. No. 684,968, now Patent No. 3,539,639, dated Nov. 10, 1970. Divided and this application Jan. 16, 1970, Ser. No. 8,146
Int. Cl. A61k *27/00*
U.S. Cl. 424—232 **4 Claims**
Salicylic acid derivatives of phenoxy- and phenylthiopyridines. Processes for the preparation of substituted salicylic acid derivatives of phenoxy- and phenylthiopyridines. Anthelmintic compositions useful in the treatment of parasitic diseases containing a substituted salicylic acid derivative of a phenoxy- or phenylthiopyridine as an active ingredient.

3,646,203
METHOD OF TREATING MILK FEVER IN DAIRY CATTLE WITH 25-HYDROXYCHOLECALCIFEROL
Hector F. De Luca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,673
Int. Cl. A61k *15/02, 27/00*
U.S. Cl. 424—236 **4 Claims**
A method of treatment and prophylaxis for milk fever in dairy cattle which comprises internally administering to the cattle 25-hydroxy-cholecalciferol.

3,646,204
TRIAZINE ANORECTIC METHOD
Abdulmuniem H. Abdallah, Zionsville, Ind., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 6, 1970, Ser. No. 9,398
Int. Cl. A61k *27/00*
U.S. Cl. 424—249 **5 Claims**
This invention relates to a method useful for suppression of appetite and reduction of food intake in animals by means of administering to animals an anorectic amount of 3 - (3,4-dichlorophenoxymethyl)-1,4,5,6-tetrahydro-astriazine or a pharmacologically-acceptable salt thereof.

3,646,205
DERIVATIVES OF 9-PYRIDYLALKYL-1,2,8,9-TETRAAZAPHENALENES FOR LOWERING BLOOD PRESSURE
John E. Francis, Pleasantville, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application Aug. 12, 1968, Ser. No. 751,734, now Patent No. 3,542,777, dated Nov. 24, 1970. Divided and this application Jan. 6, 1970, Ser. No. 661
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **14 Claims**
9-pyridylalkyl - 1,2,8,9 - tetraazaphenalenes, optionally substituted in the 3-position by hydroxy or mercapto and in the 7-position by phenyl, are hypotensive agents.

3,646,206
PYRIDYL - 2 - IMIDAZOLONIC DERIVATIVES IN THERAPEUTIC COMPOSITIONS AND METHODS
Karl J. Doebel, Ossining, and Norbert Gruenfeld, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Original application Dec. 30, 1968, Ser. No. 788,007, now Patent No. 3,542,798, dated Nov. 24, 1970. Divided and this application Jan. 19, 1970, Ser. No. 8,141
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 **12 Claims**
1-(pyridyl)-2-imidazolones which may be substituted in 4- and/or 5-position are analgesic, anti-inflammatory, and antipyretic agents. An illustrative embodiment is 1-(3-pyridyl)-4,5-dimethyl-2-imidazolone.

3,646,207
PHARMACEUTICAL COMPOSITIONS
Willem Soudyn, Turnhout, and Ineke van Wijngaarden, Beerse, Belgium, assignors to Janssen Pharmaceutica, N.V.
No Drawing. Filed Nov. 4, 1968, Ser. No. 773,324
Int. Cl. A61k *27/00*
U.S. Cl. 424—266 **11 Claims**
Pharmaceutical compositions of a 4-phenylisonipecotic acid derivative having analgesic and anti-diarrheal activity.

3,646,208
INHIBITION OF HISTIDINE DECARBOXYLASE
Edward Ervin Smissman, Lawrence, Kans., and James Allen Weis, Albany, Calif., assignors to Kansas University Endowment Association, Lawrence, Kans.
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,396
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **9 Claims**
α-Amino-β-imidazolyl-ethyl alkyl ketones as inhibitors of histidine decarboxylase.

3,646,209
PHARMACEUTICAL METHODS AND COMPOSITIONS UTILIZING 2-ALKANOYL OR AROYL-3-AMINOALKOXYINDOLES
Arne Elof Brandstrom, Goteborg, and Stig Ake Ingemar Carlsson, Molnlycke, Sweden, and Andre Gagneux, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Original application Jan. 22, 1968, Ser. No. 699,289, now Patent No. 3,509,163, dated Apr. 28, 1970. Divided and this application Sept. 26, 1969, Ser. No. 870,727
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **22 Claims**
The compounds are of the class of indole derivatives, more particularly indole derivatives substituted in 2- and 3-positions and acid addition salts thereof. The compounds are useful as analgesic, anti-inflammatory, antitussive, tranquilizing, anti-allergic and anaestesia-potentiating agents. An illustrative embodiment is 2-benzoyl-3-(2-pyrrolidinoethoxy)indole.

3,646,210
FUNGICIDAL AND BACTERICIDAL COMPOSITION AND METHOD CONTAINING 3-THIOCYANOINDOLE DERIVATIVES
Stig Hjalmar Johannes Akerstrom, Konvaljegrand 3A, 75251 Uppsala, Sweden; Albert Tempel, Van Houtenlaan, Netherlands; and Bengt Hjalmar Gullfeldt, Selangergrand 3, 16229 Vallingby, Sweden
No Drawing. Original application Jan. 3, 1968, Ser. No. 695,352, now Patent No. 3,546,244, dated Dec. 8, 1970. Divided and this application June 8, 1970, Ser. No. 44,602
Claims priority, application Sweden Jan. 4, 1967, 193/67; June 2, 1967, 7,722/67
Int. Cl. A01n *9/22*
U.S. Cl. 424—274 **4 Claims**
3-thiocyanoindoles found to be useful fungicides and bactericides.

3,646,211
GLYCIDAMIDES FOR INDUCING A TRANQUILIZER RESPONSE
Carolyn M. Quick, Manteca, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Jan. 22, 1970, Ser. No. 5,109
Int. Cl. A61k *27/00*
U.S. Cl. 424—278 **4 Claims**
2-phenylglycidamides such as 3-chloro-2-(2,4-dichlorophenyl) glycidamide, are described. The compounds have

utility in the polymer field and also possess useful biological activity.

3,646,212

MITICIDES COMPRISING AN ESTER OF 4,6-DINITRO-2-SEC. BUTYL-PHENOL AND 2,4,5,4'-TETRACHLORODIPHENYL SULFIDE OR SULFONE

Ludwig Friedrich Emmel, Bergen-Enkheim, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 29, 1969, Ser. No. 845,912
Claims priority, application Germany, Aug. 14, 1968, P 17 92 281.5
Int. Cl. A01n *9/12, 9/14, 9/20*
U.S. Cl. 424—301 **3 Claims**

Pesticidal compositions comprising 4,6-dinitro-2-sec. butylphenyl dimethyl acrylate (binapacryl), 4,6-dinitro-2-sec. butylphenyl stearate or 4.6-dinitro-2-sec. butylphenyl isopropyl carbonate (dinobuton) in combination with 2,4,5,4'-tetrachlorodiphenyl sulfide (tetrasul) or 2,4,5,4'-tetrachlorodiphenyl sulfone (tetradifon). The combinations have a synergistic effect and are especially useful in the control of spider mites.

3,646,213

COMPOSITIONS AND METHODS FOR TREATING DEPRESSION WITH COMBINATIONS OF L-3,4-DIHYDROXYPHENYLALANINE AND A HYDRAZINE

Giuseppe Bartholini, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation of application Ser. No. 753,074, Aug. 16, 1968, now Patent No. 3,557,292. This application Aug. 12, 1970, Ser. No. 63,332
Int. Cl. A61k *27/00*
U.S. Cl. 424—319 **4 Claims**

Pharmaceutical compositions are described which contain, as the active ingredients (1) L-3,4-dihydroxyphenylalanine and (2) an N'-substituted-N²-(2,3,4-trihydroxybenzyl)-hydrazine selected from the group consisting of N' - dl - seryl - N² - (2,3,4 - trihydroxybenzyl)-hydrazine, N' - l - seryl - N² - (2,3,4-trihydroxybenzyl) - hydrazine, N' - glycyl - N² - (2,3,4-trihydroxybenzyl)-hydrazine and N' - tyrosyl - N²-(2,3,4-trihydroxybenzyl)-hydrazine.

3,646,214

METHOD OF PROTECTING EYE MAKEUP

Solomon Katz, 84—24 253rd St., Bellrose, N.Y., and Renee Laglenne, 218 N. Long Beach Road, Rockville Centre, N.Y. 11570

No Drawing. Filed Aug. 20, 1968, Ser. No. 753,885
Int. Cl. A61k *7/02*
U.S. Cl. 424—362 **3 Claims**

A cosmetic formulation which prevents smudging and running of eye makeup and which acts as a sealer for the eye makeup comprises a minor amount of a film-forming material in a major amount of solvent.

3,646,215

HEPTADECANOL FOR MEDICAL PURPOSES

Walt Phillips, Newark, N.J., assignor to Commodity Improvements, Inc.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,392
Int. Cl. A61k *27/00*
U.S. Cl. 424—343 **9 Claims**

Heptadecanol has been found useful for medical purposes to reduce pain and promote rapid healing. The heptadecanol may be applied to the affected parts of the human or animal body by any conventional means, in its pure form or in a solvent.

ERRATA

For Classes 260—573 thru 260—680 see: Patent Nos. 3,646,216 thru 3,646,239

3,646,216

N¹-AMINOALKYL DERIVATIVES OF 2-NITRO-p-PHENYLENEDIAMINE

Jerome Marshall Cinnamon and Morton A. Westman, North Caldwell, N.J., assignors to Shulton, Inc., Clifton, N.J.

No Drawing. Filed Sept. 1, 1967, Ser. No. 664,937
Int. Cl. C07c *87/62*
U.S. Cl. 260—573 **7 Claims**

This invention relates to novel compounds capable of producing striking colors in keratinacious material, especially live human hair. These compounds, which are N¹-aminoalkyl derivatives of 2-nitro-p-phenylenediamine containing an hydroxyalkyl group in the N⁴ position, are highly useful in preparing high fashion colors for hair dyeing. Certain of the compounds of this invention are especially useful for effecting a bluish-purple color. This type of compound has significant value in the dyeing of gray hair which has a yellow tint. The compounds of this invention cover a wide spectrum of colors and are used either alone, in combination or combined with other dyes for producing various shades of blond to dark brown or black.

3,646,217

ALKANONE MANUFACTURE

Richard D. Smetana, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 26, 1968, Ser. No. 716,234
Int. Cl. C07c *49/02*
U.S. Cl. 260—593 R **5 Claims**

A method of preparing an alkanone comprising contacting a secondary alkyl halide with alkali metal fluoride in the presence of dimethyl sulfoxide at a temperature less than 140° C., preferably under anhydrous conditions and in the presence of an oxygen containing gas.

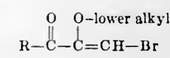
3,646,218

PENICILLIC ACID DERIVATIVES AND RELATED COMPOUNDS AND METHOD OF PRODUCING THEM

Jerold Alan Last, Princeton, and Saul Lewis Neidleman, Lawrence Township, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed May 14, 1969, Ser. No. 824,693
Int. Cl. C07c *49/24*
U.S. Cl. 260—594 **7 Claims**

This invention relates to brominated products of the general formula



and to the method of producing them. The products are useful as antimicrobial agents and also as intermediates.

3,646,219

ALKYLTHIOMETHYL PHOSPHONIUM DERIVATIVES

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Mar. 13, 1967, Ser. No. 622,419, now Patent No. 3,502,731, dated Mar. 24, 1970. Divided and this application Jan. 19, 1970, Ser. No. 4,042
Int. Cl. C07f *9/54;* **D06m** *13/28*
U.S. Cl. 260—606.5 F **6 Claims**

This invention is directed to organothiomethyl phosphonium halides which compounds find utility as textile softeners.

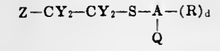
3,646,220

HYDROXYETHYLTHIO PHENOLS AND PROCESS FOR PREPARING SAME

Norman W. Dachs, Buffalo, and Robert Gruber, Tonawanda Township, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,953
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **17 Claims**

Hydroxyarylthio compounds of the formula



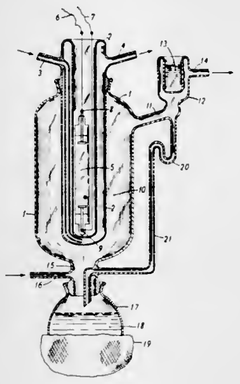
wherein *d* is from 0 to about 6; Z is selected from the group-consisting of mercapto, hydroxy, alkylthio of 1 to about 10 carbon atoms, alkoxy of 1 to about 10 carbon atoms, alkylthio of 1 to about 10 carbon atoms and alkylcarbonyloxy of 2 to about 10 carbon atoms; Y is selected from the group consisting of hydrogen and alkyl of 1 to about 5 carbon atoms; A is aryl of 6–18 carbon atoms; R is selected from the group consisting of alkyl, aralkyl, alkaryl, aryl, carbaryloxy, alkoxy, aryloxy, alkylthio, arylthio, hydroxy, mercapto, cyano, carboxy and halogen and is of 0 to about 10 carbon atoms and Q is selected from the group consisting of —OH and —O(CO)NHR², wherein R² is alkyl of one to about 10 carbon atoms, provided that when Q is —O(CO)NHR², Z may also be halogen. A typical compound is hydroxyethylthiophenol. A process for the preparation of said compounds and their pesticidal utility are also described.

3,646,221

BIS(TRIFLUOROMETHYLTHIO) FLUOROBUTANES

Robert E. A. Dear and Everett E. Gilbert, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,428
Int. Cl. C07c *149/16*
U.S. Cl. 260—609 A **4 Claims**



Bis(trifluoromethylthio) fluorobutanes useful as thermally stable dielectric coolants or insecticidal fumigants, and process for preparing them by subjecting a vaporous mixture of bis(trifluoromethyl)disulfide and certain fluoroethylenes to ultraviolet light in the wave length range between about 2000 A. and about 3600 A. at temperatures of at least about 35° C.

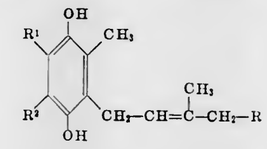
3,646,222

METHOD FOR PRODUCTION OF SUBSTITUTED HYDROQUINONES

Yutaka Kawamatsu, Suita, Osaka, Marekichi Sasaki, Yokohama, and Hiroshi Morimoto, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

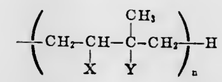
No Drawing. Filed May 15, 1969, Ser. No. 825,031
Claims priority, application Japan, May 20, 1968, 43/33,898
Int. Cl. C07c *37/00, 41/00*
U.S. Cl. 260—613 D **7 Claims**

A method for producing tetra-substituted hydroquinones of the formula

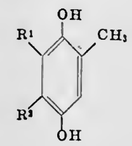


wherein each of R¹ and R² is methyl or methoxy, or R¹ and R² represent, taken together

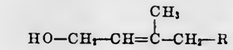
and R represents a univalent radical of the formula:



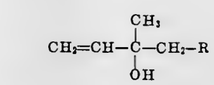
wherein X and Y are each a hydrogen atom or, taken together, represent a double bond between the carbon atoms to which they attach, and *n* is an integer from 0 to 9, is provided. A tri-substituted hydroquinone of the formula



is condensed with a β-unsaturated alcohol of the formula



or



in the presence of an N-sulfinyl compound.

3,646,223

1,4-DIMETHYLOL-1,4-DIALKYL CYCLOHEXANE AND SYNTHESIS

Ralph C. Schreyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,204
Int. Cl. C07c *35/02;* **C07g** *17/08, 22/00*
U.S. Cl. 260—617 R **3 Claims**

1,4-dialkyl-1,4-disubstituted cyclohexanes where the substituent is —CO_2X, —$CONX_2$, —$COCl_2$, —CH_2NH_2, —CN or CH_2OH, X being hydrogen or alkyl of 1–6 carbon atoms, which cyclohexanes are useful as polymer intermediates.

3,646,224
CONVERSION OF ADAMANTANE HYDROCARBONS TO MONOOLS

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Dec. 17, 1968, Ser. No. 784,487
Int. Cl. C07c *35/44*
U.S. Cl. 260—617 F 14 Claims

Adamantane hydrocarbons of the C_{10}–C_{30} range having at least one unsubstituted bridgehead position are admixed with fuming sulfuric acid (102–112% H_2SO_4 equivalent) at a temperature between the freezing point of the acid and 50° C. to effect dissolution and the mixture is then reacted with water to form bridgehead monools corresponding to the starting hydrocarbons.

3,646,225
TREATMENT OF PENTACHLOROPHENOL

Jack A. Morrison, Calgary, Alberta, Canada, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 24, 1967, Ser. No. 657,465
Int. Cl. C07c *39/24*
U.S. Cl. 260—623 R 3 Claims

Granular pentachlorophenol such as that used for preserving wood slowly sublimes during storage to form a finely crystalline dust which is highly irritating to skin and mucous membranes and which adversely affects the appearance of the product. Such sublimation and vaporization of residual acid from the product are essentially avoided by adding to the molten pentachlorophenol prior to the granulating step a small amount of an amine of low volatility. Alkanolamines such as diethanolamine and triethanolamine are particularly suitable for the purpose.

3,646,226
HYDROXY COMPOUND MANUFACTURE

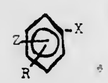
Richard D. Smetana, Beacon, and Roger G. Duranleau, Poughquag, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,841
Int. Cl. C07c *37/00*
U.S. Cl. 260—621 G 4 Claims

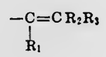
A method of preparing a hydroxy compound of the formula:



where R is hydrogen or alkyl and Y is hydrogen or —OH comprising first contacting in the substantial absence of water an alpha-olefinic compound of the formula:



where X is



Z is hydrogen or X, R_1, R_2 and R_3 are hydrogen or alkyl, R is as heretofore defined with ozone and alkanoic acid and then contacting the resultant reaction mixture with mineral acid and water.

3,646,227
HYDROGENATION OF ALDEHYDE IMPURITIES

Reuben H. Grinstein, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,169
Int. Cl. C07c *29/24*
U.S. Cl. 260—643 B 6 Claims

The effective life of solid nickel hydrogenation catalysts used in hydrogenation of aldehyde and acetal impurities in aliphatic alcohols prepared by the carbonylation and hydrogenation of olefin is improved by the use of a solid basic substance in the catalyst bed.

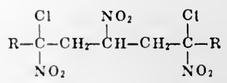
3,646,228
POLYCHLORO-POLYNITRO-ALKANES AND THEIR MANUFACTURE

Milton B. Frankel, Menlo Park, Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

No Drawing. Original application July 30, 1964, Ser. No. 386,379, now Patent No. 3,440,282, dated Apr. 22, 1969. Divided and this application Aug. 19, 1968, Ser. No. 798,204
Int. Cl. C07c *79/12*
U.S. Cl. 260—644 8 Claims

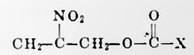
A method of preparing a compound of the formula:

(1)

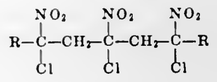


which comprises reacting an allyl alcohol ester of the formula

(2)



with a 1-chloro-1-nitroalkane, wherein the foregoing formulae, R is lower alkyl and X is a monovalent organic radical, and recovering the product thus obtained; and the method of reacting chlorine with the compound of Formula 1 to produce

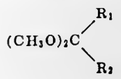


3,646,229
USE OF DIMETHOXYMETHANE TO INHIBIT A METHYLENE CHLORIDE-ALUMINUM REACTION

Wesley L. Archer, Midland, and Elbert L. Simpson, Auburn, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of application Ser. No. 775,182, Nov. 12, 1968. This application July 13, 1970, Ser. No. 56,210
Int. Cl. C07c *17/40, 17/42*
U.S. Cl. 260—652.5 R 5 Claims

Methylene chloride containing from 0.03 to 10.0 weight percent of a compound having the formula:



wherein R_1 may be hydrogen and R_2 may be hydrogen or a methyl radical, and wherein R_1 and R_2 may be taken together and represent oxygen. The composition is stable in combination with an aromatic hydrocarbon such as toluene, xylene or naphthalenes, when used in combination with aluminum to prepare paints and lacquers.

3,646,230
HYDROFLUORINATION OF ACETYLENIC UNSATURATES TO PRODUCE OLEFIN FLUORIDES

Frederick E. Kung, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 591,078, Nov. 1, 1966. This application Feb. 26, 1969, Ser. No. 802,646
Int. Cl. C07c *17/08, 21/18, 25/14*
U.S. Cl. 260—653.4 7 Claims

Olefinically unsaturated fluorides, such as vinyl fluoride, are prepared by catalytically reacting equimolar proportions of an acetylenically unsaturated compound and hydrogen fluoride in a liquid medium containing an inert fluoride salt as an essential component. Mercury catalysts are used.

3,646,231
DIORGANOMAGNESIUM REAGENTS AND METHODS OF PREPARING SAME

Conrad W. Kamienski, Gastonia, N.C., and Jerome F. Eastham, Knoxville, Tenn., assignors to Lithium Corporation of America, Bessemer City, N.C.

No Drawing. Original application May 13, 1968, Ser. No. 728,838. Divided and this application Mar. 5, 1970, Ser. No. 16,958
Int. Cl. C07f *1/00, 1/02*
U.S. Cl. 260—665 R 2 Claims

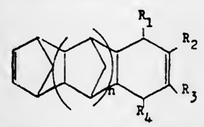
Diorganomagnesium reagents are prepared by processes which separate halides as insoluble salts from magnesium reagents. The processes are convenient and practical and provide diorganomagnesium compounds and derivatives as solids or in solution with or without solvation; the processes have provided new diorganomagnesium compounds and derivatives and solutions of diorganomagnesium compounds never previously obtained. One principal process by which the separation is accomplished is precipitation of the salt lithium halide from reaction of an organolithium reagent with an organomagnesium halide or with a magnesium halide. A second process developed for separation of halide from a magnesium reagent involves formation of the salt magnesium halide from an organomagnesium halide in a medium that will not dissolve the salt. A third process involves reaction of magnesium directly with an organic halide under conditions that produce a mixture of magnesium halide and diorganomagnesium compound, the latter of which can be dissolved into suitable solvents leaving the halide as insoluble salt.

3,646,232
POLYCYCLIC DIENES

Richard Gregory Foster and Paul Hepworth, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 20, 1970, Ser. No. 56,665
Claims priority, application Great Britain, July 22, 1969, 36,827/69
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY 11 Claims

A polycyclic diene having the structure



where *n* is a whole number of at least one and each of R_1, R_2, R_3 and R_4 is either a hydrogen atom or a monovalent hydrocarbyl group, preferably an alkyl group, or derivatives thereof in which one or more of the carbon atoms in or forming part of the endomethylene bridged rings and not forming part of a carbon-carbon double bond carries a monovalent hydrocarbyl substituent group and a process for the preparation of the polycyclic diene by Diels-Alder reaction.

3,646,233
REACTION OF PARAFFINS WITH ADAMANTANE COMPOUNDS

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 877,004, Nov. 14, 1969. This application Oct. 14, 1970, Ser. No. 80,779
Int. Cl. C07c *3/54*
U.S. Cl. 260—666 M 19 Claims

Saturated adamantane hydrocarbons of the C_{10}–C_{19} range having 0–3 alkyl substituents and/or their corresponding adamantanols are reacted with C_3–C_{20} n-paraffins and/or with certain types of C_4–C_{20} isoparaffins by contacting a mixture of such reactants with sulfuric acid having a strength of 96–105% H_2SO_4 equivalent at a temperature between the freezing point of the acid and 100° C., more preferably 10–75° C. This causes a C_3–C_{20} alkyl or alkylene moiety, derived from and having the same number of carbon atoms as the n-paraffin used, to become attached to the adamantane nucleus. As a result two types of products are obtained: (1) alkylated adamantane hydrocarbon having one adamantane nucleus per molecule with the C_3–C_{20} alkyl moiety as a bridgehead substituent; and (2) bis-type hydrocarbon product having two adamantane nuclei linked between bridgehead positions through the C_3–C_{20} alkylene moiety. Both types of products are particularly suitable as components of traction fluids.

3,646,234
REACTION OF NAPHTHENE HYDROCARBONS WITH ADAMANTANE COMPOUNDS

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 80,779, Oct. 14, 1970, which is a continuation-in-part of application Ser. No. 877.004, Nov. 14, 1969. This application Nov. 19, 1970, Ser. No. 91,183
Int. Cl. C07c *3/54, 13/28*
U.S. Cl. 260—666 M 14 Claims

Saturated adamantane hydrocarbons of the C_{10}–C_{19} range having 0–3 alkyl substituents and/or their corresponding adamantanols are reacted with C_5–C_{20} mono cyclic naphthene hydrocarbons by contacting a mixture of such reactants with sulfuric acid having a strength of 96–105% H_2SO_4 equivalent at a temperature between the freezing point of the acid and 100° C., more preferably 10–75° C. This causes a C_5–C_{20} cycloalkyl or cycloalkylene moiety, derived from and having the same number of carbon atoms as the naphthene used, to become attached to the adamantane nucleus. Two types of alkylation products are obtained: (1) alkylated adamantane hydrocarbon having one adamantane nucleus per molecule with the C_5–C_{20} cycloalkyl moiety as a bridgehead substituent; and (2) bis-type hydrocarbon product having two adamantane nuclei linked between bridgehead positions through the C_5–C_{20} cycloalkylene moiety. When the starting naphthene has a C_5 ring, a naphthene dimerization product having perhydronaphthalene structure is also obtained. All types of products are particularly suitable as components of traction fluids.

3,646,235
CATALYTIC HYDROGENATION OF ALPHA METHYL STYRENE

Edwin D. Little, Convent Station, and Zafarullah K. Cheema, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,070
Int. Cl. C07c *5/16*
U.S. Cl. 260—667 4 Claims

Alpha ethyl styrene, obtained as a by-product in the manufacture of phenol is hydrogenated back to cumene using hydrogen and standard hydrogenation catalysts which are selective for the ethylenic side chain. Prior to

hydrogenation the alpha methyl styrene is treated to effect removal of hydroxy acetone present. By reducing or eliminating hydroxy acetone, poisoning of the catalyst is prevented. Hydroxy acetone is removed from the alpha methyl styrene by water washing, distillation, or by chemical methods as for example by treating with an amine.

3,646,236
DISPROPORTIONATION OF TOLUENE WITH A PLATINUM-RHENIUM-SOLID OXIDE CATALYST
Carl D. Keith, Summit, Milton H. Dalson, Mendham, and William C. Pfefferle, Middletown, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,441
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **15 Claims**

There is disclosed a method for disproportionating toluene to benzene and xylene. The process is conducted in the presence of hydrogen and a catalyst containing a platinum group metal and rhenium on a porous, solid, acidic support. Lower alkylbenzenes of 9 to 10 carbon atoms may also be fed to the reaction zone.

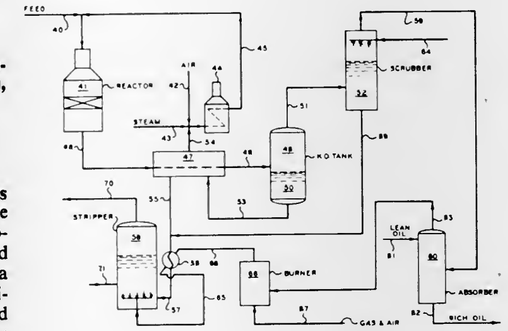
3,646,237
PROCESS FOR RECOVERING ISOBUTYLENE
Tatsuo Horie and Shigeyuki Hayashi, Tokyo, Japan, assignors to Nippon Oil Company, Limited, Minato-ku, Tokyo, Japan
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,935
Claims priority, application Japan, Sept. 7, 1968, 43/64,170
Int. Cl. C07c *11/02*
U.S. Cl. 260—677 A **6 Claims**

A process for recovering highly purified isobutylene comprising contacting an isobutylene-containing hydrocarbon mixture with an aqueous solution which is acidified with hydrochloric acid and containing a chloride of a metal selected from the group consisting of zinc, tin, antimony and bismuth to allow the isobutylene to be absorbed in the form of tert-butyl alcohol in the aqueous solution; removing unreacted hydrocarbons from said solution; subjecting the solution to degassing treatment; and subjecting them to dehydrating treatment; in which the present invention is characterized in said degassing treatment.

3,646,238
TREATING DETERGENT ALKYLATE
Harry E. Jacobs, Glenwood, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed July 13, 1970, Ser. No. 54,564
Int. Cl. C07c *7/00, 3/50*
U.S. Cl. 260—674 A **10 Claims**

Method for treating raw detergent alkylate in order to improve the color and odor characteristics of the alkyl benzene sulfonates produced from the alkylate by contacting the raw alkylate with activated charcoal and thereafter selectively hydrogenating the contacted alkylate to avoid hydrogenating the alkyl benzene compounds, said hydrogenation being carried out by contacting said contacted detergent alkylate with a hydrogen containing gas in the presence of a catalyst at a temperature in the range of from about 50° F. to about 200° F. and at a pressure in the range of from about 5 p.s.i.g. to about 50 p.s.i.g.

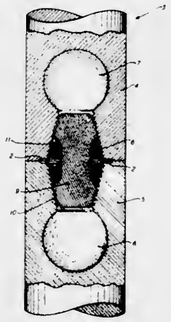
3,646,239
ENZYMATIC TREATMENT OF HYDROCARBON DEHYDROGENATION EFFLUENT
Thomas Hutson, Jr., and Ronald E. Riter, Bartlesville, Okla., assignors to Phillips Petroleum Company
Continuation-in-part of abandoned application Ser. No. 751,833, Aug. 12, 1968. This application June 3, 1969, Ser. No. 830,083
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **4 Claims**



Excess purge water containing oxygenated hydrocarbons resulting from hydrocarbon dehydrogenation processes is rendered nontoxic by the conversion of the oxygenated hydrocarbons to water and carbon oxides in the presence of microorganisms, e.g., saprophytic bacteria, protozoa, yeast and fungi, under aerobic conditions. In preferred embodiments of the invention, the purge water prior to treatment with microorganisms is reboiled or stripped with a hot gas to reduce the concentration of oxygenated hydrocarbons.

ELECTRICAL

3,646,240
ELECTRODE JOINT
John G. Lewis, Ann Arbor, Mich., assignor to Air Reduction Company, Incorporated, New York, N.Y.
Filed Aug. 28, 1970, Ser. No. 67,818
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **7 Claims**



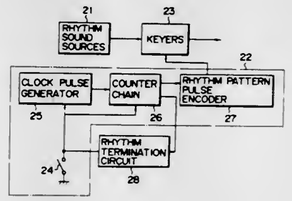
A furnace electrode assembly of the type including a pair of electrode sections having tapered threaded sockets and a nipple threaded into each of the sockets to hold the sections in face-to-face contact is characterized by a pair of counterbores at the bottom of the sockets and a portion at the center of the nipple which is devoid of threads.

3,646,241
STOP ACTUATION DEVICE IN ORGANS
Dieter Ott, Heinrich-Sohnrey-Strasse 12a, 34 Gottingen, Germany
Filed Mar. 4, 1970, Ser. No. 16,348
Claims priority, application Germany, Mar. 5, 1969, G 69 08 662
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 **1 Claim**



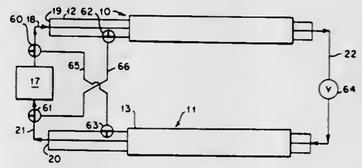
The innovation pertains to a stop actuation device in organs with a keyboard, stop draws and electrical and/or electropneumatical operation of the stop control assembly from the keyboard assembly, which incorporates a preselection device for different stop combinations that can be activated over control mechanisms at the keyboard touch assembly.

3,646,242
AUTOMATIC RHYTHM INSTRUMENT WITH CYCLE-END TERMINATION CIRCUIT
Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Mar. 15, 1971, Ser. No. 124,252
Claims priority, application Japan, Mar. 16, 1970, 45/21620
Int. Cl. G10h *5/06, 1/00*
U.S. Cl. 84—1.03 **3 Claims**



An automatic rhythm instrument is provided with a rhythm termination circuit which keeps the rhythm pattern pulse generator operating even after the stop switch is manipulated and stops keeping it operating upon detecting the end of the rhythm cycle, thus stopping the automatic rhythm performance upon completion of the full rhythm cycle. On this instrument, the player does not have to manipulate the stop switch at the exact end of the rhythm cycle, but has only to manipulate it at any time within the last rhythm cycle and the instrument keeps on the performance until it comes to the final end of the rhythm cycle and stops.

3,646,243
COOLANT CIRCUIT FOR RESISTIVE CRYOGENIC ELECTRIC POWER TRANSMISSION LINE
Peter Graneau, and Joseph L. Smith, Jr., both of Concord, Mass., assignors to Simplex Wire and Cable Company, Burlington, Mass.
Filed Oct. 27, 1969, Ser. No. 869,476
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 **10 Claims**



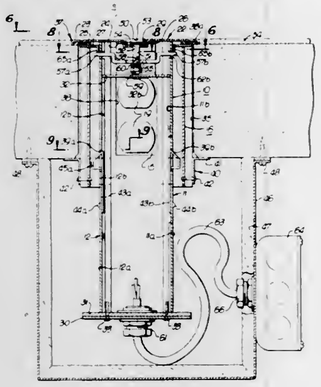
A coolant circuit for refrigerated electric power transmission cable utilizing coolant in the cable in which capacity to accommodate cyclic peak loads, overloads, and emergency conditions is provided;

1. by operating the cable coolant circuit with a liquid-phase coolant in the cable under superatmospheric pressure and normally maintaining the temperature of the coolant substantially below its vaporization temperature such that cyclic peak loads and temporary overloads and emergencies can be accommodated by the thermal mass of the coolant, i.e. by allowing the temperature of the coolant to rise while maintaining it in the liquid phase,
2. by flashing refrigerant contained in a reservoir located exteriorly of the cable to obtain added cooling capacity in cases of prolonged overload and emergency, and

3. by employing parallel electrical circuits in a common coolant loop such that the entire refrigerating capacity can be utilized to cool one electrical circuit in the event of breakdown of the other.

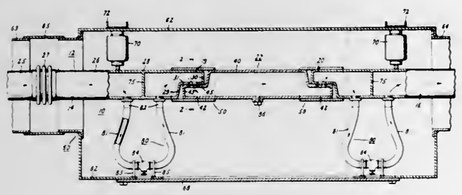
Accommodation to long term increase in required cable capacity is also provided.

3,646,244
ADJUSTABLE FLOOR RECEPTACLE MOUNT
Stephen W. Cole, Altadena, Calif., assignor to C. W. Cole & Co., Inc., El Monte, Calif.
Filed Aug. 21, 1970, Ser. No. 65,778
Int. Cl. H01h *9/02*
U.S. Cl. 174—57 **10 Claims**



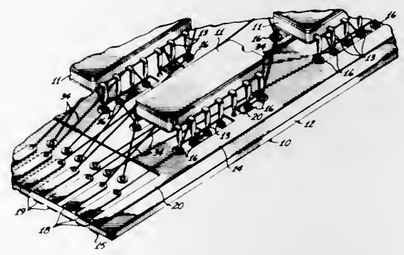
An adjustable floor receptacle mount is provided that includes a housing movable within a stationary casing fitted into a circular opening in a concrete floor. The housing and the casing are each formed of a pair of interlocking extruded channel structures whose walls are shaped to facilitate the installation and operation of the floor receptacle mount. In order to simplify the withdrawing of the housing from a recessed position within the casing, a cap provided on a cover plate for the housing and operating in conjunction with a latching mechanism pops up when the housing is unlatched. The cap thus provides a convenient handle by which the housing can be quickly pulled out of the casing in the floor when it is desired to use the electrical service provided by the receptacles on the sides of the housing.

3,646,245
LIQUID-COOLED BUS CONTAINING A DISCONNECTING LINK
Nathan Swerdlow, Philadelphia, Pa., assignor to General Electric Company
Filed Dec. 16, 1970, Ser. No. 98,697
Int. Cl. H02g *15/20*
U.S. Cl. 174—21 JS **5 Claims**



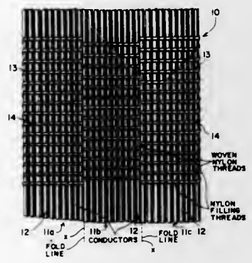
Discloses a liquid-cooled electric bus comprising a pair of hollow bus bar sections interconnected by a removable hollow disconnecting link. The interiors of the bus bar sections and the link are hydraulically interconnected to permit liquid coolant to flow between said bus bar sections via said link. Each bus bar section has a flow-blocking barrier therein and a bypass circuit bypassing the barrier comprising a pair of flexible lines of electrical insulating material and a shutoff valve interconnecting said lines.

3,646,246
CIRCUIT BOARD AND METHOD OF MAKING
Frederick D. Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc.
Filed May 22, 1970, Ser. No. 39,728
Int. Cl. H05k *3/32*
U.S. Cl. 174—68.5 **9 Claims**



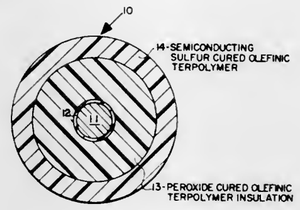
A circuit board and a method of making same, the circuit board having holes formed therethrough in which selected ones of the holes are electrically connected by a method in which conductive wire is sewn into the holes and retained therein to form an electrical connection to conductive material adjacent to the holes.

3,646,247
FOLDABLE WOVEN MULTISTRAND ELECTRICAL CABLE
Kenneth H. Sennett, Humarock, and Alan P. Mandel, Brookline, both of Mass., assignors to Electroweave, Inc., Rockland, Mass.
Filed Jan. 11, 1971, Ser. No. 105,231
Int. Cl. H01b *7/08*
U.S. Cl. 174—117 M **9 Claims**



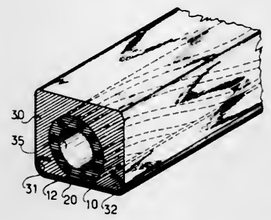
A longitudinally foldable woven multiconductor cable includes side-by-side sections joined along a longitudinal fold line, each section including single or multiple insulator sheathed conductor warps with or without alternating nonconducting yarn warps. The warps are interwoven by a weft in a common pattern which is altered or shifted at the fold lines to provide hinges between the sections. The weave pattern alteration may be accomplished with a box weave where the warps include alternate conductor and yarn warps by omitting the yarn warp between a pair of successive conductor warps at the fold line or it may be accomplished with a twill weave by reversing the weave pattern at the fold lines.

3,646,248
ELECTRIC CABLE
Ting H. Ling, and Marwick H. Solomon, both of Marion, Ind., assignors to Anaconda Wire and Cable Company
Filed Feb. 22, 1971, Ser. No. 117,475
Int. Cl. H01b *7/02*
U.S. Cl. 174—120 SC **7 Claims**



An electric cable is insulated with a cross-linked olefinic terpolymer and has a semiconducting cross-linked olefinic terpolymer jacket closely applied over the insulation. Different curing systems are employed for the insulation and jacket with the result that the jacket will maintain a void-free contact with the insulation but may still be stripped cleanly from it.

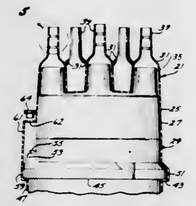
3,646,249
SUPERCONDUCTOR
Francois Moisson-Franckhauser, Bretigny-sur-Orge, France, assignor to Compagnie Generale d'Electricite, Paris, France
Filed July 14, 1970, Ser. No. 54,714
Int. Cl. H01b *5/00, 7/34*
U.S. Cl. 174—126 **2 Claims**



An electrical superconductor comprises a hollow prismatic member consisting of a cylindrical tube covered with an extra layer of the slightly resistive material to form the external shape, and containing superconductor elements, and a lining of mechanically strong material, fixed onto the prismatic member.

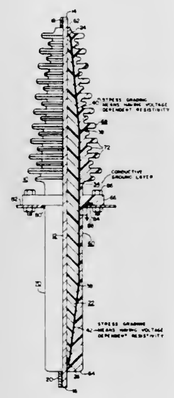
3,646,250
PROTECTIVE BOOT FOR DISTRIBUTOR CAPS AND THE LIKE
Stanley E. Estes, 543 W. 18th Street, Gardena, Calif.
Filed Apr. 1, 1970, Ser. No. 24,585
Int. Cl. H01h *19/06;* **H01r** *13/52*
U.S. Cl. 174—138 F **9 Claims**

A protective boot for an ignition system component housed in a housing having a base with a cap mounted thereon. The cap is of the type which is formed with a plurality of upstanding towers formed with passages for receipt of electrical leads leading from various electrical components in the ignition system. The boot includes a flexible jacket for closely fitting the cap and a plurality of flexible inverted cups for closely overfitting the towers and projecting beyond the upper ends of such towers to form respective nipples defining bores for passage of the electrical leads. The nipples are formed to closely fit the leads to form a seal therearound. A



flexible skirt is formed by the lower extremity of the jacket for projection over the joint between the housing base and cap whereby the boot may be installed on the housing to form a tight seal around each of the electrical leads and also over the joint formed between the cap and base to thereby positively seal the electrical component against atmospheric dirt and moisture.

3,646,251
ELECTRICAL BUSHING HAVING STRESS-GRADING LAYER DISPOSED WITHIN SOLID INSULATION INCLUDING A GROUND LAYER TERMINATED AT EACH END WITH A LAYER OF MATERIAL HAVING A VOLTAGE-DEPENDENT RESISTIVITY
Kevin F. Friedrich, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 8, 1970, Ser. No. 96,151
Int. Cl. H01b *17/26*
U.S. Cl. 174—142 **11 Claims**

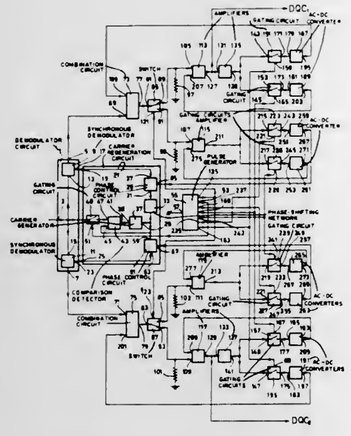


A high-voltage electrical bushing having solid electrical insulation disposed about an electrical conductor, with an axial and radial stress-grading structure disposed within the solid insulation. The stress-grading structure includes a ground layer in the form of a substantially cylindrical band of electrically conductive material disposed coaxially with the electrical conductor, with both ends of the electrically conductive band being connected to stress-grading materials having a voltage-dependent resistivity.

3,646,252
DECODER ARRANGEMENT FOR A SIGNAL TRANSMISSION SYSTEM EMPLOYING INFORMATION TRANSMISSION BY MEANS OF A QUADRATURE-MODULATED CARRIER

Marie Marcel Arnold Antoine Ghislain Verstraeten, and John Richard Reynders, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,315
Claims priority, application Netherlands, June 10, 1969, 6908782
Int. Cl. H04n *9/46, 9/50*
U.S. Cl. 178—5.4 SD **5 Claims**

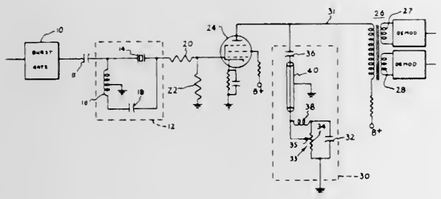


A decoder arrangement for a quadrature-modulated signal having periodically occurring bursts of each of the two quadrature components wherein during the recovery of the two carrier components required for demodulation of the signal—so as to avoid crosstalk between the quadrature components during the demodulation—a double-phase control system each active on one of the bursts is used which maintains each of these carrier components separately accurately 90° shifted in phase relative to the quadrature component which must be suppressed in the relevant demodulator.

3,646,253
TINT CONTROL FOR A COLOR TELEVISION RECEIVER

Robert F. Wood, Portsmouth, Va., assignor to General Electric Company

Filed Nov. 13, 1970, Ser. No. 89,264
Int. Cl. H04n *9/50*
U.S. Cl. 178—5.4 HE **6 Claims**

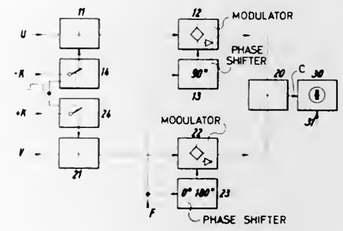


A tint control for a color television receiver comprising means for shifting the phase of the 3.58 MHz. subcarrier reference signal before applying it to a demodulator stage. The resistive element of a potentiometer is connected across a capacitor, one end of the capacitor being connected to ground. An inductor is connected between the end of the potentiometer remote from ground and the slicer thereof, the slider being coupled to the plate of a subcarrier amplifying tube by means of a second, series-connected capacitor. Proper selection of values for the inductor and capacitors allows the use of an inexpensive linear Potentiometer, while providing the desired "flat" response in the midrange of potentiometer adjustment.

3,646,254
METHOD AND APPARATUS FOR INDICATING THE PHASE DISPLACEMENT OF THE COLOR-SYNCHRONIZING SIGNAL OF A COLOR TELEVISION SIGNAL

Gerhard Illetschko, Darmstadt, and Horst Peth, Alsbach an der Bergstrasse, both of Germany, assignors to Fernseh GmbH, Dormstadt, Germany

Filed June 23, 1969, Ser. No. 835,450
Claims priority, application Germany, June 22, 1968, P 17 69 468.9
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 **7 Claims**

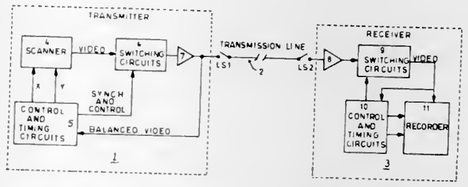


One of the two differently directed modulating components are alternatingly suppressed during predetermined time intervals. Both components are traced superimposingly on the screen of an oscilloscope tube so that they appear simultaneously visible in a level oscillogram. The amplitude difference of the components appearing on the screen is a measure of the phase displacement. Adders combine the identifying pulses with the components of the video frequency color signals, and modulators modulate the resulting combined components onto the color carrier. After combining the outputs of the modulators in an adder, the combined signal is applied to an oscilloscope or viewing.

3,646,255
FACSIMILE SYSTEM

Elliott W. Markow, Burlington, Mass., assignor to Newton Electronic Systems, Inc., Waltham, Mass.

Filed Feb. 20, 1970, Ser. No. 13,087
Int. Cl. H04n *3/30, 7/12*
U.S. Cl. 178—6 **8 Claims**

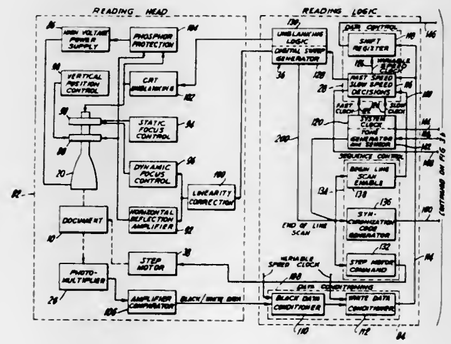


An electronic facsimile system comprising a transmitter including a document scanner, actuated by two deflection signals, one of which is held fixed while the other is scanned over the copy at a fast rate until data is encountered. When data is encountered, the scanning signal drops back and begins a slow scan until no further data has been found for a predetermined time. In the receiver, a recorder is operated in accordance with two corresponding deflection signals, one of which is fixed, while the second is scanned in time with the transmitter scan. In both transmitter and receiver, the deflection signal that is fixed while the other is scanned is stepped to the next position at the end of the scan, which is reached at a time dependent on the data content of the copy being transmitted and received.

3,646,256
ADAPTIVE MULTIPLE SPEED FACSIMILE SYSTEM

Gerald W. Jacob, Great Neck; Eugene Mogul, East Norwich; Paul Z. Boros, New York; David Schiff, Briarwood, Malcolm Reader, New Hyde Park, and Ira Kamen, New York, all of N.Y., assignors to Comfax Communications Industries, Inc., New York, N.Y.

Filed Mar. 24, 1970, Ser. No. 22,231
Int. Cl. H04n *3/32*
U.S. Cl. 178—6 **25 Claims**



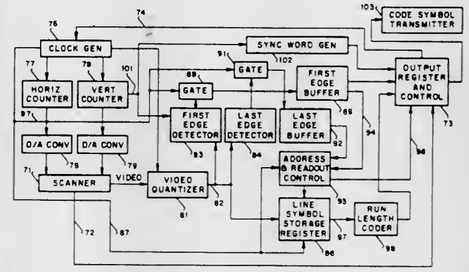
A facsimile transmitter comprises means for scanning a document to produce signals corresponding to the dark and light areas of the document. Those signals are transferred to the receiver at one of two predetermined rates—fast or slow—depending on the content of the document. If desired, the rate of scanning may also be varied according to that content. Signals having a low information value are thereby transmitted at a higher rate than signals having a high information content.

3,646,257
COMMUNICATION SYSTEM HAVING PLURAL CODING VOCABULARIES

Paul Epstein, Brookline; James Cunningham, Cambridge; Robert E. Wernikoff, Belmont, and George Rosen, Brookline, all of Mass., assignors to Electronic Image Systems Corporation, Cambridge, Mass.

Filed Mar. 13, 1969, Ser. No. 806,810
Int. Cl. H04n *1/04, 1/32, 1/38*
U.S. Cl. 178—6 **19 Claims**

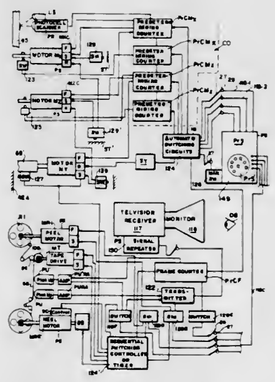
A system for providing differently coded signals to represent respective different types of information such as the indicia and margin portions of a document. As a result of successive line scans of the document a sequence of message symbols is generated for each line scan in which each sequence is differently coded to respectively represent areas of different nature along the scan line. Typically the areas of different nature are margin and indicia portions of the document. The scanning of the margin areas of the document can be selectively controlled to minimize coding of areas of margin information.



3,646,258
COMPUTING APPARATUS

Jerome H. Lemelson, 72 Prescott Avenue, Staten Island, 6, N.Y.

Original application June 14, 1955, Ser. No. 515,417, now Patent No. 3,003,109, dated Oct. 3, 1961. Divided and this application Aug. 28, 1961, Ser. No. 142,748
Int. Cl. G03b *21/02, 23/02;* **H04n** *7/18*
U.S. Cl. 178—6.6 A **19 Claims**



An information storage and reproduction apparatus is provided in which information such as picture information is stored on a plurality of record members and selectively scanned to generate images in viewable or monitorable form.

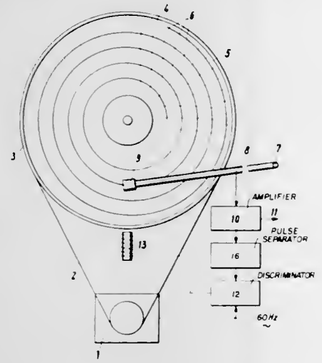
In one form of the invention, the information is provided on filmstrip as images and a scanning apparatus therefore is remotely controlled to selectively scan the recordings and generate images on a viewing screen located remote from the record members.

In another form of the invention, the information is recorded as signals defined by variable magnetic recordings in different magnetic recording members and a scanning apparatus is provided in the form of magnetic transducing means which is selectively conveyed to selected magazines containing the record members having different picture signals recorded thereon. The conveying means may be utilized to both scan and drive the record member to generate picture signals.

In yet another form of the invention, magnetic recordings of video picture signals are provided on a plurality of mag-

netic cards which are selectively scanned to generate reproductions of the video picture signals which are presented to a monitoring apparatus and utilized to generate still images on the viewing screen thereof.

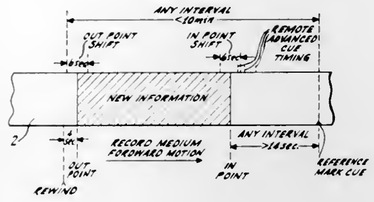
3,646,259
SYSTEM FOR RECORDING AND SCANNING VIDEO SIGNALS ON A DISC
Eduard Schuller, Berlin, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany
Filed Feb. 12, 1969, Ser. No. 798,720
Claims priority, application Germany, Feb. 13, 1968, P 15 62 038.9
Int. Cl. G11b *19/24, 27/30*; **H04n** *5/78*
U.S. Cl. 178—6.6 DD **6 Claims**



A video recording and scanning system includes a disc-type record, and a record player, the record having both video picture signal producing indicia and synchronizing pulse producing indicia recorded on its spiral track, the length of the track-carrying signals for recording each picture being variable to permit greater compression of information on a given track with short spacings, or greater image resolution detail with long spacings, the number of the pulse indicia having a fixed ratio to the number of individual pictures recorded on the disc, the position of each pulse indicium being fixed relative to the position of the indicia for producing each picture, the record player including a scanning means, a comparison circuit and a disc speed varying means, the scanning means being mounted for relative movement along the track and producing both picture signals and pulse signals, the comparison circuit comparing the frequency of the pulse signals to a reference frequency to produce an adjustment signal, and the disc speed varying means being responsive to the adjustment signal to vary the speed at which the record track moves past the scanning head so that the variable length portions of track-carrying signals for producing one image move past the scanning means in the same period of time and produce a constant picture changing frequency which is independent of the length of the track carrying the signals for producing each picture.

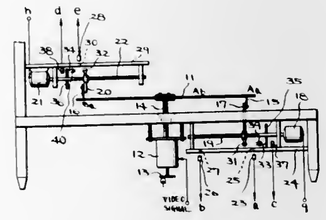
3,646,260
ELECTRONIC EDITING APPARATUS
Thomas V. Bolger, Pennsauken, N.J., assignor to RCA Corporation
Filed Mar. 17, 1969, Ser. No. 807,495
Claims priority, application Great Britain, Mar. 28, 1968, 14,944/68
Int. Cl. G11b *27/08, 27/14*; **H04n** *5/78*
U.S. Cl. 178—6.6 A **8 Claims**

There is disclosed a system operative in conjunction with a video recorder-reproducer, for providing controlled editing of information on a record medium. A desired portion or portions of the recorded information are located, selected



and modified by provision of devices for generating, manipulating and storing data correlated to the information portion to be edited on the record medium.

3,646,261
MAGNETIC RECORDING AND REPRODUCING SYSTEM
Hisao Kinjo, Yokohama; Seiichi Takashima, Kamakura; Takatoshi Kato, Tokyo, and Yoshitaka Iwabuchi, Yokohama City, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Apr. 28, 1969, Ser. No. 819,846
Claims priority, application Japan, Apr. 30, 1968, 43/28523
Int. Cl. H04n *5/78*; **G11b** *5/48*
U.S. Cl. 178—6.6 DD **4 Claims**

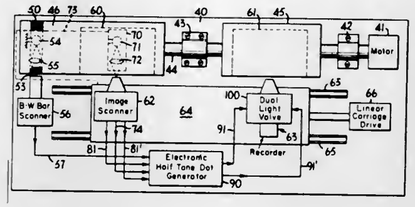


This is a system for magnetically recording and playing back video signals on a rotating disc-shaped or drum-shaped magnetic medium. A plurality of magnetic heads move alternately and intermittently in a predetermined cycle. The invention permits detection of feed initiation positions, feed completion positions, feed burst positions and feed reset positions of the magnetic heads.

3,646,262
ELECTRONIC REPRODUCTION OF CONTINUOUS IMAGE WITH CONTROLLED MODIFICATION OF IMAGE REPRODUCTION
William West Moe, Stratford, Conn., assignor to Printing Developments, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 625,038, Mar. 22, 1967, now abandoned. This application Mar. 25, 1968, Ser. No. 723,642
Int. Cl. H04n *5/84*
U.S. Cl. 178—6.7 R **36 Claims**

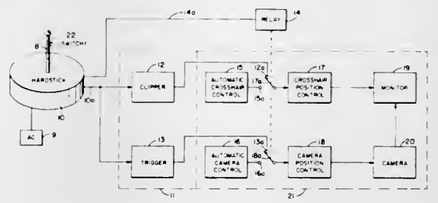
A tonal subject and a bar pattern are synchronously scanned to produce image and dot interval signals later combined to form a dot signal modulating by a light valve the width of a light beam synchronously scanning photosensitive film to expose a halftone image of the subject. Tone edges on the subject cause a shifting of the beam center transverse of

the scanning direction to sharpen such edges as reproduced. Type matter and picture matter may be respectively



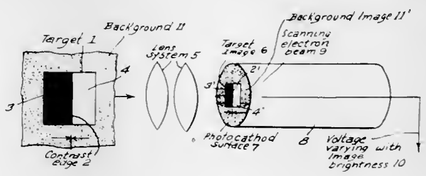
reproduced in full tone and half tone by appropriate manual or mask control of the scaling factor of the image signal.

3,646,263
SEMIAUTOMATIC TELEVISION TRACKING SYSTEM
Kilmer L. Hall, Decatur, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Jan. 4, 1971, Ser. No. 103,549
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **3 Claims**



Movable crosshairs on a television monitor are controlled by a circuit responsive to manual control, and a television camera is controlled by a circuit responsive to the same manual control. The crosshairs are centered on a contrasting target in the field-of-view of the television system in response to the manual control. The system is then switched to an automatic mode of operation, and moves the crosshairs and the camera to keep the crosshairs on the target, and the target centered in the field-of-view. A hardstick providing outputs directly related to the pressure applied thereto is the manual control.

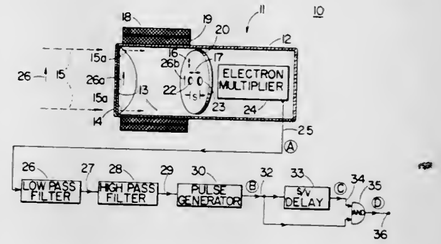
3,646,264
METHOD OF ACQUIRING A MOVING TARGET
John D. Waugh, Abingdon, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 11, 1969, Ser. No. 857,021
Int. Cl. H04n *7/00*
U.S. Cl. 178—6.8 **1 Claim**



In an electro-optical tracking system the target may be brighter than the minimum requirements for tracking but tiny and not large enough to be detected by the electro-optical device. The present method embodies defocusing the image so that it will appear larger and will fill enough of the field to be detectable.

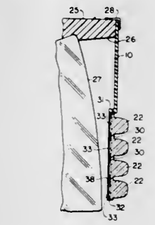
Also, an ordinary target may be faint against a certain type of background and therefore difficult to discern. The present method employs a target with a sharply defined edge between an extra-bright target area and an extra-dark target area. This makes the target discernable against any kind of background. And, more importantly, it makes it possible to accurately detect the edges or outline of one area of the target as sharply contrasted with another area. In a modification for tracking a source of light a mask over the lens provides the sharply defined edge used for high-precision tracking.

3,646,265
SYSTEM AND METHOD FOR DISCRIMINATING BETWEEN NOISE AND IMAGE SIGNALS
Edward H. Eberhardt, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Jan. 28, 1970, Ser. No. 6,629
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 **7 Claims**



An image dissector tube having a plurality of apertures thus providing a corresponding plurality of video signal pulses having a predetermined interval therebetween in response to a small input optical image as opposed to single random noise peaks in the output video signal. In the case of two apertures, the output video signal from the image dissector is delayed by substantially the interval between the paired video signal pulses and the delayed and undelayed signals passed to AND gate, thus providing a single output pulse in response to the paired pulses and supressing noise peaks.

3,646,266
TELEVISION ACTIVATED LIGHT DISPLAY
Jon M. Hassell, New York, N.Y., assignor to Lightyears, Inc., New York, N.Y.
Filed June 8, 1970, Ser. No. 44,156
Int. Cl. H04n *9/100*
U.S. Cl. 178—7.85 **7 Claims**



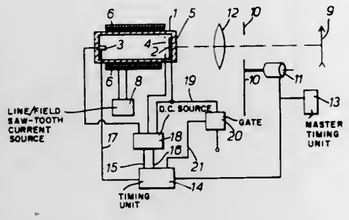
A closely spaced array of forward projecting convex lens elements larger than three-eighths inch in diameter are

mounted in an opaque screen which is placed over the picture tube of a television so that the lens elements provide a nonobjective light display.

3,646,267
CAMERA SYSTEM FOR PRODUCING A TEMPERATURE IMAGE

Michael Francis Tompsett, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England

Filed July 23, 1970, Ser. No. 57,681
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.2 **10 Claims**

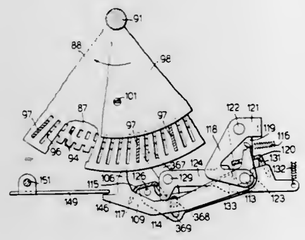


Electron discharge camera tube apparatus for translating into picture signals a temperature image includes a camera tube having an electrode of pyroelectric material upon which the image is interruptedly projected. The interruptions are sufficiently long to permit the temperature image last produced to cool substantially during an interruption. The electrode is scanned with both a high- and a low-energy ray. The output signal representative of the temperature image is derived from the low-energy ray during the interruptions.

3,646,268
CARRIAGE-SHIFTING ARRANGEMENT FOR TELEPRINTERS AND TERMINAL APPARATUS IN GENERAL

Giuseppe Ricciardi, and Bruno Sandrone, both of Ivrea (Turin), Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Mar. 3, 1969, Ser. No. 803,754
Claims priority, application Italy, Mar. 2, 1968, 50742 A/68
Int. Cl. H04l *15/34*
U.S. Cl. 178—25 **6 Claims**

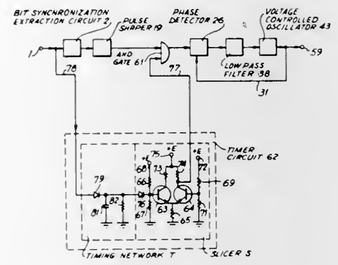


A carriage-shifting arrangement for a teleprinter or other terminal apparatus having a movable carriage. The shifting arrangement includes an actuating means controlled by a code combination for rendering a normally operative carriage shift mechanism inoperative and a normally inoperative carriage-tabulating mechanism including a series of tabulating stops operative, and for rendering at least one counterstop operative to selectively individually contact the tabulating stops for selectively arresting the carriage.

3,646,269
SYNCHRONIZATION CIRCUIT FOR RECEIVING AND REGENERATING TIMING SIGNALS IN A SYNCHRONIZED DIGITAL TRANSMISSION SYSTEM

Isao Fudemoto, Machida-shi; Kiyoshi Tomimori, Kawasaki-shi; Eiichi Nakamura, Yokohama-shi, and Yutaka Kimura, Kawasaki-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed June 18, 1969, Ser. No. 834,294
Claims priority, application Japan, June 25, 1968, 43/44068
Int. Cl. 328 *72;* **H04l** *7/04*
U.S. Cl. 178—69.5 R **5 Claims**

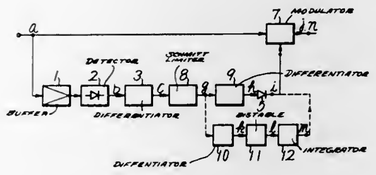


A control circuit couples the bit synchronization extraction circuit to the phase controlled oscillator of a synchronization circuit and transfers the synchronization component from the extraction circuit to the oscillator to control the phase of the oscillator when the signal-to-noise ratio of the synchronization component is at least at a predetermined level and prevents the transfer of the synchronization component to the oscillator to prevent phase control of the oscillator when the signal-to-noise ratio is below the predetermined level.

3,646,270
SOUND SYSTEM

Takeo Shiga; Michio Okamoto, and Osamu Kohsaka, all of Kawasaki-shi, Kanagawa-ken, Japan, assignors to Nippon Columbia Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 26, 1969, Ser. No. 861,406
Claims priority, application Japan, Sept. 30, 1968, 43/11014
Int. Cl. H04r *3/04*
U.S. Cl. 179—1 D **11 Claims**

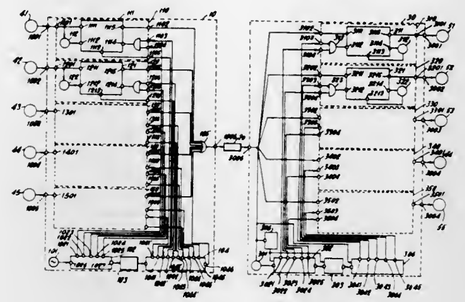


A sound system having means for producing an envelope from an original sound signal fed to a sound transmission system, means for detecting the leading edge of the envelope, and means for instantaneously changing the amplitude of the original sound signal by modulating the original sound signal based upon the shape of the leading edge of the envelope.

3,646,271
PCM RETIMING METHOD

Seiichiro Shigaki, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1970, Ser. No. 31,567
Int. Cl. H04j *3/06*
U.S. Cl. 175—15 BA **7 Claims**

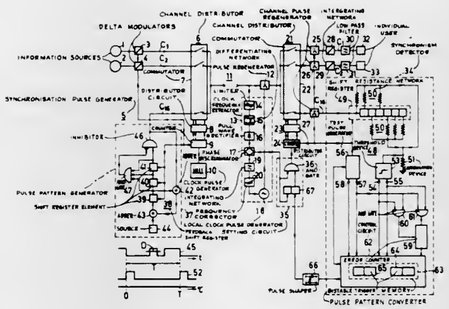


A time division pulse multiplex communication system is disclosed for multiplexing pulse signals that are not synchronized. Several code groups are rotatively used to determine the state of "stuff," which governs whether the digits in a message are increased (or decreased) by one to restore synchronization.

3,646,272
TIME DIVISION MULTIPLEX SYSTEM FOR THE TRANSMISSION OF SIGNALS BY MEANS OF PULSE CODE MODULATION

Malcolm John Kay, Lockeys, South Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1970, Ser. No. 34,817
Claims priority, application Australia, May 16, 1969, 55110/69
Int. Cl. H04j *3/02*
U.S. Cl. 179—15 AP **5 Claims**

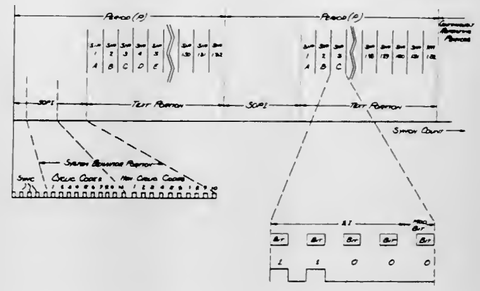


A transmission system for pulse code modulation uses time division multiplex with an improved synchronization system to provide very reliable signal synchronization even in the presence of a high degree of interference.

3,646,273
MULTIPLEX COMMUNICATION SYSTEM AND METHOD FOR MODIFYING SYSTEM BEHAVIOR

Mark T. Nadir, Warren, and Carl N. Abramson, Somerville, both of N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.

Continuation-in-part of application Ser. No. 861,947, Sept. 26, 1969. This application June 22, 1970, Ser. No. 48,096
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **42 Claims**

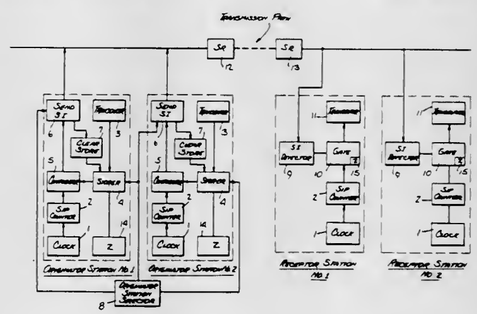


An adaptive system is provided which is flexibly responsive to system behavior information, such as instructions, reports, remote maintenance and traffic flow, command transmission or reception, and data modification. The presence or nature of the system behavior directives is indicated by signals inserted in a system behavior portion of each of a series of periods (P). These system behavior signals in turn operate to modify or change the implicit or explicit meaning of the signals inserted within discrete subperiods located in a text portion of the same period (P). Also, text information is sent by assigning message meanings individually to each of such discrete subperiods, and inserting into selected ones of such subperiods signals identifying receiving and/or sending members of the system. The receiving member, in response to the signals within both the text portion and the system behavior portion, derives the message meanings corresponding to the received subperiods and modifies its behavior accordingly.

3,646,274
ADAPTIVE SYSTEM FOR INFORMATION EXCHANGE

Mark T. Nadir, Warren, and Carl N. Abramson, South Boundbrook, both of N.J., assignors to Adaptive Technology, Inc., Piscataway, N.J.

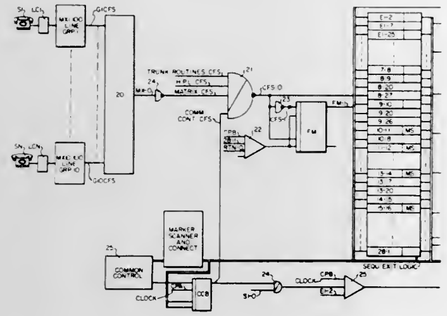
Filed Sept. 29, 1969, Ser. No. 861,947
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BA **64 Claims**



A distributed-control multiplex system is disclosed in which individual discrete subperiods within a repetitive period are assigned respective words or message meanings

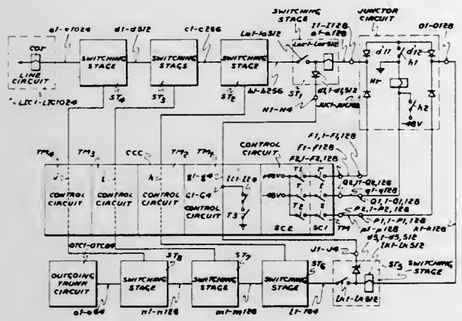
from the system vocabulary. Information transfer between stations occurs by inserting into the subperiod assigned to the desired word or meaning to be transmitted the address of the receiving and/or sending station.

3,646,275
BUSY PERIOD MARKER SPEEDUP SYSTEM
John R. Vande Wege, Glen Ellyn, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Sept. 25, 1970, Ser. No. 75,585
Int. Cl. H04q *3/48*
U.S. Cl. 179—18 E **3 Claims**



A telephone switching system matrix arrangement controlled by a marker to complete communication connections therethrough. That portion of the marker responsive to a call for service, is shown and a call for service test arrangement. This test circuit is effective to initiate the operation of other circuitry to accelerate the marker operation when a call for service is present at the time a marker is completing the servicing of a prior call by omitting certain operations thereof.

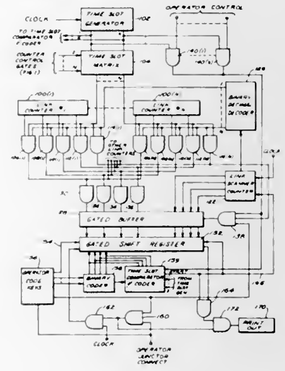
3,646,276
AUTOMATIC SWITCHING SYSTEM, SELECTING SYSTEM AND CHECK CIRCUITS
Andre Ernest Antoon Lauwers, Muizen, and Marcel Arthur Van Brussel, Hoboken, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.
Continuation of application Ser. No. 698,463, Jan. 17, 1968, now abandoned. This application Dec. 22, 1970, Ser. No. 100,762
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GE **1 Claim**



This case concerns a marker arrangement including a plurality of marker circuits built up as two-coordinate matrices and each grouping all the marking terminals adapted to mark pairs of distinct switching stages involved in the establishment of path of different types, e.g. path between junctor inlets and line circuits and between junctor outlets and outgoing trunks. Advantage: Gain of material

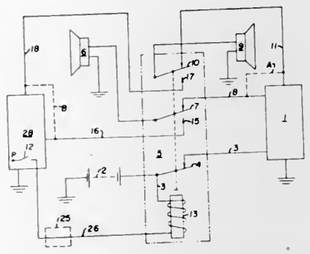
Simple code check circuits may be associated to the matrices. This case also discloses a selecting system and check circuits.

3,646,277
METHOD AND APPARATUS FOR IDENTIFYING PATHS THROUGH A SWITCHING NETWORK
Klaus Gueldenpfennig, and William Hastings, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,067
Int. Cl. H04m *3/22*; **H04q** *3/72*
U.S. Cl. 179—18 J **18 Claims**



A telephone system including a switching network wherein memory circuits are provided for each of the links in the switching network to identify and select cross-points for providing connections through the switching network. Each link that forms a portion of a connection through the network is assigned a time slot corresponding to that assigned to its connected junctor circuit. The cross-points in each connected link of a particular connection are identified by scanning the memory circuits of the links assigned to a common time slot.

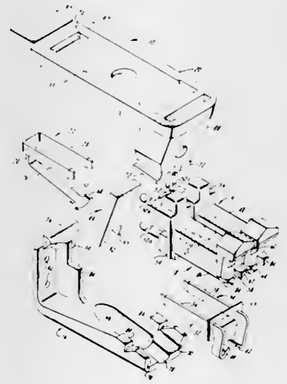
3,646,278
METHOD AND APPARATUS FOR AUTOMATIC SWITCHING OF RADIOS AND TAPE-RECORDERS
Rolf P. Panizzi, 5020 Hertel, Pierrefonds, Quebec, Canada
Filed June 8, 1970, Ser. No. 44,040
Claims priority, application Canada, Mar. 26, 1970, 078,505
Int. Cl. H04b *1/20*
U.S. Cl. 179—100.11 **20 Claims**



There is provided automatic switch means responsive to an audio output or an 'on' state of an audio unit for turning off

the power supply to another audio unit and concomitantly diverting or switching the output from the first-mentioned audio unit to the electrical-acoustic transducer which was previously supplied from the output of the second-mentioned audio unit. The invention has particular, but not inclusive, use in turning off an automobile radio when a tape-recorder is switched on and switching the outputs so that a common loudspeaker system may be used.

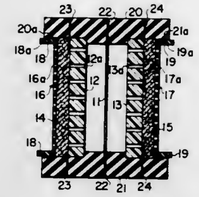
3,646,279
INDUCED MAGNETIC MOVING IRON STEREOPHONIC PHONOGRAPH PICKUP WITH REPLACEABLE STYLUS ASSEMBLY AND ONE COMMON POLE PIECE
Walter O. Stanton, Laurel Hollow, N.Y., assignor to Pickering & Company, Inc., Plainview, L.I., N.Y.
Filed Dec. 7, 1970, Ser. No. 95,562
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41K **7 Claims**



A stereophonic phonograph pickup of the magnetic type is disclosed wherein the stereophonic output is produced by an elongated tubular armature of permeable material pivotally mounted at one end for movement of its opposite end within a triangular cluster of pole pieces. The pole pieces form the terminal portions of two closed path magnetic circuits, each of which is completed through a core having a voltage-generating coil wound thereabout. One of the pole pieces forms a portion of a common leg for both circuits. Magnetomotive force is provided by a stationary permanent magnet, magnetically coupled with the pivotally mounted end of the armature. A capacitance device is coupled between the coils and an inductance device couples the magnetic circuits to minimize crosstalk.

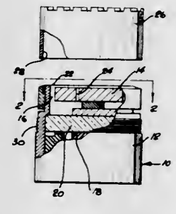
3,646,280
BACKPLATE FOR ELECTRET LOUDSPEAKER
Masahiko Tamura; Kiyonori Iwama, both of Tokorozawa; Mitsuo Asahina, and Kensuke Okuda, both of Tokyo, all of Japan, assignors to Pioneer Electronic Corporation, Ohtaku, Tokyo, Japan
Filed Aug. 26, 1970, Ser. No. 67,187
Claims priority, application Japan, Aug. 28, 1969, 44/67613
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 E **6 Claims**

An electrostatic electroacoustic transducer comprising a vibrating film, an electret having many small holes and a



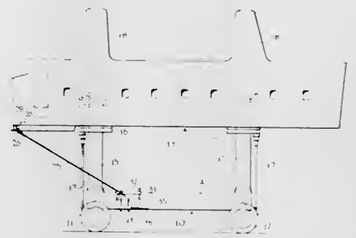
fixed electrode adhered closely thereto. The fixed electrode is made of an electroconductive fiber.

3,646,281
ELECTROSTATIC TRANSDUCER WITH VENTED DIAPHRAGM
Richard D. McGunigle, Fullerton, Calif., assignor to RdF West
Filed June 2, 1969, Ser. No. 829,522
Int. Cl. H04r *19/04*
U.S. Cl. 179—111 R **10 Claims**



An acoustic pressure transducer wherein a thin metallic diaphragm is mounted in close proximity to a backplate and electrically insulated therefrom to form a capacitor which is variable in capacity in response to variations in acoustical pressure, and at least one capillary aperture is effected through the diaphragm to thereby reduce differentials in static air pressure on opposite sides of the diaphragm.

3,646,282
VEHICLE CONTROL LINE CONNECTIONS
James M. Herring, Jr., Merion Station, Pa., assignor to Boothe Airside Services, Inc.
Filed Dec. 29, 1969, Ser. No. 888,700
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **7 Claims**



This application discloses control line connections between a chassis and an elevatable body thereon wherein the line terminals on chassis and body are spaced laterally relative to

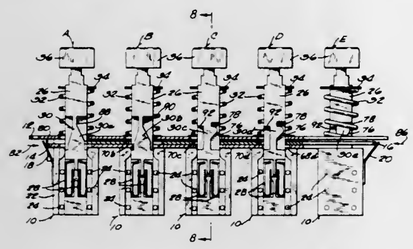
each other and wherein flexible control lines between terminals are supported on rigid bar or beam means which at one end has lateral movement relative to the adjacent terminal to accommodate vertical body movements with minimum flexing and fatigue of the control lines.

3,646,283

MULTISTATION PUSHBUTTON SWITCH ASSEMBLY WITH MASTER CONTROL MEANS FOR ALTERNATIVE PUSH-PUSH OR ONLY ONE SWITCH OPERABLE AT A TIME MODES OF ACTUATION

Eric George Hansen, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Apr. 20, 1970, Ser. No. 29,858
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 EB **14 Claims**



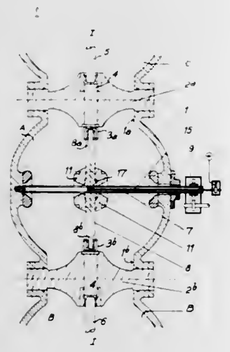
A multistation or ganged modular pushbutton switch assembly including a plurality of switch modules having a slider bar with a cam section and a push-push actuation mechanism thereon and separate latch bars cooperating with the cam sections so that some of the modules acting as operating modules can be controlled by master switch modules to have either a push-push action, momentary action or are interlocked so that one must be actuated to deactuate the other.

3,646,284

HIGH-VOLTAGE CIRCUIT BREAKERS

Yves Bokshorn, Villiers, and Jean-Pierre H. Boudiak, Gagny, both of France, assignors to COQ-France, Pantim, France

Filed Jan. 15, 1971, Ser. No. 106,811
Claims priority, application France, Jan. 14, 1970, 7001182
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **10 Claims**



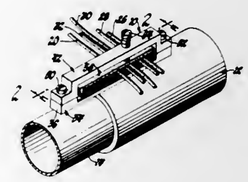
A disconnecting means for very high-voltage electrical installations, comprising a metallic enclosure for containing dielectric fluid, at least two electrical contact members each connected through insulating crossmembers to an exterior conducting element of the circuit to be disconnected, at least one earthed contact jaw, and a movable connecting element adapted to interconnect the two contact members of said circuit in one of its positions and of being earthed in another position, characterized in that said movable element carries a metallic guard part with which it is in permanent electrical connection, said guard part, when the moving element is earthed, automatically and jointly with the movable element assuming the role of a protective screen at earth potential, by being interposed between the contact members.

3,646,285

CONDITION-MONITORING ELECTRICAL SWITCH

Robert C. Farrell, Saginaw, and Thomas J. Milton, Bay City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,906
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.08 **3 Claims**



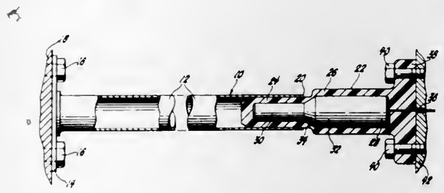
An electrical switch adapted to monitor relative axial movement between the first member and a second member, the switch including an electrically nonconductive housing supporting a plurality of electrical conductors, a first sliding block having a ramp surface thereon mounted on one of the first and second members, a bus bar mounted on the first sliding block and having piercing elements thereon, and a second sliding block having a ramp surface thereon in sliding engagement with the ramp surface on the first sliding block, the second block being rigidly connected to the other of the first and second members. In response to relative axial movement between the members, the second sliding block wedgingly moves the first sliding block to a position wherein the piercing elements breach the housing and simultaneously contact each conductor so that an electrical potential on any one conductor is applied to all of the conductors.

3,646,286

SHEARING CONTACT SWITCH

Sanford L. Maddy, Middletown, and Jackson R. Templin, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1971, Ser. No. 124,324
Int. Cl. H01h *9/00*
U.S. Cl. 200—61.08 **4 Claims**



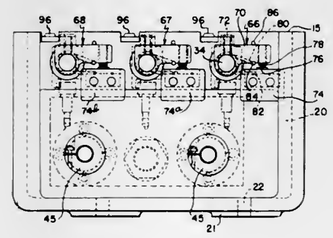
A switch for closing an electrical circuit upon relative movement of a pair of members includes a hollow cylindrical tube mounted adjacent one end to one of the members. The other end of the tube is provided with a sharpened edge. A support member of shearable insulating material is mounted to the other member and includes a first cylindrical portion receiving and piloting the free end of the tube and a second adjacent cylindrical portion of larger diameter. In one embodiment, a second contact member includes a first cylindrical portion embedded within the first portion of the support member and a second larger cylindrical portion embedded within the second portion. Upon relative movement of the members, the sharpened edge of the tube shears off the outer layer of the second portion and engages the second portion of the second contact member to close a circuit across a source of power. In another embodiment, a rod extends through both portions of the support member and spaced contacts are embedded within the second portion in the path of movement of the tube for electrical contact thereby when the tube shears off the outer layer of the second portion of the support member.

3,646,287

MICROSWITCH OPERATOR STRUCTURE INCLUDING ADJUSTABLE CAM FOLLOWER

Lawrence E. Beal, Wadsworth; Earl D. Miller, Tallmadge, and William R. Craig, Akron, all of Ohio, assignors to Eagle-Picher-Industries, Inc., Cincinnati, Ohio

Filed Apr. 3, 1970, Ser. No. 25,356
Int. Cl. H01h *3/00*
U.S. Cl. 200—18 **12 Claims**



A switch bank adapted for controlling the operation of multiple switches each of which is adapted to control multiple electrical circuits. The bank includes a plurality of adjustable switch actuators which are preset at a predetermined linear distance from a common reference point. Each actuator is capable of being preset independently of the other actuators. A movable member progressively operates the actuators, whereby the circuits controlled by the respective switches can be operated in accordance with a prearranged plan.

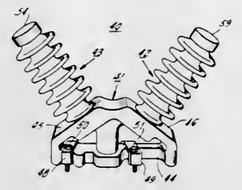
3,646,288

DISCONNECT SWITCH UTILIZING INSULATING BASE HAVING INTEGRALLY FORMED INSULATOR BUSHINGS

Robert E. Perry, Scottdale, and Eugene Gorin, Greensburg, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 31, 1970, Ser. No. 68,108
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **7 Claims**

A hook disconnect switch having a base member formed of an insulating material and insulator units integrally joined thereto. Two insulators are aligned at an angle relative to one another and support the jaw and pivoting end of a switch blade. The orientation of the insulators significantly reduce cantilever forces imposed by horizontal incoming lines upon the insulators. The base member provides a means for rigidly positioning and supporting the hook switch assembly, as well as enhancing the dielectric strength of the insulators. The design and orientation of the insulators further reduce overall



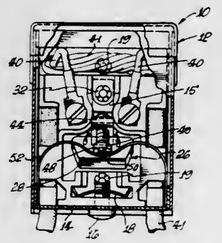
switch size and considerably reduce the effect of contamination for all mounting positions of the switch.

3,646,289

DEVICE RESPONSIVE TO MOTION AND TAMPERING

Burnie M. Craig, Pasadena, Calif., assignor to Paramount Industries, Paramount, Calif.

Filed May 8, 1970, Ser. No. 35,641
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.47 **4 Claims**



A device to be mounted on a fence, or other structure, and adapted to switch a circuit, such as an alarm circuit, in response to excessive motion of the fence and/or in response to tampering with the device in an effort to inactivate it. The device includes a housing having a removable closure and containing a single, normally closed switch connected in an alarm system, means responsive to removal of the closure for opening the switch to actuate the alarm system, and means responsive to excessive motion of the housing for opening the switch to activate the alarm system.

3,646,290

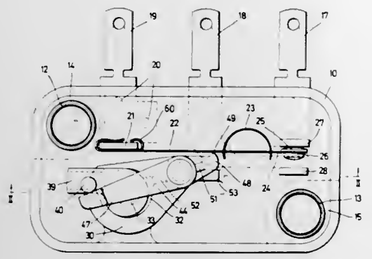
MICROSWITCH WITH PIVOTAL MICROCONTACT ACTUATOR

Wilhelm Peter Borgmann, Overath, Germany, assignor to W. P. Borgmann KG, Kreuzfahrerstr. 14, Overath, Germany

Filed May 22, 1970, Ser. No. 39,746
Claims priority, application Germany, May 23, 1969, G 69 20 813.5
Int. Cl. H01h *13/36*
U.S. Cl. 200—67 D **19 Claims**

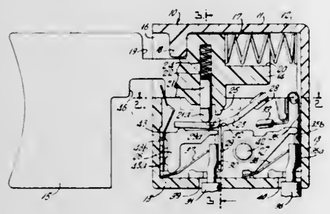
A microswitch having a microcontact operated by an actuating lever pivotally mounted to engage an overcenter snap-type switch arm which carries the movable contacts of the switch. A drive shaft extends through a nonlubrication requiring plastic bearing mounted in the casing and is rotated by an operating arm fixed to the drive shaft high-voltage pivotally between motion limiting stops on the outside of the casing. A cam connected to the inner end of the drive shaft engages one end of the actuating lever to pivot the lever against the overcenter snap arm to cause the contacts to switch. The elements of the switch are mounted in a two part

casing held together by rivets and having electrical connecting lugs molded or otherwise embedded in the insulating material of the casing. The casing is enlarged at strategic



places and the components are so arranged that the danger of flashing and tracking is substantially eliminated even when the switch is used for high voltage operation.

3,646,291
TEASE-PROOF ELECTRIC SWITCH
Wolfgang F. Bienwald, Huntington Station, and William J. Bowie, Flushing, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,376
Int. Cl. H01h *13/36, 13/08*
U.S. Cl. 200—70 **9 Claims**

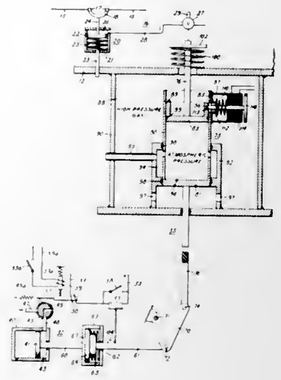


The invention relates to a tease-proof electric switch in which the switch contacts cannot be partially opened or closed by manipulation of the mechanism. The switch employs a contact-carrying rocker which moves positively between open and closed positions of the switch under the influence of forces exerted thereon by an operating member.

Movement of the rocker between open and closed positions of the switch is restrained by a releasable latch. Opening and closing of the switch contacts takes place upon release of the latch from engagement with the rocker as the result of forces exerted on the rocker by the operating member. Opening and closing of the switch contacts also takes place positively and quickly with arcing being held to a minimum.

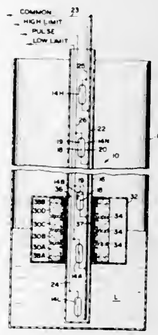
3,646,292
HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER WITH HIGH-SPEED TRIPPING MEANS
Philip Barkan, and Joseph W. Porter, both of Media, Pa., assignors to General Electric Company
Filed May 11, 1970, Ser. No. 36,288
Int. Cl. H01h *35/38, 33/82*
U.S. Cl. 200—82 B **12 Claims**

Discloses a high-voltage circuit breaker comprising a control device at high potential operable to produce separation of the usual contacts of the breaker, an operator at ground potential for operating the control device, and a linkage mechanically connecting the operator and the control device. The linkage comprises a releasable coupling at a location of substantially line potential that is releasable to allow the control device to be operated independently of the operator.



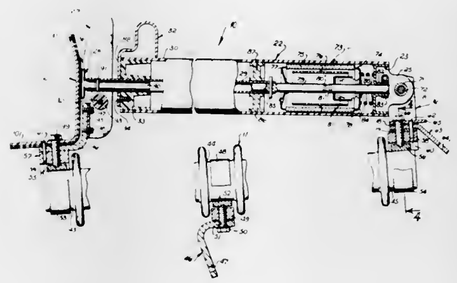
Latch means normally prevents coupling-release but is operable in response to predetermined electrical conditions to release the coupling and allow high-speed operation of the control device before the operator operates.

3,646,293
ELECTRICAL SIGNAL GENERATOR AND LIQUID LEVEL INDICATOR
William A. Howard, 6666 Solon Boulevard, Solon, Ohio
Filed Apr. 6, 1970, Ser. No. 25,818
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 C **17 Claims**



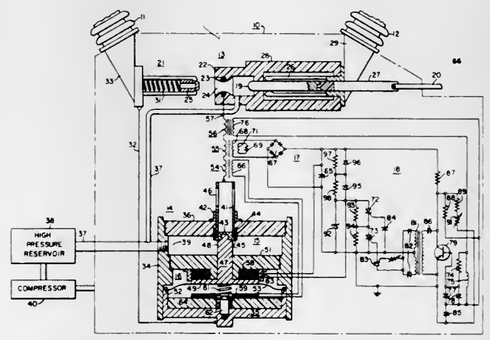
One or more magnetically operable switches are each actuated a plurality of times by a series of actuating magnets moved past the switch or switches. The switches generate signals indicative of the movement of the magnets. A surface of each magnet that moves past the switch or switches includes a north and south pole portion, and like poles of successive magnets are adjacent each other to open the switches as well as close them under magnetic force. At each end of the series of switch-actuating magnets there is a magnet of lesser strength that constrains the field of each end magnet to a zone substantially equal to that of the intermediate magnets and prevents premature actuation of a switch as the magnets approach. A preferred circuit produces a separate electrical pulse each time a switch is opened and each time it is closed. In a particular application of the mechanism, the magnets are carried by a float in a liquid-containing vessel past stationary switches as the liquid level changes. Pulses produced by the switches indicate the position of the float.

3,646,294
SWITCH
George Randall McCloud, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,023
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **13 Claims**



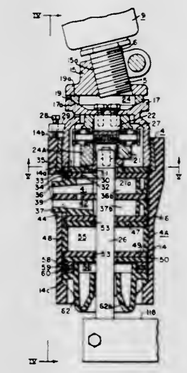
A loadbreak switch which can repeatedly open and close a circuit to a load for 200 operations or more at a current of 300 amperes or more and at a voltage of 13,000 volts or more. The switch includes two conductors connected from two fixed terminals. An arm is pivoted from one terminal and has a contact at its free end to engage the other terminal. The contact is mounted on the end of a shaft slidable in the arm. A vacuum interrupter is mounted in the arm in a position to be actuated and deactuated by axial movement of the shaft relative to the arm. The interrupter breaks before the contact breaks and makes after the contact makes. Since the interrupter is normally actuated and deactuated axially, the switch is uncomplicated, inexpensive, requires few parts and is compact.

3,646,295
SYNCHRONOUS CIRCUIT INTERRUPTER
Robert Ray Circle, Woodbridge, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,206
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 J **7 Claims**



In a circuit breaker, main current carrying contacts are in parallel with secondary or synchronous interrupter contacts, and an isolating switch is in series with both the main contacts and the synchronous interrupter. The synchronous interrupter is switched into the circuit when the main contacts open and interrupts the current at a current zero after the opening of the main contacts. The synchronous contacts are operated by electrodynamic drive means controlled by a current zero anticipator of a static type. The synchronous contacts can be small and light to facilitate synchronous operation since they carry the fault current only for the time between the opening of the main contacts and interruption of the fault.

3,646,296
CIRCUIT INTERRUPTER GRID STRUCTURE FOR OIL-BREAK CIRCUIT INTERRUPTER
Robert L. Hess, E. McKeesport, and Gerald D. Summers, Greensburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1968, Ser. No. 703,410
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R **13 Claims**

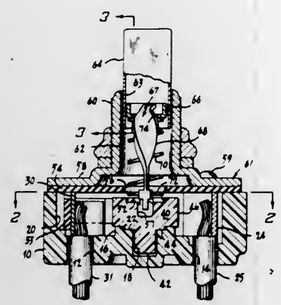


An oil-type circuit breaker has three poles provided in a unitary tank structure, each pole comprising a pair of serially related grid structures. The grid structures are constructed by nesting a plurality of plate elements, constituting vent passages and oil pockets, within an outer cylindrical glass-filament-wound shell. The stationary contact assembly is so arranged as to have a lengthened finger, which serves as an arcing horn disposed adjacent side lateral vent openings. The vent openings are formed by molded vent elements of particular materials and having a splitter plate interposed therebetween. Additional oil pockets and a lower oil-pocket plug, having an entrance opening, assist in guiding the movable contact rod, and additionally providing considerable turbulence within the oil during the opening operation.

3,646,297
PUSH SWITCH, ESPECIALLY FOR AC USE
Walter H. Anthony, Levittown, Pa., assignor to Circle F Industries, Inc.
Filed July 16, 1970, Ser. No. 55,309
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 LB **2 Claims**

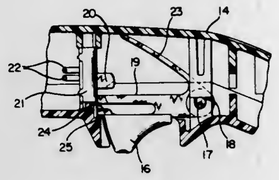
A push switch in which there is step-by-step advancement of a rotary cam. The cam configuration acts on a movable contact to effect a fast-make, slow-break action. Cooperating ratchets on the cam and switch body index the cam and have a shape that builds in a "time tolerance" such that the indexing of the cam need not coincide perfectly with the drop-off of the movable contact to the "make" position. A coil spring

incorporated in a motion translating mechanism between the button and cam is placed under added compression when the



indexing ratchets approach coincidence, accelerating the "-fast make."

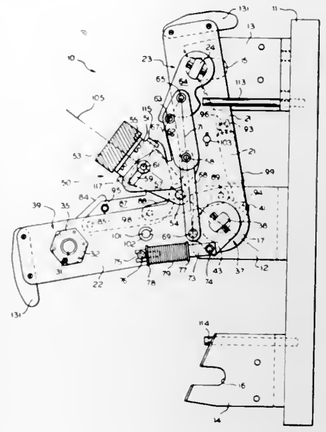
3,646,298
SWITCH OPERATING TRIGGER WITH INTEGRAL BIASING MEANS AND EXCESSIVE FORCE PROTECTION MEANS
Edwin J. Weber, Baltimore, and Roderick F. Bunyea, Cockeysville, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 25, 1970, Ser. No. 66,830
Int. Cl. H01h *3/48, 9/06*
U.S. Cl. 200—157 **4 Claims**



A grass trimmer having an electric motor, a rotary blade, a handle extending from the motor, and a trigger switch in the grip portion of the handle. The trigger switch includes an ON-OFF switch for applying power to the motor and a trigger member. Integral with the trigger member is a resilient extension which abuts a fixed surface in the handle to provide a force biasing the trigger in the off direction to provide an improved "feel" for the operator and providing safer operation by avoiding a hair trigger effect.

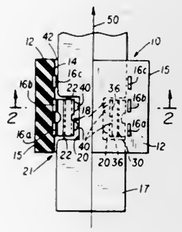
3,646,299
POLE MECHANISM FOR DOUBLE-THROW PRESSURE CONTACT SWITCH
Manfred Stene, Chicago, Ill., assignor to Erickson Electrical Equipment Co., Chicago, Ill.
Filed Aug. 27, 1970, Ser. No. 67,524
Int. Cl. H01h *1/38*
U.S. Cl. 200—162 **6 Claims**

A pole mechanism for a double-throw pressure contact switch comprising a V-shaped movable contact member pivotally mounted on a center terminal, the two blades of the movable contact member being engageable with respective end terminals. A unified actuating means, comprising a main actuating lever and two sets of overcenter biased toggle linkages, is employed to throw the switch and to clamp the blades to the switch terminals whenever the switch is fully thrown. The motion of the actuating lever is along a simple, continuous path. Each toggle linkage includes a lost-motion



connection to permit effective operation of the blade clamps by one linkage without breaking the other toggle.

3,646,300
CONTACT SWITCH
Noboru Manabe, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1970, Ser. No. 26,934
Claims priority, application Japan, Nov. 19, 1969, 44/109811
Int. Cl. H01h *1/46, 1/50*
U.S. Cl. 200—166 D **9 Claims**

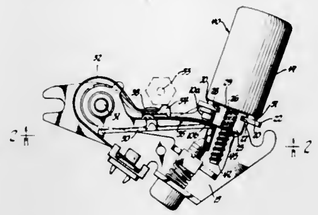


An electrical switch having fixed contacts with which a movable contact is adapted to selectively engage as the switch is actuated. The movable contact is so constructed and so mounted in a recess in a carrier therefor that misalignment or tilting of the carrier will not significantly affect engagement between the contacts.

3,646,301
IGNITION DISTRIBUTOR BREAKER CONTACT SET
Gerald O. Huntzinger; Lewis R. Hetzler, and Jackson R. Templin, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 39,704
Int. Cl. H01h *1/00, 19/28*
U.S. Cl. 200—166 BH **7 Claims**

An ignition distributor breaker contact set. One breaker contact is secured to a slotted tab extending substantially normal to a support member and the other breaker contact is secured to a pivotally mounted breaker arm which is operable to place the breaker contacts into electrical contact en-

gagement. An elongated strip of electrically conductive material having a longitudinal slot which provides breaker arm and breaker contact clearance extends substantially parallel to the breaker arm from a point on the breaker arm between the pivot and the breaker contact at which one end is electrically connected to the breaker arm and terminates adjacent an opening through an insulating member located in



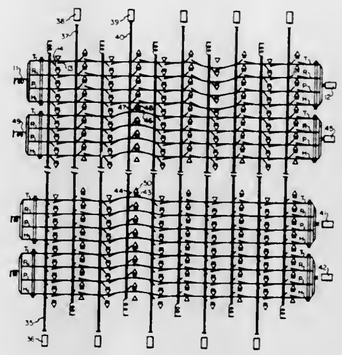
the slot of the tab. The outer conductive casing of a capacitor which provides one electrical terminal therefor is in electrical contact with one face of the tab and a center conductive post providing the other electrical terminal therefor extends through the opening through the insulating member and is electrically connected to the other end of the elongated strip of electrically conductive material.

3,646,302
ELECTRIC LAMP REPLACEMENT CORD WITH DELAY ACTION SWITCH
Herbert G. Lehmann, 5 Kent Road, Easton, Conn.
Filed July 6, 1970, Ser. No. 52,614
Int. Cl. H01h *43/00, 1/50*
U.S. Cl. 200—168 E **12 Claims**



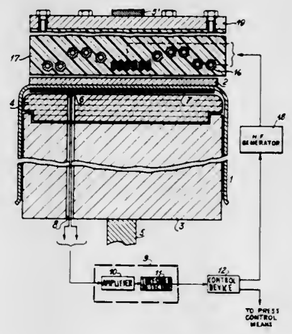
A quick replacement automatic slack takeup electric cord for small appliances such as lamps, radios and the like, comprising a length of two-conductor plastic lamp cord which is preferably coiled and semipermanently set in a helix, one end of the lamp cord having attached to it a convention two-prong electric plug adapted to be inserted in a wall receptacle. The other end of the two-conductor cord carries and extends into one end of a special elongate receptacle or housing having a socket or recess at its other end, opposite the entrance of the two-conductor cord. The special receptacle has a pushbutton switch and a flat base, the latter enabling it to be supported on a table surface. Within the special receptacle are two metal connector pieces having sharp prongs which are located at the inner end of the socket. The socket is of substantially oblong cross-sectional configuration whereby it is adapted to receive the freshly cut end portion of the original, somewhat flat electric cord from the lamp, which cord has been cut through with a scissors close to the lamp base. The receptacle also has a manually operable lever which is adapted to force the said cut end of the appliance cord laterally against the prongs, causing the latter to pierce the insulation of the appliance cord and to make electrical connections thereto. The switch of the special receptacle has a time delay device which delays the shutoff of the lamp. When the user switches off the lamp, a delay of several moments is experienced before circuit is opened.

3,646,303
CONTACT ARRANGEMENT IN COORDINATE SWITCHES
Bloomfield J. Warman, Milan, Italy, assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed July 16, 1970, Ser. No. 55,503
Int. Cl. H01h *67/02*
U.S. Cl. 200—177 **5 Claims**



Multiple bars, arranged in rows and columns, extend through different banks of a switch assembly and comprise fixed contacts to be engaged directly by adjacent movable contacts. The movable contacts extend from the faces of conductive flexible strips that are suspended between rows of the multiple bars. Operation of a first actuator flexes the contact strips of a selected column of a switch bank toward respective multiple bars, and operation of a second actuator moves the flexible strips of selected rows longitudinally such that detent prongs near respective selected contacts function as inclined planes to complete engagement of the selected contacts. Each selected contact is held closed as long as only the second actuator is operated.

3,646,304
INDUCTIVELY HEATING BRAZING PRESS
Bernard Dallet, Savigny-sur-Orge; Jacques Doucerain, Paris, and Jean Moulin, Ris-Orangis, all of France, assignors to Societe de Traitements Electrolytiques et Electrothermiques (S.T.E.L.)
Filed July 13, 1970, Ser. No. 54,250
Claims priority, application France, May 14, 1970, 7017658
Int. Cl. H05b *5/00*
U.S. Cl. 219—6.5 **3 Claims**



A mandrel, to hold the article to be heat treated and pressed, for example to hold a workpiece to form a cooking utensil, to which a bottom of highly heat-conductive material

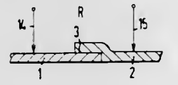
is to be applied, has a longitudinal opening formed therein through which a thermal-electric transducer, for example a thermocouple can be inserted, and its connections taken off, or, through which heat at the plate itself can be measured by infrared radiation. The thermocouple is connected to the control apparatus for the heater to cut application of electrical energy to an induction heater when tee heat at the interface of the mandrel, or an inserted thin heat-conductive sensing plate exceeds a predetermined value.

3,646,305

PROCESS FOR REDUCING TRANSITION RESISTANCE BETWEEN TWO SUPERIMPOSED, CONDUCTING LAYERS OF A MICROELECTRIC CIRCUIT

Martin Schmidtke; Winfried Ruttenauer, both of Munich; Reinhold Penzl, and Brigitte Vollmer, both of Starnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 25, 1969, Ser. No. 845,004
Claims priority, application Germany, Aug. 27, 1968, P 17 90 023.1
Int. Cl. B23k *11/00*
U.S. Cl. 219—50 3 Claims





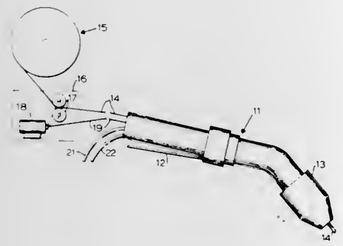
A method for reducing transition resistance between two superimposed conducting layers of a multilayered microelectronic circuit, in which there is applied to the two conducting layers an electrical energy having a magnitude below that causing a destruction of the conducting layers involved, such energy preferably comprising a potential within the range of 1 to 20 volts derived from an energy source comprising a charged electrical capacitor.

3,646,306

ARC GOUGING SYSTEM

Edwin W. Olds, 3105 High Street, Oakland, Calif.

Filed Apr. 24, 1970, Ser. No. 31,607
Int. Cl. B23k *9/16*
U.S. Cl. 219—70 1 Claim



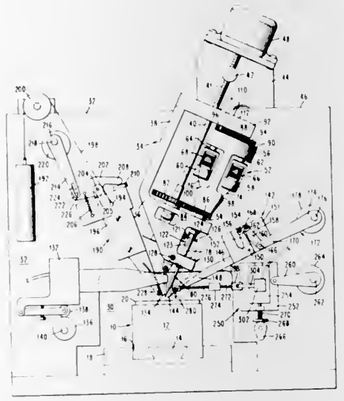
An air arc gouging system having means continuously feeding a thin walled tube filled with finely divided graphite as a flexible electrode into an arc to a workpiece and means directing gas at a high velocity on to the workpiece at the arc. A substantial length of electrode is coiled or wound as upon a drum for extended continuous gouging operations.

3,646,307

WIRING APPARATUS

Herbert K. Hazel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,033
Int. Cl. B23k *1/06, 9/12, 11/10*
U.S. Cl. 219—80 15 Claims



Apparatus for automatically bonding wires to spaced terminals has forming means for moving the end of a length of wire into a bonding position with the end thereof presented between the jaws of a clamping and pulling means which clamps the wire end during a bonding and then pulls the wire to break off a portion thereof beyond the bond, the forming means being also used to determine the shape and height of staples between bonds. A stripper removes the insulation from the portion of wire to be bonded. For bonding paired wires simultaneously to a terminal pad and a ground grid, the apparatus includes a spreader which positions both wires accurately in bonding grooves of a bonding tip and a twister for twisting the paired wires between bonds.

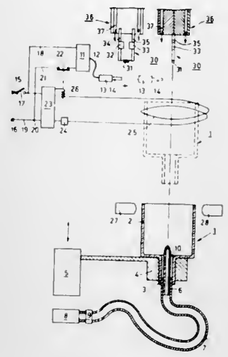
3,646,308

METHOD OF HEATING A HOLLOW ARTICLE

Raymond Francois Spiessens; Leffert Schuringa, and Ghislain Felix Alfons Arthur Verboven, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1970, Ser. No. 51,949
Claims priority, application Netherlands, July 9, 1969, 6910497
Int. Cl. H01j *1/90*
U.S. Cl. 219—121 P 10 Claims

The invention relates to a method of deforming a portion of a hollow article with the aid of a plasma burner in such a manner that the section between the inner and outer walls is completely heated above its softening point.

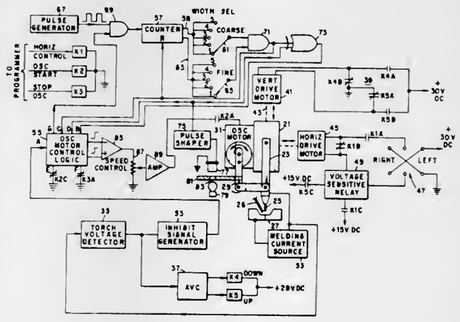


3,646,309

SELF-ADAPTIVE WELDING TORCH CONTROLLER

Carl M. Smith, Jr., Knoxville, and William R. Miller, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 26, 1971, Ser. No. 109,867
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 PL 8 Claims



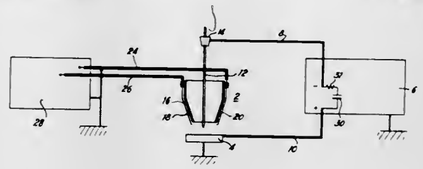
A fully automatic, self-adaptive welding system has been provided for programmed welding applications. The welding torch position, either vertically or horizontally, is generally responsive to a signal proportional to the work-to-torch spacing as well as certain other signals including pulses used to control the oscillation of the torch across the weld area. Control of the torch oscillation is, in part, supplied by the spacing signal. Use of the system ensures welds of high quality as to weld tie-in, conformity to vertical or horizontal irregularities in the parts, and thickness.

3,646,310

HIGH-FREQUENCY STARTING DEVICE FOR AN ELECTRIC WELDING ARC

Jean Manethou, Montsoult, France, assignor to L'Air Liquide Societe Anonyme Pour E'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed June 22, 1970, Ser. No. 47,970
Int. Cl. B23k *9/10*
U.S. Cl. 219—135 4 Claims



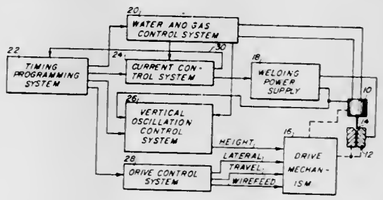
A device for starting an electric arc welding torch. To the nozzle of the torch are attached two auxiliary electrodes energized by a high-frequency electric current generator through coaxial cables. There is no electric connection between the welding electrode and the auxiliary electrodes.

3,646,311

METHOD AND APPARATUS FOR VERTICAL TORCH OSCILLATION INVERSELY TO CURRENT MAGNITUDE

James A. Cameron, Niantic; Joseph Lanzafame, Gales Ferry, both of Conn., and Leonard E. Mann, Woodridge, Ill., assignors to General Dynamics Corporation, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 804,332
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 4 Claims



A process and system for welding of the tungsten inert gas (TIG) type is described. A welding torch is mounted on a mechanism which provides for motion of the torch with respect to the work (a pipe being welded) in three different directions. Movement in each direction is electronically controlled so as to obtain preset magnitudes of oscillation of the torch, both vertically and laterally with respect to the work. The vertical oscillation is provided by following the pulsating arc current in accordance with a preselected control function. In addition, the system and process provides for control of substantially all of the parameters affecting the formation of the weld in order to produce improved weldments.

3,646,312

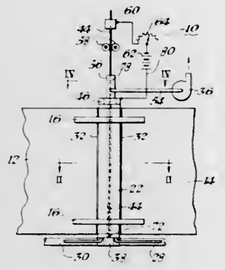
ELECTRODES FOR WELDING AND THE LIKE

Harold Edward Cable, Thornburg, and Herbert Edward Cable, Pittsburgh, both of Pa., assignors to Weld Tooling Corporation, Pittsburgh, Pa.

Original application Nov. 21, 1971, Ser. No. 684,845, now Patent No. 3,535,490, dated Oct. 20, 1970. Divided and this application Sept. 1, 1970, Ser. No. 68,733
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 3 Claims

Welding electrodes are disclosed including an elongated ribbon or strip coated with insulating and fluxing material for

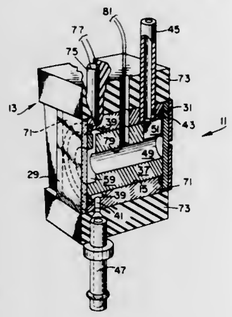
close-fitting insertion in a gap between conductive plates or other shapes to be welded. The width of the electrode strip is substantially the same as the thickness of the members to be joined, while the thickness of the electrode is substantially equal to the width of the gap so that the gap is substantially filled when the electrode is inserted endwise through the gap. Very little electrode length need be subsequently inserted into the gap as welding proceeds to compensate for flux coating displacement and gap clearances. The electrode is coated with a glasslike or ceramic fluxing material having (e.g. for welding steel) a melting point above 900° F. The coating is a strong dielectric at lower temperatures but exhibits fluxing characteristics when molten at higher temperatures. The dielectric flux can be applied by dipping, spraying or painting, or by applying a sleeve of woven, matted or wrapped glass or glasslike fibers.



3,646,313
TEMPERATURE CONTROLLED FLOW CELL

Robert L. Gorgone, and Robert J. Emary, both of Oberlin, Ohio, assignors to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Filed Apr. 8, 1970, Ser. No. 26,510
Int. Cl. H05b *1/00*
U.S. Cl. 219—200 **14 Claims**

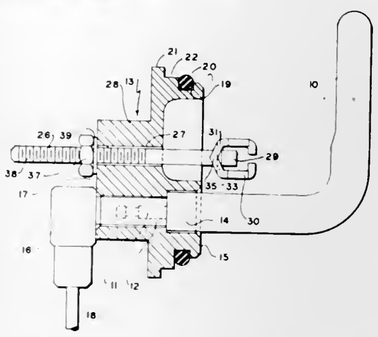


A fluid sample flow cell is constructed with a thermistor junction intimately positioned next to the sample analysis chamber which is in a cell block that has high-thermal conductivity and is provided with electrical heating elements. Electronic controls coupled to the thermistor junction and heating elements enable the fluid sample to be maintained at a precisely regulated temperature.

3,646,314
ELECTRIC ENGINE COOLING JACKET HEATER

Lynne E. Windsor, 251 Beaverbrook St., Winnipeg, Manitoba, Canada

Continuation-in-part of application Ser. No. 833,650, June 16, 1969, now abandoned. This application Mar. 15, 1971, Ser. No. 124,176
Int. Cl. B60l *1/02*
U.S. Cl. 219—208 **1 Claim**

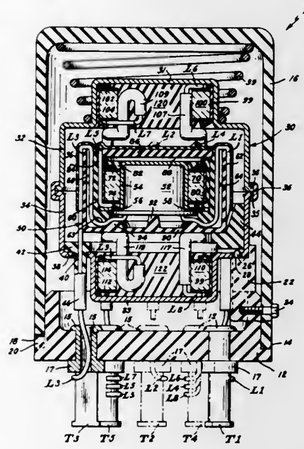


A block heater having a substantially cylindrical adapter plate with a sealing ring enabling same to be engaged within a frost plug aperture. A swivelable bridging member is secured to the end of a capscrew extending through the adapter plate so that the bridging piece can be tilted when the adapter plate is being inserted and then assumes a position parallel to the adapter plate when the capscrew is tightened thus clamping the heater into the frost plug aperture. The screw is long enough to permit the nut to be "backed off" so that axial and rotational movement of the screw and bridging member will enable the heater to be positioned properly in the frost plug aperture.

3,646,315
SELF-REGULATED HEATING DEVICE

Leo Marcoux, Pawtucket, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1967, Ser. No. 692,004
Int. Cl. H05b *1/00*
U.S. Cl. 219—210 **10 Claims**



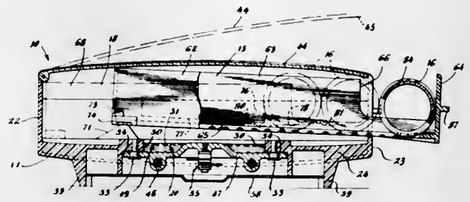
Apparatus for providing a relatively constant ambient for temperature sensitive devices in which an inner oven, adapted to hold such devices, containing a heating element

formed of material having a steep-sloped positive temperature coefficient of resistance (hereinafter referred to as PTC) above a threshold or anomaly temperature is placed within an outer oven containing at least one heating element formed of PTC material having a lower threshold or anomaly temperature than that of the inner oven's heating element. These heating elements also act as their own temperature regulators. The preferred embodiment employs a single toroidal PTC element located about a component mounting can. Leads connected to this heating element and the component leads are guided along the sidewalls of the electrically insulating housing of the inner oven. The entire inner oven is mounted in a heat conductive shell in which are fitted in recesses at two opposite ends toroidal PTC elements. Leads connected to the outer oven heating elements and the other leads are threaded through guide members placed in aligned apertures in the outer oven shell and are connected to terminals mounted in a base. The heating elements are locked in place by electrically insulating potting material. The heating elements are electrically connected in parallel.

3,646,316
PORTABLE ELECTRIC APPLIANCE FOR STEAMING HAIR ROLLERS

Michael J. Volosin, Bridgeport, and Theodore R. Flowers, Fairfield, both, Conn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,943
Int. Cl. A45d *4/16;* **H05b** *1/00*
U.S. Cl. 219—222 **13 Claims**



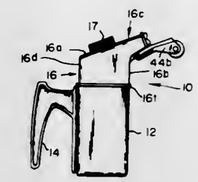
A portable electrical appliance for heating and moistening hair rollers by steam comprising a casing having a compartment therein provided with steam-generating means and wherein the rollers are disposed in a drawer mounted for movement into and out of the compartment relative to the steam-generating means. Means are also provided within the compartment to stop the drawer after partial movement outwardly of the compartment whereby the rear portion of the drawer is raised and the forward portion of the drawer exposed outwardly of the compartment, is lowered. In this manner the rollers are fed sequentially by gravity to the exposed forward portion of the drawer for use.

3,646,317
HAND STEAMING DEVICE

Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Company, Inc., Glen Cove, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,215
Int. Cl. F22b *1/30*
U.S. Cl. 219—271 **27 Claims**

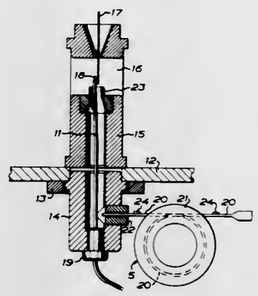
A hand steaming device including a reservoir casing having a cover attached thereto. Located on the cover is steam discharge means and water intake means with the water intake means adapted to receive water which can flow through the cover to the reservoir casing. An electrode casing in which steam is produced is secured to the cover and includes a restricted steam discharge opening and means is provided for guiding the steam produced in the electrode casing through the restricted discharge opening to the steam discharge means. A pair of spaced-apart electrodes extend partially into the electrode casing and means is provided for allowing the water to flow from the reservoir casing to the electrode casing when the electrode casing restricted discharge opening is able to discharge steam as rapidly as it is produced and for reversing this transfer when the electrode casing restricted steam discharge opening is not able to discharge steam as rapidly as it is produced. Means is provided for moving moisture trapped in the steam before it reaches the steam discharge means. The cover has accessory attaching means adjacent the steam discharge means to which can be attached a brush or a roller accessory.



3,646,318
APPARATUS FOR CONTROLLING THE TEMPERATURE OF A SAMPLE DURING THE EXAMINATION THEREOF

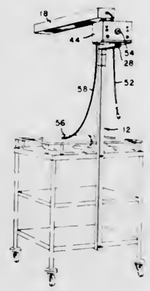
Karl-Axel Melin, Asarum, Sweden, assignor to Incentive Research & Development AB, Bromma, Sweden

Filed May 27, 1969, Ser. No. 828,299
Claims priority, application Sweden, May 29, 1968, 7214/68
Int. Cl. H05b *3/40*
U.S. Cl. 219—300 **2 Claims**



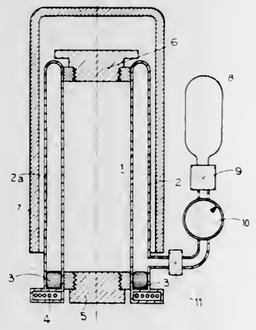
A sample during its examination in the chamber of an X-ray diffraction camera comprising a chamber body mounted in the X-ray diffraction camera to traverse the X-ray axis in the camera, a passage extending through the chamber body coaxially with the X-ray axis of the camera, a nozzle in the chamber body discharging into the passage between the ends thereof and transversely of the X-ray axis of the camera, a bore in the chamber body merging and sample into the passage with the sample to be held in the X-ray axis of the camera and in front of the nozzle, a source of pressurized gas, a tube having an electrically conductive wall connected at one end to the source of gas and at the other end to the nozzle, current control means connected to the ends of the tube for feeding an electric current through the wall of the tube to heat the tube and the gas passing therethrough, and an electric temperature sensor mounted in the passage of the chamber body adjacent the X-ray axis of the camera and in front of the nozzle and being connected to the current control means for governing the magnitude of electric current through the wall of the tube. A gas cooler is connected in series between the source of pressurized gas and the tube.

3,646,319
INFANT WARMER HAVING ELECTRIC (INFRARED) HEATING MEANS
John R. Auld, Eugene, Oreg., assignor to Merco Products, Inc., Eugene, Oreg.
Filed Dec. 9, 1968, Ser. No. 782,166
Int. Cl. H05b *1/02*
U.S. Cl. 219—347 **1 Claim**



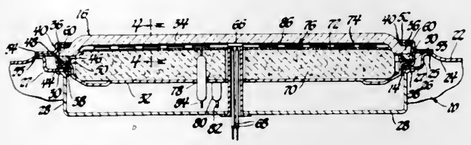
A separate environment limited to the immediate vicinity of an infant is created by the infant warmer which employs infrared radiation controlled in intensity by a unit responsive to the body skin temperature of an infant. The warmer is elongate in design to provide a controlled environment of limited dimensions within a surrounding ambient environment and includes a vertical mounting stand which is adapted to receive insertable block adjusting sections for controlled height adjustment.

3,646,320
ISOTHERMAL FURNACE
Carlo Rosatelli, University of Bologne, Italy, and Arvind Shroff, Paris, France, assignors to Thomson-CSF
Filed Oct. 31, 1969, Ser. No. 872,940
Claims priority, application France, Nov. 21, 1968, 174757
Int. Cl. F27d *11/02*
U.S. Cl. 219—401 **4 Claims**



A furnace providing an isothermal heating all along its height comprising a liquid which is heated for filling an envelope surrounding the volume to be heated with the vapor of this liquid and a system for filling the upper part of this envelope with a gas, not mixing with this vapor, for varying the operating height of the furnace.

3,646,321
INFRARED SURFACE HEATING UNIT
Donald C. Siegla, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 22, 1970, Ser. No. 48,389
Int. Cl. H05b *3/68*
U.S. Cl. 219—464 **5 Claims**



An infrared surface heating unit including an upper utensil supporting infrared transmissive cover plate having a convolute-shaped ribbon resistance element contiguous with the undersurface of the cover plate. The element has corrugations formed across its width throughout its length such that a blend of conductive and radiant heating of the utensil is achieved.

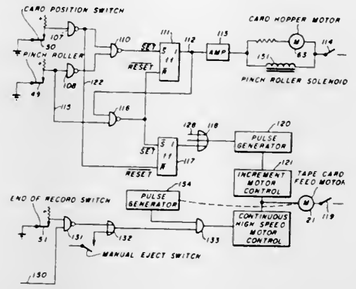
3,646,322
ELECTRIC RESISTANCE HEATING CABLE
Bernardus Willebrordus Speekman, Venlo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 5, 1971, Ser. No. 103,978
Claims priority, application Netherlands, Feb. 13, 1970, 7002052
Int. Cl. H05b *3/34*
U.S. Cl. 219—549 **3 Claims**



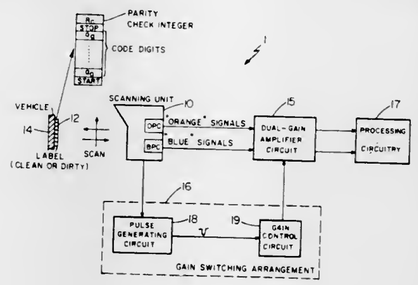
An electric resistance heating cable having alternating sectors of different temperature during use obtained by winding a heating wire having sectors of comparatively high- and comparatively low-electric resistances on a core of an electrically insulating material and by enveloping the assembly with an electrically insulating covering.

3,646,323
MAGNETIC CARD READER-RECORDER
Virgil F. Young, 1123 Elsah Ave., North Whittier, Calif., and Amable A. Pebenito, 6861 West 85th Pl., Los Angeles, Calif.
Original application Jan. 13, 1969, Ser. No. 790,632. Divided and this application July 2, 1970, Ser. No. 60,956
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 D **2 Claims**

A combined reader and recorder for both magnetic tape and magnetic cards wherein the tape and cards may be advanced in either direction during reading or recording. The apparatus comprises two spaced feed rollers extending across a card guideway and driven in either of opposite directions. Pinch rollers for holding the cards against respective feed rollers extend over one portion only of the guideway and other pinch rollers are carried by a magnetic tape magazine for guiding the tape along another portion of the rollers. A pressure pad for maintaining the cards in intimate contact with the transducer head is movable out of the way when the magnetic tape magazine is to be placed in position to process the tape.



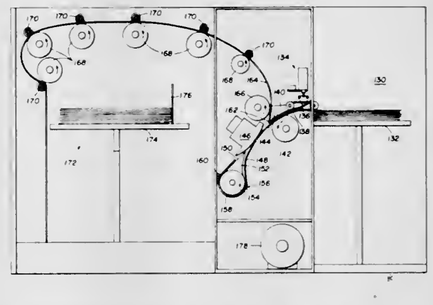
3,646,324
INFORMATION-PROCESSING SYSTEM
Frank G. Macey, Shrewsbury, Mass., assignor to GTE Sylvania Incorporated
Filed Nov. 10, 1970, Ser. No. 88,318
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **20 Claims**



An optical label-reading system for reading coded retroreflective labels affixed to railway vehicles. The labels may be clean, that is, have little or no foreign matter (e.g., ore dust or dirt) thereon, or dirty, that is have a significant amount of foreign matter thereon. In accordance with the invention, each label, whether clean or dirty, is scanned twice by a scanning unit whereby two sets of identical signals representative of the information encoded in the label are produced in succession by the scanning unit. The two sets of signals are applied in succession to a dual-gain amplifier circuit. The dual-gain amplifier circuit has two values of gain, a first value corresponding to a "clean-label" condition and a second, larger value corresponding to a "dirty-label" condition, and is adapted to be switched alternately between its two values of gain during successive scanning operations. The two values of gain are selected such that signals derived from a clean label and amplified by the first value of gain, or signals derived from a dirty label and amplified by the second value of gain, have a resulting amplitude which is within the dynamic range of processing circuitry employed to process the amplified signals produced by the dual-gain amplifier circuit.

Each of the two identical successive sets of signals derived from a label, whether clean or dirty, is amplified by a different one of the two values of gain thereby causing two sets of amplified output signals to be produced in succession by the dual-gain amplifier circuit. One of the two sets of amplified signals, by virtue of the values of gain selected for the dual-gain amplifier circuit, clearly has an amplitude falling within the dynamic range of the processing circuitry and is correctly processed by the processing circuitry. The other set of amplified signals may or may not have an amplitude falling within the dynamic range of the processing circuitry as determined by the particular condition or degree of cleanliness of the label. If the amplitude of the second set of amplified signals falls within the dynamic range of the processing circuitry, this set of signals is also correctly processed by the processing circuitry; otherwise, the set of signals is rejected by logic circuitry and parity checking circuitry provided in the processing circuitry.

3,646,325
DOCUMENT READER FOR READING DATA ON BOTH SIDES OF A DOCUMENT
Richard Willis George, Iowa City, Iowa, assignor to Westinghouse Learning Corporation
Filed Nov. 21, 1969, Ser. No. 878,739
Int. Cl. B41f *5/02*; **G06k** *7/14*; **G01n** *21/30*; **G06k** *13/07*; **G01d** *15/28*
U.S. Cl. 235—61.11 R **5 Claims**

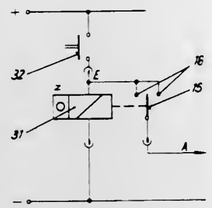


An arrangement for handling at high speeds documents both sides of which must be machine "read" or "scanned" in order to record the data contained thereon. The mechanism of the invention allows both sides of the document to be scanned by a single reading head by inverting the document and passing it by the head a second time immediately after one side has been read the path of the second passing not crossing the path followed by the document for the first reading.

3,646,326
ERROR DETECTING PULSE COUNTER
Josef Gruler, Aixheim; Bruno Borgonovi, Trossingen; Ernst Friedrich Henning Streitberger, and Kurt Wilhelm Kratt, both of Aldingen, all of Germany, assignors to J. Hengstler K.G., Aldingen Kreis Tuttlingen, Germany
Filed Feb. 25, 1970, Ser. No. 13,963
Claims priority, application Germany, Mar. 1, 1969, P 19 10 456.4
Int. Cl. H03k *21/34*
U.S. Cl. 235—92 EC **21 Claims**

Mechanical counter drivers are adapted to receive counting pulses and to perform a counterdriving operation in response to each of said counting pulses. Input signal generators are coupled to said counter drivers and arranged to be shifted between two positions in response to each of said counterdriving operations. Output signal generators are arranged to be shifted between two positions in response to each of said counting pulses. Said positions assumed by said

input and output signal generators have normally a predetermined relation. An error signal generator is adapted to compare the positions of said input and output signal generators



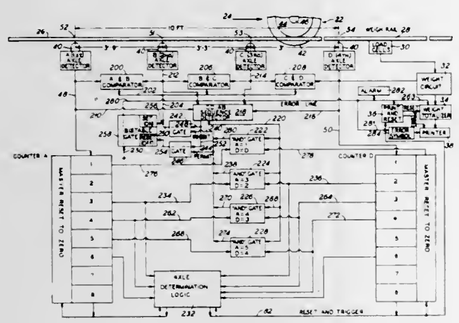
and to generate an error signal when said positions of said input and output signal generators have another than said predetermined relation.

3,646,327

METHOD AND APPARATUS UTILIZING UNIQUE CDAB SEQUENCE FOR DETECTING SYNCHRONIZATION ERROR IN RAILWAY VEHICLE READOUT SIGNAL

Lawrence A. Tonies, and James R. Teasdale, both of Grayslake, Ill., assignors to Mangood Corporation, Chicago, Ill.

Filed Feb. 27, 1970, Ser. No. 15,067
Int. Cl. B61l *1/16*; G06m *3/14*
U.S. Cl. 235—92 TC **12 Claims**



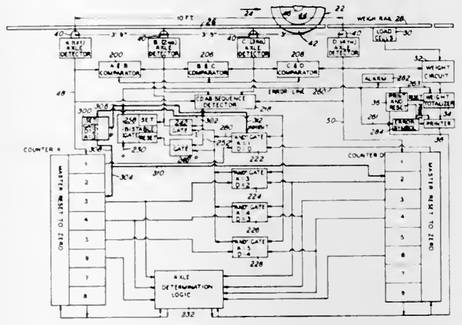
Method and apparatus for detecting synchronism error in a system which activates a readout signal for each vehicle in a train having a mixture of standard four-, six- and eight-axle cars and engines while coupled and in motion. Four axle detectors identified A, B, C and D are arranged in that order along the line of movement of the train. With the A and D detectors spaced 9 feet 4 inches to 11 feet apart, and the B and C detectors approximately evenly spaced between them, they will be actuated in a unique CDAB sequence once per standard, American four-, six- or eight-axle railway vehicle. A synchronism error signal will be activated unless one of four specific combinations of A and D axle detector actuations have occurred when the unique, CDAB sequence occurs.

3,646,328

METHOD AND APPARATUS UTILIZING UNIQUE CDAB SEQUENCE FOR CORRECTING SYNCHRONIZATION ERROR IN RAILWAY VEHICLE READOUT SIGNAL

Lawrence A. Tonies, and James R. Teasdale, both of Grayslake, Ill., assignors to Mangood Corporation, Chicago, Ill.

Filed Feb. 27, 1970, Ser. No. 15,068
Int. Cl. B61l *1/16*
U.S. Cl. 235—92 TC **15 Claims**



Method and apparatus for correcting synchronization error in a system for synchronizing a readout signal with some unique axle count condition in a train of standard railway vehicles coupled and in motion. Axle movement are detected at four locations identified as A, B, C and D in that order, in the direction of movement of the train, locations A and D being between 9 feet 4 inches and 11 feet apart for the axle spacings employed on standard American railway vehicles. Other A to D spacings may be used where axle spacings differ from current American practice. Axle movements are counted at A and D locations and the system remains in synchronism as long as the first axle of each vehicle is counted starting with a one-count regardless of the number of axles in the previous vehicle. If synchronized, when axles pass the locations in the proximate CDAB sequence, axle counts at A and D will have the following unique combinations:

A=3, D=2 for four-axle vehicles;
A=4, D=3 for six-axle vehicles;
A= 5, D=4 for eight-axle vehicles; and
A=1, D=0 for uncoupled and certain long-coupled vehicles.

If out of synchronism, the system is resynchronized according to the present invention by detecting the unique CDAB sequence and repeatedly, if necessary, setting the A and D counts to one of the above unique combinations until a vehicle identified by such combination moves past the detector locations.

3,646,329

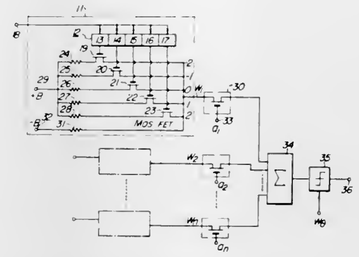
ADAPTIVE LOGIC CIRCUIT

Hirokazu Yoshino, and Tomio Yoshida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1969, Ser. No. 876,269
Claims priority, application Japan, Nov. 20, 1968, 43/85735
Int. Cl. G05b *13/02*
U.S. Cl. 235—150.1 **3 Claims**

An adaptive logic circuit which is a basic component circuit of a learning machine. A voltage divider comprising a variety of parallel resistances and a common resistance connected in series thereto gives weighting constants one of which is to be selected by applying outputs of respective stages of a shift register to the gates of MOS field effect transistors connected between the respective resistances and

the common resistance. The MOS field effect transistor whose control terminal is supplied with an input signal becomes conductive thereby providing a threshold function.



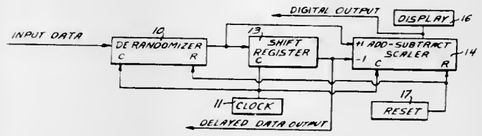
This circuit can be formed entirely of solid state elements, enabling the electronic setting of weights so that the learning processes can be performed at very high speed.

3,646,330

CONTINUOUS DIGITAL RATEMETER

Stanley J. Rudnick, Naperville; Paul L. Michaud, Lockport, and Kari G. Porges, Evanston, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 28, 1970, Ser. No. 41,457
Int. Cl. G01r *23/02*
U.S. Cl. 235—150.3 **6 Claims**



A continuous ratemeter having a digital output is described. The ratemeter has relatively long integration periods while producing a substantially continuous output. The ratemeter develops a delayed replica of the input pulse train and can indicate differential as well as integral count rates.

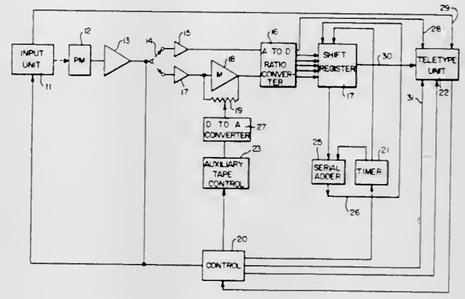
3,646,331

AUTOMATIC 100% LINE ADJUSTMENT OF SPECTROPHOTOMETERS

Joseph Samuel Lord, Walpole, Mass., assignor to Kollmorgen Corporation, New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,333
Int. Cl. G06j *1/00*; G01j *3/00*
U.S. Cl. 235—151.3 **12 Claims**

A method and apparatus for correcting radiation measuring errors in a spectrophotometer by digitizing the output of a 100-percent line input at selected discrete wavelengths. Each of the digitized values represent the spectrophotometer response at a particular wavelength. A factor, called an M factor is computed from the output at each discrete wavelength such that the digitized output multiplied by the M factor will give a corrected 100-percent output at each wavelength. These factors are each stored, and then when a sample is measured by the spectrophotometer, each of the stored M factors are synchronously applied to multiply the input signal derived from the sample thereby generating a corrected output.

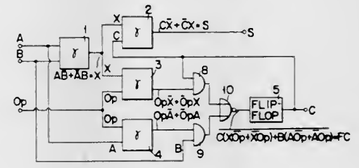


3,646,332

BINARY ADDER AND/OR SUBTRACTION USING EXCLUSIVE LOGIC

Yasoji Suzuki, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 27, 1969, Ser. No. 837,240
Claims priority, application Japan, July 3, 1968, 43/46035
Int. Cl. G06f *6/50*
U.S. Cl. 235—176 **10 Claims**



A logical operation circuit device includes a number of exclusive AND/OR logical elements derived from the logical formulas associated with a full added/subtractor. The arrangement provides a full adder/subtractor for operating on one-bit binary digital signals.

3,646,333

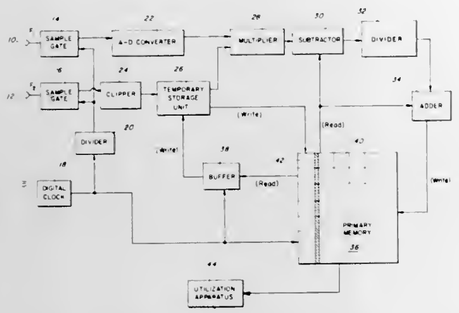
DIGITAL CORRELATOR AND INTEGRATOR

Cabell N. Pryor, Jr., Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

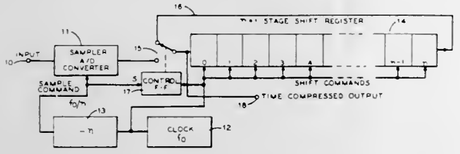
Filed Dec. 12, 1969, Ser. No. 884,392
Int. Cl. G06g *7/19*
U.S. Cl. 235—181 **4 Claims**

A digital correlator and integrator which uses a core memory to implement the cross-correlation and post-integration operations simultaneously. The system is a hybrid correlator that treats one of two sample channels linearly while it delays and stores the information in the other channel. The

samples from both channels are multiplied together then averaged repetitively into stored data to generate a time-compressed correlation function which is retained in digital form within the memory.



3,646,334
REAL-TIME CORRELATOR
Ivar Wold, Farnborough, Hampshire, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed May 27, 1970, Ser. No. 40,987
Claims priority, application Great Britain, May 28, 1969, 27,044/69
Int. Cl. G06f *15/34, 7/04*
U.S. Cl. 235—181 **5 Claims**



In various circumstances, such as the recovery of a signal from a noisy background, two signals $x(t)$ and $y(t)$ are to be correlated. In this invention $x(t)$ is sampled at recurrence period n/f_0 (n is at least 2). The samples are put into a recirculating memory of circulation time $(n+1)f$with erasure of existing samples at point of insertion. The memory is coupled to a multiplier which multiplies the output of the memory with synchronized samples of $y(t)$. The output of the multiplier is applied to an averaging memory. Only one multiplier is used to give the correlation function at n different time delays and hence greatly simplified apparatus is provided.

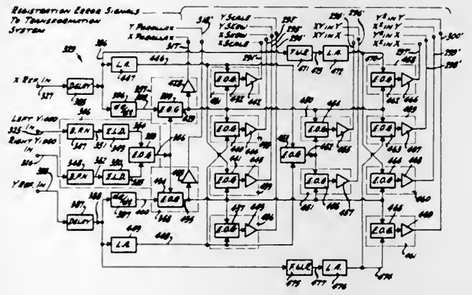
3,646,335
RECORDER CORRELATOR USING SCANNING RECORDER DEVICES
Ivan Cindrich, Southfield, Mich., assignor to The United States of America as represented by the Secretary of the Army
Filed Feb. 11, 1969, Ser. No. 798,357
Int. Cl. G06g *7/19, 9/00*
U.S. Cl. 235—181 **7 Claims**

A technique for simultaneously generating and recording a correlation function by utilizing an intensity modulated beam of light or electrons directed onto a record medium in a scanning format is described and several methods of implementation are given. As the beam scans across any selected spot on the record medium, the correlation function appears in the form of record medium exposure in accordance with the temporal and spatial variations of the beam during its



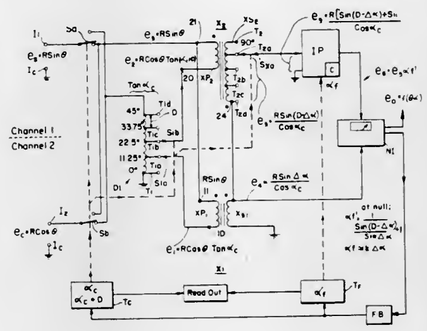
passage over the spot. This concept is described for two-dimensional correlation but can be used for one-dimensional correlation processing in either of the two dimensions available on the record medium.

3,646,336
CORRELATION UNIT
Gilbert L. Hobrough, Los Altos, Calif., assignor to Itek Corporation, Lexington, Mass.
Original application Sept. 4, 1964, Ser. No. 394,502, now Patent No. 3,432,674. **Divided and this application Sept. 30, 1968, Ser. No. 822,085**
Int. Cl. G06g *7/19;* **H03d** *13/00*
U.S. Cl. 235—181 **12 Claims**



A photogrammetric system for automatically registering a pair of photographic images for stereographic inspection. Automatic registration of the photographic images is accomplished by electronically sensing parallaxes between the images, and by transforming the images to accomplish registration. Each of a pair of stereo photographs is scanned in X and Y by a separate flying spot scanner which is driven by X- and Y-raster generators. The output of the flying spot scanners is applied to a separate video processor for controlling and enhancing the image signals and then to a separate cathode-ray tube which is driven in X and Y by the same X- and Y-raster generators. The two cathode-ray tubes comprise the left and right sides of a binocular viewer. The output of each of the flying spot scanners and the X- and Y-raster signals are applied to a correlation system which detects parallax errors and first and second order distortions between corresponding sections of each of the photographic images. The correlation system divides the output signals of the flying spot scanners into different frequency band-pass regions for separate correlation of the components of each of the signals in each band-pass region. The output of the correlation system is applied, via a transformation system, as correction signals to the raster signals driving the flying spot scanners which enables the pair of photographic images to be viewed in registration.

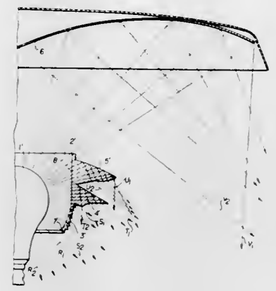
3,646,337
APPARATUS FOR PROCESSING ANGULAR DATA
Harry P. Bifulco, Jr., Huntington, N.Y., assignor to North Atlantic Industries Inc., Plainview, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,879
Int. Cl. G06g *7/22*
U.S. Cl. 235—186 **64 Claims**



Resolver apparatus is disclosed employing a system which receives resolver inputs $R\sin\theta$ and $R\cos\theta$ and is adjusted according to coarse and fine processor angles α_c and α_f to achieve a measurement of, or facilitate operations on, the resolver input angle θ. The apparatus employs two computing channels, one for each resolver input, a function generator circuit for developing tangent (or cotangent) functions of α_c, a linear interpolator in one of the channels, and circuits interconnecting the channels so that the signals ultimately developed in the channels bear a relationship which permits one of them to be linearly interpolated as a function of α_f while maintaining an interpolating angle error characteristic which is small and independent of α_c. A simple passive compensating technique may be employed to take advantage of this characteristic to produce a highly accurate response. Three of the embodiments employ tapped and switched dividers to generate the tangent functions while a fourth exploits those values of α_c which reduce the tangent functions to zero of unity, thereby permitting the use of simple combining circuits for function generation.

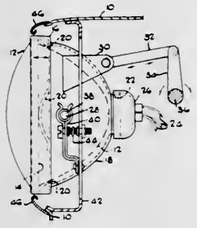
3,646,338
LIGHTING FITTING
Ignacio Goytisolo Taltavull, Lalle Madrazo, No. 83, Barcelona, Spain
Filed July 24, 1969, Ser. No. 844,376
Claims priority, application Great Britain, July 31, 1968, 36,635/68
Int. Cl. F21p *1/00*
U.S. Cl. 240—3 **5 Claims**

A lighting fitting for an electric luminous source having a molded part of transparent material surrounding the luminous source. The molded part is open on the top and at the bottom and has a first lower system of outer prisms and a second upper system of two outer prisms, all of them located in planes normal to the symmetry axis of the luminous source. A top part offers the luminous source a concave reflecting surface. The assembly is arranged so that a part of the luminous rays emerge directly through the lower opening of the molded part, another part is refracted by the first system of prisms, another part undergoes a total reflection in the second system of prisms, emerging out of the first prism of this second system in a diver form and of the second prism in a convergent form without hitting the lower located prisms, and part of the light rays is reflected downwards and outwards by the upper reflecting surface. The molded part may comprise another system of inner prisms disposed in



planes which pass through the symmetry axis and direct the light rays in an asymmetric form relative to the ground's plane.

3,646,339
PIVOTING DEVICES ALLOWING CONTINUOUS AUTOMATIC HEADLAMP ADJUSTING
Gideon Petrus Schoeman Yssel, "Sanitas," Noordbrug, Transvaal Province, Republic of South Africa
Filed June 24, 1969, Ser. No. 835,938
Int. Cl. B60q *1/10*
U.S. Cl. 240—7.1 R **3 Claims**

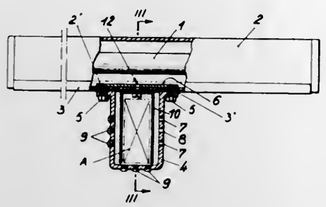


A headlamp pivotally mounted about a transverse and horizontal axis on a resiliently suspended vehicle body for tilting movement relative to the relative movement of sprung and unsprung parts of the vehicle and having axially aligned parts engaging journals while with the journals axially directed compression springs are associated to take up slack or play. The invention also extends to incorporating a pivotal mounting in a member which applies controlled tilting movement to the headlamp. Furthermore the invention extends to the mounting of journals in spring clip devices with which lateral adjusting elements are associated.

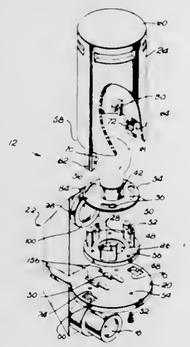
3,646,340
DISCHARGE TUBE ASSEMBLY
Marie Henri Hubert Adam, Le Moulin, Larey par Bayon, Meurthe et Moselle, France
Filed Oct. 3, 1969, Ser. No. 863,494
Int. Cl. F21l *0/00;* **H05b** *33/02*
U.S. Cl. 240—11.4 N **3 Claims**

The present invention relates to a luminous element with variable points of attachment, in which the attachment organ

is constituted by a removable lateral extension which can be attached at any point on the length of said element, and comprises, on each of its faces, means for attaching the whole on a suitable support in any geometric arrangement.



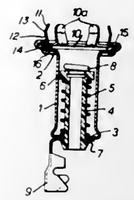
3,646,341
HEADLAMP
Morris Klatskin, 11810 National Blvd., Los Angeles, Calif.
Filed June 10, 1970, Ser. No. 45,080
Int. Cl. A61b *1/06*
U.S. Cl. 240—59 **10 Claims**



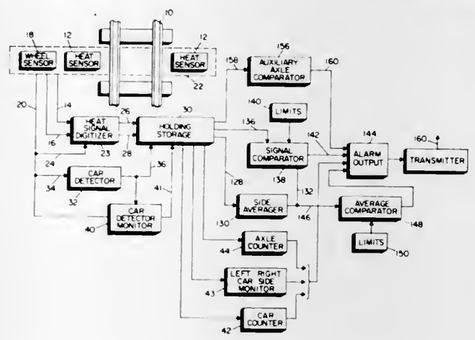
A headlamp which can be worn by a surgeon for projecting a beam of light from a point between his eyes. A periscopic mirror and lens arrangement is utilized to direct light from a prefocused bulb to a projection lens which is articulated on a generally vertical plane between the wearer's eyes. A headband of novel construction is provided in which overlapping ends of a strip of resilient material are spring loaded to girdle the wearer's head. The lamp is adjustably connected by a ball joint to a pair of links which are pivotally carried at their rear ends in a slotted bracket attached to the headband.

3,646,342
LAMPHOLDER
John Arthur Howe, 5 Allison Gardens, Chilwell, and Brian Darkins, 53 Gibbons Ave., Stapleford, both of England
Filed Aug. 20, 1970, Ser. No. 65,556
Claims priority, application Great Britain, Aug. 25, 1969, 42,273/69
Int. Cl. F21v *17/00;* **H02b** *1/02*
U.S. Cl. 240—152 **2 Claims**

This invention comprises a lampholder including a hollow metal body defining a lamp base receiving cavity having a metal attaching ring secured to the open end by a one-piece molding of synthetic plastics secured to a flange on the body and the base of the attaching ring, the plastics molding serving to electrically insulate the metal ring from the metal body.



3,646,343
METHOD AND APPARATUS FOR MONITORING HOT BOXES
Paul W. Cauller, Greenwood, and Donald W. Greene, Fisherville, both of Va., assignors to General Electric Company
Filed Feb. 26, 1970, Ser. No. 14,574
Int. Cl. B61l *3/06;* **B61k** *9/06*
U.S. Cl. 246—169 D **20 Claims**



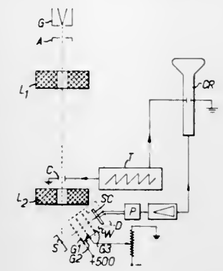
The temperatures of a plurality of journal bearings or boxes on a passing car are monitored. An average temperature value for each side of the passing car is derived. Comparisons are then effected between the temperatures of the individual journal boxes disposed on a given side of the car and the derived average temperature value for the given side, and deviations above or below predetermined limits are utilized to signify the presence of an alarm condition.

Also, means is disclosed by which the presence of an alarm condition can be correlated to a particular car and wheel of the passing train. This information is then enunciated to the train crew so that defective conditions can be readily corrected.

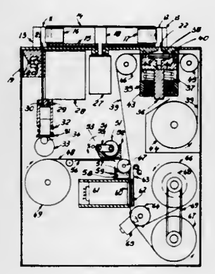
3,646,344
SCANNING ELECTRON BEAM APPARATUS FOR VIEWING POTENTIAL DISTRIBUTION ON SPECIMEN SURFACES
Graham Plows, 80, Brent Court, Stevenage, Hertfordshire, and William Charles Nixon, 2, Causewayside, Fen Causeway, Cambridge, both of England
Filed Dec. 31, 1969, Ser. No. 889,762
Claims priority, application Great Britain, June 2, 1969, 300/69
Int. Cl. H01j *37/28*
U.S. Cl. 250—49.5 A **6 Claims**

In electron beam apparatus, in which a finely focused probe is caused to impinge on the surface of a specimen and

the resulting secondary electrons are collected and used to show potential distribution on the specimen surface the detector includes, between the collector and the specimen, a positive grid and a further grid, this further grid being of variable low or negative potential to form effectively a potential barrier of adjustable height to discriminate between electrons coming from regions of different potential.



3,646,345
DIRECT INTERACTION DETERMINATION OF PRIMARY PRODUCTIVITY
Chris J. Plakas, 3645 Bangor St, S.E. Washington, D.C., and Rosemary Fry, 3223 Cleveland Ave, Kansas City, Kans.
Filed June 22, 1970, Ser. No. 48,181
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **2 Claims**

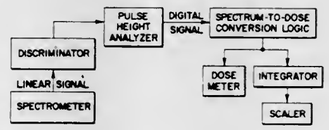


Apparatus for measuring the primary productivity in situ of an aquatic sample by detecting scintillation fluorescence through surface contact of a scintillator and metabolized organisms carrying labeled carbon fixed photosynthetically therein, comprising a photosynthesis chamber where sample and labeled carbon are introduced for photosynthetic fixation, a filter tape for filtering the metabolized organisms, a scintillator tape and photomultiplier detector means for converting energy of beta particles to fluorescence and then to electrical pulses that are directly proportional to the amount of labeled carbon fixed by the organisms, a recorder for recording the output data and logic circuitry for programming the sequence of operation, thus accurately determining the primary productivity per unit of biomass.

3,646,346
ANTIBODY-COATED TUBE SYSTEM FOR RADIOIMMUNOASSAY
Kevin J. Catt, Melbourne, Australia, assignor to Pharmacia AB, Uppsala, Sweden
Filed Dec. 26, 1968, Ser. No. 786,959
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 **8 Claims**

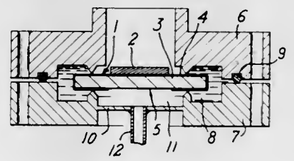
A radioimmunological method and means for the determination of proteins in aqueous samples which includes adsorbing on the internal surface of a test tube of water-insoluble polymeric material the antibody against the protein to be determined. Suitable proteins which can be determined according to this method are plasma proteins, enzymes, and many hormones.

3,646,347
METHOD AND APPARATUS FOR MEASURING RADIATION
Bobby Joe Farmer, and Jim Howard Johnson, both of Arlington, Tex., assignors to Advanced Technology Center, Inc., Grand Prairie, Tex.
Filed Dec. 2, 1968, Ser. No. 780,511
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R **19 Claims**



A method of measuring radiation dose in real time comprising the steps of measuring incident radiation with a spectrometer and weighting the radiation signal of the spectrometer with a pulse-height-to-dose conversion function.

3,646,348
NEUTRON-EMITTING TRITIATED TARGET HAVING A LAYER CONTAINING TRITIUM AND A PASSIVE SUPPORT WITH AN INTERMEDIATE BARRIER
Jacques Detaint, 121, rue de Bondy, Villemomble (93), France
Filed July 17, 1969, Ser. No. 842,626
Claims priority, application France, Aug. 8, 1968, 162318
Int. Cl. G21g *3/00*
U.S. Cl. 250—84.5 **4 Claims**

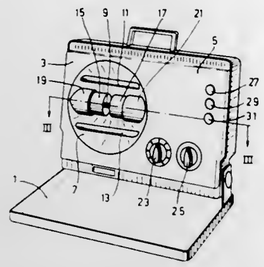


A neutron-tritiated target, comprising a layer containing a suitable quantity of tritium and a passive support in which the layer is thick enough to retard deuterons bombarding the target and is applied to the support by way of a thin intermediate barrier, formed of a metal in which hydrogen isotopes diffuse slowly and having a thickness such as to prevent the return of the deuterons from the support to the layer at the same time as the passage of the tritium towards the support.

3,646,349
IRRADIATION DEVICE
Andreas Fredericus Rietveld, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y., assignor to Commissariot A L' Energic Atomique, Paris, France
Filed June 3, 1970, Ser. No. 43,156
Claims priority, application Netherlands, June 7, 1969, 6908713
Int. Cl. H01j *37/00*
U.S. Cl. 250—86 **6 Claims**

An irradiation device having a source of UV radiation and two filter screens mounted for movement toward and away

from each other so as to fully or partly block the irradiation source. A time program device is provided so as to open and maintain the screen apart for a set period of time, which is constant for each irradiation period. The distance by which



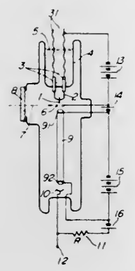
the screens are displaced is adjusted in accordance with the day of the radiation treatment. The device therefore operates with a constant irradiation time but variable radiation intensity.

3,646,350

LIGHT-DETECTING ELECTRON MULTIPLIER WITH FIELD EMISSION PHOTOCONDUCTIVE CATHODE

Haruo Maeda, Tokyo, and Jun Nishida, Machida-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1968, Ser. No. 773,078
Claims priority, application Japan, Nov. 10, 1967, 42/72728
Int. Cl. H01j *39/12*
U.S. Cl. 250—207 **1 Claim**



A light detector based on the fact that the field emission from a photoconductive material varies depending on a variation in the intensity of the light to which said photoconductive material is exposed, said detector comprising basically a field emission cathode of a photoconductive semiconductor in the form of a pointed whisker, and an electron collector for collecting the electrons emitted from said cathode, an appropriate accelerating voltage being applied between said cathode and said collector.

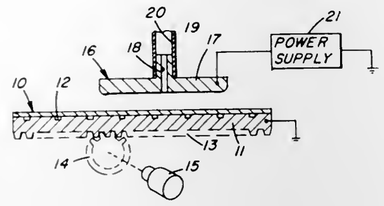
3,646,351

GAS-CUSHION CORONA CHARGER

James G. Jarvis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 823,067, May 8, 1969, now abandoned. This application Feb. 16, 1971, Ser. No. 115,726
Int. Cl. G03g *15/02*
U.S. Cl. 250—49.5 ZC **7 Claims**

A device for charging a xerographic or an electrostatic electrographic material by means of a cushion of flowing ionized gas. A supply of compressed air or other gas is applied to an aperture plate or a slotted tubular member for direction against a strip of material to be charged. The flow of gas is ionized by a source of potential connected between



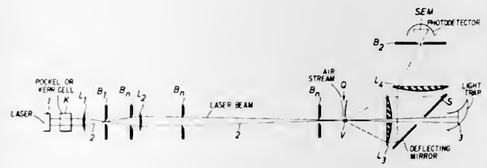
the plate and a conductive backing plate in contact with the material. The ionized gas charges the material and at the same time maintains the material in spaced relation from the plate or tubular member and against the conductive backing plate with a uniform force.

3,646,352

METHOD OF MEASURING THE CONCENTRATION AND/OR SIZE OF SUSPENDED PARTICLES BY FORWARD SCATTERING OF LIGHT

Jan Bol, Kelkheim; Werner Heinze; Josef Gebhardt, both of Frankfurt, and Werner Letschert, Oberstedten, all of Germany, assignors to Bundesminister fur Wissenshaftliche Forschung, Bonn, Germany

Filed Oct. 10, 1969, Ser. No. 865,404
Claims priority, application Germany, Oct. 10, 1968, P 18 02 269.0
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **7 Claims**



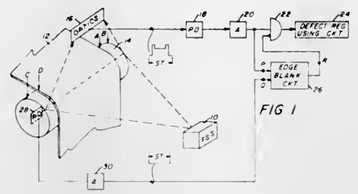
A method for measuring the concentration and/or size of illuminated particles suspended in a gas by means of the scattered light process. The suspended particles are illuminated by passing them through a focused laser beam in the vicinity of its focal plane. The light that is scattered from the particles in the direction of propagation of the laser beam within an angle of ±15° with respect to the focal line of the laser beam are then evaluated by a photodetector device to determine the desired parameter. The intensity of the laser beam is reduced if the anode current of the photodetector exceeds a preset limit. The output signal of the photodetector device is fed to a potentiometer which has a logarithmic resistance per unit of its length. The output of the potentiometer is fed to a fixed single channel pulse height analyzer, which records all the pulses above a predetermined threshold value and transmits them to a counter.

3,646,353

FLYING SPOT SCANNER BLANKING

Pushpinder S. Bhullar, and Robert A. Wright, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,969
Int. Cl. G01n *21/16*
U.S. Cl. 250—219 DF **6 Claims**



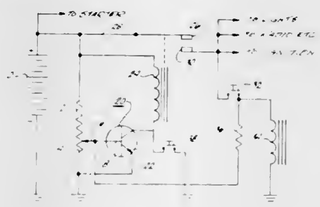
A flying spot scanner is employed to inspect a web which rides over a supporting surface. Optical signals are produced at the edges of the web, and at the edges of the surface; and optical web defect signals are produced while scanning the web. To blank signals which are not web dependent, the invention proposes to split scan-produced signals into first and second halves thereof, whereby web-edge defining signals may be isolated, and employed to operate a blanking circuit. To prevent the registering of defects which are proximate the edges of the web, each pair of blank-defining signals produced during a given scan are shifted timewise to a subsequent scan, one of each such pair being shifted a little more, and the other of each such pair being shifted a little less, than a scan duration.

3,646,354

ELECTRICAL SUPERVISORY CONTROL

Joe W. Von Brimer, Apt. 2, 3664 Vegas Plaza Drive, Las Vegas, Nev.

Filed Nov. 5, 1970, Ser. No. 87,190
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 BP **8 Claims**



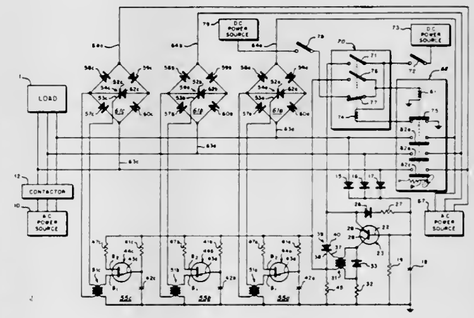
A control circuit is connected into the electrical system of a vehicle such as an automobile having a starting motor, a battery, and various current-consuming load devices, such as headlights. A relay-operated switch is connected between the battery and the load devices. A potentiometer is connected across the battery, and the relay winding and a transistor are connected across the potentiometer with the potentiometer slider connected to the base of the transistor and the collector connected to the relay winding. The resistance values are chosen such that when the battery is substantially charged, the voltage across the base-emitter junction of the transistor is sufficient to keep the transistor conducting, thus causing the relay to be energized and the switch to be closed, connecting the load devices to the battery. Should the battery be run down, as through leaving the headlights on, the battery voltage will drop, and at some desired proportion of full charge the voltage across the base-emitter junction will become too low to keep the transistor conducting, and the relay will drop out, opening the switch and disconnecting the load devices. A reset switch is provided to reconnect the remaining battery voltage across the relay winding.

3,646,355

AUTOMATIC POWER TRANSFER SWITCH

Ralph H. Ireland, Warminster, and Edward C. Lesoravage, Doylestown, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 19, 1970, Ser. No. 38,813
Int. Cl. H02j *9/06*
U.S. Cl. 307—64 **8 Claims**



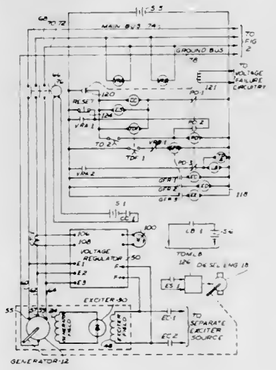
A static switch is operated upon sensing a loss of a primary power supply for providing a rapid temporary connection of a secondary power supply to a load. Slower acting power contactors are also energized and their operation provides a permanent connection of the secondary power supply to the load and also provides means for disconnecting the path of secondary power through the static switch.

3,646,356

CONTROL SYSTEM FOR STARTING UP AND SYNCHRONIZING A PLURALITY OF GENERATORS AND METHOD OF OPERATION

George M. Hoffman, Springfield, Ohio, assignor to White Motor Corporation, Cleveland, Ohio

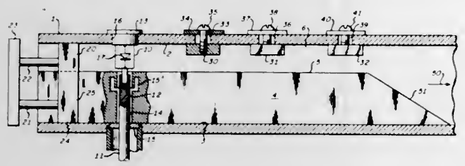
Filed Dec. 17, 1970, Ser. No. 99,162
Int. Cl. H02j *1/00*
U.S. Cl. 307—87 **20 Claims**



An electrical control system for starting up and synchronizing a plurality of alternating current generators,

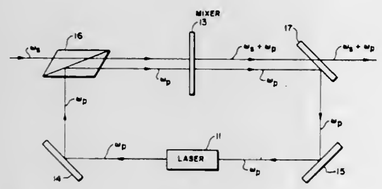
such as emergency power generators, and a method of operation thereof. The plurality of generators are simultaneously connected to a common busline, and motive power is simultaneously applied to each of the generators. As the generators begin to supply power, synchronizing circuits monitor the power developed by each generator and cause the generators to maintain substantially identical speeds as the generators are brought up to a normal operating speed. Accordingly, when the speed of the generators reaches the normal operating speed, the generators are in synchronization. The common busline may then be coupled to the main voltage supply line to thereby energize the main supply line.

3,646,357
SEMICONDUCTOR DIODE HIGH FREQUENCY SIGNAL GENERATOR
Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation
Filed Mar. 27, 1970, Ser. No. 23,130
Int. Cl. H03f *3/10*
U.S. Cl. 307—88.3 **6 Claims**



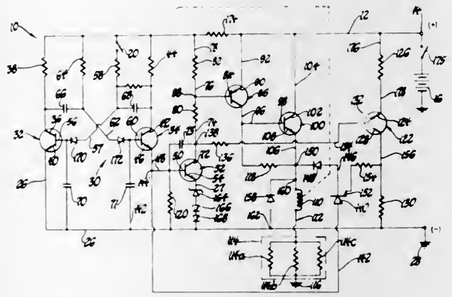
A microwave or high-frequency amplifier or frequency converter is disclosed which exploits avalanche phenomena in a semiconductor high-efficiency mode diode placed in a multiply tuned waveguide transmission line circuit. The novel configuration features means substantially avoiding loss of power within the circuit when high frequency or microwave energy is not present in the circuit; such energy may be efficiently amplified or converted when actually present in the circuit.

3,646,358
OPTICAL UPCONVERTER
Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed May 15, 1970, Ser. No. 37,647
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 **6 Claims**



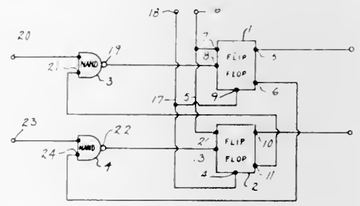
An optical upconverter having a pump beam, a signal beam, and an optically nonlinear material for mixing the pump and signal beams to obtain an output beam having a frequency which is the sum of the pump and signal beams. The pump beam is generated by a laser and the nonlinear material is mounted in the laser cavity. The laser beam is a linearly polarized plane wave. The signal beam is directed into the cavity through a polarizer which linearly polarizes the signal beam in a direction which is orthogonal to the pump beam. The nonlinear material is cut and oriented in the cavity such that nonlinear mixing of the pump beam will occur only with the signal beam and not with itself. Therefore, depletion of the pump beam will occur only during mixing with the signal beam, and second harmonic generation of the pump beam will not occur.

3,646,359
FLASHER CIRCUIT WITH OUTAGE INDICATION
John F. Bolinger, Michigan City, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.
Filed May 7, 1970, Ser. No. 35,496
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **8 Claims**



A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timed pulse signal applied to the power transistor for turning the power transistor "on"; and additional current sensing means coupled to the load and sensitive to a reduction in the current flow therethrough, due to an outage, is operatively connected to the multivibrator for eliminating the timed occurrence of said signal.

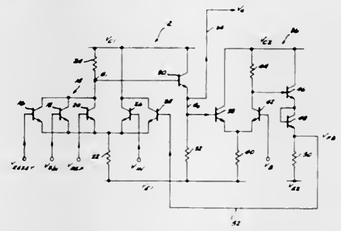
3,646,360
DATA INTERPRETATION NETWORK
Odo J. Struger, Milwaukee; William W. Kiffmeyer, Bayside, and Loren E. Shaum, Brookfield, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed June 18, 1970, Ser. No. 47,206
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **6 Claims**



The outputs of four data interpretation circuits connect through a first and second OR gate to either a first or second monoshot circuit. The data interpretation circuits each receive two 90° phase displaced signals and their inversions from a position transducer attached to a numerically controlled machine. As the machine moves, these interpretation circuits detect voltage shifts in the position transducer signals and alternately fire the first and second monoshot circuits to generate a train of pulses at the output of the network as the machine moves. Each data interpretation circuit has two flip-

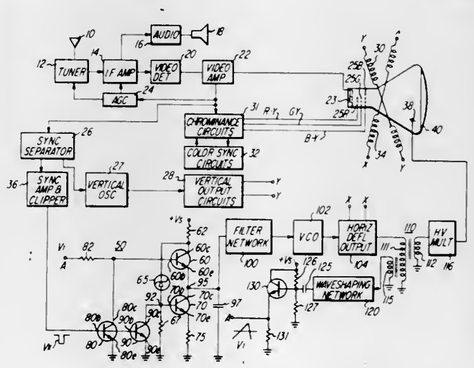
flops each triggered by the output of one of two NAND gates. An output of each flip-flop is connected to an input of the NAND gate connected to the other flip-flop. This inhibits the actuation of one flip-flop after the other flip-flop is triggered and the machine remains within predetermined limits such as occurs during vibration.

3,646,361
HIGH-SPEED SAMPLE AND HOLD SIGNAL LEVEL COMPARATOR
Harold J. Pfiffner, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 16, 1970, Ser. No. 81,235
Int. Cl. H03k *5/00*
U.S. Cl. 307—235 **18 Claims**



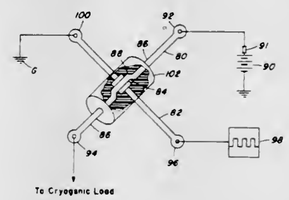
A sample and hold comparator fabricated with emitter coupled logic using only one transistor-type, resistors, and interconnects and including a differential comparator and logic circuit for comparing an input signal V_{IN} with a reference signal V_{REF} in response to a short duration sample and hold pulse V_{SIH} to produce a digital ONE or ZERO output signal depending upon whether the compared input signal is above or below the reference signal. The differential comparator and logic circuit being further responsive to a regenerative feedback signal produced by a differential amplifier in response to the output signal for latching or holding the state of the sample and hold comparator at the comparison state so that it is not further responsive to variations in the input signal V_{IN} until after a reset pulse V_{RESET} is received by it for clearing the sample and hold comparator circuitry.

3,646,362
SAMPLE-AND-HOLD CIRCUIT
Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation
Filed Apr. 30, 1970, Ser. No. 33,336
Int. Cl. H03k *17/00*
U.S. Cl. 307—238 **6 Claims**



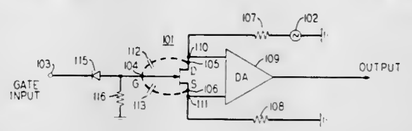
A sample-and-hold circuit employs first and second transistors of the same conductivity type, having serially coupled collector-to-emitter current paths and including a feedback path coupling the collector of the first transistor to the base of the second transistor to provide a high-input impedance and a relatively low-output impedance circuit suitable for rapid updating of a hold capacitor. The circuit samples an applied signal when the first and second transistors are keyed into conduction by keying circuit means, and holds when these transistors are biased out of conduction. The circuit is particularly suited for application as a phase comparator.

3,646,363
SUPERCONDUCTIVE APPARATUS
Robert C. Wright, Jr., 18 Lafayette Ave., Hingham, Mass., assignor to Wright, Robert C., Kendall Park, N.J.
Filed Aug. 6, 1968, Ser. No. 750,568
Int. Cl. H03k *17/00*
U.S. Cl. 307—240 **4 Claims**



Apparatus is provided whereby the conductive state of means including an element capable of exhibiting superconductivity is controlled by the maintenance of said means in intimate thermal communication with a paramagnetic salt. The temperature of such means thereby being discretely and selectively changed by the control of the magnetic state of said paramagnetic salt.

3,646,364
CIRCUIT FOR REDUCING SWITCHING TRANSIENTS IN FET OPERATED GATES
William Kaminski, West Portal, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 17, 1969, Ser. No. 877,088
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **1 Claim**

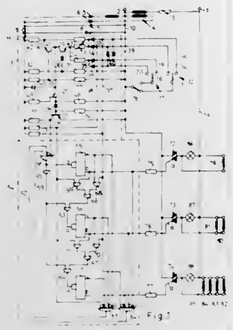


An FET analog gate includes two equal-valued resistors, one in the source path and one in the drain path of the FET, and a differential amplifier, one input connected to the FET source terminal and the other input connected to the FET drain terminal.

3,646,365
STEP SWITCH
Flemming Thorsoe, Augustenborg, and Arne Jensen, Havnbjerg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Apr. 17, 1970, Ser. No. 29,556
Claims priority, application Germany, Apr. 26, 1969, P 19 21 424.5
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **4 Claims**

The invention relates to a step switch assembly which switches power on and off in a stepwise manner in depen-

dence upon the upper and lower limiting values of a control signal. The switch assembly may be used for operating in a stepwise manner a bank of units such as motors wherein each motor, or group of motors, represents a portion or part of the total available capacity of a system such as air conditioning



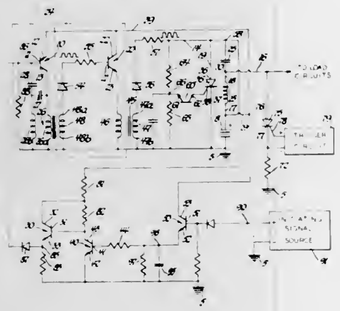
system. The step switch assembly includes a reversible counter, a transmitter for sending digital impulses to the counter, and power stages which are switchable on and off in dependence upon information stored at the counter output points.

3,646,366

CIRCUIT FOR PERIODICALLY REVERSING THE POLARITY OF A DIRECT CURRENT POTENTIAL SUPPLY LINE

James W. McNamee, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 92,026
Int. Cl. H03k *17/30, 17/72*
U.S. Cl. 307—252 W **6 Claims**



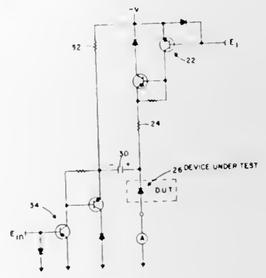
A circuit for periodically reversing the polarity of a direct current potential supply line. An inductor element is connected in series between the positive polarity output terminal of a direct current potential source and the supply line and the anode-cathode electrodes of a silicon controlled rectifier are connected across the series combination of a capacitor which is charged to a predetermined potential magnitude of a polarity in series aiding relationship with the direct current potential source, the inductor element and the direct current potential source. When the capacitor has been charged to the predetermined potential magnitude, the silicon controlled rectifier is triggered conductive through the anode-cathode electrodes to complete a discharge circuit for the capacitor through the direct current potential source and the inductor element. The potential drop across the inductor element produced by the capacitor discharge current reverses the polarity of the supply line with respect to the negative polarity terminal of the direct current potential source.

3,646,367

ELECTRICAL SWITCH

Paul L. Conant, Sr., Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Jan. 5, 1970, Ser. No. 532
Int. Cl. H03k *17/56*
U.S. Cl. 307—255 **2 Claims**



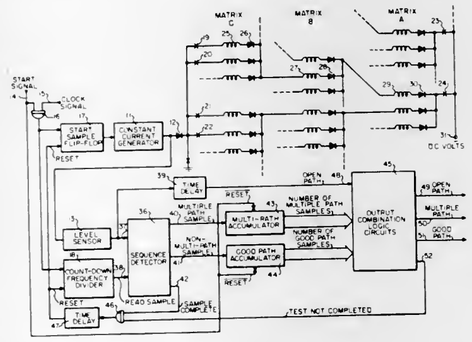
An electrical switch for large currents including a transistor element which is driven into saturation upon closing said switch. Means is provided to cause forward biasing of the base-collector junction of said transistor to force transistor current saturation.

3,646,368

CHECKING FOR UNDESIRABLE MULTIPLICITY OF MATRIX PATHS

Jeffrey P. Mills, Maywood, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed July 9, 1970, Ser. No. 53,354
Int. Cl. G01r *31/02;* **H04m** *3/26*
U.S. Cl. 307—269 **5 Claims**



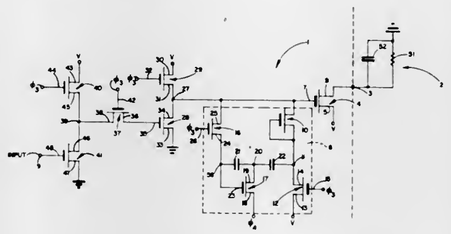
Whether a selected operating path has an undesirable multiple circuit is determined before operating current is applied by rapidly sampling the voltage level across a selected operating path at a predetermined time after constant current, less than that required for operation, is applied to it. When the path is good, voltage across it at the sampling time is substantial, but when a multiple circuit decreases the inductive impedance normally provided by operating windings, the voltage is decreased. To provide the tests, a constant-current generator and a level sensor are momentarily connected to the selected operating circuit. Logic circuits receive the output of the level sensor and decide the condition of the selected path.

3,646,369

MULTIPHASE FIELD EFFECT TRANSISTOR DC DRIVER

Ted Y. Fujimoto, Santa Ana, Calif., assignor to North American Rockwell Corporation

Filed Aug. 28, 1970, Ser. No. 76,340
Int. Cl. H03k *3/26*
U.S. Cl. 307—270 **6 Claims**



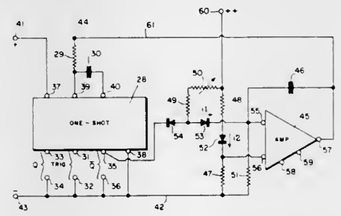
A voltage boosting circuit provides a boosted voltage level on the gate electrode of a field effect transistor driver in response to a logic input signal during a second phase of a four phase clock cycle. A field effect transistor connected as a rectifying device prevents the gate voltage from changing during at least the third and fourth phases of the clock cycle. As a result, the field effect transistor driver provides a DC output voltage level. During the second phase of the subsequent cycle, if the input has not changed, the gate voltage is reset to the boosted voltage level. If the input has changed, during the first phase of the clock cycle the gate voltage is reset to a different voltage level and maintained until the input again changes.

3,646,370

STABILIZED MONOSTABLE DELAY MULTIVIBRATOR OR ONE-SHOT APPARATUS

Peter Robert Lowe, Denver, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed July 6, 1970, Ser. No. 52,620
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **6 Claims**



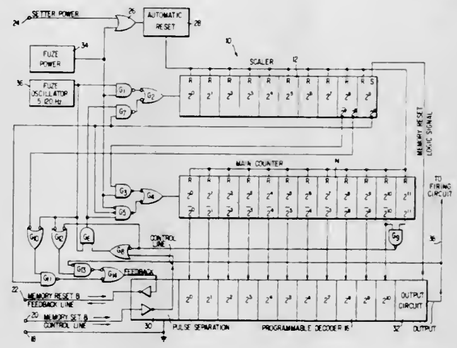
A transistor (FIG. 1) or an integrating amplifier (FIG. 2), controlled by a signal representing the duty cycle of a one-shot, controls the value of a voltage at one end of a resistor, the other end of which is connected to the one-shot timing capacitor. The charging current for this capacitor flows through this resistor during the excited periods of the one-shot, with a value dependent upon that of the voltage at the first-mentioned resistor end. The transistor or amplifier controls the value of this voltage as required to make the sum of the lengths of the excited periods over an extended period be a fixed percentage of the length of the extended period, and hence to make the average duty cycle constant at a desired value.

3,646,371

INTEGRATED TIMER WITH NONVOLATILE MEMORY

Friedrich W. Flad, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed July 25, 1969, Ser. No. 845,001
Int. Cl. H03k *17/28;* **F42c** *11/06*
U.S. Cl. 307—293 **3 Claims**



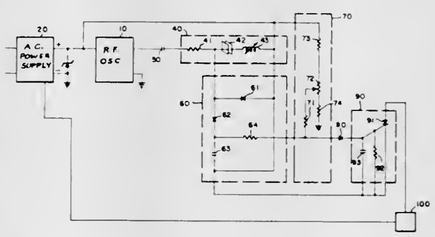
A remote settable electronic circuit timer system is described using an integrated MOS counter supplemented by an integrated programmable decoder consisting of MNOS transistors. Charge storage in the dielectric of the MNOS transistors is used to achieve memory without power. The setting information is counted into the counter at an accelerated rate and then transferred into the decoder, which serves as a memory. At the start of the timing operation, the counter is reset to zero. Then the counter counts up and when coincidence with the number stored in the decoder is achieved, an output signal is generated. The system automatically adjusts the setting for deviations of the oscillator frequency from its nominal value. Also, during the setting operation, all circuits of the timer are checked for proper functioning.

3,646,372

ELECTRONIC DEVICE FOR DETECTING THE PASSAGE OF NONCONDUCTIVE SHEETS

Donald L. Snellman; Richard A. Marson, both of Seattle, and Ernest D. Davis, Richmond Beach, all of Wash., assignors to Norfin, Inc., Seattle, Wash.

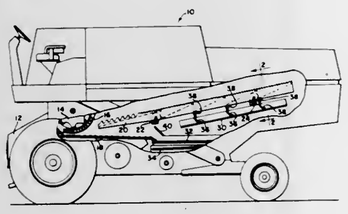
Filed June 5, 1967, Ser. No. 643,635
Int. Cl. G01n *27/00*
U.S. Cl. 307—308 **7 Claims**



Series inductance-capacitance circuit is coupled and tuned to resonance with a constant frequency signal source. The

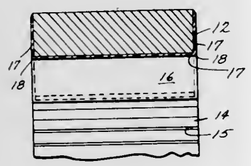
circuit includes capacitance sensor plates which sense the passage of double thickness nonconductive sheets and change the reactance of the circuit to produce a voltage change at the input to the circuit. This voltage change is detected and actuates a switch.

3,646,373
COMBINE SWEEP CONVEYOR
John Burch Hayes, Milan, Ill., assignor to Deere & Company, Moline, Ill.
Filed June 11, 1970, Ser. No. 45,435
Int. Cl. A01f *12/30*
U.S. Cl. 130—26 **4 Claims**



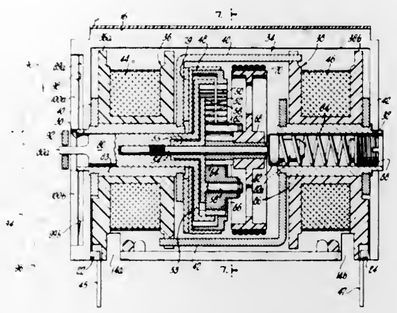
A combine having a threshing unit, a plurality of straw walkers mounted in crop-receiving relationship to the threshing unit for rotational translatory movement, a cleaning unit mounted beneath the straw walkers, a fixed grain pan mounted between the straw walkers and grain pan having a terminal end positioned over the material-receiving portion of the cleaning unit, and a plurality of resilient sweeps secured to and depending from each of the straw walkers along the length thereof for engaging material on the pan and moving the material to the terminal end of the pan during the lower portion of the path of travel of the straw walkers.

3,646,374
THERMOSETTING POLYESTER AND POLYESTER-IMIDE RESINS FOR ELECTRICAL INSULATION
Manuel A. Jordan; Edmund J. Zalewski, both of Schenectady, and Julian E. Newell, Jr., Scotia, all of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,352
Int. Cl. H02k *15/12*
U.S. Cl. 310—45 **5 Claims**



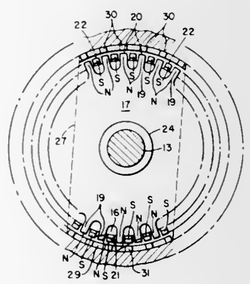
Improved thermosetting resins for coating and electrically insulating core members of dynamoelectric machine are disclosed. The resins include polyester and polyester-polyimide compositions derived from an alcohol component including tris (2-hydroxyethyl) isocyanurate.

3,646,375
MOTORIZED POTENTIOMETER WITH OVERLOAD CLUTCH AND INTERCHANGEABLE GEAR RATIO
Lawrence Mader, Yankton, S. Dak., assignor to Dale Electronics, Inc., Columbus, Nebr.
Filed Dec. 30, 1970, Ser. No. 102,805
Int. Cl. H02k *7/05*
U.S. Cl. 310—83 **16 Claims**



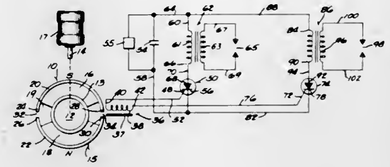
A compact gear motor having a planetary differential gear reduction system and an overload clutch which can be manually adjustable for clutch torque. The gear train accommodates interchangeable gears in order to change the output speed of the device. The gear motor drives a rotatable load such as a potentiometer, which is removably mounted directly to a hinged plastic motor housing.

3,646,376
HIGH-FREQUENCY TACHOMETER GENERATOR
Richard E. Anderson, Lynn, Mass., assignor to General Electric Company
Filed May 1, 1970, Ser. No. 33,639
Int. Cl. H02k *21/12*
U.S. Cl. 310—156 **5 Claims**



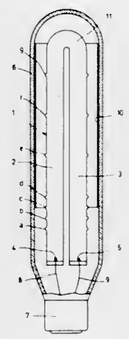
An AC tachometer generator having a lightweight rotor adapted to be mounted on a rotating shaft, the speed of which is to be measured. The rotor permanent magnet is protected from knockdown when the generator is disassembled by a pole piece construction enclosing the rotor. Flux from the rotor is alternately switched through a bridging member having axially extending fingers disposed on opposite sides of the rotor and aligned with rotor poles having opposite magnetic polarity.

3,646,377
PULSE GENERATOR
David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Original application Nov. 18, 1968, Ser. No. 776,379, now Patent No. 3,577,971. Divided and this application Sept. 2, 1970, Ser. No. 68,877
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **3 Claims**



Disclosed herein is a pulse generator including a rotor adapted to be driven by an engine and including a generally annular pole piece unit consisting of a pair of pole pieces in the form of circular ring sectors arranged around a common center with the ends of the pole pieces in adjacently spaced relation and separated by high-reluctance gaps, together with means for constituting one of the pole pieces a north pole. In arrangement for constituting the other of the pole pieces a south pole, and a trigger coil located adjacent the periphery of the rotor.

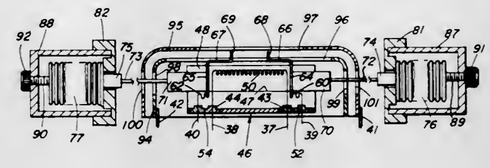
3,646,378
LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMPS
Urbaan Paul Marguerite Goossens, Waasmunster, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 22, 1970, Ser. No. 48,045
Claims priority, application Netherlands, Feb. 28, 1970, 7002894
Int. Cl. H01j *61/34*
U.S. Cl. 313—27 **3 Claims**



A low-pressure sodium vapor discharge lamp having small reservoirs of sodium positioned near the electrodes in a manner so as to satisfy the condition $B/T \quad 0.5$, wherein B represents the overall contents of those reservoirs whose distance up to the nearest electrode is between 10 and 35 percent of half the length of the discharge path and T represents the overall contents of all reservoirs.

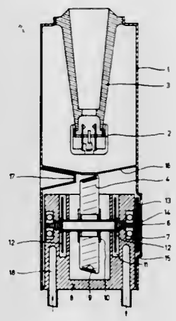
A heat-reflecting layer is positioned between the outer envelope and the discharge tube and extends over part of the length of the lamp to keep the reservoirs nearest the electrodes at cooler temperatures.

3,646,379
X-RAY TUBE HAVING CONTROLLABLE FOCAL SPOT SIZE
Khem Garewal, Stamford, Conn., and Barry M. Singer, New York, N.Y., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.
Filed May 18, 1970, Ser. No. 38,184
Int. Cl. H01j *35/00*
U.S. Cl. 313—57 **15 Claims**



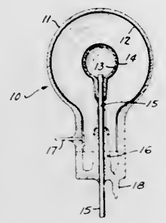
An X-ray tube having means for controlling the width and length of a focal spot area on the anode target surface, the width being adjustable by varying respective positive biasing voltages which are applied to slotted metal cups positioned between the filament and the anode target surface, and the length being externally controllable and continuously adjustable by positioning two movable metallic elements, each being maintained at zero potential or negatively biased with respect to the filament and disposed between a respective end portion of the filament and the slotted metal cups.

3,646,380
ROTATING-ANODE X-RAY TUBE WITH A METAL ENVELOPE AND A FRUSTOCONICAL ANODE
Walter Hartl, Stuffeiring, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 19, 1969, Ser. No. 851,169
Claims priority, application Germany, Aug. 19, 1968, P 17 64 846.3
Int. Cl. H01j *35/10*
U.S. Cl. 313—60 **4 Claims**



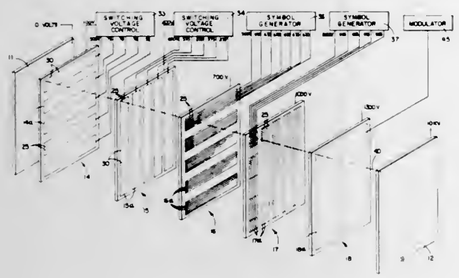
An X-ray tube having an evacuated metal envelope in which an anode is mounted for rotation about an axis perpendicular to an electron beam produced by a cathode. The anode is cooled and is frustoconical in shape, the inclined surface of which intercepts the electron beam. In a preferred embodiment, the anode is in the form of a disc consisting of molybdenum or graphite surrounded by a tire of tungsten or an alloy of tungsten and is at ground potential while the cathode is at a potential which causes X-rays to be generated and is secured to the envelope by an insulator having a recess for receiving a plug connected to a source of potential sufficient to generate X-rays.

3,646,381
SPHERICAL HALOGEN GEIGER TUBE
Richard H. Panther, and Charles Ralph Purser, both of Ottawa, Ontario, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government
Filed Nov. 4, 1968, Ser. No. 773,095
Claims priority, application Canada, Dec. 19, 1967, 007,990
Int. Cl. H01j *39/26*, *17/06*, *61/16*
U.S. Cl. 313—93 2 Claims



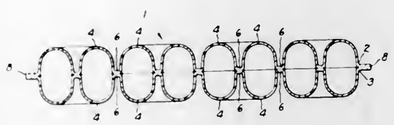
A nondirectional halogen quenched Geiger tube having concentrically arranged spherical anode and cathode, the space between the electrodes being filled with a gaseous mixture of neon, argon and bromine, which electrical connections provided to the two electrodes.

3,646,382
ELECTRON BEAM SCANNING DEVICE FOR SYMBOL AND GRAPHICAL INFORMATION
Walter F. Goede; John E. Gunther, both of Torrance, and Takeshi Noda, Los Angeles, all of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
Filed July 20, 1970, Ser. No. 56,330
Int. Cl. H01j *43/22*
U.S. Cl. 313—104 9 Claims



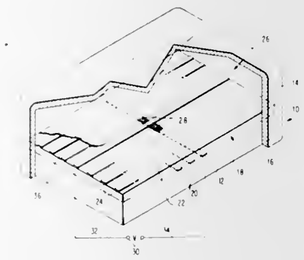
A plurality of control plates are sandwiched between an area electron source and a target, such control plates having apertures formed therein, the apertures of successive plates being aligned to form a plurality of electron channels between the electron source and the target. First control plates are utilized to direct electrons to a selected area of the target and have a first and second set of control electrodes arranged in parallel strips thereon, the first set of strips being orthogonal to the second set. The electrode strips each encompass a plurality of rows or columns of the apertures and thus define the height and width of the characters to be displayed. Second control plates are utilized to form the symbols to be displayed and have apertures formed therein aligned with the apertures of the first control plates to form a portion of the electron channels between the electron source and the target. The second control plates have mutually orthogonal strip electrodes formed thereon which are selectively energized to permit electrons to pass through portions thereof so as to define the symbols to be displayed.

3,646,383
FLUORESCENT PANEL LAMP
Clifton P. Jones, Willoughby, and William C. Martyny, Lyndhurst, both of Ohio, assignors to General Electric Company
Filed Jan. 9, 1970, Ser. No. 1,633
Int. Cl. H01j *00/00*, *17/04*
U.S. Cl. 313—109 6 Claims



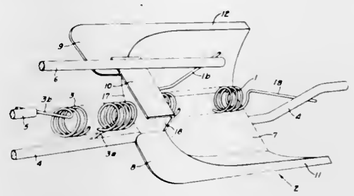
A fluorescent panel lamp having substantially uniform brightness over its face, and wherein the discharge channel is molded in both faceplate and backplate. Uniform brightness is achieved by making the gaps or slots between parallel channels narrow and deep in order to have multiple light reflections which raise the brightness within the slots approximately to that of the channels. A slot depth at least 1.2 times the slot width wherein the channel walls on each side do not depart from vertical by more than 10° is required. A lamp having eight channels within a nominal 12 inch size provides more light and operates more efficiently on lower current at higher wattage.

3,646,384
ONE-SIDED PLASMA DISPLAY PANEL
Frank M. Lay, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 9, 1970, Ser. No. 44,845
Int. Cl. H01j *61/30*
U.S. Cl. 313—109.5 6 Claims



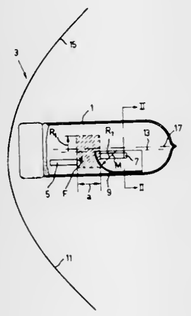
A thin glass sheet carries seats of spaced, parallel electrodes on opposite surfaces thereof and a gaseous atmosphere overlies one surface. Applying an alternating current voltage exceeding a critical value across selected electrodes of each set causes a gas discharge to take place on the surface carrying the gas at the area of selected electrode crossing with localized visible light output.

3,646,385
MOTOR VEHICLE HEADLIGHT AND DOUBLE-FILAMENT INCANDESCENT LAMP THEREFOR WITH GLARE LIGHT SHIELD
Gerhard Wichert, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH
Filed Jan. 5, 1970, Ser. No. 567
Claims priority, application Germany, Jan. 10, 1969, P 19 01 179.1
Int. Cl. H01k *1/26*
U.S. Cl. 313—115 8 Claims



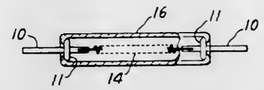
An incandescent motor vehicle headlight lamp having a pair of linear coiled filaments disposed in spaced tandem relation is provided with a scoop-shaped light-intercepting shield underlying the forward filament and having a rearward extension masking off the space between the two filaments as well as the region overlying the rearward filament back to the focal plane of the reflector.

3,646,386
HALOGEN FILAMENT LAMP FOR VEHICLE HEADLIGHT WITH SCREEN PARTIALLY SURROUNDING ANTIGLARE FILAMENT
Johannes Rijnders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 9, 1969, Ser. No. 831,358
Claims priority, application Netherlands, June 8, 1968, 6808109
Int. Cl. H01k *9/08*
U.S. Cl. 313—115 4 Claims



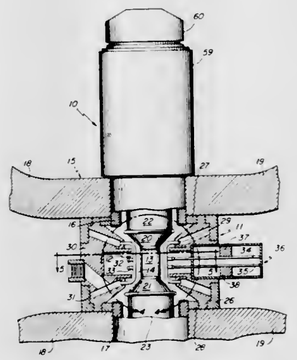
A halogen filament lamp for vehicle headlights in which a screen partially surrounds the antiglare filament within the lamp bulb to prevent blinding of a driver of an oncoming car. This screen has a reflecting surface that both blocks certain light rays and reflects same to the parabolic reflector.

3,646,387
ELECTRIC INCANDESCENT LAMP WITH TAPERED SEALING COLLAR
Reginald J. Ayres, Cape Coral, Fla., assignor to General Electric Company
Filed May 26, 1970, Ser. No. 40,508
Int. Cl. H01j *1/96*; H01k *1/18*; H01j *19/50*
U.S. Cl. 313—274 5 Claims



An electric incandescent lamp with its lead-in wires formed with an integral collar the periphery of which forms a hermetic seal with the lamp envelope. The method of manufacturing the lamp using this lead-in wire whereby the exhausting and filling operations are performed through one end of the envelope.

3,646,388
CROSSED FIELD MICROWAVE DEVICE
Kenneth W. Dudley, Sudbury, and George H. MacMaster, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 1, 1970, Ser. No. 42,180
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 10 Claims

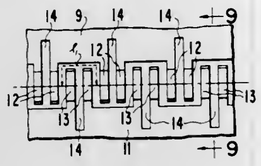


A traveling wave crossed field device is disclosed having dual sets of spaced conductive cathode electrode segments in parallel electrically with one set cooperating as a control element and the remaining set performing primarily as the emitter. Discrete electron cycloidal trajectories are considered in arriving at the spacing between adjacent elements. The cathode configuration provides for space charge control throughout the entire interaction region. Additionally, high-μ switching, as well as high-speed shutoff characteristics, has been achieved by means of very low-control voltage requirements.

3,646,389
REACTIVELY LOADED INTERDIGITAL SLOW WAVE CIRCUITS HAVING INCREASED INTERACTION IMPEDANCE AND TUBES USING SAME

John E. Hentschel, East Brunswick, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed June 14, 1966, Ser. No. 557,408
Int. Cl. H01j *23/28*
U.S. Cl. 315—3.5 **10 Claims**

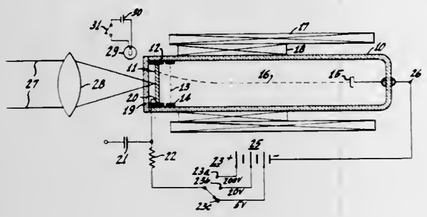


The present invention relates in general to reactively loaded interdigital slow wave circuits and, more particularly, to such circuits provided with elongated reactive loading elements to provide a more uniform intensity of the electric fields of the circuit in the interaction region, whereby the interaction impedance of the circuit is increased. Such improved circuits are especially useful for forward wave amplifiers both of the crossed field and O-type to provide increased efficiency and power output.

3,646,390
IMAGE STORAGE SYSTEM

Robert Steven Silver, Kendall Park, and Eduard Luedicke, Neshanic, both of N.J., assignors to RCA Corporation

Filed Nov. 4, 1969, Ser. No. 873,819
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 **6 Claims**



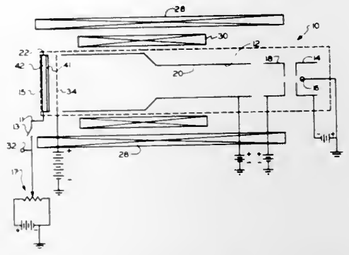
An image pickup device having a charge storage target is operated in a first mode whereby scene light discharges photodiodes included in the target structure and an electrical signal corresponding to the scene light impinging on the diodes is derived as a scanning electron beam recharges the diodes. Apparatus is provided for operating the device in a second mode whereby an optical scene image is stored in the insulator portions of the target between the photodiodes and which stored image may be read out subsequently in a nondestructive manner.

3,646,391
IMAGE-TRANSDUCING STORAGE TUBE

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.

Filed Nov. 13, 1969, Ser. No. 876,285
Int. Cl. H01j *29/50*
U.S. Cl. 315—12 **15 Claims**

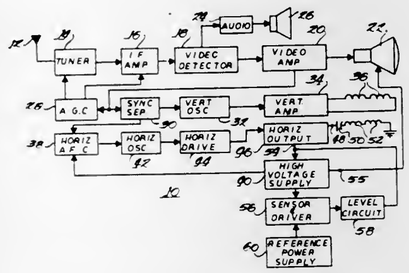
An electronic storage tube is disclosed which enables image-configurated radiant energy to be directly transformed into a corresponding charge pattern on an insulating mosaic surface of the tube target. In a preferred embodiment of the invention, the target of the tube comprised a doped silicon substrate, upon which a mosaic of insulating silicon dioxide islands has been formed. Those areas of the substrate not covered by the insulator are diffused with an impurity of the same type as the background silicon, resulting in a degenerate surface layer in said areas with consequent electrical isolation of said islands. Manipulative process steps are also set forth enabling formation of the charge pattern on said substrate, and enabling nondestructive readout thereof.



3,646,392
TELEVISION HIGH-VOLTAGE REGULATOR CIRCUIT

Joseph G. Zahnen, and George A. Kent, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Aug. 28, 1969, Ser. No. 853,844
Int. Cl. H01j *29/52*; **G05f** *1/56*
U.S. Cl. 315—22 **12 Claims**



A circuit is disclosed for maintaining a constant accelerating anode voltage over a wide range of beam currents in a cathode-ray tube by regulating the peak value of the horizontal retrace signal used to generate the accelerating voltage. A diode-capacitor clamp circuit coupled to the horizontal output stage is loaded by a variable resistance discharge path responsive through a sensing circuit to variations in beam current in the described embodiment.

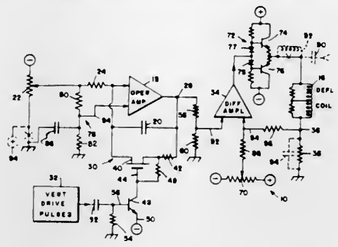
3,646,393
LINEAR SAWTOOTH SCAN GENERATOR UTILIZING NEGATIVE FEEDBACK AND MILLER INTEGRATION

William A. Tarr, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Sept. 10, 1969, Ser. No. 856,650
Int, Cl. H01j *29/70*
U.S. Cl. 315—27 TD **14 Claims**

A scan generator is provided which generates a stable, linear sawtooth current suitable for application to a magnetic deflection coil. An operational amplifier is bypassed by a capacitor so that it generates a linear ramp potential.

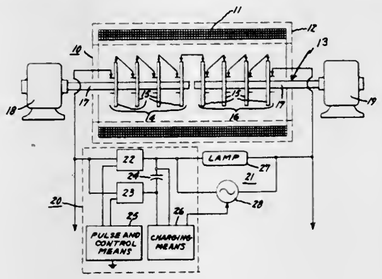
Synchronizing pulses cause a field effect transistor to discharge the capacitor and thus convert this ramp potential into a sawtooth potential. A differential amplifier measures the difference between this sawtooth potential and the potential across a resistor connected in series with the deflection coil, and generates an output signal proportional to this difference that is applied to the coil through an output amplifier. A highly linear sawtooth scan is thus created which is stable even when subjected to varying supply potentials. The same circuit can be modified for use as a skew control circuit.



3,646,394
ACYCLIC GENERATOR WITH VACUUM ARC COMMUTATOR FOR RAPID GENERATION OF SHORT, HIGH-ENERGY PULSES

Paul S. Swartz, and Willem F. Westendorp, both of Schenectady, N.Y., assignors to General Electric Company

Filed Nov. 19, 1970, Ser. No. 91,127
Int. Cl. H02k *29/02*, *31/02*; **H05b** *41/34*
U.S. Cl. 315—205 **13 Claims**



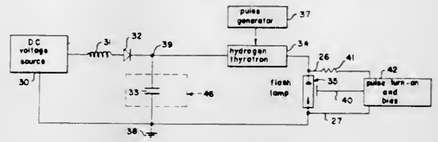
Short pulses of high energy are generated at a high-pulse rate by providing high energy from an acyclic generator having a plurality of discs rotating in the field of a superconductive field coil and commutating the output of the generator, through an electric discharge device connected across the same, by means of a pair of oppositely poled, sequentially operated triggerable vacuum arc devices.

3,646,395
HIGH REPETITION RATE LASER OPTICAL PUMPING SYSTEM

Normand P. De Pratti, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 15, 1970, Ser. No. 37,547
Int. Cl. H01s *3/09*
U.S. Cl. 315—242 P **5 Claims**

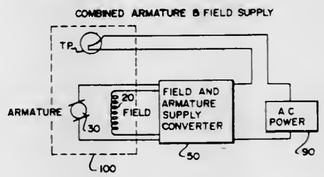
A system for optically pumping a laser at high-repetition rates. This system utilizes a discharge from a high-voltage capacitor into a laser-exciting flashlamp. The capacitor discharge is controlled by switching action of a hydrogen thyratron tube. The thyratron switch is made to close when each voltage pulse in a pulse train is applied to a thyratron control grid. The switch is automatically opened after capacitor-discharge, by maintaining capacitor voltage below the ionization potential of a thyratron tube for a fixed period of time.



3,646,396
OVERLOAD PROTECTION SYSTEM FOR DC MOTORS

Vincent A. Fischer, Cook County, Ill., assignor to Bodine Electric Company, Chicago, Ill.

Filed July 22, 1970, Ser. No. 57,180
Int. Cl. H02h *7/085*
U.S. Cl. 317—13 B **9 Claims**

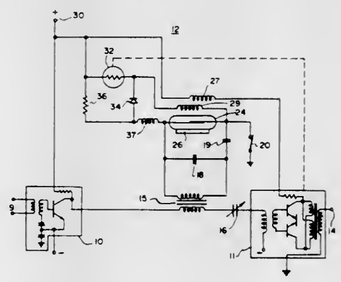


Apparatus for overload protection control of direct current (DC) motors wherein a heat and current responsive device is positioned in close proximity with the windings of the motor and electrically coupled to an alternating current (AC) power supply from which the motor power is derived through a suitable AC/DC converter or control. A current sensor monitors the power input to the motor to protect the motor from startup or operational overloading, and a thermal sensing device is positioned in thermal contact with the motor to protect against running overloads.

3,646,397
AMPLIFIER PROTECTION CIRCUIT RESPONSIVE TO TEMPERATURE AND OVERCURRENT

Ross E. Ruthenberg, and Joseph W. Spells, Jr., both of Des Plaines, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 13, 1970, Ser. No. 27,669
Int. Cl. H02h *7/20*, *5/04*
U.S. Cl. 317—16 **10 Claims**



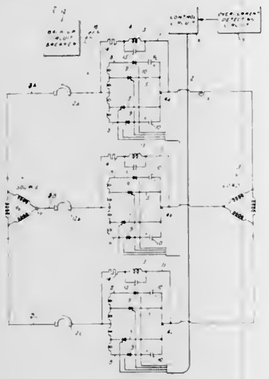
A protection circuit for the transistorized power amplifier of a transmitter is provided in the form of a normally shunted reactive circuit coupled in series with the input to the power amplifier stage means of a current stepdown transformer. When excessive current is drawn by the power amplifier or when an excessive temperature is reached the shunting cir-

cuit is opened thereby connecting the reactive component in series between the driver stage and the power amplifier stage to partially detune the driver output, reducing the drive to the power amplifier stage.

3,646,398
STATIC SWITCH PROTECTIVE CIRCUIT ACTIVATED BY SHORTED COMMUTATION THYRISTER

Peter Kotos, Havertown, Pa., assignor to General Electric Company

Filed July 16, 1970, Ser. No. 55,365
Int. Cl. H02h *7/14*
U.S. Cl. 317—33 SC **5 Claims**

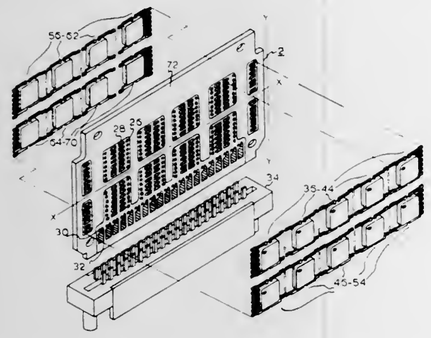


A protective circuit is provided for a thyristor switch connected between an AC source and a load. The switch includes a commutation thyristor and a DC charged commutation capacitor. The protective circuit includes a DC sensitive relay which, when energized, actuates a backup circuit breaker connected in series with said switch to isolate the source from the load. The relay is actuated by the discharge of the commutation capacitor if the commutation thyristor has shorted.

3,646,399
PRINTED CIRCUIT BOARD CONSTRUCTION

James R. Mars, Pittsfield, and Frederick S. Ciepiela, North Adams, both of Mass., assignors to General Electric Company

Filed Mar. 4, 1970, Ser. No. 16,389
Int. Cl. H02b *1/00*; **H05k** *1/18*
U.S. Cl. 317—100 **6 Claims**

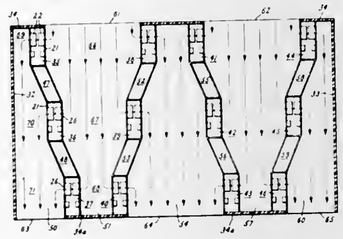


A composite circuit board assembly is formed having a laminated-type construction including surface layers of thermally conducting material having spaced openings for location of recessed mounting means for the electrical components. The openings can be etched after lamination of a composite layer which provides the heat-sink function and the assembly means. Alternately, a thermally conducting layer can be laminated upon a substrate already having the openings and an overlayer of electrically conducting material which provides the assembly means can be pressed into the openings and thereafter etched to form the assembly sites.

3,646,400
AIR-COOLING SYSTEM FOR HVDC VALVE WITH STAGGERED RECTIFIERS

Donald M. Demarest, Wallingford, and Arnold I. Shore, Philadelphia, both of Pa., assignors to General Electric Company

Filed Dec. 21, 1970, Ser. No. 99,893
Int. Cl. H02b *1/18*; **H01b** *7/34*
U.S. Cl. 317—100 **7 Claims**

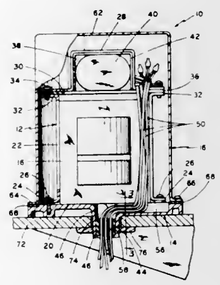


Disclosed is a housing arrangement for a plurality of rectifier holding assemblies comprising a solid-state valve(s) of a high-voltage converter. The assemblies are mounted on panel structures which are disposed between sidewalls arranged parallel to and laterally offset from each other to form inlet ducts through which a cooling fluid may be brought to the assemblies and outlet ducts through which the cooling fluid from the assemblies exits. The cross-sectional area of the inlet and outlet duct portions adjacent the panel structures are such that the pressure drop in said portions are equal. Inlet and outlet ducts are mated together to decrease housing size.

3,646,401
WEATHERPROOF UNPOTTED BALLAST CONSTRUCTION

Ernest M. Freegard, Evanston, and Sol Hasson, Skokie, both of Ill., assignors to Advance Transformer Co., Chicago, Ill.

Filed Jan. 29, 1971, Ser. No. 110,897
Int. Cl. H05k *5/04*
U.S. Cl. 317—100 **18 Claims**

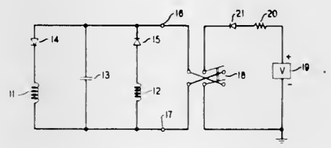


A ballast for gaseous discharge devices especially intended for connection to outdoor mercury lamps which is constructed to run cool and to be weatherproof. A transformer and condenser are mounted as a unit within a housing on an integral base of high heat conductivity metal and separated together from the canister or housing by airspace, and likewise separated from one another by airspace and a heat barrier. The ballast is unpotted and transfers heat to the housing wall by convection and radiation and to the base by condition, the transformer being in contact with the base. The housing is mounted on the base with an elastomer gasket between the housing and the base. The leads from the ballast are led to a nipple through wire-carrying channels integrally formed in the base. The nipple is also integral with the base and the leads emerge from the ballast by way of a frustoconical elastomer plug compressed within the nipple.

3,646,402
SWITCHING OF INDUCTANCES

Joseph Henry Condon, Summit, and David William Hagelbarger, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 20, 1970, Ser. No. 65,616
Int. Cl. H01f *27/42*
U.S. Cl. 317—137 **12 Claims**

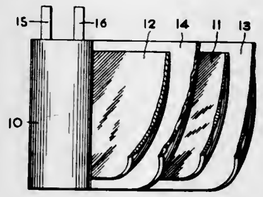


Electric current can be rapidly switched from one inductance to another similar inductance if a capacitor is connected in parallel with the two inductances and diodes are suitably placed. The required power supply need only be large enough to maintain the steady state current flow. Switching takes place when the voltage applied to the circuit is reversed. An exemplary current reversing scheme uses a combination of a high voltage silicon controlled rectifier and a lower voltage switching transistor.

3,646,403
HIGH-VOLTAGE ELECTROLYTIC CAPACITOR

Franz S. Dunkl, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Oct. 23, 1970, Ser. No. 83,568
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **4 Claims**

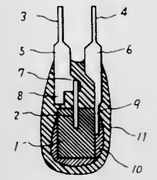


An electrolytic capacitor suitable for operating at high voltages is produced by combining a glycol-borate electrolyte together with N-methyl pyrrolidone and a moderately hydrogen-bonding solvent. The electrolytic capacitor has a wide range of temperature conditions, operates at high voltages and retains stable electrical characteristics at these levels.

3,646,404
SOLID-STATE ELECTROLYTIC CAPACITOR AND METHOD OF MAKING SAME

Masao Matsuo, Takarazuka, and Hiroshi Tomiwa, Osaka, both of Japan, assignors to Matsuo Electric Company, Limited, Osaka-fu, Japan

Filed Jan. 13, 1971, Ser. No. 106,172
Int. Cl. H01g *9/05*
U.S. Cl. 317—230 **6 Claims**

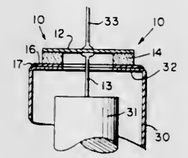


The method of making a capacitor by forming a piece of sheet metal to provide a common support and alternate anode and cathode members extending from the support, electrically connecting capacitor elements between each of said anode and cathode members, coating the individual elements and at least part of the anode and cathode members with a plastic resin and then severing the members from the common support and the resulting capacitor which has the terminals extending therefrom in substantially parallel relationship.

3,646,405
HERMETIC SEAL

George Wallis, Lexington; John J. Dorsey, Waltham, and Bernard L. Phillips, Norwood, all of Mass., assignors to P. R. Mallory & Co. Inc., Indianpolis, Ind.

Filed Jan. 8, 1969, Ser. No. 789,799
Int. Cl. H01g *9/10*
U.S. Cl. 317—230 **33 Claims**

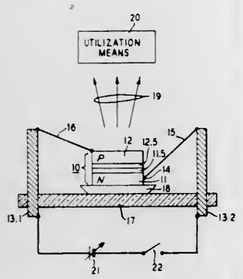


An insulator to metal hermetic seal for electronic components and methods of making the hermetic seal. The hermetic seal may be a glass to metal or a ceramic to metal seal. The terminal member of the seal, whether glass to metal or ceramic to metal, may include a metal selected from the low-carbon steels, the Group I metals (copper, silver and gold, or alloys thereof or clad materials thereof), the Group VIII metals (nickel, palladium and platinum or alloys thereof or clad materials thereof), iron-nickel-cobalt alloys or clad materials thereof, nickel-iron alloys or clad materials thereof, chromium-iron alloys or clad materials thereof or a metal from any one of the film-forming metals which can form an electrolytic oxide film such as tantalum, aluminum, niobium, titanium, zirconium alloys thereof or clad materials thereof. The glass member may include any one of the borosilicate, potash-soda-barium, potash-soda-lead, soda-lime or aluminia-silicate glasses. The ceramic member may include any one of alumina, steatite, fosterite, or beryllia.

3,646,406
ELECTROLUMINESCENT PN-JUNCTION DIODES WITH NONUNIFORM DISTRIBUTION OF ISOELECTRONIC TRAPS

Ralph Andre Logan, Morristown; Harry Gregory White, Bernardsville, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 30, 1970, Ser. No. 51,067
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 6 Claims

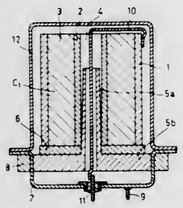


An electroluminescent PN-junction diode containing isoelectronic traps is fabricated with a relatively high concentration of such traps located within a few diffusion lengths of the PN-junction and a relatively low concentration of such traps farther away from the junction. Thereby, absorption by such traps away from the junction, of radiation emitted at such traps at the junction, is minimized. In particular, a method is described for epitaxially growing such a gallium phosphide PN-junction diode with a higher concentration of isoelectronic nitrogen traps near the junction than elsewhere in the diode.

3,646,407
RADIATION DETECTOR HAVING A SEMICONDUCTOR CRYSTAL

Johannes Meuleman, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,857
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 7 Claims

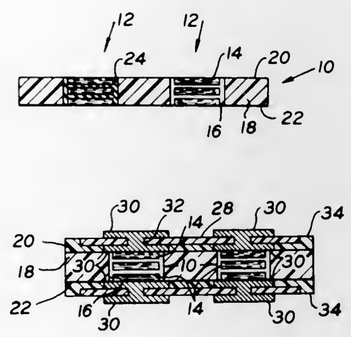


A radiation detector in which a semiconductor crystal having a substantially central cavity is used around which a radiation-sensitive junction is provided between two zones of opposite conductivity-types which may be separated by an intrinsic zone, said crystal being accommodated in a hermetically sealed envelope consisting of a boxlike holder and a cover, in which connection means for the crystal on the envelope consist of a rigid pin which is connected to the boxlike holder, said pin being guided between the aperture of the crystal and forcibly pressing therein against the wall of the cavity.

3,646,408
SEMICONDUCTOR WIRELESS VOLTAGE AMPLIFIER MOUNTED ON A DIELECTRIC SUBSTRATE

Ledyard Kastner, c/o L-K Engineering Co., 3579 Merrick Road, Seaford, N.Y.

Continuation-in-part of application Ser. No. 786,628, Dec. 24, 1968, now abandoned, and a continuation-in-part of 699,100, Jan. 19, 1968, now Patent No. 3,589,003, and a continuation-in-part of 699,205, Jan. 19, 1968. This application Jan. 13, 1971, Ser. No. 106,267
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 10 Claims

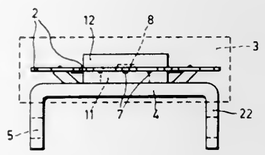


A semiconductor construction comprising an assembly of layered semiconductive material maintained within a nonconductive body without connecting leads and its application as part of an integrated construction of electronic components.

3,646,409
HEAT-SINKING PACKAGE FOR SEMICONDUCTOR INTEGRATED CIRCUIT

Johannes Theodorus van de Water; Joannes Joseph Van Hout, and Arie Baelde, all of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 29, 1969, Ser. No. 845,921
Claims priority, application Netherlands, July 30, 1968, 6810761
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 5 Claims

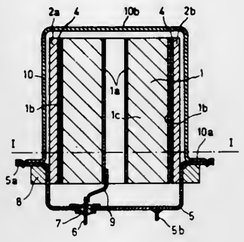


A package to improve heat dissipation of a semiconductor integrated circuit is described. The semiconductor crystal is mounted on one conductor of a lead frame, to which is joined a cooling block, and then the assembly encapsulated in a resin envelope, such that the whole block, except for the side joined to the conductor, lies outside the plane of the conductors. In this way, adequate heat dissipation is ensured via the block rather than the lead conductors themselves. If desired, this first package can then be encapsulated in a second resin envelope containing a second conductor set and a second cooler in the form of a plate.

3,646,410
RADIATION DETECTOR HAVING A CLAMPED CRYSTAL

Johannes Meuleman, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,119
Claims priority, application France, Sept. 24, 1969, 6932554
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 7 Claims

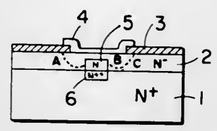


The invention relates to a radiation detector which comprises a crystal having two coaxial zones of opposite conductivity types, which zones may be separated by an intrinsic zone, between which first-mentioned zones a radiation-sensitive junction is formed, the crystal being secured in a hermetically sealed envelope consisting of a boxlike holder and a cover, the connection consisting of a clamping support which encloses the crystal and which is secured to the boxlike holder.

3,646,411
SURFACE BARRIER JUNCTION DIODE

Minetaka Iwasa, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,584
Claims priority, application Japan, Dec. 20, 1968, 43/94071
Int. Cl. H01l 3/00
U.S. Cl. 317—235 UA 2 Claims



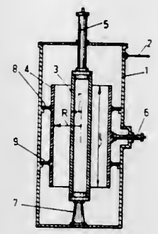
A surface barrier junction diode is disclosed in which the impurity concentration of the epitaxial layer immediately beneath the Schottky barrier is higher than that of the other regions of the epitaxial layer. The diode has improved voltage-current characteristics in both the reverse and forward directions.

3,646,412
CYLINDRICAL CAPACITORS WITH GAS DIELECTRICS

Rintje Boersma, Harmelen, and Hulbert A. J. M. Spoorenberg, Utrecht, both of Netherlands, assignors to N. V. "COQ", Utrecht, Netherlands

Filed Oct. 23, 1969, Ser. No. 868,763
Claims priority, application Netherlands, Mar. 20, 1969, 6904281
Int. Cl. H01g 3/02
U.S. Cl. 317—244 7 Claims

In a cylindrical capacitor having a gaseous dielectricum the relation between the coefficient of expansion of the material of the inner cylinder of the capacitor and the gas pressure, which is held steady, being such as to make the capacity of

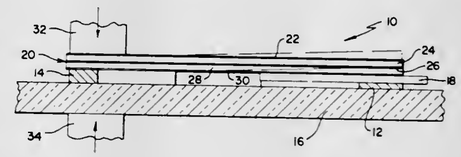


the capacitor substantially independent of temperature variations within the operational temperature range of the capacitor.

3,646,413
PIEZOELECTRIC-DRIVEN VARIABLE CAPACITOR

Johannes A. F. Oomen, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Filed Sept. 25, 1970, Ser. No. 75,532
Int. Cl. H01g 7/06
U.S. Cl. 317—246 5 Claims

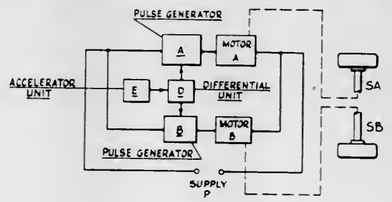


A piezoelectric-driven variable capacitor for creating a voltage-controlled variable reactance useful at high frequencies and high-power levels is disclosed. A piezoelectric flexure element is used as one of the capacitor plates. Means are provided to compensate for uneven expansion of the piezoelectric flexure element.

3,646,414
ELECTRICALLY OPERATED DRIVE SYSTEMS

David Gurwicz, Gateshead, Durham, England, assignor to Sevcon Engineering Limited and Ransomes Sims & Jefferies Limited

No Drawing. Continuation-in-part of application Ser. No. 682,468, Nov. 13, 1967, now abandoned. This application Apr. 28, 1970, Ser. No. 32,689
Claims priority, application Great Britain, Nov. 14, 1966, 51,010/66
Int. Cl. H02p 7/68
U.S. Cl. 318—67 11 Claims



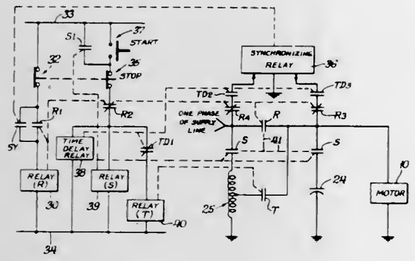
Electrically operated drive system for driving coaxial shafts comprising two electric motors, two switching circuits for

respectively connecting the motors to and disconnecting them from an electrical supply, the switching circuits being each adapted alternately and for variable periods to connect and disconnect the supply to and from the associated motor so that the means power supplied to said associated motor is variable and means for rendering the means power supplied to one of the motors different from that supplied to the other motor.

3,646,415
SYSTEM FOR STARTING INDUCTION MOTORS WITH SELF-EXCITATION

David D. Robb, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 16, 1970, Ser. No. 98,757
Int. Cl. H02p *1/26*
U.S. Cl. 318—229 **6 Claims**

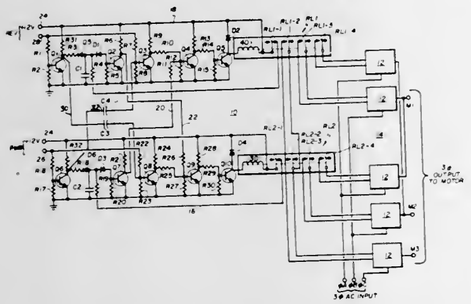


A polyphase induction machine has a balanced polyphase shunt capacitor bank connected to the stator. In starting as a motor, the stator and capacitor bank are supplied with reduced line voltage by means of a transformer, and the motor is allowed to accelerate until it reaches maximum (and nearly) synchronous speed. Then, the motor is disconnected from the source and permitted to coast, whereupon there is a building up of stator voltage by self-excitation. When the phase and amplitude of the self-excited voltage are approximately equal to the phase and amplitude of the line voltage, the stator is connected directly to the line and the transformer and excitation capacitor are disconnected. The starting is accomplished with minimal dip in line voltage.

3,646,416
SOLID-STATE CIRCUIT CONTROLLED THREE-PHASE REVERSING STARTER

Cecil W. Davidson, Dallas, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed Oct. 27, 1970, Ser. No. 84,281
Int. Cl. H02p *1/40*
U.S. Cl. 318—207 R **2 Claims**

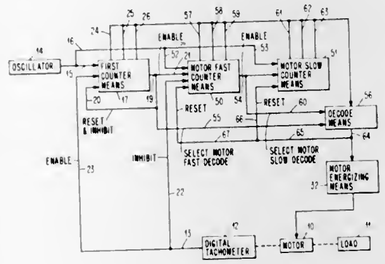


A protective solid-state logic circuit controlling the operation of an AC motor energized by a three-phase current supply in which two phases are reversed to reverse rotation of the motor, is provided with critical time delay components for causing electrical braking of the running motor by the provision a certain relatively short AC power reversal time for stopping the so running motor without creating damaging short circuiting in the system, each time the direction of rotation of the motor is reversed by switching the logic circuit.

3,646,417
DIGITAL SPEED SERVOMECHANISM

John V. Cassie, Longmont; Philip J. Lima, Boulder, and Everette R. McCully, Northglenn, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,913
Int. Cl. H02p *5/16*
U.S. Cl. 318—318 **17 Claims**



The speed of rotation of a motor is controlled by a closed-loop digital speed or velocity servomechanism which derives distance information from a digital motor tachometer and derives time information from a counter arrangement, the counter being driven by a stable high-frequency oscillator. The value of the count at the time of occurrence of a tachometer pulse is a measure of motor speed and is used to determine the mode of motor energization which will occur until the time of next tachometer pulse, at which time a new motor energization decision is made.

Three counters are connected to be sequentially incremented by a relatively high-frequency oscillator. The motor whose speed is to be controlled drives a digital tachometer whose pulse output frequency increases with speed. The highest frequency output of the tachometer occurs when the motor is running at or slightly above the desired speed; however, this highest frequency is low when compared to the oscillator frequency. Each tachometer pulse initiates counting in the first counter and also initiates decoding or sampling of the count then in the second counter when the motor is fast, or decoding or sampling of the third counter when the motor is slow. This decoding or sampling determines the mode of motor energization which will exist until the occurrence of the next tachometer pulse, the period between adjacent tachometer pulses constituting a speed-error sampling period.

During the interval between adjacent tachometer pulses, a count first advances through the first counter, then into the second counter, and then, if the motor is slow, into the third counter. The occurrence of a tachometer pulse while the second counter is advancing indicates that the motor is fast, and the specific value of the count quantitatively indicates the amount of motor overspeed. The occurrence of a tachometer pulse at a later time, after the second counter has filled and the third counter is advancing, indicates that the motor is slow, and the value of the count quantitatively indicates the amount of motor underspeed.

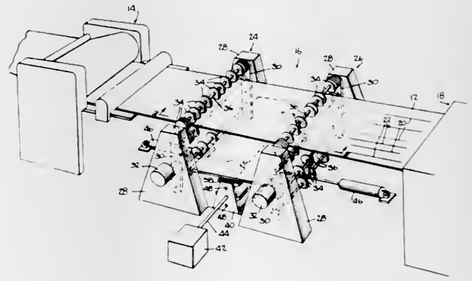
The decoding function is completed as the first counter advances during the next speed-error sampling period. Before the first counter fills, to thereafter cause the second counter to advance, the decoding function is completed and the second and third counters are reset to an initial state, thereby conditioning them for their operation in this next speed-error sampling period.

During the initial acceleration interval, when the motor is rapidly accelerating from zero velocity toward the command or desired velocity, a given high-order count is preset into the third counter. The motor receives continuous energization until its velocity has increased to the desired velocity. At this time, the preset count in the third counter no longer exists, and the acceleration mode of energization of the motor is terminated.

3,646,418
POSITIONING OF MULTIPLE ELEMENTS

Robert B. Sterns, and Robert R. Richards, both of Great Neck, N.Y., assignors to Logic Systems, Inc., Great Neck, N.Y.

Filed July 22, 1969, Ser. No. 843,322
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **28 Claims**



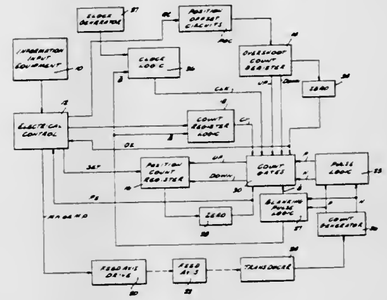
Working elements such as cutters or scorers for operating at different width positions across a lengthwise moving web, such as paperboard, are positioned widthwise by according to a digitally coded program. Each element, which is provided with a position storage register, is moved along by an associated yoke which is also provided with a position storage register. The element storage registers are programmed, as from a tape etc. to a count corresponding to a desired new position. The yoke registers maintain a count corresponding to their actual position. All the yokes are driven along a common path across the web while simultaneous comparisons are made between each pair of registers. As the comparisons for each pair of registers reach zero the yoke is declutched and remains in position until all the others have been positioned. The yokes may then be disengaged from their elements for repositioning of other elements by making similar comparisons and driving the yokes to the positions of these other elements. Possible errors in position programming are detected prior to driving the yokes by making comparisons between the programmed element storage registers to ascertain the presence of improper register signals which call for a shift in the order of the elements.

3,646,419
NUMERICAL CONTROL WITH POSITION OFFSET

Josef K. Holy, Torrance, and Esteban J. Toscano, Tarzana, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 5, 1969, Ser. No. 874,165
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **4 Claims**

A record-controlled incremental positioning system for providing position offset without the need for returning the element being positioned to a zero point in a positioning axis. Desired position information is stored in a desired position count register. Overshoot movement is stored in an overshoot count register. The magnitude of the count of a preceding overshoot movement is combined, with the sign reversed, with a succeeding count of desired position in the desired position count register. Position offset is stored in manually set switches. Storage facilities independently of the

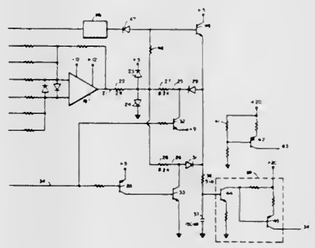


switches are provided for information identifying switches individually having both the old position offset and the new or succeeding position offset which, under the control of an initiating signal from the tape, are transferred in sequence from the storage facilities to the overshoot count register and from the overshoot count register to the position count register, the old position offset count with the same sign and the new position offset with the sign reversed.

3,646,420
BALANCE CIRCUIT FOR DC SERVOS

Martin O. Halfhill, and Frank J. Sordello, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Original application Aug. 20, 1969, Ser. No. 851,692, now Patent No. 3,601,676. Divided and this application Feb. 11, 1971, Ser. No. 114,577
Int. Cl. G05d *23/275*
U.S. Cl. 318—634 **6 Claims**

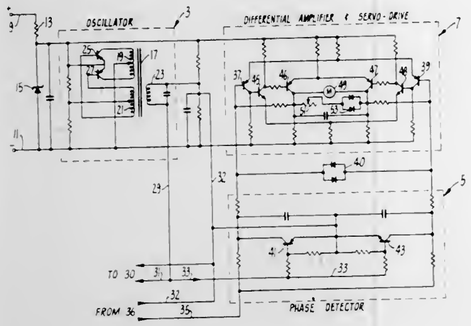


A balance circuit for neutralizing offsets and drifts of all inputs to the summing amplifier of a DC servo including: a balance amplifier for comparing the drive signal applied to a servo controlled motor with selected inputs to the summing amplifier to determine any difference therebetween and developing a balance signal for feedback to the input of the summing amplifier which is equal to, but out of phase with the difference, and circuitry for applying the balance signal during both the fine and coarse position steps of the servo operation.

3,646,421
WIND DIRECTION INDICATOR SYNCHRO SYSTEM

Robert D. Ogg, Portland, Maine, assignor to The Eastern Company

Filed Feb. 25, 1970, Ser. No. 14,000
Int. Cl. G05b 1/06
U.S. Cl. 318—654 **1 Claim**

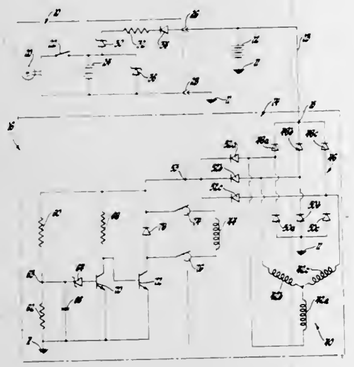


A synchro system of simple and inexpensive structure is provided which is particularly suitable for use as a wind direction indicator on sailboats. A transistorized oscillator is provided generating a current which is fed to a synchro transmitter which in turn is connected to an indicator. The indicator generates an error signal based on the phase difference between the current fed to the synchro and the position of a second synchro in the indicator and this phase difference is detected and amplified and used to operate a motor to turn the indicator. Variable damping can be employed.

3,646,422
CIRCUIT FOR RECHARGING THE BATTERY OF A PORTABLE DEVICE FROM THE CHARGING SYSTEM OF A CAR

Max E. Hankley, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1970, Ser. No. 65,623
Int. Cl. H02j 7/04
U.S. Cl. 320—53 **3 Claims**

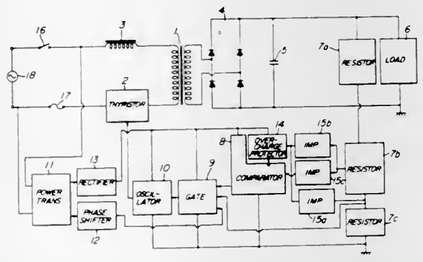


A first Zener diode connected from the positive terminal of a rechargeable battery for a portable electrical device to the output of a vehicle charging system and a second Zener diode connected across the terminals of the rechargeable battery. The first Zener breaks down when the output of the vehicle charging system is above the sum of the terminal voltage of the rechargeable battery and the breakdown voltage of the first Zener, and the second Zener breaks down when the output is above the sum of fully charged terminal voltage of the rechargeable battery and the breakdown voltage of the first Zener.

3,646,423
CONVERTER FOR CHANGING ALTERNATING CURRENT INTO DIRECT CURRENT

Kenzo Tatematsu, Amagasaki, and Teruhisa Kaneko, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 15, 1970, Ser. No. 46,322
Claims priority, application Japan, June 20, 1969, 44/49863; 44/49864; Aug. 29, 1969, 44/69483
Int. Cl. H02m 1/18; G05f
U.S. Cl. 321—14 **14 Claims**



A converter for changing alternating current into direct current by charging a large-capacity capacitor through a full wave rectification circuit which, together with a transformer, is connected to an AC power supply. The output voltage of a voltage divider circuit consisting of the above-mentioned capacitor and a parallel-connected resistor is compared with a predetermined reference voltage by a comparator circuit. Then, if the former is lower than the latter, a gate circuit is triggered to put a self-oscillating circuit into a state where it is ready for oscillation, and the oscillating operation of the above-mentioned self-oscillating circuit is triggered through the gate circuit connected to an intermediate point of a closed loop made up of a rectification circuit for rectifying an AC source voltage and of a part of the aforesaid voltage divider circuit, the output of the self-oscillating circuit providing a trigger signal for a thyristor means connected to the aforementioned transformer.

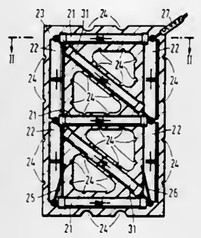
3,646,424
ELECTRICAL COMPONENT PROTECTED AGAINST HIGH TENSION, PARTICULARLY FOR COLOR TELEVISION RECEIVERS AND METHOD OF ITS PRODUCTION

Rainer H. Dangschat, Landsham, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 23, 1970, Ser. No. 5,321
Claims priority, application Germany, Jan. 23, 1969, P 19 03 351.3
Int. Cl. H02m 7/00
U.S. Cl. 321—15 **1 Claim**

A grid-shaped electrical component is formed by molding a plurality of electrically interconnected capacitors and diodes, physically forming a grid structure, within a synthetic

casting resin. The electrical components form the cores of the struts of the grid structure and each strut is provided with

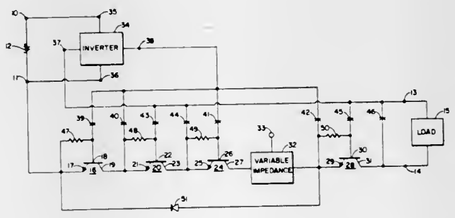


a plurality of indentations in the synthetic resin in the area of the walls of the components.

3,646,425
DC VOLTAGE MULTIPLIER

Charles H. Beck, Chalfont, and William F. Meyers, Blue Bell, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 16, 1971, Ser. No. 134,603
Int. Cl. H02m 7/00
U.S. Cl. 321—15 **7 Claims**



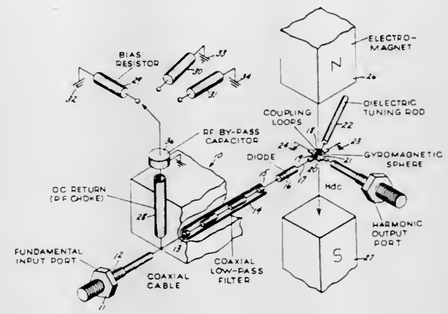
A DC voltage multiplier having a plurality of voltage multiplying stages using transistors that are capacitively coupled to an inverter to conduct current in only one direction. A variable impedance is responsive to a signal to vary the factor of multiplication of the DC voltage multiplier between a maximum value and a lower value that is determined by the number of voltage multiplying stages affected by the variable impedance and bypassed within the multiplier by a unidirectional current conducting device.

3,646,426
ELECTRONICALLY TUNABLE MICROWAVE FREQUENCY MULTIPLIER

Morris Cohen, Oceanside, N.Y., assignor to Loral Corporation, Scarsdale, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,668
Int. Cl. H02m 5/06; H03f 7/00
U.S. Cl. 321—69 NL **3 Claims**

An electronically tunable microwave frequency multiplier capable of operating over octave frequency bands in second, third and fourth harmonic modes to yield a continuous output over a desired range. The device includes a fixed coaxial low-pass filter designed to cut off at the highest fundamental frequency, a point contact diode to generate the harmonics, an electronically tuned garnet filter used to tune to the desired harmonic which is then emitted from an output port,



and a DC return fed through an RF bypass capacitor and out to a series of resistors used to effect an optimum self-bias on the diode for the optimum conversion loss for the desired harmonic band.

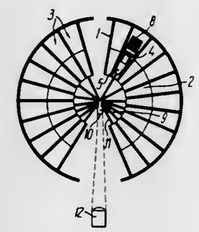
ERRATUM

For Class 323—21 see:
Patent No. 3,646,439

3,646,427
HIGH-VOLTAGE LIGHT-CONTROLLED SEMICONDUCTOR CONVERTER

Alexandr Deomidovich Koval, Belyaevo-Bogorodskoe, kvartal 48, korpus 17, kv. 41, and Viktor Iosifovich Eremin, Gospitainy val, 3, kv. 86, both of Moscow, U.S.S.R.

Filed June 2, 1970, Ser. No. 42,707
Claims priority, application U.S.S.R., June 6, 1969, 1335560; Mar. 18, 1970, 1407851
Int. Cl. H02m 1/08
U.S. Cl. 323—21 **4 Claims**



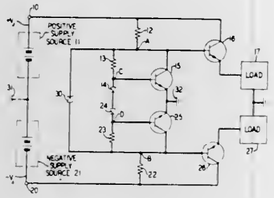
A high-voltage light-controlled semiconductor converter comprising semiconductor rectifying elements with light pickups, arranged all the way around a sphere, and a light-distributing system placed inside said sphere, for the best utilization of its luminous flux.

The converter is mainly intended for use on power transmission lines.

3,646,428
SYMMETRICAL VOLTAGE REGULATOR

Gabor Peter Torok, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 27, 1970, Ser. No. 93,077
Int. Cl. G05f 1/60, 5/00
U.S. Cl. 323—22 T 8 Claims

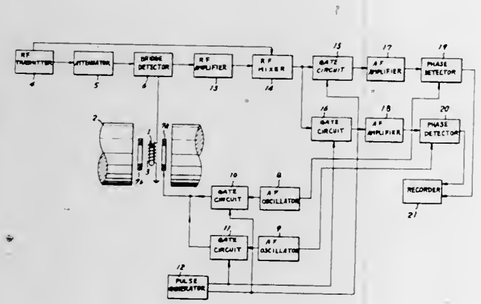


Positive and negative voltage sources are connected to a conventional regulator which establishes a fixed voltage. A sensing circuit utilizing two transistors of opposite polarity monitors the fixed voltage and initiates conduction of one of the transistors in response to an imbalance between the amplitudes of the supply voltages with respect to ground or to a similar imbalance of the load. This causes additional current to flow from one of the supplies, thereby compensating for the imbalance and establishing symmetry with respect to the ground potential.

3,646,429
NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Makoto Takeuchi; Kazuo Nakagawa; Teruo Miyamae, and Terubumi Kase, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1969, Ser. No. 888,374
Claims priority, application Japan, Nov. 27, 1969, 44/95300
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 6 Claims

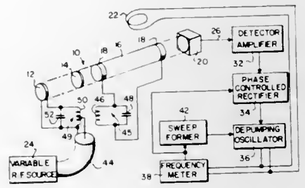


Method and apparatus for measuring gyromagnetic resonances over the nuclear magnetic resonance spectrum wherein the driving ratio frequency magnetic field or the unidirectional polarizing magnetic field is modulated at two or more different frequencies creating different resonance regions on the spectrum which are observed substantially simultaneously.

3,646,430
OPTICALLY PUMPED MAGNETOMETER INCLUDING CIRCUITS FOR ENERGIZING THE RADIATION SOURCE AND THE ABSORPTION CELL

Daniel P. Hearn, Tulsa, Okla., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 15, 1968, Ser. No. 767,657
Int. Cl. G01r 33/08
U.S. Cl. 324—0.5 11 Claims

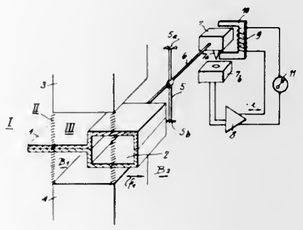


An optically pumped magnetometer comprising a radiation source including a radiation lamp, a radiation absorption cell on one side of the radiation source, a radiation detector, means for subjecting the absorption cell to a high-frequency magnetic field, first coupling means having a first resonant frequency for coupling the absorption cell to a high-frequency source, second coupling means having a second, variable resonant frequency for coupling the radiation source to the high-frequency source, a radiation reflector on the side of the lamp opposite the absorption cell to reflect to the cell radiation initially radiated away from the cell, and a heat sink for the radiation source.

3,646,431
APPARATUS FOR MEASURING THE CONCENTRATION IN PARAMAGNETIC GAS OF A GAS MIXTURE

Sylvain Jean Janssen, Neuilly-sur-Seine, France, assignor to Compagnie Des Compteurs, Paris, France

Filed Oct. 24, 1969, Ser. No. 869,258
Claims priority, application France, Oct. 31, 1968, 172128
Int. Cl. G01r 33/12
U.S. Cl. 324—36 8 Claims

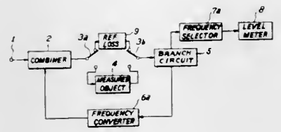


Device for measuring the paramagnetic gas concentration of a gas mixture, constituted by a pick up of general flat shape placed perpendicularly to the electric fluxes of a magnetic field having abrupt intensity variations, said pick up comprising at least one member composed of a flat metal part and an adjacent closed cell-shaped metal part filled with a nonparamagnetic gas or put under a vacuum, connected to the preceding part in a region of the airgap where the induction is uniform, each of these parts respectively having equivalent sections of metal in the regions where the field intensity varies abruptly.

3,646,432
SYSTEM FOR MEASURING THE LOSS OR GAIN COEFFICIENT OF A TRANSMISSION MEDIUM

Taichiro Nakai, Fujisawa; Hiroshi Sakaki; Masanori Sato, both of Tokyo, and Hiroshi Yuguchi, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed May 14, 1970, Ser. No. 37,236
Int. Cl. G01n 27/00
U.S. Cl. 324—57 R 6 Claims

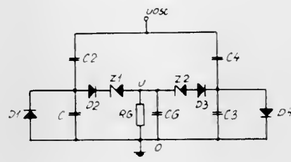


A system for measuring the infinitesimal transmission coefficient of a transmission medium in which a measuring signal is repeatedly passed through the transmission medium, such as a cable or the like, so that the infinitesimal transmission coefficient of the transmission medium is magnified in proportion to the number of repeating cycles of the measuring signal in the transmission medium up to a value sufficient to be readily and precisely measured.

3,646,433
CIRCUIT FOR COMPARING THE CAPACITANCE OF CAPACITANCE ELEMENTS

Nils Aage Juul Eilersen, Gongehusvej, 226-232, DK-2950, Vedboek, Denmark

Filed Apr. 20, 1970, Ser. No. 30,164
Claims priority, application Denmark, Apr. 21, 1969, 2157/69
Int. Cl. G01r 11/52, 27/26
U.S. Cl. 324—60 5 Claims

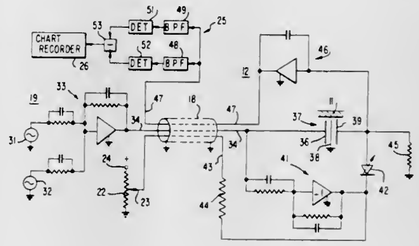


In a circuit for capacitance measurement, particularly for comparison of capacity values, a principal capacitor and a reference capacitor, each in series with an auxiliary capacitor, are connected between the terminals of an AC source. The principal capacitor and the reference capacitor are each shunted by two voltage limiting rectifier couplings, and a pair of such couplings, belonging to the principal capacitor and the reference capacitor respectively and having opposite directions of conduction, are completed through a common load. Preferably, said rectifier couplings may comprise diode rectifiers, and some or all of them may additionally comprise Zener diodes.

3,646,434
STANDARDIZATION OF DIELECTRIC MATERIALS GAUGES HAVING CAPACITIVE PROBES WITH REMOTELY CONTROLLED BALANCING CIRCUITS USING VARACTORS

Alan Norwich, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Continuation-in-part of application Ser. No. 634,261, Apr. 27, 1967, now abandoned. This application Nov. 12, 1969, Ser. No. 875,776
Int. Cl. G01n 27/26
U.S. Cl. 324—61 R 41 Claims



Disclosed is a system for measuring moisture content of a sample with a capacitive probe wherein a voltage controlled, semiconductor capacitor is employed for balancing out the probe capacitance when the probe is removed from the sample. The amount of unbalance produced by the presence of the sample is used as a measure of the moisture content. The probe, capacitor and a phase inverting means are mounted in a head positioned in proximity to the sample. At a remote location from the head and sample, AC and DC power sources are provided for exciting the probe and controlling the capacity of the variable capacity semiconductor, respectively. Monitoring means for variable signals derived from the capacitance measuring means is provided. Balance is attained manually or automatically, according to different embodiments. In automatic balancing, the probe output is modulated with a predetermined frequency which is phase detected to control the amplitude of the voltage applied to the semiconductor capacitor.

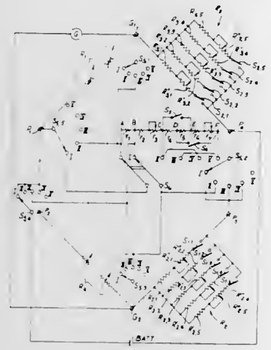
3,646,435
WHEATSTONE-THOMSON COMBINED ELECTRICAL MEASURING BRIDGE

Eliokim Zelikovich Rozenson, ul. Klinichevskaya, 1512, kv. 2, and Gennady Kuzmich Datchenko, Ofitserskaya, 48a, kv. 69, both of Krasnodar, U.S.S.R.

Continuation-in-part of application Ser. No. 674,796, Oct. 12, 1967, now abandoned. This application June 8, 1970, Ser. No. 44,145
Int. Cl. G01r 27/02
U.S. Cl. 324—62 B 7 Claims

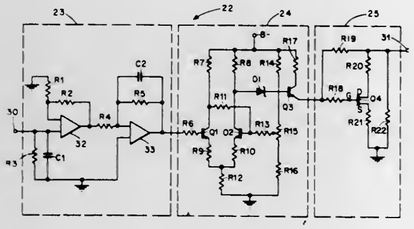
A Thomson-Wheatstone bridge including main and auxiliary adjustable arms comprising a number of decade units, the resistances of the ranks of different decade units having a relationship of 1:1, 1:10, 1:100, 1:1,000 and so forth and two adjustable ratio arms each of which consists of a plurality of parallel connected circuits each incorporating a nonadjustable resistor, an adjustable resistor and a switch, the resistors of the parallel circuits being in a relationship with the resistor of any decade unit of the adjustable bridge arms such as 1:1, 1:10, 1:100, 1:1,000, and so forth. With a view toward minimizing reading errors due to deviations of ambient temperature either from a narrow temperature, range or from a strictly fixed temperature, as well as due to instability of

bridge arm resistors with time, comprises a standard of resistance ratio unit consisting of a plurality of series-connected sections incorporating nonadjustable and adjustable resistors, with the resistances of the sections being approximately in a relationship to one another such as $1:1:3:3:3:(3\cdot10):(3\cdot10):(3\cdot10):(3\cdot10^2):(3\cdot10^2):(3\cdot10^2):(3\cdot10^3):(3\cdot10^3):(3\cdot10^3):\ldots\ldots:(3\cdot10^m):(3\cdot10^m):(3\cdot10^m)$, where m is a positive integer, switches are used which provide parallel connections between three of the above-mentioned sections



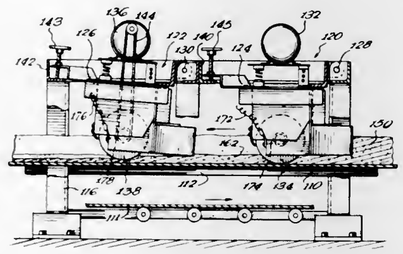
whose resistances are in a relationship of 1:1:1 to obtain a reference ratio of the resistance of the first section of said standard of resistance ratio unit to total resistance of the other sections of said standard of resistance ratio unit, said reference ratio being equal to $1:10^n$, wherein n is an integer or zero. After tuning said standard of resistance ratio unit in the circuit of the Thomson-Wheatstone bridge whose component members are so interconnected as to form the Wheatstone bridge, the Thomson-Wheatstone bridge is reconstituted for measurement.

3,646,436
APPARATUS AND METHOD FOR MEASURING ELECTRICAL RESISTANCE EMPLOYING CONSTANT OUTPUT VOLTAGE TECHNIQUE
Joseph Y. Chan, Chelmsford, and Dinesh C. Gupta, Cambridge, both of Mass., assignors to GTE Laboratories Incorporated
Filed Dec. 22, 1969, Ser. No. 886,974
Int. Cl. G01r *27/14*
U.S. Cl. 324—64 **4 Claims**



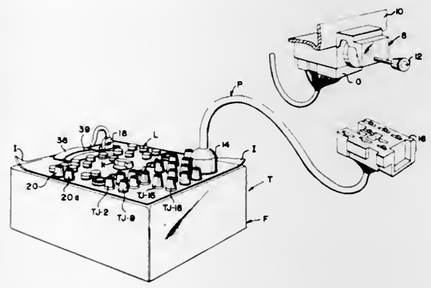
Technique of measuring resistivity of a specimen by contacting the specimen with a pair of electrodes and passing a constant current from a constant current source through the specimen between the electrodes. The potential drop between the electrodes is detected and employed to control the output of the constant current source so as to produce a potential drop between the electrodes of a predetermined value. The measured constant current from the source which produces the predetermined potential drop is a measure of the resistivity of the specimen between the pair of electrodes.

3,646,437
SAND MOISTURE DETECTOR INCLUDING A PLOW NOSE HOUSING AND ROLLER ELECTRODE
Orville C. Nutter, 314 Ingalton, West Chicago, Ill.
Filed Sept. 21, 1970, Ser. No. 73,709
Int. Cl. G01n *27/02*
U.S. Cl. 324—65 R **19 Claims**



Apparatus is provided for use in a moisture control system which responds to the conductivity of foundry sand disposed between two locations along a reach of a conveyor belt carrying a quantity of foundry sand. At each location there is a device which includes a plow for shaping the sand into a layer or swath of uniform thickness and a rotary electrode which rides in the layer, rotating with the movement of the layer past it. Rotation is achieved either by driving the rotary electrode by an electric motor, or by having the electrode ride on the reach and be driven by the passing belt. Scraper blades keep the exposed surfaces of the rotary electrodes free of adhering sand. The electrodes are mounted at a station which provides means for supporting the electrodes and moving them into position.

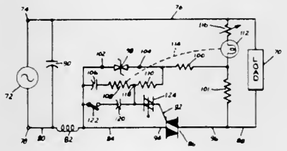
3,646,438
APPARATUS FOR TESTING DIFFERENT KINDS OF ELECTROMECHANICAL COMPONENTS USING PREPROGRAMMED CONNECTING FOR EACH OF THE DIFFERENT COMPONENTS
Richard S. Staff, Livonia, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.
Filed May 19, 1969, Ser. No. 825,720
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **3 Claims**



Indicating test apparatus for testing any one of a selected number of electrical components and comprising an indicating test unit having a plurality of electrically operable indica-

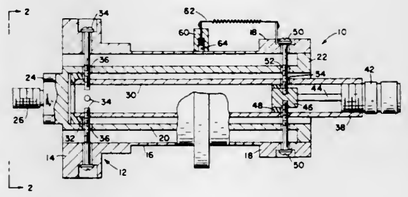
tor means to provide an indication of proper circuit operation. The indicator means are adapted for connection with the selected component by means of interchangeable programmed connector means including a disconnect peculiar to the component being tested and a connector for removably connecting the disconnect means with the indicator means. Interchangeable overlays corresponding to the interchangeable programmed connectors and having indicia thereon peculiar to the selected component may be provided. Means may also be provided to vary the test unit's output voltage which is measured by a voltmeter.

3,646,439
REGULATOR WITH OPTICAL FEEDBACK ARRANGEMENT WHEREIN BOTH INPUT AND OUTPUT VOLTAGE ARE SENSED
Thomas J. Broski, Fort Wayne, Ind., assignor to General Electric Company
Filed July 21, 1970, Ser. No. 56,779
Int. Cl. G05f *1/44, 5/00*
U.S. Cl. 323—21 **9 Claims**



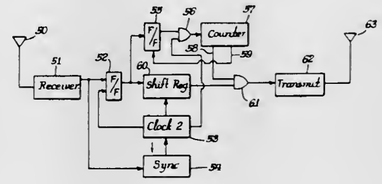
An alternating current phase control regulator circuit for controlling the energization of a load from an alternating current supply. A feedback arrangement is provided which senses in each half-cycle of the supply voltage, both the output voltage of the regulator, as supplied to the load, and the input voltage of the regulator, as supplied by alternating current supply, to provide feedback signal indicative of both the input and output voltages. The regulator which is energized by the alternating current supply includes a ramp and pedestal amplifier which amplifies the feedback signal to provide a firing signal to a bilateral semiconductor switch which phase controls the energization of the load.

3,646,440
TRIMMABLE PULSE CURRENT-VIEWING SHUNT
Francis A. Wilhelm, 8728 Edgehill Drive S.E., Huntsville, Ala.
Filed May 4, 1970, Ser. No. 34,289
Int. Cl. G01r *1/20, 21/04*
U.S. Cl. 324—126 **3 Claims**



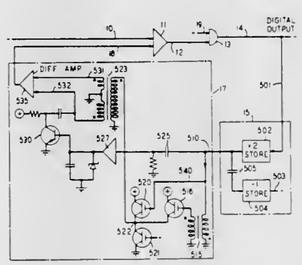
An externally trimmable pulse current-viewing shunt for measuring high peak, fast rising current pulses. The shunt is a tubular, noninductive, four terminal resistance standard. A measurement voltage drop is developed across a thin tubular section of the shunt outer shell. An insulated inner sleeve is connected across the measurement section for coaxial coupling of instantaneous voltages to low-voltage monitor stations, for indicating the precise high-current passing through the measurement section. Precision measurements are additionally afforded by adjusting a slider on the measurement section.

3,646,441
DIGITAL RADIO COMMUNICATION SYSTEMS USING REPEATERS OPERATING AT SAME FREQUENCY
Henry Magnuski, 605 Spring Road, Glenview, Ill.
Filed Dec. 5, 1969, Ser. No. 882,414
Int. Cl. H04b *7/18*
U.S. Cl. 325—13 **23 Claims**



Communication systems using a repeater or a chain of repeaters each of which receives information during one portion of a cycle of operation and transmits at the same frequency during a subsequent portion of the cycle in a manner to avoid interference. Digital circuitry is provided for transmitting, repeating and receiving digital signals in a manner such that no information is lost and good spectrum utilization and high fidelity are achieved without compounding distortion and noise effects, permitting use of a large number of relatively low-power repeaters. Delta modulator and demodulator means are provided for converting voice or other analog signals to digital signals and for reconverting the digital signals to analog signals. Radio waves of one frequency can be used and a mobile unit can be moved from the field of a base unit to that of a repeater or from the field of one repeater to that of another, without interruption in communication.

3,646,442
DELTA MODULATION SYSTEM USING VARIABLE WEIGHTED QUANTA TO OVERCOME SLOPE LIMITATIONS
Robert Alan Kotch, Villa Park, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 781,852, Dec. 6, 1968, now abandoned. This application Apr. 30, 1970, Ser. No. 33,392
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 B **9 Claims**



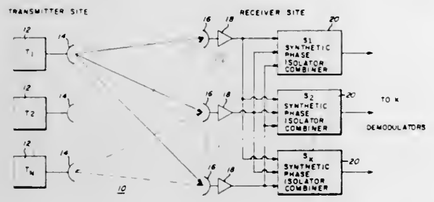
A delta modulation system is disclosed in which the input signal is compared with a reference level derived from the integrated output signal, the comparison resultant modulating a pulse train to produce the delta output signal in the conven-

tional manner. The magnitude of the reference level is determined by superimposing the absolute magnitude of the integrator output on a fixed reference voltage level and utilizing the resultant voltage together with the sign of the integrator output to produce the reference level for the waveform reconstruction.

3,646,443
MULTIAPERTURE RECEIVING AND TRANSMITTING SYSTEM

William J. Bickford, Weston; Joseph T. De Bettencourt, West Newton; James F. Roche, Dedham, and Howard J. Rowland, Newton Highlands, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 1, 1968, Ser. No. 764,094
Int. Cl. H04b *7/04*
U.S. Cl. 325—56 **3 Claims**

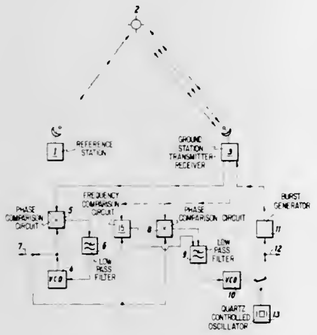


A multiaperture receiving and transmitting system using predetection signal combining which provides the same aperture with a multielement antenna system as will the use of a single large aperture. The multiplicity of apertures for the transmitter permits multiplexing of RF carriers side-by-side in the same radio channel assignment. In the receiver portions of the system with N apertures and one transmitter per aperture, predetection combining permits reception of each signal on N apertures.

3,646,444
METHOD AND APPARATUS FOR SYNCHRONIZING THE TRANSMISSION OF DIGITAL SIGNALS BETWEEN GROUND STATIONS VIA A COMMUNICATIONS SATELLITE

Wolfgang Bitzer, Unterweissach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed Oct. 8, 1969, Ser. No. 864,818
Claims priority, application Germany, Oct. 16, 1968, P 18 03 263.8; Feb. 5, 1969, P 19 05 532.4
Int. Cl. H04b *1/40*
U.S. Cl. 325—58 **15 Claims**

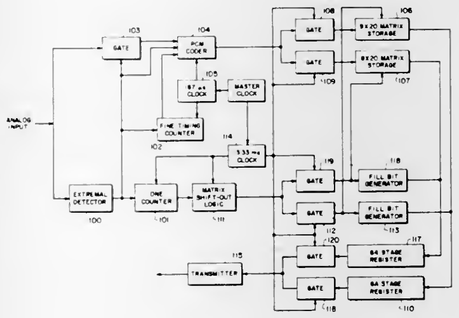


A method and apparatus for synchronizing the transmission of data between a plurality of ground stations via a satellite by transmitting a fixed frequency reference signal from a reference ground station, receiving this signal at every other ground station, producing at each other ground station a first local signal identical in frequency and phase with the received reference signal, producing at each other ground station a second local signal, transmitting this signal to the satellite and receiving this signal back at the ground station from which it originated, and varying the second local signal until it has a value such that upon its reception back at the originating station it is identical in frequency and phase with the first local signal produced at that station.

3,646,445
ADAPTIVE EXTREMAL CODING OF ANALOG SIGNALS

Adolf Reindl, Asbury Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 628,510, Apr. 4, 1967. This application Oct. 2, 1970, Ser. No. 77,460
Int. Cl. H04b *1/04*
U.S. Cl. 325—141 **4 Claims**



A method of transmitting extreme point samples of an analog waveform is described in which the signal is processed in intervals of a fixed number of bits. During each interval a heading is transmitted indicating in which of the plurality of frames within the interval the extreme points lie. The remainder of the interval comprises the extreme point data plus a variable number of fill-bits. The extreme point data comprises amplitude and fine timing data. The number of encoding levels of the extreme point data decreases as the number of extreme points within the interval increases.

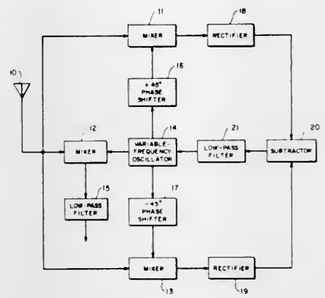
3,646,446
BINARY INFORMATION RECEIVER FOR DETECTING A PHASE MODULATED CARRIER SIGNAL

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 12, 1969, Ser. No. 875,682
Int. Cl. H04b *1/30*
U.S. Cl. 325—320 **4 Claims**

A receiver for detecting phase reversed binary information wherein the phase reversal is accomplished linearly over one clock period by slightly increasing or decreasing the carrier frequency. A variable frequency local oscillator tuned to the carrier frequency is mixed with the phase modulated carrier signal and then averaged by a first filter. When the oscillator is at the proper phase, the output of the first filter will be a binary signal. A pair of feedback loops detect and compare

in a subtractor and a second filter the rectified outputs of a pair of mixers which beat the phase modulated carrier signal with plus and minus 45° components of the oscillator signal. When the oscillator is at the proper phase, the energy from

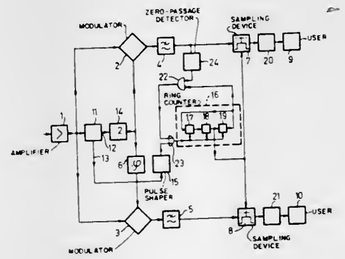


both mixers in the feedback loop will be equal. When the oscillator phase is incorrect, the energy in the loops will be different and the output of the second filter will then increase or decrease slightly the oscillator frequency until the proper phase is reached.

3,646,447
RECEIVER FOR RECEPTION OF MODULATED PULSES LYING IN A GIVEN SIGNAL BAND

Petrus Josephus Van Gerwen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,636
Claims priority, application Netherlands, Nov. 4, 1969, 6916580
Int. Cl. H04b *1/18;* **H03k** *9/00*
U.S. Cl. 325—321 **1 Claim**

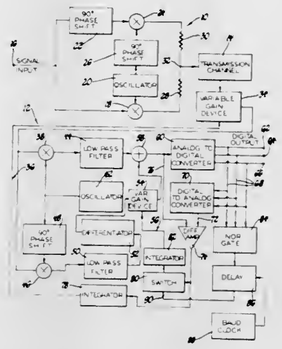


Receiver for the reception of pulses modulated on a carrier wave, comprising a device forming frequencies F_1+f_2 and f_1-f_2 from two transmitted pilot frequencies f_1 and f_2 from which the local carrier and clock signals respectively are derived. In order to reduce the phase shifts of these signals due to frequency shifts on the transmission path, the device comprises two automatic phase correction (AFC)-loops each including a phase discriminator and an oscillator, the incoming signals being applied to the phase discriminator of the first AFC-loop and the associated oscillator being tuned to f_1 or f_2, while the output voltage of said phase discriminator is applied both to the phase discriminator of the second AFC-loop whose oscillator is tuned to f_1+f_2 and to a selective circuit tuned to f_1-f_2.

3,646,448
QUADRATURE INJECTION CONTROL CIRCUIT

Samuel T. Harmon, Jr., and Kenneth E. Monroe, both of Ann Arbor, Mich., assignors to Datamax Corporation, Ann Arbor, Mich.

Filed Feb. 16, 1970, Ser. No. 11,379
Int. Cl. H04b *1/16*
U.S. Cl. 325—326 **12 Claims**

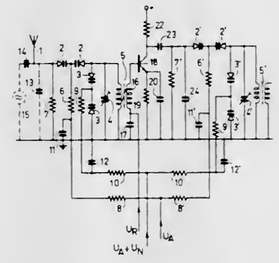


A data signal communication system including an analog signal transmitter and a receiver for converting the analog signal levels to digital form. The receiver employs an automatic gain control loop including means for generating an error signal related to the difference between the analog input and the analog equivalent of a digital output. The error signal is used to control both loop gain and the quantity of a quadrature component which is combined with the data signal within the automatic gain control loop.

3,646,449
INPUT STAGE FOR A RECEIVER, PARTICULARLY FOR THE MEDIUM WAVE

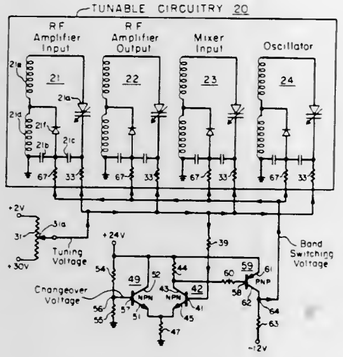
Heinz Hellbarth, Wetzlar; Wolfram Wendel, Niederbiel, and Alfred Schulz, Volpertshausen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1970, Ser. No. 30,432
Claims priority, application Germany, Apr. 22, 1969, P 19 19 625.9
Int. Cl. H04b *1/18*
U.S. Cl. 325—383 **10 Claims**



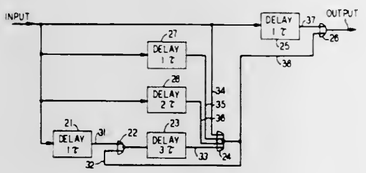
A receiver input stage for the reception of signals in a broad frequency range comprising an input resonant circuit and an output resonant circuit that is identical to the antenna-input circuit. The input and output circuits are coupled and tuned by means of variable capacity coupling and tuning diodes respectively.

3,646,450
VOLTAGE-CONTROLLED PLURAL-BAND TUNER FOR A WAVE SIGNAL RECEIVER
John Y. Ma, Algonquin, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 13, 1969, Ser. No. 849,837
Int. Cl. H04b *1/16*
U.S. Cl. 325—458 **7 Claims**



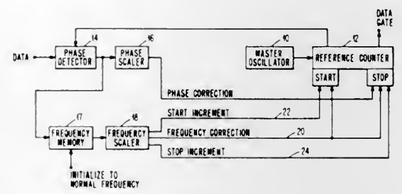
Selective tuning to any broadcast channel within a plurality of frequency bands is achieved by voltage-controlled tunable circuitry, such as the type employing varactor or varicap diodes, responsive to an adjustable DC tuning voltage, having unique levels assigned to the various desired channels. The voltage level, in tuning across all of the frequency bands, must be varied over a predetermined amplitude range, portions of which range are effectively assigned to different respective ones of the bands. Band switching of the tunable circuitry occurs automatically and electronically under control of the tuning voltage. Each time its amplitude is changed from a level in one portion of the range to a level in another portion, the tuner is made tunable over a different frequency band. No mechanical switches are needed to accomplish band switching.

3,646,451
TIMING EXTRACTION CIRCUIT USING A RECIRCULATING DELAY GENERATOR
Stephen Davis Shoap, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 7, 1970, Ser. No. 62,014
Int. Cl. H041 *25/66*
U.S. Cl. 328—63 **5 Claims**



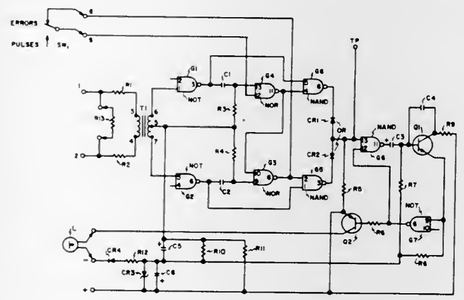
A timing circuit generates the timing signal used in the regeneration of pulse code modulation signals by taking a previously regenerated signal and inserting pulses where they are missing from the original signal. The inserted pulses are created in a recirculating delay generator which is synchronized with the incoming data and whose outputs is inhibited by delaying the input pulses for various periods and applying them to the output gate of the generator so that an output pulse from the generator is available only when there is no input pulse. The output of the generator is then summed at the output gate of the circuit with the original signal, producing a continuous stream of timing pulses.

3,646,452
SECOND ORDER DIGITAL PHASE-LOCK LOOP
Isaac Horowitz, Rehovot, Israel; Lawrence A. Laurich, Mahopac, N.Y., and Fred W. Niccone, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y., by said Laurich and said Niccone
Filed Feb. 16, 1971, Ser. No. 115,447
Int. Cl. H03k *1/00, 5/18*
U.S. Cl. 328—63 **10 Claims**



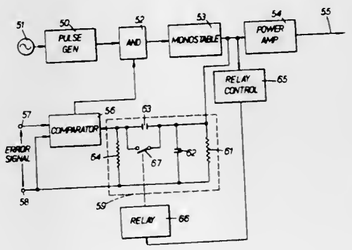
A digital second order phase-lock loop is built up utilizing all-digital circuits. The purpose of the loop is to synchronize a data gate signal in the synchronous data receiver with an incoming train of data pulses. One application of the system is the production of gate signals synchronized with data pulses read from a magnetic recording. The loop consists of six basic parts: (1) a reference counter with controllable start and stop counts; (2) a master oscillator to advance the reference counter; (3) a phase detector to detect the phase difference between a data pulse and the digital ramp simulated by the advancing count in the reference counter; (4) a phase scaler for generating an immediate phase correction factor for the reference counter; (5) a frequency memory which is updated and thereby tracks the frequency of the data pulses; and (6) a frequency scaler for generating an immediate and continuing frequency correction for the reference counter. The loop symmetrically corrects the digital ramp simulated by the reference counter.

3,646,453
ERROR DETECTOR CIRCUIT
Julian A. Garcia, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 8, 1969, Ser. No. 882,826
Int. Cl. H03k *5/20*
U.S. Cl. 328—118 **4 Claims**



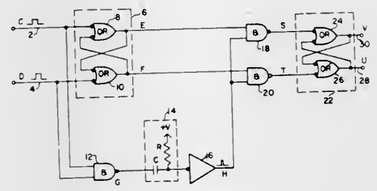
An electronic detector circuit is provided for use in determining whether or not a bipolar train of pulses is being received, where a bipolar train of pulses is one in which successive pulses are of opposite polarity. The circuit also includes the capability of distinguishing errors in bipolar pulse trains where an error exists when two successive pulses are of the same polarity.

3,646,454
CONTROL SYSTEMS HAVING PROPORTIONAL AND INTEGRAL CONTROL
Michael Southern, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England
Filed Feb. 24, 1970, Ser. No. 13,572
Claims priority, application Great Britain, Feb. 24, 1969, 9,829/69
Int. Cl. G06g *7/18*
U.S. Cl. 328—127 **7 Claims**



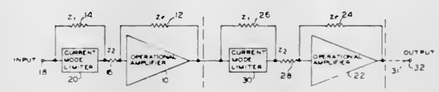
In a control system having a controller providing an output control signal with at least proportional and integral components, means are provided operative when the output signal reaches a predetermined value to inhibit operation of the integrating means until the control is back within the proportional band so as thereby to prevent integral saturation.

3,646,455
PHASE-DETECTING CIRCUIT
Edmund G. Coccagna, Villanova, Pa., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,232
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 **6 Claims**



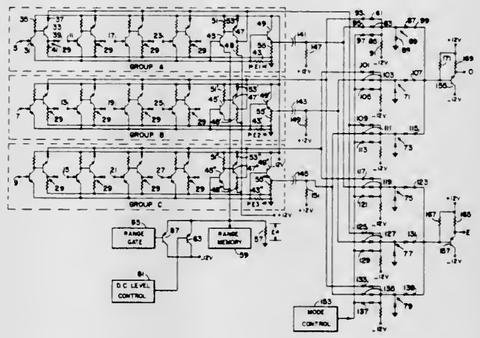
A circuit for detecting which of two out-of-phase input signals is leading (or lagging) the other. The detecting circuit includes a first circuit which is bistable for certain periods of time, the state of this circuit during each such period being dependent on which signal is leading. A timing pulse is provided during each such period and fed to a bistable circuit which provides the output signal of the detecting circuit. The bistable circuit is adapted to respond to the state of the first circuit in response to the timing pulses and, thereby, provides an output signal indicative of which of the two input signals is leading or lagging.

3,646,456
LOGARITHMIC AMPLIFIER
Eugene C. Kauffman, Portland, and Larry R. Lockwood, McMinnville, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed July 9, 1970, Ser. No. 53,466
Int. Cl. G06g *7/24*
U.S. Cl. 328—145 **11 Claims**



A nonlinear amplifier circuit is described which may be used to provide a logarithmic amplifier. The amplifier circuit includes a plurality of similar stages connected in cascade, each stage including an operational amplifier and a limiter circuit connected in parallel with a portion of the input coupling resistance of such operational amplifier. The limit circuit is current-mode actuated and includes a pair of diodes connected in series opposition which are switched from a quiescent low-impedance state to a high-impedance state when the signal current exceeds a predetermined level. This causes an increase in the effective input coupling resistance and thereby reduces the gain Z_f/Z_{in} of the operational amplifier stage to unity. As a result of cascade amplification, five amplifier stages are switched to unity gain in successive order from the output to the input of the amplifier circuit, thereby forming each of the segments of the logarithmic output.

3,646,457
HIGH SPEED GREATEST OF COMPARATOR CIRCUIT
Charles E. David, Huntsville, and Wallace E. Wood, Arab, both of Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 6, 1965, Ser. No. 493,589
Int. Cl. H03k *5/20*
U.S. Cl. 328—147 **5 Claims**



A device for analyzing groups of signals simultaneously, providing a digital signal to indicate which signal is the largest, and produce the amplitudes of the largest inputs in the other groups. The signals in a particular group are fed to a parallel combination of transistors. The largest signal in a group causes its transistor to conduct and thereby back-bias all other transistors. A plurality of groups are likewise connected so that the largest signal from any group is presented at a particular output. The largest signals from the other groups produce outputs which are fed to inhibit gates (AND gates) along with other outputs from the groups to control

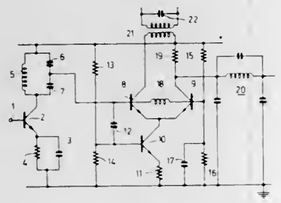
output transistors so that their output is the same as the second and third largest input signals.

3,646,458

CIRCUIT ARRANGEMENT FOR DETECTING A TELEVISION SIGNAL HAVING A DIFFERENTIAL CIRCUIT WITH A COMMON EMITTER TRANSISTOR

Leonardus Adrianus Johannes Verhoeven, and Hendrikus Dollekamp, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1970, Ser. No. 23,326
Claims priority, application Netherlands, Apr. 5, 1969, 6905354
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **5 Claims**



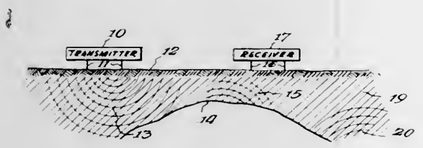
A video detector circuit comprising a long-tailed pair arrangement employing a first and a second transistor and a third transistor in the common emitter of the first and the second transistor, the third transistor being linearly controlled by the signal to be detected and the first and second transistors being switched by the same signal.

3,646,459

INDUCED POLARIZATION RECEIVER

Theodore R. Madden, Weston; George H. Hopkins, Jr., Boston, and Michael Chessman, Watertown, all of Mass., assignors to Ampex Corporation, San Mateo, Calif.

Continuation of application Ser. No. 810,067, Jan. 27, 1969. This application Feb. 26, 1971, Ser. No. 119,412
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **7 Claims**



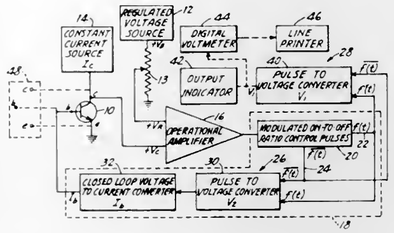
A receiver for measuring the subsurface electrical impedance of the earth as indicated by the frequency dependent attenuation of low-frequency transmitted signals. The receiver has a gain control for establishing a reference gain level at one frequency and an indicator for the signal amplitude deviation at a second frequency. A synchronous detector controlled by the output of a local oscillator synchronized with the received signal permits operation under poor signal-to-noise conditions.

3,646,460

MODULATED ON-TO-OFF RATIO PULSE CONTROLLED DIGITAL-TO-ANALOG CONVERTER

Daniel J. Donohoo, Shoreview, Minn., assignor to Dantronics Inc., St. Paul, Minn.

Filed Nov. 13, 1969, Ser. No. 876,488
Int. Cl. H03k *9/08*
U.S. Cl. 329—102 **12 Claims**



An amplification-measuring apparatus for determining amplification of an active device having a control input and a controlled output is shown. The apparatus includes a regulated voltage source, a constant current source for operating the active device while the amplification measurements are being made thereon, a difference amplifier for producing a control signal having at least a predetermined magnitude, a converting means for producing an input signal in response to the control signal, which input signal is applied to the control input for operating the active device, and an analog signal-producing means which converts the control signal into an analog signal representing the amplification of the active device.

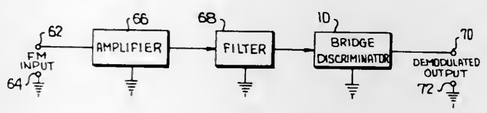
Also disclosed is an output-indicating means which is responsive to the analog signal for directly representing as a visual readout the amplification of the active device. In addition, a control means and a modulated on-to-off ratio control pulse generator are disclosed which are adapted for use in said amplification measuring device.

3,646,461

REDUCED DISTORTION DRIVING OF BALANCED TRANSMISSION LINE PHASE BRIDGE DISCRIMINATORS

Richard Modafferi, Vestal, N.Y., assignor to McIntosh Laboratory, Inc., Binghamton, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,768
Int. Cl. H03d *3/00*
U.S. Cl. 329—192 **7 Claims**



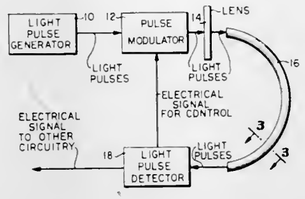
A balanced transmission line phase bridge frequency discriminator of conventional type is driven by a circuit which reduces even order harmonic content of a frequency modulated radio signal, as seen by said discriminator, essentially to zero, and which reduces progressively the amplitudes of odd order harmonics, if these occur, in order to increase the useful demodulated output of the detector. Well balanced push-pull amplifiers employing bifilar windings to enhance balance are employed in one embodiment, to effect the drive; in another embodiment filtering is resorted to to remove harmonic response; and in still another embodiment both these expedients are employed concurrently.

3,646,462

FIBER FOR DISTORTION-FREE PROPAGATION

Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 14, 1969, Ser. No. 876,838
Int. Cl. H01s *3/02, 3/08*
U.S. Cl. 330—4.3 **10 Claims**



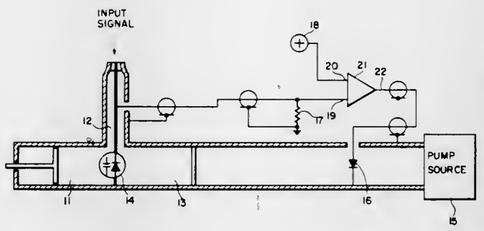
A fiber for use in the propagation of light pulses with the attendant elimination of distortion. The fiber is useful as a delay line storage device for computer information with an extremely high-packing density capability for the bits of information. Another application is in a broadband communication system as a transmission line and in any application the fiber may be "active" as either a laser amplifier or oscillator. Basically, the invention involves the choice of fiber core and cladding size and other parameters to counteract, with the anomalous dispersion associated with the waveguide transmission, the normal dispersion of the bulk glass from which the fiber is made. The pulses of light are thereby propagated undistorted since the various frequency components within the light pulse are propagated with an effective velocity which is independent of wavelength in the spectral interval of the pulse.

3,646,463

GAIN STABILIZED PARAMETRIC DEVICE

Uldis Rutulis, and Edward Stowe Layton, both of Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Nov. 2, 1970, Ser. No. 85,842
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.9 **3 Claims**



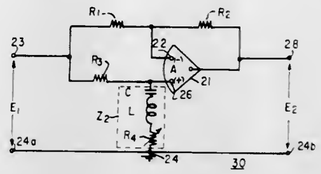
A gain stabilized parametric device having a varactor diode shunted by an external bias resistor to form a self-bias configuration. When pump, input, or pump and input signals are coupled to the varactor diode, through pump and signal circuits respectively, a self-bias voltage develops across the bias resistor. This self-bias voltage is compared to a preset reference voltage to generate a difference voltage which is then amplified and used to control the attenuation of a variable attenuator interposed between the pump source and the pump circuit.

3,646,464

ACTIVE DELAY AND AMPLITUDE EQUALIZERS

Albert Boggs, deceased, late of New York, N.Y. (by Emily Eloise Boggs, Executrix), assignor to Sangamo Electric Company, Springfield, Ill.

Filed Feb. 13, 1970, Ser. No. 11,204
Int. Cl. H03f *1/36*
U.S. Cl. 330—30 D **10 Claims**



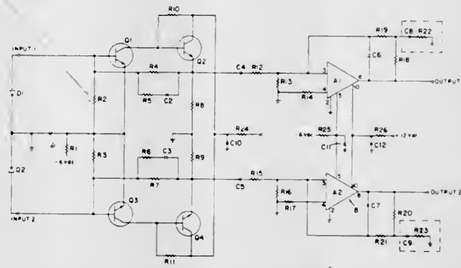
An adjustable active delay and amplitude equalizer circuit, including operational amplifiers, and resistive and reactive circuit elements, in which adjustment for amplitude can be made substantially independent of adjustment for delay.

3,646,465

DUAL WIDEBAND AMPLIFIER

Jerome T. Hartlaub, New Brighton, Minn., assignor to The United States of America as represented by the Secretary of the Army

Filed July 15, 1970, Ser. No. 54,944
Int. Cl. H03f *33/68*
U.S. Cl. 330—30 R **1 Claim**



A dual amplifier having the capability to amplify extremely low level photodiode transducer output signals to useful voltage levels. The input signals are amplified while input signal phase separation is preserved at the output. Each channel has a first stage for voltage gain, a second stage for high to low impedance transfer with corresponding current gain and an integrated circuit amplifier having a nearly flat voltage gain over the bandwidth. The dual amplifiers are essentially physically overlapping so that the design includes both adequate power supply decoupling and simplicity for easy lead positioning in order to achieve negligible interchannel coupling.

3,646,466

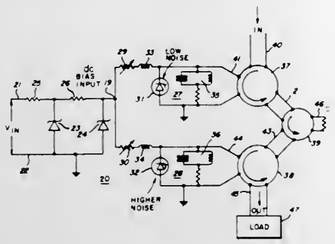
TUNNEL DIODE AMPLIFIER

William J. Crowe, Berkeley Heights, and Robert G. Geissler, Cranford, both of N.J., assignors to Raytheon Company, Lexington, Mass.

Continuation-in-part of application Ser. No. 717,711, Apr. 1, 1968. This application June 4, 1970, Ser. No. 43,494
Int. Cl. H03f *3/10*
U.S. Cl. 330—34 **15 Claims**

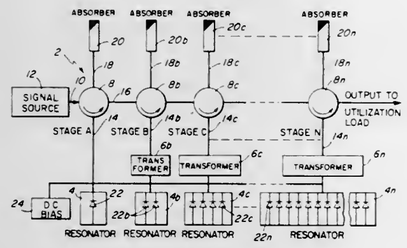
An apparatus for minimizing the variation of gain with bias voltage and temperature variations in a tunnel diode

microwave amplifier or other tunnel diode circuit by employing two stages in which one stage is biased at a voltage higher



than the peak gain bias voltage and the other stage is biased at a voltage less than the peak gain bias voltage.

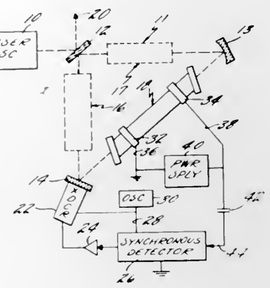
3,646,467
SOLID-STATE ELECTROMAGNETIC ENERGY AMPLIFIER SYSTEM
Burton H. Smith, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Nov. 2, 1970, Ser. No. 86,172
Int. Cl. H03f *3/60*
U.S. Cl. 330—53 **5 Claims**



A high-power solid-state amplifier system is disclosed having plural semiconductor amplifying elements electrically oriented in parallel in a multistage array. The number of elements in each stage successively increases with all elements operating at substantially the same RF voltage level. The stages are interconnected by circulator transmission means. Two modes of operation are permissible, namely, as a reflection-type amplifier or phase lock oscillator. Suggested amplifying elements include negative resistance semiconductors of the bulk effect or avalanche-type.

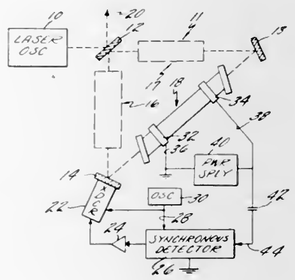
3,646,468
SERVO AIDED INJECTION PHASE-LOCKED LASER OSCILLATOR
Carl J. Buczek, Manchester; Michael L. Skolnick, Monroe, and Robert J. Freiberg, South Windsor, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,319
Int. Cl. H01s *3/00*; **G01b** *9/02*
U.S. Cl. 331—94.5 **5 Claims**

A high-power laser oscillator is overcoupled, thereby to be oscillating at below maximum output power, and laser radiation injected into the high-power oscillator from a low-power, controlled driving oscillator drives the total radiation intensity within the high-power oscillator to an output power approaching its maximum value. This permits the high-power oscillator output to be sharply maximized when it is adjusted so that its resonant frequency is close to that of the driving oscillator, thereby permitting closed loop servocontrol of the high-power oscillator cavity length in response to maximum power output to cause the cavity length to match the transition frequency of the driving oscillator closely enough for



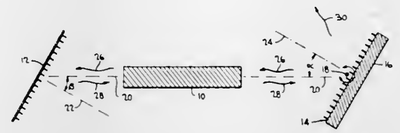
stable phase locking of the two oscillators. In one embodiment, a ring interferometer high-power oscillator is operated in one direction only thereby preventing feedback from this oscillator to the driving (low-power reference) oscillator. In another embodiment, an optical isolator is used between the high low-power reference oscillator and the power oscillator.

3,646,469
TRAVELLING WAVE REGENERATIVE LASER AMPLIFIER
Carl J. Buczek, Manchester, and Michael L. Skolnick, Monroe, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,320
Int. Cl. H01s *3/00*; **G01b** *9/02*
U.S. Cl. 331—94.5 **4 Claims**



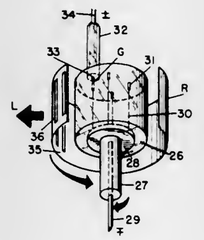
A unidirectional travelling wave regenerative amplifier includes gain medium disposed in a travelling wave ring interferometer, the unidirectional travelling wave permitting coupling of a driving oscillator thereto without the amplifier feeding back to the oscillator. Because the amplifier is operated near saturation intensity, the output characteristic (with respect to frequency) is broadened; therefore, the output power and phase stability are relatively insensitive to variations in physical resonance. A hill climbing servo maintains the cavity of the ring interferometer at a length which relates precisely to the output frequency of the driving oscillator.

3,646,470
STIMULATED RADIATION CAVITY STRUCTURE
David Y. Tseng, 142 Wendy Drive, Newbury Park, Calif.
Filed July 16, 1970, Ser. No. 55,498
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **6 Claims**



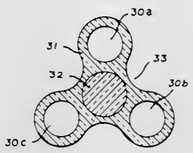
A laser/maser cavity configuration for scanning and amplitude modulating the laser/maser output directly from the cavity reflector. These effects are controlled directly by the cavity reflector; no separate components are required for accomplishing these effects. The scanning and amplitude modulation are obtained by direct angular rotation of one of the cavity reflectors. The rotating reflector is a novel reflection grating that belongs to the class of corrugated structures which exhibit a newly discovered type of Wood anomaly. These corrugated reflection gratings are wavelength selective, power selective and polarization selective according to their structure and angular orientation to the laser/maser cavity. The rotation device may be any system which provides an angular degree of freedom about an axis perpendicular to the longitudinal axis of the cavity. The range of angular scan, the scanning direction, and the level of amplitude modulation are easily calculated from available explicit formulas and graphs.

3,646,471
A CYLINDRICAL ARRAY OF EXPLODING CONDUCTORS EMBEDDED IN A SOLID DIELECTRIC FOR PUMPING A LASER
Jack DeMent, 4847 Southeast Division Street, Portland, Oreg.
Original application Jan. 7, 1963, Ser. No. 254,536, now Patent No. 3,300,734, dated Jan. 24, 1967. Divided and this application Nov. 25, 1966, Ser. No. 597,505
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **2 Claims**



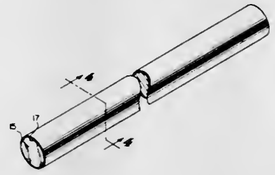
A rotatable phased array of explodable conductors is enstructured with a transparent cylinder of dielectric, blast-resistant solid, each of the explodable conductors fired in sequence by contact with a high-voltage source upon rotation of the cylindrical ensemble of explodable conductors, to sequentially release brilliant bursts of light including laser pumping light.

3,646,472
LASER STRUCTURES
Alfred R. Cooper, Cleveland Heights, Ohio, and Charles Gilbert Young, Storrs, Conn., assignors to American Optical Corporation, Southbridge, Mass.
Filed Oct. 2, 1967, Ser. No. 672,307
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **2 Claims**



Laser structures for generating and amplifying laser light, each such structure embodying an elongated core of solid laser material embedded within a cladding of solid light-transmitting material and within which cladding is also embedded a plurality of elongated flashtube chambers arranged in symmetrical relation to said core.

3,646,473
CLAD GLASS LASER ROD
Charles Gilbert Young, Southeast Road, Storrs, Conn.
Filed Apr. 10, 1969, Ser. No. 815,012
Int. Cl. H01s *3/06*, *3/16*
U.S. Cl. 331—94.5 **8 Claims**



The cladding of a clad glass laser rod is made very thin and has an index of refraction slightly higher than the index of refraction of the laser glass core.

3,646,474
SYMMETRICALLY PUMPED SLAB LASER
Joseph P. Segre, Acton, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 21, 1969, Ser. No. 817,909
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **9 Claims**

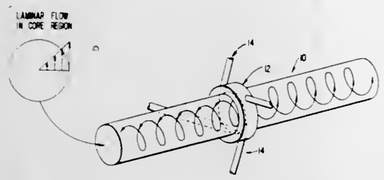


The combination of apparatus for exfocal symmetrically pumping with a generally rectangular slab-type laser. The arrangement is especially suited to substantially overcome problems of birefringence induced by thermal gradients in a laser being pumped.

3,646,475
VORTEX TUBE LASER

Francis M. Taylor, Xenia, Ohio, assignor to Systems Research Laboratories, Inc., Dayton, Ohio

Filed Sept. 16, 1969, Ser. No. 858,491
Int. Cl. H01s *3/09, 3/22;* **F25b** *9/02*
U.S. Cl. 331—94.5 **9 Claims**

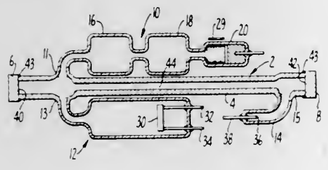


A Hilsch-Ranque swirl tube is operated as a gas laser by injecting a mixture of hot gases therein at very high velocity.

3,646,476
PULSED GAS ION LASER

Gerald C. Barker, Palo Alto, and Steven M. Jarrett, Los Altos, both of Calif., assignors to Coherent Radiation Laboratories

Filed Nov. 24, 1969, Ser. No. 879,154
Int. Cl. H01s *3/09, 3/02, 3/22*
U.S. Cl. 331—94.5 **5 Claims**

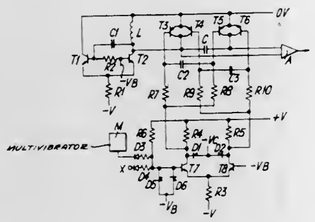


A miniature pulsed gas ion laser constructed so that the discharge tube forms the optical resonator. Internal cavity reflectors require no adjustment after fabrication. TEM_{oo} output is provided at a single wavelength.

3,646,477
MEANS FOR RAPIDLY SWITCHING TUNED CIRCUITS OF VARIABLE-FREQUENCY OSCILLATORS FROM ONE STATE TO ANOTHER

Laurence Goodall, Egham, England, assignor to Ferranti, Limited, Lancashire, England

Filed Jan. 29, 1970, Ser. No. 6,695
Claims priority, application Great Britain, Feb. 1, 1969, 5,558/69
Int. Cl. H03b *5/12*
U.S. Cl. 331—117 R **4 Claims**

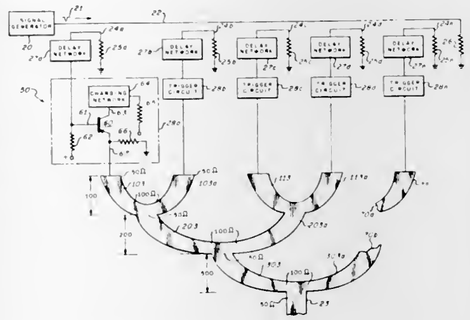


A variable-frequency oscillator includes a tuned circuit and a switch having two positions. In one position the tuned circuit is completed, and in the other position the tuned circuit is interrupted and the energy stored in it remains substantially constant. Switch drive means are provided to either maintain the switch in said one position or to cause it to alternate repetitively between the two positions at a rate considerably greater than the frequency of oscillation of the tuned circuit.

3,646,478
ENERGY COUPLER UTILIZING DIRECTIONAL COUPLERS AND DELAY LINES TO SIMULTANEOUSLY TRIGGER PLURAL CHARGING NETWORKS INTO TREE FOR SUMMING AT COMMON OUTPUT

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation

Filed Mar. 27, 1970, Ser. No. 23,147
Int. Cl. H01p *5/12, 3/08;* **H03k** *5/159*
U.S. Cl. 307—106 **6 Claims**

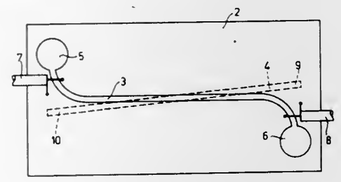


An electromagnetic energy coupling network for reciprocally processing energy flowing in pluralities of transmission lines is disclosed. The network may be employed individually or multiply as a coupling network element in complex coupling network matrices for the generation of subnanosecond signal impulses. The coupling element is a multiple port transmission line junction associated with tapered transmission lines and efficiently transferring energy inputs on such lines into a wave flowing only from a single output port.

3,646,479
DIRECTIONAL COUPLER COMPRISING DIFFERENT TRANSMISSION LINES ON OPPOSITE SIDES OF DIELECTRIC BOARD

Frans Christiaan de Ronde, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,061
Claims priority, application Netherlands, Feb. 14, 1970, 7002118
Int. Cl. H01p *5/14*
U.S. Cl. 333—10 **1 Claim**

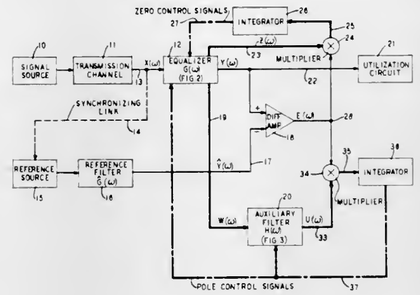


A reciprocal directional coupling comprising a strip line provided on a dielectric supporting plate and a gap line provided on the opposite surface so that the longitudinal axes of the transmission lines cross each other at a small angle so that a wide, effective frequency bandwidth is obtained.

3,646,480
RECURSIVE AUTOMATIC EQUALIZER

David Adams Spaulding, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1970, Ser. No. 101,379
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **8 Claims**

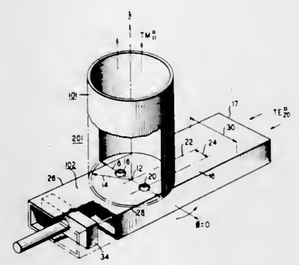


A general-purpose synthesizer or equalizer combining recursive and nonrecursive signal paths automatically compensates a distorting transmission medium in order to achieve a desired overall transfer function (ratio of output to input parameters). Zeros of transmission are adjusted in the equalizer by direct correlation of the error difference between the actual equalizer output and a reference output with a plurality of filtered samples of the distorted signal. Poles are adjusted in parallel paths within the equalizer for each of which paths individual samples are first filtered in a duplicate of the recursive portion of the basic equalizer and correlated with the above error differences. Inputs to the equalizer are furnished in common to each of the parallel paths, which comprises simple second order recursive filters, to realize poles of resonance. The output of the equalizer is composed of signal samples from the several parallel paths to realize transmission zeros.

3,646,481
WAVEGUIDE MODE TRANSDUCER

Chi Fu Den, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1971, Ser. No. 123,673
Int. Cl. H01p *1/16*
U.S. Cl. 333—21 R **10 Claims**

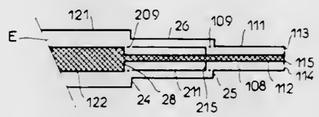


A transducer for converting the TE_{20} rectangular wave mode into the TM_{11} circular wave mode utilizes a circular waveguide capable of supporting the TM_{11} mode which is mounted to a broad side of a rectangular waveguide transmitting the TE_{20} wave mode. Two antiphase coupling ports formed at prescribed distances from the center of the circular waveguide and along a diameter thereof which is perpendicular to the longitudinal axis of the rectangular waveguide transfer energy from the TE_{20} wave mode into a substantially pure TM_{11} mode in the circular guide when the proper electrical and magnetic field patterns are obtained at the ports by adjusting a movable plunger within the rectangular waveguide.

3,646,482
APERIODIC DISPERSIVE LOAD FOR HIGH-FREQUENCY, HIGH-POWER USE

Francois Ursenbach, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 12, 1970, Ser. No. 88,601
Claims priority, application France, Nov. 21, 1969, 6940100
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **10 Claims**

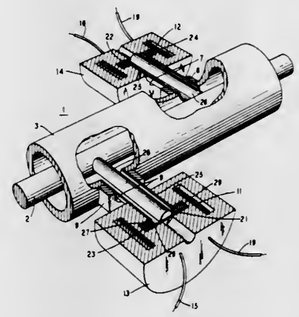


The load is formed as a plurality of terminal elements, one being the last and the others being complementary thereto; each one includes an external conductor and an internal conductor, the complementary terminal elements further including a peripheral conductor coaxially surrounding each complementary element and electrically connected to an adjacent peripheral conductor of an adjacent element, the open end of the external conductor of the first terminal element being interconnected with the adjacent end of the peripheral conductor of the next adjacent complementary element, the external conductors of two adjacent terminal elements being interconnected by a material transparent to the energy to be dissipated, or directly connected thereto; preferably, a resistive element may form the interconnection between an interior conductor and the closed end of an external conductor, and cooling means may be provided (such as by the formation of gaps and making the internal conductor hollow) to additionally dissipate a load.

3,646,483
MICROWAVE LOADED LINE FERRITE PHASE SHIFTER

John Ineson Smith, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

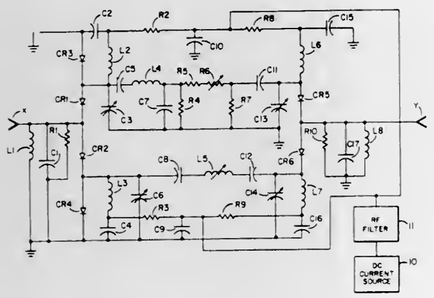
Filed June 12, 1970, Ser. No. 45,694
Int. Cl. H01p *1/18*
U.S. Cl. 333—31 R **9 Claims**



An agile microwave phase shifter of the loaded line type using ferrite material as the active element. The active ferrite material is fabricated in the shape of an annulus and is disposed in a radial cavity which encircles and terminates a

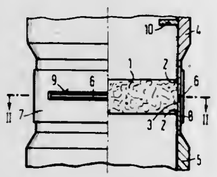
coaxial stub attached to a main coaxial transmission line. The ferrite annulus may be operated between states of magnetization that are either below or above the high-loss resonance region. To achieve low magnetization energy, short switching time, and low losses in signal power, the ferrite annulus is made very thin so that its internal magnetic field is substantially uniform and the total magnetomotive force required to produce a given field is small.

3,646,484
DIODE-SWITCHED RF ATTENUATOR
Donald E. Maxwell, Syracuse, and Roger W. Mazzochi, Solvay, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army
Filed July 8, 1970, Ser. No. 53,149
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 R **2 Claims**



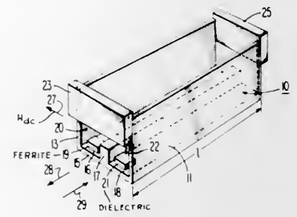
Bypass and attenuation paths are provided through respectively switched diodes. The diodes in the bypass path are turned on in response to direct current of one polarity, and off in response to the opposite polarity, and conversely for the diodes in the attenuate path. Filters are provided to exclude direct current from the bypass and attenuation paths, and to exclude RF from the source of direct current. Equalizers and compensators associated with each path allow phase-shift and attenuation to be accurately adjusted.

3,646,485
TRAVELING-WAVE TUBE WITH A VACUUMTIGHT CERAMIC WINDOW
Franz Gross; Paul Kahl, both of Munich, and Peter Mammach, Oberschleissheim, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 11, 1970, Ser. No. 45,510
Claims priority, application Germany, June 23, 1969, P 19 31 712.5
Int. Cl. H01p *1/08*
U.S. Cl. 333—98 P **6 Claims**



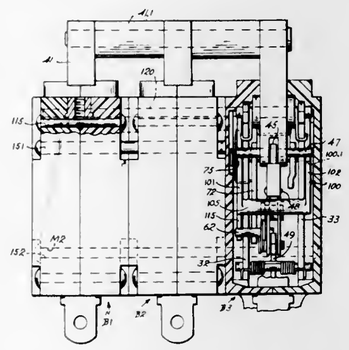
A traveling-wave tube is provided with a waveguide having a vacuumtight ceramic window therein disposed at the line of separation of a pair of separate portions of the waveguide. The ceramic window includes beveled edges which form solder limiting means along the inner surface of the waveguide during bonding of the window therein. A metal ring or band is tightly secured within a recess about the waveguide adjacent the ceramic window and includes at least one circumferentially disposed slot therein situated at the point of coupling of the tubular waveguide portions.

3,646,486
GYROMAGNETIC ISOLATOR WHEREIN EVEN MODE COMPONENTS ARE CONVERTED TO ODD MODE COMPONENTS BY BIASED FERRITE
Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation
Filed Oct. 28, 1970, Ser. No. 84,829
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.2 **11 Claims**



A symmetrical trough waveguide isolator for isolation of signals at discrete frequencies. The trough waveguide comprises two sidewalls spaced by a bottom wall and a shorter center wall or fin symmetrically disposed between the taller sidewalls and extending upward from the bottom wall. A slab of ferrite material biased by a DC magnetic field is located between one sidewall and the center fin and a matching slab of dielectric material is located between the center fin and the opposite sidewall. A conductive cover is placed at each end of the waveguide, the covers connecting the center fin to form a cavity only as to signals propagating in the odd mode. The even mode components of signals at frequencies to be isolated are converted to odd mode components by the biased ferrite.

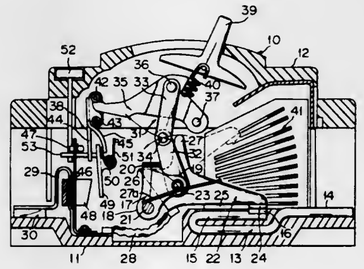
3,646,487
MULTIPOLE CIRCUIT BREAKER
Lawrence W. Brackett, Sr., Georgetown, Mass., assignor to Wood Electric Corporation, Danvers, Mass.
Filed June 5, 1970, Ser. No. 43,737
Int. Cl. H01h *93/00*
U.S. Cl. 335—8 **5 Claims**



In the embodiment described, three trip-free single-pole circuit breakers magnetically responsive to overload are joined side by side, adjacent sidewalls of the breaker casings being provided with windows for swinging transfer rods. Each breaker has a toggle mechanism with a normally locked catch which on tripping of its armature opens the movable contact. The breakers have identical transfer trip cranks pivoted thereon, each trip crank having a contact bar, a trip leg and a trip transfer bar. The bars and the tube extend transversely of the swinging plane of the movable contact. The transfer trip cranks are connected by a transfer rod inserted in the transfer bars and passing to an adjacent breaker through the casing windows.

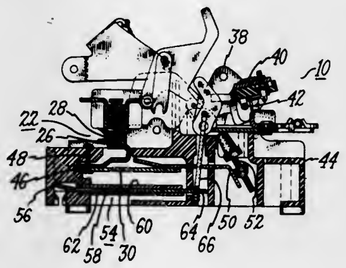
The contact arm of an overloaded breaker hits its contact bar, its connector bars swing about the crank pivots and the trip legs of the other cranks release the catches of the as yet closed breakers causing their toggles to collapse and their contacts to open.

3,646,488
ELECTRIC CIRCUIT BREAKER
Masachika Iida, and Yasutaka Imajyo, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Nov. 5, 1969, Ser. No. 874,244
Int. Cl. H01h *77/02*
U.S. Cl. 335—16 **1 Claim**



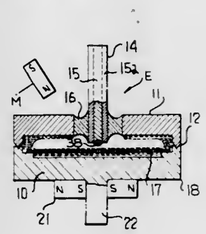
An electric circuit breaker has movable and stationary contacts which are operable automatically as well as manually. The movable contact is separated from the stationary contact by electromagnetic repulsion generated therebetween when there occurs a short circuit in the load circuit of the circuit breaker, causing the switching mechanism of the contacts positively to be collapsed independently of its automatic releasing device.

3,646,489
CIRCUIT BREAKER HAVING THERMAL AND MAGNETIC ACTUATION WITH IMPROVED MAGNETIC TRIP
Philip J. Hopkinson, Pittsfield, Mass., assignor to General Electric Company
Filed Sept. 23, 1970, Ser. No. 74,554
Int. Cl. H01h *75/12*
U.S. Cl. 335—35 **5 Claims**



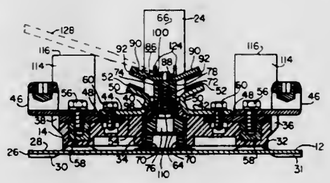
An electromagnetic circuit breaker having a bimetal operating member combined with a magnetic trip member. The bimetal member is provided with a steel assembly which acts as a trip extension member and also provides a low-reluctance flux path for the magnetic circuit. A magnetic armature of three layers of laminated steel is pivotally mounted below and parallel to the bimetal member and has a push rod which is connected to the latch plate to trigger the latch plate and open the circuit breaker contacts when sufficient short circuit current is present to attract the armature toward the bimetal.

3,646,490
MERCURY SWITCH
Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension, Inc., Princeton, N.J.
Filed Aug. 24, 1970, Ser. No. 66,534
Int. Cl. H01h *1/08*
U.S. Cl. 335—58 **31 Claims**



An attitude insensitive mercury relay included in a hermetically sealed nonmagnetic enclosure composed of a header and header cap, welded together in a high-pressure hydrogen atmosphere, including one or more stationary contacts extending insulatedly into the enclosure and a magnetic diaphragm as armature, in the form of a single planartight spiral having physically separated turns. In one form of the device, the interior of the enclosure and the diaphragm may be mercury wettable, excluding only an insulating feedthrough button for a stationary contact, and also excluding a portion of the face of the contact which is intended to sustain impact by the armature, the mercury wettable portion of that face being indented with respect to the impact area, and the quantity of mercury in the enclosure being sufficient, but only sufficient, to sustain a thin layer of mercury on the mercury wettable surfaces. In other forms the enclosure may be nonmetallic, e.g., ceramic, provided with mercury wettable screen surfaces.

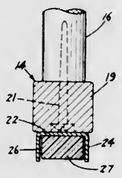
3,646,491
MOVABLE CONTACT STRUCTURE FOR AN ELECTRIC SWITCH
Jordan F. Puetz, Milwaukee, Wis., assignor to Square D Comapny, Park Ridge, Ill.
Filed Dec. 18, 1970, Ser. No. 99,612
Int. Cl. H01h *1/50*
U.S. Cl. 335—197 **8 Claims**



A movable contact structure for a large size electric switch which is arranged so the contacts of the switch may be readily inspected. The contact structure includes a movable con-

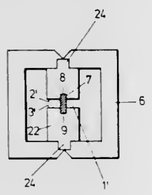
tact retainer that has apertured ears and the base of the switch which supports the stationary contacts includes support posts, which, when the switch is disassembled to inspect the contacts, are available to act as a fulcrum for the shank of a screwdriver when the tip of the screwdriver is inserted into the apertures. The screwdriver thus may be used as a tool to overcome the spring forces holding the movable contact retainer and thus facilitate the removal and replacement of the movable contacts from its position on the movable contact carrier.

3,646,492
MAGNETIC-PICKUP-DEVICE
Lillian D. Westermann, 255 East Second Street, Redwood Falls, Minn.
Filed July 16, 1970, Ser. No. 55,422
Int. Cl. H01f *7/20*
U.S. Cl. 335—285 **8 Claims**



A hand-operated device for collecting and picking up metal objects, as pins, nails, clips or the like. The device has a crosshead secured to the lower end of an elongated handle. A U-shaped channel of magnetic material is secured to the bottom of the crosshead. A bar having magnetic properties is located within the channel establishing a flux force field in the channel operative to pick up and hold magnetic metal objects on the channel.

3,646,493
MAGNETIC CIRCUIT FOR AN INDUCTOR OR TRANSFORMER
Ernst Wiesner, Dornbirn, Austria, assignor to Walter Zumtobel, Dornbirn, Austria
Filed Dec. 18, 1970, Ser. No. 99,549
Claims priority, application Austria, Dec. 29, 1969, 12051
Int. Cl. H01f *27/24*
U.S. Cl. 336—178 **11 Claims**



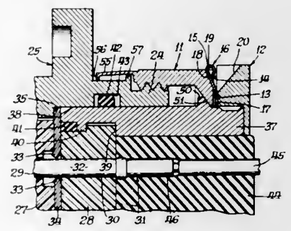
The magnetic circuit of a ballast for fluorescent lamps has an airgap whose effective width is locally reduced by an insert of ferromagnetic material, whereby the magnetization curve of the circuit at low values of the magnetizing force has two angularly offset, substantially rectilinear portions. The insert is readily manufactured to close tolerances and may facilitate assembly of the ballast and reduce hum as the ballast ages.

3,646,494
ELECTRIC MOTOR PROTECTOR SENSOR
Joseph W. Waseleski, Jr., Mansfield, Mass., and Ralph E. Charnley, Edmond, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 23, 1970, Ser. No. 5,428
Int. Cl. H01c *7/00*
U.S. Cl. 338—25 **6 Claims**



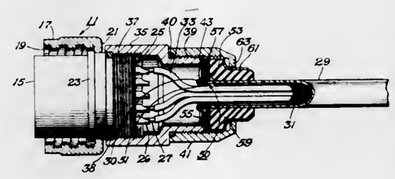
An electric motor protector sensor for use in pressurized atmospheres comprises a small thermistor of low-thermal inertia which is carried in an opening in a thin, inner layer of flexible, temperature-resistant, electrically insulating material to expose portions of the thermistor on opposite sides of the thin insulating layer. Ends of lead wires are connected to these exposed thermistor portions, the lead wires extending away from the thermistor along opposite sides of the thin insulating layer to be connected at their opposite ends to the conductive cores of insulated conductors. Thin, flexible, disc-shaped foils of copper of much larger diameter or surface area than the thermistor are disposed on each side of the thin insulating layer in heat-transfer engagement with respective exposed portions of the thermistor and with portions of the lead wires, thereby to provide heat-collecting members of substantial surface area in the sensor. Outer thin layers of similar insulating material sandwich the thin insulating layer and are bonded to opposite sides of the inner insulating layer around the copper foils, thermistor and leads for sealing the sensor. Heat-shrunk tubes of insulating material are disposed in sealing relation around portions of the insulated conductors and portions of the outer insulating layers of the sensor to complete sealing of the sensor.

3,646,495
CONNECTOR DEVICE HAVING DETENT LOCK
Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 19, 1970, Ser. No. 3,630
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **6 Claims**



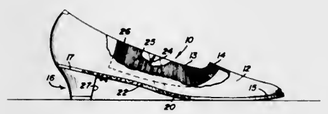
Connector device including a leaf detent spring disposed between facing annular surfaces of a pair of rings and engageable in a key slot in one of the rings to lock the rings against relative rotation. Preferably, one of the rings is a coupling ring threaded on a shell of an electrical connector to move an insert member into the shell and to lock contact means within an insulating body in the shell, the detent spring being releasable to allow reverse rotation of the coupling ring and release of the lock of the contact means, so that the contact means may be removed for servicing or replacement.

3,646,496
ELECTRICAL CABLE CONNECTOR AND GROUNDING MEANS
Robert A. Williams, Fort Worth, Tex., assignor to Williams Instrument, Inc., Fort Worth, Tex.
Filed July 30, 1969, Ser. No. 846,202
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **12 Claims**



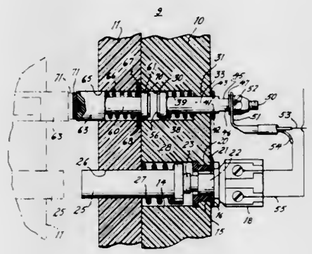
An electrical cable connector for attachment with a shielded, conductor cable, the connector having a coupling means, a sizing shell releasably secured to the coupling means, and a housing clamp releasably secured to the sizing shell. A separable ring is seated and confined against a shoulder inside the sizing shell by securing the housing clamp to the sizing shell, the housing clamp also serving to jam an expanded portion of the shielding of the cable between a split ring and a ferrule or ring, internally causing partial or 360° peripheral electrical continuity between the cable shielding and the sizing shell which, in turn, electrically and mechanically, peripherally connects to the external portion of the connector providing overall shielding to the connector contacts. Upon removal of the housing clamp, the split ring may be separated and removed so that the sizing shell may be moved rearwardly from the coupling means to expose the point of connection of the cable conductors to the electrical contact elements. Thus, both the grounding means and the electrical connection means of the connector are exposed for convenient inspection, repair or initial assembly.

3,646,497
SHOE WITH INTERCHANGEABLE HEELS
Bobby G. Gillikin, Beaufort, N.C., assignor to Martha Ann Willis, Harkers Island, N.C., a part interest
Filed Jan. 15, 1970, Ser. No. 3,029
Int. Cl. A43b *23/28*
U.S. Cl. 36—58.5 **4 Claims**



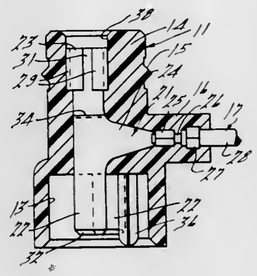
A shoe construction having angle irons mounted to the heel seat of the shoe for slidably mounting interchangeable low and high heels. An arch supporting plate is attached to the shoe shank for rendering vertical support to the shank when a high heel is utilized. An elastic band is attached to the upper opening for retaining the upper snugly against the wearer's foot. Stiffening strips are attached to oppositely disposed vertical arch portions of the shoe to prevent outward bulging of this shoe portion when the high heel is employed.

3,646,498
ELECTRICAL CIRCUIT CONTROL APPARATUS
Robert T. Reed, Moorestown, N.J., assignor to Walton Products Inc., Broomall, Pa.
Filed May 19, 1970, Ser. No. 38,775
Int. Cl. H01r *25/00*
U.S. Cl. 339—48 **6 Claims**



Electrical circuit control apparatus and more particularly a spring-loaded contact pin assembly is described for making and breaking electrical circuits, the structure being particularly suited for circuits of railroad cars which are coupled and uncoupled and which cannot have exposed electrically live contact pins.

3,646,499
MULTIPLE CONNECTOR
Don L. De Lano, Mount Clemens, and Francis C. Schmidt, Berkley, both of Mich., assignors to Microdot Inc.
Filed June 22, 1970, Ser. No. 48,020
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 M **9 Claims**

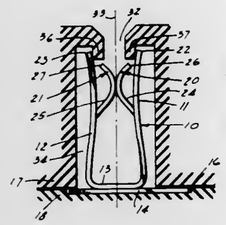


The connector has a body containing a plug receiving recess at one end with male terminals therein and a plug containing mating female terminals at the other end. The terminals are joined to conductors which extend laterally from the body. The connector is so constructed that the recessed end will receive the plug end of a second conductor or a plug which is similar to the connector but which has the recessed end omitted. The connector and plug provides flexibility in locating outlets at spaced points with the conductors connected in series.

3,646,500
ELECTRICAL CONNECTOR HAVING A CONTACT SPRING MOUNTED IN A HOUSING CAVITY

Hermann Wessely, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 25, 1969, Ser. No. 861,022
Claims priority, application Germany, Sept. 26, 1968, P 17 90 199.4
Int. Cl. H01r 13/62
U.S. Cl. 339—65 4 Claims

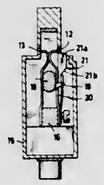


An electrical connector, of the type having a contact spring for unilaterally clamping a conductive contact member and being mounted within the cavity formed in a housing having a guide aperture intersecting the cavity and defining an insertion axis along which the contact member may be inserted for engagement with the contact spring, is characterized by the contact spring comprising an elastic contact portion normally biased toward the insertion axis for contacting an inserted conductor member with a predetermined unilateral contact force and a resilient portion attached to the contact portion and having a free end normally held in a deflected position by engagement with abutment means for outwardly biasing the contact to present an initial plugging force approaching zero and being deflectable to a position out of contact with the projection for presenting a sharply increasing plugging force and a gradually increasing contact force.

3,646,501
CONNECTING PLUG FOR A CURRENT SUPPLY RAIL ARRANGEMENT INTENDED PARTICULARLY FOR LIGHTING PURPOSES AND SMALL-SIZED ELECTRICAL MOTORS

Rainer Ilkka Tapio Valtonen, Suomenoja, Finland, assignor to Oy Nokia A.B., Helsinki, Finland

Filed Oct. 24, 1969, Ser. No. 869,267
Claims priority, application Finland, Oct. 24, 1968, 3026/68
Int. Cl. H01r 13/54
U.S. Cl. 339—75 M 4 Claims

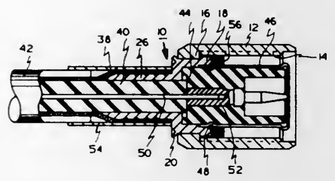


A connecting plug for a current supply rail, provided with contact fingers displaceable by means of manually turnable eccentrics from an inner inoperative position to an outer contact-making position. The plug is provided with locking means in engagement with the eccentrics for preventing turning of the eccentrics in an incorrect contact position of the plug in the current supply rail.

3,646,502
CONNECTOR ELEMENT AND METHOD FOR ELEMENT ASSEMBLY

Harold Gregory Hutter, Brookfield, and William Max Erich Zerlin, Newtown, both of Conn., assignors to The Bunker-Ramo Corporation, Oakbrook, Ill.

Filed Aug. 24, 1970, Ser. No. 66,351
Int. Cl. H01r 13/54, 17/04
U.S. Cl. 339—89 C 4 Claims

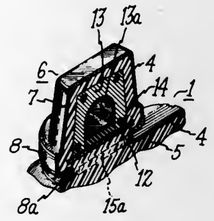


A body construction for a connector element which permits for easy captivation of a coupling ring on the connector body. The ring has a flange with a predetermined inner diameter while the body has an enlarged end section with a diameter larger than that of the flange inner diameter, at least one center section of diameter slightly less than the flange inner diameter, and an end section of reduced diameter. The center section includes a portion which is adapted to be bent up at an angle to the axis of the element when the flange of the coupling ring is over the center section to captivate the flange between the enlarged end section of the body and the bent-up portion of the body center section. Binding of the coupling ring as it is rotated may be eliminated by providing a slight undercut for the portion of the body section which is bent up.

3,646,503
HANDLING MEANS FOR A CABLE TERMINATION HOUSING HAVING STRESS ISOLATING MEANS BETWEEN THE HOUSING AND THE HANDLING MEANS

Henry N. Tachick, Pittsfield, Mass., assignor to General Electric Company

Filed Apr. 13, 1970, Ser. No. 27,613
Int. Cl. H01r 13/62
U.S. Cl. 339—110 R 11 Claims

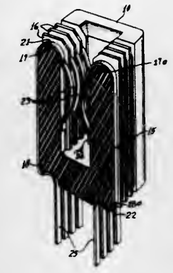


An electric cable termination housing is provided with an integral handling means mounted thereon in the form of a hook stick receiving handle that is mounted on one end of a resilient, flexible cylinder, which in turn is fastened to the termination housing. The resilient cylinder between the termination housing and the handling means serves to isolate from the housing stresses applied to the handle when a hook stick is used to manipulate the termination housing by applying force to the handle at a variety of different angles.

3,646,504
ELECTRICAL CONNECTOR

Edwin O. Classon, Wallingford, Conn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 17, 1969, Ser. No. 867,178
Int. Cl. H05r 1/07
U.S. Cl. 339—176 MP 6 Claims



An electrical connector for printed circuit boards consisting of a series of contact members each having a curved contact section extending into the recess in an insulating block of generally cubical shape in which the printed circuit board is inserted and an external section provided with an integral terminal portion. The metallic contact member is in the form of an open loop and, being resilient, is mounted about the outer surface of the insulating block by spreading the ends of the loop to clear the locking protuberance formed on the bottom of said block. The curved contact section of the contact member forms a beam, the lower end of which is free to move as the beam is deformed by the insertion of the printed circuit board, and the pressure on the board contact or terminal decreases as the beam is deflected. As the circuit board is inserted into or withdrawn from the connector, the wiping action provides for good contact surfaces on the opposing contacts, and the withdrawal force required is greater than the force required to insert the circuit board in the connector.

3,646,505
AUTOMATICALLY DEPLOYABLE SONOBUOY

Woodrow P. Kirby, Hicksville, Ohio, assignor to The United States of America as represented by the Naval Air Systems Command

Filed Mar. 18, 1970, Ser. No. 20,689
Int. Cl. B63b 21/52
U.S. Cl. 340—2 6 Claims

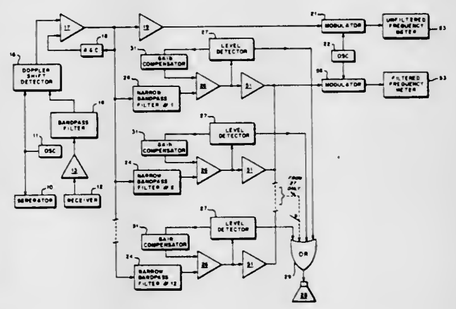


A sonobuoy arranged to be dropped into the sea from an aircraft and automatically deployed into an operational configuration. The prelaunch configuration is generally cylindrical for ejection from a conventional airborne launching tube. After ejection, a rotochute at the upper end of the sonobuoy automatically opens to stabilize and retard descent. Upon impact with the water, the impact pressure on a movable bottom plate at the lower end of the sonobuoy forces a release rod upward along the longitudinal axis to release the rotochute. When the rotochute is jettisoned, an antenna retainer is pulled free by a lanyard attached to the rotochute thus permitting antenna and ground plane elements to erect. When the bottom plate moves inwardly a split retaining ring holding the plate is released and subsequent reduction of the impact pressure, permits a pair of leaf springs to force the bottom plate out. Cocomittantly, a hydrophone, lower electronics and compliant cable deploy from the bottom. The upper end of the sonobuoy is positively buoyant and remains at the water surface. That is, when the bottom plate falls away, the leaf springs move out of coextensive slots at the bottom of the sonobuoy housing and a hydrophone cup thereby permitting the hydrophone cup to drop off and the hydrophone and lower electronics to pay out. When the lower electronics is clear of the sonobuoy housing, an umbrellalike sea anchor opens to introduce vertical damping. A sea-activated battery slidable from the upper to lower ends of the buoy is retained in the floating portion of the sonobuoy and provides electrical power.

3,646,506
SONIC DETECTION APPARATUS

Henry Suter, Hatboro, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 9, 1970, Ser. No. 31,042
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R 7 Claims



An improved swimmer and floater detector having a sonic generator and receiver and a shift detector indicating the doppler frequency difference between the generated and received sonic waves within a guarded volume of flowing water. The shift detector output is passed to a plurality of adjacent narrow bandpass filters, each being connected via a respective gain-controlled amplifier to a common multiple frequency meter. The amplifier gain control is nonproportional to the output amplitude and is operative in two modes to steadily increase or decrease the gain when the output is below or above threshold respectively.

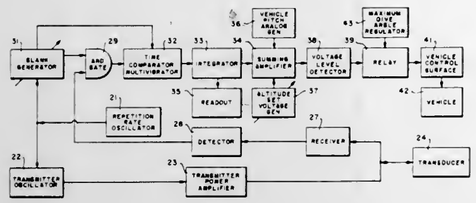
3,646,507
VEHICLE ALTITUDE CONTROL SYSTEM

James W. B. Foley, Lanesboro, Mass., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 5, 1966, Ser. No. 599,993
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R 9 Claims

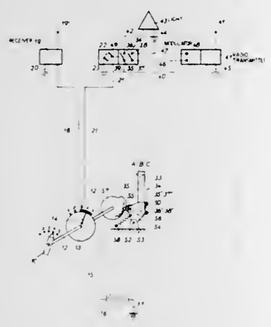
An altitude control system for guiding a submarine vehicle in such manner as to search for and hunt along a reference

altitude above the sea floor having a sonar range signal generator, a vehicle pitch signal generator, an adjustable reference altitude voltage source, and a series-connected summing amplifier and direct current level detector coupled



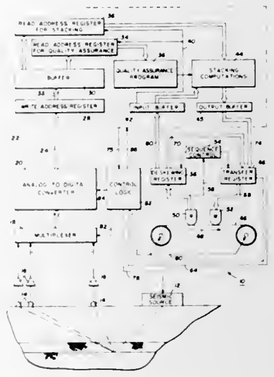
to the aforesaid range and pitch signal generators and said reference altitude voltage source for automatically regulating the control surfaces of said submarine vehicle in accordance with the algebraic sum of the output signals therefrom.

3,646,508
AUTOMATIC SIGNALING DEVICE FOR AUTOMOTIVE VEHICLES
Jacinto Rocha Da Silva, Quinta das Pousadas, Vagos, Portugal
Filed June 12, 1968, Ser. No. 736,508
Claims priority, application Portugal, June 3, 1968, 47 882
Int. Cl. G08g *1/00*
U.S. Cl. 340—33 **22 Claims**



A system for receiving and transmitting signals, to be used with automotive vehicles. A receiver is provided for receiving radio signals transmitted through the atmosphere. Also a transmitter is provided for transmitting radio signals through the atmosphere from the vehicle. In addition, an illuminating device is provided for providing a visual signal. A selector switch is available to the operator of the vehicle for selecting either an operation wherein signals are received by the radio receiver or an operation wherein signals are transmitted from the illuminating device and the transmitter. When providing the visual signal and transmitting signals, a plurality of programs are provided according to which the illuminating structure and transmitting structure are operated in a predetermined sequence to provide intermittent signals at both of these structures. The selecting switch can be placed in a selected one of a number of positions selecting a given program when the illuminating structure and transmitter structure are used.

3,646,509
METHOD FOR FIELD STACKING SEISMIC DATA AND SYSTEM USING WRITE AFTER READ BULK DATA STORAGE
John M. Hughes; Stanley E. Lehnhardt, both of Dallas, and Byron C. Lochridge, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 694,530, Dec. 29, 1967, now abandoned. This application Aug. 8, 1969, Ser. No. 849,605
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 MC **5 Claims**

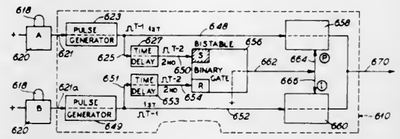


A seismic digital field stacking method and system in which the first seismic shot of a stack is initiated from a blast command recorded on a conventional magnetic tape which moves past a read head and then past a write head. The seismic response signal is detected and digitalized and temporarily delayed in the buffer of a digital computer for a predetermined number of words, and then recorded on the magnetic tape. After the entire seismic response from the first shot has been recorded on the magnetic tape beginning at a delayed point after the blast command, the tape is rewound. When the blast command again passes the read head, the second shot of the stack is initiated and the tape continues to run. The seismic response from the second shot is again digitalized and temporarily stored in the buffer of the digital computer while the computer performs conventional quality assurance calculations as the tape continues to run. When the first data word is read from the magnetic tape by the read head, it is stored in a transfer register while the computer performs the stacking circulations, taking into account the quality assurance program, and then updates the data word stored in the transfer register. Then as the next data word is read from the tape as it passes the read buffer, the updated word in the transfer register is rewritten on the magnetic tape. The procedure is then repeated to stack the new data from the second shot with the old data from the first shot, and the entire stacking procedure repeated for all successive shots in the stack.

3,646,510
CIRCUIT FOR SIGNALING ALTERNATION ERROR IN DETECTORS FOR RAILWAY VEHICLE CONTROL SYSTEM
Donald J. Bailey, Palatine, Ill., assignor to Mangood Corporation, Grayslake, Ill.
Filed Feb. 27, 1970, Ser. No. 15,142
Int. Cl. G08g *1/015*
U.S. Cl. 340—23 **8 Claims**

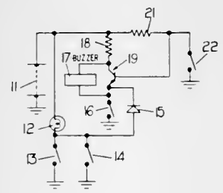
In a railway vehicle control system having a pair of axle detectors spaced along the line of movement of a trail, a

distance less than the closest axle-to-axle spacing in standard railway vehicles, a detector-for-detector interrogation system which activates an error signal if either is repeated without alternation with the other. An error signal output circuit is



connected to receive signals through two control gates connected to input circuits activated by the two axle detectors. A control circuit unblocks one of the control gates in response to repeat actuation of either axle detector and places an error signal in the output circuit.

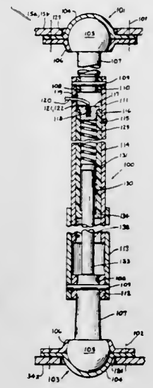
3,646,511
WARNING CIRCUITS FOR ROAD VEHICLES
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Apr. 29, 1970, Ser. No. 32,820
Claims priority, application Great Britain, June 9, 1969, 29,035/69
Int. Cl. B60q *5/00*; **G08b** *21/00*
U.S. Cl. 340—52 D **3 Claims**



In a warning circuit for a road vehicle for giving an indication to a driver if he attempts to leave the vehicle without removing the ignition key, one terminal of the vehicle battery is grounded and the other battery terminal is connected to ground through a warning device and a first grounded switch which is closed when the driver's door is opened. A second grounded switch is connected to the live battery terminal and is closed when the ignition key is in position, and means is provided for short circuiting the warning device when the first switch closes unless the second switch is still closed.

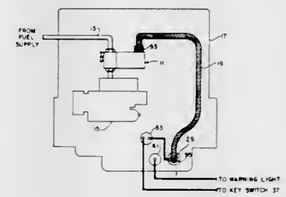
3,646,512
VEHICLE TRAILER BED OVERLOAD INDICATING SYSTEM
George J. Borgstede, 10537 Stewart Place, New Orleans, La.
Continuation-in-part of application Ser. No. 640,907, May 24, 1967, now abandoned , and a continuation-in-part of 689,157, Dec. 8, 1967, now abandoned , and a continuation-in-part of 722,276, Apr. 18, 1968, now abandoned. This application Sept. 1, 1970, Ser. No. 68,723
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 R **10 Claims**

The invention comprises overload sensors comprised of intertelescoped contact carriers for installation between load-supporting areas, as truck beds and the vehicle axle means therebelow that support the leaf spring means which in turn yieldably support the load-supporting area or load bed. The



deposit of load on the load-supporting area compresses the leaf spring means and intertelescope the contact carriers to close circuit to sense or render indicia of overload.

3,646,513
VEHICLE INTERNAL-COMBUSTION ENGINE FUEL CONTROL AND SIGNAL DEVICE
Johnny Goodman, Granite City, Ill., assignor to Joseph J. Bristow, East Carondelet, Ill., a part interest
Filed Jan. 25, 1971, Ser. No. 109,392
Int. Cl. B60q *1/00*; **G08b** *21/00*
U.S. Cl. 340—53 **10 Claims**

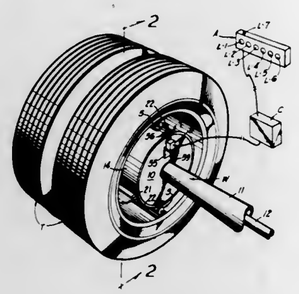


A control for preventing damage to an internal-combustion engine due to extended operation at excessive temperatures where the engine speed varies according to flow of fuel thereto. The control includes a fuel-limiting solenoid valve which controls the flow of fluid to the engine and which has a plunger movable from a first position permitting unobstructed fuel flow to a second position causing fuel flow reduction to a preset reduced amount causing engine speed reduction sufficient to reduce the operating temperature thereof, the valve having a winding which, when deenergized, permits movement of the plunger from the first position to the second position. Switch means is connected in a circuit with the winding for controlling the energization thereof and is responsive to the operating temperature of the engine. This switch means operates to cause deenergization of the winding when the engine operating temperature exceeds a preset level, thereby protectively reducing the engine speed to reduce its operating temperature.

3,646,514
VEHICLE LOW TIRE PRESSURE SIGNAL SYSTEM

Phillip G. Mitchell, 305 Highland Avenue, Opelika, Ala.; Fredrick S. Hagans, 8 South Church Street, Sylacauga, Ala.; James Noel Baker, 445 Opelika Road, Auburn, Ala., and Glenn R. McClendon, Opelika Highway, Drawer H, Lafayette, Ala.

Filed Apr. 24, 1970, Ser. No. 31,514
Int. Cl. 360c *23/02*
U.S. Cl. 340—58 **4 Claims**

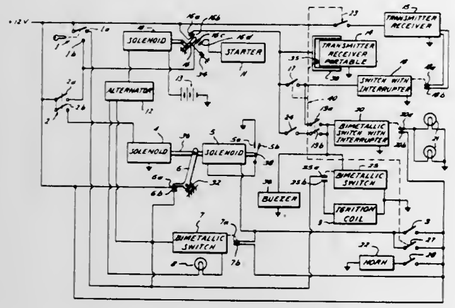


A low-pressure alarm system for pneumatic tires including a sensing unit operatively connected to each tire pressure, a detection unit carried by each stationary tire hub for detecting when the sensing unit is activated and a light panel connected to the detecting unit through a solid-state control circuit to indicate which tire assembly has a low pressure. The detection units are manually set to a detecting position and, once tripped by the associated sensing unit, remains tripped until manually reset.

3,646,515
VEHICULAR SAFETY AND REMOTE CONTROL SYSTEM

Frank Vodehnal, 1104 West Tri Oaks, Houston, Tex.

Filed Mar. 2, 1970, Ser. No. 15,513
Int. Cl. B60r *25/04*; **F02n** *17/00*
U.S. Cl. 340—64 **18 Claims**

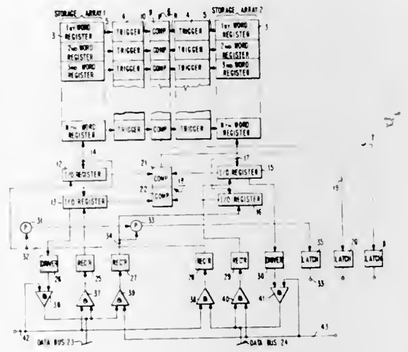


Vehicular safety and control system whereby the user upon leaving his vehicle unattended may prevent unauthorized use of his vehicle. Uses which the system makes available are: ceasing unauthorized operation of the engine, preventing unauthorized movement of the vehicle, and indicating whether the use is or is not authorized. The system can also be used to locate the car from among many in a large parking lot or for other location operations, and to start and stop the motor by remote control. This system also protects against engaging the starter of the vehicle once the motor is running.

3,646,516
ERROR-DETECTING CIRCUITRY

Michael Flinders, Chandler's Ford; Peter Lycett Gardner, Bishops Sutton; Michael Henry Hallett, Chandler's Ford; John W. Jones; John Francis Minshull, both of Winchester, and Keith Graham Taylor, Chandler's Ford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,900
Claims priority, application Great Britain, Apr. 24, 1969, 20,902/69
Int. Cl. G06f *11/00*
U.S. Cl. 340—146.1 **10 Claims**

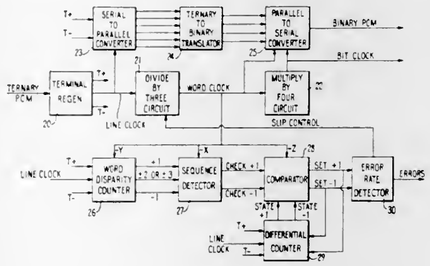


Error detection circuitry employs duplicate equal order binary registers and comparison circuitry for detecting and diagnosis of errors in data bits being transferred between the storage registers and a data bus.

3,646,517
ERROR DETECTION AND CORRECTION SYSTEM

Derek Brian Waters, Chelmsford, and Anthony Jessop, Enfield, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 15, 1970, Ser. No. 37,718
Claims priority, application Great Britain, June 25, 1969, 32,`92/69
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 **10 Claims**

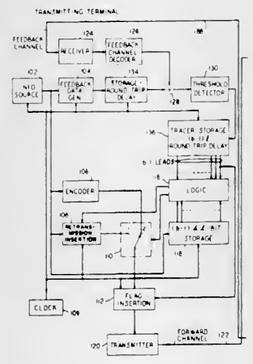


This relates to an error detection and correction system for use in the receive terminal of a restricted disparity ternary code communication system. A word disparity counter and sequence detector detects sequences of consecutive ternary code groups which should contain predetermined disparity characteristics. A differential counter computes the expected disparity characteristics of such sequences. The detected and expected disparity characteristics are compared and any differences therebetween adjusts the counter to compensate for the difference. An error rate detector also responds to the difference to provide an error signal when a predetermined number of the differences occur in a given time interval. The error signal indicates an out-of-synchronism condition and is employed to regain synchronism.

3,646,518
FEEDBACK ERROR CONTROL SYSTEM

Stephen Brant Weinstein, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1970, Ser. No. 34,770
Int. Cl. G08c *25/00*; **G06f** *11/00*
U.S. Cl. 340—146.1 **20 Claims**



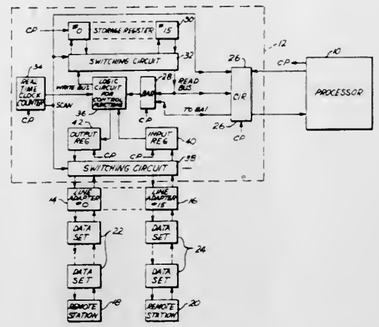
Information sequences are encoded into a block code and both transmitted to a receiving terminal and stored at the transmitting terminal. The transmitted blocks are decoded at the receiving terminal and if uncorrectable errors are detected in a block, the receiving terminal transmits a feedback word to the transmitting terminal indicating that errors have been detected in the block in question. If uncorrectable errors have not occurred, the receiving terminal transmits to the transmitting terminal another feedback word which is a reduced version of the information portion of the block in question. Upon receipt of the feedback word, the transmitting terminal decides if a retransmission is required; if so, it substitutes, for the parity sections of subsequently transmitted blocks, that information sequence corresponding to the erroneous block.

3,646,519
METHOD AND APPARATUS FOR TESTING LOGIC FUNCTIONS IN A MULTILINE DATA COMMUNICATION SYSTEM

James E. Wollum, Glendora; Robert L. Rawlings, Diamond Bar, and James Clark Davidson, Glendora, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1970, Ser. No. 7,969
Int. Cl. G06f *11/02*; **G05b** *1/01*
U.S. Cl. 340—172.5 **3 Claims**

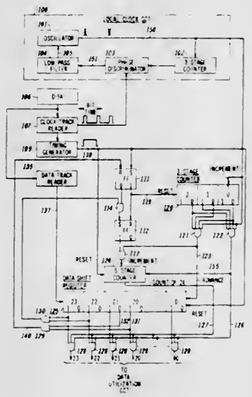
A data communication system in which a single control logic function is tested by writing a test control word for one communication line into a time-shared control circuit register from a processor. The control word together with a test line input word generated by the processor are coupled to the control logic for one clock period to perform one step of the logic function, the result being stored in memory. The result is then interrogated in memory to determine if the result of the logic function meets the test.



3,646,520
ADAPTIVE READING CIRCUIT FOR A DISK MEMORY

Robert Graham Spencer, North Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 25, 1970, Ser. No. 39,974
Int. Cl. G11b *5/02*, *31/00*
U.S. Cl. 340—172.5 **7 Claims**



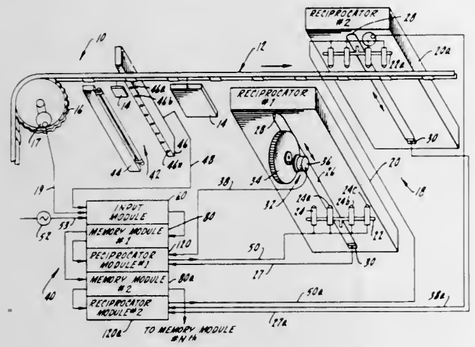
A circuit arrangement wherein a local oscillator is phase locked to information read from a timing track on a disk memory and serves to generate output pulses having a repetition rate several times higher than the repetition rate of the information on the timing track. For each data track of the memory there is provided a data-receiving circuit which comprises a shift register having its input connected to a data track reading circuit. Initially, data obtained from a corresponding data track is shifted through the shift register at a relatively high rate corresponding to the repetition rate of the local oscillator circuit. A sequence-detecting circuit is connected to a plurality of stages of the shift register for detecting the presence of a significant pattern of binary digits in the connected stages and for generating a discrete output signal upon the detection of this discrete pattern. Control circuitry which is responsive to the output signal of the sequence-detecting circuit serves to stop the advancing of data through

the shift register at the previously noted higher repetition rate and initiates the advancing of the data through the shift register at a lower rate which corresponds to the rate at which information occurs on the timing track. The change in rate occurs synchronously with the occurrence of the output signal of the sequence-detecting circuit.

3,646,521
MULTILEVEL SPRAY CONTROL

Virgle E. Porter, Steger, Ill., assignor to Amtron, Inc., Midlothian, Ill.

Filed July 6, 1970, Ser. No. 52,586
Int. Cl. G05b *23/02, 11/26, 11/32*
U.S. Cl. 340—172.5 **26 Claims**

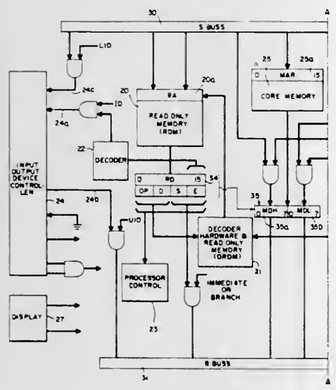


An electronic control circuit is disclosed for controlling the operation of a paint spray system of the type having a spray station having at least one spray gun assembly and one spray gun thereon and a conveyor means for transporting objects of diverse geometry past the spray station.

3,646,522
GENERAL PURPOSE OPTIMIZED MICROPROGRAMMED MINI-PROCESSOR

Arthur R. Furman, Middletown; Richard Jones, Holmdel; Charles Moreland, Wall Township, and Elliot Nestle, Neptune, all of N.J., assignors to Interdata, Incorporated

Filed Aug. 15, 1969, Ser. No. 850,519
Int. Cl. G06f *9/14*
U.S. Cl. 340—172.5 **2 Claims**

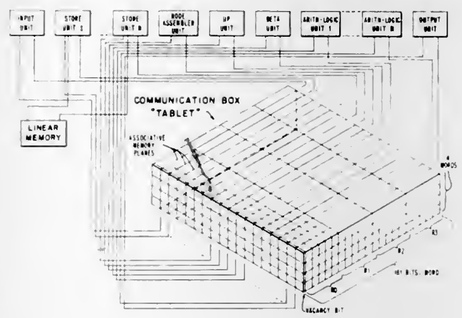


A processor system having a main memory to store user instructions and a read only memory which contains microroutines to emulate the user instructions. A user's instruction is fetched from the main memory and placed in an instruction register, a separate decode read only memory holds the individual starting address for the appropriate microroutine utilized in a current user instruction. The operation code of the user's instruction is applied from the instruction register to the decode read only memory for obtaining the starting address of a predetermined microroutine. Further, multiplication and division are performed according to a unique set of microroutines to significantly decrease processor operating time.

3,646,523
COMPUTER

Klaus Juergen Berkling, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,473
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **14 Claims**

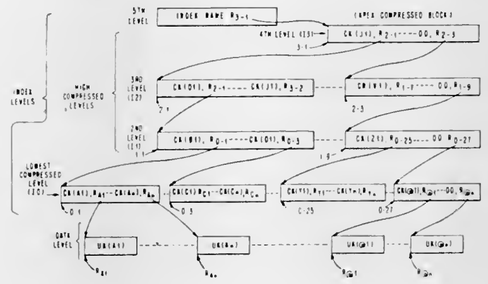


A computer is disclosed wherein the machine language thereof is a particular formal system, i.e., the "calculus of lambda conversion." Such machine language is the language of the "well-formed" formulas of the aforementioned lambda calculus whereby the theoretical properties of the lambda calculus are implemented in the computer. Consequently, the computer is capable of computing all computable functions with time and space being the only limitations. The nerve center of the system is termed a tablet which in one implementation may essentially consist of an array of high-speed registers, each one large enough to hold a primitive term together with its designator. The nodes of a tree given by some formula corresponds to rows in the tablet and the branches extending from the nodes correspond to columns in the tablet. In one embodiment, the tablet has three columns for the branches and can have a fourth column which holds the tree addresses of the nodes. Associative techniques permit access to a row upon a match with the contents of the data or designator fields of one or more columns. The basic unit of information consists of the contents of a complete row of the tablet, such unit being termed a "message." The tablet, functioning as a central communication device, communicates with functional units, memory units, and input-output units, the latter issuing and accepting messages, or merging them with existing ones when the units obtain access to the tablet. The invention contemplates either the accessing by the units of the whole tablet, one after another in a fixed sequence, or the accessing by each unit of only a subset of the tablet, all units simultaneously accessing discrete subsets respectively. In order to render all messages available to all units, all of the messages are circulated, i.e., shifted through the whole tablet.

3,646,524
HIGH-LEVEL INDEX-FACTORING SYSTEM

William A. Clark, IV; Charles T. Davies, Jr., both of Poughkeepsie, N.Y.; Kent A. Salmond, Los Gatos, Calif., and Thomas S. Stafford, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,462
Int. Cl. G05b *19/22;* **G06f** *7/04;* **G06r** *7/06*
U.S. Cl. 340—172.5 **52 Claims**



High-level index-factoring system generates a multilevel compressed index in which the compressed key format in all levels of the index (i.e., high and low) are searchable by a single method, such as the method in allowed application Ser. No. 788,835.

The generation process includes the factoring of high-order bytes common to all uncompressed keys contributing to any compressed index block at any level; the factored high-order bytes are transferred into a compressed key in the next higher level compressed index block.

The high levels in the compressed index are built by selectively passing to the high levels the last uncompressed key (UK) used in the generation of each low-level compressed index block. The determination to pass the UK to a next higher level is made when the UK is the last UK used to generate the last-compressed key (CK) in the compressed index block at the current level. The propagation of a UK to successive high levels ends whenever the UK is used to generate a CK which does not complete a compressed index block. Thus the UK passing depends on the block completion function at successive levels.

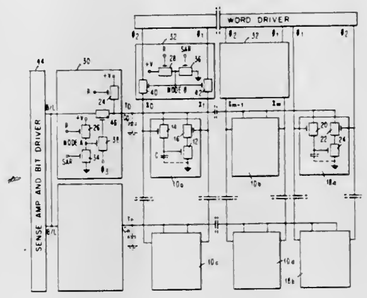
A different sequence of UK's is received by each high level. The CK's at any high level are generated from the sequence of UK's passed to that level; each high-level CK is generated from the current and prior UK's passed to the same level. Thus each UK passed to a high level is used to generate a current CK for that level, and then the UK is stored for that level so that it can later be used in the generation of the next CK for that level when a next UK is passed to it.

The key bytes in each high-level CK are taken from the UK currently passed to that level, beginning from a leftmost byte which is dependent on whether the currently passed UK is a right-shift type, a left-shift type, or no-shift type at the respective high level. The UK type at a high level is independent of its type at a lower level because the UK sequence is different. The rightmost key byte for the respective high level CK is determined by the low-level difference byte in the same UK determined by its use in generating a CK for the low-level index; this rightmost byte is independent of the UK type at the respective high level. If the passed UK is a left- or no-shift type at the respective high level, the key bytes for the high-level CK are taken from the high-level difference byte through the low-level difference byte. If it is a right-shift type of CK at the respective high level, the key bytes are taken from its position after the high-level difference byte in the prior UK for the same high level through its low-level difference byte.

3,646,525
DATA REGENERATION SCHEME WITHOUT USING MEMORY SENSE AMPLIFIERS

Richard H. Linton, Poughkeepsie, N.Y., and Thomas L. Palfi, Mountainview, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,292
Int. Cl. G11c *7/00, 11/24, 11/40*
U.S. Cl. 340—173 CA **7 Claims**

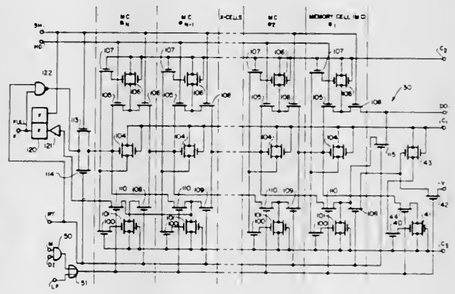


This specification discloses a scheme for regenerating the data in stored-charge storage cells of monolithic memories. The scheme involves the periodic reading out of the data in the stored-charge storage cells and temporarily storing the data in a regeneration cell. Thereafter the data is read out of the regeneration cell and back into the storage cell to complete the regeneration cycle.

3,646,526
FIFO SHIFT REGISTER MEMORY WITH MARKER AND DATA BIT STORAGE

Lloyd D. Fagan, Santa Clara, Calif.; David R. Hadden, Jr., Eatontown; David Haratz, New Shrewsbury, and Lorenz M. Sarlo, Matawan, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 17, 1970, Ser. No. 20,183
Int. Cl. G11c *19/00, 11/24;* **H03k** *25/02*
U.S. Cl. 340—173 R **7 Claims**



A first-in, first-out (FIFO) memory having a plurality of memory cells, each for storing one data bit and one marker bit. The marker bit is provided for steering the data bits into successive memory cells when writing. Reading data is accomplished by shifting the data in succession out one end of the FIFO. Each memory cell consists only of MOS-transistors, which are connected so as to function as sample-

and-hold devices and clocked inverter devices. One sample-and-hold transistor and one inverter each connected to the same clock will store a bit, either data or marker. Sample-and-hold transistors and inverters are coupled between the bit storage sections of common and adjacent memory cells so as to provide the proper logic for steering the data bits for shifting to adjacent cells the data and marker bits.

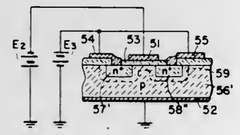
The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,646,527

ELECTRONIC MEMORY CIRCUIT EMPLOYING SEMICONDUCTOR MEMORY ELEMENTS AND A METHOD FOR WRITING TO THE MEMORY ELEMENT

Toshio Wada; Katsuhiro Onoda; Ryo Igarashi; Sho Nakanuma, and Tohru Tsujide, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 31, 1970, Ser. No. 24,078
Claims priority, application Japan, Apr. 12, 1969, 44/28422
Int. Cl. G11c *11/40*; H01l *13/00*
U.S. Cl. 340—173 R **6 Claims**



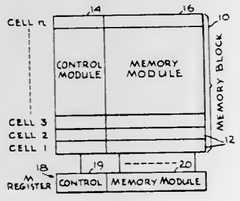
Data is written into a memory storage device by applying a negative voltage to the gate electrode of an MIS-type transistor, and a positive voltage to at least one of the drain and source of that transistor. The voltage difference between the gate and the source or drain exceeds a critical voltage so that electrons are injected and trapped in the gate film. Also disclosed is a memory matrix in which a plurality of MIS transistors are arranged in a matrix array and have their gate and source-drain electrodes connected to row-and-column drive lines.

3,646,528

SELF-SEARCHING MEMORY UTILIZING IMPROVED MEMORY ELEMENTS

Paul M. Davies, Manhattan Beach, Calif., assignor to TRW Inc., Cleveland, Ohio

Original application Jan. 2, 1962, Ser. No. 163,603, now Patent No. 3,196,410, dated July 20, 1965. Divided and this application Nov. 5, 1964, Ser. No. 409,127
Int. Cl. G11c *15/00, 11/44*
U.S. Cl. 340—173.1 **8 Claims**



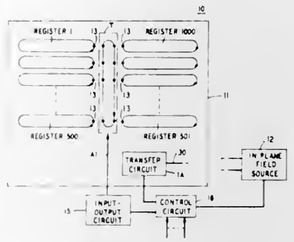
A superconductive associative memory system using the presence or absence of a persistent current to represent binary information. Readout is accomplished by association in comparators which may be selectively masked.

3,646,529

MAGNETIC DEVICES UTILIZING GARNET COMPOSITIONS

Andrew Henry Bobeck, Chatham; David Herbert Smith, Lebanon Township, Hunterdon County; Edward Guerrant Spencer, Murray Hill, and LeGrand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 20, 1970, Ser. No. 30,071
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **10 Claims**



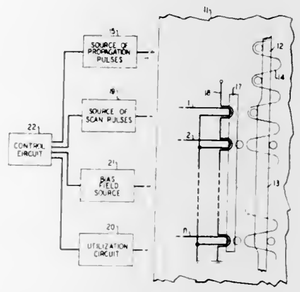
Magnetic crystalline materials of the garnet structure with suitable magnetic moments and with reduced temperature dependence of magnetic moment are advantageously incorporated in devices depending for their operation on "bubble" domains.

3,646,530

INPUT GATE ARRANGEMENT FOR DOMAIN WALL DEVICE

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 30, 1970, Ser. No. 76,882
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **9 Claims**



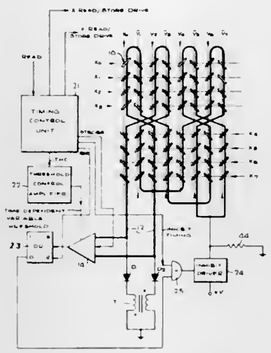
A first multistage domain shift register, of the type in which a domain is moved along a rail which defines the register, is employed in an input gate arrangement for an autonomous line scanner. Information in such a register is represented by a domain in one of two possible positions laterally displaced with respect to one another to a first and second side of the rail in each stage. A second rail parallels the first and is responsive to input (off-hook) signals to determine the lateral positions of domains there for interaction with and thus for determination of the lateral positions of domains in the first register.

3,646,531

MAGNETIC CORE SIGNAL DISCRIMINATION METHOD

Seishin Marahashi, San Jose, Calif., assignor to Core Memories, Inc., Mountain View, Calif.

Filed Oct. 10, 1969, Ser. No. 865,373
Int. Cl. G11c *7/02, 11/06, 5/02*
U.S. Cl. 340—174 DC **1 Claim**



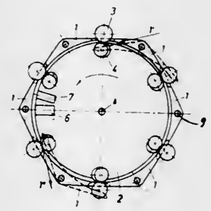
A ferrite core signal discriminating system is disclosed which uses a variable threshold for more accurate signal discrimination. A threshold control amplifier provides a time dependent threshold level to a discriminator with a high static level during initial read drive current periods and an exponentially decreasing level following the peak of noise and before peaks of ensuing core switching periods to improve discrimination of signal from noise.

3,646,532

DEVICE FOR THE PROCESSING OF ACCOUNT CARDS, MAGNETIC ACCOUNT CARDS OR THE LIKE IN AUTOMATIC ACCOUNTING MACHINES, ELECTRIC TYPEWRITERS AND SIMILAR APPARATUS

Udo Winter, Paderborn, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany

Filed Apr. 24, 1970, Ser. No. 31,570
Claims priority, application Germany, Apr. 28, 1969, P 19 21 577.1
Int. Cl. B65h *5/06*; G11b *5/00*
U.S. Cl. 340—174.1 R **12 Claims**



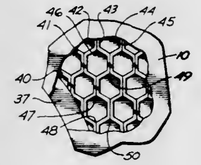
A device for the processing of account cards, magnetic account cards or the like in accounting machines, electric typewriters and similar apparatus comprises a gridlike drum for the admission and extraction of a card to and from a circular guide track and for guiding it therein. The guide track for the card is delimited internally by a number of spaced rigid guide rings mounted on a drum main shaft and externally by deflectors distributed over the periphery of the drum and pivoted one on either side of each guide ring to longitudinal bars so that always two neighboring deflectors are angularly displaced. The longitudinal bars are distributed over the periphery of the drum and one end face of the drum consists of a rigid plate, driving rollers and counterpressure rollers being provided in the vicinity of said rigid plate, in the zone of said guide track.

3,646,533

ROTARY DISK ASSEMBLY HAVING LOW-DENSITY CORE FOR INFORMATION STORAGE SYSTEM

Robert A. Rosenblum, Newbury Park, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 8, 1969, Ser. No. 814,384
Int. Cl. G11b *5/82*
U.S. Cl. 340—174.1 R **15 Claims**



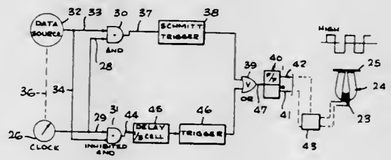
In a disk file information storage system, the rotary disk is constructed of a low-density core covered with a thin higher density outer skin. The core is preferably a honeycomb structure with cells whose axes are parallel to the axis of the disk. The skin is constructed of flat circular sheets of metal bonded to the ends of the core and an outer ring bonded to the sheets along the outside perimeter of the core. Assuming the core has a hole through its center, the skin includes an inner ring bonded to the sheets along the inside perimeter of the core. Thus, the core is sealed by the skin.

3,646,534

HIGH-DENSITY DATA PROCESSING

Wendell S. Miller, 1341 Comstock Street, Los Angeles, Calif.

Filed May 5, 1969, Ser. No. 821,627
Int. Cl. G11b *5/06*
U.S. Cl. 340—174.1 G **31 Claims**

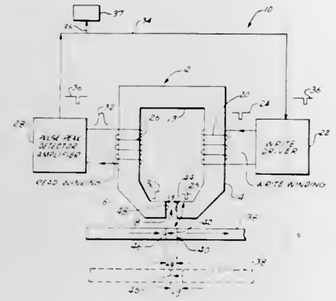


A high-density data processing system in which individual data bits are represented in coded form as changes in state of a predetermined data output unit, with two or more different types of bits being distinguished from one another by shifting the occurrence of a particular change of state to a slightly different time if it represents a bit of a first type than if it represents a bit of a second type. A decoding or playback device may then be designed to respond to the specified changes in state in a manner reading out the different types of bits in accordance with their relative timing.

3,646,535
METHOD AND APPARATUS FOR MEASURING TAPE SPEED

Michael I. Behr, South Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 18, 1969, Ser. No. 877,698
Int. Cl. G11b 5/00
U.S. Cl. 340—174.1 B 20 Claims

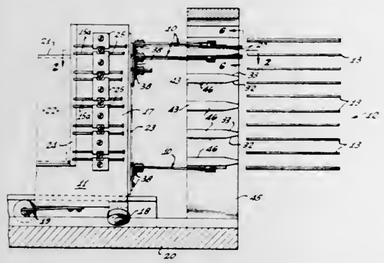


A monitor for sensing the instantaneous speed of a magnetic medium utilizing a single magnetic head having a first leg coupled to a signal generator and a second leg to a pulse peak detector for recording and detecting a timing signal as an incremental portion of the magnetic recording medium traverses the nonmagnetic gap defined by the head. The head is incorporated in a magnetic recording apparatus as a permanent part of the apparatus or in a portable probe. An output from the peak detector energizes the signal generator such that the frequency of the detected signals is a function of the instantaneous speed of the recording medium.

3,646,536
HEAD-POSITIONING APPARATUS

Lewis W. Bleiman, Northridge, Calif., assignor to SLI Industries, Van Nuys, Calif.

Filed Dec. 4, 1969, Ser. No. 882,234
Int. Cl. G11b 21/12, 5/54, 5/60
U.S. Cl. 340—174.1 C 14 Claims

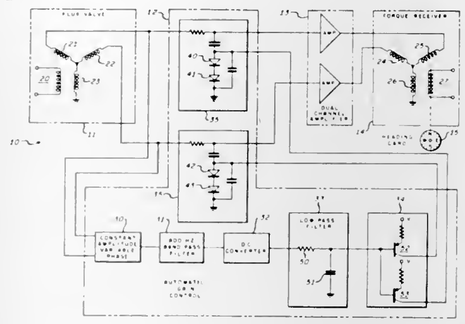


Apparatus for shifting a plurality of vertically spaced pairs of magnetic heads into a vertical stack of magnetic memory discs and pressing the heads of each pair in opposite directions against the discs above and below the heads, the heads being supported in side-by-side relation on resilient strips with an actuator between the strips for shifting the heads into engagement with the discs. The actuator comprises an elongated spring arm with two laterally projecting wings that are oppositely inclined from the horizontal when the spring is free, each wing having a follower on its tip engageable with a cam along the path of the tip to shift the wings away from the associated discs and stress the arms during retraction of the heads and to release the wings to the action of the springs during insertion.

3,646,537
AUTOMATIC GAIN CONTROL FOR AN ELECTROMECHANICAL TRANSDUCER

James R. Erspamer, and George W. Snyder, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Mar. 13, 1970, Ser. No. 19,198
Int. Cl. G08c 19/00
U.S. Cl. 340—197 9 Claims

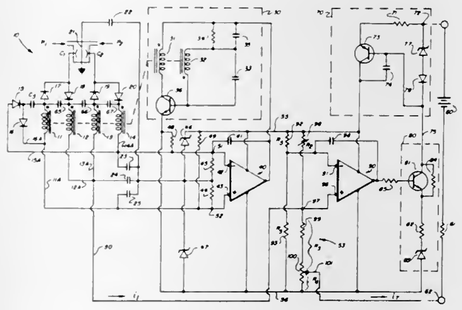


An automatic gain control for an electromechanical transducer apparatus for indicating direction which includes a transmitter, an amplifier and a receiver. The automatic gain control provides a constant output despite the presence of undesired variations in the strength of the horizontal component of the earth's magnetic field. The automatic gain control detects the amplitude of the undesired variations and controls the variable impedance that varies the gain of the amplifier in inverse proportion to the field strength thereby maintaining a constant output to the receiver.

3,646,538
TRANSDUCER CIRCUITRY FOR CONVERTING A CAPACITANCE SIGNAL TO A DC CURRENT SIGNAL

Roger L. Frick, Minneapolis, Minn., assignor to Rosemount Engineering Company, Eden Prairie, Minn.

Filed Oct. 27, 1969, Ser. No. 869,608
Int. Cl. G08c 19/10
U.S. Cl. 340—200 14 Claims



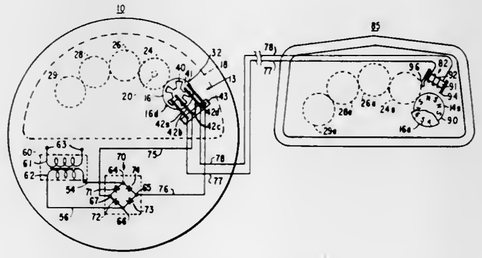
The circuitry including the variable capacitance sensor is excited by an external DC power source. A portion of the direct current power is converted to a high-frequency alternating current which is in circuit with the capacitance sensor and individual rectifying means for each of the capacitances. The rectified currents from the capacitances are compared to a reference current and the resulting signal together with a measure of all the other direct currents used by the circuit

provide a signal to control the total current supplied to the circuitry. The total current then bears a prescribed and dependent relation to the capacitance of the sensor. The rectifying means form separate rectifying loops each of which is driven by an AC excitation winding. These rectifying loops are used in a special circuit configuration with a capacitance pressure sensor to provide a highly linear output signal as a function of differential pressure.

3,646,539
TRANSMITTING UNIT FOR METER EXTENSION SYSTEM

Dale F. Becker, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Filed May 26, 1969, Ser. No. 829,160
Int. Cl. G08c 19/16
U.S. Cl. 340—203 9 Claims

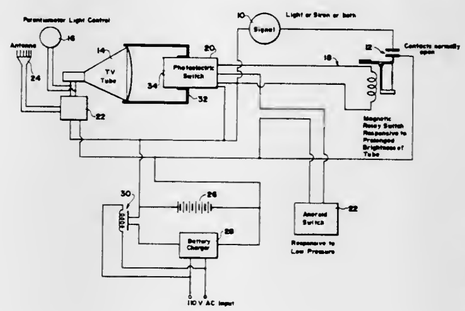


A transmitting unit connected to a remote receiver register for supplying direct current pulses to a stepping motor of the register, including a rectifier circuit for converting alternating current to full wave direct current pulses and a switch for producing pulses by reversing the polarity of the current pulses in response to measurement of commodity flow by the meter.

3,646,540
TORNADO ALARM

Roy L. Cooper, deceased, late of Waterman, Ill. (by Alberta M. Cooper, heir), assignor to Lynn F. Laseman, Waterman, Ill., a part interest

Filed Nov. 7, 1969, Ser. No. 874,872
Int. Cl. G08b 21/00
U.S. Cl. 340—241 3 Claims



The tornado alarm consists of a simple TV-type tube circuit adapted to receive radio signals from an approaching tornado to light up the tube with a sustained brightness which is detected by an electric eye circuit to operate an alarm or warning signal of the approach of the tornado in time for taking all precautionary measures possible against loss of life or property damage. A barometric pressure switch is included in the alarm control circuit to make it operative only if the barometric pressure is substantially reduced, in order to prevent operation of the alarm should there be a local disturbance created accidentally to brighten the TV tube when there is no tornado in the vicinity.

3,646,541
FLUID LEVEL INDICATOR

Ward J. Rathbun, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 680,704, Nov. 6, 1967, now abandoned. This application June 4, 1970, Ser. No. 41,772
Int. Cl. G01f 23/24; G08b 21/00
U.S. Cl. 340—244 C 4 Claims

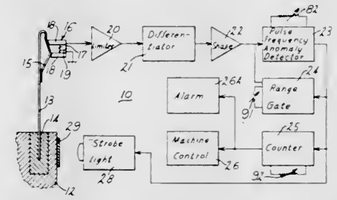


A fluid level indicator utilizing a transistorized relaxation oscillator, which is powered by a DC source, and a probe, which is positioned in a container so as to detect the absence of fluid at some critical level. The probe is either in circuit or out of circuit with the oscillator so that whether the probe is immersed in the fluid or out of the fluid determines the duration of the oscillator output pulses. If the probe is out of the fluid the duration of the output pulses increases enough to energize a relay. The energized relay causes a warning lamp to illuminate and provide a visual warning that the fluid is below the critical level.

3,646,542
MONITOR SYSTEMS

Myron L. Anthony, La Grange, Ill., assignor to Russell Mills, Inc.

Filed Feb. 25, 1970, Ser. No. 14,053
Int. Cl. G08b 21/00
U.S. Cl. 340—259 2 Claims

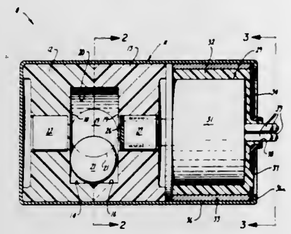


A monitor system for detecting bent, broken, missing or otherwise mutilated operating elements in a cyclically operable machine (e.g., the knitting needles in a rotary knitting machine) comprising a sensing device for sensing passage of individual operating elements, a detector for detecting mutilated elements from the output of the sensing device to develop an error signal, and a range gate for blanking the detector for most of a complete cycle or period after each error signal. A counter develops a control signal to shut down the machine on a given count of error signals occurring in consecutive cycles; a strobe light actuated by the error signals locates the mutilated operating elements.

3,646,543
SENSING ASSEMBLY

Harold D. Morris, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Feb. 4, 1969, Ser. No. 796,378
Int. Cl. G08b *21/00*
U.S. Cl. 340—262 **15 Claims**

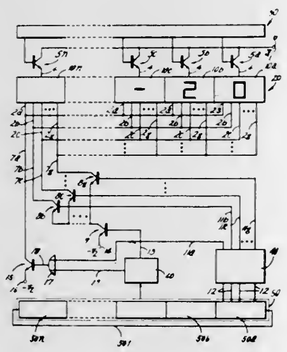


Sensing assembly having a housing with a cavity therein and a movable mass disposed in the cavity in the housing and means normally yieldably urging said movable mass into a predetermined position in the housing and also having electronic means for sensing the position of the movable mass in the housing.

3,646,544
APPARATUS FOR INDICATING NUMERICAL INFORMATION

Hiroshi Yamaguchi, Iwami-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan and Tottori Sanyo Electric Co., Ltd., Tottori-shi, Tottori-ken, Japan

Filed May 5, 1970, Ser. No. 34,788
Claims priority, application Japan, May 6, 1969, 44/730021
Int. Cl. G08b *5/22*
U.S. Cl. 340—324 R **21 Claims**

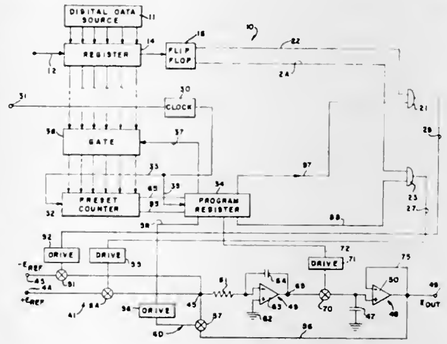


A multidigit decimal number display apparatus comprises a predetermined plurality of numeral display elements corresponding to a plurality of individual digit display positions each capable of selectively indicating a minus sign or any desired Arabic numeral. The apparatus displays the digits of the decimal number on a time-sharing basis in accordance with data identifying the digits of the decimal number and registered in a main circulation shift register. Means are provided for generating a logical state pattern signal identifying the stages of the main register containing data identifying the decimal number. Means responsive to the logical state pattern signal effects cancellation of zeros in all display positions exceeding the most significant digit of the decimal number. Further means responsive to the logical state pattern signal generates an enabling signal identifying the display position immediately preceding the display position for the most significant digit of the decimal number. The enabling signal is also responsive to the state of the decimal number as plus or minus to activate the immediately preceding display position to display a minus sign in accordance with that state. Each display element comprises a plurality of light-emitting segments having a minus-in-square configuration wherein the horizontal middle segment is activated to provide the minus sign indication.

3,646,545
LADDERLESS DIGITAL-TO-ANALOG CONVERTER

Bob N. Naydan, Wyckoff, and John D. Brinkman, Pine Brook, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed June 4, 1970, Ser. No. 43,489
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **15 Claims**



A charge-gated, ladderless, digital to analog (D to A) converter for converting a digital input signal into an analog output signal. The digital input signal is provided to an analog signal generating circuit, including a counter, which, upon command, generates an analog signal in the form of a pulse width which is a representation of the magnitude of the digital input signal and is a proportion of a predetermined maximum pulse width. The analog signal generating circuit includes means for applying a predetermined reference signal to the input of an integrating circuit for a period of time equal in duration to the pulse width representation of the digital input signal. The output from the integrator is received and stored upon command by storage means including a storage capacitor, to provide the analog output signal. The analog output signal is then connected to the input of the integrator for a period of time equal to the full scale integration time. In effect, when applied to the integrator, the output signal is integrated while the signal from the previous conversion remains stored on the integrator capacitor so that at the end of the integration, the signal at the integrator output is nominally equal to zero. The amount that the output signal from the integrator differs from zero at this time represents the error in the output signal of the converter and, in the subsequent conversion cycles, this error signal acts to correct the error.

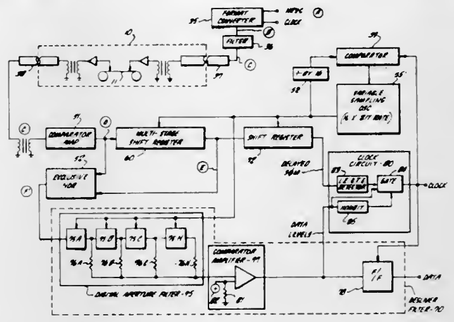
3,646,546
SPLIT-PHASE ADAPTIVE DECODING ELECTRONICS

Kermit A. Norris, Azusa, Calif., assignor to Leach Corporation, North Coney, Calif.

Filed Oct. 10, 1968, Ser. No. 766,531
Int. Cl. H04l *15/00*
U.S. Cl. 340—347 DD **32 Claims**

A decoding system for decoding split-phase signals is disclosed. The system is operative for decoding signals which include extreme zero-crossing variations at either a fixed bit rate or variable bit rates.

A one-bit delay is employed for decoding the split-phase signals. A phase comparison circuit restores the split-phase signal (such as split-phase mark, S M) to standard digital format, (such as nonreturn-to-zero change, NR C). A digital

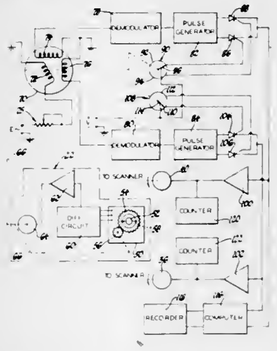


aperture filter removes noise in the standard format. A digital aperture filter removes noise in the standard format. Delay times are variable via a frequency-locked feedback loop so as to accommodate speed variation during fixed or variable data rates. Different data rates are also automatically decoded by the disclosed invention.

3,646,547
ANALOG-TO-DIGITAL CONVERTER FOR POSITIONAL COORDINATES

Norbert H. Hoffmann, Royal Oak, Mich., assignor to Albert J. Beni, Utica; Charles A. Bourdo and W. Keith Galbraith, Pontiac, Mich., part interest to each

Filed July 2, 1969, Ser. No. 838,421
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **4 Claims**

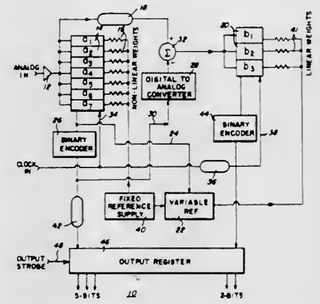


Method and apparatus are disclosed for converting an analog representation of a line into digital form. The invention is especially useful in connection with preparing control programs for numerically controlled machine tools. A scanner is oriented in the direction of the line and first and second pulse trains are generated having pulse repetition rates corresponding respectively to the cosine and to the sine of the direction angle of the scanner. The scanner is displaced with simultaneous components of stepwise motion along first and second axes in synchronism with the pulses corresponding respectively to the cosine and the sine of the direction angle and the scanner is continuously maintained in alignment with the direction of the line so that the system provides for self-checking of the accuracy of the digital data generated. The digital data is recorded on a suitable medium for subsequent playback to control a numerically controlled machine tool.

3,646,548
NONLINEAR ANALOG-TO-DIGITAL CONVERTER

Arnold H. Van Doren, Holliston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of application Ser. No. 734,060, June 3, 1968, now abandoned. This application Jan. 15, 1971, Ser. No. 106,890
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **11 Claims**

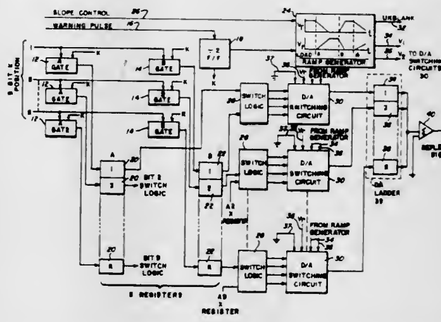


A high speed nonlinear analog-to-digital converter for producing a nonlinear or logarithmic transfer function which utilizes a parallel bank of nonlinear comparators and a parallel bank of linear comparators. The effective gain of the linear comparators is varied depending upon the portion of the logarithmic scale selected by the nonlinear comparators. This variation in gain is accomplished by changing the reference voltage of the linear comparators to coincide with the region of the input range in which the signal lies. The data flow through the converter is timed such that the nonlinear comparators are working on a second sample while the linear comparators are working on the first sample. All data from a complete sample arrives at the output terminals simultaneously.

3,646,549
GENERATOR WITH DIFFERENTIAL DIGITAL-TO-ANALOG CONVERTER

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

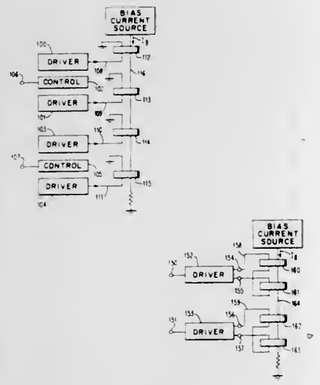
Filed Nov. 25, 1968, Ser. No. 778,583
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **7 Claims**



A vector generator employing a single differential digital-to-analog converter for changing from the analog of a first

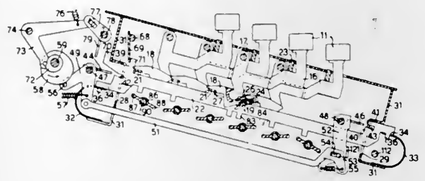
digital number to that of a second following any predetermined linear slope. The converter utilizes a single ladder network eliminating the differential errors which would be present in typical systems using two separate digital-to-analog ladder networks.

3,646,550
MAGNETIC DECODER NETWORK WITH MULTIDIMENSIONAL SELECTION CAPABILITY
Wilhelm Anacker, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,870
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **9 Claims**



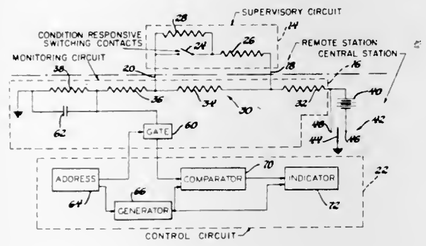
A decoding network with two- or three-dimensional selection capability is composed of magnetic switch elements such as toroidal cores, toroidal films or other films operated in the parallel-field switching mode. Each switch element has a response-excitation characteristic that enables the element to remain in a normal stable state unless it is subjected to an excitation in excess of a given threshold level, whereupon it switches to a different state, at least for the duration of the applied excitation. A coincidence of excitations applied in several selection coordinates may be required to condition an entire set or column of such elements for switching. The elements in each conditioned set or column are selectively switched in response to binary or other bivalued input signals applied to input lines which are individual to the respective elements of any one set but shared by corresponding elements of other sets, the selection of these input signal values constituting still another dimension or coordinate of selection. The input lines are paired so that one selected line of each pair is energized by an input signal of a given binary value. Thus, half of the elements in a set are switched for any given combination of input values. Furthermore, the number of elements switched is always even. A plurality of output lines is associated with each set of elements in such fashion that a unique output line is energized for each different combination of input signal values, with all of the switched elements in the set additively contributing portions of the output signal on that line; whereas in all of the other output lines of that set, the component signals contributed by the switched elements cancel each other out. If toroidal switch elements are used, they are arranged in relatively shiftable planes to facilitate threading the output lines through the switch elements in the desired individual wiring configurations.

3,646,551
KEYBOARD FOR CALCULATING MACHINES, ACCOUNTING MACHINES, TELEPRINTING MACHINES OR THE LIKE
Franco Bretti, and Emilio Gilardi, both of Caluso, Italy, assignors to Ing. C. Olivetti & Co., S.p.A., Ivrea (Turin), Italy
Filed May 6, 1970, Ser. No. 35,065
Claims priority, application Italy, May 9, 1969, 51764 A/69
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 **10 Claims**



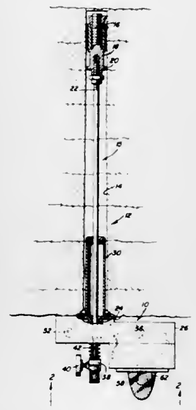
In a keyboard for calculating and like machines, upon the depression of each key, a corresponding elongated plate is shifted in a first direction substantially parallel to the long edge thereof to prearrange the selective setting of a series of code bars. The setter thus prearranged is thereafter shifted by motor in a second direction perpendicular to said long edge to set the code bars as to produce a corresponding binary code combination. Each plate is provided at the two ends with two U-shaped leaf springs engageable with two universal bars shifted simultaneously by the said motor so as to shift the prearranged plate through a pure translation.

3,646,552
TAMPERPROOF RESISTANCE-SENSING SUPERVISORY SYSTEM
David R. Fuhr, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 10, 1970, Ser. No. 88,458
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 **2 Claims**



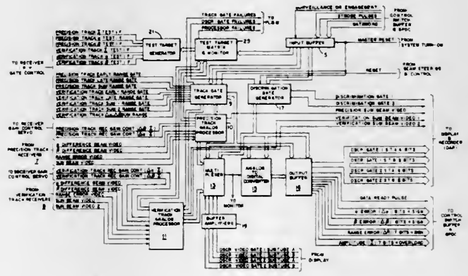
A supervisory system is provided for monitoring a plurality of remote stations from a central station. A supervisory circuit located at each of the remote stations is connected to a corresponding monitoring circuit located at the central station through a pair of conductors. The supervisory circuits each include a switching device operable between an opened position and a closed position. A control circuit located at the central station and connected to each of the monitoring circuits detects closed-switch, opened-switch, ground, short circuit and open circuit conditions existing in each of the supervisory circuits located at the remote stations. In addition, the control circuit detects the failure of any of the system components and the external application of an unauthorized voltage across any of the supervisory circuits.

3,646,553
ROOF MICROMETER AND WARNING INSTRUMENT
Ellsworth V. Conkle, P.O. Box 190, Paonia, Colo.
Filed Nov. 26, 1969, Ser. No. 880,184
Int. Cl. E21d *21/02*; **G08b** *21/00*
U.S. Cl. 340—421 **7 Claims**



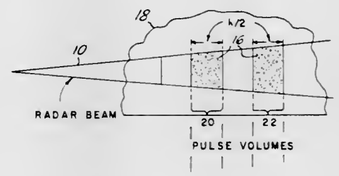
A bore is formed through the strata of a mine roof to allow deep insertion of an anchor therein. A support assembly passes through the bore and permits the mounting of a micrometer thereto. The lower end of the support assembly provides means for biasing a switch housing against the ceiling of the roof; As the housing moves downwardly in response to downward displacement of the roof ceiling, the micrometer actuates the switch and completes a warning circuit. Instead of the switch, a linear displacement transducer can be substituted so that as increased engagement between the micrometer and the transducer occurs, precise readings proportional to mine ceiling displacement can be made.

3,646,554
VIDEO PULSE CONVERTER FOR THE TRACK SIGNAL PROCESSOR
Stanley A. Fierston, Swampscott, and Bruce K. Nelson, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Army
Filed May 19, 1966, Ser. No. 552,384
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 DP **6 Claims**



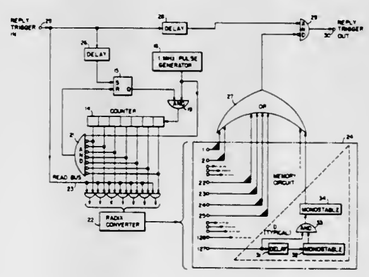
Precision and verification track processors receive radar information from receivers which may be fed by a test target generator. The analog outputs of the processors are simultaneously applied to a multiplexer. The analog output of the multiplexer is converted by an analog to digital converter whose output is fed through an output buffer to control switch buffer and to a computer. A track gate generator, a discrimination gate generator, and the test target generator are all controlled by the control switch buffer. The gate generators in turn control the operation of the processors, multiplexer, analog to digital converter, and output buffer.

3,646,555
METHOD AND APPARATUS FOR RADAR TURBULENCE DETECTION
David Atlas, 5522 South Harper, Chicago, Ill.
Filed May 2, 1969, Ser. No. 821,389
Int. Cl. G01s *9/02*; **G01w** *1/00*
U.S. Cl. 343—5 W **25 Claims**



Method and apparatus for detecting atmospheric turbulence with a conventional, non-Doppler radar by detecting echo signals from two pulse volumes radially spaced apart along the radar beam. The measurement of the atmospheric turbulence is effected by measuring the average power of the echo signal from each of the two pulse volumes, by measuring the variance in the fluctuation spectra of these signals, and by measuring the variance of the signals representative of the predetection sum of the echo signals from both pulse volumes. The difference in the mean velocities of the scatterers in the pulse volumes, a measurement of the atmospheric turbulence, can be calculated since it is a function of the difference between the power-weighted variance of the fluctuation spectrum of the predetection sum of the echo signals from both pulse volumes and the sum of the power-weighted variances of the fluctuation spectra of the echo signals from each of the pulse volumes.

3,646,556
REFLECTED IFF INTERROGATION REJECTOR
Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 25, 1970, Ser. No. 22,467
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **5 Claims**

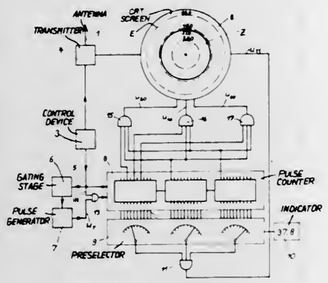


A technique of using the time between the direct path and the reflected path of an IFF interrogation to inhibit responses to succeeding reflected path interrogations.

3,646,557
APPARATUS FOR DISPLAYING DISTANCE REFERENCE MARKS ON A RADAR SCREEN

Kurt Scheer, Bremen, Germany, assignor to Fried. Krupp. Gesellschaft mit beschrankter Halftung, Essen, Germany

Filed July 10, 1969, Ser. No. 840,656
Claims priority, application Germany, July 23, 1968, P 17 73 894.2
Int. Cl. G01s *7/22*
U.S. Cl. 343—13 R **8 Claims**

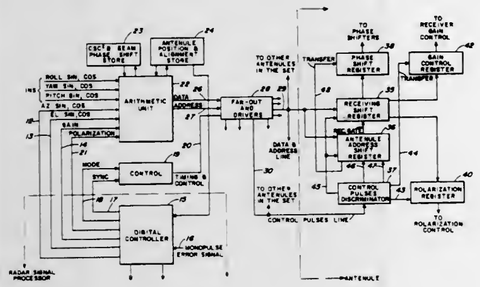


Apparatus for simultaneously producing an adjustable distance reference mark and fixed distance reference marks on the display device of a reflected-beam position-finding system. The apparatus includes a pulse generator for producing timing pulses, a pulse counter for counting the timing pulses and producing a digital output indicative of the count, a manually adjustable selector for producing a marking pulse each time the counter produces a digital output indicative of a particular preselected count and means for producing further marking pulses each time the counter produces a digital output indicative of a particular fixed count. The marking pulses produced are employed to cause the display device to display a mark indicative of a particular preselected distance and marks indicative of particular fixed distances.

3,646,558
PHASED ARRAY BEAM STEERING CONTROL WITH PHASE MISALIGNMENT CORRECTION

Matthew J. Campanella, Hammonton, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 20, 1970, Ser. No. 18,029
Int. Cl. H04b *7/08*
U.S. Cl. 343—100 SA **7 Claims**

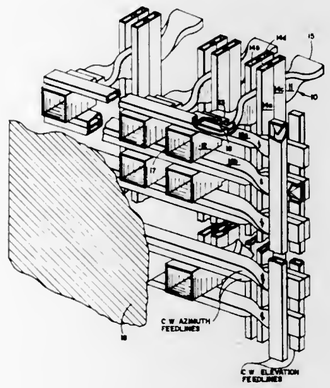


A system for remotely controlling the phase of active antenna elements in a phased array that has the capability of correcting the inherent phase misalignment of each individual antenna element within the array. Beam azimuth and elevation signals are fed into an appropriate arithmetic unit by a radar signal processor. Roll, yaw and pitch signals are fed into the same arithmetic unit by an inertial navigation system. The arithmetic unit, using the information from the inertial navigation system and the radar signal processor, computes the phase shift required for each individual antenna element in order to point the radar beam in the desired direction. To compensate for inherent phase alignment in the system, an antennule position and alignment store feeds a predetermined alignment factor for each antennule into the arithmetic unit. The arithmetic unit then adds or subtracts the alignment factors from the respective computed phase angles. All the calculated phase angles are then sent to the control circuitry of the antenna array. A Csc^2 beam phase shift store provides for generation of a Csc^2 beam at the array.

3,646,559
PHASE AND FREQUENCY SCANNED ANTENNA

Wiley, Carl A., Corona Del Mar, Calif., assignor to North American Rockwell Corporation

Filed Jan. 15, 1968, Ser. No. 699,756
Int. Cl. H01q *3/26*
U.S. Cl. 343—100 SA **9 Claims**



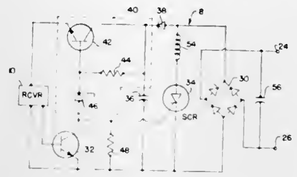
A multimode antenna for simultaneously providing at least one frequency-scanned mode and a phase-scanned mode. The isolated ports of the directionally coupled radiating apertures of a cross-fed frequency-scanned array, are adapted to be fed from a fixed frequency source by a phased array of voltage-controlled phase shifters or by mechanically scanned means for adjusting the phase gradient (or by a combination of the two). The fixed frequency corresponds to a direction-frequency (of the frequency-scanned array) outside the range of directions to be covered by the phased array, thereby providing mutual isolation between the phased-array energy and the frequency-scanned energy.

3,646,560
TWO-TERMINAL CONTROL CIRCUIT AND POWER SUPPLY

Edson L. Barlow, Jr., Oakland Township, Mich., assignor to Multi-Elmac Company, Oak Park, Mich.

Filed Mar. 5, 1970, Ser. No. 16,862
Int. Cl. H04b *7/00, 1/06*
U.S. Cl. 343—228 **3 Claims**

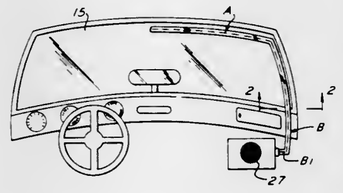
Automatically operating electrical devices or equipment are operatively controlled by a radio control receiver circuit connected to an operating output circuit, provided with or without a manually operated switch, to actuate such devices or equipment. Current furnished by a constant power supply is controlled by the receiver circuit to substantially continuously power both the radio receiver and an operating output relay for actuating any such device or equipment.



3,646,561
ADHESIVELY SECURED AUTOMOBILE WINDSHIELD ANTENNA

Edwin B. Clarke, Dorchester Apts., 266 W. Rittenhouse Sq., Philadelphia, Pa.

Filed Jan. 19, 1971, Ser. No. 107,683
Int. Cl. H01q *1/32*
U.S. Cl. 343—711 **1 Claim**

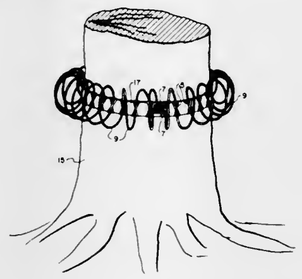


An automobile antenna which is adapted to be secured to be adhesively secured to the windshield in replacement of the fender aerial. The antenna is encapsulated within a pressure sensitive tape and permanently joined to the lead-in cable by a molded flexible coupling.

3,646,562
HELICAL COIL COUPLED TO A LIVE TREE TO PROVIDE A RADIATING ANTENNA

Morris Acker, Wanamassa; Kurt Ikrath, Elberon, and Wilhelm A. Schneider, Fair Haven, all of N.J., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 3, 1970, Ser. No. 43,153
Int. Cl. H01q *1/36*
U.S. Cl. 343—720 **4 Claims**

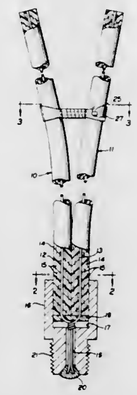


This device is an air-cored toroidal coil having dimensions much less than the wavelength of the applied frequency. It may be used as an omnidirectional antenna or as a coupler for converting a much larger object, such as a forest, into a giant antenna.

3,646,563
FREQUENCY-TUNABLE MULTIELEMENT ANTENNA STRUCTURE

Richard J. Francis, and Clara A. Francis, both of 11855 Broad St., Pataskala, Ohio

Filed July 22, 1970, Ser. No. 57,285
Int. Cl. H01q *1/40, 9/46, 21/00*
U.S. Cl. 343—723 **11 Claims**

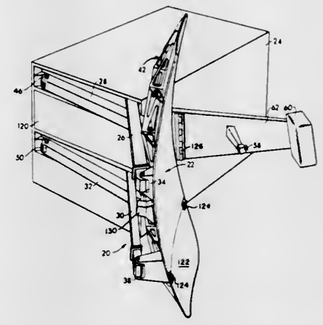


An antenna structure is provided having a plurality of elongated antenna units that are supported in mechanically coupled, longitudinally extending, side-by-side relationship but are relatively flexible to a spaced relationship for obtaining resonance at a predetermined frequency. Each antenna unit includes one or more electrically conductive elements with the elements of all units electrically interconnected at one end and structurally supported and protectively encased in a dielectric material comprising a fiber-glass-reinforced synthetic resin matrix.

3,646,564
ANTENNA SLEW SYSTEM

Cornelius J. Drislane, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

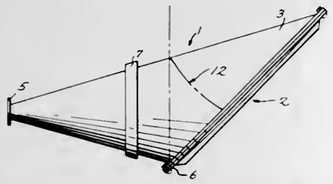
Filed Mar. 3, 1969, Ser. No. 803,626
Int. Cl. H01q *3/00*
U.S. Cl. 343—766 **10 Claims**



An antenna azimuthal positioning mechanism formed from pairs of elongated antenna supporting struts pivotally

mounted on a fixed support structure and extending both outwardly and in crossed relationship therefrom to pivotally connect with an antenna whereby the antenna pivots with respect to the supporting struts as the supporting struts carry the antenna past an end of the fixed support structure to give a partial view to the rear of the support structure and thereby provide an azimuth sector scan subtending an arc which is greater than the pivoting arc of any one of the supporting struts. The supporting struts can be disconnected from the antenna to facilitate transfer of the antenna to a telescoping stowage support for antenna stowage.

3,646,565
HORN-REFLECTOR ANTENNA
Glen P. Robinson, Jr., and Samuel F. Hutchins, both of Atlanta, Ga., assignors to Scientific Atlanta, Inc., Atlanta, Ga.
Filed Feb. 17, 1970, Ser. No. 12,121
Int. Cl. H01q *19/14, 19/12*
U.S. Cl. 343—781 **5 Claims**



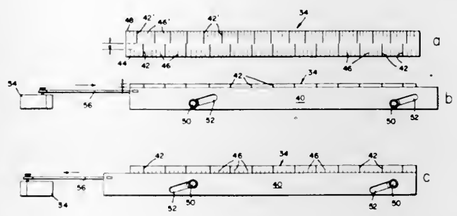
The present invention relates to a horn-reflector antenna and a method of making it. More particularly, it relates to a horn-reflector antenna consisting of a hollow cone composed of a microwave transparent material, lined in part with a microwave reflective material and a paraboloidal reflecting section which intersects with and is secured to the open end of the cone, the cone being unlined adjacent the paraboloidal reflecting section so that a portion of the cone functions as the radome.

3,646,566
COLLAPSIBLE ANTENNA ASSEMBLY
George J. Neff, Jr., Erlanger, Ky., assignor to Avco Corporation, Cincinnati, Ohio
Filed Oct. 15, 1970, Ser. No. 81,026
Int. Cl. H01q *9/28*
U.S. Cl. 343—808 **8 Claims**



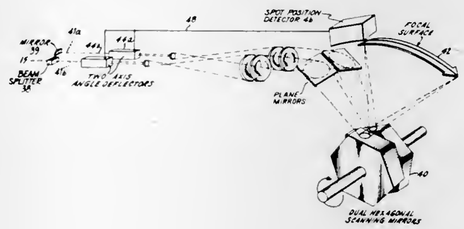
A collapsible antenna assembly for providing a broadband radiator similar to that of a biconical dipole antenna is disclosed. The antenna assembly provides upper and lower radiating cage structure joined by an insulating structure and fed at the insulated midpoint by a balanced transmission line. Each radiating structure has spring-loaded arms which are connected by flexible wire elements to the center or driving point of the assembly. Means are provided to permit the opening and closing of the radial arms when the antenna assembly is in the elevated position.

3,646,567
MULTIPLE GRID LINE APPARATUS FOR RECORDING OSCILLOGRAPHS
Rafn Stefansson, San Marino, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed June 1, 1970, Ser. No. 42,236
Int. Cl. G01d *13/02*
U.S. Cl. 346—23 **9 Claims**



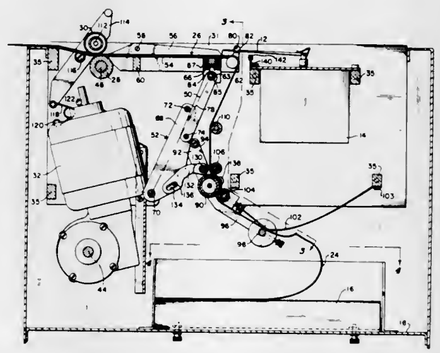
Apparatus for projecting one of at least two grid line patterns onto a moving oscillographic photosensitive record medium, without removing an included grid screen from the oscillograph. The opaque grid screen is characterized by a first plurality of transparent indicia arranged such that the light projected therethrough onto the moving surface produces thereon a first plurality of line images in predetermined spaced relation, in addition to a second plurality of transparent indicia arranged such that the light projected therethrough onto the moving surface produces thereon a second plurality of line images a predetermined number of which are disposed between successive ones of the line images of the first plurality and in predetermined spaced relation therewith. Shutter means associated with the opaque screen is provided for alternatively preventing and permitting light to be projected through the second plurality of indicia onto the moving surface, thereby permitting either the line images of both pluralities, or the line images of only the first plurality, to be recorded on the photosensitive surface.

3,646,568
BEAM CONTROL SYSTEM
Dennis J. Woywood, Cherry Hill, N.J., assignor to RCA Corporation
Filed Apr. 3, 1969, Ser. No. 813,108
Int. Cl. G01d *15/14*
U.S. Cl. 346—108 **3 Claims**



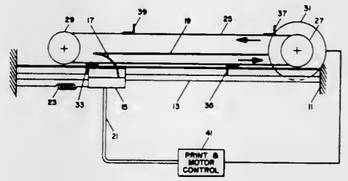
A beam control system characterized by first and second independently controllable light beams which are alternately and separately scanned across a predetermined focal surface by first and second elements of a dual mirror scanning assembly; the dual scanning feature permitting spot position corrections to be made to the nonscanning beam during the period that the remaining beam is in its scanning mode.

3,646,569
DRIVE ARRANGEMENT FOR VARIABLE WIDTH Z-FOLD CHART PAPER
Arthur R. Erbach, Des Plaines, and Albert Kupferschmidt, Chicago, both of Ill., assignors to Beckman Instruments, Inc.
Filed Apr. 13, 1970, Ser. No. 27,473
Int. Cl. G01d *15/30*
U.S. Cl. 346—136 **9 Claims**



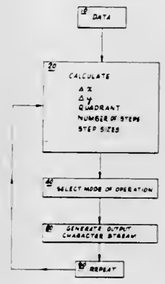
A drive arrangement for Z-fold chart paper is provided in which spaced apart guide means positioned between the back tensioning roller and the chart supply provide a positive lateral reference for the chart web just prior to its engagement with the back tensioning roller. The guide means may be conveniently changed in spacing to accommodate chart paper of different widths without requiring any readjustment of the drive rollers or the back tensioning roller.

3,646,570
PRINTING HEAD MECHANISM
Raoul E. Drapeau, Vienna, Va., assignor to Scope Incorporated, Reston, Va.
Filed Feb. 13, 1970, Ser. No. 11,077
Int. Cl. G01d *15/06*
U.S. Cl. 346—139 R **10 Claims**



A printing head mechanism for an impactless printer having a printing head which reciprocates across the face of the paper to be printed. The head is biased toward the left-hand side of the paper by a spring. A continuous belt is driven between the head and the paper below the printing stylii. Means are associated with the belt so as to drive the head in a scan manner across the paper against the bias of the spring. At the conclusion of one line of printing, the head is released from the influence of the belt and returns to the left-hand side of the paper.

3,646,571
METHOD OF ENCODING GRAPHICAL DATA
George Y. Kurata, San Diego, Calif., assignor to Typagraph Corporation, San Diego, Calif.
Filed Mar. 18, 1970, Ser. No. 20,494
Int. Cl. G06f *3/14*
U.S. Cl. 444—1 **34 Claims**

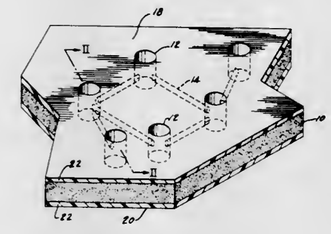


A method of encoding graphical data to be displayed by an output terminal where the output terminal has plural modes of operation and procedures are undertaken to select, using past history and future anticipated operation, the fastest and most efficient mode of operation. In the faster modes, part of the information defining the location to be reached and the symbol to be displayed are stored and remembered. In these modes less information need be transmitted to the terminal to execute a move and successive moves are thereby executed faster. The optimum mode may be selected by examining previous location information to predict a possible mode change.

ERRATA

For Classes 174—68 thru 343—100 see:
Patent Nos. 3,646,572 thru 3,646,589

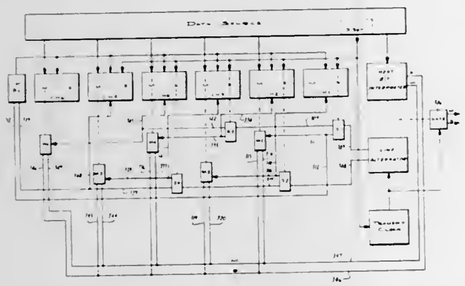
3,646,572
ELECTRIC WIRING ASSEMBLIES
Robert Page Burr, Huntington, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Continuation of application Ser. No. 704,383, Feb. 9, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 628,701, Apr. 5, 1967, now abandoned. This application Feb. 9, 1970, Ser. No. 10,039
Int. Cl. H05k *1/02*
U.S. Cl. 174—68.5 **29 Claims**



This invention provides a prefabricated electric wire assembly board which comprises an insulating base, a preformed, metal conductor bonded to the base, an aperture in the base intersecting the conductor such that at least one end of the conductor is exposed at the wall surrounding the

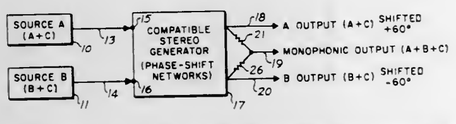
aperture, and a deposit of metal on the wall which contacts and forms an integral bond with the end of the conductor.

3,646,573
CIRCUITS FOR INTERCONVERTING GROUPS OF PARALLEL FORM AND SERIAL FORM SIGNAL BITS
Lawrence Holmes, Jr., 108 Jones Blvd., Las Vegas, Nev.
Original application July 29, 1965, Ser. No. 475,728, now Patent No. 3,453,379. Divided and this application Apr. 14, 1969, Ser. No. 853,988
Int. Cl. H04l *17/00*
U.S. Cl. 178—4.1 R **13 Claims**



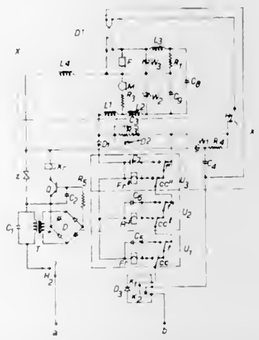
A system for linking a first typewriter with a remote typewriter or other data processing device, whereby the first typewriter transmits groups of binary signal bits indicative of typewriter operations and may operate in response to received groups of signal bits, includes a converter circuit for translating groups of synchronous signal bits into corresponding serial form sequences of bits for transmission and also includes a converter circuit for translating received serial form bits into parallel form. In parallel to serial conversion the component bits of a group are sequentially transmitted out of each of a plurality of bit storage devices without being shifted through any of the storage devices other than the single one which stored each bit. In serial to parallel conversion each successive incoming bit is transmitted directly into an individual bit storage device without being shifted through any of the others. In part, this is made possible by bit storage devices which assume one state when storing a mark bit and an alternate state when storing a space bit and can also assume a third state to control a gate, when a bit has been transmitted into or out of the particular storage device.

3,646,574
COMPATIBLE STEREO GENERATOR
Howard S. Holzer, 6530 Shoup Ave., Canoga Park, Calif.
Continuation of application Ser. No. 696,249, Jan. 8, 1968, now abandoned. **This application May 25, 1970, Ser. No. 40,335**
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 G **14 Claims**



This invention relates to an instrument incorporating an otherwise independent pair of wide band unity gain amplifier chains of novel configuration providing in the several stages of each chain the capability of and means for shifting the phase of signals from stereophonic signal sources applied to each chain. The phase shift capability of one channel is over the range of zero phase shift related to the phase of the input signal through +90° and in the other channel over a range of from zero phase shift related to the phase of the input signal through −90°. The wide band phase shift networks are an element in the implementation of a means to apply the discovery disclosed in this invention that if the signal output of each respectively, of a pair of related stereophonic signal channels is applied to one, respectively, of said amplifier chains, one of the channels containing signals identified as *A+C*, and the other containing signals identified as *B+C* (the *C*-components of the signals being common to both channels) and the signal of the first channel shifted in phase +60° while that in the second channel is shifted in phase −60° (the difference between the two being a total of 120° centered about a zero input reference phase) then the summation of the phase shifted signals from the two channels will result in an output (summed) signal of *A+B+C*, whereas by prior art techniques the summation or mixing of two stereophonic channels produces a resultant *A+B+2C*.

3,646,575
COIN-OPERATED APPARATUS AND SIGNALLING SYSTEM
Edmond Marie Heirbaut, Melsele-Waas; Raymond Francis Andrian Fabre, Wilrijk; Josephus Henricus Karel Camps, Edegem, and Michael Marcel Mees, Londerzeel, all of Belgium, assignors to International Standard Electric Corporation
Original application Dec. 15, 1966, Ser. No. 602,096, now abandoned. Divided and this application Dec. 3, 1969, Ser. No. 879,958
Int. Cl. H04m *17/00*
U.S. Cl. 179—6.3 R **3 Claims**



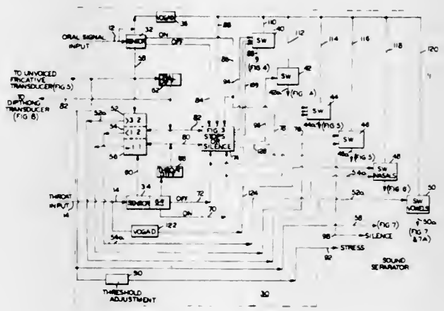
A telephone pay station central system in which answering of a call originated at the pay station causes the generation of a signal from the central office to the pay station to connect the coil collection and value-indicating network to the line loop. A coin collection relay is thereby energized to collect a coin and to cause a pulse to be returned to the central office indicating that the call can continue. Periodic back-and-forth signalling continues as necessary during the conversation period without disrupting the conversation.

3,646,576
SPEECH CONTROLLED PHONETIC TYPEWRITER
David Thurston Griggs a/k/a D. Thurston Griggs, 5128 Rolling Road, Baltimore, Md.
Filed Jan. 9, 1970, Ser. No. 1,739
Int. Cl. G10l *1/16*
U.S. Cl. 179—1 SA **16 Claims**

To convert speech directly into print as it is being spoken, by machine, is a goal that has been thwarted by two critical wants: (1) a way to perform many complex selective operations with great speed, and (2) a way to close the gap between continuous speech as an unbroken sequence of

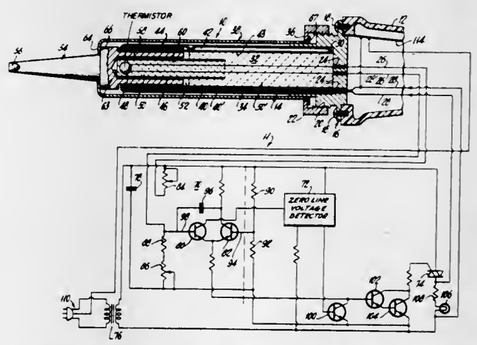
sounds on the one hand, and the distinctly separated words and spelling conventions of the printed language, on the other. Recently, taking advantage of the electronic computer's speed with multiplex programmed operations, acousticians have sought to achieve more accurate detection and separation of speech sounds. Such efforts have required programming and availability of extensive computer facilities to approach one step in the problem.

The approach described here, however, detects and analyzes speech sounds instantaneously without a computer,



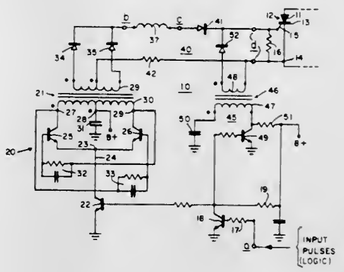
converting the sounds by means of comparators, timers, filters, and switching circuits, into a real-time electrical phonemic analog of what is said; then it adds a special-purpose digital computer component to process and match syllabic sequences of sounds in the language. Thus, the computer element is smaller and is used not for phonetic detection but simply to give an output as close as possible to conventional printing as can be obtained by means of a prestored vocabulary of 12,000 words. The readout can be printed by a modern high-speed electric typewriter.

3,646,577
TEMPERATURE-CONTROLLED SOLDERING TOOL
Frank Ernst, Largo, Fla., assignor to National Cash Register Company, Dayton, Ohio
Continuation-in-part of application Ser. No. 797,044, Feb. 6, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,920
Int. Cl. H05b *1/02*; **B23k** *3/02*
U.S. Cl. 219—241 **13 Claims**



A temperature-controlled soldering iron with replaceable tip is described wherein a fast and accurate tip-temperature control is obtained both during no-load and load conditions. A temperature-sensing element is employed which is mounted to a heat-insulative handle and so placed relative to the tip and a heating element that the tip temperature is properly sensed, with rapid tracking fidelity; the rapid response is attributed to high-thermal resistance between the mounting of the temperature-sensing element and of the heating element, compared to low-thermal resistance (effectively thermal short circuit relation) in the path from the heating element to the sensing element via inserted part of the tip. A voltage source is used which exceeds the maximum voltage rating of the heater element by a preselected amount to obtain, in cooperation with a temperature-control circuit, a temperature-regulated soldering iron which quickly responds to load variations.

3,646,578
GATE DRIVE FOR CONTROLLED RECTIFIERS
Elmo M. Gregory, Newport Beach, Calif., assignor to Lear Jet Industries, Inc., Wichita, Kans.
Filed Oct. 21, 1969, Ser. No. 868,023
Int. Cl. H03k *17/30*
U.S. Cl. 307—252 J **8 Claims**

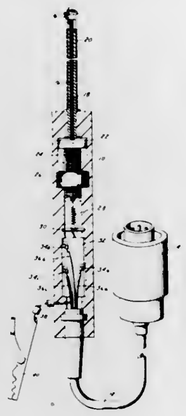


An effective gate drive for silicon controlled rectifiers is provided by a relatively low-voltage, low-power electronic circuit, individual to each rectifier. The gate drive circuits hereof utilize a gated high-frequency oscillator, as a modified Royer type. Control logic ON pulses effect their oscillation, providing relatively narrow square wave pulses that are rectified to constitute the pedestal of each drive signal. A second portion of each gate drive signal is also initiated by the logic pulses, each with a rapid rise rate and of ample magnitude. The composite gate drive signal is transformer coupled to the associated SCR gate electrode, providing independence as to circuital grounding. Drive circuit is efficient and low in weight. Applicable in high-power-controlled rectifier systems.

3,646,579
LOGIC CIRCUIT PROBE WITH SCREW THREAD ADJUSTMENT AND INTERCHANGEABLE CIRCUITRY TO MATCH CIRCUIT BEING MONITORED
Philip S. Di Vita, Richboro; Earl N. Powers, Philadelphia, and Charles J. Werneth, Newtown, all of Pa., assignors to Data Display Systems, Inc.
Filed May 2, 1969, Ser. No. 821,288
Int. Cl. G01r *31/02*
U.S. Cl. 324—72.5 **8 Claims**

A probe for use with microelectronic circuitry characterized by a screw-actuated clamping mechanism which affords the probe structure diminished portions while providing superior pin-coupling and locking ability. The probe is of general utility; however, it includes design features which specifically complement its use in association with digital circuitry. In this respect, a logic pack of the type used in the cir-

cuit to be monitored is positioned in the probe housing and electrically connected in the input thereof. The logic pack is

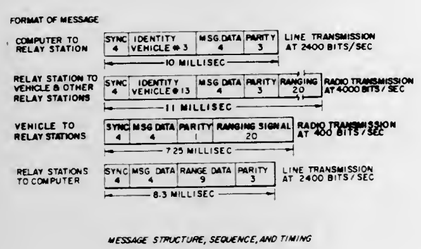


interchangeable to permit the characteristics of the probe to be directly matched to the circuit being monitored.

3,646,580
SURFACE VEHICLE FLEET COMMAND AND CONTROL SYSTEM

Roger L. Fuller, Stow; Robert K. Kaye, Framingham; Joseph J. Oliver, Allston, and William H. Rood, Acton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 18, 1969, Ser. No. 842,885
Int. Cl. G01s *9/56*
U.S. Cl. 325—53 **7 Claims**

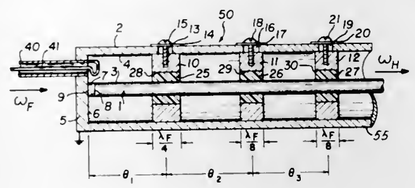


A system for communicating with and locating mobile surface vehicles in a high multipath signal clutter environment such as an urban center. This system seeks to take advantage of the scattering of the CW wave in urban areas for both communication and ranging where line of sight radiation techniques may not properly function. A plurality of remote relay stations are located at fixed points throughout the urban area. Each station receives and transmits wireless coded digital data and tone burst signals, the tone burst signals being used for phase ranging. Additionally, each of the surface vehicles is equipped with a transponder. The vehicle transponder is responsive only to a radio signal having a formatted message. This includes the vehicle identification code and a ranging tone suitably impressed thereon. The formatted signal is transmitted from one of the relay stations and picked up by a preselected number of other relay stations as well as the vehicle transponder. The transponder in turn generates a reply signal containing message data and a tone burst signal in phase with the original transmitted signal.

3,646,581
SEMICONDUCTOR DIODE HIGH-FREQUENCY SIGNAL GENERATOR

Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation

Filed Mar. 9, 1970, Ser. No. 17,673
Int. Cl. N03f *3/60*
U.S. Cl. 330—56 **8 Claims**

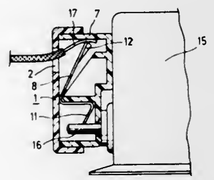


A microwave or high-frequency amplifier or frequency converter is disclosed which exploits avalanche phenomena in a semiconductor diode placed in a multiply tuned transmission line circuit. The novel configuration features means substantially avoiding loss of power within the circuit until high-frequency or microwave input energy is fed into the circuit, whereupon power is then efficiently amplified or converted within the circuit.

3,646,582
BALLAST

Gerard Herman Van Alphen; John Jongenelen, and Johannes Hendricus Franciscus Van Werd, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,297
Claims priority, application Netherlands, Oct. 25, 1968, 6815253
Int. Cl. H01r *9/12*
U.S. Cl. 339—95 D **6 Claims**

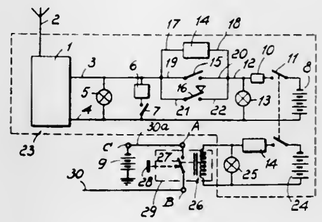


A ballast having an electrical connector for establishing contact between external contact lugs of the ballast and stripped ends of supply wires to the ballast. The connector comprises a socket of insulating material, one side of which has apertures for accommodating the contact lugs and another side of which, preferably the opposite side, has apertures for accommodating the ends of the supply wires. The socket is provided with a plurality of resilient elements comprising one or more parts, which at one of their ends can establish a nondetachable contact with one of the contact lugs and at their other end can establish contact with one or more ends of the supply wires. The resilient elements are preferably S-like resilient strips whose ends form an acute angle with an inserted lug, so that the resilient strips exert an axial force on an inserted lug, which prevents the lug from sliding out.

3,646,583
AUTOMATIC ACCIDENT SIGNALLING APPARATUS FOR MOTOR VEHICLES

Santi Scuderi, Fuchsweg 3, 3097 Liebfeld (Bern), Switzerland

Filed Aug. 18, 1969, Ser. No. 850,821
Claims priority, application Italy, Aug. 27, 1968, 39326 A/68
Int. Cl. B60q *9/00, 5/00, 1/00*
U.S. Cl. 340—52 H **1 Claim**

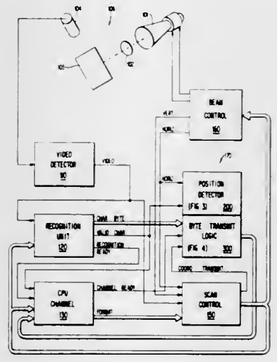


An automatic accident-signalling apparatus for motor vehicles, arranged inside the motor vehicle, comprising at least one device sensitive to collision and means-emitting signals controlled by said device sensitive to collision.

3,646,584
COORDINATE TRANSMISSION FOR CHARACTER RECOGNITION SYSTEMS

William W. Hardin, Stewartville, and Patrick J. Traglia, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,937
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3AH **3 Claims**

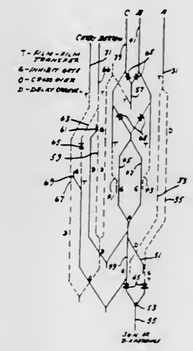


An optical character recognition system in which position data is detected by other than addressing a document field and is tagged on to a character identifying data byte. For documents in which the position of the character conveys information and for which the selected field to be scanned does not satisfactorily identify the character position, the scanning beam is tracked and converted into a position data byte when a character is detected. The position data byte is sent along with the character data byte to a utilization means.

3,646,585
MAGNETIC DOMAIN ADDER-SUBTRACTOR NETWORK

Harvey I. Jauvtis, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 31, 1969, Ser. No. 889,373
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 MC **4 Claims**

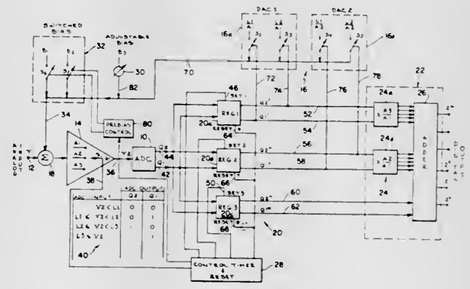


A combination adder and subtractor unit in two magnetic film layers in which magnetic domains representing binary bits are introduced and controlled through a series of magnetic domain diodes, fan-outs, and film-to-film transfers. Adjacent channels in different layers act as inhibit gates and in combination form exclusive OR gates.

3,646,586
ANALOGUE-TO-DIGITAL CONVERTER SYSTEM

Rainer Kurz, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Filed Apr. 28, 1969, Ser. No. 819,911
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **26 Claims**



A serial-parallel analogue-to-digital converter system utilizes a conventional ADC having a relatively low number of channels together with at least one amplifier which may be set at different amplification factors, a conventional digital-to-analogue converter, and an arithmetic device that generates the digital output, to provide a fast conversion and an output having a substantially greater number of channels and a correspondingly high resolution. The conventional ADC is utilized several successive times at increasingly higher sensitivity through the use of the amplifier which may have its gain increased and its zero offset changed with each succeeding use of the ADC. Various means are described

which may be employed for reducing or eliminating any errors which could be generated in the operation of this system. Additionally, particular circuit configurations are described which may be advantageously employed in the system for effecting the necessary gain changes with a minimum of error in result and a minimum of circuit complexity.

3,646,587

DIGITAL-TO-ANALOG CONVERTER USING FIELD EFFECT TRANSISTOR SWITCH RESISTORS

Everett L. Shaffstall, Fountain Valley; Carroll R. Perkins, Balboa Island, and James L. Gundersen, Carson, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 16, 1969, Ser. No. 885,518
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 DA **4 Claims**



A plurality of field effect transistors having their source-drain paths connected in parallel are operated as switch resistors under the control of respective digital input bit signals. When biased to conduction with a gate voltage at a uniform first preselected level, each switch resistor provides in its source-drain path a resistance $R_n=2^{(n-1)}R$, where R is a predetermined resistance and n is a positive integer identifying the switch resistor in question. When biased with a gate voltage at a uniform second preselected level, each switch resistor is nonconductive. A plurality of gating field effect transistors selectively apply to the respective switch resistor gate electrodes respective voltages at essentially either the first or the second aforementioned preselected level as determined by the respective digital input bit signals. Output circuitry including an operational amplifier provides an analog voltage representative of the net current flow through the switch resistor source-drain paths.

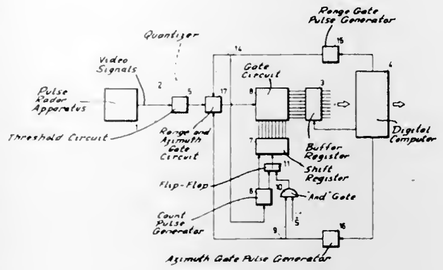
3,646,588

DEVICE FOR MAKING PREDICTIONS AND CORRECTIONS FROM RADAR DATA

Yftinus Frederik Van Popta, Hengelo, Netherlands, assignor to N. V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Oct. 13, 1969, Ser. No. 865,583
Claims priority, application Netherlands, Oct. 18, 1968, 6814192
Int. Cl. G01s *9/14*
U.S. Cl. 343—7.3 **3 Claims**

A device for making predictions and corrections in azimuth and a given second coordinate (particularly the range) of a target to be tracked from video signals detected by a pulse radar apparatus. In such a device a varying number of bits is written in a buffer register for each detected video signal. The number of storage elements of that register correspond with the number of increments into which the measuring range is divided. These increments are shorter than the pulse duration. The contents of the register are placed in the store of a computer during each transmitter pulse interval. The real target position is obtained by selection of a group of bits from the total of bit positions as written in the store during consecutive transmitter pulse intervals and by logically processing said group of bits.

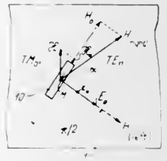


3,646,589

MULTIMODE TRACKING SYSTEM UTILIZING A CIRCULAR WAVEGUIDE HAVING SLOTS ANGULARLY ORIENTED WITH RESPECT TO THE WAVEGUIDE AXIS

Jean-Pierre R. Poitevin, 69, rue du Trosy, Clamart, France

Filed Dec. 15, 1969, Ser. No. 884,814
Claims priority, application France, Dec. 13, 1968, 178238
Int. Cl. H04b *7/00*
U.S. Cl. 343—100 PE **2 Claims**



Improvement to systems for determining the position of a telecommunications satellite carrying a radiofrequency beacon transmitting signals of circular polarization of a given direction and in which, whenever the beacon is off the boresight axis of a circular horn antenna, the TM_{01} mode is excited together with the TE_{11} mode in the circular horn. The TM_{01} and TE_{11} modes are separated by a system including a circular feed waveguide for the horn, a pair of rectangular slots formed therein at two diametrically opposite points in a cross section of the waveguide, said slots having their longer sides respectively perpendicular to the direction of the magnetic field at those points of the TE_{11} mode having said given direction of polarization, two rectangular section guides connected perpendicularly to the circular waveguide and having their long sides respectively parallel to the long sides of the slots so that the slots excite TE_{10} mode waves in the rectangular waveguide, a magic T having two input waveguides respectively connected to the two rectangular waveguides, an output guide relating to the antisymmetrical waves in the input guides, at whose output the signal relating to the TM_{01} mode is collected, and an output guide relating to the symmetrical waves in the input guides and comprising an absorber which absorbs the symmetrical waves.

ERRATA

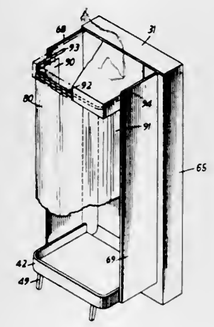
For Classes 4—146 thru 292—200 see:
Patent Nos. 3,646,590 thru 3,646,612

3,646,590

SHOWER CABINETS

Harry Collett Bolt, Woodbrook, Penn Road, Knotty Green, Beaconsfield, Buckinghamshire, England

Filed Apr. 13, 1970, Ser. No. 27,921
Int. Cl. A47k *3/23*
U.S. Cl. 4—146 **14 Claims**



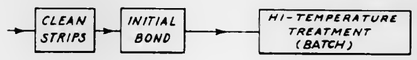
A shower cabinet which is collapsible so that when not in use it occupies small depth and comprises a back structure having a bottom tray, a roof, and two sidewalls, all pivoted to the back structure, means to effect a waterproof engagement between the sidewalls and the tray, and a front closure member.

3,646,591

METHOD FOR MAKING THERMOSTAT METAL

Seth R. Thomas, Middleboro, and John F. Clarke, North Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1968, Ser. No. 784,778
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **10 Claims**



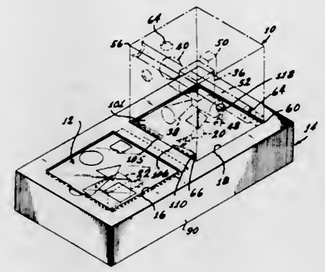
A process for making thermostat metals embodying a plurality of oxidizable metal layers such as layers of iron or iron alloy, is shown to comprise the steps of cleaning the surfaces of thin strips of such metals having relatively high and low coefficients of thermal expansion respectively, interfacially contacting the cleaned surfaces of the strips, squeezing the strips together with sufficient reduction of the strip materials to form incipient metallurgical bonds between the strips in the solid phase, and heating the resulting bonded composite material to a sufficiently high temperature for substantially completely dispersing oxides from the interfacially contacted surfaces of the strips into the strip material and for increasing the bonds between the strips by diffusion in the strip materials for substantially completely bonding the interfacially contacted surfaces of the strips together in the solid phase.

3,646,592

CUBE PATTERN GAME

Denis V. Bosley, Palos Verdes Peninsula, and Lucia C. Pearce, Altadena, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 23, 1969, Ser. No. 868,705
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 D **8 Claims**



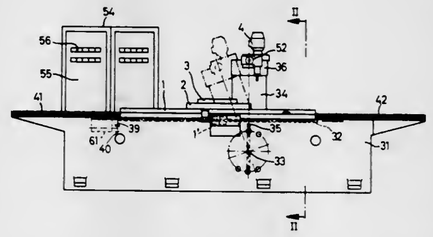
A game for testing spatial relations comprising a transparent cube composed of two three-sided members which can be fitted together in either of three rotational positions to form a cube. Each member has three-dimensional objects mounted on its inside so that different patterns are seen when the cube is viewed from each of its six different sides, there being a total of 18 different patterns formed for the three rotational positions of the members. A testing machine is provided which receives the cube, and any one of a plurality of cards, each card displaying one possible two-dimensional cube pattern which can be seen at one orientation of the cube on the machine. The cube has indicia along its edges and the cards have corresponding indicia, and the testing machine compares the indicia. The machine either turns on a light or sounds a buzzer, to indicate whether the arrangements seen on the cube and card match or do not match, respectively.

3,646,593

APPARATUS FOR THE AUTOMATIC SHARPENING OF BROACHING OR REAMING TOOLS

Ludwig Schubert, Solingen-Ohligs, Germany, assignor to Oswald Forst GmbH, Solingen, Germany

Filed July 7, 1969, Ser. No. 839,308
Claims priority, application Germany, July 5, 1968, P 17 52 718.3
Int. Cl. B24b *49/00*
U.S. Cl. 51—165 R **7 Claims**



In an apparatus for automatically sharpening reaming or broaching tools, the spacing and pitch of the tool edges are mechanically scanned and a grinding disk is guided by electrical signals corresponding to the scanning values, a horizontal slide is provided for carrying the work blank, a vertical slide is movable about a horizontal axis, a grinding slide with

grinding spindles and grinding disks is mounted on the vertical slide for movement transversely of the horizontal slide with drive means for slide and spindle, the scanning means and grinding disk are provided at the grinding spindle and an electronic guiding means is provided for guiding the drive means.

3,646,594
PROCESS FOR REMOVAL OF ACIDIC MATERIALS FROM FLUIDS

Jack S. Lasky, Verona, and Ronald W. Fuest, Kinnelon Borough, both of N.J., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

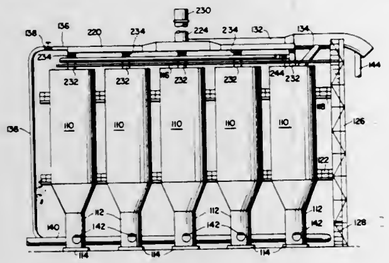
Continuation-in-part of application Ser. No. 783,137, Dec. 11, 1968, now Patent No. 3,564,818. This application June 11, 1969, Ser. No. 832,494
Int. Cl. B01d *53/00*
U.S. Cl. 55—59 **29 Claims**

A process for removing Acidic Materials especially SO_2 from a fluid such as water, waste gases, etc., which removal is achieved by passing said fluid through a shaped article formed from a polyolefin, a polyester or a nylon in admixture with a nitrogen-containing polymer.

3,646,595
SOLID-GAS SEPARATING MEANS

David C. Williams, Houston, Tex., assignor to Ashland Oil, Inc., Houston, Tex.

Division of Ser. No. 579,576, Sept. 15, 1966, Pat. No. 3,491,578.
Filed June 11, 1969, Ser. No. 832,382
Int. Cl. B01d *46/02*
U.S. Cl. 55—284 **4 Claims**

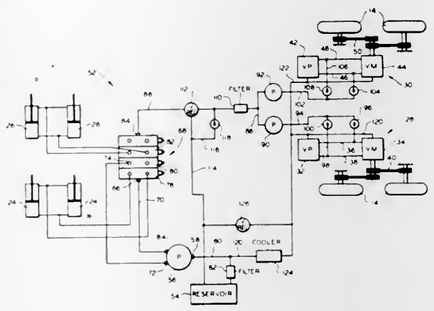


A solids transport system for a plurality of parallel-connected bag-type filters which includes a solids-laden gas inlet manifold connected in parallel to the tops of the filters, having a diminishing cross section from the first of the filters served to the last of the filters served and adapted to supply solids-laden gas to the filters, a clarified gas outlet connected to the top of the filters, a solids-laden gas withdrawal line connected to the solids-laden gas manifold and adapted to withdraw a predetermined small amount of solids-laden gas from the solids-laden gas inlet manifold, a separated solids transport manifold connected in series to the filters and also connected to the solids-laden gas withdrawal line and having an increasing cross section from the first filter served to the last filter served, a recycle line having its inlet end connected to the separated solids transport manifold and its discharge end connected to the solids-laden gas inlet manifold and adapted to recycle gas from the separated solids transport manifold to the solids-laden gas inlet manifold after solids have been removed therefrom, and continuously open orifices in the bottom outlets of the filters which are successively of decreasing diameter from the first to the last of the filters served by the separated solids transport manifold. A clarified gas repressure line can also be connected to the clarified gas manifold and to each of said filters through valves which permit a continuous flow of gas through the clarified gas outlet means.

3,646,596
FLUID SYSTEM FOR A VEHICLE WITH FLUID DRIVE MEANS

James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company

Filed Jan. 26, 1970, Ser. No. 5,756
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 HE **11 Claims**

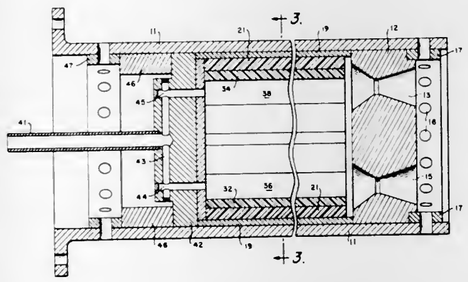


A fluid system for supplying pressurized fluid to the accessory motor means and hydrostatic drive means of a vehicle. The system includes first pump means and first valve means for controlling the supply of fluid from the first pump means to the accessory motor means. Also, second pump means is connected to the first valve means and hydrostatic drive means for supplying fluid to the hydrostatic drive means. Second valve means is connected to the first valve means, second pump means and a reservoir for bypassing fluid from the first valve means to the reservoir or drawing fluid from the reservoir to the second pump means.

3,646,597
VARIABLE THRUST PROPULSION ENGINE

John R. Feemster, Saratoga, Calif., assignor to United Technology Center, Sunnyvale, Calif.

Filed Apr. 4, 1969, Ser. No. 814,893
Int. Cl. F02k *9/06*
U.S. Cl. 60—251 **2 Claims**



A variable thrust propulsion engine having a plurality of nozzles, a fuel section containing an outer core of a first solid propellant and an inner core of another solid propellant, said inner core of another solid propellant having a plurality of cavities therein, and means for supplying liquid oxidizer into said plurality of cavities.

3,646,598
PILE DRIVER SYSTEMS, APPARATUS AND METHOD FOR DRIVING A PILE

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed June 25, 1969, Ser. No. 836,309
Int. Cl. E02d *7/10*
U.S. Cl. 61—53.5 **34 Claims**

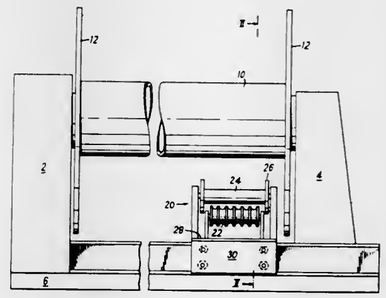


Pile driver systems and apparatus and method for driving a pile are described wherein a hollow pile is driven into the earth with the employment of a massive piston freely movable in the pile bore and normally resting on the pile. An air gun repeater is placed below the piston within the liquid containing pile bore to generate powerful thrusts upon its actuation. The thrust heaves the massive piston upwardly under guidance by the pile bore wall. When the piston again descends under guidance from the pile bore wall, it generates a momentum which is dissipated on the pile to drive the pile into the earth. In a preferred embodiment a double action pile driver is obtained by utilizing the thrust from the air gun repeater to produce an initial advance of the pile into the earth followed by a second advance when the massive piston dissipates its momentum on the pile.

3,646,599
APPARATUS FOR A METHOD OF FORMING COILED TUBE BANKS

Alexander Lightbody, 1 Weaver Lane, Kilbarchan, Renefrewshire, Scotland

Filed May 26, 1969, Ser. No. 827,625
Int. Cl. B21c *47/00*; **B21f** *3/04*
U.S. Cl. 72—147 **5 Claims**



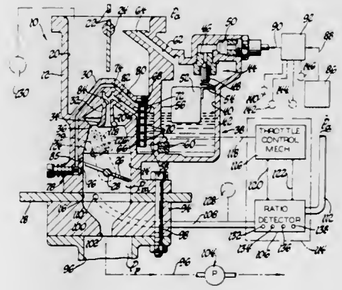
A method of forming tube banks having means in the form of guide rollers for controlling the feed of the tubes to a rotating core for the effective production of an acceptable core of controlled dimension.

An apparatus for use in forming such tube bank adapted with guide rollers having braking means for use in controlling the speed at which a tube is fed to the rotating core.

3,646,600
METHOD AND APPARATUS FOR GAUGING FLUID FLOW

Kenneth C. Bier, Bloomfield Hills; Jerome J. Frankowski, Warren, and Gustav A. Schumacher, Almont, all of Mich., assignors to Holley Carburetor Company, Warren, Mich.

Filed July 9, 1969, Ser. No. 840,193
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **14 Claims**



Method

In order to eliminate the effect of variations in barometric pressure, the throttle angle and volume rate of airflow through the induction passage of a second carburetor are matched to the throttle angle and volume rate of airflow through the induction passage of a first carburetor by creating a pressure downstream of the throttle valve of the second carburetor of a value which will produce a measured volume rate of airflow equal to the volume rate of airflow through the induction passage of the first carburetor and which will also, when compared to the then pressure upstream of the throttle valve of the first carburetor, result in a ratio of upstream and downstream pressures equal to the ratio of upstream and downstream pressures as existed across the throttle valve of the first carburetor.

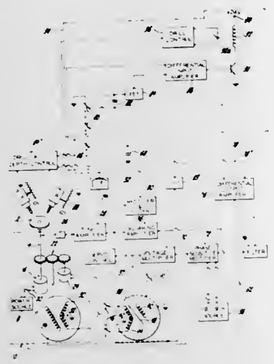
Apparatus

An orifice of predetermined flow capacity is situated at a point downstream of the throttle valve of a test carburetor and the downstream side of the orifice is exposed to a reduced pressure sufficient to cause a predetermined volume rate of airflow therethrough; pressure responsive means responsive to a first pressure between the throttle valve and orifice as well as the ambient pressure upstream of the throttle valve is effective for computing the ratio of said first pressure and said upstream pressure; if the said ratio does not equal a predetermined value the pressure responsive means creates an error signal to an associated control mechanism which causes appropriate rotation of the throttle valve in order to vary the value of said first pressure until said ratio equals said predetermined value.

3,646,601
OFF-ANGLE BALANCE CORRECTION METHOD AND APPARATUS

Joseph F. Lash, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1969, Ser. No. 868,500
Int. Cl. G01n 1/22
U.S. Cl. 73—462 6 Claims

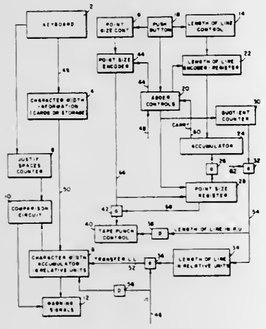


The amount and angle of unbalance of a rotary workpiece are measured and the position of unbalance is oriented between two angularly spaced correction drills. If the position of unbalance is not centered between the drills, then the drill depth at each location is compensated by a factor proportional to the product of the off-angle amount and the amount of unbalance.

3,646,602
PHOTOCOMPOSING MACHINE AND KEYBOARD HAVING LINE LENGTH CONVERSION FEATURE

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla.

Filed Dec. 24, 1968, Ser. No. 786,632
Claims priority, application Great Britain, Dec. 28, 1967, 58,756/67
Int. Cl. B41b 17/00
U.S. Cl. 95—4.5 R 4 Claims

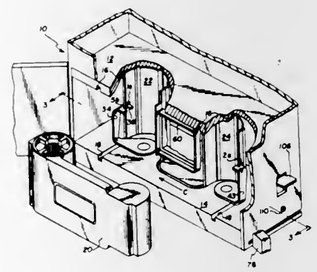


A photographic-type composing machine utilizing relative units for the representation of character widths, including a keyboard for the control of the machine, in which the selection of various point sizes does not affect the length of line, or the length of a line segment, produced in the photounit. The line length is selected in absolute units (such as picas, inches, or millimeters) at the keyboard, and is then automatically divided by a value representative of the point size selected, the quotient of the division representing the line length in relative units of the point size being used. The quotient is stored in the keyboard for justification purposes, and is also introduced into the controls for the photounit, for example, in the form of punched codes in a paper tape.

3,646,603
FOCAL PLANE SHUTTER AND MECHANISM FOR OPERATING

Wolfgang Ort, and Gerhard Brauning, both of Stuttgart-bad Connstatt, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,590
Claims priority, application Germany, May 14, 1969, P 17 72 427.5
Int. Cl. G03b 9/36
U.S. Cl. 95—55 8 Claims



A focal plane shutter includes a pair of curtains formed of a one-piece member of readily flexible material having corrugations running in a direction perpendicular to the direction of curtain travel. The curtains are guided in opposed grooved of width substantially equal to the depth of the corrugations. The curtains ride in the grooves on a pair of pins and are driven by a pair of spring-biased transmission plates which are cocked by a tensioning lever and are latched in their cocked positions by a pair of armature levers. One of the armature levers is released by the tensioning lever while the other armature lever is released by a timing device after a delay period.

3,646,604
ARTICULATED RAILROAD CAR CONNECTION

Carl E. Tack, Elmhurst, and Loyal J. Rodgers, Kenilworth, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

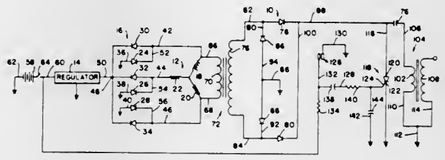
Filed Apr. 7, 1969, Ser. No. 813,870
Int. Cl. B61f 3/12, 5/18; F16c 17/04
U.S. Cl. 105—4 R 12 Claims

An articulated car connection is provided with various improvements to reduce slack and to prevent undesirable interference between adjacent or abutting parts.

3,646,605
CAPACITOR-DISCHARGE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Alfred Plume, Jr., Carson City, Nev., assignor to Mallory Electric Corporation, Detroit, Mich.

Filed Oct. 29, 1969, Ser. No. 872,306
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E 2 Claims



The capacitor-discharge ignition system is for use in connection with internal combustion engines which employ an alternator. The alternator functions in the usual manner to provide operating power for the electrical system usually associated with an internal combustion engine. A capacitor-discharge ignition circuit is connected across one phase of the output of the alternator in parallel with the usual electrical system. The alternator is utilized directly as a source of power for operation of the capacitor-discharge ignition system.

3,646,606
PHYSIOLOGICAL MONITORING SYSTEM

Richard L. Buxton, and George N. Miller, both of Huntsville, Ala., assignors to Care Electronics, Inc.

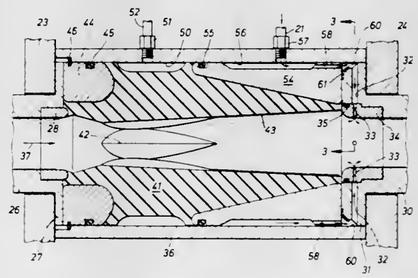
Filed Aug. 6, 1969, Ser. No. 847,946
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 R 3 Claims

A physiological monitoring system for hospitalized patients wherein each of the patients monitored would be provided a patient monitoring unit which would electrically sense two or more physiological conditions, translate desired information into digital form and transmit it by pulse coded FM radio link to a central monitoring station. The central monitoring station would receive transmitted information from one or more patients so equipped and detect and display the information in analog and digital form and in some instances provide automatic alarms on the occurrence of certain predetermined values for the sensed conditions.

3,646,607
APPARATUS FOR CONTROLLING FLUID FLOW THROUGH A CONDUIT

Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Continuation-in-part of application Ser. No. 650,854, July 3, 1967, now Patent No. 3,479,001. This application Oct. 24, 1969, Ser. No. 869,244
Int. Cl. F16k 31/12; F16l 55/14
U.S. Cl. 137—604 7 Claims

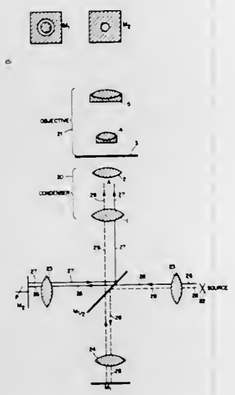


An apparatus for controlling the flow of fluid such as drilling mud through a conduit. It includes a housing arranged for fluid flow therethrough and is provided with a resilient generally tubular shaped flow controlling means, such as a rubber sleeve, mounted in the housing. The rubber sleeve is arranged for radial inward deformation to control the flow of mud therethrough. The apparatus includes means for flowing another fluid into the conduit at a point adjacent the downstream end of the rubber sleeve to reduce turbulence and cavitation to thereby extend the usable life of the apparatus and particularly the rubber sleeve.

3,646,608
PHASE CONTRAST MICROSCOPE ILLUMINATOR

Howard J. Rowland, Newton Highlands, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 10, 1969, Ser. No. 831,896
Int. Cl. G02b *21/06*
U.S. Cl. 350—87 4 Claims

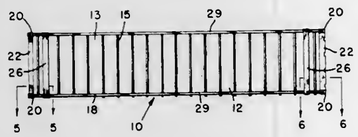


A phase contrast microscope illuminator in which a transparent stop positioned within a collimated light beam is focused upon a specimen plane aperture. In the absence of a specimen within the aperture, the objective field of the microscope objective lens system appears bright. A specimen actually within the aperture is illuminated by light from the focused beam. It is also illuminated by the focused phase shifted portion of the beam. Phase contrast is assured by varying the transmissivity of the stop. In this regard, the amplitude of the phase shifted portion of the light beam is set equal to the amplitude of the diffracted light entering the objective lens system. A planar reflector with a movable central portion serves as another embodiment of the invention.

3,646,609
CONTAINER FOR HANDLING FREIGHT

Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-Land Service, Inc., Elizabeth, N.J.

Filed June 6, 1969, Ser. No. 831,057
Int. Cl. B65d *21/00*
U.S. Cl. 220—1.5 7 Claims

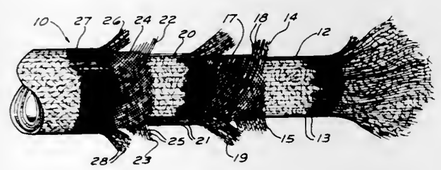


A container for handling freight in overland and marine transportation capable of being stacked with other containers is superposed relation. Strong points are provided at the corners and intermediate the corners of the containers for stacking mixed lengths of containers and to facilitate handling with a single lifting spreader suited to the shortest length container of the mixed stack.

3,646,610
FIBER GLASS REINFORCED GOLF SHAFT

Carl Thomas Jackson, Fairview, Pa., assignor to True Temper Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 475,112, July 27, 1965, now abandoned , and a continuation-in-part of 666,342, Sept. 8, 1967, now abandoned. This application Mar. 10, 1969, Ser. No. 805,753
Int. Cl. A63b *53/10*
U.S. Cl. 273—80 R 24 Claims

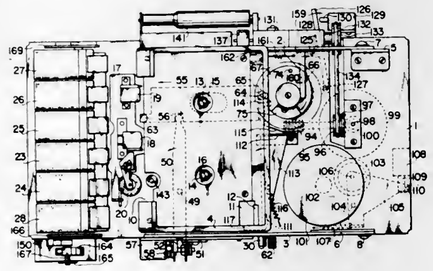


A fiber glass reinforced golf shaft has layers of fiber glass strands disposed longitudinally or both longitudinally and circumferentially of the shaft and enclosed in a resinous binder, some or all of the layers being provided with a layer of random-oriented, short lengths of chopped, fiber glass filament which are also enclosed within said resinous binder.

3,646,611
MAGNETIC TAPE RECORDING AND REPRODUCING DEVICE

Hisao Ikeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 7, 1969, Ser. No. 839,469
Claims priority, application Japan, Aug. 30, 1968, 43/62471
Int. Cl. G11b *23/12*
U.S. Cl. 274—4 F 15 Claims

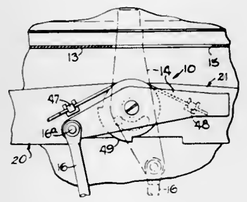


A novel mechanism in which a plurality of stacked cassettes housed in a cassette housing can be automatically played in succession in such a manner that when the play of a cassette which has first been brought into the play position is completed the cassette is discharged out of the cassette housing and the next cassette is brought into the play position.

3,646,612
OVEN DOOR LATCH

Donald L. Anderson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Continuation-in-part of application Ser. No. 754,174, Aug. 21, 1968, now abandoned. This application Oct. 15, 1969, Ser. No. 871,472
Int. Cl. E05c *3/10*
U.S. Cl. 292—200 14 Claims

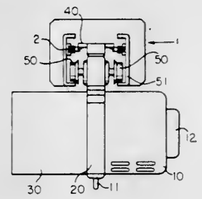


A latching device for an oven door for use during the high-heat cycle of a self-cleaning oven. A latch is moved between latched and unlatched positions by a mechanism which is movable from a normal position to an actuating position to move the latch to the latched position and is movable from the normal position to an operating position to move the latch to the unlatched position. So that the mechanism can return to the normal position after moving the latch while leaving the latch in the moved position, the mechanism is connected to the latch by a lost motion connection. In one embodiment, the mechanism comprises two levers with one lever for moving the latch from the unlatched position to the latched position and the other for moving the latch from the latched position to the unlatched position. The mechanism comprises a single handle in the second embodiment.

3,646,613
AUTOMATIC CARRYING SYSTEM

Mikio Matsumoto, Ashiya-shi, Hyogo-ken; Kenji Terada, Sumiyoshi-ku, Osaka, and Mitsuru Matsunaga, Neyagawa-shi, Osaka, all of Japan, assignors to The Tsubakimoto Chain Mfg. Co., Ltd., Osaka, Japan

Filed Oct. 21, 1968, Ser. No. 769,320
Claims priority, application Japan, Oct. 31, 1967, 42/69578
Int. Cl. B61b *3/02*
U.S. Cl. 104—149 3 Claims



An automatic carrying system for carrying loads from any place to any location along particular formed rails provided with power supply lines. This system includes an automatic carrying apparatus adapted to run on the rail with loads to be conveyed, a section control apparatus for controlling the operation of the carrying apparatus so as not to permit the successive carrying apparatus to collide each other, a branching and joining apparatus for the carrying apparatus, a turnable directioning apparatus for turning the direction of the carrying apparatus, and accessories for controlling the operation of the carrying apparatus.

DESIGNS

FEBRUARY 29, 1972

223,017
PAINT BRUSH HANDLE
John A. Pharris, Brookfield, and Albert A. Mlachnik, Greendale, Wis., assignors to EZ Paintr Corporation
Filed Sept. 25, 1970, Ser. No. 25,203
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



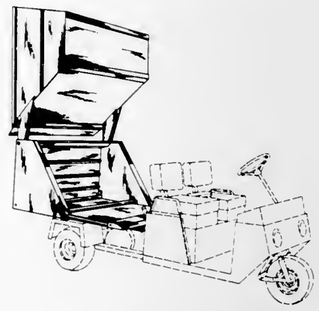
223,018
PAINT BRUSH HANDLE
John A. Pharris, Brookfield, and Albert A. Mlachnik, Greendale, Wis., assignors to EZ Paintr Corporation
Filed Sept. 25, 1970, Ser. No. 25,204
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



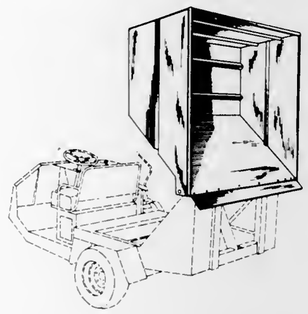
223,019
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 18, 1971, Ser. No. 107,604
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125



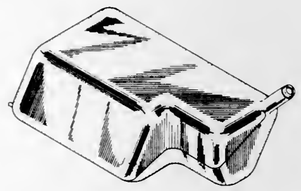
223,020
DUMP BODY FOR A SMALL TRUCK
Roy F. Broyhill, Dakota City, Nebr. 68731
Filed July 15, 1970, Ser. No. 23,961
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



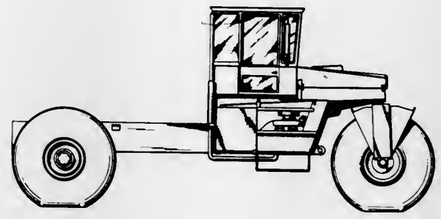
223,021
DUMP BODY FOR A SMALL TRUCK
Roy F. Broyhill, Dakota City, Nebr. 68731
Filed July 23, 1970, Ser. No. 24,083
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



223,022
VEHICULAR TANK FOR FUEL OR THE LIKE
James M. Yates, 908 Deer Ridge, Waco, Tex. 76710
Filed Nov. 16, 1970, Ser. No. 26,002
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



223,023
TRUCK
Verner E. Bergman, 4042 Wanamaker Road, Topeka, Kans. 66610
Filed Dec. 4, 1970, Ser. No. 26,286
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



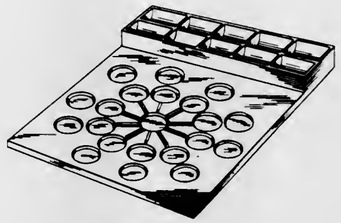
223,024
ANTI-BOUNCE CONTROL ARM INSERT FOR AUTOMOBILE REAR-END SUSPENSION SYSTEM
Hudson Thomas, 777 Hamilton St., Costa Mesa, Calif. 92627
Filed Apr. 13, 1970, Ser. No. 22,411
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



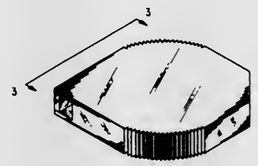
223,025
CHAIR
Chester J. Barecki, Grand Rapids, and Carl W. Sundberg and Montgomery Ferar, Southfield, Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed June 5, 1970, Ser. No. 23,332
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—8



223,026
EDUCATIONAL BOARD FOR TEACHING CHILDREN WITH DISABILITIES
Johanna R. Rotkow, 735 55th St., Des Moines, Iowa 50312
Filed Oct. 23, 1970, Ser. No. 25,627
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D25—1



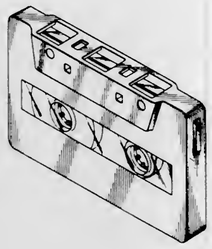
223,027
TAPE CARTRIDGE
William A. Sours, Sauquoit, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.
Filed Jan. 8, 1970, Ser. No. 105,147
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



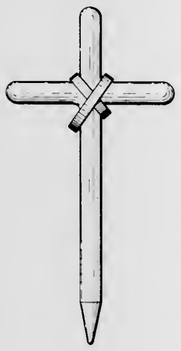
223,028
PORTABLE SPEAKER ENCLOSURE
Augustine J. Sperrazza, 324-A Liberty Road, Troy, N.Y. 12180
Filed Aug. 20, 1970, Ser. No. 24,590
Term of patent 14 years
Int. Cl. D14—*03*; D6—*01*
U.S. Cl. D26—14



223,029
MAGNETIC TAPE CASSETTE
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Oct. 2, 1970, Ser. No. 25,306
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



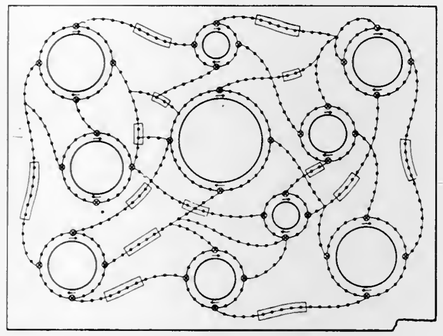
223,030
WEDDING CAKE ORNAMENT
Geza Dombi, 4060 Carlock Drive, Boulder, Colo. 80303
Filed June 1, 1970, Ser. No. 23,217
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—24



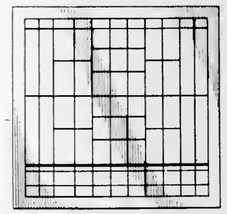
223,031
GOLF PUTTER HEAD
Leo J. Ernst, Los Angeles, Calif. (18640 Superior St., Northridge, Calif. 91324)
Filed Apr. 23, 1970, Ser. No. 22,600
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



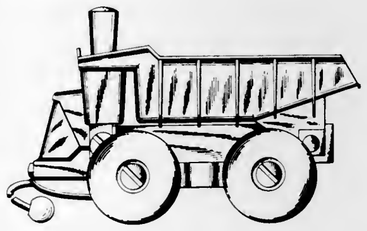
223,032
GAME BOARD
Matilda Corey, 3208 Arsenal St., St. Louis, Mo. 63118, and Joseph Paul Courry, Garden Grove, Calif.; said Courry assignor to said Corey
Filed Aug. 31, 1970, Ser. No. 24,760
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



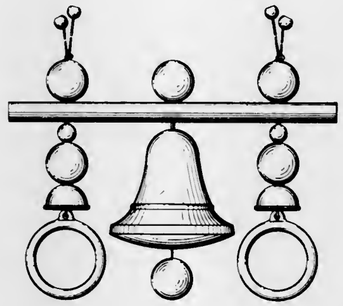
223,033
GAME BOARD
Mary Everett Oldham, 413 N. Sycamore St., Mount Sterling, Ky. 40353
Filed Dec. 16, 1970, Ser. No. 26,533
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



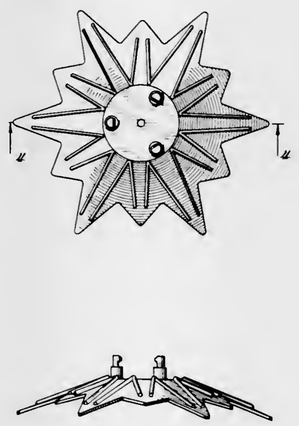
223,034
TOY DUMP TRUCK
Wesley E. Sharer, Chicago, Ill., assignor to Playskool, Inc., Chicago, Ill.
Filed Aug. 27, 1970, Ser. No. 24,726
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,035
NURSERY GYM
Irving Brecher, 5 Greenacre Court, Great Neck, N.N.Y. 11021
Filed Oct. 6, 1970, Ser. No. 25,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



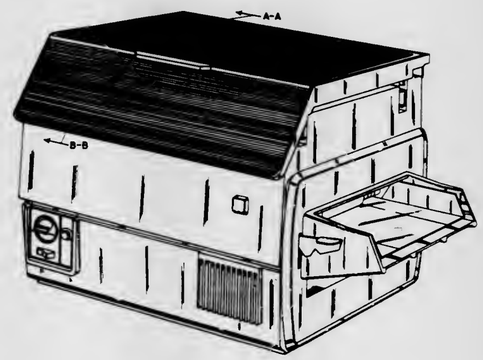
223,036
HOT WATER DEFLECTOR FOR A COFFEE URN
John C. Martin and Eugene G. Rescho, Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Aug. 14, 1970, Ser. No. 24,502
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26



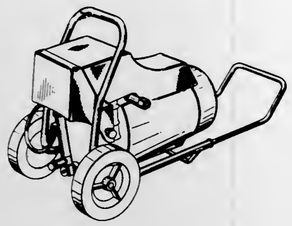
223,037
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jan. 8, 1971, Ser. No. 105,154
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



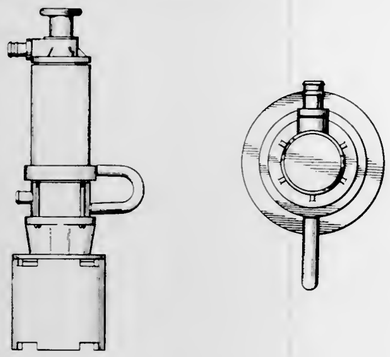
223,038
COPY MACHINE
Toshihiko Sakow, Fort Lee, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Jan. 13, 1971, Ser. No. 106,310
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



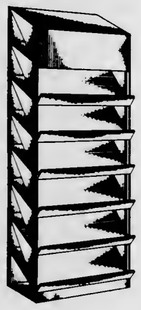
223,039
PORTABLE PUMPING UNIT
Stanley W. Widmer, Coon Rapids, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Nov. 10, 1969, Ser. No. 20,020
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



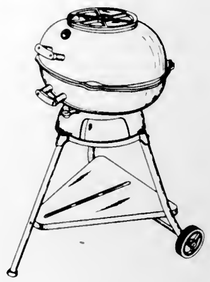
223,040
COMBINATION MOTOR, PUMP, AND FILTER
Walter J. Otto, Wantagh, N.Y., assignor to Julius L. Englesberg, Freeport, N.Y.
Filed Sept. 17, 1970, Ser. No. 25,316
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



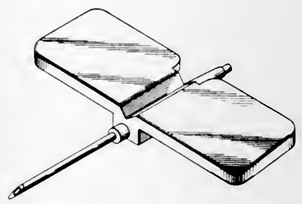
223,041
MODULAR DISPLAY STAND
Kenneth Kuenster, New Haven, Conn., assignor to Hammermill Paper Company, Erie, Pa.
Filed Aug. 26, 1970, Ser. No. 24,707
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



223,042
PORTABLE OUTDOOR COOKER
Judkins E. Wilkinson and Clarence R. Smith, Birmingham, Ala., assignors to Atlanta Stove Works, Inc.
Filed Dec. 4, 1970, Ser. No. 26,296
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10

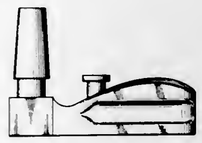


223,043
INFUSION SET
Kenneth Raines, Bethlehem, Pa., assignor to Burron Medical Products, Inc., Bethlehem, Pa.
Continuation-in-part of design applications Ser. No. 22,700, Apr. 29, 1970, Ser. No. 22,710, Apr. 29, 1970, Ser. No. 22,711, Apr. 29, 1970, and Ser. No. 22,712, Apr. 29, 1970. This application Nov. 19, 1970, Ser. No. 26,078
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12

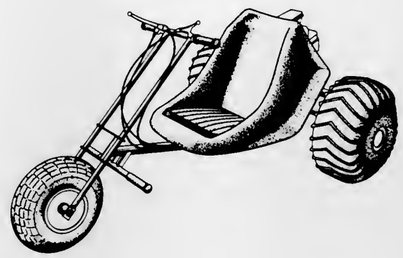




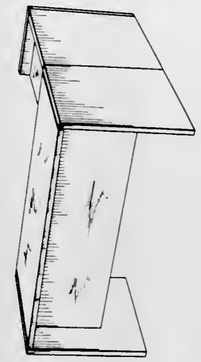
223,044
COMBINED NAIL POLISH CONTAINER AND FINGER REST
Elliott Yellin, 2314 39th Ave., San Francisco, Calif. 94116
Filed Jan. 12, 1970, Ser. No. 20,876
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



223,045
THREE-WHEELED POWERED VEHICLE
William S. Stull, Los Angeles County, Calif. (15214 Midcrest Drive, Whittier, Calif. 90604)
Filed Sept. 16, 1970, Ser. No. 25,020
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D90—8



223,046
DESK
John Nance, Quakertown, Pa., assignor to JG Furniture Company, Inc., New York, N.Y.
Filed June 17, 1970, Ser. No. 23,527
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—7



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF FEBRUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Carter, Sidney T., 3,645,303.

Abbott Laboratories: *See—*
Harrigan, Robert Emmet, 3,645,262.

Abdallah, Abdulmuniem H., to Dow Chemical Company, The. Triazine anorectic method. 3,646,204, Cl. 424-249.

Abe, Hiroshi; Shigeta, Yukio; Uchimaru, Fumihiko; Okada, Seizaburo; and Kosasayama, Akira, to Daiichi Seiyaku Company, Limited. 2-Morphalino carbonyl pyrazines. 3,646,031, Cl. 260-247.5

Abe, Michio, to Tokai Cold Forming Co., Ltd. Method of making ball studs from metal rods. 3,644,973, Cl. 29-149.5

Abel, Bernard: *See—*
Birr, Jacques; Abel, Bernard; and Charbonnier, Patrice,3,645,798.

Abraham, Anton, 1/2 to Wiener Kammfabrik Anton Abraham Komm. Ges. Hair securing means, particularly a hair-clasp or barrette, or a hair-comb with such securing means. 3,645,278, Cl. 132-48.

Abrams, Andrew M., to Union Camp Corporation. Box structure convertible into an easel. 3,645,382, Cl. 206-45.21

Abramson, Carl N.: *See—*
Nadir, Mark T.; and Abramson, Carl N.,3,646,273.
Nadir, Mark T.; and Abramson, Carl N.,3,646,274.

Acker, Morris; Ikrath, Kurt; and Schneider, Wilhelm A., to United States of America, Navy. Helical coil coupled to a live tree to provide a radiating antenna. 3,646,562, Cl. 343-720.

Acme Highway Products Corporation: *See—*
Berchou, William J., 3,645,176.

Acme Spring Company: *See—*
Swatt, Leonard W., 3,644,946.

Acre, Thomas R.; Gimbel, Frederick M.; Ramachandran, Sundaresan; and Beck, Thomas F., to Allegheny Ludlum Industries, Inc. Consumable lance. 3,645,520, Cl. 266-34.

Actor, Philip Paul; and Pellerano, Cesare Enrico Guiseppe, to Kline, Smith & French Laboratories. Anticestode hydrazinoquinolines. 3,646,019, Cl. 260-240.

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Zinnes, Harold; Lindo, Neil A.; and Shavel, John, Jr., to Warner-Lambert Pharmaceutical Company. 4-Hydroxy-3-furylcarbamyl-2H-1,2-benzothiazine 1,1- dioxides and process thereof. 3,646,021, Cl. 260-243.
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LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Corella, Arthur P.: *See*—
Schneider, William S., and Corella. Re. 27,302.

Lutzker, Lawrence D.: *See*—
Lutzker, Robert S. Re. 27,301.

Lutzker, Robert S., assignor of a fractional part interest to Lawrence D. Lutzker. Can closure plug. Re. 27,301, 2-29-72, Cl. 220—60.

Rodgers, Wayne V.: *See*—
Schneider, William S., and Corella. Re. 27,302.

Schneider, Carl: *See*—
Schneider, William S., and Corella. Re. 27,302.

Schneider, William S., and A. P. Corella, assignors to Wayne V. Rodgers and Carl Schneider, a fractional part interest to each. Method of making dispensing containers. Re. 27,302, 2-29-72, Cl. 53—28.

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Barecki, Chester, J., Sundberg, and Ferar. 222,025.

Atlanta Stove Works, Inc.: *See*—
Wilkinson, Judkins E., and Smith. 223,042.

Barecki, Chester J., C. W. Sundberg, and M. Ferar, to American Seating Co. Chair. 223,025, 2-29-72, Cl. D15—8.

Bergman, Verner E. Truck. 223,023, 2-29-72, Cl. D14—3.

Brecher, Irving. Nursery gym. 223,035, 2-29-72, Cl. D34—15.

Roy F. Broyhill. Dump body for a small truck. 223,020, 2-29-72, Cl. D14—3.

Broyhill, Roy F. Dump body for a small truck. 223,020, 2-29-72, Cl. D14—3.

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Raines, Kenneth. 223,043.

Cogar Corp.: *See*—
Sours, William A. 223,027.

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Courry, Joseph P.: *See*—
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Weiss, Reinhold M., and Dennehey. 223,029.

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Ferar, Montgomery: *See*—
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Hammermill Paper Co.: *See*—
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JG Furniture Co., Inc.: *See*—
Nance, John. 223,046.

Kuenster, Kenneth, to Hammermill Paper Co. Modular display stand. 223,041, 2-29-72, Cl. D80—9.

Litton Business Systems, Inc.: *See*—
Sakow, Toshihiko. 223,038.

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Pharris, John A., and A. A. Mlachnik, to EZ Paintr Corp. Paint brush handle. 223,018, 2-29-72, Cl. D4—38.

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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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614.03 3,645,294
624.13 3,645,295
625.69 3,645,296
637.3 3,645,297

CLASS 138

40 3,645,298

CLASS 139

11 3,645,299
308 3,645,300

CLASS 140

93.2 3,645,302

CLASS 141

7 3,645,303
68 3,645,301
198 3,645,305

CLASS 143

6G 3,645,306
3,645,307
160 3,645,304

CLASS 144

176 3,645,308
326 3,645,309

CLASS 146

115 3,645,310

CLASS 148

2 3,645,799
6.15R 3,645,797
6.15Z 3,645,806
9.5 3,645,798
11.5 3,645,800
12 3,645,801
15 3,645,802
127 3,645,803
128 3,645,804
156 3,645,805
187 3,645,807
3,645,808

CLASS 149

38 3,645,809
43 3,645,810

CLASS 151

41.75 3,645,311

CLASS 152

158 3,645,312
209R 3,645,313
209 3,645,314
383 3,645,315
410 3,645,316

CLASS 156

5 3,645,811
17 3,645,812
62.4 3,645,813
62.8 3,645,814
69 3,645,815
94 3,645,816
108 3,645,817
128 3,645,818
148 3,645,819
191 3,645,820
196 3,645,821
243 3,645,822
247 3,645,823
322 3,645,824
361 3,645,825
401 3,645,826
3,645,827
402 3,645,828
441 3,645,829
510 3,645,830
527 3,645,831
541 3,645,832

CLASS 160

168 3,645,317
348 3,645,318

CLASS 161

57 3,645,833
92 3,645,834
146 3,645,835
151 3,645,836
160 3,645,837
164 3,645,838
193 3,645,839

CLASS 162

78 3,645,840
166 3,645,841
303 3,645,842
347 3,645,843
352 3,645,844

CLASS 164

72 3,645,319
160 3,645,320
252 3,645,321
281 3,645,322
282 3,645,323
388 3,645,324

CLASS 165

27 3,645,325
48 3,645,326
51 3,645,327
105 3,645,329
151 3,645,330

CLASS 166

75 3,645,332
85 3,645,328
3,645,333
120 3,645,334
179 3,645,335
288 3,645,336

CLASS 169

14 3,645,337
16 3,645,338

CLASS 171

61 3,645,339

CLASS 172

804 3,645,340

CLASS 173

12 3,645,341
17 3,645,342
43 3,645,343
49 3,645,344

CLASS 174

15 3,646,243
21JS 3,646,245
57 3,646,244
68.5 3,646,246
3,646,572
117M 3,646,247
120SC 3,646,248
126 3,646,249
138F 3,646,250
142 3,646,251

CLASS 175

56 3,645,345
65 3,645,331
237 3,645,346

CLASS 178

4.1R 3,646,573
5.4HE 3,646,253
5.4SD 3,646,252
5.4P 3,646,254
6 3,646,255
3,646,256
3,646,257
6.6DD 3,646,259
3,646,261
6.6A 3,646,258
3,646,260
6.7R 3,646,262
6.8 3,646,263
3,646,264
7.2 3,646,265
3,646,267
7.85 3,646,266
25 3,646,268
69.5R 3,646,269

CLASS 179

1SA 3,646,576
1D 3,646,270
1G 3,646,574
6.3R 3,646,575
15AP 3,646,272
15BA 3,646,271
3,646,273
3,646,274
18GE 3,646,276
18E 3,646,275
18J 3,646,277
100.11 3,646,278
100.41K 3,646,279
111E 3,646,280
111R 3,646,281

CLASS 180

5R 3,645,348
5 3,645,347
6.48 3,645,349
9.2R 3,645,350
54C 3,645,351
82 3,645,352
90 3,645,353

CLASS 181

23 3,645,354
31B 3,645,355
32R 3,645,356
36B 3,645,357
36R 3,645,358

CLASS 182

2 3,645,359

CLASS 184

6.18 3,645,360

CLASS 187

29R 3,645,361

CLASS 188

71.8 3,645,362
184 3,645,363
196D 3,645,364
285 3,645,365

CLASS 191

12R 3,646,282

CLASS 192

.08 3,645,366
4A 3,645,367
4C 3,645,368

CLASS 193

43B 3,645,369

CLASS 194

9T 3,645,370

CLASS 195

4 3,645,845
28R 3,645,846
30 3,645,847
31R 3,645,848
62 3,645,849
66R 3,645,850
3,645,851
68 3,645,852
103.5R 3,645,853

CLASS 197

1 3,645,371
18 3,645,372
82 3,645,373
97 3,645,374

CLASS 198

19 3,645,375
27 3,645,376
33AB 3,645,377
38 3,645,378
127 3,645,379
219 3,645,380
220CA 3,645,381

CLASS 200

5EB 3,646,283
18 3,646,287
48R 3,646,284
48 3,646,288
61.08 3,646,285
3,646,286
61.47 3,646,289
67D 3,646,290
70 3,646,291
82B 3,646,292
84C 3,646,293
144B 3,646,294
148J 3,646,295
150R 3,646,296
153LB 3,646,297
157 3,646,298
162 3,646,299
166BH 3,646,301
166D 3,646,300
168E 3,646,302
177 3,646,303

CLASS 201

39 3,645,854

CLASS 204

16 3,645,855
28 3,645,856
3,645,857
34 3,645,858
35N 3,645,859
35R 3,645,860
49 3,645,861
56R 3,645,862
59 3,645,863
74 3,645,864
96 3,645,865
99 3,645,866
130 3,645,867
158HA 3,645,868
159.12 3,645,869
159.17 3,645,870
181 3,645,871
3,645,872
3,645,873
3,645,874
195 3,645,875
211 3,645,876
224 3,645,877
243R 3,645,878
247 3,645,879
278 3,645,880
286 3,645,881
300 3,645,883
301 3,645,882
3,645,884

CLASS 206

45.21 3,645,382
45.34 3,645,384
51 3,645,383
52R 3,645,385
59F 3,645,386
60 3,645,387
62R 3,645,388
3,645,389
84 3,645,390

CLASS 208

8 3,645,885
48AA 3,645,886
96 3,645,887
139 3,645,888
308 3,645,889

CLASS 209

73 3,645,391
74M 3,645,392
80.5 3,645,393
82 3,645,394
91 3,645,395
97 3,645,396
464 3,645,397

CLASS 210

23 3,645,890
3,645,891
44 3,645,892
50 3,645,893
73 3,645,398
77 3,645,399
108 3,645,400
232 3,645,401
266 3,645,402

CLASS 211

13 3,645,403
168 3,645,404

CLASS 212

3 3,645,405
14 3,645,406
39R 3,645,407

CLASS 214

1BB 3,645,408
6BA 3,645,409
6N 3,645,410
36 3,645,411
377 3,645,412

CLASS 215

11R 3,645,413
3,645,414

CLASS 219

6.5 3,646,304
50 3,646,305
70 3,646,306
80 3,646,307
121P 3,646,308
125PL 3,646,309
135 3,646,310
137 3,646,311
146 3,646,312
200 3,646,313
208 3,646,314
210 3,646,315
222 3,646,316
241 3,646,577
271 3,646,317
300 3,646,318
347 3,646,319
401 3,646,320
464 3,646,321
549 3,646,322

CLASS 220

1.5 3,646,609
22 3,645,415
3,645,416
31S 3,645,419
41 3,645,417
55.3 3,645,418
60 Re.27,301

CLASS 222

23 3,645,420
57 3,645,421
169 3,645,422
207 3,645,423
402.1 3,645,424

CLASS 223

69 3,645,425
89 3,645,426
96 3,645,427

CLASS 224

2B 3,645,428
45G 3,645,429

CLASS 226

40 3,645,430
97 3,645,431
190 3,645,432
3,645,433
196 3,645,434

CLASS 228

3 3,645,435

CLASS 229

44R 3,645,436
3,645,437

CLASS 234

1 3,645,438

CLASS 235

60.49 3,645,439
61.11D 3,646,323
61.11E 3,646,324
61.11R 3,646,325
66 3,645,440
92EC 3,646,326
92TC 3,646,327
3,646,328
145R 3,645,441
150.1 3,646,329
150.3 3,646,330
151.3 3,646,331
176 3,646,332
181 3,646,333
3,646,334
3,646,335
3,646,336
186 3,646,337
201 3,645,442

CLASS 236

34 3,645,443
59 3,645,444

CLASS 238

10E 3,645,445

CLASS 239

14 3,645,446
15 3,645,447
3,645,448
17 3,645,449
116 3,645,450
206 3,645,451
227 3,645,452
237 3,645,453

CLASS 240

3 3,646,338
7.1R 3,646,339
11.4N 3,646,340
59 3,646,341
152 3,646,342

CLASS 241

4 3,645,454
20 3,645,455
29 3,645,456
60 3,645,457
175 3,645,458
191 3,645,459
299 3,645,460

CLASS 242

31 3,645,461
55.19 3,645,462
58.1 3,645,463
68.3 3,645,464
72.1 3,645,465
3,645,466
74.2 3,645,467
107R 3,645,468
118.4 3,645,469
182 3,645,470
3,645,471
3,645,472
210 3,645,473

CLASS 244

2 3,645,474
3.22 3,645,475
12B 3,645,476
46 3,645,477
103R 3,645,479
114 3,645,478
122AG 3,645,480
123 3,645,481
137 3,645,482

CLASS 246

169D 3,646,343

CLASS 248

4 3,645,483
80 3,645,484
223 3,645,485
243 3,645,486
354S 3,645,487
399 3,645,488
480 3,645,489

CLASS 249

50 3,645,490
61 3,645,491
68 3,645,492

CLASS 250

49.5ZC 3,646,351
49.5A 3,646,344
71.5R 3,646,345
83 3,646,346
83.3R 3,646,347
84.5 3,646,348
86 3,646,349
207 3,646,350
218 3,646,352
219DF 3,646,353

CLASS 251

120 3,645,493
121 3,645,494
129 3,645,495
148 3,645,496
3,645,497
159 3,645,498
303 3,645,499
340 3,645,500

CLASS 252

1 3,645,894
8.1 3,645,895
8.55D 3,645,896
34.7 3,645,897
62.59 3,645,898
62.9 3,645,974
63.5 3,645,899
63.7 3,645,900
73 3,645,902
75 3,645,901
77 3,645,903
89 3,645,904
171 3,645,906
182 3,645,907
186 3,645,908
300AE 3,645,909
313R 3,645,910
316 3,645,911
411R 3,645,912
416 3,645,913
455R 3,645,914
462 3,645,915
478 3,645,916
540 3,645,905

CLASS 254

29R 3,645,502

126 3,645,501
197 3,645,503

CLASS 259

2 3,645,504
10 3,645,505
58 3,645,506
100 3,645,507
107 3,645,508

CLASS 260

2A 3,645,917
3,645,920
2P 3,645,918
3,645,919
2.1R 3,645,921
3,645,922
2.5AB 3,645,927
2.5AC 3,645,923
3,645,924
3,645,925
2.5E 3,645,929
3,645,930
2.5L 3,645,926
2.5N 3,645,928
2.5R 3,645,931
3 3,645,932
3.3 3,645,933
5 3,645,934
3,645,935
9 3,645,936
17A 3,645,937
17R 3,645,938
17.4BB 3,645,940
17.4GC 3,645,939
18TN 3,645,942
18R 3,645,941
22TN 3,645,943
23XA 3,645,944
28 3,645,945
3,645,946
28.5AS 3,645,947
28.5AV 3,645,948
28.5A 3,645,949
29.2EP 3,645,950
3,645,954
29.4UA 3,645,951
29.6H 3,646,044
29.6T 3,645,952
31.4R 3,645,955
32.6A 3,645,956
32.6N 3,645,957
32.6R 3,645,953
33.6UA 3,645,959
33.6A 3,645,958
37SB 3,645,960
37N 3,645,961
40R 3,645,962
45.7P 3,645,964
45.7S 3,645,963
45.75R 3,645,968
45.8N 3,645,965
45.9 3,645,966
47CA 3,645,972
47CN 3,645,971
47EN 3,645,969
47U 3,645,970
67.6R 3,645,973
75NE 3,645,975
75NH 3,645,976
77.5BB 3,645,977
3,645,982
77.5CH 3,645,978
3,645,981
77.5CR 3,645,980
77.5NC 3,645,979
78R 3,645,983
78S 3,646,153
78.4R 3,645,985
78.4 3,645,984
79 3,645,986
79.5B 3,645,987
80.72 3,645,988
80.73 3,645,989
3,645,990
80.77 3,645,991
80.78 3,645,992
3,645,993
82.1 3,645,994
88.1 3,645,997
88.2C 3,645,996
88.2 3,645,995
92.1 3,645,998
93.5A 3,645,999
93.7 3,646,000
94.3 3,646,001
146T 3,646,002
146 3,646,003
152 3,646,004
209R 3,646,006
211.5R 3,646,007
239BD 3,646,011
239A 3,646,010
239 3,646,009
239.3B 3,646,008
239.5 3,646,012
239.55 3,646,013
240CA 3,646,015
240E 3,646,018
240G 3,646,016
3,646,019
240K 3,646,014
240.1 3,646,017
243C 3,646,023
3,646,024
3,646,025
243R 3,646,020
3,646,021
3,646,022
247.2B 3,646,026
3,646,027
247.5R 3,646,031
247.7F 3,646,030
249.9 3,646,032
250R 3,646,033
251QA 3,646,034
256.5R 3,646,028
268PH 3,646,035
268TR 3,646,037
3,646,038
3,646,039
268C 3,646,036
268R 3,646,029
285.5 3,646,046
290P 3,646,040
293.63 3,646,041
294.8K 3,646,043
294.8 3,646,047
294.9 3,646,042
295K 3,646,048
296R 3,646,045
302H 3,646,049
305 3,646,050
306.7 3,646,051
306.8R 3,646,053
308A 3,646,052
3,646,054
308C 3,646,055
309 3,646,057
309.5 3,646,056
310A 3,646,058
310R 3,646,059
326.14T 3,646,061
326.3 3,646,060
327M 3,646,062
340.9 3,646,063
3,646,064
3,646,065
343.2S 3,646,068
343.7 3,646,066
3,646,067
345.2 3,646,069
348C 3,646,070
371 3,646,071
380 3,646,072
396R 3,646,073
397.4 3,646,074
3,646,075
3,646,076
397.5 3,646,077
410.9N 3,646,078
413 3,646,079
429J 3,646,080
429.2 3,646,081
429.7 3,646,082
429.9 3,646,083
435R 3,646,086
448R 3,646,084
448.2E 3,646,087
3,646,089
3,646,090
3,646,092
3,646,093
448.2N 3,646,091
448.2P 3,646,088
448.8R 3,646,085
453AP 3,646,095
453SP 3,646,096
453R 3,646,097
455B 3,646,094
458 3,646,100
462R 3,646,098
3,646,101
463 3,646,102
465 3,646,103
465.4 3,646,099
3,646,104
470 3,646,107
471C 3,646,109
473G 3,646,108
473S 3,646,110
476R 3,645,967
479R 3,646,111
484R 3,646,112
486R 3,646,113
488B 3,646,114
497A 3,646,116
497 3,646,115
508 3,646,005
3,646,117
514P 3,646,118
514R 3,646,119
515R 3,646,120
519 3,646,121
520 3,646,122
524N 3,646,123
525 3,646,124
3,646,125
530N 3,646,127
530R 3,646,126
533C 3,646,130
533R 3,646,128
534E 3,646,129
537R 3,646,131
544L 3,646,132
545P 3,646,133
551P 3,646,134
553A 3,646,135
3,646,136
557R 3,646,137
558S 3,646,138
562B 3,646,141
567.5 3,646,139
567.6P 3,646,140
570.5CA 3,646,146
570.5C 3,646,145
570.6 3,646,144
573 3,646,216
583J 3,646,148
583R 3,646,147
586B 3,646,149
586R 3,646,150
586 3,646,151
593R 3,646,217
594 3,646,218
606.5F 3,646,219
609A 3,646,221
609F 3,646,220
613D 3,646,222
617F 3,646,224
617R 3,646,223
621G 3,646,226
623R 3,646,225
643B 3,646,227
644 3,646,228
651F 3,646,230
652.5R 3,646,229
665R 3,646,231
666PY 3,646,105
3,646,232
666M 3,646,233
3,646,234
667 3,646,106
3,646,235
669P 3,646,142
672T 3,646,236
674A 3,646,238
677A 3,646,237
680E 3,646,239
683D 3,646,143
683.68 3,646,152
827R 3,646,155
857TW 3,646,156
857L 3,646,154
3,646,157
859R 3,646,158
860 3,646,159
864 3,646,160
876B 3,646,161
876R 3,646,162
3,646,163
878R 3,646,164
3,646,165
879R 3,646,167
879 3,646,166
889 3,646,168
3,646,169
899 3,646,170
926 3,646,171
928 3,646,172
976 3,646,173

CLASS 261

39A 3,645,509
94 3,645,510

CLASS 263

19A 3,645,511
3,645,512
21A 3,645,513
29 3,645,514
32 3,645,515
40 3,645,516
52 3,645,517

CLASS 264

3C 3,646,174
8 3,646,175
11 3,646,176
12 3,646,177
41 3,646,178
3,646,179
45 3,646,180
73 3,646,181
115 3,646,182
117 3,646,183
144 3,646,184
161 3,646,185
174 3,646,186
176 3,646,187
230 3,646,188
295 3,646,189
297 3,646,190
315 3,646,191

CLASS 266

2.5 3,645,521
4E 3,645,518
34LM 3,645,519
34L 3,645,520

CLASS 267

54 3,645,522
107 3,645,523

CLASS 270

31 3,645,524
45 3,645,525

CLASS 271

32 3,645,526
42 3,645,527

CLASS 273

63R 3,645,528
80R 3,646,610
108 3,645,529
138A 3,645,531
138R 3,645,530
142A 3,645,532
145A 3,645,533
157A 3,645,534
157R 3,645,535
185R 3,645,536
207 3,645,537

CLASS 274

4A 3,645,538
4B 3,645,539
4F 3,646,611
4R 3,645,540
23R 3,645,541

CLASS 277

1 3,645,542
58 3,645,543
70 3,645,544
72 3,645,545
205 3,645,546
207 3,645,547

CLASS 280

11.35M 3,645,552
11.37Z 3,645,553
33.99R 3,645,554
104.5B 3,645,555
150B 3,645,556
166 3,645,557
270 3,645,558
415B 3,645,559
482 3,645,560

CLASS 282

29B 3,645,561

CLASS 285

18 3,645,565
24 3,645,563
47 3,645,564
73 3,645,562
197 3,645,566
340 3,645,567
360 3,645,568

CLASS 287

54A 3,645,569
117 3,645,570

CLASS 292

19 3,645,571
21 3,645,572
200 3,646,612
241 3,645,573
242 3,645,574

CLASS 293

67 3,645,575

CLASS 294

1CA 3,645,576
50.9 3,645,578
104 3,645,577

CLASS 297

216 3,645,548
388 3,645,549
454 3,645,550

CLASS 299

5 3,645,551
75 3,645,579

CLASS 301

55 3,645,580

CLASS 302

2R 3,645,581
35 3,645,582
53 3,645,583

CLASS 303

21F 3,645,584
22R 3,645,585

CLASS 305

10 3,645,586

CLASS 307

10BP 3,646,354
64 3,646,355
87 3,646,356
88.3 3,646,357
3,646,358
106 3,646,478
202 3,646,359
233 3,646,360
235 3,646,361
238 3,646,362
240 3,646,363
251 3,646,364
252B 3,646,365
252J 3,646,578
252W 3,646,366
255 3,646,367
269 3,646,368
270 3,646,369
273 3,646,370
293 3,646,371
308 3,646,372

CLASS 308

4A 3,645,587
6C 3,645,588
9 3,645,589
3,645,590
187 3,645,592
187.1 3,645,591
189 3,645,593

CLASS 310

45 3,646,374
83 3,646,375
156 3,646,376
168 3,646,377

CLASS 312

100 3,645,594
231 3,645,595
258 3,645,596
297 3,645,597
333 3,645,598

CLASS 313

27 3,646,378
57 3,646,379
60 3,646,380
93 3,646,381
104 3,646,382
109 3,646,383
109.5 3,646,384
115 3,646,385
3,646,386
274 3,646,387

CLASS 315

3.5 3,646,388
3,646,389
10 3,646,390
12 3,646,391
22 3,646,392
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	3,646,523		3,646,550		CLASS 350	132	3,645,622	202	3,645,642		3,646,200
	3,646,524	347NT	3,646,545	1	3,645,600		CLASS 356		CLASS 415		3,646,201
173CA	3,646,525	347SY	3,646,547		3,645,601	1	3,645,623	111	3,645,643	232	3,646,202
173R	3,646,526	365	3,646,551	36	3,645,602	5	3,645,624	163	3,645,645	236	3,646,203
	3,646,527	409	3,646,552	87	3,646,608	27	3,645,625		CLASS 416	249	3,646,204
173.1	3,646,528	421	3,646,553	91	3,645,609	71	3,645,626	157	3,645,644	250	3,646,205
174DC	3,646,531		CLASS 343	149	3,645,603	85	3,645,629		CLASS 417	263	3,646,206
174MC	3,646,585	5DP	3,646,554	160	3,645,604	86	3,645,628	50	3,645,646	266	3,646,207
174TF	3,646,529	5W	3,646,555	214	3,645,605	87	3,645,627	79	3,645,647	273	3,646,208
	3,646,530	6.5R	3,646,556	292	3,645,606	100	3,645,630	214	3,645,648	274	3,646,209
174.1B	3,646,535	7.3	3,646,588	301	3,645,607	136	3,645,631	379	3,645,649		3,646,210
174.1C	3,646,536	13R	3,646,557	310	3,645,608	165	3,645,632	420	3,645,650	278	3,646,211
174.1G	3,646,534	100PE	3,646,589		CLASS 351	177	3,645,633	479	3,645,651	301	3,646,212
174.1R	3,646,532	100SA	3,646,558	159	3,645,610	201	3,645,634		CLASS 418	319	3,646,213
	3,646,533		3,646,559		CLASS 353	252	3,645,635	31	3,645,652	343	3,646,215
197	3,646,537	228	3,646,560	23	3,645,611		CLASS 401	56	3,645,653	362	3,646,214
200	3,646,538	711	3,646,561	27	3,645,612	227	3,645,636	133	3,645,654		CLASS 425
203	3,646,539	720	3,646,562	121	3,645,613		CLASS 402		CLASS 424	35	3,645,655
241	3,646,540	723	3,646,563		CLASS 355	15	3,645,637	35	3,646,192	71	3,645,656
244C	3,646,541	766	3,646,564	3	3,645,614		CLASS 408	85	3,646,193	72	3,645,657
259	3,646,542	781	3,646,565		3,645,615	1	3,645,638	94	3,646,195	78	3,645,658
262	3,646,543	808	3,646,566		3,645,616	146	3,645,639	119	3,646,194	204	3,645,659
324R	3,646,544		CLASS 346	4	3,645,617	192	3,645,640	162	3,646,196	445	3,645,660
347AD	3,646,548	23	3,646,567	15	3,645,618			177	3,646,197		CLASS 431
	3,646,586	108	3,646,568	40	3,645,619			180	3,646,198	24	3,645,661
347DA	3,646,549	136	3,646,569	63	3,645,620					78	3,645,662
	3,646,587									93	3,645,663
										209	3,645,664
											CLASS 444
										1	3,646,571

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	223,018		223,023		223,028		223,033	D54— 12	223,037	D81— 10	223,042
D 9—125	223,019	6	223,024		223,029	7	223,046	D61— 1	223,038	D83— 12	223,043
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	223,021	D25— 1	223,026	D34— 5	223,031		223,035		223,040	D90— 8	223,045

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1 : 3,645,343	3,645,466	3,646,419	3,646,262	3,645,311	3,645,453
3,645,475	3,645,471	3,646,420	3,646,302	3,645,403	3,645,486
3,645,559	3,645,472	3,646,470	3,646,311	3,645,446	3,645,489
3,646,263	3,645,497	3,646,476	3,646,370	3,645,571	3,645,492
3,646,440	3,645,512	3,646,519	3,646,468	3,645,608	3,645,496
3,646,457	3,645,530	3,646,526	3,646,469	3,645,638	3,645,511
3,646,514	3,645,532	3,646,528	3,646,473	3,645,678	3,645,539
3,646,606	3,645,533	3,646,531	3,646,502	3,645,679	3,645,574
2 : 3,646,086	3,645,536	3,646,533	3,646,504	3,645,680	3,645,586
3,646,181	3,645,543	3,646,534	3,646,598	3,645,849	3,645,637
4 : 3,645,067	3,645,548	3,646,535	3,646,609	3,645,983	3,645,656
3,645,075	3,645,572	3,646,536	10 : 3,645,780	3,646,387	3,645,705
3,645,645	3,645,578	3,646,543	3,645,809	3,646,577	3,645,757
3,645,818	3,645,581	3,646,546	3,645,890	13 : 3,645,027	3,645,760
3,645,827	3,645,594	3,646,559	3,645,915	3,645,143	3,645,764
3,646,246	3,645,606	3,646,567	3,645,917	3,645,219	3,645,824
3,646,537	3,645,619	3,646,571	3,645,924	3,645,339	3,645,830
5 : 3,645,687	3,645,641	3,646,574	3,645,934	3,645,406	3,645,843
6 : Re.27,302	3,645,688	3,646,578	3,645,948	3,645,481	3,645,888
3,644,946	3,645,690	3,646,587	3,645,962	3,645,816	3,645,901
3,645,025	3,645,698	3,646,592	3,645,978	3,646,565	3,645,903
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3,645,037	3,645,747	8 : 3,645,179	3,645,989	16 : 3,645,501	3,645,937
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3,645,101	3,645,810	3,645,763	3,646,070	3,645,016	3,645,975
3,645,114	3,645,832	3,645,896	3,646,072	3,645,030	3,646,007
3,645,133	3,645,999	3,645,918	3,646,085	3,645,038	3,646,035
3,645,135	3,646,016	3,645,919	3,646,095	3,645,055	3,646,036
3,645,166	3,646,096	3,646,018	3,646,104	3,645,093	3,646,042
3,645,188	3,646,097	3,646,133	3,646,130	3,645,115	3,646,044
3,645,225	3,646,100	3,646,316	3,646,150	3,645,146	3,646,074
3,645,230	3,646,116	3,646,417	3,646,223	3,645,152	3,646,098
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3,645,297	3,646,211	3,644,976	11 : 3,644,949	3,645,199	3,646,238
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3,645,327	3,646,244	3,645,015	3,644,996	3,645,245	3,646,275
3,645,336	3,646,250	3,645,095	3,644,997	3,645,301	3,646,299
3,645,344	3,646,281	3,645,100	3,645,003	3,645,302	3,646,327
3,645,369	3,646,289	3,645,148	3,645,031	3,645,319	3,646,328
3,645,394	3,646,294	3,645,423	3,645,032	3,645,321	3,646,330
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3,645,420	3,646,323	3,645,613	3,645,070	3,645,350	3,646,368
3,645,435	3,646,336	3,645,652	3,645,163	3,645,355	3,646,373
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3,645,451	3,646,382	3,646,185	3,645,306	3,645,422	3,646,437

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